SENATE SÉNAT

CANADA

First Session
Forty-second Parliament, 2015-16

Proceedings of the Standing Senate Committee on

FISHERIES AND OCEANS

Chair:
The Honourable FABIAN MANNING

Tuesday, May 31, 2016
Tuesday, June 7, 2016
Tuesday, June 21, 2016 (in camera)

Issue No. 5

Consideration of a draft agenda (future business)

First (final) meeting:

Study on the regulation of aquaculture, current challenges and future prospects for the industry in Canada

Third and fourth meetings:

Study on Maritime Search and Rescue activities, including current challenges and opportunities

INCLUDING:
THE THIRD REPORT OF THE COMMITTEE
(Budget Application for Study on Maritime Search and Rescue)
and
THE FOURTH REPORT OF THE COMMITTEE
(Report on Aquaculture)

WITNESSES:
(*See back cover*)

Première session de la
quarante-deuxième législature, 2015-2016

Délibérations du Comité sénatorial permanent des

PÊCHES ET DES OCÉANS

Président :
L'honorable FABIAN MANNING

Le mardi 31 mai 2016
Le mardi 7 juin 2016
Le mardi 21 juin 2016 (à huis clos)

Fascicule nº 5

Étude d'un projet d'ordre du jour (travaux futurs)

Première (dernière) réunion :

Étude sur la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada

Troisième et quatrième réunions :

Étude sur les activités de recherche et de sauvetage maritimes, y compris les défis et les possibilités qui existent

Y COMPRIS :
LE TROISIÈME RAPPORT DU COMITÉ
(Demande de budget pour étude sur la recherche et sauvetage maritimes)
et
LE QUATRIÈME RAPPORT DU COMITÉ
(Rapport sur l'aquaculture)

TÉMOINS :
(*Voir à l'endos*)

52644-52674-52741

STANDING SENATE COMMITTEE ON FISHERIES AND OCEANS

The Honourable Fabian Manning, *Chair*

The Honourable Elizabeth Hubley, *Deputy Chair*

and

The Honourable Senators:

* Carignan, P.C. (or Martin)	Munson
Eaton	Poirier
Enverga	Raine
* Harder, P.C. (or Bellemare)	Sinclair
McInnis	Stewart Olsen
	Wallace
	Watt

*Ex officio members

(Quorum 4)

Changes in membership of the committee:

Pursuant to rule 12-5, membership of the committee was amended as follows:

The Honourable Senator Eaton replaced the Honourable Senator Ataullahjan (*June 8, 2016*).

The Honourable Senator Lovelace Nicholas was removed from the membership of the committee, substitution pending (*June 8, 2016*).

The Honourable Senator Ataullahjan replaced the Honourable Senator Eaton (*June 7, 2016*).

The Honourable Senator Eaton replaced the Honourable Senator Frum (*June 1, 2016*).

The Honourable Senator Frum replaced the Honourable Senator Eaton (*May 31, 2016*).

COMITÉ SÉNATORIAL PERMANENT DES PÊCHES ET DES OCÉANS

Président : L'honorable Fabian Manning

Vice-présidente : L'honorable Elizabeth Hubley

et

Les honorables sénateurs :

* Carignan, C.P. (ou Martin)	Munson
Eaton	Poirier
Enverga	Raine
* Harder, C.P. (ou Bellemare)	Sinclair
McInnis	Stewart Olsen
	Wallace
	Watt

* Membres d'office

(Quorum 4)

Modifications de la composition du comité :

Conformément à l'article 12-5 du Règlement, la liste des membres du comité est modifiée, ainsi qu'il suit :

L'honorable sénatrice Eaton a remplacé l'honorable sénatrice Ataullahjan (*le 8 juin 2016*).

L'honorable sénatrice Lovelace Nicholas a été retirée de la liste des membres du comité, remplacement à venir (*le 8 juin 2016*).

L'honorable sénatrice Ataullahjan a remplacé l'honorable sénatrice Eaton (*le 7 juin 2016*).

L'honorable sénatrice Eaton a remplacé l'honorable sénatrice Frum (*le 1er juin 2016*).

L'honorable sénatrice Frum a remplacé l'honorable sénatrice Eaton (*le 31 mai 2016*).

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ORDER OF REFERENCE

Extract from the *Journals of the Senate,* Monday, June 20, 2016:

The Honourable Senator Manning moved, seconded by the Honourable Senator Smith:

That the Standing Senate Committee on Fisheries and Oceans be authorized to examine and report on the regulation of aquaculture, current challenges and future prospects for the industry in Canada;

That the papers and evidence received and taken and work accomplished by the committee on this subject during the First Session of the Forty-first Parliament be referred to the committee; and

That the committee report from time to time to the Senate, but no later than June 30, 2016, and that the committee retain all powers necessary to publicize its findings for 180 days after the tabling of the final report.

After debate,

The question being put on the motion, it was adopted.

ATTEST:

ORDRE DE RENVOI

Extrait des *Journaux du Sénat* du lundi 20 juin 2016 :

L'honorable sénateur Manning propose, appuyé par l'honorable sénateur Smith,

Que le Comité sénatorial permanent des pêches et des océans soit autorisé à étudier, afin d'en faire rapport, la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada;

Que les documents reçus, les témoignages entendus et les travaux accomplis par le comité à ce sujet au cours de la première session de la quarante et unième législature soient renvoyés au comité;

Que le comité fasse de temps à autre rapport au Sénat, mais au plus tard le 30 juin 2016, et qu'il conserve tous les pouvoirs nécessaires pour diffuser ses conclusions dans les 180 jours suivant le dépôt du rapport final.

Après débat,

La motion, mise aux voix, est adoptée.

ATTESTÉ :

Le greffier du Sénat,

Charles Robert

Clerk of the Senate

MINUTES OF PROCEEDINGS

OTTAWA, Tuesday, May 31, 2016
(11)

[*English*]

The Standing Senate Committee on Fisheries and Oceans met this day at 5:03 p.m., in room 9, Victoria Building, the deputy chair, the Honourable Elizabeth Hubley, presiding.

Members of the committee present: The Honourable Senators Enverga, Frum, Hubley, McInnis, Poirier, Raine and Stewart Olsen (7).

In attendance: Odette Madore, Analyst, Parliamentary Information and Research Services, Library of Parliament.

Also present: The official reporters of the Senate.

Pursuant to the order of reference adopted by the Senate on Thursday, April 14, 2016, the committee continued its study on Maritime Search and Rescue activities, including current challenges and opportunities. (*For complete text of the order of reference, see proceedings of the committee, Issue No. 4.*)

WITNESSES:

Canadian Coast Guard Auxiliary:

Randy Strandt, National Chair.

Royal Canadian Marine Search and Rescue:

Pat Quealey, Chief Executive Officer.

Cougar Helicopters Inc.:

Hank Williams, Chief Operating Officer;

Rick Banks, Search & Rescue Program Manager;

Steve Reid, Search & Rescue Capability Advisor.

The deputy chair made a statement.

Mr. Strandt made a statement and, together with Mr. Quealey, answered questions.

At 6:01 p.m., the committee suspended.

At 6:06 p.m., the committee resumed.

The chair made a statement.

Messrs. Williams, Banks and Reid each made a statement and answered questions.

At 7:02 p.m., the committee adjourned to the call of the chair.

ATTEST:

PROCÈS-VERBAUX

OTTAWA, le mardi 31 mai 2016
(11)

[*Traduction*]

Le Comité sénatorial permanent des pêches et des océans se réunit aujourd'hui, à 17 h 3, dans la pièce 9 de l'édifice Victoria, sous la présidence de l'honorable Elizabeth Hubley (*vice-présidente*).

Membres du comité présents : Les honorables sénateurs Enverga, Frum, Hubley, McInnis, Poirier, Raine et Stewart Olsen (7).

Également présente : Odette Madore, analyste, Service d'information et de recherche parlementaires, Bibliothèque du Parlement.

Aussi présents : Les sténographes officiels du Sénat.

Conformément à l'ordre de renvoi adopté par le Sénat le jeudi 14 avril 2016, le comité poursuit son étude sur la recherche et le sauvetage maritimes, y compris les défis et les possibilités qui existent. (*Le texte intégral de l'ordre de renvoi figure au fascicule nº 4 des délibérations du comité.*)

TÉMOINS :

Garde côtière auxiliaire canadienne :

Randy Strandt, président national.

Royal Canadian Marine Search and Rescue :

Pat Quealey, chef de la direction.

Cougar Helicopters Inc. :

Hank Williams, chef des opérations;

Rick Banks, gestionnaire, Programme de recherche et sauvetage;

Steve Reid, conseiller consultatif, Recherche et sauvetage.

La vice-présidente fait une déclaration.

M. Strandt fait une déclaration puis, aidé de M. Quealey, répond aux questions.

À 18 h 1, la séance est suspendue.

À 18 h 6, la séance reprend.

La présidente fait une déclaration.

MM. Williams, Banks et Reid font chacun une déclaration, puis répondent aux questions.

À 19 h 2, le comité s'ajourne jusqu'à nouvelle convocation de la présidence.

ATTESTÉ :

OTTAWA, Tuesday, June 7, 2016
(12)

[*English*]

The Standing Senate Committee on Fisheries and Oceans met this day at 5:33 p.m., in room 9, Victoria Building, the chair, the Honourable Fabian Manning, presiding.

Members of the committee present: The Honourable Senators Ataullahjan, Enverga, Manning, McInnis, Munson, Poirier and Raine (7).

In attendance: Odette Madore, Analyst, Parliamentary Information and Research Services, Library of Parliament; Marcy Galipeau, Communications Officer, Senate Communications Directorate.

Also present: The official reporters of the Senate.

Pursuant to the order of reference adopted by the Senate on Thursday, April 14, 2016, the committee continued its study on Maritime Search and Rescue activities, including current challenges and opportunities. (*For complete text of the order of reference, see proceedings of the committee, Issue No. 4.*)

WITNESS:

National Defence:

Rear-Admiral John Newton, Commander Joint Task Force Atlantic and Commander Maritime Forces Atlantic.

The chair made a statement.

Rear-Admiral Newton made a statement and answered questions.

At 6:42 p.m., the committee suspended.

At 6:43 p.m., the committee resumed in camera, pursuant to rule 12-16(1)(d), to consider a draft agenda (future business).

At 6:46 p.m., the committee adjourned to the call of the chair.

ATTEST:

OTTAWA, Tuesday, June 21, 2016
(13)

[*English*]

The Standing Senate Committee on Fisheries and Oceans met in camera this day at 11:03 a.m., in room 9, Victoria Building, the chair, the Honourable Fabian Manning, presiding.

Members of the committee present: The Honourable Senators Eaton, Enverga, Hubley, Manning, McInnis, Stewart Olsen, Wallace and Watt (8).

Also present: The official reporters of the Senate.

OTTAWA, le mardi 7 juin 2016
(12)

[*Traduction*]

Le Comité sénatorial permanent des pêches et des océans se réunit aujourd'hui, à 17 h 33, dans la pièce 9 de l'édifice Victoria, sous la présidence de l'honorable Fabian Manning (*président*).

Membres du comité présents : Les honorables sénateurs Ataullahjan, Enverga, Manning, McInnis, Munson, Poirier et Raine (7).

Également présentes : Odette Madore, analyste, Service d'information et de recherche parlementaires, Bibliothèque du Parlement; Marcy Galipeau, agente des communications, Direction des communications du Sénat.

Aussi présents : Les sténographes officiels du Sénat.

Conformément à l'ordre de renvoi adopté par le Sénat le jeudi 14 avril 2016, le comité poursuit son étude sur la recherche et le sauvetage maritimes, y compris les défis et les possibilités qui existent. (*Le texte intégral de l'ordre de renvoi figure au fascicule nº 4 des délibérations du comité.*)

TÉMOIN :

Défense nationale :

Contre-amiral John Newton, commandant de la Force opérationnelle interarmées (Atlantique) et des Forces maritimes de l'Atlantique.

Le président fait une déclaration.

Le contre-amiral Newton fait une déclaration, puis répond aux questions.

À 18 h 42, la séance est suspendue.

À 18 h 43, conformément à l'article 12-16(1)d) du Règlement, la séance se poursuit à huis clos afin que le comité puisse examiner un projet d'ordre du jour (travaux futurs).

À 18 h 46, le comité s'ajourne jusqu'à nouvelle convocation de la présidence.

ATTESTÉ :

OTTAWA, le mardi 21 juin 2016
(13)

[*Traduction*]

Le Comité sénatorial permanent des pêches et des océans se réunit aujourd'hui à huis clos, à 11 h 3, dans la pièce 9 de l'édifice Victoria, sous la présidence de l'honorable Fabian Manning (*président*).

Membres du comité présents : Les honorables sénateurs Eaton, Enverga, Hubley, Manning, McInnis, Stewart Olsen, Wallace et Watt (8).

Aussi présents : Les sténographes officiels du Sénat.

It was agreed that the committee allow the transcription of today's in camera meeting, that one copy be kept in the office of the clerk of the committee for consultation by committee members present and the committee analyst, and that the transcript be destroyed by the clerk when authorized to do so by the Subcommittee on Agenda and Procedure but no later than at the end of this parliamentary session.

Pursuant to the order of reference adopted by the Senate on Monday, June 20, 2016, the committee began its study on the regulation of aquaculture, current challenges and future prospects for the industry in Canada.

Pursuant to rule 12-16(1)(d), the committee considered a draft report.

It was agreed that the committee adopt its report on the regulation of aquaculture, current challenges and future prospects for the industry in Canada, and that the chair be authorized to table the report in the Senate and to request a complete and detailed response from the government.

At 11:08 a.m., pursuant to rule 12-16(1)(d), the committee considered a draft agenda (future business).

At 11:16 a.m., the committee adjourned to the call of the chair.

ATTEST:

Il est convenu que le comité autorise la transcription de la partie de la réunion qui se déroulera à huis clos; qu'une copie de la transcription soit conservée au bureau du greffier pour consultation par les membres du comité présents et par l'analyste du comité; et que le document soit détruit par le greffier quand il en aura reçu l'autorisation du Sous-comité du programme et de la procédure, au plus tard à la fin de la présente session parlementaire.

Conformément à l'ordre de renvoi adopté par le Sénat le lundi 20 juin 2016, le comité entreprend son étude sur la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada.

Conformément à l'article 12-16(1)d) du Règlement, le comité examine une ébauche de rapport.

Il est convenu que le comité adopte son rapport sur la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada, et que le président soit autorisé à déposer le rapport au Sénat et à demander une réponse complète et détaillée du gouvernement.

À 11 h 8, conformément à l'article 12-16(1)d) du Règlement, le comité examine un projet d'ordre du jour (travaux futurs).

À 11 h 16, le comité s'ajourne jusqu'à nouvelle convocation de la présidence.

ATTESTÉ :

Le greffier du comité,

Maxwell Hollins

Clerk of the Committee

REPORTS OF THE COMMITTEE

Monday, June 20, 2016

The Standing Senate Committee on Fisheries and Oceans has the honour to present its

THIRD REPORT

Your committee, which was authorized by the Senate on Thursday, April 14, 2016, to examine and report on Maritime Search and Rescue activities, including current challenges and opportunities, respectfully requests funds for the fiscal year ending March 31, 2017, and requests, for the purpose of such study, that it be empowered to:

(*a*) engage the services of such counsel, technical, clerical and other personnel as may be necessary;

(*b*) adjourn from place to place within Canada; and

(*c*) travel inside Canada.

Pursuant to Chapter 3:06, section 2(1)(c) of the *Senate Administrative Rules*, the budget submitted to the Standing Committee on Internal Economy, Budgets and Administration and the report thereon of that committee are appended to this report.

Respectfully submitted,

RAPPORTS DU COMITÉ

Le lundi 20 juin 2016

Le Comité sénatorial permanent des pêches et des océans a l'honneur de présenter son

TROISIÈME RAPPORT

Votre comité, qui a été autorisé par le Sénat le jeudi 14 avril 2016 à étudier, afin d'en faire rapport, les activités de recherche et de sauvetage maritimes, y compris les défis et les possibilités qui existent, demande respectueusement des fonds pour l'exercice financier se terminant le 31 mars 2017, et demande qu'il soit, aux fins de ses travaux, autorisé à :

a) embaucher tout conseiller juridique et personnel technique, de bureau ou autre dont il pourrait avoir besoin;

b) s'ajourner d'un lieu à l'autre au Canada; et

c) voyager à l'intérieur du Canada.

Conformément au chapitre 3:06, article 2(1)c) du *Règlement administratif du Sénat*, le budget présenté au Comité permanent de la régie interne, des budgets et de l'administration ainsi que le rapport s'y rapportant sont annexés au présent rapport.

Respectueusement soumis,

Le président,

FABIAN MANNING

Chair

STANDING SENATE COMMITTEE ON FISHERIES AND OCEANS

Study on Maritime Search and Rescue (SAR) activities, including current challenges and opportunities

APPLICATION FOR BUDGET AUTHORIZATION FOR THE FISCAL YEAR ENDING MARCH 31, 2017

Extract from the *Journals of the Senate* of Thursday, April 14, 2016:

The Honourable Senator Manning moved, seconded by the Honourable Senator Wells:

That the Standing Senate Committee on Fisheries and Oceans be authorized to examine and report on Maritime Search and Rescue activities, including current challenges and opportunities; and

That the Committee report from time to time to the Senate, but no later than November 30, 2017, and that the Committee retain all powers necessary to publicize its findings for 180 days after the tabling of the final report.

After debate,
The question being put on the motion, it was adopted.

ATTEST

COMITÉ SÉNATORIAL PERMANENT DES PÊCHES ET DES OCÉANS

Étude sur la recherche et sauvetage maritimes (SAR), y compris les défis et les possibilités qui existent

DEMANDE D'AUTORISATION DE BUDGET POUR L'EXERCICE FINANCIER SE TERMINANT LE 31 MARS 2017

Extrait des *Journaux du Sénat* du jeudi 14 avril 2016:

L'honorable sénateur Manning propose, appuyé par l'honorable sénateur Wells,

Que le Comité sénatorial permanent des pêches et des océans soit autorisé à examiner, pour en faire rapport, les activités de recherche et de sauvetage maritimes, y compris les défis et les possibilités qui existent ; et

Que le Comité fasse de temps à autre rapport au Sénat, mais au plus tard le 30 novembre 2017, et qu'il conserve tous les pouvoirs nécessaires pour diffuser ses conclusions dans les 180 jours suivant le dépôt du rapport final.

Après débat,
La motion, mise aux voix, est adoptée.

ATTESTÉ:

Le greffier du Sénat,

Charles Robert

Clerk of the Senate

SUMMARY OF BUDGET

Activity 1: Nova Scotia, Prince Edward Island and New Brunswick	$	107,588
Activity 2: Newfoundland and Labrador	$	152,657
TOTAL	**$**	**260,245**

The above budget was approved by the Standing Senate Committee on Fisheries and Oceans on Tuesday, May 17, 2016.

The undersigned or an alternate will be in attendance on the date that this budget is considered.

Date

FABIAN MANNING
Chair, Standing Senate Committee on Fisheries and Oceans

Date

LEO HOUSAKOS
Chair, Standing Committee on Internal Economy, Budgets and Administration

SOMMAIRE DU BUDGET

Activité 1 : Nouvelle-Écosse, Île-du-Prince-Édouard et Nouveau Brunswick	107 588	$
Activité 2 : Terre-Neuve-et-Labrador	152 657	$
TOTAL	**260 245**	**$**

Le budget ci-dessus a été approuvé par le Comité sénatorial permanent des pêches et des océans le mardi 17 mai 2016.

Le soussigné ou son remplaçant assistera à la séance au cours de laquelle le présent budget sera étudié.

Date

FABIAN MANNING
Président du Comité sénatorial permanent des pêches et des océans

Date

LEO HOUSAKOS
Président du Comité permanent de la régie interne, des budgets et de l'administration

STANDING SENATE COMMITTEE ON FISHERIES AND OCEANS

Study on Maritime Search and Rescue (SAR) activities, including current challenges and opportunities

EXPLANATION OF BUDGET ITEMS APPLICATION FOR BUDGET AUTHORIZATION FOR THE FISCAL YEAR ENDING MARCH 31, 2017

ACTIVITY 1: FACT-FINDING MISSIONS IN NOVA SCOTIA, PRINCE EDWARD ISLAND AND NEW BRUNSWICK, AND PUBLIC HEARINGS IN NOVA SCOTIA

20 participants for public hearings (1 day): 12 Senators, 8 staff (1 clerk, 1 analyst,

1 administrative assistant, 3 interpreters, 1 stenographer, 1 communications officer)

16 participants for fact-finding missions (2 days): 12 Senators, 4 staff (1 clerk, 1 analyst, 1 administrative assistant, 1 communications officer)

PROFESSIONAL AND OTHER SERVICES			
	OTHER		
1.	Reporting/transcribing (0403)	4,500	
	(1.5 days, $3,000/day)		
2.	Transcript editing services (0143)	3,000	
Sub-total			$7,500
TRANSPORTATION, ACCOMMODATION AND LIVING EXPENSES			
1.	Transportation - air	53,600	
	12 senators x $2,800 (0224)		
	4 staff x $2,800 (0227)		
	4 staff x $2,200 (0227)		
2.	Hotel accommodation	17,600	
	12 senators, $200/night, 5 nights (0222)		
	4 staff, $200/night, 5 nights (0226)		
	4 staff, $200/night, 2 nights (0226)		
3.	Per diem	10,368	
	12 senators, $96/day, 6 days (0221)		
	4 staff, $96/day, 6 days (0225)		
	4 staff, $96/day, 3 days (0225)		
4.	Working meals (travel) (0231)	4,100	
5.	Taxis	3,000	
	12 senators x $150 (0223)		
	8 staff x $150 (0232)		
6.	Charter bus (0228)	3,600	
	(3 days, $1,200/day)		
Sub-total			$92,268

ALL OTHER EXPENDITURES

OTHER

1.	Miscellaneous costs associated with travel (0229)	500	

COURIER

2.	Courier Charges (0261)	150	

RENTALS

3.	Rental office space (meeting rooms) (0540)	1,500	
	(1.5 days, $1,000/day)		
4.	Rental - interpretation equipment (0504)	5,670	
	(1.5 days, $3,780/day)		
Sub-total			$7,820

Total of Activity 1 **$107,588**

ACTIVITY 2: FACT-FINDING MISSION AND PUBLIC HEARINGS IN NEWFOUNDLAND AND LABRADOR

20 participants for public hearings (1 day): 12 Senators, 8 staff (1 clerk, 1 analyst, 1 administrative assistant, 3 interpreters, 1 stenographer, 1 communications officer)

16 participants for fact-finding missions (2 days): 12 Senators, 4 staff (1 clerk, 1 analyst, 1 administrative assistant, 1 communications officer)

PROFESSIONAL AND OTHER SERVICES

OTHER

1.	Reporting/transcribing (0403)	3,000	
	(1 day, $3,000/day)		
2.	Transcript editing services (0143)	2,000	
Sub-total			$5,000

TRANSPORTATION, ACCOMMODATION AND LIVING EXPENSES

1.	Transportation - air	92,600
	12 senators x $5,550 (0224)	
	4 staff x $4,350 (0227)	
	4 staff x $2,150 (0227)	
2.	Hotel accommodation	14,400
	12 senators, $200/night, 4 nights (0222)	
	4 staff, $200/night, 4 nights (0226)	
	4 staff, $200/night, 2 nights (0226)	
3.	Per diem	8,448
	12 senators, $96/day, 5 days (0221)	
	4 staff, $96/day, 5 days (0225)	
	4 staff, $96/day, 2 days (0225)	

4.	Working meals (travel) (0231)	4,100			
5.	Taxis	3,000			
	12 senators x $150 (0223)				
	8 staff x $150 (0232)				
6.	Charter bus (0228)	3,000			
	(3 days, $1,000/day)				
7.	Charter flight (0233)	13,950			
Sub-total			$139,498		
ALL OTHER EXPENDITURES					
	OTHER				
1.	Miscellaneous costs associated with travel (0229)	500			
	COURIER				
2.	Courier Charges (0261)	150			
	RENTALS				
3.	Rental office space (meeting rooms) (0540)	1,000			
	(1 day, $1,000/day)				
4.	Rental - interpretation equipment (0504)	6,509			
	(1 day, $6,509/day)				
Sub-total			$8,159		
Total of Activity 2				**$152,657**	
Grand Total					**$ 260,245**

The Senate Administration has reviewed this budget application.

Date	Blair Armitage, Principal Clerk, Committees Directorate
Date	Nathalie Charpentier, Comptroller, Finance and Procurement Directorate

COMITÉ SÉNATORIAL PERMANENT DES PÊCHES ET DES OCÉANS

Étude sur la recherche et sauvetage maritimes (SAR), y compris les défis et les possibilités qui existent

EXPLICATION DES ITEMS BUDGÉTAIRES DEMANDE D'AUTORISATION DE BUDGET POUR L'EXERCICE FINANCIER SE TERMINANT LE 31 MARS 2017

ACTIVITÉ 1 : MISSIONS D'ÉTUDE EN NOUVELLE-ÉCOSSE, ILE-DU-PRINCE-ÉDOUARD ET NOUVEAU-BRUNSWICK, ET AUDIENCES PUBLIQUE EN NOUVELLE-ÉCOSSE

20 participants pour les audiences publiques (1,5 j.) : 12 sénateurs, 8 employés (1 greffier, 1 analyste, 1 adjointe administrative, 3 interprètes, 1 sténographe, 1 agent de communications)

16 participants pour les missions d'étude (3 j.): 12 sénateurs, 4 employés (1 greffier, 1 analyste, 1 adjointe administrative, 1 agent de communications)

SERVICES PROFESSIONNELS ET AUTRES

AUTRE

1.	Sténographie/transcription (0403)	4 500	
	(1.5 jours, 3 000 $/jour)		
2.	Services d'édition des témoignages (0143)	3 000	
Sous-total			7 500 $

TRANSPORTS, HÉBERGEMENT ET FRAIS DE SÉJOUR

1.	Transport - aérien	53 600	
	12 sénateurs x 2 800 $ (0224)		
	4 employés x 2 800 $ (0227)		
	4 employé x 2 200 $ (0227)		
2.	Hébergement	17 600	
	12 sénateurs, 200 $/nuit, 5 nuits (0222)		
	4 employés, 200 $/nuit, 5 nuits (0226)		
	4 employés, 200 $/nuit, 2 nuits (0226)		
3.	Indemnité journalière	10 368	
	12 sénateurs, 96 $/jour, 6 jours (0221)		
	4 employés, 96 $/jour, 6 jours (0225)		
	4 employés, 96 $/jour, 3 jours (0225)		
4.	Repas de travail (voyage) (0231)	4 100	
5.	Taxis	3 000	
	12 sénateurs x 150 $ (0223)		
	8 employés x 150 $ (0232)		
6.	Affréter - autobus (0228)	3 600	
	(3 jours, 1 200 $/jour)		
Sous-total			92 268 $

AUTRES DÉPENSES

AUTRES

1.	Divers coûts liés aux déplacements (0229)	500		

MESSAGERIE

2.	Frais de messagerie (0261)	150		

LOCATIONS

3.	Location d'espace (salles de réunion) (0540)	1 500		
	(1.5 jours, 1 000 $/jour)			
4.	Location - équipement d'interprétation (0504)	5 670		
	(1.5 jours, 3 780 $/jour)			
Sous-total			7 820 $	
Total de l'Activité 1				**107 588 $**

ACTIVITÉ 2 : MISSION D'ÉTUDE ET AUDIENCES PUBLIQUES A TERRE-NEUVE-ET-LABRADOR

20 participants pour les audiences publiques (1,5 j.) : 12 sénateurs, 8 employés (1 greffier, 1 analyste, 1 adjointe administrative, 3 interprètes, 1 sténographe, 1 agent de communications)

16 participants pour les missions d'étude (3 j.): 12 sénateurs, 4 employés (1 greffier, 1 analyste, 1 adjointe administrative, 1 agent de communications)

SERVICES PROFESSIONNELS ET AUTRES

AUTRE

1.	Sténographie/transcription (0403)	3 000		
	(1 jour, 3 000 $/jour)			
2.	Services d'édition des témoignages (0143)	2 000		
Sous-total			5 000 $	

TRANSPORTS, HÉBERGEMENT ET FRAIS DE SÉJOUR

1.	Transport - aérien	92 600		
	12 sénateurs x 5 550 $ (0224)			
	4 employés x 4 350 $ (0227)			
	4 employé x 2 150 $ (0227)			
2.	Hébergement	14 400		
	12 sénateurs, 200 $/nuit, 4 nuits (0222)			
	4 employés, 200 $/nuit, 4 nuits (0226)			
	4 employés, 200 $/nuit, 4 nuits (0226)			
3.	Indemnité journalière	8 448		
	12 sénateurs, 96 $/jour, 5 jours (0221)			
	4 employés, 96 $/jour, 5 jours (0225)			
	4 employés, 96 $/jour, 2 jours (0225)			
4.	Repas de travail (voyage) (0231)	4 100		

5.	Taxis *12 sénateurs x 150 $ (0223)* *8 employés x 150 $ (0232)*	3 000		
6.	Affréter - autobus (0228) *(3 jours, 1 000 $/jour)*	3 000		
7.	Vol nolisé (0233)	13 950		
Sous-total			139 498 $	
AUTRES DÉPENSES				
	AUTRES			
1.	Divers coûts liés aux déplacements (0229)	500		
	MESSAGERIE			
2.	Frais de messagerie (0261)	150		
	LOCATIONS			
3.	Location d'espace (salles de réunion) (0540) *(1 jour, 1 000 $/jour)*	1 000		
4.	Location - équipement d'interprétation (0504) *(1 jour, 6 509 $/jour)*	6 509		
Sous-total			8 159 $	
Total de l'Activité 2				**152 657 $**
Grand Total				**260 245 $**

L'administration du Sénat a examiné la présente demande d'autorisation budgétaire.

Date — Blair Armitage, greffier principal,
Direction des comités

Date — Nathalie Charpentier, contrôleur,
Direction des finances et de l'approvisionnement

APPENDIX (B) TO THE REPORT

Thursday, June 16, 2016

The Standing Committee on Internal Economy, Budgets and Administration has examined the budget presented to it by the Standing Senate Committee on Fisheries and Oceans for the proposed expenditures of the said committee for the fiscal year ending March 31, 2017, for the purpose of its special study on Maritime Search and Rescue activities, including current challenges and opportunities, as authorized by the Senate on Thursday, April 14, 2016. The approved budget is as follows:

Activity 1: Nova Scotia, Prince Edward Island and New Brunswick	$	107,588
Activity 2: Newfoundland and Labrador		—
TOTAL	**$**	**107,588**

(includes funds for public hearings and fact finding missions; includes funds for 12 senators to travel; decision on Activity 2 deferred)

The budgets approved by the Senate for each travel activity are the maximum amount that can be spent for that activity;

Budgets normally include funds for the full membership of the committee to travel;

In general, a reduced delegation actually travels and efforts are made to find additional savings;

Therefore, actual expenditures are expected to be considerably below the approved budget, and they will be reported to the Senate;

Any surplus funds remaining at the conclusion of a travel activity will be clawed-back and can be made available for allocation to committees for other activities.

Respectfully submitted,

ANNEXE (B) AU RAPPORT

Le jeudi 16 juin 2016

Le Comité permanent de la régie interne, des budgets et de l'administration a examiné le budget qui lui a été présenté par le Comité sénatorial permanent des pêches et des océans, concernant les dépenses projetées dudit comité pour l'exercice se terminant le 31 mars 2017, aux fins de leur étude spéciale sur les activités de recherche et de sauvetage maritimes, y compris les défis et les possibilités qui existent, tel qu'autorisé par le Sénat le jeudi 14 avril 2016. Le budget approuvé se lit comme suit:

Activité 1 : Nouvelle-Écosse, Île-du-Prince-Édouard et Nouveau Brunswick	107 588	$
Activité 2 : Terre-Neuve-et-Labrador	—	
TOTAL	**107 588**	**$**

(y compris des fonds pour des audiences publiques et des missions d'étude; y compris des fonds pour les déplacements de 12 sénateurs; décision reportée pour l'activité 2)

Les budgets approuvés par le Sénat pour chaque déplacement sont le montant maximal qui peut être dépensé pour ce déplacement;

Les budgets prévoient normalement des fonds pour les déplacements de tous les membres du comité;

En règle générale, une délégation réduite se déplace réellement et des efforts sont faits pour réaliser des économies additionnelles;

Par conséquent, on s'attend à ce que les dépenses réelles soient beaucoup inférieures au budget approuvé, et elles feront l'objet d'un rapport au Sénat;

Tous les fonds excédentaires restants après un déplacement seront récupérés et peuvent être réattribués aux comités pour d'autres activités.

Respectueusement soumis,

Le président,

LEO HOUSAKOS

Chair

Tuesday, June 21, 2016

The Standing Senate Committee on Fisheries and Oceans has the honour to table its

FOURTH REPORT

Your committee, which was authorized by the Senate on Monday, June 20, 2016, to examine and report on the regulation of aquaculture, current challenges and future prospects for the industry in Canada, now tables its final report in three volumes entitled: *Volume One — Aquaculture Industry and Governance in Canada*; *Volume Two — Aquaculture Industry and Governance in Norway and Scotland*; and *Volume Three — An Ocean of Opportunities: Aquaculture in Canada*.

Respectfully submitted,

Le mardi 21 juin 2016

Le Comité sénatorial permanent des pêches et des océans a l'honneur de déposer son

QUATRIÈME RAPPORT

Votre comité, qui a été autorisé par le Sénat le lundi 20 juin 2016 à étudier, afin d'en faire rapport, la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada, dépose maintenant son rapport final en trois volumes intitulés : *Volume un — Industrie aquacole et gouvernance au Canada*; *Volume deux — Industrie aquacole et gouvernance en Norvège et en Écosse*; et *Volume trois — Un océan de possibilités : L'aquaculture au Canada*.

Respectueusement soumis,

Le président,

FABIAN MANNING

Chair

(*Text of the report appears following the evidence*.)

(*Le texte du rapport paraît après les témoignages*.)

EVIDENCE

OTTAWA, Tuesday, May 31, 2016

The Standing Senate Committee on Fisheries and Oceans met this day at 5:03 p.m. to study Maritime Search and Rescue activities, including current challenges and opportunities.

Senator Elizabeth Hubley (*Deputy Chair*) in the chair.

[*English*]

The Deputy Chair: Good evening. My name is Elizabeth Hubley, a senator from Prince Edward Island, and I am pleased to chair this evening's meeting. Before I give the floor to the witnesses, I would like to invite the members of the committee to introduce themselves.

Senator McInnis: Tom McInnis from Nova Scotia.

Senator Poirier: Rose-May Poirier from New Brunswick.

Senator Stewart Olsen: Carolyn Stewart Olsen from New Brunswick.

Senator Raine: Nancy Greene Raine, from British Columbia.

Senator Enverga: Tobias Enverga from Ontario.

The Deputy Chair: The committee is continuing its study on Maritime Search and Rescue activities, including current challenges and opportunities. We are pleased to welcome Randy Strandt, National Chair, Canadian Coast Guard Auxiliary; and Pat Quealey, Chief Executive Officer, Royal Canadian Marine Search and Rescue. On behalf of the members of the committee, I thank you for being here today. I understand you have opening remarks. Therefore, in the interests of allowing as much discussion as possible in the time available to us, opening statements should be about 12 minutes in total. Please proceed.

Randy Strandt, National Chair, Canadian Coast Guard Auxiliary: Thank you, senator. I will be brief.

I am National Chair of the Canadian Coast Guard Auxiliary. It is a volunteer role that I serve in. In my day job, I am a chartered accountant and CFO for a small company in Vancouver. I am a volunteer on the water in North Vancouver as well and have been active on the water for many years.

I will go through the slides and share a few notes on each one as I go through. Certainly, if you have questions, we look forward to those.

The Canadian Coast Guard Auxiliary is five organizations across the country, and there is a map I will show you in a moment, divided geographically across the country comprised of 4,000 volunteers who give their time each week and month in search and rescue. It involves training and responding to incidents as the Coast Guard does. They are quick and effective and exist in

TÉMOIGNAGES

OTTAWA, le mardi 31 mai 2016

Le Comité sénatorial permanent des pêches et des océans se réunit aujourd'hui, à 17 h 3, pour étudier les activités de recherche et sauvetage maritimes et les défis et possibilités qui y sont associés.

La sénatrice Elizabeth Hubley (*vice-présidente*) occupe le fauteuil.

[*Traduction*]

La vice-présidente : Bonsoir. Je m'appelle Elizabeth Hubley, sénatrice de l'Île-du-Prince-Édouard. J'ai le plaisir de présider la séance de ce soir. Avant de donner la parole aux témoins, j'aimerais inviter les membres du comité à se présenter.

Le sénateur McInnis : Tom McInnis, de la Nouvelle-Écosse.

La sénatrice Poirier : Rose-May Poirier, du Nouveau-Brunswick.

La sénatrice Stewart Olsen : Carolyn Stewart Olsen, du Nouveau-Brunswick.

La sénatrice Raine : Nancy Greene Raine, de la Colombie-Britannique.

Le sénateur Enverga : Tobias Enverga, de l'Ontario.

La vice-présidente : Le comité poursuit son étude des activités de recherche et sauvetage maritimes et des défis et possibilités qui y sont associés. Nous sommes heureux d'accueillir Randy Strandt, président national de la Garde côtière auxiliaire canadienne, et Pat Quealey, chef de la direction du Royal Canadian Marine Search and Rescue. Au nom des membres du comité, je vous remercie d'être venus nous voir aujourd'hui. Je crois savoir que vous avez des remarques préliminaires. Donc, pour permettre le maximum de discussion possible dans le temps qui nous est imparti, les exposés préliminaires ne doivent pas dépasser une douzaine de minutes au total. Veuillez commencer.

Randy Strandt, président national, Garde côtière auxiliaire canadienne : Merci, madame la sénatrice. Je serai bref.

Je suis président national de la Garde côtière auxiliaire canadienne. C'est une fonction bénévole. Durant les heures ouvrables, je suis comptable agréé et directeur financier d'une petite entreprise de Vancouver. Je suis bénévole dans les eaux de Vancouver-Nord et je suis actif depuis de nombreuses années.

Je vais faire passer les diapositives et vous donner quelques commentaires à chaque fois. Si vous avez des questions, je me ferai un plaisir d'y répondre.

La Garde côtière auxiliaire canadienne est composée de cinq organismes répartis dans tout le pays. Je vous montrerai une carte dans un moment, où vous verrez la division géographique des 4 000 bénévoles qui consacrent du temps, chaque semaine et chaque mois, à des activités de recherche et sauvetage. Ils suivent une formation et interviennent en cas d'incident comme le fait la

coastal communities across the country. If there is a population base there, likely we have people, crews and assets there. Those boats can be community-owned, dedicated-purpose response vessels — so rescue boats. On occasion, they are private vessels; or they may be fishing vessels in communities where that make more sense and they can provide support that way. I can assure you that the volunteers have a significant impact on the SAR system in this country on the water, on the ground and in the air, which I am not talking about today. They have a significant impact on the outcomes of search and rescue in Canada.

The maps are divided regionally west to east: the Pacific Region, or RCM SAR; the Central and Arctic, which covers a large area; Quebec; Newfoundland and Labrador; and the Maritimes. Each of them operates in slightly different ways but provide the same level of service and the same training across the country.

This map, which is very small on your slides, shows the asset locations. To give you context, where there is a community with a population, there is likely a Coast Guard auxiliary station. We included the B.C. one in more detail but probably too small for you to see clearly on the maps you have. It highlights that those boats are in almost every remote and big city in both B.C. and across the country.

One point to make is that it becomes difficult for us to put volunteers where there are no people. We don't pay people to partake so, if they don't live there, it is unlikely we can put a station or volunteer asset there and effectively service. In smaller communities, it becomes difficult for us to maintain that response capability.

The next slide has some pictures of what you might think an auxiliary asset would look like. It could be a Coast Guard vessel showing up, a purpose-built rescue boat, or a fishing vessel or private vessel coming to assist you. The crew will be trained and professional and effective in what they do but may have different assets depending on where you are in the country.

The next slide shows the structure and how we fit into the SAR program. It is key to see that we are part of the program, as is the Coast Guard, who are our partners. We respond to pages from the Joint Rescue Coordination Centre, who receive calls and task us to respond to incidents. If you are in a boat on the water and are in trouble, you call us in the same way that you call the Coast Guard. We are a national asset and we are tasked by them to respond in quick order. We also work with many other agencies, including the Department of National Defence, police and fire departments, and local agencies in our communities to assist them in their needs.

Garde côtière. Ils sont rapides et efficaces et ils sont actifs dans les collectivités côtières de tout le pays. S'il y a une collectivité quelque part, il est probable que nous y avons des gens, des équipes et des installations. Les bateaux peuvent être des navires communautaires d'intervention, donc des bateaux de sauvetage. Il peut s'agir à l'occasion de bateaux privés ou même de bateaux de pêche locaux quand c'est plus logique et qu'ils peuvent fournir ce soutien. Je peux vous garantir que les bénévoles comptent beaucoup pour le système de recherche et sauvetage maritime, terrestre ou aérien du pays, mais ce n'est pas ce dont je vous parlerai aujourd'hui. Ils comptent beaucoup dans les résultats obtenus en matière de recherche et sauvetage au Canada.

Les cartes sont divisées en régions d'ouest en est : la région du Pacifique ou RCM SAR; la région centrale et l'Arctique, qui couvrent une zone très vaste; la région du Québec; la région de Terre-Neuve-et-Labrador; et la région des Maritimes. Chacune d'elles fonctionne un peu différemment, mais elles offrent toutes le même niveau de service et la même formation.

Cette carte, qui est très petite sur les diapositives, montre les lieux des installations. Pour vous donner une idée du contexte, quand il y a une collectivité avec une certaine population, il y a des chances qu'il y ait une station de la Garde côtière auxiliaire. Nous avons inclus celle de la C.-B. de façon plus détaillée, mais c'est probablement trop petit pour que vous puissiez la voir clairement sur vos cartes. On voit qu'il y a ce genre de bateaux dans toutes les collectivités éloignées et les grandes villes de la C.-B. et du pays.

Il faut dire qu'il devient difficile de placer des bénévoles là où il n'y a personne. On ne paie pas les gens; il est donc peu probable que, s'ils ne vivent pas là, on puisse installer une station ou une ressource et offrir un service efficace. Dans les petites collectivités, il devient difficile de maintenir la capacité d'intervention.

La diapositive suivante montre des images de ce qui pour vous pourrait être une ressource auxiliaire. Cela pourrait être un bateau de la Garde côtière, un bateau de sauvetage, un bateau de pêche ou un bateau privé venu à votre secours. L'équipage sera entraîné, professionnel et efficace, mais il pourrait avoir différentes ressources selon la région.

La diapositive suivante montre la structure et la façon dont nous nous inscrivons dans le programme de recherche et sauvetage. C'est important de constater que nous faisons partie du programme, tout comme la Garde côtière, qui est notre partenaire. Nous intervenons à l'appel du Centre conjoint de coordination des opérations de sauvetage, qui reçoit les appels et nous envoie sur les lieux des incidents. Si vous êtes en difficulté dans un bateau sur l'eau, vous nous appelez de la même façon que vous appelleriez la Garde côtière. Nous sommes une ressource nationale, et on nous demande d'intervenir rapidement. Nous travaillons aussi avec beaucoup d'autres organismes, dont le ministère de la Défense nationale, les services policiers et les services de lutte contre les incendies, ainsi que les organismes locaux de nos collectivités pour répondre à leurs besoins.

I am now on the Coast Guard slide. They obviously are a key partner federally and provide funding to us to operate. It's the agency we work with closely most of the time on the water when conducting rescues. We share a common goal: to save lives on the water. Canadians enjoy fairly effective rescue coordination and effective results.

The next slide is entitled "Unity of Effort." This is key for us. The Coast Guard mentioned this when they were here. This is a joint effort. Depending on where you are, you depend on volunteers to a great extent, but it is also Coast Guard and National Defence and community groups who make this system work. It isn't just one level or organization that makes sure that the person in the water is responded to effectively and quickly.

We share the risks. The water environment can be dangerous, and we are responding when others are going for safe harbour. We do everything we can with the Coast Guard to train jointly and implement policy to ensure we don't have significant risk to our crews when they go out to rescue someone.

Interagency is key for us. Obviously, the Coast Guard is important to us, as are other agencies. Local agencies are really important to us. If you are in a small community, the police and fire and ground SAR teams become a key relationship for us to make sure we work well with them.

If I had one message for you today, it is this slide. Our members are Canadian citizens who, for whatever reason, have decided to volunteer a significant time and effort to do what they do. Without those 4,000-plus volunteers, there is no volunteer SAR program, and Pat and I are not here today talking to you. They do this on a daily basis. They are on call 24/7 to respond. When you talk about Canadians, these people represent the best about Canadians and that volunteer spirit.

It is important to note on the training slide that these are trained crews. Sometimes you think of volunteers as being ad hoc or showing up when they want to. That couldn't be farther from the case. Our volunteers are highly trained and effective at what they do. There is a significant time commitment in training and in responding. When they respond to you, it will be a professional person picking you out of the water every single time. That requires a lot of commitment and time.

I talked about response earlier. There are about 2,000 rescues every year, conducted by volunteers in this country. That represents about 25 per cent of all incidents. Whenever a marine incident happens in this country and someone calls for help, a quarter of the time it will be a volunteer team that comes

Voici la diapositive sur la Garde côtière. Elle est évidemment un partenaire clé à l'échelle fédérale, et c'est elle qui finance nos opérations. C'est l'organisme avec lequel nous travaillons très étroitement la plupart du temps pour les sauvetages maritimes. Nous avons un but commun : sauver des vies en zone maritime. Les Canadiens bénéficient d'une coordination efficace des services de sauvetage et obtiennent des résultats efficaces.

La diapositive suivante est intitulée « Unité des efforts ». C'est fondamental pour nous. Les représentants de la Garde côtière en ont parlé quand ils sont venus ici. C'est un effort commun. Selon l'endroit, les bénévoles peuvent jouer un rôle important, mais c'est aussi le travail de la Garde côtière, de la Défense nationale et des groupes communautaires qui rend le système efficace. Il n'y a pas qu'un seul niveau d'organisation qui garantit que la personne en détresse dans une zone maritime reçoit du secours rapidement et efficacement.

Nous partageons les risques. L'environnement maritime peut être dangereux, et nous intervenons quand les autres se mettent à l'abri. Nous faisons le maximum, avec la Garde côtière, pour donner une formation commune et pour appliquer une politique garantissant que nos équipes ne prennent pas trop de risques quand elles portent secours à quelqu'un.

La collaboration entre organismes est fondamentale pour nous. Évidemment que la Garde côtière est importante, mais d'autres organismes le sont aussi, notamment les organismes locaux. Dans une petite collectivité, la police, les pompiers et les équipes terrestres de recherche et sauvetage deviennent des interlocuteurs clés dans cette collaboration.

Si je devais vous laisser un message aujourd'hui, ce serait cette diapositive. Nos membres sont des citoyens canadiens qui, pour une raison ou une autre, ont décidé d'offrir beaucoup de temps et d'efforts pour faire ce qu'ils font. Sans ces 4 000 bénévoles ou plus, il n'y aurait pas de programme bénévole de recherche et sauvetage, et Pat et moi ne serions pas ici aujourd'hui à vous parler. Ils font cela tous les jours. Ils sont prêts à intervenir 24 heures sur 24, 7 jours par semaine. Ces gens représentent le meilleur de la mentalité canadienne et de l'esprit de bénévolat de nos concitoyens.

Je tiens à rappeler, au sujet de la diapositive sur la formation, que ce sont des équipes entraînées. On croit parfois que les bénévoles sont des équipes spéciales ou des équipes qui se présentent quand elles le veulent. Rien de moins vrai. Nos bénévoles sont très entraînés et efficaces. Ils consacrent beaucoup de leur temps à leur formation et aux interventions qu'ils doivent faire. Tous ceux qui portent secours sont des professionnels entraînés à vous sortir de l'eau. À chaque fois. Cela demande beaucoup de dévouement et de temps.

J'ai parlé de nos interventions tout à l'heure. Les bénévoles de ce pays effectuent environ 2 000 sauvetages par an, soit environ 25 p. 100 de l'ensemble des incidents. Lorsqu'il se produit un incident maritime et que quelqu'un appelle à l'aide, une fois sur quatre, c'est une équipe bénévole qui portera secours. On ne

to help. This isn't all the hours we count, but 170,000 hours last year, and 97 per cent of all persons in danger were rescued, which is a significant milestone

Disasters and emergencies are boats that are on fire, they are sinking, and people are lost, disoriented. That is what we respond to.

It is important to note with respect to the volunteer model and how that works that it is the norm, and in many places in the world it is the only model they use. If you were to travel to Europe, most of the countries would rely almost entirely on a volunteer model. They have been doing so for hundreds of years, and they are very effective and highly trained and regarded as probably the best rescue organizations in the world. We model much of what we do after them and use them as our example to follow.

There are some pictures to give you an example. The first set is not from Canada; these are boats from the United Kingdom, Sweden, Holland and New Zealand, and these are volunteer-oriented organizations running professional, effective rescues.

That model has been adopted here to some degree. The next page shows vessels from Pat's region, again purpose-built rescue boats. You would not know them from a Coast Guard vessel that came up beside you, other than the logo on the side. Professional level training goes with that. It is required to be standardized across the country so that crews who operate those vessels operate them the same wherever they might be.

We talked about value, and that is hard to quantity, although the Coast Guard did quantify more than 10 years ago what it might cost if you had to pay for this service. The value they came up with was $37 for every $1 invested, if you had to pay for that level of service across the country.

The value to us is more than money. It is the 200-plus lives every year, people who are plucked out of the water and saved who might not have been if it weren't for a volunteer crew responding.

We appreciate that two years ago the government they recognized ground, marine and air volunteers with a volunteer tax credit; so every time we fill our tax form out, my wife appreciates that there is a small return of $400 to our family for the volunteer hours that Canadians put in.

The committee asked us to come up with challenges and opportunities. The challenges are the current program and its support, and to expand upon that, how we might go outside of our mandate. Sometimes the contract we have with the Coast Guard limits us to doing services that are in the Coast Guard's realm of activity. Many of our volunteers and the organizations

compte pas toutes les heures, mais les bénévoles ont donné 170 000 heures de leur temps l'année dernière, et 97 p. 100 des personnes en danger ont été secourues, ce qui est un jalon important.

Les catastrophes et les urgences prennent la forme de bateaux incendiés, de naufrages et de gens perdus ou désorientés. C'est là que nous intervenons.

Il faut dire que le bénévolat est le modèle de fonctionnement classique et que, dans bien des régions du monde, c'est le seul. En Europe, la plupart des pays s'appuient presque entièrement sur un système de bénévoles. Et c'est comme cela depuis des siècles. Ce sont des groupes très efficaces et très entraînés qui sont considérés comme ce qu'il y a probablement de mieux dans le monde en matière de sauvetage. C'est sur eux que nous prenons exemple.

Voici quelques images pour illustrer ce que je dis. La première série ne concerne pas le Canada : ce sont des bateaux du Royaume-Uni, de Suède, de Hollande et de Nouvelle-Zélande, et ces équipes sont des bénévoles qui effectuent des opérations de sauvetage professionnelles et efficaces.

C'est ce modèle que nous avons adopté ici jusqu'à un certain point. La page suivante montre des bateaux de la région de Pat. Ce sont des bateaux de sauvetage. Vous ne verriez pas la différence par rapport à un bateau ordinaire de la Garde côtière en dehors du logo sur le côté. Une formation de niveau professionnel accompagne cela. Elle doit être normalisée dans tout le pays pour que les équipes qui utilisent ces bateaux fonctionnent de la même façon partout.

On a parlé de valeur, et c'est difficile à quantifier, mais la Garde côtière a calculé, il y a plus de 10 ans, ce que pourrait vous coûter ce service si vous aviez à le payer. Le résultat a été de 37 $ pour chaque dollar investi si on devait payer ce niveau de service à travers le pays.

Mais, pour nous, la valeur est plus que financière. Ce sont les 200 vies et plus qui sont sauvées tous les ans, ces gens arrachés à l'eau qui auraient été perdus s'il n'y avait pas eu d'équipe de sauvetage prête à intervenir.

Nous sommes heureux que le gouvernement ait reconnu la valeur des bénévoles voués aux sauvetages terrestres, maritimes et aériens il y a deux ans en prévoyant un crédit fiscal. À chaque fois que nous remplissons notre déclaration d'impôt, ma femme et moi, nous apprécions le fait qu'un petit montant de 400 $ revienne à notre famille pour les heures de travail bénévole qu'offrent les Canadiens.

Le comité nous a demandé de parler de nos défis et possibilités. Les difficultés actuelles sont le programme en cours et son soutien, et puis, plus largement, le moyen d'élargir notre mandat. Les contrats que nous avons avec la Garde côtière limitent parfois notre capacité à offrir des services qui sont de l'ordre des activités de la Garde côtière. Plusieurs de nos bénévoles et nos organismes

have the ability and desire to do more in their community, and sometimes it is difficult for us to achieve that with our funding and/or insurance requirements.

As well, supporting evolution: we are good at maintaining the status quo, but it becomes difficult for us if we are looking for new ways of doing business, whether it is technology or training or interoperation with other agencies It is more difficult to achieve those goals going forward than we would hope.

I don't think anyone would show up in Ottawa and not say that funding is an issue; and certainly it is an issue for us. We have been funded by the federal government through the Coast Guard to the tune of $5.2 million. That has been consistent for the 10 years that I have been around. During that time, inflation and other challenges keep coming, and it becomes more difficult every year to maintain the level of service we provide with that consistent funding.

We find most of our groups are fundraising. You will see them in your community raising funds, relying on charity, and in the case of B.C. using the province to support the acquisition of boats and assets. To be clear, none of the assets you have seen are funded through that contribution agreement. We are not allowed to use that money to fund any asset. It is only used for operation, so fuel, maintenance and training, but nothing can be used to fund any of the equipment you see. Whether it is a PFD or life jacket on the crew member, or a boat or any other asset they use, it would have been fund-raised by that community to pay for that.

Utilization is key for us. This is a recurring issue for us. You put a lot of time and effort into training volunteers, and they put a lot of time and effort into it, and the issue is if they are not utilized, we lose them. People have competing things where they can volunteer or put their time toward, and if they don't feel their skills and experience are being utilized, we lose them. It is important to make sure they are utilized appropriately across the country.

Broader challenges across the country and beyond marine: We see the lack of a nationally directed SAR integration, so back to marine, land and air, and how we bring those together. They all work very well independently, but when it requires them to work interoperably, it becomes more difficult, and we would see that as improving.

There is often an ad hoc use of volunteers in SAR and public safety in general across the country. If that was more consistent and directed, it would be a better level of service. Flexibility is key so that we can interoperate with industry or other not-for-profits to expand what we do and share. We could be better at that. If that was allowed, we would be more effective.

peuvent et veulent faire plus dans leurs collectivités, et c'est parfois difficile à réaliser avec les budgets que nous avons ou les exigences à respecter en matière d'assurance.

Il y a aussi l'évolution : nous savons très bien maintenir le statu quo, mais cela devient difficile quand on cherche de nouvelles façons de fonctionner, qu'on parle de technologie, de formation ou d'interopérabilité avec les autres organismes. C'est plus difficile de réaliser ces objectifs et d'aller de l'avant que nous l'espérions

Je ne pense pas que quelqu'un viendrait à Ottawa et ne parlerait pas de financement. C'est un problème pour nous aussi. C'est le gouvernement fédéral qui nous finance par l'intermédiaire de la Garde côtière à raison d'environ 5,2 millions de dollars. C'est stable depuis les 10 années de ma participation. Au cours de cette période, l'inflation et d'autres difficultés se sont accumulées, et c'est de plus en plus difficile, d'année en année, de maintenir le niveau de service que nous offrons avec le même budget.

La plupart des groupes font des collectes de fonds. Vous les verrez dans les collectivités en train de recueillir des fonds, de faire appel aux organismes de bienfaisance et, dans le cas de la C.-B., de demander l'aide de la province pour acheter des bateaux et des ressources. Je précise qu'aucune des ressources que vous avez vues n'est financée grâce à cet accord de contribution. Nous n'avons pas le droit d'utiliser cet argent pour cela. Ça doit seulement servir aux opérations, dont au carburant, à l'entretien et à la formation, mais pas à l'équipement que vous voyez. Qu'on parle d'un VFI ou d'un gilet de sauvetage, d'un bateau de sauvetage ou d'une autre ressource, c'est financé par la collectivité.

L'utilisation est un enjeu important. C'est un problème récurrent pour nous. On met beaucoup de temps et d'effort dans la formation de bénévoles, et eux en font autant, mais, s'ils ne sont pas utilisés, on les perd. Les gens peuvent faire du bénévolat ou donner du temps ailleurs, et, s'ils ont l'impression qu'on n'utilise pas leurs compétences et leur expérience, on les perd. C'est important de veiller à les utiliser comme il faut dans tout le pays.

Il y a des problèmes plus larges dans l'ensemble du pays et au-delà du domaine maritime : le système de recherche et sauvetage n'est pas intégré à l'échelle nationale et on en revient à la question des moyens de regrouper les activités maritimes, terrestres et aériennes. Les services fonctionnent très bien indépendamment les uns des autres, mais, quand il faut qu'ils soient interopérables, cela devient plus difficile, et ce serait une amélioration.

On utilise souvent les bénévoles de la recherche et sauvetage et les professionnels de la sécurité publique de façon ponctuelle à travers le pays. Si tout cela était plus cohérent et intégré, on aurait un meilleur niveau de service. La souplesse est aussi un élément important pour qu'il y ait interopérabilité avec le secteur privé et d'autres organismes sans but lucratif, ce qui permettrait d'élargir les activités et la collaboration. On pourrait s'améliorer. Si c'était possible, nos interventions seraient plus efficaces.

Going beyond our mandate: Being able to respond to natural disasters, earthquakes or large-scale events, and train for that. You have a group of skilled volunteers that could be of value to the government and local communities if they are utilized that way.

That leads me to opportunities, which is more important to us. There are a lot of opportunities. The ones we highlighted are the expansion of volunteer service. I think you should use volunteers to a higher level and get more out of them across the country if it was invested in. It is a cost-effective way to increase capacity, if you are lacking it. The Arctic is a perfect example. We know we are lacking capacity, and we are investing money there to increase capacity in a relatively cost-effective way in small communities.

Lack of resources: If other paid resources are called away, having volunteers in place mitigates that risk of not having another asset in place, again an effective response by using volunteers.

I mentioned having volunteers who are able, capable and trained to respond to natural disasters in their communities. Fort McMurray recently, where people from around the world are being called in to help, is a great example. You need trained help. With the volunteer sector, in this case marine volunteers, they are trained in incident command and first aid and all the skills you want them to be trained in — communications and radio — and are ready to respond. That is a ready set of assets, people who can respond very quickly to those types of emergencies, and we maybe underutilize them in this country. They are trained, experienced and willing and able to respond.

I will wrap up with my last two slides. I mentioned SAR integration. If we were better at integrating across ground, marine and air SAR on a more regular basis, when those large incidents happen we would be better prepared to deal with them and respond.

In supporting environmental response, which is a new area for us, you could utilize volunteers to mitigate some of those concerns going forward.

Reducing risk in our communities: You can reduce risks by having those trained volunteers, either for marine or other needs, in the community.

Earlier I mentioned cooperation with industry. Building partnerships with industry and other non-government organizations across Canada and beyond our borders that have skills or technology that we could access would make us more effective.

Getting back to my earlier point, what you have here is a bunch of capable, passionate volunteers who love what they do. They put a lot of time and energy into it, and they believe it brings value to them but more so to the people in need. We are partners

Pour ce qui est d'élargir notre mandat, on pourrait intervenir en cas de catastrophe naturelle, qu'on parle de tremblements de terre ou d'accidents à grande échelle, et on pourrait suivre une formation pour cela. Il y a un groupe de bénévoles compétents qui pourraient être très utiles au gouvernement et aux collectivités locales si on les utilisait de cette façon.

C'est ce qui m'amène aux possibilités, et c'est plus important pour nous. Il y a beaucoup de possibilités. Nous avons souligné l'expansion du service des bénévoles. Je pense qu'on devrait utiliser les bénévoles plus largement et investir pour en multiplier le nombre dans le pays. C'est un moyen rentable d'accroître la capacité, si on en manque. L'Arctique est un exemple parfait. On sait qu'il manque de capacité dans cette région, et nous sommes en train d'investir de l'argent pour accroître la capacité d'une façon assez rentable dans les petites collectivités.

Concernant le manque de ressources, si d'autres ressources payées sont utilisées ailleurs, la disponibilité de bénévoles sur place peut atténuer le risque d'en manquer, et c'est une bonne occasion de faire appel aux bénévoles.

J'ai parlé de la possibilité d'utiliser des bénévoles aptes et entraînés à intervenir dans le cadre de catastrophes naturelles dans leurs collectivités. La catastrophe récente à Fort McMurray, où des gens du monde entier sont venus apporter leur aide, est un excellent exemple. On a besoin d'aide dûment entraînée. Les bénévoles du secteur maritime, en l'occurrence, sont formés à la gestion des incidents et aux premiers soins, mais ils ont aussi toutes les compétences qu'on peut souhaiter, comme les communications et la radio, et ils sont prêts à intervenir. Ce sont des ressources immédiatement utilisables, des gens qui peuvent intervenir rapidement à ce genre d'urgence, et peut-être qu'on ne les utilise pas assez dans ce pays. Ils sont formés, ils ont de l'expérience et ils sont capables d'intervenir.

Je terminerai avec les deux dernières diapositives. J'ai parlé de l'intégration des activités de recherche et sauvetage. Si les activités terrestres, maritimes et aériennes de recherche et sauvetage étaient mieux intégrées régulièrement, on serait mieux préparé à faire face aux incidents majeurs.

Du point de vue des interventions environnementales, qui est une nouveauté pour nous, on pourrait utiliser les bénévoles pour atténuer certains risques à venir.

Pour ce qui est de réduire les risques dans nos collectivités, on peut le faire en ayant sur place des bénévoles entraînés, que ce soit pour le domaine maritime ou ailleurs.

J'ai parlé tout à l'heure de la collaboration avec le secteur privé. On gagnerait en efficacité en créant des partenariats avec le secteur privé et d'autres organisations non gouvernementales du Canada et de l'étranger dotées de compétences et de technologies auxquelles nous pourrions avoir accès.

Pour en revenir à ce que je disais tout à l'heure, vous avez là un groupe de bénévoles compétents et passionnés qui adorent ce qu'ils font. Ils offrent leur temps et leur énergie, et cela a de la valeur à leurs yeux, mais encore plus aux yeux de ceux qu'ils

in SAR and public safety. This represents the true value of what it means to be Canadian, to give back if you can give back. Certainly, our members live those values. It is a model for innovation. I mentioned the volunteers and what they have done and the innovation they've brought to search and rescue. They think of new ways to do what we do on a daily basis in this country.

That would conclude my thoughts. I thank you again for inviting us here today.

The Deputy Chair: Before we go to questions, Mr. Quealey, do you have anything you wish to add?

Pat Quealey, Chief Executive Officer, Royal Canadian Marine Search and Rescue: No. We worked on this together. Randy has done a tremendous job of representing our thoughts. I clearly look forward to your questions.

The Deputy Chair: Our first question goes to Senator Poirier.

Senator Poirier: Thank you, gentlemen, for being here. My first question is for me to understand a bit more. I was looking at the five regions when you did your presentation. They are also the five regions where you can see the Canadian Coast Guard, right?

Mr. Strandt: Correct.

I should clarify that there are three regions now for the Coast Guard. It used to be five, the same five that the Coast Guard Auxiliary has.

Senator Poirier: I understand you are a not-for-profit organization and work with volunteers to help out wherever the need is in the community. Who is the first responder? Does the Canadian Coast Guard reach out to you if there is an emergency and they need supplemental help? Does the community go to your organization first for volunteers before they go to the Canadian Coast Guard? Where do you fit in?

Mr. Strandt: They will respond identical to a Coast Guard asset. A person calling for help wouldn't see any difference. They could call a rescue coordination centre or 9/11. It would be directed to a Joint Rescue Coordination Centre. They will phone and page the local crew, whether they're a Coast Guard asset or a volunteer asset, and a boat will respond. The person who called for help would not know where the call went or who's responding. In their mind, it will be through a Coast Guard response that someone's coming to help. All our calls are directed through the Coast Guard.

Senator Poirier: If one is going out, the other would know automatically that they went.

Mr. Strandt: Yes.

Mr. Quealey: Maybe I can add to that as well. You may recall from previous testimony from witnesses a description of the Joint Rescue Coordination Centre. It's the same Joint Rescue Coordination Centre that tasks our assets. A Coast Guard

aident. Nous sommes des partenaires en matière de recherche et sauvetage et en matière de sécurité publique. C'est la vraie valeur de l'identité canadienne : redonner si on peut redonner. Nos membres incarnent visiblement ces valeurs. C'est aussi un modèle d'innovation. J'ai parlé des bénévoles et de ce qu'ils font, et des innovations qu'ils ont apportées en matière de recherche et sauvetage. Ils réfléchissent à de nouveaux moyens de faire ce que nous faisons tous les jours dans ce pays.

Voilà ce que je pense. Merci encore de m'avoir invité.

La vice-présidente : Avant de passer aux questions, monsieur Quealey, est-ce que vous voulez ajouter quelque chose?

Pat Quealey, chef de la direction, Royal Canadian Marine Search and Rescue : Non. Nous avons fait ce travail ensemble. Randy a très bien exprimé nos idées. Je serai heureux de répondre à vos questions.

La vice-présidente : Madame la sénatrice Poirier, vous avez la parole.

La sénatrice Poirier : Merci d'être parmi nous, messieurs. Ma première question vise à comprendre un peu mieux la situation. J'examinais les cinq régions pendant votre exposé. Il y a aussi cinq régions pour la Garde côtière, n'est-ce pas?

M. Strandt : C'est exact.

Je dois préciser qu'il y a trois régions aujourd'hui. Il y en avait cinq, les mêmes que les nôtres, mais cela recouvre les mêmes zones en fait.

La sénatrice Poirier : Je crois savoir que vous êtes un organisme sans but lucratif et que vous travaillez avec des bénévoles partout où on a besoin d'eux. Qui est le premier répondant? Est-ce que c'est la Garde côtière qui fait appel à vous en cas d'urgence si elle a besoin d'aide supplémentaire? Est-ce que la collectivité s'adresse d'abord à vous pour avoir des bénévoles avant de s'adresser à la Garde côtière? Où intervenez-vous?

M. Strandt : L'intervention est identique à celle d'une ressource de la Garde côtière. Une personne qui demande des secours ne voit pas de différence. L'appel peut être fait à un centre de coordination des secours ou au 911. Il est acheminé à un centre conjoint de coordination des opérations de sauvetage. De là, on appelle l'équipe locale ou on lui envoie un message par téléavertisseur, et cela peut être une ressource de la Garde côtière ou un bénévole qui prendra le bateau pour intervenir. La personne qui a appelé au secours ne saura pas où a été acheminé l'appel ni qui intervient. Pour elle, c'est la Garde côtière qui aura envoyé de l'aide. Tous les appels passent par la Garde côtière.

La sénatrice Poirier : Si un intervenant part, l'autre saura automatiquement qu'il est en route.

M. Strandt : Oui.

M. Quealey : Je peux peut-être ajouter quelque chose. Vous vous rappelez peut-être ce qu'ont dit des témoins antérieurs sur le Centre conjoint de coordination des opérations de sauvetage. C'est le même centre qui confie des tâches à nos ressources. C'est

controller in that joint centre makes a decision based on the asset availability, its suitability to the task and lots of different factors in which they are experts. As Mr. Strandt described, it is based on that assessment that they choose the adequate resource to respond.

Senator Poirier: My second line of questioning is on funding. You mentioned in the slide the amount that you receive for the 15 years, but there is also the mention of $500,000 for the Arctic region. Was that extra funding a one-time deal or will it be added annually?

Mr. Strandt: That is recurring funding to support the operations as they expand in the Arctic.

Senator Poirier: Your slide showed pictures of the different assets you utilize. If I understood, you said they are boats from other countries and not necessarily from here. Is that right?

Mr. Strandt: There was one slide showing an international model.

Senator Poirier: The fundraising in the community is for training and equipment; is that right?

Mr. Strandt: Right. Most of the training operations are funded through our contribution agreement with the Coast Guard. All of the equipment is fund-raised.

Senator Poirier: Do you have any funding that comes from the provinces of the areas? Is there any provincial funding?

Mr. Strandt: We do. I will defer to Mr. Quealey because his region, more than any other, benefits from that.

Mr. Quealey: The example of British Columbia, and I am not conversant with how it is in every other province, is a good supportive model federally, provincially and locally in terms of the support we receive. Royal Canadian Marine Search and Rescue benefits from a program provincially, which is the Community Gaming Grants administered through the Ministry of Community, Sport and Cultural Development in the province. Effectively, that is the result of the relationship through the lottery corporation. Funds are sets aside for specific activities. In this context, money is set aside for public safety initiatives.

Our organization benefits tremendously from this approach in the province of British Columbia in that it allows us to acquire those boats that you saw — not the international model but the slide that depicts Canadian potential. You will note it says "provincial funding and local fundraising."

Part of that program is not that the money comes only from the province. As Randy described, our individual stations — over 40 in British Columbia — are fundraising on their own. The

un contrôleur de la Garde côtière affecté à ce centre conjoint qui prend la décision en fonction des ressources disponibles, de leur adéquation à la tâche et de toutes sortes de facteurs qu'il connaît très bien. Comme l'a expliqué M. Strandt, c'est en fonction de cette évaluation que le contrôleur choisit la ressource qui convient pour intervenir.

La sénatrice Poirier : Ma deuxième série de questions porte sur le financement. Vous avez dit au sujet d'une diapositive que le montant que vous avez reçu pendant 15 ans, mais il y a aussi les 500 000 $ pour la région de l'Arctique. Est-ce que c'était une allocation supplémentaire ponctuelle ou est-ce que cela s'ajoutera tous les ans?

M. Strandt : C'est une allocation récurrente destinée à financer les opérations qui prennent de l'expansion dans l'Arctique.

La sénatrice Poirier : Votre diapositive montrait des images des différentes ressources que vous utilisez. Si j'ai bien compris, vous avez dit qu'il y a aussi des bateaux d'autres pays, pas seulement d'ici. C'est bien cela?

M. Strandt : Il y avait une diapositive montrant un modèle international.

La sénatrice Poirier : La collecte de fonds dans la collectivité sert à financer la formation et à acheter du matériel, c'est bien cela?

M. Strandt : C'est exact. La plupart des activités de formation sont financées par le biais de notre pacte de contribution à la Garde côtière. Tout le matériel est acheté grâce à la collecte de fonds dans la collectivité.

La sénatrice Poirier : Est-ce que les provinces de vos régions vous financent? Avez-vous des fonds d'origine provinciale?

M. Strandt : Oui. Je vais passer la parole à M. Quealey parce que sa région, plus que tout autre, en bénéficie.

M. Quealey : L'exemple de la Colombie-Britannique, et je ne sais pas comment cela se passe dans toutes les autres provinces, est un bon modèle coopératif du point de vue du soutien fédéral, provincial et local. Royal Canadian Marine Search and Rescue bénéficie d'un programme provincial appelé Community Gaming Grants, qui est administré par le ministère des collectivités, des sports et du développement culturel dans la province. C'est effectivement le produit de cette relation par l'intermédiaire de la société des loteries. Des fonds sont réservés à des activités précises. C'est dans ce contexte que de l'argent est mis de côté pour les projets de sécurité publique.

Notre organisme bénéficie énormément de cette façon de faire dans la province de la Colombie-Britannique. Car cela nous permet d'acheter les bateaux que vous avez vus, pas dans la diapositive sur le modèle international, mais celle qui décrit le potentiel du Canada. Vous remarquerez qu'on y parle de financement provincial et de collecte de fonds locale.

Dans le cadre de ce programme, l'argent ne vient pas seulement de la province. Comme l'a expliqué Randy, nos stations, qui sont plus de 40 en Colombie-Britannique, organisent leurs propres

communities are contributing to this capacity as well. As Randy described, that only helps that sense of fabric in the community in terms of it is them supporting an organization within their midst.

Senator Poirier: You are not aware of other provinces across Canada doing that, are you?

Mr. Quealey: I anticipate there are similar programs, but I can't speak to them with authority.

Mr. Strandt: Certainly there is support in other provinces, but not to the same extent.

Senator Poirier: Do you have donors and sponsors that regularly help your organization?

Mr. Strandt: Yes, we have them locally and regionally. Occasionally nationally people will support us — corporations and individuals.

Senator Poirier: What is your biggest challenge? You talked about different ones in here. Is your biggest challenge finding the number of volunteers you need or is the challenge more toward the funding you need to get the proper equipment and training you need? Is your challenge more to keep your well-trained volunteers active enough in the community? Is there enough community support for the type of work that you are trained to do to be able to utilize to the top priority that you would need in the community?

Mr. Strandt: You asked me about the biggest challenge. Certainly, funding is key. In my role, I would probably go to funding, mainly because I am a chartered accountant and I think of money first and how we afford to keep things going. The volunteer utilization is also important. It takes large amounts of time and energy to train a volunteer — it doesn't happen overnight. When you have them trained, active and engaged, you want to keep them. Keeping them active and interested is important. We do a great job of that, but it is an ongoing issue. As the generations change, you have different drivers and different goals, and keeping current with what people want to do is important for us. To date, we have done a good job of that, but I don't think we can let our guard down, either.

Senator Stewart Olsen: I would like to put on the record that I hear what you are saying and one of your big challenges is the lack of a nationally directed SAR integration, ground, air and marine. I have been concerned about that. I am happy that you brought that up because I think it is something we have to look at.

Can you tell me how I would become a volunteer?

Mr. Strandt: That is a good question. It would probably depend on where you are. First and foremost, you need to live close to the sea where we are stationed or where a community resource exists. Once you meet that condition, you would

collectes de fonds. Les collectivités contribuent également. Comme l'a expliqué Randy, cela contribue simplement au sentiment collectif d'aider un organisme local.

La sénatrice Poirier : Est-ce que d'autres provinces du Canada font cela aussi, le savez-vous?

M. Quealey : J'imagine qu'il existe des programmes du même genre, mais je ne peux pas en parler en connaissance de cause.

M. Strandt : Les autres provinces apportent effectivement un soutien, mais pas dans la même mesure.

La sénatrice Poirier : Est-ce qu'il y a des donateurs et des commanditaires qui aident régulièrement votre organisme?

M. Strandt : Oui, à l'échelle locale et régionale. Il arrive aussi que des entreprises ou des personnes nous aident à l'échelle nationale.

La sénatrice Poirier : Quelle est votre principale difficulté? Vous avez parlé de plusieurs problèmes ici. Est-ce que le plus important est de trouver le nombre de bénévoles dont vous avez besoin ou est-ce que c'est plutôt de trouver les fonds nécessaires à l'achat du matériel dont vous avez besoin et au financement de la formation? Est-ce que c'est plutôt de faire en sorte que vos bénévoles entraînés restent suffisamment actifs dans la collectivité? Est-ce que le soutien de la collectivité est suffisant pour que vous puissiez faire intervenir les bénévoles entraînés de façon prioritaire en fonction des besoins?

M. Strandt : Vous demander quelle est la principale difficulté. Le financement est évidemment une question centrale. Compte tenu de mon rôle, je serais enclin à dire que c'est le financement, parce que je suis comptable agréé et que je pense d'abord à l'argent et aux moyens de pouvoir continuer à faire ce qu'on fait. L'utilisation des bénévoles est également importante. Il faut beaucoup de temps et d'énergie pour former un bénévole. Cela n'arrive pas du jour au lendemain. Quand on les forme, qu'on les garde actifs et engagés, on veut les garder. C'est important de les garder actifs et intéressés. On fait un excellent travail de ce côté-là, mais c'est un problème constant. À chaque génération, on a des moteurs différents, des objectifs différents, et c'est important de rester attentif à ce que les gens veulent faire. Jusqu'ici, on a réussi, mais je ne pense pas qu'on puisse se permettre de baisser la garde non plus.

La sénatrice Stewart Olsen : Je tiens à dire pour mémoire que je vous comprends et qu'on aurait besoin d'intégrer à l'échelle nationale les opérations de recherche et sauvetage maritimes, terrestres et aériennes. Cela me préoccupe. Je suis contente que vous ayez soulevé la question parce que je crois que nous devons nous pencher sur ce problème.

Pouvez-vous me dire comment je pourrais devenir une bénévole?

M. Strandt : Voilà une bonne question. Cela dépendrait probablement de l'endroit où vous habitez. Mais, en tout premier lieu, vous devez habiter près de la mer, où nous avons des stations, ou à un endroit où existent des ressources

approach that local community or the regional organization and put your hand up and say that you're interested in volunteering. You would go through an assessment process. They would determine your suitability, health and skill levels. That said, they will train you in the things you need to know, but they will assess your commitment and whether you have the time and energy to do this. If you make it through all that, they'll put you in a training program. There is further assessment through that training program. Some people don't make it through or don't enjoy it like they thought they were going to. If you make it through all that and meet the minimum requirements, they will put you on a volunteer crew.

Senator Stewart Olsen: Do you train them at that location or that station?

Mr. Strandt: There is both. I would say 90 per cent of the training we do is at the local level. As well, station members train other station members. They have years of experience, of course, and training programs they implement that we provide to those stations. That said, there are regional training programs as crews become more advanced, some skills you would like them to have if they are going to operate and be in charge of the vessel, and some skills we like them to have as they progress.

Mr. Quealey: To expand on that, and speaking from the perspective of Royal Canadian Marine Search and Rescue specifically in British Columbia, just to add to Randy's comments on how you become a volunteer, I would highlight that becoming a volunteer in any of our organizations is much like being a volunteer in any of the public safety service streams. It becomes a sense of commitment and vocation that you are embarking on.

Yes, we have standards, and yes, you will be assessed against those standards, and the intention is to bring people up to those standards. But because of that commitment aspect that Randy spoke of, what makes enduring volunteers is that sense of vocation and commitment to their communities, and that's how we are successful.

Senator Stewart Olsen: Do they work in the same way as volunteer firefighters? You would get a call, and then the call goes out to everybody and they come?

Mr. Quealey: An interesting piece of the volunteer approach is that we work in many ways to the effect or outcome. To clarify, for example, in British Columbia we have a requirement that all of the crews that are on standby to respond must be at what we call 30 minutes' notice to move so that from the time they are called, they can be under way with that vessel and responding to the GRCC call or tasking. How they achieve that we will leave flexible based on the community, its design, demographics and the proximity by which people live. Within the stations, the station leadership is empowered to make that design but must meet that minimum standard. The result is that the standard is achieved.

communautaires. Si vous remplissez ces conditions, il faut vous adresser à l'organisme local ou régional et lui faire savoir que vous souhaitez devenir bénévole. On va vous évaluer pour déterminer si vous convenez et mesurer votre état de santé et vos compétences. Cela dit, ils vont vous enseigner ce que vous avez besoin de savoir, mais ils évalueront votre degré d'engagement et détermineront si vous avez le temps et l'énergie pour faire ce travail. Une fois ce processus terminé, ils vous inscriront à un programme de formation. Le programme de formation comprend aussi une évaluation. Certaines personnes ne vont pas jusqu'au bout du programme ou s'aperçoivent qu'elles n'aiment pas cela comme elles l'auraient cru. Si vous allez jusqu'au bout et que vous répondez aux exigences minimales, ils vous placeront dans une équipe de bénévoles.

La sénatrice Stewart Olsen : Est-ce que vous les formez sur place ou à la station?

M. Strandt : Les deux. Je dirais que la formation a lieu à 90 p. 100 à l'échelle locale. Les membres des stations forment d'autres membres de leur station. Ils ont des années d'expérience, bien sûr, et les programmes de formation qu'ils appliquent sont ceux que nous fournissons à ces stations. Cela dit, il y a des programmes de formation régionaux lorsque les équipes sont plus expérimentées et que vous voulez qu'elles aient certaines compétences pour assurer la responsabilité d'un bateau et progresser.

M. Quealey : Pour ajouter aux remarques de Randy, compte tenu de mon expérience du Royal Canadian Marine Search and Rescue en Colombie-Britannique, je dirais qu'on devient bénévole dans n'importe quel organisme de la même façon qu'on devient bénévole dans n'importe quel groupe d'organisations vouées à la protection du public. Ce qui joue, c'est votre sentiment d'engagement et de vocation.

Bien sûr que nous avons des normes et bien sûr que vous serez évaluée en fonction de ces normes, et le but est d'amener les gens à ces niveaux. À cause du sentiment d'engagement dont parlait Randy, ce qui fait les bénévoles de longue date, c'est ce sentiment de vocation et d'engagement envers la collectivité, et c'est comme cela que nous réussissons.

La sénatrice Stewart Olsen : Est-ce qu'ils travaillent de la même façon que les pompiers bénévoles? Il y a un appel, et tout le monde reçoit l'appel et arrive à la rescousse?

M. Quealey : Il y a un aspect intéressant du bénévolat, c'est que c'est le résultat final qui compte. Pour clarifier, prenons l'exemple de la Colombie-Britannique : il est entendu que toutes les équipes en disponibilité doivent être prêtes, à 30 minutes d'avis, à embarquer sur le bateau et à intervenir à la demande du GRCC. Pour obtenir ce résultat, le programme est assez souple pour tenir compte de la collectivité, de son organisation, de la démographie et de la proximité. Dans les stations, le chef de station a le pouvoir de décider de cette configuration, mais il doit remplir des normes minimales. Le résultat est que les normes sont respectées.

To add to your question about training, the Royal Canadian Marine Search and Rescue is on the cusp of evolution in relation to training in that yes, we do focus on the station leadership, and that's critical for not only the training in the technical sense but building the unit cohesion and that sense of teamwork.

What's really important in that whole fabric of marine SAR is that we work closely with the Canadian Coast Guard in our training, and so joint training and an integrated approach is part of that team approach. We benefit from the courses they run, like the Rigid Hull Inflatable Operator Training, which is done in Bamfield, B.C.

The cusp I speak of is also now looking at opportunities for centralized training. We have just recently completed our regional training centre in East Sooke in British Columbia, and that will present a new opportunity, not only for RCM SAR but other partners inclusive of the marine SAR and broader community to come and train with us and learn from our expertise and share as well. There are tons of opportunities there, and that is only our regional example. There are others clearly.

Senator Stewart Olsen: Is it the community that decides they need a station and they proceed to set one up and work with everyone, or who decides there is a need?

Mr. Strandt: Now it would be the region, Coast Guard Auxiliary with Coast Guard deciding an asset is needed.

Senator Stewart Olsen: By ''the region,'' you mean New Brunswick saying that they need a station?

Mr. Strandt: Exactly. That would likely be determined with Coast Guard, who do their own needs analysis and determine that perhaps we need more resources here and would come to us and say they would like to have another resource in this community or area. Historically it would be the reverse, the way you mentioned. Over time the communities would have said they need a resource, so let's get together and put a boat in service. In more recent times, that's more coordinated through Coast Guard and our regions, and you wouldn't be standing a station up without having Coast Guard and your regional approval.

Senator Stewart Olsen: Are there enough?

Mr. Quealey: I know my colleague Clay Evans was sitting in this chair a few weeks back, and I must say to that comment, the team approach, Coast Guard colleagues are part of that team. To Randy's point, an operational needs assessment occurs for consideration of where potential gaps are or how we might do better, and we support Coast Guard in that analysis. The unique thing about the volunteer aspect, and I think that's what you are alluding to, is we can't direct volunteers where they are going to live and what the community capacity is to support them; so we do another piece, and that's the community capability assessment

Au sujet de la question sur la formation, le Royal Canadian Marine Search and Rescue est sur le point de transformer son approche de la formation dans le sens que, oui, nous insistons sur le leadership d'une station, et c'est crucial non seulement pour la formation strictement technique, mais aussi pour le développement de la cohésion de l'unité et de l'esprit d'équipe.

Ce qui est vraiment important dans ce qui constitue le réseau des activités de recherche et sauvetage, c'est que nous travaillons en collaboration étroite avec la Garde côtière pour la formation et que l'esprit d'équipe passe aussi par une formation commune et une approche intégrée. Nous bénéficions des cours qu'elle donne, par exemple le cours de manœuvre des embarcations pneumatiques à coque rigide, qui se donne à Bamfield, en C.-B.

Le tournant dont je parle fait aussi qu'on pense à centraliser la formation. Nous venons de terminer notre centre de formation régionale à East Sooke, en Colombie-Britannique, et ça ouvre une nouvelle possibilité, non seulement pour la RCM SAR, mais aussi pour d'autres partenaires, qui pourront venir s'entraîner avec nous et partager notre expertise et la leur. Il y a des tas de possibilités, et je n'ai donné que l'exemple de notre région. Il y en a d'autres, évidemment.

La sénatrice Stewart Olsen : Est-ce que c'est la collectivité qui décide qu'elle a besoin d'une station et qui fait le nécessaire pour en créer une et collaborer avec tout le monde, ou qui décide qu'il y a un besoin?

M. Strandt : Ce serait la région, la Garde côtière auxiliaire et la Garde côtière du Canada qui décideraient qu'on a besoin d'une ressource.

La sénatrice Stewart Olsen : Par « région », vous voulez dire que le Nouveau-Brunswick estime avoir besoin d'une station?

M. Strandt : Exactement. C'est une décision qui en principe serait prise par la Garde côtière, qui fait sa propre analyse des besoins et conclura qu'on a besoin ici ou là de plus de ressources et qui viendra annoncer à la collectivité ou au secteur qu'elle voudrait installer une autre ressource. Dans les faits, jusqu'ici c'était l'inverse qui se passait. Une collectivité estimait qu'elle avait besoin d'une ressource, regroupait ses forces et mettait un bateau en service. Plus récemment, cela se passe de façon plus coordonnée par le biais de la Garde côtière et de nos régions, et une station n'est plus créée sans l'approbation de la Garde côtière et l'approbation régionale.

La sénatrice Stewart Olsen : Est-ce qu'il y en a assez?

M. Quealey : Je sais que mon collègue Clay Evans était ici il y a quelques semaines et je dois dire que, au sujet du travail d'équipe, les collègues de la Garde côtière font partie de cette équipe. Pour faire suite à ce que disait Randy, on effectue une évaluation opérationnelle lorsqu'il y a des lacunes potentielles ou lorsqu'on se demande comment faire mieux, et nous appuyons l'analyse de la Garde côtière en ce sens. Ce qu'il y a d'unique dans le bénévolat, et je pense que c'est ce que vous voulez dire, c'est qu'on ne peut pas dire aux bénévoles où ils doivent vivre ni savoir ce que sera la capacité de la collectivité à les soutenir. Donc on s'occupe

and what can the community create. I don't use that as formalized term; that's just the effect we achieve. Ultimately the community gets to decide if they are going to contribute. We are very lucky in B.C. to have over 40 communities that have stepped up to that challenge and in various forms have created these stations to achieve the effect.

Senator Stewart Olsen: Thank you.

The Deputy Chair: I would like to welcome Senator Frum, who has joined us this evening.

Senator Enverga: Thank you for the presentation. You have mentioned something different from what we heard the last time with the Coast Guard. Correct me if I'm wrong. They said 40 minutes, but you are faster, 30 minutes, so that's good.

My main question is with regard to your presentation that says there is a lack of nationally directed SAR integration. Can you give an example of what kind of challenges you have encountered through this? Is this a cause for concern? What kind of difficulty did you have because there is less coordination?

Mr. Strandt: It's hard to pin down. If I had to give an example, the best one that comes to mind is the ground SAR teams. Why that sticks out the most is ground SARs are the responsibility of provincial authorities, usually delegated to the police of jurisdiction. We are working with a nationally mandated system, being Coast Guard and marine SAR, and working with a provincially mandated system.

These are interface calls. If a person is injured on an island or remote access and cannot get out by road, a marine asset is required. We could be better at those incidents where you need coordination of a land and marine asset and joint effort, and perhaps joint training could be better; and perhaps even an overarching national direction that that's how we're going to operate so that marine assets are to be dispatched to assist with land-based calls, whereas now our key mandate is marine-based calls and we are not really focused on the humanitarian assistance.

Mr. Quealey: This is purely my personal perspective. This is not the authority of my organization, but having had experience in this realm as well, I can help.

As Randy said, you have the three main elements of SAR — marine, air and ground. I would highlight that the Joint Rescue Coordination Centres, as they currently exist with the joint-ness being the marine and air aspects, do an extremely good job in that coordination. Equally, when we look at a provincial setup, and from the context of British Columbia, the provincial emergency

d'un autre aspect, et c'est l'évaluation de la capacité de la collectivité et de ce qu'elle peut créer. Je ne parle pas de structure officielle, mais simplement de l'effet obtenu. En fin de compte, c'est la collectivité qui décide de contribuer ou non. Nous avons beaucoup de chance, en C.-B., d'avoir plus de 40 collectivités qui ont relevé le défi sous toutes sortes de formes et ont créé des stations dans ce but.

La sénatrice Stewart Olsen : Merci.

La vice-présidente : Bienvenue à la sénatrice Frum, qui s'est jointe à nous ce soir.

Le sénateur Enverga : Merci de votre exposé. Vous nous avez parlé de choses différentes de ce que nous avons entendu la dernière fois concernant la Garde côtière. Sauf erreur de ma part. Vous aviez 40 minutes, mais vous êtes plus rapide et vous en avez pris 30, c'est excellent.

Ma principale question porte sur ce que vous avez dit dans votre exposé au sujet du manque d'intégration des opérations de recherche et sauvetage à l'échelle nationale. Pourriez-vous nous donner un exemple de difficulté à ce sujet? Est-ce que cela vous préoccupe? Quel genre de difficulté avez-vous eue à cause du manque de coordination?

M. Strandt : C'est difficile à préciser. Le meilleur exemple qui me vienne à l'esprit, c'est les équipes de recherche et sauvetage terrestres. La raison pour laquelle c'est plus évident est que ces opérations relèvent des autorités provinciales et que cette responsabilité est généralement déléguée au service de police. Nous avons un système dont le mandat est national, puisqu'on parle de la Garde côtière et des opérations de recherche et sauvetage maritimes, et nous travaillons dans le cadre d'un système dont le mandat est provincial.

Ce sont des appels interface. Si une personne se trouvant sur une île ou dans un lieu difficilement accessible est blessée et ne peut pas prendre la route, on a besoin d'une ressource maritime. On pourrait mieux intervenir dans ce genre de cas où il faut intégrer les ressources maritimes et terrestres et coordonner les activités, et peut-être qu'il faudrait une formation commune, peut-être même une direction nationale organisant les opérations pour que des ressources maritimes soient affectées aux appels terrestres, alors que, actuellement, notre mandat principal est d'ordre maritime et qu'on ne met pas vraiment l'accent sur l'assistance humanitaire.

M. Quealey : C'est uniquement mon avis personnel et non pas l'expression de l'opinion de mon organisme, mais j'ai aussi de l'expérience dans ce domaine et je peux aider.

Comme l'a expliqué Randy, les opérations de recherche et sauvetage couvrent les trois principaux éléments : maritime, aérien et terrestre. Je dois préciser que les centres conjoints de coordination des opérations de sauvetage tels qu'ils fonctionnent actuellement, les aspects maritimes et aériens étant reliés, font un excellent travail de coordination. Il faut dire aussi, compte tenu de

management organization coordinates closely and is unified in their approach with their federal colleagues.

That point highlights that a lot of that is reliant, in terms of those jurisdictional streams, on the relationships that exist between the leadership. It is extremely effective because a colleague will know a colleague and will work toward success because we are all in it together.

When you look at it from the jurisdictional and the governance perspective, we have the national SAR secretariat and the national SAR program, but that doesn't empower that organization, which now resides in Public Safety Canada and has transitioned from National Defence, to direct the program, to standardize the levels of training necessary across the country, and to go into that more programmatic and systematic approach that may result in arguably a more effective approach nationally. That highlights a potential opportunity to improve, as we should all be looking to improve.

Senator Enverga: Looking for improvement, we were talking to the Coast Guard a couple of weeks ago, and they mentioned that there is no particular wish list they have for equipment. I know you guys have been working so hard and you have rescued thousands of people and saved a lot of lives. What kind of new equipment do you need? I know you need funding, but it could be for something else. Are there any wish lists that you would say you would want from us that could make you more effective and helpful to your friends?

Mr. Quealey: Senator, we only have an hour.

Mr. Strandt: There's a long list going through my head. We mentioned funding, for sure. Where would it be used? For sure, assets is key for us — not only acquiring assets but maintaining them. Boats are an expensive venture, if you've ever owned one, to maintain and keep running. How do you keep it sustainable? It's one thing to get it in the first place, but then sustainable funding so we can be here in 10, 15, 20 years.

We mentioned a few ways within the current mandate, if you will, but expanding that mandate, looking for other ways to utilize volunteers. Both marine volunteers and others would improve the service level and engagement, and you would find more quality people, which deals with the issue of retention and attracting people.

Part of it is awareness, both at the government and public level, of the volunteers who are out there and what they do. That feeds everything else. It feeds into recruitment, retention and perhaps getting more donations and fundraising. So the awareness piece is key for us as well.

la situation en Colombie-Britannique, que l'organisme provincial de gestion des urgences assure une coordination étroite et unifie ses opérations avec ses collègues fédéraux.

On peut donc dire que beaucoup de ces filières juridictionnelles sont reliées compte tenu des relations entre les directions. C'est très efficace parce qu'un collègue connaît un autre collègue et qu'ils travailleront en collaboration parce que nous sommes tous dans le même bateau.

Du point de vue de la compétence et de la gouvernance, il y a le secrétariat national de recherche et sauvetage et le programme national de recherche et sauvetage, mais cela ne donne pas à cette organisation, qui est passée du ministère de la Défense nationale à Sécurité publique Canada, le pouvoir de diriger le programme, de normaliser les niveaux de formation à l'échelle du pays, ni d'adopter une approche plus programmatique et systématique susceptible de donner lieu à des résultats plus efficaces à l'échelle nationale. Il y a là une possibilité d'amélioration et on devrait tous y réfléchir.

Le sénateur Enverga : Au sujet des mesures d'amélioration, nous avons parlé à des représentants de la Garde côtière il y a quelques semaines, et ils nous ont dit qu'ils n'avaient pas de demande particulière en termes de matériel. Je sais que vos équipes travaillent très fort, que vous avez porté secours à des milliers de gens et que vous avez sauvé beaucoup de vies. De quelle sorte de matériel avez-vous besoin? Je sais que vous avez besoin d'argent, mais cela pourrait être pour autre chose. Est-ce que vous auriez une liste de souhaits qui, si nous l'exaucions, vous permettrait d'être plus efficace et d'aider vos amis?

M. Quealey : Monsieur le sénateur, nous n'avons qu'une heure devant nous.

M. Strandt : J'ai une longue liste dans la tête. Il y a le financement, évidemment. Comment l'utiliserait-on? Sûrement pour des ressources, et pas seulement pour en acheter, mais pour les entretenir. Des bateaux, ça coûte cher à entretenir et à garder en état de marche. Vous le savez si vous en avez déjà eu un. Comment faire durer les ressources? C'est une chose de les acquérir, mais il faut ensuite des fonds pour être encore là dans 10, 15, 20 ans.

Nous avons parlé de quelques moyens d'agir à l'intérieur du mandat actuel, si on veut, mais il faudrait élargir ce mandat et trouver d'autres moyens d'utiliser les bénévoles. Les bénévoles du domaine maritime comme les autres pourraient améliorer le niveau de service et de participation, et on pourrait trouver plus de gens compétents, ce qui permettrait d'intéresser et de garder des gens.

La sensibilisation est un élément du problème, aussi bien au gouvernement que dans la population : on ne parle pas assez de ces bénévoles et de ce qu'ils font. Cela alimente tout le reste. Cela alimente le recrutement, la rétention et même, peut-être, la possibilité d'obtenir plus de dons et de recueillir plus de fonds. La sensibilisation, c'est donc central pour nous.

Senator Enverga: We are talking a lot now about the Arctic. Do you have a problem with volunteers from around the Arctic and the North?

Mr. Strandt: We are expanding there right now.

Senator Enverga: Inuit?

Mr. Strandt: Yes**.** We're looking for places to put resources right now. I would say it's a challenge anywhere where it's remote. That can be in the Arctic or in B.C. or Newfoundland. Any time a community is small and remote, it's difficult. It's difficult because they are far away and because they don't have a lot of people. We do make it work, but the smaller the community and the more remote it is, the more difficult it is for us, for sure. There is a point where it is too small for us to support because there aren't enough people to support it. But we do make it work in many small communities throughout the Arctic and other places in Canada.

Senator Enverga: What about volunteers from our First Nations and our Inuit? Do they have difficulty, or are they accepting of the fact that you are there?

Mr. Strandt: No. I come from B.C., so my experience is there. We do have some Aboriginal communities that are fantastic, as you would have seen, and respond. They look after not only their own communities but the greater community in those areas. I can think of several who operate in B.C., but there are others on other coasts as well.

Senator Raine: Just following up perhaps on the last topic, in the North, are you working with the Rangers up there to coordinate? They are also involved in environmental monitoring and things like that.

Mr. Strandt: We haven't at this point. Certainly we do cooperate and work with them where rescues require a land-based or joint response. They are not responding for us on marine assets at this time, although I do know that as we look to expand to the Arctic, it might be one of the models we look at.

Senator Raine: Some of the Ranger stations have marine assets.

Mr. Strandt: To be fair, we're an asset and we're able to respond, as is Coast Guard. Any asset can be tasked. There are many examples where the rescue centre is not tasking a Coast Guard or auxiliary. I mentioned that we respond to 25 per cent of the calls. The Coast Guard doesn't respond to the other 75 per cent. Many times it is the vessel of opportunity who is responding. An example would be where they are a trained community asset. Certainly they can be tasked to go help, whether an auxiliary or Coast Guard asset.

Le sénateur Enverga : On parle beaucoup de l'Arctique en ce moment. Est-ce que vous avez un problème du côté des bénévoles dans l'Arctique et le Nord?

M. Strandt : On est en train d'élargir nos activités là-bas en ce moment.

Le sénateur Enverga : Les Inuits?

M. Strandt : Oui. Nous cherchons des endroits où installer des ressources en ce moment. Je dirais que c'est toujours difficile quand c'est une zone éloignée. Cela peut être dans l'Arctique, en C.-B. ou à Terre-Neuve. Quand une collectivité est petite ou éloignée, c'est difficile. Parce que c'est loin et parce qu'il n'y a pas beaucoup de gens. On s'organise pour que cela marche, mais plus la collectivité est petite et éloignée, plus c'est difficile pour nous, évidemment. Il y a une limite où c'est trop petit pour qu'on puisse faire quelque chose parce qu'il n'y a pas assez de gens pour maintenir le système. Mais cela marche dans beaucoup de petites collectivités de l'Arctique et de beaucoup d'autres endroits au Canada.

Le sénateur Enverga : Et les bénévoles des collectivités autochtones et inuites? Est-ce qu'ils ont des difficultés ou est-ce qu'on accepte qu'ils soient là?

M. Strandt : Non. Je viens de C.-B., je parle donc de cette expérience-là. Nous avons des collectivités autochtones fantastiques, comme vous l'avez vu, où il y a des intervenants. Ils prennent soin non seulement de leurs propres collectivités, mais des zones environnantes. Je pense à plusieurs de ces équipes qui travaillent en C.-B., mais il y en a d'autres sur d'autres côtes également.

La sénatrice Raine : Pour en revenir à la dernière question, dans le Nord, est-ce que vous travaillez avec les gardes forestiers pour coordonner les activités? Ils s'occupent de surveillance environnementale et de choses comme cela.

M. Strandt : Jusqu'ici, non. Nous collaborons et travaillons, bien sûr, avec eux quand les secours exigent une base terrestre ou une intervention commune. Ils n'interviennent pas pour nous dans les opérations maritimes pour l'instant, mais je sais que, pour l'expansion de nos activités dans l'Arctique, ce serait un modèle à envisager.

La sénatrice Raine : Certains des postes de garde forestier ont des ressources maritimes.

M. Strandt : En fait, nous sommes une ressource et nous pouvons intervenir, comme la Garde côtière. N'importe quelle ressource peut être sollicitée. Il y a beaucoup d'exemples où le centre des opérations de sauvetage ne fait pas appel à la Garde côtière ou à la Garde auxiliaire. Comme je vous l'ai dit, nous intervenons dans 25 p. 100 des cas. La Garde côtière n'intervient pas dans les 75 autres. Bien souvent, c'est le bateau de passage qui intervient. Cela pourrait être une ressource communautaire qui a été formée. On peut évidemment leur demander de l'aide, que ce soit une ressource auxiliaire ou de la Garde côtière.

Mr. Quealey: If I may add: As it relates to the Rangers specifically, the Rangers respond under the management of the Department of National Defence. Therefore, their command and control mechanisms are necessarily through DND.

To that point, and as Randy described, because the Rangers are often in small communities, generally in those small communities the responders know each other — in fact, not only do they know each other, but oftentimes it's the same person who signed up for multiple responsibilities in those organizations.

Giving you a jurisdictional perspective, the way it would be coordinated is through the Joint Task Force commander regionally, which is DND. In many cases, that person, that commander in National Defence, is also the search-and-rescue region commander, for example, in B.C. and in the Atlantic provinces. Equally, that person can then decide what assets are being employed in DND in that region.

From our perspective, we may see ourselves alongside the Rangers and working together in a joint, unified manner, but the jurisdictions are separate. But when it comes to the people in the community, they're people who know each other and who are generally used to working with each other. What is extremely successful in that model is that it's community based. Rangers are, from my perspective, a key element to that approach.

Senator Raine: My main question that I have for you is this: There have been some changes in B.C. in the Coast Guard and with the closing of Comox and Tofino. Is that working? Is it not working? Obviously, if a person is calling for help, first you need the ears, someone to hear their cries for help. With the mountainous terrain and inconsistent radio frequencies perhaps, there can be problems. In your experience, has the change in the system in coastal British Columbia been effective? Is it causing any problems? Will it work? How far along are we in the transition? With the reopening of the Kitsilano Coast Guard station, which of course is in the urban area, will that help? Can you give just a little overview, from your perspective as volunteers, on how that is going?

Mr. Quealey: Thank you, senator. I would go back to that sense of partnership, is really how I would put a theme to the response. Clearly, the Coast Guard does its own assessment of operational needs and the equipment and technology that is necessary to achieve that. I'm not expert to suggest there is a better way of doing it. I think you are referring to MCTS, for example.

In terms of what we've seen operationally and the impact to us in providing that service to Coast Guard and supporting their mandate, I can't say that I have seen any diminishment, but that is not with any personal assessment.

What I can comment on is that in every one of our communities or our stations that interact with Coast Guard, the perspective of the leadership of our organization, and necessarily the perspective of the leadership at the station level, is that we are working in cooperation and in a unified way with Coast Guard.

M. Quealey : Si vous permettez, j'aimerais ajouter que les gardes forestiers interviennent à la demande du ministère de la Défense nationale. Donc leur système de commandement et de contrôle passe nécessairement par le MDN.

Jusqu'ici, comme l'a expliqué Randy, parce que les gardes forestiers vivent souvent dans de petites collectivités, les intervenants se connaissent les uns les autres, et, en fait, non seulement cela, mais c'est souvent la même personne qui assume plusieurs responsabilités dans ces organisations.

Pour vous donner une perspective juridictionnelle, les opérations seraient coordonnées par le commandant de la force opérationnelle interarmées, qui est le MDN. Dans bien des cas, cette personne, le commandant de la Défense nationale, est aussi le commandant de la région des opérations de recherche et sauvetage. C'est ce qui se passe, par exemple, en C.-B. et dans les provinces de l'Atlantique. Cette personne peut aussi choisir les ressources qui sont employées par le MDN dans cette région.

Dans notre perspective, nous pouvons nous voir aux côtés des gardes forestiers et travailler ensemble de façon unifiée, mais les juridictions sont séparées. Mais, à l'échelle communautaire, il y a des gens qui se connaissent et qui ont généralement l'habitude de travailler ensemble. Ce qui est extrêmement efficace dans ce modèle, c'est la base communautaire. D'après moi, les gardes forestiers sont un élément clé de cette approche.

La sénatrice Raine : Ma principale question est la suivante : il y a eu des changements dans la Garde côtière en C.-B. depuis la fermeture de Comox et Tofino. Est-ce que cela fonctionne? Ou non? Évidemment, quand quelqu'un appelle à l'aide, il faut que quelqu'un l'entende. Il peut y avoir des problèmes à cause du relief montagneux et de fréquences radio irrégulières. D'après votre expérience, est-ce que la transformation du système de la côte de la Colombie-Britannique est efficace? Est-ce qu'elle soulève des problèmes? Est-ce que cela va marcher? À quelle étape de la transition en est-on? Est-ce que la réouverture de la station de Kitsilano, qui est bien sûr en zone urbaine, aidera? Pourriez-vous nous donner simplement un aperçu, dans votre perspective de bénévole, de la situation actuelle?

M. Quealey : Merci, madame la sénatrice. J'en reviens à cette idée de partenariat. C'est vraiment comme cela qu'il faut concevoir les interventions. Évidemment que la Garde côtière fait sa propre évaluation des besoins opérationnels et du matériel et de la technologie nécessaires. Je ne suis pas un expert et je ne peux pas proposer de meilleure façon de faire. Je pense que vous voulez parler des SCTM, par exemple.

Sur le plan opérationnel et des répercussions sur notre capacité à fournir ce service à la Garde côtière et à appuyer son mandat, je ne peux pas dire que j'aie vu de réduction, mais je n'ai pas fait d'évaluation personnelle.

Ce que je peux dire, c'est que, dans toutes les collectivités ou les stations qui interagissent avec la Garde côtière, la perspective du leadership de notre organisation, et donc la perspective du leadership à l'échelle des stations, tout le monde travaille en collaboration et de façon unifiée avec les membres de la Garde

These are our partners. Clearly, if Coast Guard gets additional assets and they're applied to marine SAR, we are grateful, because for the people of Canada and British Columbia, that is potential for additional support. We would welcome any additional assets in that regard of whatever nature you assess to be worthy.

In that sense, I want to highlight as well that our relationship is a non-competitive one. We are there to support their mandate. One of the strengths of the volunteer organization is that we have flexibility to support them in whatever gaps or additional needs they identify.

Senator Raine: When you mentioned the need to continually fundraise for building up the assets of your teams, are there things coming down the pike in terms of technology that you wish you had but just cannot afford? For instance, I know when you get a set of radios, all of a sudden better radios come along. It's not just buying one radio; it's buying a whole bunch of radios. Are those kinds of things always challenging?

Mr. Quealey: Absolutely. To the senator's question about the wish list, I didn't chime in, but I would echo what Randy said in terms of funding. We have been very successful in developing our vessels and our fleet in British Columbia, but it needs to be known that has been done on the backs of volunteers who are taking out their own time to manage that fleet. I rely on three people in our organization who are volunteers, who manage our fleet development, who contribute to the quality assurance when the vessels are being built and who are directly involved in implementation. Hats off to them. These are the people who are making it successful in British Columbia, for example.

If you were to ask about down-the-pike activities and the complexities of this equipment, this is top-notch stuff. Certainly we would welcome any opportunity to have additional funding, clearly, which would allow us to expand our approach in terms of a more systematic approach and greater depth in terms of the people able to support acquisitions such as that equipment.

Randy described the limitation in terms of the funding models. The contribution agreement we have with the Coast Guard right now restricts us from using those funds for capital assets. Again, we are reliant on a system of gaming grants and the fund-raising of our specific stations, and that is a rather tenuous approach.

Senator Raine: Do you know how it works in Europe and countries where they rely on a voluntary SAR system?

Mr. Strandt: There are various models. In the U.K., for example, it's probably one of the biggest charities. Tens of millions of pounds are raised every year — a well-recognized charity in the U.K. Other places use membership models where they charge membership fees and raise money that way. In every case, it is a charitable raising of funds or service provision. As a membership model, they provide a service for the membership and are very successful. Different models are employed depending

côtière. Ils sont nos partenaires. Évidemment, si la Garde côtière obtient d'autres ressources et les attribue aux opérations de recherche et sauvetage maritimes, nous en serons reconnaissants, parce que, pour les Canadiens et pour les gens de la Colombie-Britannique, c'est du renfort. Toutes les ressources supplémentaires que vous jugerez valables seront les bienvenues.

Je voudrais justement souligner aussi le fait que nous ne sommes pas en rivalité. Nous sommes là pour appuyer le mandat de la Garde côtière. Un des atouts de l'organisation des bénévoles est que nous pouvons apporter notre aide là où ils déterminent qu'il y a une lacune ou un besoin.

La sénatrice Raine : Quand vous avez dit qu'il fallait tout le temps recueillir des fonds pour développer les ressources de vos équipes, est-ce qu'il y a des moyens technologiques que vous aimeriez avoir et que vous n'avez pas les moyens d'acquérir? Par exemple, je sais que, quand vous obtenez une série de radios, tout à coup on a de meilleures radios. Il ne s'agit pas d'acheter une radio, mais un grand nombre de radios. Est-ce que ce genre de choses est toujours problématique?

M. Quealey : Absolument. Concernant la liste de souhaits, je n'ai rien mentionné, mais je reviendrais sur ce qu'a dit Randy au sujet du financement. Nous avons bien réussi à développer notre flotte de bateau en Colombie-Britannique, mais il faut savoir que cela s'est fait sur le dos des bénévoles qui ont donné du temps pour faire fonctionner cette flotte. Je compte sur trois bénévoles qui s'occupent du développement de notre flotte, qui s'occupent d'assurance de la qualité quand les bateaux sont construits et qui participent directement à la mise en œuvre. Je leur tire mon chapeau. C'est grâce à eux que le système fonctionne en Colombie-Britannique par exemple.

Si on parle des activités à venir et des complexités de ce matériel, c'est du haut de gamme. Évidemment que des fonds supplémentaires seraient les bienvenus, c'est sûr, car cela nous permettrait d'élargir notre approche de façon plus systématique et plus approfondie.

Randy a expliqué les limites des modèles de financement. L'accord de contribution que nous avons avec la Garde côtière en ce moment nous permet d'utiliser ces fonds seulement pour les immobilisations. Là encore, nous comptons sur un système de subventions tirées des loteries et sur les collectes de fonds de nos stations. C'est plutôt fragile comme méthode.

La sénatrice Raine : Est-ce que vous savez comment cela fonctionne en Europe et dans les pays où il existe un système bénévole de recherche et sauvetage?

M. Strandt : Il y a plusieurs modèles. Au Royaume-Uni, par exemple, c'est probablement une des organisations de bienfaisance les plus importantes. Des dizaines de millions de livres sont recueillies tous les ans : c'est une organisation largement reconnue là-bas. Dans d'autres pays, on utilise un modèle d'affiliation qui permet de recueillir des fonds grâce aux cotisations. Dans tous les cas, c'est une collecte de fonds ou une offre de services de nature charitable. Dans le modèle d'affiliation,

on where you go, but they are very successful in raising funds, for sure. Part of their success is not only their rescue success, but also their fundraising is world class as well.

Senator Raine: This is a whole other subject. All on our committee are pretty familiar with it. Can you comment on the interface between your organization and the lighthouses and their keepers? We understand that the boats they used to have for rescue at light stations are no longer there. Is that impacting the opportunity for quick response?

Mr. Strandt: That would be more difficult for me to respond to. In my experience, I haven't had that encounter. Even at the regional level, I don't think we've encountered that being an issue for us. You are probably asking the wrong people for feedback on that.

Senator Raine: There is no case where a light station is the SAR station?

Mr. Strandt: Not that I'm aware of.

Senator Raine: Do you think that's a possibility? Those light stations are valuable assets and are always located in areas where traditionally people got into trouble on the ocean. It would seem a natural fit to work together.

Mr. Quealey: To your original question, I'm not aware either. I'm aware of Coast Guard building flexibility in that their assets can have secondary roles as well. All of us, as you know from the Law of the Sea, have a secondary role to respond. Were there to be a lighthouse or light station that has a capacity to do anything at sea, it wouldn't necessarily be a secondary role. To your question, I'm not aware of any impacts in that regard.

Mr. Strandt: One challenge I would add is that we don't send a crew out with fewer than two people. We prefer more than two but certainly at least two on the vessel.

Senator McInnis: This has been interesting. Of course, as Senator Enverga mentioned, the purpose of this study is to investigate how the services might be improved and some of the challenges you may have. Of course, for many of us, it's a learning experience as well, and I put myself in that category.

An interesting study done by Fisheries and Oceans calculated that every dollar invested in volunteers for marine search and rescue gave a return to the department and the Canadian public of $37. A challenge of money shouldn't be quite so difficult.

I want to ask: What would your budget look like? Where are your expenses? I take it the maintenance of vessels is an expense, as is the fuel.

ils fournissent un service aux affiliés, et cela marche très bien. Différents modèles sont appliqués dans différents pays, mais ils arrivent très bien à recueillir des fonds, c'est certain. Ils n'ont pas seulement du succès dans leurs opérations de sauvetage, mais aussi dans leurs collectes de fonds de classe internationale.

La sénatrice Raine : Passons à un tout autre sujet. Tous les membres du comité en sont très conscients. Pourriez-vous nous parler de l'interface entre votre organisation et les phares et les gardiens de phare? Nous croyons savoir qu'ils n'ont plus les bateaux de sauvetage qui servaient aux stations de phare. Est-ce que cela influe sur la rapidité d'intervention?

M. Strandt : Je ne peux pas vraiment vous répondre. Je n'ai pas eu à vivre ce genre de situation. Même à l'échelle régionale, je ne crois pas que nous ayons eu ce genre de problème. Probablement que vous ne vous adressez pas aux bonnes personnes à ce sujet.

La sénatrice Raine : Il n'arrive jamais qu'une station de phase soit une station de recherche et sauvetage?

M. Strandt : Pas à ma connaissance.

La sénatrice Raine : Est-ce que ce serait une possibilité d'après vous? Ces stations de phare sont des ressources valables et elles sont toujours situées dans des zones où des gens peuvent se trouver en difficulté dans l'océan. Cela semblerait être un élément naturel de collaboration.

M. Quealey : Pour répondre à votre première question, je ne sais pas non plus. Je sais que la Garde côtière s'organise de façon plus souple pour que ses ressources puissent remplir aussi des rôles secondaires. Nous avons tous, comme vous le savez, un rôle secondaire à remplir en vertu du droit de la mer. Si un phare ou une station de phase a la capacité de faire quelque chose en mer, ce ne serait pas nécessairement un rôle secondaire. Mais, pour répondre à votre question, je ne sais pas quel impact cela peut avoir à ce sujet.

M. Strandt : J'ajouterais qu'un de nos problèmes est que nous n'envoyons pas d'équipe composée de moins de deux personnes. Nous préférons en envoyer plus que deux, mais en tout cas il y en a toujours au moins deux sur le bateau.

Le sénateur McInnis : C'est intéressant. Évidemment, comme l'a dit le sénateur Enverga, notre étude a pour but de déterminer comment les services pourraient être améliorés et d'analyser certaines de vos difficultés. Et bien sûr que, pour beaucoup d'entre nous, c'est aussi un apprentissage. Je me place moi-même dans cette catégorie.

Selon une étude intéressante effectuée par Pêches et Océans, chaque dollar investi dans les bénévoles des opérations de recherche et sauvetage maritimes rapporte 37 $ au ministère et à la population canadienne. Cela ne devrait pas être si difficile de trouver de l'argent.

Je voudrais vous demander : à quoi ressemble votre budget? Quelles sont vos dépenses? J'imagine que l'entretien des bateaux est une dépense. Le carburant aussi.

Mr. Strandt: Of the $5.2 million we receive across the country, which are rough numbers, a good third would go to administration of the organization — actual staff — and Mr. Quealey is an example. Another third would go to operations, essentially funding the station, giving them a stipend for training and every time they go on a call. All the maintenance is looked after by them. They use those funds we give them to maintain the vessel, and they have to raise their own money to supplement that. One third would go to operational, beyond actual tasking an incident. A third for training; a third for operation; and a third for administration.

The money is disbursed to either the private owner of the vessel or the community station responsible for maintaining the vessel and paying for fuel, et cetera. None of the funds received would go directly to fixing a vessel, as you say, or to paying for the fuel. That would be paid down to someone else who would look after paying the bills.

Senator McInnis: Who owns the vessel?

Mr. Strandt: The vessels would be owned by either the community or a private individual.

Senator McInnis: They volunteer their vessels.

Mr. Strandt: Yes**.**

Senator McInnis: Amazing. And how many are there?

Mr. Strandt: About 4,000.

Mr. Quealey: In British Columbia, the model is a little different because of the gaming grant situation. The boats are owned by the societies. Just to be clear about the relationship, in our communities, we have the stations that are the operational arm of the Royal Canadian Marine Search and Rescue. They are supported by societies that are members of RCM SAR, who support behind the scenes by fund raising and application for grants, for example. Their efforts are part of the partnership that's critical to developing and getting the monies for the boats. As I mentioned, only a portion can be covered by the gaming grants.

From our perspective in terms of answering the question of where the money goes, in our region, we receive roughly $1.3 million a year from Coast Guard in our contribution agreement, which goes to a number of different activities, and our books are all available on line for further scrutiny. That goes to administration, direct support to search and rescue operations, training and on-the-water incident response. Some limited funds are also available for search and rescue awareness and boating safety. For example, they tie directly to community engagement events where we raise awareness about the necessary safety on the water and how to prevent SAR incidents altogether by people taking prudent action.

The next element is the gaming grants I described. This year, we were fortunate to receive from the Province of B.C. $3 million, which supported the evolution of our fleet. In addition, gaming

M. Strandt : Sur les 5,2 millions de dollars que nous recueillons dans tout le pays — c'est un chiffre approximatif —, un bon tiers va à l'administration de l'organisation, autrement dit au personnel proprement dit, et M. Quealey en est un exemple. Un autre tiers va aux opérations, essentiellement au financement des stations, pour la formation et pour chaque opération. Tout l'entretien est fait par les stations. Elles utilisent les fonds que nous leur donnons pour entretenir les bateaux et elles doivent recueillir leurs propres fonds pour le reste. Un autre tiers va aux opérations en dehors des interventions en cas d'incident. Donc un tiers à la formation, un tiers aux opérations et un tiers à l'administration.

L'argent est remis soit au propriétaire du bateau, soit à la station communautaire responsable de l'entretien du bateau, du paiement du carburant, et cetera. On ne règle jamais directement de factures d'entretien ou de paiement de carburant. L'argent est remis à quelqu'un qui s'occupera de régler les factures.

Le sénateur McInnis : À qui appartient le bateau?

M. Strandt : Les bateaux appartiennent à la collectivité ou à des propriétaires privés.

Le sénateur McInnis : Ils prêtent leur bateau.

M. Strandt : C'est cela.

Le sénateur McInnis : Magnifique! Et combien y en a-t-il?

M. Strandt : Autour de 4 000.

M. Quealey : En Colombie-Britannique, le système est un peu différent à cause de la subvention tirée des loteries. Les bateaux appartiennent à des sociétés. Pour expliquer le lien, dans nos collectivités, nous avons des stations qui sont le bras opérationnel du Royal Canadian Marine Search and Rescue. Elles sont appuyées par des sociétés qui sont membres du RCM SAR, qui fournit un soutien en coulisses en recueillant des fonds et en demandant des subventions, par exemple. Ces activités font partie du partenariat indispensable à la collecte de fonds pour les bateaux. Comme je l'ai dit, une partie seulement est couverte par les subventions tirées des loteries.

Pour répondre à la question de la répartition des dépenses, dans notre région, nous recevons environ 1,3 million de dollars par an de la Garde côtière dans le cadre de notre accord de contribution, et cela finance un certain nombre d'activités. Nos livres comptables sont accessibles sur Internet. Les fonds vont à l'administration, aux opérations de recherche et sauvetage, à la formation et aux interventions en mer. Une petite partie du budget est réservée à la sensibilisation aux activités de recherche et sauvetage et à la sécurité de la navigation. Par exemple, on utilise les événements de participation communautaire pour sensibiliser la population à la sécurité et à la prudence sur l'eau et aux moyens d'éviter les incidents.

Il y a aussi les subventions tirées des loteries. Cette année, nous avons eu la chance de recevoir 3 millions de dollars de la province de la Colombie-Britannique, ce qui nous a permis de développer

grants allow for operational support as well. The headquarters of Royal Canadian Marine Search and Rescue is supported through gaming grants.

The third element to our funding is the general funding that comes through donations from people who look at our website and see that this is a worthwhile charity, non-profit, it saves lives, and they contribute that way directly. That element can fluctuate depending on the ability of people and organizations to fund us.

Senator McInnis: Let me turn to another area. I'm trying to determine when you are triggered into action. Say someone is in distress. Does the Joint Rescue Coordination Centre determine if you go or if the Canadian Coast Guard goes? Who makes that determination?

Mr. Strandt: The controller at the Joint Rescue Coordination Centre determines that. The marine controller, who is a Coast Guard employee, would decide the most appropriate asset or multiple assets. In many cases, more than one vessel is sent, depending on the scenario. They would be the person responsible for determining the appropriate response.

Senator McInnis: In my hometown, there is a search and rescue system. They have a boat, but would not be tied in with you. They're a volunteer outfit.

Mr. Strandt: One area we don't cover to any great extent is inland waters. We talked earlier about restrictions. We are restricted to coastal waters, or navigable waters, I believe Coast Guard calls them. Our funding is limited to that. We can't be on lakes, unless it is one of the Great Lakes, or rivers or other bodies of water that might be dangerous, as certainly people are being harmed and having accidents there. The only example we have is one station in B.C. on a lake, but it's a limited example. It's a challenge for us to keep it funded and insured under the contribution agreement. These ground SAR teams or land-based teams are responsible for those lakes, and that's why they typically have vessels. They may go on salt water as well, but they wouldn't come under us. Certainly Coast Guard could task them, or the Joint Rescue Coordination Centre could task them, but again tasking them as a vessel of opportunity that they happen to know about or are aware of, but they wouldn't be part of the program per se.

Senator McInnis: But they would be in the harbours. About 75 per cent of your volunteers are fishers.

Mr. Strandt: Depending on where you are, yes. Certainly in the Maritimes and Newfoundland, it is closer to 95 per cent. On the West Coast, it would be less than 5 per cent. It varies depending on where you are in the country. If you look at it across the country, it is perhaps 50/50.

Senator McInnis: That is very good. Thank you.

notre flotte. Ces subventions permettent aussi de financer les opérations. Le quartier général du Royal Canadian Marine Search and Rescue est financé par ces subventions.

Le troisième volet de notre financement est ce qui nous vient de donateurs qui consultent notre site web et constatent que c'est une organisation de bienfaisance valable, sans but lucratif, qui sauve des vies. Ils contribuent donc directement. Ce volet dépend beaucoup de la capacité des gens et des organismes à nous financer.

Le sénateur McInnis : Permettez que j'aborde un autre aspect. J'essaie de comprendre quand votre intervention est déclenchée. Disons qu'une personne est en détresse. Est-ce que c'est le Centre conjoint de coordination des opérations qui décide de vous envoyer ou d'envoyer la Garde côtière? Qui décide?

M. Strandt : C'est le contrôleur du Centre conjoint de coordination des opérations. Le contrôleur maritime, qui est un employé de la Garde côtière, choisit la ou les ressources qui conviennent le mieux. Dans beaucoup de cas, on envoie plus d'un bateau, selon la situation. C'est lui qui décide de la façon dont il faut intervenir.

Le sénateur McInnis : Dans ma ville natale, il y a un système de recherche et sauvetage. Ils ont un bateau, mais il n'est pas relié à votre organisation. C'est une organisation bénévole.

M. Strandt : Nous ne couvrons pas beaucoup les eaux intérieures. Nous avons parlé tout à l'heure de nos limites. Nous sommes limités aux eaux côtières ou aux eaux navigables, comme les appelle la Garde côtière je crois. Notre financement se limite à cela. Nous ne pouvons pas intervenir sur les lacs, à moins que ce soit un des Grands Lacs, ni sur des rivières ou d'autres cours d'eau éventuellement dangereux, et c'est certain qu'il y des gens qui sont blessés ou ont des accidents à ces endroits. Il y a bien une station de la C.-B. située sur un lac, mais c'est un exemple rare. C'est difficile pour nous de maintenir le financement de nos opérations et de les garantir dans le cadre de l'accord de contribution. Ces équipes de recherche et sauvetage terrestres sont responsables des lacs, et c'est pour cela qu'elles ont généralement des bateaux. Elles peuvent aller en mer aussi, mais elles ne dépendent pas de nous. La Garde côtière peut certainement faire appel à elles, le Centre conjoint de coordination des opérations aussi, mais ce serait fonction de leur présence sur place et du fait d'une situation immédiate dont elles auraient connaissance, mais elles ne font pas partie du programme comme tel.

Le sénateur McInnis : Mais elles seraient dans les ports. Environ 75 p. 100 de vos bénévoles sont des pêcheurs.

M. Strandt : Cela dépend où, mais oui, c'est vrai. Dans les Maritimes et à Terre-Neuve, on parle de presque 95 p. 100. Sur la côte Ouest, ce serait moins de 5 p. 100. Cela varie selon l'endroit. À l'échelle du pays, on parle peut-être de 50/50.

Le sénateur McInnis : Excellent. Merci.

The Deputy Chair: Mr. Strandt and Mr. Quealey, on behalf of the members of the Standing Senate Committee on Fisheries and Oceans, thank you for sharing with us the important work of the Canadian Coast Guard Auxiliary.

Mr. Strandt: Thank you for having us.

The Deputy Chair: The committee is continuing its study on Maritime Search and Rescue activities, including current challenges and opportunities. We are now pleased to welcome, from Cougar Helicopters Inc., Hank Williams, Chief Operating Officer; Rick Banks, Search & Rescue Program Manager; and Steve Reid, Search & Rescue Capability Advisor.

On behalf of the members of the committee, I thank you for being here today. I understand that you have opening remarks. Therefore, in the interest of allowing as much discussion as possible in the time available to us, you are requested to please limit your opening statements to possibly 12 minutes. Thank you.

Hank Williams, Chief Operating Officer, Cougar Helicopters Inc.: That's not a problem. Thank you, Madam Chair.

Thank you, everyone, for the opportunity to speak to you on an important matter to us and to all Canadians: search and rescue. I would like to start with my compliments to previous presenters, the auxiliary and the hundreds of volunteers. All Canadians are proud of that for sure.

Headquarters for Cougar Helicopters is located in St. John's, Newfoundland. We have been in the search and rescue business for over 20 years. I have been employed by Cougar Helicopters for 20 years — a long time. Before my time, Cougar Helicopters was involved with the Department of Fisheries and Oceans, DFO, out of Yarmouth, Nova Scotia, doing surveillance as well as some ad hoc search and rescue work.

I guess our big dive into search and rescue happened in 1997 when we were awarded, by the oil and gas company ExxonMobil, provision for passenger services to the oil rigs offshore in Newfoundland. A condition of that contract was that we also had to be first responders in the oil field area — at that time, 103, located in Gander, using the Labrador aircraft. It was a requirement that we needed something local and quick as a first response to the oil and gas industry. We currently operate 11 aircraft on the East Coast of Canada. Two of those are in Nova Scotia and the remainder on our base in St. John's.

Our search and rescue capabilities have evolved over the last 20 years that I have been involved. At one time I used to refer to it as passive SAR, but since 2010, with our big movement when we went into an enhanced first response mode, we have had dedicated air frames, dedicated search and rescue specialists and dedicated training hours.

La vice-présidente : Monsieur Strandt et monsieur Quealey, au nom des membres du Comité sénatorial permanent des pêches et des océans, merci d'être venus nous parler du travail important de la Garde côtière auxiliaire canadienne.

M. Strandt : Merci de nous avoir accueillis.

La vice-présidente : Le comité poursuit son examen des activités de recherche et sauvetage maritimes et des difficultés et possibilités qui y sont associées. Accueillons maintenant Hank Williams, chef des opérations chez Cougar Helicopters Inc, Rick Banks, gestionnaire du Programme de recherche et sauvetage, et Steve Reid, conseiller consultatif en recherche et sauvetage.

Au nom des membres du comité, je vous remercie d'être parmi nous aujourd'hui. Je crois que vous avez des remarques préliminaires. Donc, pour permettre la discussion la plus large possible dans le temps qui nous est imparti, je vous prie de ne pas dépasser 12 minutes autant que possible. Merci.

Hank Williams, chef des opérations, Cougar Helicopters Inc. : Aucun problème. Merci, madame la présidente.

Merci à tous de nous permettre de vous parler d'un sujet important pour nous et pour tous les Canadiens : les opérations de recherche et sauvetage. Je voudrais commencer par féliciter les témoins qui nous précèdent, les auxiliaires et les centaines de bénévoles. Tous les Canadiens en sont fiers, c'est certain.

Le siège social de Cougar Helicopters est situé à St. John's, à Terre-Neuve. Nous nous occupons de recherche et sauvetage depuis plus de 20 ans. Je travaille pour Cougar Helicopters depuis 20 ans. C'est une longue période. Avant mon temps, Cougar Helicopters collaborait avec le ministère des Pêches et Océans (MPO), à partir de Yarmouth, en Nouvelle-Écosse, où l'entreprise s'occupait de surveillance et de certaines opérations de recherche et sauvetage spéciales.

Je crois que nous sommes vraiment entrés dans les opérations de recherche et sauvetage en 1997, quand l'entreprise d'exploitation pétrolière et gazière ExxonMobil nous a confié les services de transport de passagers vers les plates-formes pétrolières installées au large de Terre-Neuve. L'une des conditions du contrat était que nous devions aussi être premiers répondants de la zone d'exploitation, le 103e escadron à l'époque. On partait de Gander avec l'avion du Labrador. Nous avions besoin de quelque chose de local et rapide pour intervenir en cas d'incident pour le secteur pétrolier et gazier. Nous exploitons actuellement 11 aéronefs sur la côte Est du Canada. Deux d'entre eux sont en Nouvelle-Écosse et le reste se trouve sur notre base de St. John's.

Nos moyens en matière de recherche et sauvetage ont évolué depuis 20 ans. À une certaine époque, je parlais de nos capacités passives, mais, depuis 2010 et notre évolution vers un mode d'intervention amélioré, nous avons des cellules dédiées, des spécialistes en recherche et sauvetage dédiés et des heures de formation réservées.

Of course, one of the things about operating in the environment we do, your capabilities are very much contingent on the type of equipment you fly. We are not in sunny Miami; we are on the East Coast of Canada.

Our main platform aircraft is the Sikorsky S-92 that we operate as our fleet. It is an all-weather aircraft, four access, auto pilot, dual hoists, night vision and forward looking infrared systems. We now have a full level D simulator based in St. John's, Newfoundland, where we can do a lot of our training, and we have a lot of RCAF air crew experience that came out of the air force and into the civilian world. Not only do we have a lot of rescue technicians, but also flight crews, as well as some flight engineers that came from previous military experience.

We run a 24/7 operational control centre that runs all of our flight activity — our dispatch centre. When I say type D dispatch or co-authority dispatch, it pretty well aligns with how the fixed wing operation work where a pilot and a dispatcher will put together a flight plan and with co-authority they both agree on that flight plan before it launches.

Before I go on any more about Cougar, I would like to speak about the two gentlemen with me. I consider them subject matter experts in what Cougar does. Rick has been working with me for quite some time, and I have never met two gentlemen who are more passionate about SAR and saving lives. Every time I talk to them, it's all about the way we can do it better and the way we can enhance to all Canadians the way we perform search and rescue.

For your understanding, Cougar's involvement in search and rescue today is 100 per cent mandated and contracted by the oil and gas industries that we have contracts with for the provision of search and rescue to their assets and people in the field. That presents a bit of a challenge to us. We work closely with JRCC, specifically in Halifax, Nova Scotia, almost to the point where we have daily contact. We make sure they are aware of our assets and what our capability is and, in turn, they do the same. If they have a mission to launch to some other part of the province or the territory, they check to see where our assets are so they can understand what they have in the event of an emergency.

The challenge for us is that, as I said earlier, our assets are 100 per cent contracted to the oil and gas company. In order to conduct a civilian or a tasking from JRCC, I must get release of those assets from the oil companies. The challenge is not only from a contract but right within and how do you say no? We've done a fair amount of missions over the years I've been there, and we've never said no, but these assets are not always available.

Bien entendu, dans le type d'environnement où nous intervenons, la capacité dépend largement du genre d'aéronef utilisé. On n'est pas sous le soleil de Miami. On est sur la côte Est du Canada.

Notre principal aéronef est le Sikorsky S-92. C'est un hélicoptère tous temps, à quatre accès, à pilote automatique, à double palan, doté d'un système de vision nocturne et d'un système infrarouge à balayage frontal. Nous avons maintenant un simulateur de vol de niveau D à St. John's, où nous pouvons donner beaucoup de formation. Nous profitons également de l'expérience de membres d'équipage de l'ARC passés dans le civil. Non seulement nous avons beaucoup de techniciens de sauvetage, mais aussi du personnel navigant et quelques mécaniciens aéronautiques ayant une expérience militaire.

Nous avons un centre de contrôle opérationnel qui fonctionne 24 heures sur 24, 7 jours sur 7. C'est le centre de régulation des vols. Quand je parle de service aérien de type D ou de régulation des vols en coresponsabilité, cela correspond en gros à la façon dont fonctionne un appareil à voilure fixe, où un pilote et un répartiteur dressent un plan de vol et s'entendent sur ce plan et en assument ensemble la responsabilité avant de le suivre.

Avant de parler plus en détail de Cougar, je voudrais parler des deux personnes qui sont avec moi. J'estime que ce sont des experts des activités de Cougar. Rick travaille avec moi depuis un certain temps, et je n'ai jamais vu deux hommes plus passionnés de recherche et sauvetage et plus dévoués à leur mission de sauver des vies. Ils sont toujours en train de se demander comment faire mieux pour les Canadiens.

Pour vous expliquer un peu la situation, la participation de Cougar aux opérations de recherche et sauvetage est entièrement prévue par mandat et contrat avec les entreprises d'exploitation pétrolière et gazière qui nous ont confié la tâche de protéger leurs biens et leurs effectifs sur le terrain. C'est tout un défi pour nous. Nous collaborons de près avec les JRCC, plus précisément à Halifax, en Nouvelle-Écosse, et c'en est presque au point que nous avons des contacts quotidiens. Nous veillons à ce qu'ils connaissent nos ressources et nos moyens et ils font de même. S'il y a une mission dans une autre partie de la province ou du territoire, ils vérifient où sont nos ressources pour savoir sur quoi ils peuvent compter en cas d'urgence.

Pour nous, comme je l'ai dit tout à l'heure, le défi est que nos ressources sont mises entièrement à la disposition de l'entreprise pétrolière et gazière. Pour effectuer une opération civile ou une opération demandée par un JRCC, je dois obtenir l'autorisation des entreprises pétrolières pour libérer des ressources. Nous sommes liés par contrat, mais comment dire non? Nous avons fait un bon nombre de missions depuis des années et nous n'avons jamais dit non, mais ces ressources ne sont pas toujours disponibles.

The oil and gas industry consider that any time their dedicated search and rescue is not available — if we take them and move our assets to some other part of the region — it is a massive exposure to their personnel, people and assets offshore. So that presents a bit of a challenge to us.

We have a vision of what we like to do. When we say we're 24/7 capable, we operate a 20-minute response time 365 days a year. Our infrastructure that we have located in St. John's, Newfoundland is built around a fire hall concept. Our search and rescue technicians, our engineers and our flight crews sleep there to get that 20-minute response time.

We have a vision to become federally recognized and an aeronautical SAR service provider, where value-added services and capabilities complement — which is the key word I want to emphasize — the national SAR objective and program today.

Both Steve and Rick are familiar with this: If we look at where the national program assets are located, the exposure up North is high. I've done a lot of talking to people up in places like Iqaluit, with the Northwest Passage opening up and cruise ships going up there. We consider that it needs a remodeling somehow to provide that type of service.

I will not take any more time telling you who we are and what we are. Our capabilities today are quite strong. I would like to offer both Steve and Rick a couple of words on anything that they want to emphasize.

Rick Banks, Search & Rescue Program Manager, Cougar Helicopters Inc.: Thank you for inviting us, senators.

I want to mention a bit of past history. There is a lot of depth in our company when it comes to search and rescue, from three continents. I think we would agree to that. It is not just Canada. We have a lot of skill sets involved and enhanced capabilities that have formalized over the last few years.

Looking at the regions where we have worked, we are not primarily just East Coast. We have been to Barrow, Alaska. We were integral in setting up SAR for our customers up on the north slope of Alaska. We have had contracts in Tuktoyaktuk, Northwest Territories; Inuvik, Northwest Territories; two bases in Ilulissat and Nuuk, Greenland; the Gulf of Mexico, down in Galliano, Louisiana for a number of years.

Just to show a little more depth, not only is it oil and gas when we get to those places, we're so remote that the Joint Rescue Coordination Centres know our capability, they know our response levels and they know we're up there and we're a presence. As a tangible, taskable asset, numerous times in all of those locations we've been tasked to civil SAR. That includes humanitarian aid, whether it's a lost hiker, a tourist who has suffered a heart attack way out in the tundra and vessels we've

Les entreprises pétrolières et gazières estiment que, lorsqu'elles n'ont pas accès à leurs moyens de recherche et sauvetage dédiés, si nous les emportons dans un autre secteur de la région, c'est un risque massif pour leur personnel, leurs effectifs et leurs biens en mer. Donc, c'est un peu un problème pour nous.

Nous avons une idée de ce que nous aimerions faire. Quand on parle de disponibilité 24 heures sur 24, 7 jours sur 7, on parle de délai d'intervention à 20 minutes d'avis 365 jours par année. Notre infrastructure à St. John's est construite comme une caserne de pompiers. Nos techniciens, nos mécaniciens et nos équipages dorment sur place pour pouvoir agir dans un délai de 20 minutes.

Nous voulons devenir un fournisseur de services de recherche et sauvetage aéronautiques reconnu par le gouvernement fédéral, offrant des services et moyens à valeur ajoutée à titre de complément, et j'insiste sur ce mot, à la mission et au programme de recherche et sauvetage d'aujourd'hui à l'échelle nationale.

Steve et Rick le savent bien : si on examine la répartition des ressources du programme à l'échelle nationale, le Nord est très exposé. J'ai parlé avec beaucoup de gens dans des endroits comme Iqaluit, compte tenu de l'ouverture du Passage du Nord-Ouest et de la circulation de navires de croisière dans cette zone. Nous pensons qu'il faut reconsidérer le modèle concernant l'offre de ce genre de services.

Je ne prendrai pas plus de temps à vous expliquer qui nous sommes et ce que nous sommes. Nos moyens sont aujourd'hui très solides. J'aimerais passer la parole à Steve et Rick pour qu'ils vous parlent de ce qui est important pour eux.

Rick Banks, gestionnaire, Programme de recherche et sauvetage, Cougar Helicopters Inc. : Merci au comité de nous avoir invités.

Je voudrais faire un peu d'histoire. Notre entreprise a une expérience profonde des opérations de recherche et sauvetage, et cela couvre trois continents. Je pense que nous sommes d'accord là-dessus. Il n'y a pas que le Canada. Nous avons des compétences et des moyens qui se sont structurés au cours des dernières années.

Pour ce qui est des régions où nous intervenons, il n'y a pas que la côte Est. Nous sommes allés à Barrow, en Alaska. Nous avons fait partie des opérations d'installation de ressources de recherche et sauvetage pour nos clients sur le versant nord de l'Alaska. Nous avons eu des contrats à Tuktoyaktuk et à Inuvik, dans les Territoires du Nord-Ouest; nous avons deux bases à Ilulissat et à Nuuk, au Groenland; il y a aussi le golfe du Mexique, jusqu'à Galliano, en Louisiane, depuis un certain nombre d'années.

Pour vous donner une idée plus précise, ce n'est pas seulement pour les entreprises pétrolières et gazières que nous allons dans ces endroits. Nous allons si loin que les centres conjoints de coordination des opérations de sauvetage connaissent nos moyens, ils connaissent nos niveaux d'intervention et ils savent que nous sommes sur place. Nous sommes une ressource tangible, qu'on peut solliciter, et on nous a confié de nombreuses opérations de recherche et sauvetage civiles dans tous ces

taken people off for medical aid or injury. There are a number of realms. Once we are in those locations, it's amazing how we become another side of the house.

Again, Hank mentioned we have a bit of a struggle because we do have a contract in place and we're working for a company. As much as we would like to do it and are proud to do it and the guys will jump at it, it is a bit of a struggle going forward. Our desire is to be recognized as a federal GSAR provider, and that is definitely in our future. We have the capability and professionalism.

In my case, I'm a 20-year veteran as a search and rescue technician with the RCAF, and there are a number of guys from that group. About 85 per cent of our staffing right now is ex-military RCAF SAR from a select group that we have hand selected who were leaving the military. We have been fortunate there. It's not that we go after them. We know they're leaving, so I think it's a great transition for people.

We have the underlying desire and love of the Canadian North that we are specialists in setting up in, and we've been very fortunate to be involved in providing whatever capability we can to those people up there because of the vastness of it, you could say, not only in the marine environment but on the land environment as well.

I thank you all for inviting us today.

Steve Reid, Search & Rescue Capability Advisor, Cougar Helicopters Inc.: Thank you as well for the opportunity to be here. I am pleased to be supporting Cougar Helicopters as well. I want to be a bit clearer on my role in this.

I consider myself a team member of Cougar Helicopters, but I'm not an employee. I have been working with Cougar for the past few months to help identify exactly the purpose of this committee's intent, which is to identify potential opportunities to help improve and achieve the national objective in search and rescue. Cougar has asked me, with my background as an RCAF helicopter pilot, an officer with 20 years' service and commanding officer of one of our primary search and rescue squadrons, to lend some of my experience and to help articulate some of the challenges that currently exist and how there may be opportunity to solve some problems in a cordial, compatible, organized and efficient way.

We can all appreciate that Canada probably has the majority of the challenges in the world when it comes to providing search and rescue services. Our area of responsibility is huge. The sentiments of our previous presenters rang true for me. They articulated very well the need to adopt a team approach. Partnerships are important, and we need to look to each other to add value and take advantage of opportunities to provide the service that I think all Canadians want and deserve. That only

endroits. Cela comprend de l'assistance humanitaire, qu'on parle d'un randonneur égaré, d'un touriste victime d'une crise cardiaque en pleine toundra ou de personnes embarquées pour être soignées. Il y a toutes sortes de situations. Quand on est sur place, c'est fou comme on nous considère comme faisant partie de la maison.

Hank a dit que c'était un peu compliqué parce que nous sommes sous contrat et que nous travaillons pour une entreprise. On veut intervenir et on est fier de le faire, et les gars sont toujours prêts, mais c'est toujours un peu difficile. Nous aimerions être reconnus comme fournisseur de services de recherche et sauvetage par le gouvernement fédéral, et nous pensons que c'est effectivement notre avenir. Nous en avons les moyens et les compétences.

Quant à moi, j'ai été technicien en matière de recherche et sauvetage pour l'ARC pendant 20 ans, et plusieurs de mes collègues viennent de ce groupe. Environ 85 p. 100 de nos effectifs actuels sont d'ex-militaires de l'ARC que nous avons sélectionnés à leur sortie de l'armée. On a eu de la chance. On ne leur court pas après. Nous savons qu'ils quittent l'armée, et je pense que c'est une excellente transition pour eux.

Nous aimons le Nord canadien et nous sommes des spécialistes de ce genre d'installations. Nous avons eu la chance de donner des moyens à ces gens, parce que c'est une zone très vaste, non seulement du point de vue maritime, mais du point de vue terrestre.

Merci de nous avoir invités aujourd'hui.

Steve Reid, conseiller consultatif, Recherche et sauvetage, Cougar Helicopters Inc. : Je vous remercie, moi aussi, de nous avoir invités. Je suis heureux également d'apporter mon appui à Cougar Helicopters. Je vais expliquer un peu mon rôle.

Je considère que je fais partie de l'équipe de Cougar Helicopters, bien que je ne sois pas un employé de l'entreprise. Je collabore avec Cougar depuis quelques mois pour comprendre exactement le but de l'étude du comité, qui est de déterminer les possibilités d'amélioration qui permettraient de concrétiser l'objectif national en matière de recherche et sauvetage. J'étais pilote d'hélicoptère dans l'ARC, j'ai 20 ans de service comme officier et j'ai commandé l'un des premiers escadrons de recherche et sauvetage, et c'est la raison pour laquelle Cougar m'a demandé de mettre mon expérience à contribution et de contribuer à l'analyse de certaines des difficultés actuelles et à la recherche des moyens de régler certains problèmes de façon cordiale, compatible, organisée et efficace.

On peut tous comprendre que le Canada a probablement le plus de problèmes au monde quand il s'agit de fournir des services de recherche et sauvetage. Notre secteur de responsabilité est énorme. Je partage les sentiments exprimés par les témoins précédents. Ils ont très bien expliqué la nécessité d'une approche concertée. Les partenariats sont importants, et il faut mettre en commun la valeur ajoutée de chacun et tirer parti des possibilités d'offrir les services que les Canadiens attendent et méritent. Cela

happens through working together, partnerships, training and developing that relationship so that people know that when they make that call for help, the right type of resource is on the way and will pluck them out of peril. They don't care if it's yellow, blue or white, on water or if it is a volunteer or professional. All they know is, "Right now, I need help."

In my 10 years as CO 103 Squadron in a past life, I worked alongside Cougar to keep that relationship strong. All the while, they plucked valuable people from me and challenged me to deliver on my mandate, and that certainly is one of the challenges of Canada's search and rescue system, particularly on the aeronautical side. We are here to talk maritime SAR, but it is important that we look at all three components of SAR as one because they all are integrated and they do need an integrated approach.

When it comes to performance measurement and seeing what types of values and returns on investment we are getting from our search and rescue system — is it effective, and is it where it needs to be — it's very difficult to do that without a mechanism or overarching body that would set national policy and drive toward national objectives.

It is important to reiterate that we have aviation, maritime and inland SAR components. If we go back in history and talk about where SAR began, in the post-World War II 1940s, the international community recognized that, globally, we needed to do a good job of dealing with the emerging trends in aviation and decide who would send the search party for the people in federal waters, the oceans and, for us, the Great Lakes' navigable waters. At that time, the government agreed that is a federal responsibility, but they also said that anything that doesn't involve an aircraft in distress or a distress on federal waters will be left to the provinces and territories to handle.

Fast forward 50 years, and the evolution of capability has probably exceeded what the original intent of that looked like back then, in particular with regard to helicopters. Now, it is more about rescue than about search. That is what the emphasis is on. When you have companies like Cougar Helicopters that can offer those types of capabilities, that's an important opportunity to take advantage of.

Their challenge is that, up until this point, there has only been one federally recognized aeronautical SAR provider responsible for both aviation and maritime, and that is the air force. In more than 70 years, the air force has generated a standard of how you do that safely, because it can be dangerous. I have gone through a terrible experience related to that and lost some friends in an aviation accident which really emphasized the importance of making sure that we have capable and properly-trained and equipped people ready to respond to the needs of Canadians.

ne peut arriver que par la collaboration, le partenariat, la création et le développement des relations pour que les gens sachent que, quand ils appellent à l'aide, on enverra le genre de ressource qui convient et qui les tirera d'affaire. Ils se fichent de savoir si c'est un bateau jaune, bleu ou blanc ou si c'est un bénévole ou un professionnel. Tout ce qu'ils savent, c'est que, à ce moment-là, ils ont besoin d'aide.

Durant les 10 années où j'ai commandé le 103e escadron de recherche et sauvetage, j'ai collaboré avec Cougar pour garder des liens solides. Pendant ce temps-là, ils me piquaient des gens de valeur et me mettaient au défi de remplir mon mandat, et c'est certainement l'une des difficultés du système canadien de recherche et sauvetage, surtout du côté aéronautique. Nous sommes ici pour parler d'opérations de recherche et sauvetage maritimes, mais c'est important d'examiner les trois volets de ces opérations comme un tout parce qu'ils sont intégrés et qu'il faut une approche intégrée.

Quand on veut mesurer le rendement et calculer la valeur et le rendement sur investissement que nous obtenons de notre système — autrement dit : est-ce qu'il est efficace, est-ce qu'il est là où il doit être —, eh bien, il est très difficile de s'en faire une idée sans un mécanisme ou un organisme principal qui permette d'établir une politique nationale et de poursuivre des objectifs nationaux.

Il faut redire qu'il y a le volet aérien, le volet maritime et le volet terrestre. Si on remonte l'histoire, on sait que les opérations de recherche et sauvetage ont commencé dans les années 1940, après la Seconde Guerre mondiale, quand la collectivité internationale a reconnu que, à l'échelle globale, il fallait faire face aux tendances émergentes en aviation et qu'on a décidé qui enverrait les équipes de recherche dans les eaux fédérales, les océans et les eaux navigables des Grands Lacs pour nous. À l'époque, le gouvernement avait accepté d'en prendre la responsabilité, mais il avait aussi précisé que tout ce qui ne concernait pas un avion en détresse ou un incident dans les eaux fédérales devrait être réglé par les provinces et territoires.

Cinquante ans plus tard, les moyens sont probablement supérieurs à ce qu'on entrevoyait à l'époque, notamment du côté des hélicoptères. Aujourd'hui, on parle plus de sauvetage que de recherche. C'est ce qui compte de nos jours. Quand on a des entreprises comme Cougar Helicopters qui peuvent offrir ce genre de moyens, il faut en tirer parti.

Leur problème, c'est que, jusqu'ici, il n'y a qu'un seul fournisseur de services de recherche et sauvetage aéronautique reconnu par le gouvernement fédéral, c'est la force aérienne. Durant ses 70 années d'activité, la force aérienne a produit une norme de sécurité, parce que cela peut être dangereux. J'ai vécu des choses terribles et j'ai perdu des amis dans un accident d'avion qui nous a fait vraiment comprendre l'importance de s'assurer que nous avons des gens capables, bien formés et équipés pour intervenir et répondre aux besoins des Canadiens.

The air force has done a very good job of that, but maybe the demand now exceeds the capacity and we need to look for other ways to take advantage of opportunities, but in a way that makes sense. We can't expect to have a rotary wing rescue asset in every town or, perhaps, even in every province — they are expensive to operate — but we can do it in a smart and logical way that would make sense for Canadians.

This is how I am here to offer help. I am thankful for the opportunity to lend any advice or information that I can.

The Deputy Chair: Thank you very much. Our first questioner is Senator Stewart Olsen.

Senator Stewart Olsen: Thank you, gentlemen, for being here and thank you for your presentations. Who would call you in the event of an emergency?

Mr. Williams: The JRCC. When we say we are first response, we know where all the assets are for the oil companies, whether it's a supply vessel, a helicopter or whatnot. Our dispatch centre would know that immediately, but it is a simultaneously launched exercise.

Senator Stewart Olsen: So they would know they didn't have an asset available, and they would call you?

Mr. Williams: Yes.

Senator Stewart Olsen: Are you paid for those missions you would undertake for them?

Mr. Williams: We have not charged to date.

Senator Stewart Olsen: How do you do your training for your people on board? I assume you have a chopper pilot and perhaps a copilot. How many team management members are there?

Mr. Banks: Our crew composite mirrors the military right now. We have two pilots — a captain and a copilot — a hoist operator and two rescue men. Given the great distances we go, we would never go with two in the back because there needs to be that backup if one guy gets in trouble.

Again, the systems we have in place somewhat mirror the standards of the military. As best we can, we try to align ourselves with that standard because it is very well-proven. We have a lot of in-depth systems and layers to our training. We are afforded 60 hours a month for training. Our day shift would routinely be airborne for about an hour and a half a day in training, be it ocean work, vessel work or open ocean water work. The guys in the water working with rafts could be inland on freshwater lakes or in the bush doing an assortment of let-downs and confined area landings and that kind of thing. There is a great variance of what we need to be on top of. Even though marine work is our bread and butter under contract, we do derivatives outside of that to keep our skills honed in every area and facet.

La force aérienne a fait de l'excellent travail, mais peut-être que la demande dépasse les moyens aujourd'hui et qu'il faut envisager d'autres façons de tirer parti des possibilités, mais d'une manière logique. On ne peut pas espérer avoir un hélicoptère dans chaque ville ni même peut-être dans chaque province — cela coûte très cher à exploiter —, mais on peut s'organiser de façon intelligente et logique à l'avantage des Canadiens.

C'est pour cela que je suis ici, pour offrir de l'aide. Je suis heureux de pouvoir donner mon avis ou de l'information.

La vice-présidente : Merci beaucoup. La première question sera posée par la sénatrice Stewart Olsen.

La sénatrice Stewart Olsen : Merci, messieurs, d'être parmi nous et merci de vos exposés. Qui vous appellerait en cas d'urgence?

M. Williams : Les CCCOS. Quand on dit que nous sommes des premiers répondants, on sait que toutes nos ressources sont destinées aux entreprises pétrolières, qu'on parle d'un bateau d'approvisionnement, d'un hélicoptère, et cetera. Notre centre de régulation des vols le saurait immédiatement, mais c'est un exercice de déclenchement simultané.

La sénatrice Stewart Olsen : Donc ils sauraient qu'ils n'ont pas de ressource disponible et ils vous appelleraient?

M. Williams : C'est cela.

La sénatrice Stewart Olsen : Est-ce que vous êtes payés pour les missions que vous faites pour eux?

M. Williams : Nous n'avons jamais rien facturé jusqu'ici.

La sénatrice Stewart Olsen : Comment se passe la formation de vos équipes à bord? Je suppose que vous avez un pilote d'hélicoptère et peut-être un copilote. Combien avez-vous de membres dans l'équipe?

M. Banks : Notre équipe ressemble à ce qui se passe dans l'armée actuellement. Nous avons deux pilotes — un commandant et un copilote —, un opérateur de palan et deux secouristes. Comme nous couvrons de grandes distances, nous ne partons jamais avec deux à l'arrière parce qu'il faut une réserve si un des hommes a des difficultés.

Nos systèmes actuels suivent des normes similaires à celles de l'armée. Nous essayons de notre mieux de respecter ces normes parce qu'elles ont fait leurs preuves. La formation est approfondie et compte plusieurs niveaux. On nous donne 60 heures par mois pour nous entraîner. Notre quart de jour est généralement aérien, à raison d'une heure et demie d'entraînement par jour, que cela soit au-dessus de l'océan, sur un bateau ou en pleine mer. Ceux qui travaillent sur l'eau avec des canots peuvent être sur des lacs ou en forêt pour expérimenter des situations de difficulté et d'atterrissage dans des zones exiguës et ce genre de choses. Nous devons faire face à toutes sortes de situations. Même si les opérations maritimes forment l'essentiel de notre travail sous contrat, nous avons des activités dérivées qui nous permettent de maintenir nos compétences dans tous les domaines.

Routinely, the day and night shifts would each get an hour and a half, so we're up on MVGs, and those crews would transition from day to night during their shifts. There is a 12 hour daytime shift followed by a night 12-hour shift. As I said, it is like a firehall program.

We say we have a 20-minute launch window or mandate where we are routinely airborne in 11 minutes. We have worked that down and mitigated it through in-depth safety management systems and risk assessments, and we purposely built a hangar in 2012 for the transition and flow of getting a response with guys located either in the gym or in the medical section.

We are competent in advanced medical skills under the licence of a practicing physician. We are doing a lot of advanced skills that your normal paramedic wouldn't see. We are into the IVs and narcotics for pain relief. We have 100 per cent airways and the ability to do chest decompressions and a whole slew of other emergency tactics that we need. By the time we get to somebody, it is not within the golden hour. We need to be able to grab someone when they are at their worst and bring them back, so we need those advanced-level skills to deal with the trauma that we could see.

Again, our pilots, from the back-end point to the front, have in-depth training systems as well. We have a cadre of training pilots. They are in the simulator doing their own training on the ground, in the air, then on SAR again. It is quite a bit more intensive than someone would think. It's a lot more pronounced than an offshore pilot with passenger movements. There are more criteria to pass through to be one of these selected gentlemen.

Senator Stewart Olsen: When you are in the air, are you in constant communication with HQ or whoever sent you out? How does that happen?

Mr. Williams: As I mentioned, we have a 24-7 operational centre and dispatch and flight-following system. Our aircraft is monitored in every phase of flight from our dispatch centre and satellite communications from our aircraft to our dispatcher. If there was an emergency on our flight activity or a vessel, the dispatcher would activate the emergency.

Senator Stewart Olsen: I'm sorry to take extra time. So if you are in the air and you've rescued someone, who do you contact? Do you contact your dispatcher or do you contact directly?

Mr. Williams: Once we were tasked by JRCC for a civil rescue, exactly. Our dispatcher would be communicating with JRCC. What would happen in a realistic mission is that both of us could be there. We could be there as the first responder, and then — of

En général, chaque quart de jour et de nuit compte une heure et demie de formation, et on passe aux lunettes de vision nocturne, et les équipes passent du jour à la nuit durant leurs quarts. Il y a un quart de jour de 12 heures suivi d'un quart de nuit de 12 heures. Comme je l'ai dit, c'est comme un programme de caserne de pompiers.

Nous avons une fenêtre de lancement ou un délai de 20 minutes, mais nous sommes généralement dans les airs en 11 minutes. Nous avons réduit ce délai et atténué les risques grâce à une gestion et une évaluation approfondies des risques, et nous avons construit un hangar en 2012 pour assurer la transition et faciliter l'intervention avec des gens qui se trouvent dans le gymnase ou dans la section médicale.

Nous avons des compétences médicales approfondies sous la surveillance d'un médecin praticien. Nous faisons des interventions que votre ambulancier ne ferait pas. Nous faisons des intraveineuses et administrons des narcotiques pour soulager la douleur. Nous pouvons procéder à des décompressions thoraciques et pratiquer toutes sortes d'autres manœuvres d'urgence au besoin. Quand on arrive près de la personne en détresse, ce n'est déjà plus l'heure d'or. On doit pouvoir la ramasser au pire moment et la ramener. On a donc besoin de compétences approfondies pour atténuer les traumatismes que nous constatons.

Là encore, nos pilotes, d'un bout à l'autre du spectre, ont une formation approfondie, eux aussi. Nous avons du matériel de formation pour les pilotes. Il y a un simulateur de vol qui leur permet de s'entraîner au sol, puis ils peuvent s'entraîner dans les airs et ensuite à des opérations de recherche et sauvetage. C'est plus intensif qu'on penserait. C'est beaucoup plus approfondi que ce qu'on exige d'un pilote en mer transportant des passagers. Il y a plus de critères à remplir pour faire faire de cette équipe sélecte.

La sénatrice Stewart Olsen : Quand vous êtes en vol, est-ce que vous êtes en communication constante avec le quartier général ou avec ceux qui vous ont envoyés? Comment est-ce que cela se passe?

M. Williams : Comme je l'ai expliqué, nous avons un centre opérationnel et un système de régulation et de suivi des vols qui fonctionnent 24 heures sur 24, 7 jours sur 7. Notre hélicoptère est suivi à chaque étape du vol depuis le centre de régulation et par satellite de communication entre l'hélicoptère et le répartiteur. S'il y avait une urgence durant le vol ou sur un bateau, le répartiteur activerait le système d'intervention.

La sénatrice Stewart Olsen : Je suis désolée de prendre du temps supplémentaire. Donc, si vous êtes en vol et que vous avez secouru quelqu'un, qui contactez-vous? Votre répartiteur ou directement?

M. Williams : Un jour, un CCCOS nous a demandé de faire une intervention civile, exactement. Notre répartiteur a communiqué avec le CCCOS. Dans une situation réelle, les deux pourraient être là. Nous pourrions être là comme premiers

course Steve would know more about this — there's aircraft communication but back to the each other's dispatch centre.

Mr. Reid: There's no real difference between a Cougar response in terms of communication and coordination. When the federal system requests support, it's aligned in terms of effectiveness. There really is no difference.

Senator Stewart Olsen: So it is fairly seamless.

Mr. Reid: Yes.

Mr. Banks: To add one more thing, to get that seamless approach as well, we do an annual exercise with our military counterparts, the RCAF. When they are in St. John's on their exercise for a week, we spend the greater part of two days with them. We invite JRCC down. We do a couple of simulations, and the exercises are a night and day exercise, both marine oriented. So night boat hoisting on a vessel that we contract, we will launch in different time frames with the separation to pretend they are coming down from Gander, and then they'll come into play. So we will get that communication bridge going for the on-scene commander so that there's no mistake and when it does happen in real life, everybody knows how to play it.

Senator Poirier: I have a couple of questions. One is a follow up to what my colleague here asked. From my understanding, you are not a non-profit organization. You are a company, right?

Mr. Williams: Correct.

Senator Poirier: And you have a contract with the offshore oil and gas industry to do your work.

Mr. Williams: Correct.

Senator Poirier: She questioned when you get a call from the JRCC to come in and help, you are doing that for free? Right?

Mr. Williams: Okay. Most of the missions or anything we have been a part of has been in our field of activity. I mentioned the word "exposure" before. So if we were tasked for that fisherman that's 30 miles outside of St. John's, we are still not exposing our offshore workforce. We can still respond to them as well. An asset could be directed either way.

The challenge for us is when we are tasked for an exercise that takes us outside of our region. Then the aircraft has to be really taken off contract with the oil companies because it is not available to them any longer to provide the service.

That is a very complicated piece of activity that goes on behind the scenes. The flight crew and the engineers who are preparing for that don't see — it's like the duck in the water. Nobody sees the legs going beneath that make that duck move, but the duck just sails along nicely.

répondants, et ensuite — comme Steve le sait bien — il y aurait les communications de l'hélicoptère, mais vers les centres de régulation de chacun.

M. Reid : Il n'y a pas vraiment de différence entre une intervention de Cougar et une autre en termes de communications et de coordination. Quand le système fédéral demande de l'aide, on est sur la même longueur d'onde en termes d'efficacité. Il n'y a pas vraiment de différence.

La sénatrice Stewart Olsen : Donc c'est plutôt homogène.

M. Reid : Oui.

M. Banks : Je voudrais ajouter que, pour qu'il y ait cette homogénéité, on fait un exercice annuel avec nos homologues militaires de l'ARC. Quand ils sont à St. John's pendant une semaine pour leur exercice, nous passons presque deux jours avec eux. Nous invitons les CCCOS. Nous faisons quelques simulations, et les exercices se font de nuit et de jour, toujours en zone maritime. Donc on utilise le treuillage à partir d'un bateau que nous louons et nous lançons des opérations dans des délais différents en faisant semblant qu'ils arrivent de Gander, et ensuite ils entrent en jeu. Il y aura la passerelle de communications pour le commandant sur place pour qu'il n'y ait pas d'erreur, et, quand les choses arrivent réellement, tout le monde sait jouer son rôle.

La sénatrice Poirier : J'ai quelques questions. L'une d'elles fait suite à ce que ma collègue a demandé. Si j'ai bien compris, vous êtes un organisme sans but lucratif. Vous êtes une entreprise, n'est-ce pas?

M. Williams : C'est exact.

La sénatrice Poirier : Et vous avez un contrat avec une entreprise d'exploitation pétrolière et gazière en mer.

M. Williams : C'est cela.

La sénatrice Poirier : Vous avez dit à ma collègue que vous intervenez gratuitement quand le CCCOS vous demande de l'aide, c'est bien cela?

M. Williams : D'accord. La plupart des missions ou des choses que nous faisons font partie de notre domaine d'activité. J'ai parlé de risque tout à l'heure. Donc, si on nous demande d'aller porter secours à un pêcheur à 30 milles de St. John's, nous ne faisons pas courir de risque à nos effectifs en mer. On peut encore intervenir pour eux également. Une ressource peut être orientée dans un sens ou dans l'autre.

La difficulté, c'est quand on nous appelle en dehors de notre région. L'hélicoptère doit alors être exclu du contrat avec les entreprises pétrolières parce qu'il n'est plus disponible.

C'est une organisation en coulisses très compliquée. L'équipage et les mécaniciens qui se préparent ne le voient pas. C'est comme le canard sur l'eau. Personne ne voit ses pattes, mais il se déplace très gracieusement.

Most of our missions over the years have been within our local region, and we have no issues if we are going out on a search in our area of training that we do in those areas. There's only been a couple of times that we have been taken outside of our region to do that, and to date we have not charged for that.

Senator Poirier: Your finances or funding as a company comes from your contracts with the oil and gas industry?

Mr. Williams: Yeah. If I can throw a bouquet, our oil and gas clients that we work for pay a significant amount of money to have those assets and the people and everything there, and they encourage us to work within certain parameters with the air force. Because as I said, how do you say no? You don't. So you have to come up with some framework.

I guess the challenge for me as the COO is that we have a very informal way of conducting this, and we want to formalize it so that we know exactly what we are doing and what our limitations are.

I mentioned we have the capabilities and all this, but you have to have an asset that you can take and put those pilots and engineers in and go. I don't always have that asset because it's over here and doing its mandated and contractual job that it has been contracted and paid for.

Senator Poirier: As a company, you also mentioned that you have operations in other countries or other parts of the country. The operations that you have there or the work you're doing, is that through the oil and gas industry also?

Mr. Williams: Yes, that's correct.

Senator Poirier: In doing the type of work you are doing for the offshore oil and gas industry, does it require specific equipment compared to other maritime operations? Is there a different type of equipment that you need?

Mr. Williams: Typically, when a request for proposal comes out for an operation in Greenland, for example, the oil companies must specify the level of search and rescue they require. There are various degrees of capabilities. We would refer to it as LimSAR or limited capabilities, a hoist on an aircraft. What we're contracted for on the East Coast of Canada right now is what we call full blown SAR: FLIR, night vision, the training and everything else.

A typical contract in the scope of work will outline the degree of search and rescue that they need. For example, some operators might say, "I just require day VFR — visual flight rules — operation." We would not institute an NVG program. Our level of service in the region is dictated by the contract and the contract requirements.

Senator Poirier: Thank you.

La plupart de nos missions, depuis des années, ont été effectuées dans notre région, et nous n'avons aucun problème à faire des recherches dans le secteur où nous faisons notre entraînement. Il est arrivé quelques fois que nous soyons appelés en dehors de notre région, et, jusqu'ici, nous n'avons rien facturé pour cela.

La sénatrice Poirier : Vos finances ou votre budget d'entreprise viennent de vos contrats avec des entreprises pétrolières et gazières?

M. Williams : Oui. Je dois dire que nos clients du secteur pétrolier et gazier paient le prix fort pour avoir ces ressources, ces gens et tout cela, et ils nous encouragent à travailler selon certains paramètres avec la force aérienne. Parce que, comme je le disais : comment refuser? On ne peut pas. Il faut donc avoir un certain cadre.

Je pense que la difficulté, pour moi, comme chef des opérations est que nous faisons cela de façon très informelle, et nous voulons rendre cela plus formel pour savoir exactement ce que nous faisons et connaître nos limites.

J'ai dit que nous avons les moyens et tout cela, mais il faut avoir des ressources où on peut embarquer ces pilotes et ces mécaniciens. Je n'ai pas toujours ce qu'il faut, parce que la ressource est ailleurs et fait ce qu'elle doit faire selon le contrat conclu et payé.

La sénatrice Poirier : Comme entreprise, vous effectuez aussi des opérations à l'étranger et dans d'autres régions du Canada. Est-ce que ces opérations sont également liées au secteur pétrolier et gazier?

M. Williams : Oui, en effet.

La sénatrice Poirier : Quand vous faites ce genre de travail pour le secteur d'exploitation pétrolière et gazière en mer, est-ce que vous avez besoin de matériel particulier comparativement à d'autres opérations maritimes? Est-ce que vous avez besoin de matériel différent?

M. Williams : En général, quand on reçoit une demande de proposition pour des opérations au Groenland, par exemple, les entreprises pétrolières doivent préciser le niveau de recherche et sauvetage dont elles ont besoin. Il y a différents niveaux de capacité. On parle de LimSAR ou capacité limitée, un treuil sur un hélicoptère. Sur la côte Est du Canada, nous sommes engagés pour des opérations complètes de recherche et sauvetage : cela inclut le système de vision nocturne et le système infrarouge à balayage frontal, la formation, et tout le reste.

Un contrat classique dans ce cas indiquera le niveau de recherche et sauvetage dont l'entreprise a besoin. Par exemple, certains opérateurs diront : « J'ai seulement besoin d'opérations de vol à vue. » On ne lancera donc pas de programme de lunettes de vision nocturne. Le niveau de service dans la région est déterminé par le contrat et ses stipulations.

La sénatrice Poirier : Merci.

Senator McInnis: Thank you, gentlemen. Is there a larger role that you could see Cougar playing in getting involved in search and rescue?

Mr. Williams: Yes. I can speak as a Canadian citizen or speak as Cougar, but I think both of these gentlemen spoke about it. These people have had experiences in the Arctic, going in there for a rescue when you were based in Newfoundland and various places. There is a model that needs to be developed that provides some resources to that region, and Cougar would like to be a part of that model.

In my opening I said to complement what the Canadian air force has now, because I admire everything they do, but we mentioned about the region they have to cover. We envision there is a model out there somewhere where we can complement and work together.

You referred to training programs, standards, training of personnel. We have a great training program. We also have an S-92 simulator now right in our backyard in Newfoundland. Who would ever have thought we would get one of those there? Well, we have. The training capabilities that are available to us, if we work closely together — when I say resources, it's equipment; it's people.

I think you used the words that a couple of your guys came our way, but we were very cautious that we did not deplete specifically the 103 rescue centre in Gander because they provide service to us as well. We were very cautious when we brought people back.

I think there is an area of collaboration and a model that we plug in in certain regions where we can complement each other.

Senator McInnis: And perhaps take over part of what is being done now by the military.

Mr. Reid: We have developed a strategy that would make sense as a complementary solution, considering a subcontracted role to the air force that would add a capability, add value. Because Canada is so vast, if you don't have a sustainability model that supports a resource once it's tasked to the end of its mission and then regenerates itself, it will not work. Canada is too big for that. It's about adding certain pieces of the puzzle, adding more pieces of the puzzle. It's cheaper to add a piece than it is to separate it completely and then expect that one entity to deliver that service. There is opportunity there, and we are hoping to open that discussion with the air force.

Mr. Williams: One of the things I think it was Steve mentioned is you look at a jurisdiction like Nunavut with a federal responsibility and a territorial responsibility, and somehow they have to collaborate together and share that resource or the capabilities you would put in that type of region. It has to be the land, the marine, the aeronautical. It wouldn't make sense to go down separate roads because you can it as one.

Le sénateur McInnis : Merci, messieurs. Est-ce que vous pensez que Cougar pourrait jouer un rôle plus important en matière de recherche et sauvetage?

M. Williams : Tout à fait. Je peux parler en tant que citoyen canadien ou en tant que représentant de Cougar, mais je pense que ces deux messieurs en ont parlé. Ils connaissent l'Arctique et y sont allés pour des opérations de sauvetage quand ils étaient à Terre-Neuve et dans différents endroits. Il faudrait développer un modèle pour fournir des ressources dans cette région, et Cougar aimerait faire partie de ce modèle.

Dans mes remarques préliminaires, j'ai parlé d'être un complément de la force aérienne canadienne, parce que j'admire tout ce qu'ils font, mais nous avons parlé de la région qu'ils doivent couvrir. Nous envisageons un modèle permettant de travailler en complément et en collaboration.

Vous avez parlé de programmes de formation, de normes, de formation de personnel. Nous avons un excellent programme de formation. Nous avons aussi un simulateur de vol S-92 actuellement à Terre-Neuve. Qui aurait dit que nous aurions cet appareil ici? Eh bien, c'est fait. Les moyens de formation dont nous disposons, si nous collaborons étroitement... quand je parle de ressources, je parle de matériel et je parle de personnel.

Je crois que vous avez dit que quelques-uns de vos membres sont venus vers nous, mais nous avons fait très attention de ne pas appauvrir le centre du 103e escadron à Gander, parce qu'ils nous fournissent des services également. Nous avons fait très attention quand nous avons ramené les gens.

Je pense qu'il y a matière à collaboration et qu'on peut imaginer un modèle permettant de se compléter dans certaines régions.

Le sénateur McInnis : Et peut-être prendre en charge une partie de ce que font actuellement les militaires.

M. Reid : Nous avons élaboré une stratégie qui serait une solution complémentaire, compte tenu d'un rôle de sous-traitance auprès de la force aérienne pour ajouter de la capacité, une valeur ajoutée. Comme le Canada est immense, si on n'a pas de modèle de durabilité à l'appui d'une ressource une fois qu'elle est affectée, jusqu'à la fin de sa mission, et ensuite régénérée, cela ne marchera pas. Le Canada est trop vaste pour cela. Il faut ajouter certaines pièces au puzzle, il faut ajouter d'autres pièces au puzzle. Cela coûte moins cher d'ajouter une pièce que de la séparer complètement et de s'attendre ensuite à ce qu'une entité fournisse le service. Il y a là une possibilité, et nous espérons ouvrir le dialogue avec la force aérienne.

M. Williams : Je pense à ce que disait Steve, je crois, au sujet d'une juridiction comme le Nunavut, où la responsabilité est à la fois fédérale et territoriale, et où ils doivent collaborer et partager les ressources ou les moyens que vous mettrez à la disposition de la région. Il faut que ce soit terrestre, maritime et aéronautique. Cela n'aurait pas de sens de séparer les opérations.

Senator McInnis: The military is doing it now, correct?

Mr. Reid: No, the military is not doing territorial or provincial SAR. That is a gap that exists. Every province is different. Some provinces have more capability than others to respond to their needs for inland SAR with an aeronautical response, but the challenges can be extraordinary. Newfoundland, the North and British Columbia have extreme challenges, and, unfortunately, it is those worst case scenarios when the alignment isn't there or the capability isn't adequate to respond to that need. Then the request for federal assistance can be enacted, and an RCAF resource can be requested through the JRCC. But up until that point, the province or the territory is expected to deliver upon their own needs, their own aeronautical SAR system. The problem is that there is no civilian SAR standard for which a Cougar helicopter organization can generate that type of a capability because the standard for how you provide and how you train and how you build exists in the air force.

For a territorial government, for example, to say, "We would like to have an aeronautical SAR response capability in one of our locations in the North to respond to our inland SAR demands," and for them to come and approach a Cougar helicopter to say, "We would like to contract you to deliver upon our own responsibility to offer that service," that would be viewed as a welcome capability enhancement. Then the air force could say, "Since you are there, on an opportunity basis, we will tap into that as well."

The reality is that there are three types of SAR demands that could be called upon to use that resource, whether it's an aircraft incident or a maritime incident or an inland SAR incident. It doesn't really make sense to contract one resource for one component of it. You would think it should be there for all three because that's where you get your maximum efficiency and your maximum bang for your buck.

From a coordination perspective, the organization that has all the expertise in this country for aeronautical SAR coordination is the air force, and they do it well, very well. The fact that there is one phone number that you can call to get a dedicated aeronautical SAR response and that it's either Halifax, Trenton or Victoria, works extremely well. There is no reason there cannot be a value-added capability in other places that works the same way. It is just a civilian entity, and Canada's SAR system has very much capitalized on civilian partnerships. The only organization in the Canadian SAR system that is not civilian is the air force.

Senator McInnis: Value added how?

Mr. Reid: Value added by adding a capability in a place where, currently, there is no coverage, but treat it in the same way. If an incident occurs, you are going to tap into that resource as if it's

Le sénateur McInnis : L'armée procède de cette façon, n'est-ce pas?

M. Reid : Non, l'armée ne s'occupe pas d'opérations de recherche et sauvetage territoriales ou provinciales. C'est une lacune. C'est différent dans chaque province. Certaines provinces ont plus de moyens que d'autres pour effectuer des opérations terrestres avec une intervention aéronautique, mais les difficultés sont extraordinaires. Terre-Neuve, le Nord et la Colombie-Britannique ont des problèmes énormes, et, malheureusement, ce sont les pires situations où il n'y a pas d'alignement ou encore que les moyens sont insuffisants pour répondre aux besoins. C'est à ce moment-là qu'on peut demander l'aide du gouvernement fédéral et qu'une ressource de l'ARC peut être demandée par le biais du CCCOS. Mais, jusque-là, c'est la province ou le territoire qui est censé se débrouiller pour intervenir avec son propre système de recherche et sauvetage aéronautique. Le problème est qu'il n'y a pas de norme civile permettant à une organisation d'hélicoptères Cougar de produire ce genre de moyen parce que la norme de service, de formation et de développement est celle de la force aérienne.

Ce serait une amélioration bienvenue si un gouvernement territorial pouvait dire, par exemple, qu'il a besoin d'une ressource d'intervention aéronautique dans un certain endroit du Nord pour répondre aux besoins terrestres et s'il pouvait approcher une entreprise d'hélicoptères Cougar pour lui proposer un contrat le chargeant d'offrir ce service. La force aérienne pourrait alors dire : « Puisque vous êtes sur place, nous ferons appel à vous également. »

En fait, il y a trois types de demandes de services de recherche et sauvetage : les incidents aériens, les incidents maritimes et les incidents terrestres. Cela ne semble pas très logique de passer contrat pour une ressource concernant un volet seulement. On peut penser qu'il faut prévoir les trois puisqu'on atteindra ainsi le maximum d'efficacité et le maximum de rendement sur investissement.

Du point de vue de la coordination, l'organisation qui a toute l'expertise nécessaire pour la coordination des opérations aéronautiques est la force aérienne, et elle remplit très bien son rôle. Le fait qu'il y ait un seul n^{o} de téléphone à appeler pour obtenir une intervention aéronautique dédiée, qu'on parle de Halifax, de Trenton ou de Victoria, est extrêmement efficace. Il n'y a aucune raison de ne pas avoir une capacité à valeur ajoutée dans d'autres endroits sur le même modèle. C'est simplement une entité civile, et le système de recherche et sauvetage du Canada s'appuie énormément sur les partenariats civils. La seule organisation dans ce système qui ne soit pas civile est la force aérienne.

Le sénateur McInnis : En quoi y a-t-il valeur ajoutée?

M. Reid : Au sens où on ajoute des moyens dans un endroit où il n'y a pas de protection actuellement, mais le même traitement. Si un incident se produit, on va solliciter cette ressource comme si

the same type of air force squadron that exists there. It has the same people; it has the same types of capabilities. It's just the matter of the communication and the alignment.

Senator McInnis: Under control of the air force, right?

Mr. Reid: Yes, the coordination doesn't change, and it shouldn't change. The air force also has, strategically, a fantastic system for coordinating and driving and surging when necessary. They have an abundance of resources that they can call to bear if something catastrophic does occur. When one resource isn't available, they can tap into something else. Even if it does fall outside of a primary SAR mandate, they have airlift. They have helicopters, and they tap into the navy as well. From a coordination perspective, that part works fabulously.

Senator McInnis: So you are already moving in that direction?

Mr. Williams: That's what we'd like to do.

Mr. Reid: We have requested support from the air force to consider that and open the dialogue and look at maybe outside-of-the-box ways to add to, not take away from or threaten, existing systems, add value to it.

Mr. Banks: You have to understand that we come from this world, and we've seen it many times. Steve and I both lived up in the North doing these missions. Just the remoteness and some of the risk that we saw putting in our parajumpers far up North, 27 hours before a helicopter can get to them, puts them in peril as well, not just the victims. Staging a couple of these remote areas, reducing significantly the response and providing to the people in the North and not risking sending all the assets North that need to remain in the South to carry on with their mandate. There are lots of ideas there.

Senator McInnis: The North is certainly an issue that has been raised here a couple of times.

Senator Enverga: Thank you for the presentation. You were here when I was asking the previous witnesses what their wish list was, and I was hoping they would say Cougar.

My question is: In case the idea came up that we could integrate Cougar within the SAR system, what kind of dollar value are we looking for? Would it be as cost effective or more cost effective than what we have now, like the air force? Would it be cheaper to operate that?

Mr. Williams: It is expanding on what is already there. We are not saying take away anything that currently exists. It is expanding on that. Yes, there is a dollar value attached to that. We spoke about the S-92 platform. As Cougar, I think what we can leverage is part of our offshore oil and gas clients for

c'était le même genre d'escadron de la force aérienne qui existe ailleurs. Ce sont les mêmes personnes, les mêmes moyens, mais c'est une question de communications et d'alignement.

Le sénateur McInnis : Sous le contrôle de la force aérienne, n'est-ce pas?

M. Reid : En effet. La coordination ne change pas, et elle ne devrait pas changer. La force aérienne a également, sur le plan stratégique, un système fantastique de coordination et d'intervention en cas de besoin. Elle a beaucoup de ressources à mettre en œuvre si une catastrophe se produit. Si une ressource n'est pas disponible, elle peut faire appel à une autre. Même si cela s'écarte d'un mandat strict de recherche et sauvetage, elle peut offrir du transport aérien. Il y a les hélicoptères et elle peut aussi faire appel à la Marine. Du point de vue de la coordination, son expérience est fabuleuse.

Le sénateur McInnis : Donc vous vous orientez déjà dans cette direction, n'est-ce pas?

M. Williams : C'est ce que nous aimerions faire.

M. Reid : Nous avons demandé à la force aérienne de l'envisager et d'ouvrir le dialogue pour voir s'il est possible, en réfléchissant hors des sentiers battus et sans priver ni menacer personne, d'ajouter aux systèmes existants, de leur ajouter de la valeur.

M. Banks : Il faut comprendre que nous venons de ce monde et que nous l'avons vu plusieurs fois. Steve et moi avons vécu dans le Nord et y avons fait ces missions. Le simple éloignement et quelques-uns des risques que nous avons constatés en enfilant nos parachutistes dans le Grand Nord, 27 heures avant qu'un hélicoptère puisse atteindre le lieu de l'incident, tout cela les expose au danger également, il n'y a pas que les victimes. On peut organiser quelques-uns de ces secteurs éloignés, on peut réduire considérablement le délai d'intervention et on peut fournir des ressources aux gens du Nord pour éviter d'envoyer dans le Nord des ressources qui doivent rester dans le Sud pour continuer de remplir leur mandat. Il y a toutes sortes de solutions.

Le sénateur McInnis : Le Nord est effectivement un problème dont on nous a parlé à quelques reprises.

Le sénateur Enverga : Merci de votre exposé. Vous étiez là quand j'ai demandé aux témoins précédents ce qu'ils souhaiteraient, et j'espérais qu'ils parlent de Cougar.

Ma question est la suivante : si on envisageait d'intégrer Cougar au système de recherche et sauvetage, de quel ordre de grandeur serait la valeur en dollars? Est-ce que ce serait aussi rentable ou plus rentable que ce que nous avons actuellement, comme la force aérienne? Est-ce que cela coûterait moins cher à exploiter?

M. Williams : Ce serait une expansion de ce qui existe déjà. On ne parle pas de supprimer quoi que ce soit. C'est une expansion. Oui, il y a une valeur en dollars associée à cela. Nous vous avons parlé de la plate-forme S-92. Je pense que Cougar peut tirer parti des ressources réservées à ses clients des entreprises pétrolières et

passenger movement. We have 11 aircraft on the East Coast of Canada. We have about $30 million worth of spares that support those 11 aircraft. If we were placing one or two aircraft in strategic positions, it could be supported by the infrastructure that we already have in place. You are not building a full infrastructure to support that one base — our dispatch centre, our maintenance teams, our training programs and the availability of spares.

There is one thing I would like to add: Our search and rescue program that we currently provide for oil and gas has some magnificent reliability stats, and it's because we are not bringing in parts or anything to support one or two aircraft. We're bringing in parts to support 11, 12, all in one consolidated area. Our up-tonne of aircraft we refer to is magnificent.

Senator Enverga: I know that your rescue time is faster by 10 minutes, from 30 to 20. Do you think you can maintain this 20-minute response time all over Canada's coast?

Mr. Williams: Rick mentioned something key about how we did little things. We built a hangar that was 18 feet deeper so that we could specifically have a tug hooked up to it 24/7 so that we didn't lose two minutes hooking up a tug to tow an aircraft out. You need a fit-for-purpose facility to get to 20 minutes. Wouldn't you agree, Rick?

Mr. Banks: It has to be risk-assessed. There have to be management-of-change processes. You do it in such a way that you are sure. We went from an hour to 45 to 30 and then to 20, and I think that is the cutoff. Even though we are doing it sometimes or most of the time quicker than that, you have to put a number on it and say, "This is the safe zone, and we won't accept anything less." However, I think that, in this day and age, our teams have proven that it's effective, that it's safe and that there is no risk, and it's the way we have rolled it out. We could do that in any strategic location.

Mr. Williams: The biggest key, where we went from one hour to 30 to 20 minutes, is the crews residing on site. It has to be the firehall concept to get 20 minutes. You could waste 20 minutes just getting out of bed. The 20 minutes has a bunch of things involved, but, to me, if you are going to start at a baseline, you have to have fit-for-purpose facilities where the crew is on site. The combination is on site.

Senator Enverga: You mentioned that you have some equipment there already, but then how would you compare yourself with the air force? What do you have that they don't? Are you better equipped than the air force?

Mr. Reid: The reason I want to take that one is because, three month ago, they asked me to come in and give them some advice, and they asked that question: Why are we different? How are we

gazières en mer pour le transport de passagers. Nous avons 11 hélicoptères sur la côte Est du Canada. Nous avons pour environ 30 millions de dollars de pièces de rechange pour ces appareils. Si nous placions un ou deux appareils dans des endroits stratégiques, ils pourraient être appuyés par l'infrastructure déjà en place. Il n'est pas nécessaire de construire toute une infrastructure pour appuyer une base — notre centre de régulation, nos équipes d'entretien, nos programmes de formation et la disponibilité de pièces de rechange.

J'aimerais ajouter une chose : le programme de recherche et sauvetage que nous fournissons actuellement aux entreprises pétrolières et gazières affiche des statistiques de fiabilité magnifiques, et c'est parce que nous n'apportons pas des éléments ou quoi que ce soit à l'appui d'un ou deux appareils, mais de 11 ou 12 appareils dans une même région. La disponibilité d'appareils est magnifique.

Le sénateur Enverga : Je sais que votre délai d'intervention est plus rapide de 10 minutes, passant de 30 à 20. Est-ce que vous pensez pouvoir garder ce délai d'intervention de 20 minutes sur tout le littoral canadien?

M. Williams : Rick a parlé de quelque chose d'important au sujet des petites choses que nous faisons. Nous avons construit un hangar de 18 pieds plus profond pour pouvoir y relier un remorqueur 24 heures sur 24, 7 jours sur 7, pour éviter de perdre deux minutes à relier un remorqueur qui remorquera l'appareil à l'extérieur. Il faut une installation adaptée pour arriver à un délai de 20 minutes. Tu ne crois pas, Rick?

M. Banks : Il faut évaluer les risques. Il faut des méthodes de gestion du changement. Il faut faire les choses de telle façon qu'on est sûr. Nous sommes passés d'un délai d'une heure à 45 minutes, puis 30, puis 20, et je pense que c'est la limite. Même si on arrive parfois ou presque tout le temps à faire moins, il faut fixer un chiffre et dire : « C'est une zone sûre et on n'acceptera rien de moins. » Mais je pense que, aujourd'hui, nos équipes ont fait la preuve que c'est efficace, sûr et sans risque et que c'est dû à la façon dont c'est organisé. On peut faire la même chose dans n'importe quel endroit stratégique.

M. Williams : Le facteur le plus important dans la réduction du délai d'une heure à 30 ou 20 minutes, ce sont les équipes sur place. Il faut imiter le fonctionnement d'une caserne de pompiers pour arriver à un délai d'intervention de 20 minutes. On peut perdre 20 minutes simplement à sortir du lit. Ces 20 minutes englobent beaucoup de choses, mais, à mon avis, au départ il doit y avoir une installation adaptée où l'équipe est sur place. La combinaison est sur place.

Le sénateur Enverga : Vous avez dit que vous avez déjà du matériel, mais en quoi est-ce que vous êtes comparable à la force aérienne? Qu'est-ce que vous avez qu'elle n'a pas? Est-ce que vous êtes mieux équipés que la force aérienne?

M. Reid : La raison pour laquelle je tiens à répondre à cette question est que, il y a trois mois, on m'a demandé des conseils et on m'a posé la question : Pourquoi sommes-nous différents? En

different? What challenges would we face? Why can we not gain traction as a comparable or reputable or viable option to add value to this SAR system?

I turned them down at first because I didn't want to be the guy to expose a difference between this organization and an air force organization. I pretty much know the differences. I spent a lot of time in the air force. I also was the author of the *30-minute Continuous Readiness Posture Force Generation Analysis* when I was in the Canadian Forces as a SAR policy advisor here at NDHQ. I have really dug into the requirements that make an aeronautical SAR capability sustainable. I went back to them afterwards and I said, "I'm going to do it and provide that advice because I think this is a really great opportunity here, but you need to know what the differences are so you can recognize them, maybe make some adjustments and identify exactly what would be required for you to deliver the same type and level of service that is expected and that the air force delivers." That's what we went back and forth on for the last three months.

There are some challenges, but some of the biggest challenges are, first, that there are no civilian SAR standards to allow them to generate and build that capability on their own. Whether they like it or not, the air force is linked to civilian SAR for the foreseeable future, and they have no choice but to pull people from that organization to share their experience because there is no such thing as a SAR licence in Canada. There is an air transport pilot licence and various categories for delivering civilian aeronautical services, but there is no recognized licence for delivering SAR capability on the civilian side. That's a big challenge.

The other big challenge in Canada is that when a SAR asset launches and goes on a task, it could fly for 1,000 miles before getting on scene. Over a course of 1,000 miles, there are a lot of challenges with making sure that the capability is sustainable in the 24-hour period. For example, there can be a crew exchange if the aircraft breaks on the road? Can we get parts and people to it to keep the system alive? That's what the air force has in spades. It has the ability to support, not just with one resource but with a team of resources. Whether it's two aircraft or a Coast Guard vessel or auxiliary, the team works together to deliver the effect needed.

For Cougar to offer an opportunity to enhance maritime SAR or aeronautical SAR or GSAR, it doesn't make sense to do it on their own because they cannot do it on their own. They need to work together. It will not work if they can't. However, there is a slight difference. I'll use one example. With their rescue specialists who use the hoist to lower SAR techs down on the cable, in the air force that person is also a recognized aerospace maintenance or flight engineer. So when the aircraft lands away from home base,

quoi sommes-nous différents? Quelles sont nos difficultés? Pourquoi ne pouvons-nous pas gagner du terrain comme solution comparable ou réputée pour ajouter de la valeur au système de recherche et sauvetage?

J'ai commencé par refuser parce que je n'avais pas envie d'être celui qui expose les différences entre cette organisation et une organisation de la force aérienne. Je connais bien ces différences. J'ai passé beaucoup de temps dans la force aérienne. J'ai écrit un article intitulé *30-minute Continuous Readiness Posture Force Generation Analysis* quand je travaillais dans les Forces canadiennes comme conseiller stratégique en matière de recherche et sauvetage, ici au quartier général de la Défense nationale. J'ai vraiment réfléchi aux conditions de durabilité d'un système de recherche et sauvetage aéronautique. Je suis retourné les voir par la suite et je leur ai dit : « Finalement, je vais le faire et je vais vous donner les conseils que vous avez demandés parce qu'il y a vraiment de belles possibilités ici, mais vous devez savoir quelles sont les différences pour les reconnaître, apporter certaines modifications et savoir exactement ce qu'il faut pour offrir le même niveau de service que ce qui est demandé et que la force aérienne offre. » C'est cela le va-et-vient des trois derniers mois.

Il y a des difficultés, et d'abord le fait qu'il n'y a pas de normes civiles permettant de produire et de construire leurs propres ressources. Qu'on le veuille ou non, la force aérienne est reliée au système civil de recherche et sauvetage pour les prochaines années, et on ne peut pas faire autrement que de demander aux gens de cette organisation de partager leur expérience parce qu'il n'y a rien qui ressemble à une licence SAR au Canada. Il existe une licence de pilote de transport aérien et diverses catégories de services aéronautiques civils, mais il n'y a pas de licence reconnue en matière de recherche et sauvetage dans le civil. C'est un gros problème.

L'autre difficulté importante au Canada est que, lorsqu'un appareil de recherche et sauvetage est sollicité, il peut avoir à parcourir 1 000 milles avant d'arriver sur les lieux de l'incident. Il y a beaucoup de difficultés à surmonter sur un parcours de 1 000 milles, dont le fait de garantir que la ressource peut tenir sur une période de 24 heures. Par exemple, est-ce qu'il peut y avoir échange d'équipe si l'appareil tombe en panne en cours de route? Est-ce qu'on peut acheminer des pièces de rechange et du personnel pour que le système reste fonctionnel? C'est ce que la force aérienne a en abondance. Elle peut garantir un appui, pas seulement avec une ressource, mais avec une équipe de ressources. Que ce soit deux hélicoptères ou un bateau de la Garde côtière ou de la Garde côtière auxiliaire, l'équipe travaille en collaboration pour obtenir le résultat nécessaire.

Pour que Cougar soit un atout dans le système de recherche et sauvetage aéronautique ou terrestre, il ne faut pas l'envisager en propre, car elle ne peut le faire toute seule. Il faut une collaboration, sinon cela ne marchera pas. Mais il y a une petite différence. Je vais vous donner un exemple. Grâce aux spécialistes en sauvetage qui utilisent le palan pour descendre les techniciens le long du câble, dans la force aérienne, cette personne est reconnue comme mécanicien d'entretien ou mécanicien à bord.

he can do the aircraft turnaround and he can recertify it so the next day it can take off again and fly home. In the civilian SAR world, that one person is used only as a hoist operator, so if that aircraft goes away from its main operating base, there is no one to certify it for its next day's use. Now you have to fly someone else in to turn that aircraft around, and that is extremely cost inefficient.

There are differences, and we've gone through a process of identifying the differences, how they can be addressed and what opportunities might be possible to make this something that actually does work, because I think the possibility is endless. I think that there are a lot of other people that think that, too.

Mr. Williams: The differences can be easily overcome with the partnership. We can both become a part of that model that works.

I agree with what Steve is saying, but when we looked at the differences and some of the challenges that we have, doing it alone presents big challenges, but doing it in partnership with the air force today and what is already in place with us becoming part of it to augment what they have is definitely the future.

Senator Enverga: Basically, you are already there and in place, so the air force doesn't have to do much regarding being in place in the area. That could be the value. Also, it would be cheaper to have you than for them to create another agency.

Mr. Williams: To save their own assets, yes.

Mr. Reid: For the air force to generate a new squadron somewhere in the North, for example, the logistics and challenges would be extraordinary. Cougar offers fly in/fly out capability where if you put a piece of infrastructure in a location, you can have your people and assets there very quickly. You will probably have a lot of RCAF experience occupy those cockpits and "back enders" as well. You will get a return on previous investment that the air force has already made in those people who have perhaps moved on to something else.

There is value in recuperating and value in efficiency and generating a new capability, and there is a lot of opportunity there.

Senator Enverga: You will be able to employ retired air force personnel, is that how it works?

Mr. Reid: That certainly would be an option.

Mr. Banks: Many of them come to us retired at 38 or 39 years old; million-dollar men. We hand select them. We have anywhere from 50 to 60 resumés on my desk at a time, but we have the opportunity to hand select and take the very best that we want.

Mr. Williams: I threw one bouquet to the oil industry. The oil companies have some strict criteria around crewing. A transport pilot to meet the Transport Canada minimum standards is one thing to become a pilot, but the oil companies have their own; they ratchet it up. Not only that, we get audited against those

Donc, quand l'appareil se pose en dehors de sa base, cette personne peut s'occuper de la rotation au sol et apporter les rectificatifs pour que l'appareil puisse décoller le lendemain et rentrer à sa base. Dans le civil, le responsable est seulement opérateur de palan, et, si l'appareil s'éloigne de sa base, il n'y a personne pour certifier son utilisation le lendemain. Il faut donc embarquer quelqu'un d'autre pour ce travail, et cela devient très peu rentable.

Il y a des différences, et nous les avons identifiées et envisagé des solutions. Nous avons imaginé des moyens de rendre tout cela fonctionnel, parce que je crois que les possibilités sont infinies. Et je crois que beaucoup d'autres gens pensent comme moi.

M. Williams : On peut facilement surmonter les difficultés grâce au partenariat. On peut tous faire partie d'un modèle qui fonctionne.

Je suis d'accord avec Steve, mais, quand on examine les différences et certaines de nos difficultés, on se rend compte qu'on ne peut pas le faire tout seuls, mais que la solution d'avenir passe absolument par un partenariat avec la force aérienne et l'utilisation de ce qui existe déjà en y ajoutant notre part complémentaire.

Le sénateur Enverga : Vous êtes déjà sur place, donc la force aérienne n'a pas grand-chose à faire de ce côté-là. Cela pourrait être intéressant. De plus, cela coûterait moins cher que ce soit vous et non la force aérienne qui crée un autre organisme.

M. Williams : Pour épargner leurs propres ressources, en effet.

M. Reid : Si la force aérienne devait créer un nouvel escadron quelque part dans le Nord, par exemple, la logistique et les difficultés seraient énormes. Cougar offre un service de navette, et, si vous voulez créer une infrastructure quelque part, on peut y acheminer très rapidement votre personnel et vos ressources. Il y aura aussi probablement des gens d'expérience de l'ARC dans ces cockpits et ces « parties arrière ». Vous recueillerez le fruit d'un investissement antérieur de la force aérienne dans ces gens qui sont peut-être passés à autre chose entre-temps.

Il est intéressant de récupérer de l'efficacité et de produire de nouveaux moyens. Il y a beaucoup de possibilités.

Le sénateur Enverga : Vous pourrez employer du personnel à la retraite de la force aérienne, c'est ce que vous voulez dire?

M. Reid : Ce serait certainement à envisager.

M. Banks : Beaucoup de ces retraités nous arrivent à l'âge de 38 ou 39 ans. Ils valent de l'or. Nous les sélectionnons un par un. J'ai entre 50 et 60 curriculum vitae à la fois sur mon bureau, mais nous avons la possibilité de les choisir et de prendre les meilleurs.

M. Williams : J'ai parlé tout à l'heure du secteur pétrolier. Les entreprises pétrolières appliquent des critères stricts aux équipages. Un pilote de transport doit respecter les normes minimales établies par Transports Canada, mais les entreprises pétrolières ont leurs propres normes, elles sont plus exigeantes.

standards annually, sometimes semi-annually. It happens quite often. We love the fact that we are held to the standard and audited against the standard. The oil companies under the OGP, the Oil & Gas Producers, have some very stringent rules around the requirement for our flight crews.

Senator Enverga: I must be watching too many movies, but are you guys equipped in case there is a search and rescue operation, for example, and you need to rescue a boat from piracy or terrorists? Or do you have to call the air force?

Mr. Reid: That would be a real stretch of the mandate.

Mr. Banks: I don't think it would be RCAF, either; that would be JTF.

Senator Raine: This has been great. I have a couple of questions. How long does it take to get a release from the oil companies if you have to go on a SAR mission?

Mr. Williams: What we have been doing is going and then informing, but with some blanket criteria.

I assume you would all be familiar with the Canadian Newfoundland Offshore Petroleum Board, the petroleum regulator. In order for us to fly a passenger aircraft to and from the oil rigs, there must be a 20-minute response time. The oil companies have to live up to that mandate of the board. If this was a life and death situation, for example, if we had a passenger aircraft that was just flown to an offshore platform, it would remain there and not fly back until our asset became available. We have certain protocols and guidelines around that now that. We've even had oil and gas producers that have cancelled flights and have said we will leave our flight on the ground. You do that mission. There are protocols around it so we wouldn't be delayed because of it.

Senator Raine: It seems to me that for the Canadian public the way it is right now, it's probably working pretty well — especially since you have been not been charging to date. I would guess that's not really sustainable, especially if you are looking at going further afield to the North. You are looking to develop some kind of a contract or a callout relationship with the Canadian air force for this kind of SAR mission, and perhaps because you would have that contract, then purchasing one more machine would give you a little more capacity?

Mr. Williams: What we talked about is a small area. Basically, the Avalon Peninsula in Newfoundland is where we use our current assets. But for the bigger picture where we want to go, there are no assets.

There are two components of what we are talking about, and I don't want to overshadow the one where we are tasking an asset in Newfoundland today. It is the bigger picture of seeing Cougar being injected into the search and rescue program. We are managing how we use this asset that is 100 per cent dedicated and

Non seulement cela, mais nous faisons l'objet de vérifications en fonction de ces normes tous les ans, parfois tous les six mois. Cela arrive très souvent. Nous apprécions le fait d'être tenus à des normes et de faire l'objet d'un contrôle. Les entreprises pétrolières qui relèvent de l'OGP, l'Organisation internationale des producteurs de pétrole et de gaz, ont certaines règles très strictes concernant le personnel navigant.

Le sénateur Enverga : Je dois regarder trop de films, mais est-ce que vous êtes équipés, par exemple, pour porter secours à un bateau attaqué par des pirates ou des terroristes? Ou est-ce que vous devez appeler la force aérienne?

M. Reid : Cela pousserait très loin notre mandat.

M. Banks : Je ne pense pas que ce serait l'ARC non plus; ce serait plutôt la FOI.

La sénatrice Raine : Très intéressant. J'ai quelques questions. Combien de temps faut-il pour obtenir l'autorisation de l'entreprise pétrolière si vous devez aller en mission de recherche et sauvetage?

M. Williams : En fait, nous y allons et nous l'informons, mais en fonction de certains critères généraux.

Je suppose que vous connaissez tous l'Office Canada-Terre-Neuve des hydrocarbures extracôtiers, qui est l'organisme de réglementation du secteur pétrolier. Pour transporter des passagers entre la terre et les plates-formes pétrolières, il faut respecter un délai de 20 minutes. Les entreprises pétrolières doivent respecter cette exigence de l'Office. Si c'était une question de vie ou de mort, par exemple, si on venait d'envoyer un appareil sur une plate-forme en mer, il y resterait et ne reviendrait pas avant que notre ressource soit disponible. Il y a maintenant des protocoles et des directives à appliquer. Certains producteurs ont même annulé des vols et dit qu'ils garderaient l'appareil au sol. Faites votre mission. Il y a des protocoles pour éviter les retards à cause de cela.

La sénatrice Raine : Il me semble que, pour les Canadiens, les choses marchent bien actuellement, surtout que vous n'avez rien facturé jusqu'ici. J'imagine que cela ne peut pas vraiment durer, surtout si vous pensez aller plus loin au Nord. Vous voulez développer une sorte de relation contractuelle ou d'urgence avec la force aérienne pour ce genre de mission de recherche et sauvetage, et peut-être que, si vous aviez ce contrat, vous pourriez acheter un autre appareil qui vous donnerait un peu plus de capacité, c'est cela?

M. Williams : Nous avons parlé d'un petit secteur. En fait, c'est dans la péninsule d'Avalon, à Terre-Neuve, que nous utilisons nos ressources actuelles. Pour les opérations plus vastes que nous souhaitons pour l'avenir, nous n'avons pas de ressources.

Il y a deux éléments dans ce scénario, et je ne veux pas éclipser nos activités actuelles à Terre-Neuve. La perspective plus vaste vise à intégrer Cougar au programme de recherche et sauvetage. Nous nous débrouillons avec cette ressource entièrement réservée aux entreprises pétrolières et payée par elle, mais ce n'est pas

paid for by the oil companies, but it's not easy. There are some times when it is not available. If we have an aircraft airborne 200-mile offshore on the way back, we can't launch our asset to go outside of our region because then we would be going against the petroleum board's regulations that say you can't do that. We have to be cognizant of that and our mandate, and contract obligation has to be met first. If I gave a false impression that it was always available, no, that's not correct. We do manage it for isolated cases.

Senator Raine: I think what has evolved is pretty incredible, and I appreciate why you would like to formalize it a bit. One thing is the fishermen who you save or rescue who happen to be near where you are. However, if you are looking at something further away, then you need to plan and be part of a bigger picture. Is that what you are seeking to do with the air force?

Mr. Williams: Correct. We wouldn't be able to take that asset to go, for example, to St. Anthony on the northern peninsula, or anywhere like that, because then our assets are away from our region, and there is no service to the offshore oil and gas and we are not meeting our mandate requirements in our contract there.

Newfoundland and Labrador is just one small area, but our broader vision is more to do with a bigger region in Canada where we can have a base of service set up to support and complement the SAR program today.

Senator Raine: I think it is an excellent model for all parts of our SAR system. Obviously it is always better if people are busy doing other things and you stop what you are doing and go and rescue someone rather than just sitting and waiting for someone to get into trouble. You could never have a system. I really appreciate what you are doing. Thank you very much.

The Chair: Mr. Williams, Mr. Banks, Mr. Reid, thank you very much for being with us this evening and sharing with us the extensive operations of Cougar Helicopters. On behalf of our Standing Senate Committee on Fisheries and Oceans, we would all like to thank you and wish you the best.

Mr. Reid: Thank you very much.

(The committee adjourned.)

OTTAWA, Tuesday, June 7, 2016

The Standing Senate Committee on Fisheries and Oceans met this day at 5:33 p.m. to study Maritime Search and Rescue activities, including current challenges and opportunities.

Senator Fabian Manning (*Chair*) in the chair.

The Chair: Good evening. My name is Fabian Manning, a senator from Newfoundland and Labrador, and I'm pleased to chair this evening's meeting.

facile. Parfois, elle n'est pas disponible. Si un avion envoyé à 200 milles des côtes est de retour, nous ne pouvons pas envoyer notre ressource à l'extérieur de notre région parce que ce serait contraire à la réglementation de l'Office. Nous devons en tenir compte, et nos obligations contractuelles passent avant. Si j'ai donné l'impression que c'était toujours disponible, non, ce n'est pas le cas. Nous nous en servons pour des cas isolés.

La sénatrice Raine : Je pense que la situation a évolué de façon incroyable et je comprends que vous vouliez la formaliser un peu. Il y a les pêcheurs que vous avez sauvés ou secourus parce qu'ils se trouvaient là où vous étiez vous-mêmes. C'est une chose. Mais, si vous voulez aller plus loin, il faut élaborer des plans pour faire partie d'une perspective plus large. Est-ce que c'est ce que vous essayez de faire avec la force aérienne?

M. Williams : C'est cela. On ne pourrait pas envoyer notre appareil, par exemple, à St. Anthony, dans la péninsule, ou dans un endroit comme cela, parce que ce serait en dehors de notre région et qu'il n'y aurait plus de service pour les plates-formes en mer, donc on ne respecterait pas les conditions de notre contrat avec les entreprises.

Terre-Neuve-et-Labrador n'est qu'un petit secteur. Notre vision est beaucoup plus large et englobe le Canada, où nous pouvons installer une base de service pour appuyer et compléter le programme de recherche et sauvetage actuel.

La sénatrice Raine : Je pense que c'est un excellent modèle pour tous les volets de notre système de recherche et sauvetage. Évidemment, il vaut toujours mieux que les gens soient occupés ailleurs et interrompent leurs activités pour porter secours à quelqu'un au lieu d'attendre assis qu'il y ait quelqu'un à secourir. Il ne peut pas y avoir de système dans ce cas. Je vous félicite pour ce que vous faites. Merci beaucoup.

La présidente : Monsieur Williams, monsieur Banks, monsieur Reid, merci beaucoup d'être venus nous voir ce soir et de nous avoir parlé des opérations de Cougar Helicopters. Le Comité sénatorial permanent des pêches et des océans vous remercie et vous souhaite bonne chance.

M. Reid : Merci beaucoup.

(La séance est levée.)

OTTAWA, le mardi 7 juin 2016

Le Comité sénatorial permanent des pêches et des océans se réunit aujourd'hui, à 17 h 33, pour étudier les activités de recherche et de sauvetage maritimes, y compris les défis et les possibilités qui existent.

Le sénateur Fabian Manning (*président*) occupe le fauteuil.

Le président : Bonsoir. Je m'appelle Fabian Manning et je suis un sénateur de Terre-Neuve-et-Labrador. Je suis heureux de présider la réunion ce soir.

The committee is continuing its study on maritime search and rescue activities, including current challenges and opportunities. This evening we will be learning about the role of the Department of National Defence and the Canadian Armed Forces in coordinating and carrying out maritime search and rescue.

We are pleased to welcome by video conference Rear-Admiral John Newton, Commander Joint Task Force Atlantic and Commander Maritime Forces Atlantic. On behalf of the members of the committee, I thank you for joining us today, Rear-Admiral.

I understand you have opening remarks. In the interests of allowing as much discussion as possible in the time available to us, I would ask that you take the floor now and give us your remarks. Then we'll open the floor up for questions with senators.

Rear-Admiral John Newton, Commander Joint Task Force Atlantic and Commander Maritime Forces Atlantic, National Defence: Thank you, Mr. Chairman. Senators, thank you very much for the opportunity to testify before the committee. As an operational commander of search and rescue in Canada, it is an honour to be invited to provide you my thoughts on this essential element of Canadian sovereignty.

I have commanded the Halifax Search and Rescue Region since July 2013, and will continue in my post until July 2017. The Halifax Search and Rescue Region encompasses all of the Atlantic provinces, the eastern half of Quebec, the southern half of Baffin Island and a large area of the western North Atlantic Ocean. It is a very large area, one of three search and rescue regions in Canada, and is indicative of the search and rescue effort in our country.

On regional challenges, in 2015, JRCC Halifax coordinated 2,502 SAR cases. Of these, 1,760 were marine cases, 440 were aeronautical and 192 were humanitarian. The most frequent type of marine search and rescue operation is to provide assistance to disabled vessels and medical evacuation of ships' crew members injured or ill at sea.

Under my authority, I authorize patient transfers on humanitarian grounds in support of regional health authorities. This occurs most frequently in Newfoundland and Labrador.

In my region, the distances are long, the weather challenging and the emergency circumstances are often dire. Fortunately, Canadian SAR forces are crewed by exceptional men and women

Le comité poursuit son étude sur les activités de recherche et de sauvetage maritimes, y compris les défis et les possibilités qui existent. Ce soir, nous apprendrons des choses au sujet du rôle du ministère de la Défense nationale et des Forces armées canadiennes dans le cadre de la coordination et de la réalisation des activités de recherche et de sauvetage maritimes.

Nous sommes heureux d'accueillir, par vidéoconférence, le contre-amiral John Newton, commandant de la Force opérationnelle interarmées (Atlantique) et des Forces maritimes de l'Atlantique. Au nom des membres du comité, je vous remercie d'être là aujourd'hui, contre-amiral.

Je crois savoir que vous avez une déclaration préliminaire. Afin de pouvoir consacrer le plus possible du temps dont nous disposons aujourd'hui à la discussion, je vais vous demander de prendre immédiatement la parole et de nous présenter votre déclaration préliminaire. Puis, nous permettrons aux sénateurs de vous poser des questions.

Contre-amiral John Newton, commandant de la Force opérationnelle interarmées (Atlantique) et des Forces maritimes de l'Atlantique, Défense nationale : Merci, monsieur le président. Mesdames et messieurs les sénateurs, merci beaucoup de m'avoir donné l'occasion de témoigner devant le comité. En tant que commandant opérationnel des activités de recherche et de sauvetage au Canada, c'est un honneur d'être invité ici pour vous dire ce que je pense de cet aspect essentiel de la souveraineté canadienne.

J'assure le commandement de la région de recherche et de sauvetage de Halifax depuis juillet 2013, et je resterai en poste jusqu'en juillet 2017. La région de recherche et de sauvetage de Halifax englobe toutes les provinces atlantiques, la moitié est du Québec, la moitié sud de l'île de Baffin et une grande région du nord-ouest de l'océan Atlantique. C'est une très grande zone, l'une des trois régions de recherche et de sauvetage du Canada, et elle est représentative des efforts de recherche et de sauvetage dans notre pays.

Pour ce qui est des défis régionaux, en 2015, le CCCOS de Halifax a coordonné 2 502 missions de recherche et sauvetage. Du nombre, 1 760 avaient été menées en mer, 440, étaient des missions aéronautiques, et 192, des missions humanitaires. Le type le plus fréquent d'opérations de recherche et de sauvetage maritime sont des situations où on fournit une assistance à des navires désemparés ou dans le cadre desquelles on procède à l'évacuation pour des raisons médicales de membres d'équipage de navires blessés ou malades en mer.

Sous mon autorité, j'autorise le transfert de patients pour des motifs humanitaires à l'appui des régies régionales de la santé. Ce genre de situations se produit fréquemment à Terre-Neuve-et-Labrador.

Dans ma région, les distances sont grandes, les conditions météorologiques, difficiles, et les situations d'urgence, souvent extrêmes. Heureusement, les forces canadiennes de recherche et de

who are passionate in their duties, extremely well-trained and -equipped and have developed formidable experience saving lives.

The region experiences the highest volume of SAR incidents between May and September, the peak period for cruise ships, coastal fisheries, commercial and recreational traffic and adventurer activities. It is also the season when tropical storms are most common.

The winter is the most dangerous for mariners and SAR crews alike. Low-pressure systems churn up the ocean. There is little rest from high winds, rough seas, icing conditions and snow. SAR aircraft routinely reposition to regional airfields to ensure they avoid the worst conditions that would otherwise close their home bases. Survival time in the water for unprotected victims is reduced to minutes.

A constant flow of global commerce to and from the United States passes through this region. Voyaging in the wintertime North Atlantic necessitates storm avoidance in routing through seasonal pack ice. Later in the spring, impenetrable fogs blanket the eastern seaboard, and mariners must navigate with caution past innumerable icebergs. For these reasons, some of the worst maritime disasters have occurred during this season, including the oil rig *Ocean Ranger*, the jack-up rig *Rowan Gorilla I*, the fishing vessel *Andrea Gail*, the oil tanker *MV Flare/P3GL2*, fishing vessel *Melina and Keith II* and the fishing vessel *Miss Ally*, to name but a few.

Along Canada's broad Atlantic continental shelf lies some of the world's most difficult-to-extract energy reserves: Canada's only developed offshore production areas. The oil and gas deposits of offshore Nova Scotia and Newfoundland and Labrador demand permanently assigned SAR forces contracted from industry and working in close liaison with federal capabilities.

As much as these massive offshore sites are a constant source of human activity on the high seas, and therefore a SAR concern, they offer a remote base for refueling and to land on for helicopters in the conduct of their SAR duties over the deep ocean. Similarly, new mining activities in the North and the modern merchant ships that service them offer SAR resources in the event of SAR cases in those remote areas.

Cruise ships are now regular visitors to the Atlantic Provinces and increasingly into the North, as highlighted by the planned Northwest Passage transit of the *Crystal Serenity* in 2016. The passage of thousands of visitors in our coastal waters raises the

sauvetage sont composées de femmes et d'hommes exceptionnels qui s'acquittent de leurs fonctions avec passion, qui sont extrêmement bien formés et bien équipés et qui ont acquis une formidable expérience liée au fait de sauver des vies.

La région affiche le plus grand nombre d'incidents de recherche et de sauvetage de mai à septembre, la période de pointe des bateaux de croisière, des pêches le long des côtes, de la circulation commerciale et récréative et des activités de type aventure. C'est aussi la saison où les tempêtes tropicales sont les plus courantes.

L'hiver est la période la plus dangereuse pour les gens de mer et les équipages de recherche et de sauvetage. Les systèmes de basse pression agitent la mer. Les grands vents, les mers démontées, les conditions glaciales et la neige nous laissent peu de répit. Les aéronefs de recherche et de sauvetage sont souvent repositionnés sur des terrains d'aviation régionaux afin d'éviter les conditions extrêmes qui exigent la fermeture de leur base principale. La durée de survie dans l'eau pour les victimes sans protection se limite à quelques minutes.

Il y a un flux constant de navires qui soutiennent le commerce mondial à destination et en partance des États-Unis. Naviguer en hiver dans l'Atlantique Nord exige des mesures d'évitement des tempêtes, et il faut emprunter des trajets permettant d'éviter les banquises saisonnières. Plus tard, au printemps, un brouillard épais enveloppe le littoral est, et les gens de mer doivent naviguer avec précaution pour éviter les innombrables icebergs. Pour ces raisons, certaines des pires catastrophes maritimes se sont produites durant cette saison, y compris les événements liés à la plateforme pétrolière *Ocean Ranger*, la plateforme de forage autoélévatrice *Rowan Gorilla I*, le navire de pêche *Andrea Gail*, le pétrolier *MV Flare/P3GL2*, le navire de pêche *Melina and Keith II* et le navire de pêche *Miss Ally* pour ne nommer que ceux-là.

On trouve le long du plateau continental de l'Atlantique du Canada certaines des réserves énergétiques les plus difficiles à extraire du monde : il s'agit des seules zones de production extracôtières exploitées par le Canada. Les gisements de pétrole et de gaz naturel au large des côtes de la Nouvelle-Écosse et de Terre-Neuve-et-Labrador exigent l'affectation en permanence de forces de recherche et de sauvetage embauchées par l'industrie. Ces forces travaillent en étroite liaison avec les capacités fédérales.

Même si ces imposants sites extracôtiers constituent une source constante d'activité humaine en haute mer, et, par conséquent, une préoccupation du point de vue de la recherche et du sauvetage, ils offrent une base éloignée où les hélicoptères qui s'acquittent de tâches de recherche et de sauvetage au grand large peuvent atterrir et se ravitailler. Dans un même ordre d'idées, dans ces régions éloignées, les nouvelles activités d'exploitation minière dans le Nord et les navires marchands modernes qui s'y rendent constituent des ressources de recherche et de sauvetage en cas de besoin.

Les navires de croisière sont devenus des visiteurs réguliers dans les provinces atlantiques et sont de plus en plus présents dans le Nord, comme le montre bien le fait que le *Crystal Serenity* prévoit passer par le passage du Nord-Ouest en 2016. Le passage

spectre of a major maritime incident. Increasingly, adventure and ecotourism agents are operating in northern waters where deep fjords, abundant marine life and icebergs are the backdrop of recreational activities.

All this demands the active management of interagency relationships, SAR planning and open lines of communication in order to permit effective response to maritime and aeronautical SAR cases.

On response, JRCC Halifax is responsible for coordinating, controlling and conducting all aeronautical and maritime SAR responses. JRCC Halifax is manned by specialist SAR operators from the Coast Guard and the Royal Canadian Air Force. The centre is operational 24 hours a day, 7 days a week. It is the nucleus of all East Coast SAR activities. It is co-located with the Marine Security Operations Centre. The centre builds the detailed picture of shipping in the region and aids the SAR first responders to quickly locate their target and communicate with other vessels in proximity to the distress.

Information-sharing and dissemination, and directing a coordinated SAR response employing a wide range of primary, secondary and community-based capabilities is facilitated by the centre's co-location in the primary operational headquarters of the Commander Joint Task Force Atlantic. The joint task force ensures that SAR cases that progress to consequence management are effectively managed with primary maritime and land partners.

In addition to JRCC Halifax, there is one Maritime Rescue Sub-Centre within the Halifax area of responsibility, located in Quebec City, and MRSC Quebec facilitates accurate SAR communication across the predominantly French areas of northern New Brunswick, the Gulf of St. Lawrence and in the St. Lawrence River. During SAR missions that require air support, MRSC Quebec requests assistance from JRCC Halifax aeronautical coordinators.

SAR dispatchers examine many parameters, including current and future environmental data like temperature, wind, waves and currents. They analyze terrain, distance from the nearest available SAR assets, the severity of the case and other ongoing cases in the region in order to determine the best SAR response.

de milliers de visiteurs dans nos eaux côtières soulève le spectre d'un incident maritime majeur. De plus en plus, des agents dans les domaines de l'aventure et de l'écotourisme sont présents dans les eaux nordiques où les profonds fjords, la faune abondante et les icebergs sont le théâtre d'activités de loisirs.

Tout ce qui précède exige une gestion active des relations interagences, une planification des activités de recherche et de sauvetage et des lignes de communication ouvertes afin de permettre l'intervention efficace en cas d'événements maritimes et aéronautiques exigeant une intervention de recherche et de sauvetage.

En ce qui a trait aux interventions, le CCCOS de Halifax est responsable de la coordination, du contrôle et de la réalisation de toutes les interventions de recherche et de sauvetage de nature aéronautique et maritime. Le Centre conjoint compte sur des spécialistes des opérations de recherche et de sauvetage de la Garde côtière et de l'Aviation royale canadienne. Il est opérationnel 24 heures sur 24, 7 jours sur 7. C'est le centre de toutes les activités de recherche et de sauvetage de la côte Est. Il se trouve au même endroit que le Centre des opérations de la sûreté maritime. Ce dernier brosse un portrait détaillé des activités d'expédition dans la région et aide les premiers intervenants responsables de la recherche et du sauvetage à situer rapidement leur cible et à communiquer avec les autres bâtiments à proximité du signal de détresse.

L'échange d'information, la communication de l'information et la direction d'une intervention coordonnée de recherche et de sauvetage faisant intervenir un large éventail de capacités primaires, secondaires et communautaires sont facilités par le partage des locaux du poste de commandement opérationnel principal du Commandement de la Force opérationnelle interarmées (Atlantique). La Force opérationnelle interarmées s'assure que les dossiers de recherche et de sauvetage qui passent à l'étape de la gestion des conséquences sont gérés efficacement en collaboration avec les principaux partenaires maritimes et terrestres.

En plus de CCCOS de Halifax, il y a un centre secondaire de sauvetage maritime dans la zone de responsabilité de Halifax. Ce centre secondaire est situé dans la ville de Québec, et le MRSC de Québec facilite une communication précise en matière de recherche et de sauvetage dans les zones majoritairement francophones du nord du Nouveau-Brunswick, du golfe du Saint-Laurent et du fleuve Saint-Laurent. Durant les missions de recherche et de sauvetage qui exigent un soutien aérien, le MRSC de Québec demande l'aide des coordonnateurs aéronautiques du CCCOS de Halifax.

Les répartiteurs responsables des activités de recherche et de sauvetage examinent beaucoup de paramètres, y compris les données environnementales actuelles et futures comme les températures, les vents, les vagues et les courants. Ils analysent le terrain, la distance des actifs de recherche et de sauvetage disponibles le plus près, la gravité des situations et les autres dossiers en cours dans la région afin de choisir la meilleure intervention de recherche et de sauvetage possible.

The Joint Rescue Coordination Centre then tasks resources, stages sustainment forces for long searches, collaborates with a wide range of community and government agencies and executes the rescue. In consultation with searching forces, other government departments, adjoining search and rescue region commanders and families, decisions are reached to transition to recovery or transfer the case to another lead agency as the rescue phase terminates.

Aeronautical search and rescue assets are provided by 413 Transport and Rescue Squadron in Greenwood, Nova Scotia, flying Hercules aircraft and CH-149 Cormorant helicopters. In Newfoundland and Labrador, 103 Search and Rescue Squadron in Gander flies the Cormorant helicopter. Search and rescue aircraft and air crew are on 30-minute standby during those hours of peak marine activities and 2-hour standby during quieter evening hours.

The Canadian Coast Guard is responsible for the maritime component of the federal SAR system. Canadian Coast Guard primary search and rescue units are comprised of large multi-task vessels, SAR life boat stations and inshore rescue boats strategically located along the coast. The Inshore Rescue Boat program is operated and maintained by the Canadian Coast Guard, and is located in high recreational areas during the summer season. Warships of the Royal Canadian Navy are frequently asked to provide primary SAR readiness when operating in Atlantic waters.

The Canadian Coast Guard Auxiliary is a volunteer service operated by local mariners and supported by the Canadian Coast Guard. The Marine Communications and Traffic Services centres coordinate marine communications and manage vessel traffic movements. These radio operators work in conjunction with the Joint Rescue Coordination Centre in Halifax by advising mariners of developing SAR cases, which is an integral part of a successful SAR system.

SAR secondary assets, including the Coast Guard Auxiliary, the Royal Canadian Air Force aircraft and vessels of opportunity play an important role in SAR. At 5 Wing Goose Bay, 444 Squadron maintains a small fleet of Griffin helicopters for local airfield support associated with NATO and national air force training missions executed at the Wing. These aircraft have limited SAR capability and are employed on a case-by-case basis to assist with SAR cases. An emergency transfer of a patient

Ensuite, le Centre conjoint de coordination des opérations de sauvetage affecte les ressources, organise l'approvisionnement des forces en vue des longues opérations de recherche, travaille en collaboration avec un large éventail d'organismes communautaires et gouvernementaux et exécute l'activité de sauvetage. En consultation avec les forces responsables des recherches, d'autres ministères gouvernementaux, les commandants des régions de recherche et de sauvetage avoisinantes et les familles, les décisions sont prises pour passer à l'étape du rétablissement ou procéder au transfert du dossier à un autre organisme responsable une fois la phase de sauvetage terminée.

Les actifs de recherche et de sauvetage aéronautiques sont fournis par le 413e Escadron de Transport et de Sauvetage de Greenwood, en Nouvelle-Écosse, les avions Hercules et les hélicoptères CH-149 Cormorant. À Terre-Neuve-et-Labrador, le 103e Escadron de recherche et de sauvetage, à Gander, utilise les hélicoptères Cormorant. Les aéronefs de recherche et de sauvetage et les équipages sont parés à manœuvrer dans les 30 minutes durant les heures de pointe d'activités maritimes et prêtes à manœuvrer dans les 2 heures durant les heures plus calmes, le soir.

La Garde côtière canadienne est responsable de la composante maritime du système fédéral de recherche et de sauvetage. Les principales unités de recherche et de sauvetage de la Garde côtière canadienne sont composées de grands navires polyvalents, de stations de bateau de sauvetage et de petites embarcations de sauvetage côtières positionnées stratégiquement le long de la côte. Le Programme des bateaux de sauvetage côtiers est exécuté et maintenu par la Garde côtière canadienne dans les zones où il y a beaucoup d'activités récréatives durant la saison estivale. On demande souvent à des bâtiments de guerre de la Marine royale canadienne d'offrir une disponibilité opérationnelle primaire de recherche et de sauvetage durant les interventions dans les eaux atlantiques.

La Garde côtière auxiliaire canadienne est un service bénévole offert par des navigateurs locaux et soutenu par la Garde côtière canadienne. Les centres des Services de communication et de trafic maritimes coordonnent les communications maritimes et gèrent le déplacement des bâtiments. Ces opérateurs radio travaillent en collaboration avec le Centre conjoint de coordination des opérations de sauvetage de Halifax en informant les gens de mer d'interventions de recherche et de sauvetage en cours, ce qui fait partie intégrante de la réussite du système de recherche et de sauvetage.

Les actifs secondaires de recherche et de sauvetage, y compris la Garde côtière auxiliaire canadienne, les aéronefs de l'Aviation royale canadienne et les navires de passage jouent un rôle important dans le cadre des activités de recherche et de sauvetage. À la 5e Escadre Goose Bay, le 444e Escadron maintient une petite flotte d'hélicoptères Griffin dans le cadre du soutien local des aérodromes associés avec les missions de formation nationale de l'OTAN et de la Force aérienne réalisées par l'Escadre. Ces

yesterday occurred involving one of these aircraft. It rescued a severely burned member of Hopedale on the Labrador coast and transferred the victim to Goose Bay.

The Canadian SAR system is one of the best in the world, owing to the cooperation and teamwork demonstrated by the network of government and civilian organizations and volunteers that make up the SAR system. SAR works as one component of a bigger system, including the regulation of construction, SAR equipping and crew qualification. Prevention and communications are other components. Volunteerism is an essential element. Bystanders, nearby ships and private and commercial aircraft organize SAR auxiliaries, and community emergency response volunteers are essential to successful search and rescue in Canada.

SAR partners include the Joint Task Force Atlantic and other Canadian Armed Forces elements, Rangers of the Canadian Army, the Canadian Coast Guard, the Canadian Coast Guard Auxiliary, the Department of Fisheries and Oceans, Public Safety Canada, Transport Canada, Canadian Border Services Agency, Public Works and Government Services Canada, Royal Canadian Mounted Police, provincial emergency management offices, Public Health Agency of Canada, Parks Canada and many other Canadian government departments, as well as provincial and municipal delegates.

Foreign interactions occur with authorities of the United States Navy, the United States Coast Guard, the Danish joint Arctic Command and SAR authorities in Portugal and England.

The Halifax Search and Rescue Region shares ocean boundaries with a number of regions, including Boston. The Boston region is a particularly busy zone, and frequent interactions are necessary between JRCC Halifax and JRCC Boston to coordinate a joint U.S.-Canadian response to an emergency.

In addition to these agencies, the Automated Mutual Assistance Vessel Rescue System, Amver, is a close partner in most offshore cases. Participating companies and merchant ships are often on scene quickly, aiding in search efforts, evacuations of

aéronefs possèdent une capacité de recherche et de sauvetage limitée et sont utilisés au cas par cas pour aider durant les interventions de recherche et de sauvetage. On a procédé hier au transfert d'urgence d'un patient grâce à un de ces aéronefs. L'aéronef a permis de secourir un habitant gravement brûlé de Hopedale, sur la côte du Labrador, et de procéder au transfert de la victime à Goose Bay.

Le système de recherche et de sauvetage du Canada est l'un des meilleurs du monde en raison de la coopération et du travail d'équipe dont font preuve le réseau d'organisations gouvernementales et civiles et les bénévoles qui le composent. Le système de recherche et de sauvetage est une composante d'un système plus général, qui inclut la réglementation de la construction, les pièces d'équipement de recherche et de sauvetage et la qualification des équipes. La prévention et les communications sont d'autres composantes de ce système. Le bénévolat est un élément essentiel. Les témoins, les navires qui se trouvent à proximité et les aéronefs privés et commerciaux peuvent devenir des intervenants auxiliaires dans le cadre d'activités de recherche et de sauvetage, et les membres bénévoles des groupes d'intervention d'urgence communautaire sont essentiels à la réussite du système de recherche et de sauvetage du Canada.

Parmi les partenaires dans le cadre des interventions de recherche et de sauvetage, mentionnons la Force opérationnelle interarmées (Atlantique) et d'autres éléments des Forces armées canadiennes, les Rangers de l'armée canadienne, la Garde côtière du Canada, la Garde côtière auxiliaire canadienne, le ministère des Pêches et des Océans, Sécurité publique Canada, Transports Canada, l'Agence des services frontaliers du Canada, Travaux publics et Services gouvernementaux Canada, la Gendarmerie royale du Canada, les bureaux provinciaux de gestion des urgences, l'Agence de la santé publique du Canada, Parcs Canada et beaucoup d'autres ministères du gouvernement canadien ainsi que des représentants provinciaux et municipaux.

Il y a des interactions avec des entités étrangères, comme la marine américaine, la garde côtière américaine, le commandement arctique interarmées danois et les autorités responsables des activités de recherche et de sauvetage du Portugal et de l'Angleterre.

La région de recherche et de sauvetage de Halifax partage des limites océaniques avec un certain nombre de régions, y compris Boston. La région de Boston est une zone particulièrement occupée, et des interactions fréquentes sont nécessaires entre le CCCOS de Halifax et son homologue bostonnais pour coordonner les interventions conjointes américaines-canadiennes en réaction à certaines situations d'urgence.

En plus de ces organismes, le système automatique d'entraide pour le sauvetage des navires, l'Amver, est un proche partenaire dans la plupart des cas en zone extracôtière. Les entreprises et les navires marchands participants sont souvent sur les lieux

persons in peril and providing a lee from the weather or reassurance to stricken vessels.

In the air, the Civil Air Search and Rescue Association, CASARA, contributes spotters, air crew and aircraft on a voluntary basis to start SAR cases when weather and distances permit. This association is funded by the Department of National Defence and participates in annual SAR training exercises with the Royal Canadian Air Force.

On request, Joint Rescue Coordination Centre Halifax will support ground search and rescue operations in support of the RCMP on a case-by-case basis. Considering the vast geography of the Halifax Search and Rescue Region and our frequent callout to support ground search and rescue, engagement by the Canadian Rangers is not an unusual occurrence.

On readiness, SAR technicians maintain readiness through a cycle of constant training for real-life, all-season scenarios in the marine and land environments. SAR techs are part of the SAR aircraft crew and must do air crew training as well as formal SAR training in Comox, British Columbia. This is in addition to upgrade training in the survival and medical specializations. The national search and rescue exercise in 2014 took place in Goose Bay, Newfoundland and was hosted by 103 Search and Rescue Squadron in Gander.

For their part, the Canadian Coast Guard hosted the North Atlantic Coast Guard Forum in 2014 and culminated their year of chairmanship with GUARDEX 2014, showcasing SAR tactics and interagency cooperation in a two-day SAR event.

In order to maintain the preparedness, the Joint Rescue Coordination Centre and its partners, particularly Joint Task Force Atlantic and the Canadian Coast Guard, carry out regular training scenarios. Training is robust and committed to exercising the capability and skills of all partners to ensure that members of the SAR system are a strong and well-prepared team.

Operation NANOOK 2014 exercised a major shipping disaster in Frobisher Bay. In 2015, Joint Task Force Atlantic and JRCC Halifax SAR personnel helped plan and execute the SAR response for the *Stena IceMAX*, a large, offshore drill ship contracted to drill the Shelburne Basin off Nova Scotia.

rapidement, participant aux efforts de recherche, à l'évacuation des personnes en péril et fournissant un abri en cas de conditions météorologiques difficiles ou en rassurant les passagers de navires accidentés.

Dans les airs, l'Association civile de recherche et de sauvetage aériens, l'ACRSA, contribue en fournissant des observateurs, des équipages et des aéronefs bénévolement pour commencer les activités de recherche et de sauvetage lorsque les conditions météorologiques et les distances le permettent. Cette association est financée par le ministère de la Défense nationale, et ces intervenants participent aux exercices de formation annuels en recherche et sauvetage avec l'Aviation royale canadienne.

Sur demande, le Centre conjoint de coordination des opérations de sauvetage de Halifax peut soutenir des activités de recherche et de sauvetage terrestres à l'appui de la GRC. Elle le fait au cas par cas. Vu le très grand territoire de la région de recherche et de sauvetage de Halifax et nos fréquents appels de soutien pour des activités de recherche et de sauvetage terrestres, il n'est pas rare qu'on demande la participation des Rangers canadiens.

Pour ce qui est de l'état de préparation, les techniciens en recherche et sauvetage maintiennent leur état de préparation grâce à un cycle de formation constante liée à des scénarios de la vie réelle en toute saison dans les environnements maritimes et terrestres. Les techniciens en recherche et sauvetage font partie d'un équipage d'aéronefs de recherche et sauvetage et doivent donc suivre une formation connexe ainsi qu'une formation officielle en recherche et sauvetage à Comox, en Colombie-Britannique. Tout cela en plus d'une formation de mise à niveau en techniques de survie et de la formation médicale. L'exercice national de recherche et sauvetage de 2014 a eu lieu à Goose Bay, à Terre-Neuve, et a été tenu par le 103^{e} Escadron de recherche et sauvetage à Gander.

Pour sa part, la Garde côtière canadienne a organisé le Forum des gardes côtières de l'Atlantique Nord en 2014 et a terminé son année de présidence en organisant GUARDEX 2014, un événement lié au domaine de la recherche et du sauvetage de deux jours où elle a mis en valeur les tactiques de recherche et de sauvetage et la coopération interagences.

Afin de maintenir son état de préparation, le Centre conjoint de coordination des opérations de sauvetage et ses partenaires, particulièrement la Force opérationnelle interarmées (Atlantique) et la Garde côtière canadienne réalisent régulièrement des scénarios de formation. Les exercices de formation sont difficiles et visent à mettre en pratique les capacités et les compétences de tous les partenaires pour que l'on puisse s'assurer que l'ensemble des membres du système de recherche et de sauvetage constituent une équipe solide et bien préparée.

L'opération NANOOK de 2014 a simulé une importante catastrophe maritime dans la baie Frobisher. En 2015, le personnel responsable de la recherche et du sauvetage de la Force opérationnelle interarmées (Atlantique) et du CCCOS de Halifax a aidé à planifier et exécuter une intervention de recherche

This concludes my introductory remarks, and I look forward to answering your questions. Thank you very much.

The Chair: Thank you, rear-admiral. Once again I apologize for the late start to the meeting this evening due to the fact we were still sitting in the Senate.

Senator Munson: Thank you, rear-admiral, for being with us via video conference.

When you speak, it sounds very impressive. It sounds like that everything is working and that there is a competent Armed Forces out there, with the Coast Guard and others, doing their job. The geography of this country is immense, and I'm curious to know your views.

First of all, just a general question: Do you have enough assets to do the job the way you want the job done in assisting search and rescue?

Rear-Admiral Newton: Yes, sir. From my perspective as a commander, having done the job day-to-day now for three years, I have adequate resources. Where I feel shortages or pressures due to a maintenance issue or due to distance and geography, I have worked out relationships or detailed plans for how to ensure that we take the assets we've been fortunate to have been given and move them into the SAR right away. I have not, to my mind, had a shortcoming in using the equipment and personnel at my disposal to meet an emergent SAR in the region over the last three years.

Senator Munson: Could you elaborate just a bit more on the maintenance issue? How extensive is it? Has it cost millions? Do you have to fly others and experts in to fix aircraft and other military equipment? Just how immense is this maintenance issue you talk about?

Rear-Admiral Newton: Whether you're operating ships or operating aircraft, there is a running maintenance program that you must address. Equipment breaks, from time to time, and the Royal Canadian Air Force has provided enough helicopters at the squadrons in Greenwood and the squadron in Gander, Newfoundland, to manage any breakdowns that might occur in a particular aircraft.

If there is a breakdown in the startup or the flight of an aircraft into a mission, we immediately ask and are given a second resource from one of the two squadrons. It is just the complexity of flying large aircraft; it's not something I worry about. It's just the reality of flying large aircraft.

et de sauvetage du navire *Stena IceMAX*, un gros navire de forage en haute mer dont les services ont été retenus pour forer dans le bassin Shelburne au large des côtes de la Nouvelle-Écosse.

Voilà qui conclut ma déclaration préliminaire. Je suis prêt à répondre à vos questions. Merci beaucoup.

Le président : Merci, contre-amiral. Encore une fois, je vous prie d'excuser le début tardif de la réunion, ce soir; nous siégions encore au Sénat.

Le sénateur Munson : Merci, contre-amiral, de discuter avec nous par vidéoconférence.

Lorsqu'on vous écoute, c'est très impressionnant. On dirait que tout fonctionne et que des intervenants compétents, les Forces armées, la Garde côtière et d'autres intervenants, font leur travail. La superficie du pays est immense, et j'aimerais bien connaître vos opinions.

Dans un premier temps, une question générale : avez-vous suffisamment d'actifs pour offrir un soutien aux activités de recherche et de sauvetage à la hauteur de vos attentes?

Cam Newton : Oui, monsieur. De mon point de vue de commandant, qui s'acquitte de cette tâche au quotidien depuis maintenant trois ans, je compte sur des ressources adéquates. En cas de pénurie ou lorsque je ressens des pressions en raison de problèmes d'entretien, de la distance ou de la géographie, j'ai créé des relations et défini des plans détaillés pour déterminer de quelle façon nous pouvons positionner immédiatement les actifs que nous avons la chance de posséder pour mener nos activités de recherche et de sauvetage. Selon moi, je n'ai pas eu de problèmes à utiliser l'équipement et le personnel à ma disposition pour intervenir dans le cadre d'une nouvelle situation de recherche et de sauvetage dans ma région au cours des trois dernières années.

Le sénateur Munson : Pouvez-vous fournir quelques précisions sur les problèmes d'entretien? Quelle est l'ampleur du problème? A-t-il fallu dépenser des millions de dollars? Devez-vous faire venir par avion d'autres intervenants ou des experts pour réparer un aéronef ou d'autres pièces d'équipement militaire? Quelle est l'ampleur de ce problème d'entretien dont vous parlez?

Cam Newton : Qu'on exploite des navires ou des aéronefs, il y a un programme d'entretien permanent qu'il faut réaliser. Il y a des bris d'équipement de temps en temps, et l'Aviation royale canadienne a fourni suffisamment d'hélicoptères aux escadrons à Greenwood et à Gander, à Terre-Neuve, pour composer avec tout bris pouvant survenir dans un aéronef précis.

S'il y a un problème au démarrage ou durant le vol d'un aéronef dans le cadre d'une mission, nous demandons immédiatement une deuxième ressource d'un des deux escadrons, et nous l'obtenons. C'est simplement une des réalités liées au fait de faire voler de grands aéronefs. Ce n'est pas une situation qui me préoccupe, c'est une réalité de l'exploitation d'un grand aéronef.

I would add, sir, that we take zero chance of flying a large helicopter with five crewmen aboard out into the distant ocean or across large expanses of water. We will not add five more victims to a search and rescue. The aircraft are maintained at a very high state. If a weakness develops, the air crew knows to terminate their flight, and I will find a second resource using the Joint Rescue Coordination Centre.

Senator Munson: In the past, there has been controversy over Sea King helicopters and their ability to react to — and I know they are a great workhorse — situations of distress in Atlantic Canada. Do you still have concerns over the aging Sea King helicopter?

Rear-Admiral Newton: Sea King helicopters are helicopters used on the Royal Canadian Navy frigates. They, from time to time, are assigned a SAR secondary role if a Cormorant helicopter, in Greenwood in particular, is not serviceable. This is very rare occurrence but, should a search and rescue case occur at sea, a Sea King will be flown from the nearest warship because we'll use any resource of the Canadian Armed Forces if it's proximal to the search and rescue.

I would add, sir, that the Sea Kings are near the end of their life, and the Cyclones have started transitioning into service. From my windows I watch the Cyclones operate daily with the fleet from HMCS Montreal and HMCS Halifax. I look forward, like everybody in Canada, to the day when our venerable Sea King terminates over 50 years of service and the Cyclone starts its long period of duty to Canada.

Senator Munson: Well, that's good news. It beats seeing a Sea King landing in a schoolyard and the sort of thing that we have seen in the past not so long ago, but that's yesterday's story. We're talking about today's story.

Just to change the subject of conversation a wee bit, how involved are you with the Canadian Rangers? We all, in the South, applaud the Canadian rangers for what they do in the North, but you seem so far away. You have talked about cruise ships going through. We're talking about countries staking out their claim to the North. We're talking about the issues of distress in the North and the distances that the Armed Forces has to travel.

In some of our prepared notes it is said that the Canadian Rangers provide patrols and detachments for national security and public safety. It talks about the Canadian Armed Forces' role in this. Is this really enough to have the Rangers in the North and not to have a stronger presence of the Canadian military, both in rescue and in protecting our national security?

Je tiens à ajouter, monsieur, que nous ne prenons aucun risque lorsque nous envoyons un grand hélicoptère avec cinq membres d'équipage en haute mer ou au-dessus de vastes étendues d'eau. Nous n'allons pas ajouter cinq autres victimes dans le cadre d'une opération de recherche et sauvetage. Les aéronefs sont maintenus à un très haut niveau de fonctionnement. Si une faiblesse apparaît, l'équipe sait qu'il doit mettre fin au vol et que je trouverai une deuxième ressource par l'intermédiaire du Centre conjoint de coordination des opérations de sauvetage.

Le sénateur Munson : Il y a eu, dans le passé, une controverse au sujet des hélicoptères Sea King et de la capacité de réagir à — et je sais que ce sont des machines performantes — des situations de détresse dans le Canada atlantique. Avez-vous encore des préoccupations relativement aux hélicoptères Sea King vieillissants?

Cam Newton : Les hélicoptères Sea King sont des hélicoptères utilisés par les frégates de la Marine royale canadienne. De temps en temps, on leur attribue un rôle secondaire en matière de recherche et de sauvetage si un hélicoptère Cormorant — de Greenwood, en particulier — n'est pas en état de service. C'est une situation qui se produit très rarement, mais si une activité de recherche et de sauvetage doit se produire en mer, un hélicoptère Sea King sera envoyé du navire de guerre le plus près, parce que nous utilisons toutes les ressources des Forces armées canadiennes qui sont à proximité de la zone de recherche et de sauvetage.

Je dois aussi ajouter, monsieur, que les hélicoptères Sea King sont près de la fin de leur cycle de vie, et qu'on a commencé à mettre en service des Cyclones. De ma fenêtre, je peux voir les Cyclones à l'œuvre chaque jour avec la flotte des NCSM Montréal et *Halifax*. Comme tous les Canadiens, j'attends avec impatience le jour où nos vénérables Sea King seront mis hors service après 50 ans de service et où les Cyclones commenceront leur longue période de service au Canada.

Le sénateur Munson : Eh bien, ce sont de bonnes nouvelles. C'est mieux que de voir un Sea King atterrir dans une cour d'école ou ce genre de chose dont nous avons été témoins dans un passé pas si lointain, mais c'est de l'histoire ancienne. Concentrons-nous sur aujourd'hui.

Je vais un peu changer de sujet. Dans quelle mesure interagissez-vous avec les Rangers canadiens? Nous tous, ici, dans le Sud, louangeons les Rangers canadiens pour ce qu'ils font dans le Nord, mais vous semblez tellement loin. Vous avez parlé des navires de croisière qui passent par là. Nous parlons de pays qui commencent à se réclamer de territoires dans le Nord. Nous parlons des problèmes de détresse dans les Nord et des distances que les Forces armées doivent parcourir.

Dans certaines des notes qui ont été préparées pour nous, il est mentionné que les Rangers canadiens fournissent des patrouilles et des détachements à des fins de sécurité nationale et de sécurité publique. Il est question du rôle des Forces armées canadiennes dans ce contexte. Est-ce suffisant d'avoir des Rangers dans le Nord sans autre présence militaire canadienne marquée, tant à des fins de sauvetage que pour protéger la sécurité nationale?

Rear-Admiral Newton: I'm very intimately engaged with the Canadian Rangers. They are an army activity, but there are Canadian Rangers across Newfoundland and Labrador. There are many hundreds of them. I often will turn to my deputy joint task force commander, who is the commander of 5th Division, and ask for the support of Rangers in particular coastal activities. Often, in ground search and rescue cases that we are drawn into, they have already been implicated by the local communities.

But, sir, I would say that, from Newfoundland and Labrador and all the way into the Arctic, the Canadian Rangers are a very formidable force for sovereignty for Canada. They are not an armed service for National Defence, but they are key eyes and ears in the Canadian hinterlands. That is just one activity of the Canadian Armed Forces in the North.

Since about 2002, you have watched a very robust level of activity by the Canadian Armed Forces in the North in events like Operation QIMMIQ, Operation NUNALIVUT, Operation NUNAKPUT and Operation NANOOK. As the Maritime Component Commander for the Royal Canadian Navy, I deploy patrol ships North every year and join the Canadian Coast Guard with their annual patrol activities. I think, with the building of the Arctic offshore patrol ship and its capability married to the Cyclone helicopter, Canada is implementing a very good Canadian Armed Forces element to Northern sovereignty and security, sir.

Senator Munson: Thank you. Rear-Admiral, you're appearing before this Fisheries Committee. We are talking about air, sea and rescue and helping people in distress. You talked about the humanitarian work. You're saying a lot of good things. That's very important, but surely there must be something you want to make your job a little better.

There is a brand new government. There is a brand new minister on every level. It's an opportunity, I would think, for the Armed Forces to publicly ask for something that would make your life easier. Surely there is something there you want to tell us.

Rear-Admiral Newton: It's a very good question, senator. I am thrilled with a lot of the programs that are being implemented through the National Shipbuilding Strategy: the movement toward the delivery of a fixed-wing SAR aircraft, the building of the Arctic offshore patrol ship and the delivery of the Cyclone helicopter. These will all to contribute to the sovereignty element that is search and rescue.

I build a picture, on a daily basis, using a multitude of tools, through the Marine Security Operations Centres. Anything that Canada can deliver to increase the fidelity of surveillance and

Cam Newton : J'interagis de très près avec les Rangers canadiens. Ils relèvent de l'Armée, mais il y a des Rangers canadiens à l'échelle de Terre-Neuve-et-Labrador. Il y en a des centaines. Je me tourne souvent vers mon commandant adjoint de la Force opérationnelle interarmées, qui est le commandant de la 5e Division pour demander le soutien des Rangers dans le cadre d'activités précises sur la côte. Souvent, dans des cas de recherche et de sauvetage terrestres où nous avons dû intervenir, ils avaient déjà été appelés par les collectivités locales.

Cependant, monsieur, je dois dire que, de Terre-Neuve-et-Labrador et jusque dans l'Arctique, les Rangers canadiens sont de valeureux défenseurs de la souveraineté du Canada. Ils ne sont pas un service armé de Défense nationale, mais ils sont les yeux et les oreilles importants dans l'arrière-pays canadien. Ce n'est qu'une des activités des Forces armées canadiennes dans le Nord.

Depuis environ 2002, on a pu constater un très haut niveau d'activité des Forces armées canadiennes dans le Nord dans le cadre d'événements comme l'opération QIMMIQ, l'opération NUNALIVUT, l'opération NUNAKPUT et l'opération NANOOK. En tant que commandant de la composante maritime de la Marine royale canadienne, je déploie chaque année dans le Nord des navires de patrouille qui se joignent à la Garde côtière canadienne dans le cadre de ses activités de patrouille annuelles. Je crois que, grâce à la construction du patrouilleur hauturier pour l'Arctique et l'union de ses capacités avec celles de l'hélicoptère Cyclone, le Canada est en train de mettre en place un très bon élément des Forces armées canadiennes pour assurer la souveraineté et la sécurité dans le Nord, monsieur.

Le sénateur Munson : Merci. Contre-amiral, vous devez comparaître devant le comité des pêches. Nous parlons de sauvetage et d'aider des gens en détresse dans les airs et sur les mers. Vous avez parlé de travail humanitaire. Vous dites beaucoup de bonnes choses. C'est très important, mais il doit y avoir certains aspects de votre travail que vous aimeriez améliorer.

Il y a un tout nouveau gouvernement en place. Il y a de tout nouveaux ministres à tous les niveaux. Selon moi, c'est l'occasion pour les Forces armées de demander publiquement quelque chose pour lui rendre la vie plus facile. Il y a sûrement quelque chose que vous voulez nous dire.

Cam Newton : C'est une très bonne question, monsieur le sénateur. Je suis très content de voir les nombreux programmes qui sont mis en œuvre par l'intermédiaire de la Stratégie nationale de construction navale : le mouvement vers l'adoption d'un aéronef de recherche et de sauvetage à voilure fixe, la construction du patrouilleur hauturier pour l'Arctique et la livraison des hélicoptères Cyclones. Toutes ces choses contribueront à la composante de protection de la souveraineté du cadre de recherche et de sauvetage.

Chaque jour, je brosse un tableau à l'aide d'une multitude d'outils, par l'intermédiaire des centres des opérations de la sûreté maritime. Tout ce que le Canada peut offrir pour accroître

precision in the offshore, like what will be provided through RADARSAT and the RADARSAT Constellation mission, both programs moving through Defence procurement and Government of Canada procurement, are thrilling pieces of news.

The other side of search and rescue, sir, is education, prevention and public confidence. I think there is, in all three of these areas, work to be done. We work in these areas and, no matter what the industrial or work domain you are in, they are constants. You can never stop doing them. There is always a new generation to educate. There is always public confidence to be maintained. If I needed any help, it was in those areas of prevention, education about search and rescue, and public confidence.

Senator McInnis: Thank you, rear-admiral, for appearing this evening. We're not here to criticize. We're here to uncover any challenges that may surround search and rescue. I just wanted to come back to the Canadian Rangers for a moment. We always hear great things about them. Are they properly trained to do maritime search and rescue? Do they have the marine capabilities?

Rear-Admiral Newton: You may have in your mind the vision of the Rangers of the High Arctic, which are more land-based, but they are excellent sailors too. They have their family boats and the like. I'm not really referring to them when I talk about any kind of marine search and rescue in the coastal waters.

In Newfoundland and Labrador the Rangers populate the coastal communities. Often, we exercise with them in coastal and surveillance scenarios with search and rescue aspects.

They have their own boats. These are 30- to 60-foot fishing boats that Newfoundland designs, and they are very effective in coastal patrol, working with the joint task force and the Canadian Army.

The Canadian Rangers are an activity of the Canadian Army, and any commentary on how well trained they are should be answered by the Canadian Army. My own personal opinion — I haven't worked with them frequently — is they are very well trained in domains of ice, land movements, field craft and the coastal activities in Newfoundland and Labrador. These are the main methods of transportation along the Newfoundland and Labrador coasts.

Senator McInnis: Coming back to the North, it would appear to me that most of your equipment is not up North; it's in the lower part of Canada. Does that present a challenge? How is it that you handle the North? Are there many incidents up there? Is it a challenge to get the equipment there in time?

l'exactitude de la surveillance et la précision comme ce que permettra le programme RADARSAT et la mission Constellation RADARSAT — deux programmes qui cheminent dans les processus d'acquisition pour la Défense et du gouvernement du Canada —, sont des nouvelles très palpitantes.

L'autre aspect des activités de recherche et de sauvetage, monsieur, c'est l'éducation, la prévention et la confiance du public. Je crois qu'il y a, dans ces trois domaines, du travail à faire. Nous œuvrons dans ces domaines et, peu importe le domaine industriel ou professionnel dans lequel on se trouve, ce sont des constantes. On ne peut jamais arrêter d'y voir. Il y a toujours une nouvelle génération de personnes à sensibiliser. Il faut toujours maintenir la confiance du public. Si j'ai besoin d'aide, c'est dans les domaines de la prévention, de l'éducation au sujet de la recherche et du sauvetage et de la confiance publique.

Le sénateur McInnis : Merci, contre-amiral, d'être là ce soir. Nous ne sommes pas ici pour critiquer. Nous sommes ici pour découvrir tous les défis pouvant être liés aux activités de recherche et de sauvetage. Je veux revenir à la question des Rangers canadiens un court moment. Nous entendons toujours des choses excellentes à leur sujet. Sont-ils bien formés pour s'acquitter d'activités de recherche et de sauvetage maritimes? Possèdent-ils les capacités maritimes nécessaires?

Cam Newton : Vous avez peut-être en tête une vision des Rangers canadiens dans l'Extrême-Arctique, qui travaillent davantage en milieu terrestre, mais ce sont aussi d'excellents marins. Ils ont des bateaux familiaux et ce genre de choses. Je ne parle pas vraiment d'eux lorsque je parle des genres d'activités de recherche et de sauvetage maritimes dans les eaux côtières.

À Terre-Neuve-et-Labrador, les Rangers font partie des collectivités le long de la côte. Souvent, nous nous exerçons avec eux dans le cadre de nos scénarios de surveillance le long de la côte qui comptent des composantes de recherche et de sauvetage.

Ils ont leurs propres bateaux. Ce sont des bateaux de pêche de 30 à 60 pieds conçus par Terre-Neuve, qui sont très efficaces pour faire des patrouilles le long de la côte en collaboration avec la Force opérationnelle interarmées et l'armée canadienne.

Les Rangers canadiens appartiennent à l'armée canadienne, et tout commentaire sur le caractère approprié de leur formation devrait être formulé par l'armée canadienne. À mon humble avis — je n'ai pas travaillé fréquemment avec eux —, ils sont très bien formés dans les domaines des opérations sur glace, des mouvements terrestres, des techniques de campagne et des activités côtières à Terre-Neuve-et-Labrador. Ce sont les principales méthodes de transport le long des côtes de Terre-Neuve-et-Labrador.

Le sénateur McInnis : Revenons à la question du Nord. J'ai l'impression que la majeure partie de vos actifs sont non pas dans le Nord, mais plus au sud en territoire canadien. Cette situation constitue-t-elle un défi? De quelle façon gérez-vous la situation dans le Nord? Y a-t-il beaucoup d'incidents là-bas? Est-ce un défi de transporter l'équipement là-bas à temps?

Rear-Admiral Newton: The North is a very large area with very little infrastructure and the communities are spread out. The maritime access to the Canadian North is very limited in comparison to the Danish North. Ours is a frozen, polar area whereas the Danish west coast, for instance like Greenland, is more temperate, open and free of ice.

You've got these very severe environmental effects where you could potentially or theoretically station a lot of search and rescue assets in the North but find that the weather is a severe restriction to mobility and readiness. We tend to stage in the South. We respond to the summer navigation system and the bloom of activity associated with the change of the ice regime. We have the capability, the major airline disaster kits, ready to be flown away.

We have at our access large helicopters, three-engine, long-range helicopters, the long-range Hercules aircraft, and we start moving and staging crews into the North. While we're doing that, the Joint Rescue Coordination Centre is actually communicating with all the maritime and air resources of the North. We have the contact lists, we have the shipping picture, and we effectively bring the community of SAR providers — whether voluntary, proximal, auxiliary, Rangers or community, in addition to the Canadian Armed Forces assets — to bear on the target.

We have had four Arctic cases out of the 20 or so in the last year that were all very successful, and I can list them.

There's Sergey Ananov who crashed his helicopter onto the ice. There was the fishing vessel *Atlantic Charger*, with nine crew members, in Davis Strait. There was *Saputi* with 30 crew members that managed to limp into Nuuk, Greenland. Finally, there was the member of the Legislative Assembly of Nunavut and his two companions, one of them his son, which were all successfully engaged by JRCC Halifax as Arctic search and rescue, amongst quite a few others of the 20 or so last year, sir.

Senator McInnis: Do you see a role that the private sector could play in search and rescue in Canada, particularly in the North?

Rear-Admiral Newton: Yes, sir. I think we're already operating a bit of a hybrid system in Canada with the offshore oil industry contracting standby capabilities, as was dictated by the Wells commission after the Cougar air crash. Mines and centres of industrial development in the North, by necessity, have to

Cam Newton : Le Nord couvre un très grand territoire. Il y a très peu d'infrastructures, et les collectivités sont loin les unes des autres. L'accès maritime au Nord canadien est très limité en comparaison du Nord danois. Notre région est une zone polaire gelée tandis que la côte Ouest danoise, comme le Groenland par exemple, est plus tempérée. La zone est ouverte et il n'y a pas de glace.

Il y a des conditions environnementales très difficiles à un point où on pourrait potentiellement ou théoriquement positionner beaucoup d'actifs de recherche et de sauvetage dans le Nord, pour ensuite constater que les conditions météorologiques limitent beaucoup leur mobilité et leur état de préparation. Nous avons tendance à nous organiser dans le Sud. Nous réagissons au système de navigation estival et à la pointe d'activités associées au changement du régime de glaces. Nous avons la capacité — les trousses pour les catastrophes aériennes majeures, qui sont prêtes à être envoyées par avion.

Nous avons à notre disposition de grands hélicoptères à trois moteurs, des hélicoptères longue portée, les aéronefs Hercules de longue portée, et nous commençons à déplacer et à organiser des équipages dans le Nord. Pendant que nous procédons à ces préparatifs, le Centre conjoint de coordination des opérations de sauvetage communique en fait avec toutes les ressources maritimes et aériennes dans le Nord. Nous avons des listes de personnes-ressources, nous utilisons le tableau de navigation et nous réunissons efficacement l'ensemble des fournisseurs de services de recherche et de sauvetage — que ce soient des bénévoles, des intervenants à proximité, des ressources auxiliaires, les Rangers ou des ressources communautaires, qui s'ajoutent aux actifs des Forces armées canadiennes — afin qu'ils convergent vers la cible.

Il y a eu quatre cas dans l'Arctique sur environ 20 au cours de la dernière année; tous ont été de grands succès, et je peux vous fournir la liste.

Il y a eu Sergey Ananov, dont l'hélicoptère s'est écrasé sur les glaces. Il y a eu le navire de pêche *Atlantic Charger*, qui comptait neuf membres d'équipage, dans le détroit de Davis. Il y a eu le *Saputi* qui comptait 30 membres d'équipage, et qui a réussi à se rendre de peine et de misère à Nuuk, au Groenland. Puis, il y a eu le membre de l'Assemblée législative du Nunavut et ses deux compagnons, dont l'un était son fils. Le CCCOS de Halifax est intervenu avec succès dans le cadre de tous ces incidents de recherche et de sauvetage dans l'Arctique. Ce ne sont que quelques exemples parmi la vingtaine d'autres incidents, environ, qui se sont produits l'année dernière, monsieur.

Le sénateur McInnis : Selon vous, le secteur privé pourrait-il jouer un rôle au Canada en matière de recherche et de sauvetage, particulièrement dans le Nord?

Cam Newton : Oui, monsieur. Je crois que nous appliquons déjà un genre de système hybride au Canada, l'industrie pétrolière extracôtière retenant déjà les services d'entreprises fournissant des capacités en mode d'attente, comme l'a demandé la commission Wells après l'écrasement en vol de l'hélicoptère Cougar. Les mines

contract aviation capabilities to move their own people, to resupply their facilities and to do any kind of medical evacuation for their large workforces.

There is a case, let's say in the Mary River mine at the northern end of Baffin Island, far from any of the permanent SAR infrastructure that I have, and far from Iqaluit that has its own industrial support provided by contracted services. That's including emergency management for their mine, firefighting and rescue capabilities, airplanes and an airstrip and a seaport.

As much as this might look like up to a thousand people operating in the North and a vulnerability from a search and rescue perspective, I view it as opportunity. It gives me options for search and rescue in the North: there's an airfield, there's a seaport, there's an ability to move a major airline disaster kit in from Trenton into a new location that's just opening up as this mine develops its capacity.

It is the same in northern Labrador at the nickel mine in Kuujjuaq, the Raglan Mine. These are facilities that offer us bed-down points for our aircrew or airfields to use a CC-130 lift to bring in additional resources if there was an air crash in the North. It just gives us these little lily pads around the North to operate from. I see opportunity more than I see risk.

Senator Raine: I really appreciate hearing from you. It's obvious that the communications between the Armed Forces, the Coast Guard and all the search and rescue organizations around Canada is very sophisticated and well centralized. That's pretty necessary.

I'm a bit curious as to how the ears work. If you're out there in the wilderness and you're calling a mayday, how does the message get to the Joint Rescue Coordination Centre? Is there anything lacking?

Right now, with new technology coming out and the ability to have satellite communication, I don't know if it's possible to require everyone who goes a long way from their communities to carry locaters and things like that technology. We were informed on the incident with the MLA in Nunavut, and I was shocked to find out that he was not prepared for where he was, and yet they were rescued.

This brings to mind your role in public communication on safety. If you would just comment on that, I will have another question.

et les centres de développement industriel dans le Nord n'ont pas d'autre choix que de passer des marchés pour obtenir des capacités d'aviation pour déplacer leurs employés, réapprovisionner leurs installations et procéder à tout type d'évacuation médicale de membres de leurs importants effectifs.

Disons qu'il y a un problème à la mine Mary River, à la pointe nord de l'île de Baffin, loin de toute infrastructure permanente de recherche et de sauvetage à ma disposition et loin d'Iqaluit, qui possède son propre soutien industriel fourni par des services contractuels. Cela inclut la gestion des urgences de la mine, les capacités de lutte contre les incendies et de sauvetage, les aéronefs et une bande d'atterrissage et un port de mer.

Même si on pourrait considérer qu'il y a jusqu'à 1 000 personnes œuvrant dans le Nord et qu'il s'agit d'une vulnérabilité du point de vue de la recherche et du sauvetage, j'y vois une occasion. Il s'agit pour moi d'options de recherche et de sauvetage dans le Nord : il y a une bande d'atterrissage, il y a un port de mer, il y a une capacité de transporter des trousses devant servir en cas de catastrophe aérienne majeure de Trenton à un nouvel emplacement qui vient d'ouvrir tandis que la mine accroît ses capacités.

C'est la même chose dans le nord du Labrador à la mine de nickel de Kuujjuaq, la mine Raglan. Ce sont des installations qui nous offrent des endroits où les équipages peuvent passer la nuit ou des terrains d'aviation pouvant servir à l'atterrissage d'un CC-130 pour apporter des ressources supplémentaires si jamais il y a un écrasement d'avion dans le Nord. Ce sont autant de petites bases d'opérations un peu partout dans le Nord d'où nous pouvons intervenir. J'y vois une occasion plus qu'un risque.

La sénatrice Raine : Je suis très heureuse de vous entendre. On voit bien que la communication entre les forces armées, la Garde côtière et toutes les organisations de recherche et de sauvetage au Canada est très perfectionnée et bien centralisée. C'est tout à fait nécessaire.

Je me demande comment vous pouvez être mis au courant lorsqu'il y a des problèmes. Si une personne se trouve en milieu sauvage et qu'elle appelle à l'aide, de quelle façon ce message se rend-il au Centre conjoint de coordination des opérations de sauvetage? Y a-t-il des lacunes?

Actuellement, grâce aux nouvelles technologies et à la capacité de communication satellitaire, je ne sais pas s'il serait possible d'exiger que quiconque s'éloigne beaucoup de sa collectivité se munisse d'un dispositif de localisation ou de ce genre de technologie. Nous avons été informés de l'incident avec le député au Nunavut, et j'ai été surprise d'apprendre qu'il n'était pas préparé vu l'endroit où il était, mais il a tout de même été secouru.

Cela soulève la question de votre rôle en ce qui a trait à la communication publique sur la sécurité. J'aimerais bien vous entendre à ce sujet, puis je vous poserai une autre question.

Rear-Admiral Newton: That's a really good question, because there are two elements to communications. One is how we physically communicate in the SAR scenario, to raise the alarm or raise the alert that somebody is in trouble? Second, how do we communicate, as a large interagency task force, to effectively coordinate and communicate? There are systems for that.

Finally, how do we communicate the idea of prevention and education to the greater public of Canada so they make smart decisions with regard to equipping and what systems are really useful and I find essential, should we be heading out into the wilderness of Canada.

I think I have to unpack it a bit and say that in an emergency in the maritime domain, there are a number of ways to communicate, but the most common way is the very high frequency radio. Channel 16 is permanently assigned to search and rescue. There are no more electric words, whether given by a captain of a ship or the pilot of a plane, than "mayday, mayday, mayday." It travels for line of sight as powerful as the VHF radio can push it. Generally it's heard by people in proximity, flying aircraft or, in this case, sailing ships.

Similarly, aircrew have a frequency that they call on that all aircraft flying keep tuned into for air-to-air communication to avoid of collisions, so there are these set frequencies.

Then for ships of certain tonnages, by law there are emergency position-indicating beacons, and for airplanes there are emergency locating transmitters that automatically raise a tone in our emergency communication systems. In more modern systems they activate a SARSAT, a search and rescue satellite system, and we get a position on the earth and get the indication that somebody is having an emergency. There is a little bit of concern, in my mind, that Canada has not yet mandated the most modern emergency locating transponder, the 406-megahertz beacon. We still allow an older 121.5-megahertz beacon to be used, and I don't get as much useful information from the old beacon. Slowly Canada's beacon system is modernizing.

Finally, as you mentioned about the MLA in Nunavut, I think most Northern communities — and I'd have to check — have provided, free of charge from their hamlet offices, little spot beacons — personal beacons — that people can activate that communicate with a satellite system and then back to a home office that a hunter, trapper or snowmobiler is in trouble. Increasingly, these are used by people who go into the hinterlands of Canada.

Cam Newton : C'est une très bonne question, parce qu'il y a deux aspects aux communications. Le premier concerne la façon dont nous communiquons concrètement durant un scénario de recherche et de sauvetage, pour faire sonner l'alarme ou avertir qu'une personne a des difficultés. L'autre concerne la façon dont nous communiquons, en tant qu'importante force opérationnelle interorganisationnelle pour assurer une coordination et des échanges efficaces. Il y a des systèmes qui le permettent.

Puis, il y a la question de la façon dont nous devons promouvoir tout ce qui touche la prévention et sensibiliser le grand public canadien afin que les personnes prennent de bonnes décisions en ce qui a trait à l'équipement qu'ils apportent et aux systèmes qui sont vraiment utiles et que je juge essentiels à quiconque part en excursion dans les régions sauvages du Canada.

Je crois que je dois distinguer certaines choses et dire que, dans une situation d'urgence maritime, il y a un certain nombre de manières de communiquer, mais la façon la plus courante est la radiophonie à très haute fréquence. La fréquence 16 est attribuée en permanence aux activités de recherche et de sauvetage. Il n'y a plus de communications électroniques, que ce soit du capitaine d'un navire ou du pilote d'un avion, à part « Mayday, mayday, mayday ». Le message voyage en ligne droite aussi loin que la radio VHF peut l'envoyer. En général, le message est entendu par les gens à proximité, les aéronefs qui passent par là ou, dans la situation qui nous occupe, des navires.

Dans un même ordre d'idées, les équipages d'aéronefs ont une fréquence qu'ils utilisent. Tous les aéronefs en vol restent sur cette fréquence de communication air-air pour éviter les collisions. Il y a donc ces fréquences établies.

Puis, pour les navires d'un certain tonnage, la loi exige la présence de balises indicatrices de position en cas d'urgence et les aéronefs sont munis d'émetteurs de localisation d'urgence qui déclenchent automatiquement un avertissement sonore dans nos systèmes de communication d'urgence. Les systèmes plus modernes activent un SARSAT, un système de recherche et sauvetage assisté par satellite, et nous obtenons une position sur la Terre et une indication selon laquelle une personne est en difficulté. Je suis un peu préoccupé par le fait que le Canada n'a pas encore exigé l'adoption du transpondeur d'urgence le plus moderne, la balise de 406 mégahertz. Nous permettons encore l'utilisation d'une balise moins récente de 121,5 mégahertz et je n'obtiens pas autant de renseignements utiles de cette ancienne balise. La modernisation du système de balises du Canada se fait lentement.

Et enfin, comme vous l'avez mentionné au sujet du député du Nunavut, je crois que la plupart des collectivités nordiques — et je vais devoir vérifier — ont fourni sans frais dans leurs bureaux de hameaux, de petites balises de localisation — des balises personnelles — que les gens peuvent activer et qui communiquent avec un système de satellites pour informer un bureau central qu'un chasseur, un trappeur ou un motoneigiste est en difficulté. Les gens les utilisent de plus en plus lorsqu'ils pénètrent dans l'arrière-pays canadien.

Finally, many people carry cellular or iridium phones that communicate directly with a satellite in space, and you can make a normal phone call across it. You will often see adventurers using these iridium phones because they're posting actively to social media.

There is a host of communication technologies that are used, and only in the worst cases — and I think it's more rare today — do people lack any kind of communication technology. Sadly, that was the case in the Arctic. We had to go by concerned members phoning in that the member hadn't arrived or been heard from. It is a case where people should leave a route plan so that family or supporting staff can notify the RCMP that somebody has failed to arrive as per their route plan.

That's the communication from the emergency.

The bigger communication across the integrated search and rescue family is done by phone; it is done by an information technology system called SARMaster, which is getting old but which is in the full process of getting redeveloped or developed anew by the Government of Canada. Right now, we're in the project-definition phase. The system works for me. I know it is old. I know it has its problems — it is a bit slow when a lot of operators get on it — but it effectively manages search and rescue in Canada and, if need be, we can go back to paper management of the cases.

On the final aspect of communications, I believe we could do a better job with SAR prevention, but I'm not the authority for that. It is a shared responsibility with other agencies, but as a search and rescue provider I do not hesitate to work in the SAR-prevention domain. We go to communities frequently. We participate in fisheries associations and fairs in the coastal communities. The search and rescue squadrons bring their helicopters and personnel.

Whenever we're doing any kind of military exercise, we'll often meet with municipal authorities and emergency response members, and we reaffirm with them the communication structures that we use and the educational elements of search and rescue, like positive-buoyancy life jackets, immersion suits, personal beacons and other tools like flares that are very handy at keeping people alive and ensuring rescue as quickly as possible.

Senator Raine: I'm from a mountain environment in the ski industry, and we often have a lot of skiers going out of bounds and sometimes they get into trouble. We had an amazing incident

Enfin, beaucoup de personnes possèdent un téléphone mobile ou un téléphone mobile Iridium qui communique directement avec un satellite dans l'espace, et elles peuvent faire un appel normal. On voit souvent des aventuriers utiliser ces téléphones mobiles Iridium parce qu'ils restent actifs sur les médias sociaux.

Il y a toute une gamme de technologies de communication qui sont utilisées, et c'est seulement dans les pires scénarios — et je crois que c'est de plus en plus rare aujourd'hui — que les gens ne sont pas munis d'une technologie de communication ou d'une autre. Malheureusement, c'était le cas dans l'Arctique. Nous devions uniquement nous appuyer sur le fait que des personnes préoccupées téléphonaient pour nous dire que le député n'était pas arrivé ou qu'on n'avait pas eu de nouvelles de lui. C'est une situation où les gens devraient laisser un plan de leur trajet afin que la famille ou le personnel de soutien puisse informer la GRC qu'une personne n'est pas arrivée à destination conformément à son trajet prévu.

Voilà pour les communications en cas d'urgence.

Le gros des communications au sein du milieu intégré de la recherche et du sauvetage se fait par téléphone, grâce à un système de technologie de l'information appelé SARMaster, qui prend de l'âge, mais que le gouvernement du Canada est en train de complètement redévelopper ou de moderniser. Actuellement, nous en sommes à l'étape de définition du projet. Selon moi, le système fonctionne. Je sais qu'il est vieux. Je sais qu'il y a des problèmes — il est un peu lent lorsque beaucoup d'intervenants l'utilisent —, mais il permet de gérer efficacement les activités de recherche et de sauvetage au Canada et, au besoin, nous pouvons revenir à la gestion papier des dossiers.

Pour ce qui est du dernier aspect lié à la question des communications, je crois que nous pourrions faire du meilleur travail de prévention en matière de recherche et de sauvetage, mais ce n'est pas à moi de le dire. C'est une responsabilité partagée avec d'autres organismes, mais, en tant que fournisseur de services de recherche et de sauvetage, je n'hésite pas à participer au domaine de la prévention en matière de recherche et de sauvetage. Nous allons souvent dans des collectivités. Nous participons aux réunions d'associations de pêcheries ou aux foires des collectivités côtières. Les escadrons de recherche et de sauvetage y vont avec leurs hélicoptères et leur personnel.

Lorsque nous réalisons tout exercice militaire, nous rencontrons souvent les autorités municipales et les membres responsables des interventions d'urgence, et nous passons en revue avec eux les structures de communication que nous utilisons et les aspects liés à l'éducation des activités de recherche et de sauvetage, comme les gilets de sauvetage de flottabilité positive, les combinaisons de plongeur, les radiobalises individuelles et d'autres outils comme les feux de détresse, qui sont très utiles pour maintenir les gens en vie et s'assurer qu'on peut les secourir le plus rapidement possible.

La sénatrice Raine : Je viens des montagnes où règne l'industrie du ski, et il y a souvent des skieurs qui sortent des pistes et qui ont parfois des ennuis. Il y a eu un incident dramatique dans le cadre

where some young people went out of bounds and had to spend the night on the mountain. They video recorded each other saying goodbye to their families because they thought they would die.

When they were eventually found, the authorities told them they had a penalty to pay. They had to speak to most of the schools in the district about what they did wrong. It was a tremendous learning opportunity. I would say it was probably another 10 years before we had kids making those same mistakes. That was very valuable.

I sort of went off topic there, but would you care to comment on your thoughts around cruise ships going through the Northwest Passage?

Rear-Admiral Newton: Yes, ma'am. It's a great point. Human activity is slowly increasing in the North, and there is a tendency for money to buy recreation, adventure and extreme sports. This is increasingly being witnessed in our North.

Cruise passengers have been visiting the North for quite a few years. At first they were riding on chartered Russian icebreakers or chartered Academy of Sciences ships like the *Akademik Ioffe* the *Sergey Vavilov* or the *Kapitan Khlebnikov* — big ships purpose-built for the North.

There is a whole other variety of cruise ships purpose-built for the North that has been cruising for a few years. You'll hear names like the MS *Hanseatic*, and ships of that nature, built for Northern cruising. But they only hold 200 to 500 passengers, let's say.

Most recently, we hear of the *Crystal Serenity*. It's a ship that voyages the Alaska coast, and it is a cruise to Antarctica. It is a cruise ship proper. It has a certain degree of ice rating, and it has been planning for two years now to transit the Northwest Passage, which will be a first where we have 1,200 passengers and about to 200 to 300 or more crew members on board. I think the total number of people on board will be somewhere between 1,500 and 1,700 people.

In this regard, having been given fair notice, the Arctic Council has worked through a series of tabletop and live exercises, Arctic Zephyr and Arctic Chinook, working between coast guard districts in Alaska, Joint Task Force North, the Canadian Joint Operations Command and the Danish joint Arctic Command, to plan the consequence management pieces of a cruise liner in the Canadian North. The threats are potential grounding, potential search and rescue or medical evacuation.

In this instance, besides our planning, the cruise line industry itself, the ship's owner or charterer is contracting a standby vessel, just like oil rigs contract standby vessels, to facilitate any kind of

duquel des jeunes sont sortis des pistes et ont dû passer une nuit sur la montagne. Ils se sont enregistrés les uns les autres faisant leurs adieux à leur famille parce qu'ils pensaient mourir.

Lorsqu'on a fini par les trouver, les autorités leur ont dit qu'il y avait une pénalité : ils ont dû parler à la plupart des écoles dans leur district pour expliquer ce qu'ils ont fait de mal. Cela a été une excellente occasion d'apprentissage. Je crois qu'il s'écoulera probablement encore 10 ans avant que des jeunes fassent la même erreur. Le processus a été très utile.

Je me suis un peu éloignée du sujet, mais pouvez-vous nous dire des choses au sujet des navires de croisière qui empruntent le passage du Nord-Ouest?

Cam Newton : Oui, madame. C'est un très bon point. Les activités humaines augmentent lentement dans le Nord, et les gens qui ont de l'argent ont tendance à s'adonner à des loisirs, des activités de type aventure et des sports extrêmes. C'est quelque chose qu'on voit de plus en plus dans le Nord.

Des croisiéristes visitent le Nord depuis pas mal d'années. Au début, ils utilisaient des brise-glace russes nolisés ou des navires de l'Académie des sciences nolisés comme le *Akademik Ioffe* et le *Sergey Vavilov* ou encore le *Kapitan Khlebnikov* — de grands navires construits spécialement sur mesure pour le Nord.

Il y a plein d'autres types de navires de croisière construits spécialement pour le Nord qui naviguent depuis quelques années. Vous entendrez des noms comme le MS *Hanseatic*, et des navires de cette nature, construits pour les croisières dans le Nord. Cependant, ils peuvent seulement accueillir de 200 à 500 passagers environ.

Plus récemment, nous avons entendu parler du navire *Crystal Serenity*. C'est un navire qui navigue le long de la côte de l'Alaska et qui est souvent en Antarctique. C'est réellement un bateau de croisière. Il possède une certaine cote de glace, et ses propriétaires prévoient lui faire emprunter le passage du Nord-Ouest depuis maintenant deux ans. Ce sera la première fois qu'un navire comptant 1 200 passagers et environ 200, 300 membres d'équipage ou plus passera par là. Je crois qu'il y aura en tout à bord environ de 1 500 à 1 700 personnes.

À ce sujet, ayant obtenu un avertissement suffisant, le Conseil de l'Arctique a réalisé toute une série d'exercices sur table et d'exercices réels, Arctic Zephyr et Arctic Chinook; ces exercices ont été réalisés en collaboration par les districts de la garde côtière en Alaska, la Force opérationnelle interarmées (Nord), le Commandement des opérations interarmées du Canada et le commandement interarmées danois dans l'Arctique afin de prévoir les aspects liés à la gestion des conséquences associées à la présence d'un paquebot de croisière dans le Nord canadien. Les menaces sont liées à la possibilité d'échouement, à la possibilité d'avoir à effectuer des activités de recherche et de sauvetage et de possibles évacuations médicales.

Dans ce cas, à part notre planification, l'industrie des croisières en tant que telle, le propriétaire du navire ou l'affréteur, passe un contrat avec un navire de réserve, tout comme le font les

rescue that is required during the ship's transit of the Northwest Passage. In any mind, this is probably a very thorough plan — far more than we've witnessed with the regular cruise line industry that is plying the North.

I hope that answers your question, ma'am.

Senator Raine: So when they're going through, you'll be crossing your fingers? Are you pretty confident there won't with a problem?

Rear-Admiral Newton: No, I am a watcher of ship activities in the North. I am a partner in the Marine Security Operations Centre that is headquartered in Halifax. I have partners in the RCMP, the Canadian Coast Guard, the Department of Fisheries and Oceans, the Canada Border Services Agency and Transport Canada — I think I got them all.

We actually watch the Arctic and we watch all shipping. We watch for the planned transit of vessels, whether in the Arctic or the Atlantic, to what they're actually doing. We watch them as they pass through sensitive areas, like marine protected areas, and pass sites like the HMS *Erebus*, which is a protected heritage site. We watch their starts and stops along the coast — maybe at an abandoned whaling station or in a community. We communicate through the agencies I mentioned to keep our eyes on the ship and ensure that what we predict they're going to do is what they actually do.

I don't, therefore, cross my fingers. I have my hand on a wooden spoon, stirring the pot, so to speak. We're actively watching over these ships, whether it's the *Crystal Serenity*, the *Akademik Ioffe* or a 50-foot yacht whose owners are a loving husband and wife just thinking about transiting the passage on a whim and a hope.

We're actively managing, ma'am.

Senator Raine: I appreciate that. Thank you.

Senator Enverga: Thank you for the presentation, rear-admiral. It's great to know that we are well secured right in the North.

I know that you've been working with different organizations. How much do you rely on private individuals, companies or maybe volunteers? Can you tell me what percentage we rely on them, please?

Rear-Admiral Newton: Yes, sir. I've talked about the offshore oil industry, which contracts standby vessels and search and rescue aircraft in the event of a rig emergency. You can well imagine something like the Deepwater Horizon occurring.

plateformes pétrolières, dans le but de faciliter tout type de sauvetage qui serait requis durant la traversée du passage du Nord-Ouest par le navire. Dans l'esprit de n'importe qui, il s'agit probablement d'un plan très complet... beaucoup plus que ce dont nous avons été témoins dans le cas de l'industrie des croisières régulières qui navigue dans le Nord.

J'espère que cela répond à votre question, madame.

La sénatrice Raine : Alors, quand ils traversent, vous vous croisez les doigts? Êtes-vous pas mal convaincu du fait qu'il n'y aura pas de problème?

Cam Newton : Non, je suis un surveillant des activités des navires dans le Nord. Je suis un partenaire du Centre des opérations de la sûreté maritime, dont le siège social est situé à Halifax. J'ai des partenaires dans la GRC, dans la Garde côtière canadienne, au ministère des Pêches et des Océans, à l'Agence des services frontaliers du Canada et à Transports Canada... Je pense que je les ai tous nommés.

En fait, nous surveillons l'Arctique, et nous surveillons toutes les activités maritimes. Nous surveillons le transit planifié de navires, que ce soit dans l'Arctique ou dans l'Atlantique, par rapport à ce qu'ils font réellement. Nous les surveillons au moment où ils traversent des zones sensibles, comme des aires marines protégées, et lorsqu'ils passent par des sites comme celui du HMS Erebus, qui est un site patrimonial protégé. Nous surveillons leurs départs et leurs arrêts le long de la côte... peut-être à une station baleinière abandonnée ou dans une collectivité. Nous communiquons par l'intermédiaire des organismes que j'ai mentionnés afin de ne pas perdre de vue les navires et de nous assurer qu'ils font vraiment ce que nous avions prédit qu'ils feraient.

Par conséquent, je ne me croise pas les doigts. J'ai les choses bien en main, pour ainsi dire. Nous veillons activement sur ces navires, qu'il s'agisse du *Crystal Serenity*, du *Akademik Ioffe* ou d'un yacht de 50 pieds dont les propriétaires sont un homme et son épouse qui s'aiment et qui pensent seulement à transiter par le passage sur un coup de tête.

Nous assurons une gestion active, madame.

La sénatrice Raine : Je comprends cela. Merci.

Le sénateur Enverga : Merci pour l'exposé, contre-amiral. C'est génial de savoir que nous sommes bien protégés jusque dans le Nord.

Je sais que vous travaillez avec diverses organisations. Dans quelle mesure dépendez-vous de personnes ou d'entreprises privées, ou bien de bénévoles? Pouvez-vous me dire dans quel pourcentage nous dépendons d'eux, s'il vous plaît?

Cam Newton : Oui, monsieur. J'ai parlé de l'industrie pétrolière extracôtière, qui passe des contrats avec des navires de réserve et d'aéronefs de recherche et de sauvetage en cas d'urgence sur une plateforme. On peut bien imaginer qu'un événement comme celui de Deepwater Horizon se produise.

We work very closely with the contracted partners, like Cougar or Canadian Helicopters that's flying the *Stena IceMAX* in the Shelburne Basin. We have to figure out who all these companies are. The industry knows to come to us. We work with the Newfoundland and Labrador Offshore Petroleum Board to understand the rig activities and which companies are going to start working, so we interact with those offshore petroleum development boards. It's the same for Nova Scotia. Then the companies invite us to participate in their emergency response plans, so we actually have a very interactive role in the development with private industry and commercial entities to facilitate both a search and rescue plan and a consequence management plan for these big sites offshore.

Nous travaillons en très étroite collaboration avec les partenaires contractuels, comme Cougar ou Canadian Helicopters qui pilote le *Stena IceMAX* dans le bassin Shelburne. Nous devons découvrir qui sont toutes ces entreprises. L'industrie sait qu'elle doit venir à nous. Nous travaillons avec l'Office Canada-Terre-Neuve-et-Labrador des hydrocarbures extracôtiers afin de comprendre les activités menées sur les plateformes et quelles entreprises vont commencer à travailler, alors nous interagissons avec ces offices de développement des hydrocarbures extracôtiers. Il en va de même pour la
Nouvelle-Écosse. Ensuite, les entreprises nous invitent à participer à leurs plans d'intervention d'urgence, alors nous jouons vraiment un rôle très interactif dans le développement avec l'industrie privée et des entités commerciales afin de faciliter l'établissement d'un plan de recherche et sauvetage et d'un plan de gestion des conséquences pour ces grandes plateformes extracôtières.

Search and rescue just doesn't occur out of the blue; it occurs against a backdrop of routine surveillance of Canada's waters and land areas. As well as a search and rescue commander, I am a surveillance commander and I have an operation called LEVIATHAN. In the North there is a surveillance operation called Op QIMMIQ, and on the West Coast there is one called SEA LION.

Les activités de recherche et sauvetage ne sont tout simplement pas menées à l'improviste; elles ont lieu dans le contexte d'une surveillance routinière des eaux et des terres du Canada. En outre, en tant que commandant des opérations de recherche et de sauvetage, je suis un commandant de surveillance, et je mène une opération appelée LEVIATHAN. Dans le Nord, on mène une opération de surveillance appelée Op QIMMIQ, et, sur la côte Ouest, on en mène une appelée SEA LION.

Search and rescue occurs against a backdrop of continuous surveillance and in surveillance we contract a lot of air hours that are provided by authorities like Provincial Aerospace. They help us survey the ocean. We put names to contacts, we validate the tracks and then, with my partners in the rest of the government, we dig in and understand who's in the crew, what kind of cargo is being carried and the activities of those vessels. There is a contracted agent we work with on a day-to-day basis called Provincial Aerospace Limited.

Les opérations de recherche et sauvetage sont menées dans le contexte d'une surveillance continue et, dans le cadre de la surveillance, nous confions à la sous-traitance beaucoup d'heures de vol qui sont assurées par des autorités comme Provincial Aerospace. Elles nous aident à sonder l'océan. Nous associons des noms aux contrats, nous validons les pistes, puis, avec mes partenaires du reste du gouvernement, nous fouillons, et nous comprenons qui est l'équipage, quel genre de fret est transporté et quelles sont les activités de ces navires. Nous travaillons quotidiennement avec un agent contractuel appelé Provincial Aerospace Limited.

In the North we will often reach for an authority like Kenn Borek Air, which is a very experienced northern flyer with twin otter type aircraft that are well-suited to the North. We work with mine sites or geological survey companies that may be flying helicopters, and we will request they join a search and I'm an authority for paying for contracted services should that be the most proximal way to execute a rescue. Kenn Borek Air has been used on several occasions because of its proximity and expertise in getting to a search and rescue site.

Dans le Nord, nous faisons souvent appel à une autorité comme Kenn Borek Air, qui est un voyageur nordique très expérimenté pilotant des aéronefs de type Twin Otter, lesquels sont bien adaptés au Nord. Nous travaillons avec des sites miniers ou des entreprises de levés géologiques qui pourraient piloter des hélicoptères, et nous leur demandons de se joindre à une recherche, et j'ai le pouvoir de payer des services contractuels s'il s'agit de l'intervenant le plus rapproché qui peut exécuter une opération de sauvetage. On a eu recours à Borek Air à plusieurs occasions en raison de sa proximité et de son expertise pour ce qui est de se rendre sur les lieux d'une opération de recherche et sauvetage.

These are just some of the ways, and if I thought longer I could generate a longer list of how we interact with commercial agents.

Il ne s'agit là que de certains des moyens, et, si j'y réfléchissais plus longuement, je pourrais générer une liste plus longue de façons dont nous interagissons avec les agents commerciaux.

Senator Enverga: What percentage of their services do you use? Do you normally use them maybe 50 per cent of the time? How many times do you call them and say "we need you"? Do you have any stats that tell how much you need them at a certain point?

Rear-Admiral Newton: Yes, sir, I understand the question. Anecdotally, from my head, the vast majority of flying is done by Royal Canadian Air Force helicopters and fixed-wing assets that are designated to me by the Royal Canadian Air Force. I would have to go and dig out the statistics, and I will provide you a specific answer to your question as to what number of flight hours are provided by a voluntary agency like CASARA, which is civil aviation. They are volunteers. We reach for them right away because they are part of the Canadian SAR system. For my SAR region, I can also provide a list of how many times we've contracted a civilian air company to join a search and rescue.

In my mind, though, the number is wildly and predominantly Royal Canadian Air Force flying the Cormorants and the Hercules aircraft. With respect to specifics, I will have to get back to you.

Senator Enverga: Thank you, sir. We will be expecting those numbers.

If we eliminated the private sector, what kind of efficiency could we get? Do you think we would be more efficient with regard to maybe going into the SAR and helping people, or is it more efficient at this time?

Rear-Admiral Newton: That's a good point, sir, because in Canada and in the larger SAR regions of the world, and let's say we're somewhere between number one and number ten in size. We're certainly not the biggest. In these really large SAR regions around the world there is no government-provided solution that will do it all. It would be wrong to build it because the proximity of another ship or the proximity of a community or a civilian flyer gives you the best response because time is of the essence. Always in search and rescue time is of the essence.

If somebody in the civilian world happens to be there, you should reach for it. If that's going to be the case, then you should nurture relationships with civilian authorities, whether they're community or civil aviation or shipping companies or fishing fleets. You should go out and nurture better relationships, and that's what we do. Then we get more proximity and more people knowing how to communicate. We get people eager to participate.

Le sénateur Enverga : Quel pourcentage de leurs services utilisez-vous? Avez-vous habituellement recours à eux, peut-être, la moitié du temps? Combien de fois les appelez-vous pour dire : « Nous avons besoin de vous »? Avez-vous des statistiques indiquant dans quelle mesure vous avez besoin d'eux à un certain moment?

Cam Newton : Oui, monsieur, je comprends la question. Soit dit en passant, de mémoire, la grande majorité des vols sont effectués par des hélicoptères de l'Aviation royale canadienne et par des aéronefs à voilure fixe qui me sont affectés par l'Aviation royale canadienne. Il faudrait que je fouille pour trouver les statistiques, et je vous donnerai une réponse précise à votre question concernant le nombre d'heures de vol qui sont fournies par un organisme bénévole comme l'ACRSA, qui est l'aviation civile. Les intervenants sont des bénévoles. Nous faisons appel à eux immédiatement parce qu'ils font partie du système SAR canadien. Pour ma région SAR, je peux également fournir une liste du nombre de fois où nous avons communiqué avec une compagnie aérienne civile afin qu'elle se joigne à une opération de recherche et sauvetage.

À mon avis, toutefois, le nombre représente largement et principalement des vols de Cormorant et de l'avion Hercules de l'Aviation royale canadienne. Pour ce qui est des détails, je vais devoir vous revenir là-dessus

Le sénateur Enverga : Merci, monsieur. Nous attendrons ces chiffres avec impatience.

Si nous éliminions le secteur privé, quels genres de gains en efficience obtiendrions-nous? Pensez-vous que nous serions plus efficients lorsqu'il s'agit, peut-être, de mener une opération de recherche et sauvetage et d'aider les gens, ou bien sommes-nous plus efficients actuellement?

Cam Newton : C'est une bonne question, monsieur, parce que, au Canada, et dans l'ensemble des régions SAR du monde... Et disons que nous nous situons quelque part entre les premiers et les dixièmes au chapitre de la taille. Nous ne sommes certainement pas la plus importante. Dans les très grandes régions SAR du monde, aucune solution fournie par le gouvernement n'est une solution complète. Ce serait une erreur que de procéder à la construction parce que la proximité d'un autre navire, d'une collectivité ou d'un pilote civil vous procure la meilleure intervention, car le temps presse. Dans le cadre d'opérations de recherche et sauvetage, le temps est toujours compté.

Si une personne du monde civil se trouve là par hasard, on devrait y faire appel. Si cela doit être le cas, alors, il faudrait entretenir des relations avec les autorités civiles, qu'il s'agisse de la collectivité, de l'aviation civile, d'entreprises de transport maritime ou de flottes de pêche. Il faudrait sortir et entretenir de meilleures relations, et c'est ce que nous faisons. Nous obtenons ensuite une plus grande proximité et davantage de gens qui savent comment communiquer. Nous rendons les gens enthousiastes à l'idée de participer.

You can call it the Good Samaritan Act or go to the United Nations Convention on the Law of the Sea but we all, as mariners and aviators, whether civil or military, understand the fundamental requirement to help fellow humans because tomorrow, as a ship's captain, I would expect you as a ship's captain to come to my rescue because of proximity.

I think it's in the best interests of big Canada and the big Arctic to nurture relationships with everybody and try to find the balance between federal forces and commercial enterprise. That's the trick.

Senator Enverga: My major concern was that Cougar was here last time and they told us that, although they have been helping people or the agencies, sometimes they will be unable because their equipment is dedicated to a particular place. How could we manage that in case they're not available? How do we ensure we cover all the SAR needs?

Rear-Admiral Newton: As far as I know, Cougar does contracted search and rescue and personnel movements to the oil rigs, and they get contracted by other authorities like installations in the wilderness, dam sites or mines, where that company feels it has to have its own standby capability, either to move people or to send someone to hospital because they're working in a very industrial setting. They are very much a contracted service provider.

I imagine that they have enough resources for each contract that they take. I assume that is the case. On a big case, like the big Hebron rig we're just building or the Hibernia rig that is already on the shelf, we all work together because there's no way that Cougar alone and the standby ship alone can be the rescue authority for the rig. We all know we must rush additional assets to the circumstance because it's going to be a bad night, it's going to be cold, with high seas, ice and fog, and everybody will be searching. We'll come to assist and work parallel with Cougar, side by side with them.

We nurture a relationship there because we don't believe they will be able to do everything, even though they're contracted. Again, it's part of this balance of we need them but they need us, too, and we need a system where we all work together.

Senator Enverga: Can you assure us that they will always be there for you to communicate with you or to join you?

Vous pouvez appeler cela la loi du bon samaritain ou vous rendre à la Convention des Nations Unies sur le droit de la mer, mais, en tant que marins et qu'aviateurs — civils ou militaires —, nous comprenons tous le besoin fondamental d'aider d'autres humains parce que demain, en tant que capitaine de navire, je m'attendrais à ce que vous, en tant que capitaine de navire, veniez à ma rescousse en raison de votre proximité.

Je pense qu'il est dans l'intérêt du grand Canada et du grand Arctique d'entretenir des relations avec tout le monde et de tenter de trouver l'équilibre entre les forces fédérales et l'entreprise commerciale. Voilà l'astuce.

Le sénateur Enverga : Ma préoccupation majeure tenait au fait que des représentants de Cougar ont comparu la dernière fois et qu'ils nous ont dit que, même s'ils aident les gens ou les organismes, parfois, ils en sont incapables parce que leur équipement est consacré à un lieu particulier. Comment pourrions-nous gérer cet état de fait dans les cas où ils ne sont pas disponibles? Comment pouvons-nous nous assurer que nous répondons à tous les besoins en matière de recherche et sauvetage?

Cam Newton : À ce que je sache, Cougar mène des opérations de recherche et sauvetage et déplace du personnel vers les plateformes pétrolières au titre de contrats, et l'entreprise passe des contrats avec d'autres autorités, comme des installations en milieu sauvage, des barrages ou des mines, si l'entreprise en question estime qu'elle doit disposer de sa propre capacité de réserve, soit pour déplacer des gens, soit pour envoyer une personne à l'hôpital parce que les employés travaillent dans un milieu très industriel. Il s'agit pas mal d'un fournisseur de services contractuel.

J'imagine que l'entreprise dispose d'assez de ressources pour chaque contrat qu'elle passe. Je présume que c'est le cas. Dans un cas important, comme celui de la grande plateforme Hebron, que nous sommes en train de construire, ou de la plateforme Hibernia, qui est déjà en service, nous travaillons tous ensemble parce qu'il est impossible qu'à eux seuls, Cougar et le navire de réserve puissent être l'autorité de sauvetage pour la plateforme. Nous savons tous que nous devons envoyer de toute urgence des ressources supplémentaires vers les lieux des événements parce que ça ne sera pas une bonne nuit, qu'il va faire froid, que c'est en haute mer et qu'il y a de la glace et du brouillard, et tout le monde va participer aux recherches. Nous viendrons prêter assistance et travaillerons en parallèle avec Cougar, à ses côtés.

Nous entretenons une relation avec ces autorités parce que nous ne croyons pas qu'elles pourront tout faire, même si elles ont passé un contrat. Encore une fois, cela fait partie de l'équilibre mentionné : nous avons besoin d'elles, mais elles ont besoin de nous aussi, et nous avons besoin d'un système où nous travaillons tous ensemble.

Le sénateur Enverga : Pouvez-vous nous assurer qu'elles seront toujours là pour communiquer avec vous ou pour se joindre à vous?

Rear-Admiral Newton: Yes, sir. On really hard cases, we metaphorically open the book on all the available assets that we can pull on in the really hard cases. So Cougar, Universal and Canadian Helicopters are all well-known aviation service providers in industry, and we have relationships with them. From time to time, like with Provincial Aerospace who flies aircraft offshore for surveillance, we will contract or task that aircraft to fly the top cover for our helicopters.

It's probably not well-known that when we fly deep-ocean missions with our helicopters we are worried about our helicopter and the safety of those five members over the ocean, so we will fly a fixed-wing aircraft with our helicopter for the really long-range missions. Sometimes I get that escort from a Provincial Aerospace aircraft based in St. John's, Newfoundland, because it's the quickest way I can get an airplane to escort my helicopter.

I use this as an example of the constant dialogue with the commercial authorities to provide support to us, and at the same time we are there for them in the big rig emergencies or mine site disasters if a ground search and rescue or a humanitarian patient transfer should arise. It's a network of people working together, sir.

Senator Enverga: Thank you.

Senator Raine: You mentioned the automated mutual assistance vessel rescue system. Is that really what we're talking about here? What does "automated" mutual assistance system mean?

Rear-Admiral Newton: In the deep ocean, well beyond the range of helicopters, there is a risk area of the North Atlantic. It's midway between us and the Azores, or midway between Newfoundland and Ireland, and midway to the south tip of Greenland there is this big hole in the ocean where helicopters can't reach. In fact, helicopters just scratch the edge of the giant ocean basin.

So a long time ago, merchant industry was approached and organized into a system where merchant ships and participating companies would register their ships and then they would be tracked by maritime authorities. In the event of an emergency, we know which ships are very willing to actually stop, deviate from their route and start searching. An automated system is used to alert these vessels and to know where they are.

Having said that, pretty well all vessels feel obligated to search for fellow mariners, and we rarely have a hard time getting somebody to participate in a search. Sometimes you can get delayed on your passage and miss your slot in a port for unloading, so it is a bit of a risk for merchant ships to get involved

Cam Newton : Oui, monsieur. Dans les cas vraiment difficiles, nous ouvrons le champ des possibilités à toutes les ressources disponibles auxquelles nous avons accès. Alors, Cougar, Universal et Canadian Helicopters sont des fournisseurs de services d'aviation connus dans l'industrie, et nous avons établi des relations avec eux. De temps à autre, comme dans le cas de Provincial Aerospace, qui envoie des aéronefs assurer une surveillance extracôtière, nous passons un contrat avec l'aéronef en question ou le chargeons de survoler nos hélicoptères à des fins de protection.

Il est probable que peu de gens savent que, lorsque nous menons des missions au grand large à bord de nos hélicoptères, nous sommes préoccupés au sujet de notre hélicoptère et de la sécurité des cinq membres qui survolent l'océan, alors nous envoyons un aéronef à voilure fixe accompagner notre hélicoptère dans le cas des missions de très longue portée. Parfois, j'obtiens cette escorte de la part d'un aéronef de Provincial Aerospace situé à St. John's, à Terre-Neuve, parce qu'il s'agit de la façon la plus rapide pour moi d'obtenir un aéronef qui pourra escorter mon hélicoptère.

J'utilise cette pratique comme un exemple du dialogue constant que nous tenons avec les autorités commerciales afin qu'elles nous fournissent du soutien, et, en même temps, nous sommes là pour elles en cas d'urgence sur les grandes plateformes ou de catastrophes minières, si une opération de recherche et sauvetage terrestre devait être menée ou si un patient devait être transféré pour un motif d'ordre humanitaire. Il s'agit d'un réseau de gens qui travaillent ensemble, monsieur.

Le sénateur Enverga : Merci.

La sénatrice Raine : Vous avez mentionné le système automatique d'entraide pour le sauvetage des navires. Est-ce vraiment de cela qu'il est question? Que signifie un système d'entraide « automatique »?

Cam Newton : Au grand large, bien au-delà de la portée des hélicoptères, il y a une région à risque de l'Atlantique Nord. Elle se trouve à mi-chemin entre nous et les Açores, ou à mi-chemin entre Terre-Neuve et l'Irlande, et à mi-chemin vers la pointe sud du Groenland, il y a ce grand trou dans l'océan que les hélicoptères ne peuvent atteindre. De fait, ils ne font qu'effleurer la limite du bassin océanique géant.

Ainsi, il y a longtemps, l'industrie marchande a été abordée et organisée en un système où les navires marchands et les entreprises participantes enregistraient leurs navires, puis faisaient l'objet d'un suivi par les autorités maritimes. En cas d'urgence, nous savons quels navires sont très disposés à s'arrêter, à s'écarter de leur itinéraire et à commencer à mener des recherches. On utilise un système automatique pour alerter ces navires et pour savoir où ils se trouvent.

Cela dit, pas mal tous les navires se sentent obligés d'aller à la recherche d'autres marins, et nous avons rarement de la difficulté à amener quelqu'un à participer à une recherche. Parfois, nous pouvons être retardés dans le cadre de notre passage et manquer notre créneau dans un port pour le déchargement, alors il est un

in a search and rescue but they are very important to the task. They provide shelter, they search and many, many times in the deep ocean they effect the rescue, and we have cases of that this year. I just looked for a sailboat in the middle of the Atlantic for two days, and the merchant ships in that area were key to the search.

In the case of the *Atlantic Charger*, it was a Canadian merchant ship that came to the rescue of the nine crew members. Although it didn't feel it could take the risk of rescuing the *Atlantic Charger* crew, it provided the shelter, proximity and a communication platform so we could manage the search and rescue after the commercial vessel had located the *Atlantic Charger* life raft. Big merchant ships are fundamental to the execution of search and rescue on the North Atlantic, ma'am.

Senator Poirier: Thank you, rear-admiral, for being here. Quite a few of my questions have already been touched on by some of my colleagues, but I have a couple that I wanted to add on to those.

During the study we have been doing so far on the maritime search and rescue programs, one of the issues that we have heard about a few times is the Arctic challenges with the Northern traffic. I know some of my colleagues have touched on that already.

Just last week, the committee heard from the Canadian Coast Guard Auxiliary, and they mentioned to us that they had received extra funds to answer to some of the Northern challenges.

As your budget currently stands, do you have adequate funds to respond to Northern challenges?

Rear-Admiral Newton: I'm not budget-limited. I have been provided aircraft, resources and the crews to fly them, and 40 hours a week of standby number hours at 30 minutes' notice to fly, and the rest of the week at 2 hours' notice to fly. The Coast Guard has enough big ships for the areas that we're covering.

The fleets are all busy; nobody is not busy. The navy fleet is busy in Canadian waters and deploying to the North. I am not personally budget-limited, nor is the Joint Rescue Coordination Centre or the aircraft provided to me by the Royal Canadian Air Force. The readiness seems to match the demand, and the Air Force affords that level of readiness.

peu risqué pour un navire marchand de participer à une opération de recherche et sauvetage, mais ils sont très importants pour la tâche. Ils fournissent un refuge, ils mènent des recherches et, très très souvent, au grand large, ils effectuent le sauvetage, et nous avons connu des cas de ces occurrences cette année. J'étais simplement à la recherche d'un voilier au milieu de l'Atlantique depuis deux jours, et les navires marchands de cette région ont été la clé de la recherche.

Dans le cas de l'*Atlantic Charger*, c'était un navire marchand canadien qui est venu à la rescousse des neuf membres d'équipage. Même s'il n'avait pas l'impression de pouvoir prendre le risque de secourir l'équipage de l'*Atlantic Charger*, il a fourni le refuge, la proximité et une plateforme de communication afin que nous puissions gérer les activités de recherche et sauvetage après que le navire commercial a localisé le radeau de sauvetage de l'*Atlantic Charger*. Les grands navires marchands sont essentiels à l'exécution des opérations de recherche et sauvetage dans l'Atlantique Nord, madame.

La sénatrice Poirier : Je vous remercie, contre-amiral, de votre présence. Pas mal de mes questions ont été abordées par certains de mes collègues, mais j'en ai deux ou trois que je voulais ajouter.

Durant l'étude que nous menons jusqu'ici concernant les programmes de recherche et sauvetage maritime, l'un des problèmes dont nous avons entendu parler à quelques occasions, ce sont les difficultés dans l'Arctique liées à la circulation nordique. Je sais que certains de mes collègues ont déjà abordé cette question.

Pas plus tard que la semaine dernière, le comité a eu des nouvelles de la Garde côtière auxiliaire canadienne, et on nous a mentionné qu'elle avait reçu des fonds supplémentaires pour relever certains des défis nordiques.

Compte tenu de votre budget actuel, disposez-vous de fonds adéquats pour relever les défis nordiques?

Cam Newton : Je ne suis pas limité par le budget. On m'a fourni des aéronefs, des ressources et les équipages nécessaires pour les piloter, et 40 heures par semaine de ressources de réserves prêtes à s'envoler sur un préavis de 30 minutes, et le reste de la semaine, sur un préavis de 2 heures. La Garde côtière dispose de suffisamment de grands navires pour les secteurs dont elle assure la protection.

Les flottes sont toutes occupées; personne n'est pas occupé. La flotte navale est occupée dans les eaux canadiennes et se déploie dans le Nord. Personnellement, je ne suis pas limité par le budget, et le Centre conjoint de coordination des opérations de sauvetage ou l'aéronef qui m'a été fourni par l'Aviation royale canadienne ne le sont pas non plus. L'état de préparation semble correspondre à la demande, et la Force aérienne se permet ce degré de préparation.

I don't usually think, ma'am, in terms of budget. We would have to go back to the Air Force and ask if the number of hours they are providing me is taxing their budget, but I have not heard those kinds of communications as a senior commander.

Senator Poirier: Thank you. When a call is taken from the North area, where is the help deployed from? How far do they have to go?

Rear-Admiral Newton: Our immediate response would be to reach for community assets, commercial providers and experts in flying in the North. I mentioned Borek before, and that's one type of industry that flies in the North.

Immediately on the call, without hesitation, a case is opened in my JRCC and we task the big Cormorant helicopters to start flying North. They do it in three hops. We also task immediately, either from Trenton or from Greenwood, Nova Scotia, the big search and rescue Hercules aircraft to start flying. They have a several-hour flight time — three to five hours — to get into the North to be overhead and start communicating or searching for the lost mariners, victims in lifeboats or a ship taking on water.

We don't wait and wait for those aircraft to arrive. We're always working with any kind of merchant ships transiting the area, as was the case where the nickel-carrying merchant ship came to the aid immediately of the *Atlantic Charger*. We reach for a commercial air company or a Transport Canada Dash-8 on an ice patrol or environmental patrol; we look for any other Royal Canadian Air Force assets flying in the North. In the case of 2013, where the adventurers drifted out into the Northwest Passage while on an expedition to swim with the narwhals, they were Griffin helicopters doing a mission in the north that turned around, left their mission and rescued the people on the ice floe.

We do this very active management, reaching for everything we can in the region. As a SAR authority, we have a great deal of authority and trust with the partners we work with. If we use any kind of commercial entity, if demanded by the authority, we will repay them for their hours. Otherwise, in that period of time, the big air force from the South is flying north, but usually it's the combined forces of things already in the North and the aircraft flying from the South that reach the scene and deal with the emergency.

Je ne pense habituellement pas en fonction du budget, madame. Il faudrait que nous retournions nous adresser aux responsables de la Force aérienne pour leur demander si le nombre d'heures qu'ils me fournissent réduit leur budget, mais, en tant que commandant supérieur, je n'ai pas entendu ce genre de communications.

La sénatrice Poirier : Merci. Quand on répond à un appel de la région du Nord, d'où l'aide est-elle déployée? Quelle distance les intervenants doivent-ils parcourir?

Cam Newton : Notre réaction immédiate serait de faire appel aux ressources communautaires, aux fournisseurs commerciaux et aux experts en matière de transport aérien dans le Nord. J'ai déjà mentionné Borek, et il s'agit d'un type d'industrie qui circule dans le Nord.

Immédiatement à la suite de l'appel, sans hésitation, un cas est ouvert à mon Centre conjoint de coordination des opérations de sauvetage, et nous chargeons les grands hélicoptères Cormorant de s'envoler vers le Nord. Ils le font en trois temps. En outre, nous chargeons immédiatement — depuis Trenton ou depuis Greenwood, en Nouvelle-Écosse — les grands avions de recherche et de sauvetage Hercules de s'envoler. Leur temps de vol s'étend sur plusieurs heures — de trois à cinq heures — avant qu'ils arrivent dans le Nord, qu'on puisse les entendre et commencer à communiquer ou à chercher les marins perdus, les victimes dans les canots de sauvetage ou un navire qui pend l'eau.

Nous ne faisons pas qu'attendre et attendre l'arrivée de ces aéronefs. Nous travaillons toujours avec tout type de navires marchands en transit dans la région, comme cela a été le cas lorsque le navire marchand transportant du nickel est immédiatement venu en aide à l'*Atlantic Charger*. Nous faisons appel à une compagnie aérienne commerciale ou à un Dash-8 de Transports Canada à bord d'une patrouille de reconnaissance des glaces ou d'une patrouille environnementale; nous vérifions la présence de toute autre ressource de l'Aviation royale canadienne survolant le Nord. Dans le cas de 2013, quand les aventuriers ont dérivé dans le passage du Nord-Ouest dans le cadre d'une expédition visant à leur permettre de nager avec les narvals, ce sont des hélicoptères Griffin qui menaient une mission dans le Nord qui ont fait demi-tour, abandonné leur mission et secouru les gens sur la banquise.

Nous assurons une gestion très active et faisons appel à tout ce que nous pouvons dans la région. En tant qu'autorité en matière de recherche et de sauvetage, nous jouissons d'un grand pouvoir et de la confiance des partenaires avec lesquels nous travaillons. Si nous avons recours à tout type d'entité commerciale, à la demande de l'autorité, nous allons lui rembourser ses heures. Autrement, durant cette période, la grande force aérienne du Sud se dirige vers le nord, mais, habituellement ce sont les forces combinées de ressources déjà dans le Nord et l'aéronef en provenance du Sud, qui arrivent sur place et gèrent la situation d'urgence.

I would say, ma'am, that as we build the Arctic offshore patrol ship — we're building, say, six of these ships, and they are developed to carry the Cyclone helicopter and they can land Chinooks and Griffins on their deck — we are adding to the Canadian inventory a new class of standby capability in the North that will regularly patrol our waters. It is a big ship. It has command and control facilities, communications, a very large flight deck, it has three large boats, a large crane, can take medical staff and acts as a joint enabling capability with all the other elements of the Canadian Armed Forces.

I think we're doing a good job now, and I think with the recapitalization of the Coast Guard and the navy's building of the Arctic offshore patrol ships, things will develop apace the change of activity in the North that we're witnessing.

Senator Poirier: As the activities increase in the Northern areas, in your opinion would what you have just described be the best solution?

Rear-Admiral Newton: There are several risks in the Arctic, whether it's shipping, aircraft operation or whether it's just people on the land and adapting to new circumstances with ice and climate.

I think there are quite a few things that are evolving from a capital point of view. The RADARSAT Constellation Mission is going to give us a far better and more precise picture of everything moving in Northern latitudes. Right now I depend on or rely on, to some degree, RADARSAT-2. We're getting an increment in quality and the number of passes above that.

We're building the Arctic offshore patrol ship. The Coast Guard and Fisheries fleet is being recapitalized. The Canadian Air Force's C-17s and C-130Js fly into almost all of the air strips in the North, whether dirt-covered or short. The large Chinook helicopters are Arctic capable and being developed increasingly for the Arctic. We move our Cormorant helicopters around the North, despite the challenges of weather. They are built for all weather and are very robust flyers. We are getting good communications with the Global Wideband Satellite system that we're now using in the military.

Aside from the forces I've been given I see, in the Canadian Armed Forces, quite a bit of development that is tuned to the North. You see an increased invigoration of the Rangers and a far higher level of Canadian Armed Forces activity in the North, whether it's the Arctic Response Company Group, Joint Task Force North, me as the Maritime Component Commander in my patrol ships or my role in northern Labrador as a Joint Task Force Commander, our work across the straits with Denmark,

Je dirais, madame, qu'au moment où nous construisons le patrouilleur hauturier pour l'Arctique — nous construisons, disons, six de ces navires, et ils sont conçus pour transporter l'hélicoptère Cyclone, et des Chinook et des Griffin peuvent atterrir sur leur pont —, nous ajoutons à l'inventaire canadien une nouvelle catégorie de capacité de réserve dans le Nord qui patrouillera régulièrement nos eaux. C'est un grand navire. Il est doté d'installations de commandement et de contrôle, de dispositifs de communication et d'un très grand pont d'envol; il compte trois gros bateaux et une grande grue; il peut transporter du personnel médical, et il agit à titre de capacité habilitante mixte avec tous les autres éléments des Forces armées canadiennes.

Je pense que nous faisons du bon travail, maintenant, et, compte tenu de la restructuration de la Garde côtière et de la construction par la marine de patrouilleurs hauturiers pour l'Arctique, la situation évoluera au même rythme que le changement dont nous sommes témoins au chapitre de l'activité dans le Nord.

La sénatrice Poirier : À mesure que les activités augmentent dans les régions nordiques, à votre avis, est-ce que ce que vous venez tout juste de décrire serait la meilleure solution?

Cam Newton : Il y a plusieurs risques dans l'Arctique, qu'il s'agisse de l'activité maritime, du pilotage d'aéronefs ou simplement de gens sur terre qui s'adaptent à la nouvelle situation relativement à la glace et au climat.

Je pense qu'il y a pas mal de choses qui évoluent du point de vue du capital. La mission de la Constellation RADARSAT va nous donner une idée bien meilleure et beaucoup plus précise de tout ce qui bouge aux latitudes nordiques. En ce moment, je dépends dans une certaine mesure de RADARSAT-2, ou je compte sur cette mission. Nous obtenons une augmentation graduelle de la qualité et du nombre de passages au-dessus de cela.

Nous construisons le patrouilleur hauturier pour l'Arctique. La flotte de la Garde côtière et du ministère des Pêches fait l'objet d'une restructuration. Les C-17 et C-130J de l'Aviation canadienne atterrissent sur presque toutes les pistes d'atterrissage du Nord, qu'elles soient en terre battue ou qu'elles soient courtes. Les grands hélicoptères Chinook sont capables de voler dans l'Arctique et sont de plus en plus conçus pour ce climat. Nous nous déplaçons à bord de nos hélicoptères Cormorant dans le Nord, malgré les conditions météorologiques difficiles. Ils sont conçus pour toutes les conditions météorologiques et sont très robustes. Nous obtenons de bonnes communications grâce au système Global Wideband Satellite, que nous utilisons maintenant dans l'armée.

À part les forces que j'ai reçues, dans les Forces armées canadiennes, j'observe toute une évolution qui est axée sur le Nord. On constate une dynamisation accrue des Rangers et un niveau d'activités des Forces armées canadiennes bien plus élevé dans le Nord, qu'il s'agisse du Groupe compagnie d'intervention dans l'Arctique, de la Force opérationnelle interarmées (Nord), de moi-même en tant que commandant de la composante maritime dans mes navires de patrouille ou dans le cadre de mon rôle dans

and our work to the district of the U.S. Coast Guard in Alaska. There is quite a convergence of capability that seems to be developing apace the change of the ice and climate regime in the North. I see it as a bit of a good thing. I don't think it's all in the search and rescue bucket but, as a Canadian Armed Forces senior officer, I do see it having a relationship to what we're trying to achieve with search and rescue.

le nord du Labrador en tant que commandant de la Force opérationnelle interarmées, de notre travail avec le Danemark de l'autre côté des détroits et de notre travail dans le district de la Garde côtière américaine, en Alaska. Il y a toute une convergence des capacités qui semblent évoluer au même rythme que le changement au chapitre de la glace et du régime climatique dans le Nord. Je considère un peu cela comme une bonne chose. Je ne pense pas que ça soit tout lié au domaine de la recherche et du sauvetage, mais, en tant qu'officier supérieur des Forces armées canadiennes, je considère que cela a un lien avec ce que nous tentons d'obtenir grâce aux opérations de recherche et de sauvetage.

Senator Poirier: Thank you very much. Thank you for all the great information you have provided tonight.

La sénatrice Poirier : Merci beaucoup. Je vous remercie des excellents renseignements que vous nous avez fournis ce soir.

Rear-Admiral Newton: You're welcome, ma'am.

Cam Newton : Il n'y a pas de quoi, madame.

The Chair: On behalf of the committee members, rear-admiral, I would like to thank you for your time and your very interesting and informative answers to the questions raised here this evening. Certainly it will add much as we continue on with our study. I apologize again for the late start, but your information has been wonderful. Thank you.

Le président : Au nom des membres du comité, contre-amiral, je voudrais vous remercier de votre temps et de vos réponses très intéressantes et très instructives aux questions soulevées ici, ce soir. Il est certain qu'elles constitueront un ajout important à mesure que nous poursuivons notre étude. Je m'excuse encore une fois pour le début tardif de la séance, mais vos renseignements ont été merveilleux. Merci.

Members, I would ask for agreement on a motion to proceed in camera to consider a draft agenda, just for a few moments, for future business. Agreed?

Mesdames et messieurs, je vous demanderais d'adopter une motion afin que nous poursuivions à huis clos pour examiner une ébauche d'ordre du jour, seulement pour quelques instants, concernant les travaux à venir. D'accord?

Hon. Senators: Agreed.

Des voix : D'accord.

(The committee continued in camera.)

(La séance se poursuit à huis clos.)

SENATE SÉNAT
CANADA

VOLUME ONE – AQUACULTURE INDUSTRY AND GOVERNANCE IN CANADA

Standing Senate Committee on Fisheries and Oceans

The Honourable Fabian Manning
Chair

The Honourable Elizabeth Hubley
Deputy Chair

June 2016



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The Committee would like to recognize the following Honourable Senators who are no longer serving members of the Committee whose contribution to the study was invaluable.

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ORDER OF REFERENCE

Extract from the *Journals of the Senate*, Monday, December 9, 2013:

The Honourable Senator Manning moved, seconded by the Honourable Senator Unger:

That the Standing Senate Committee on Fisheries and Oceans be authorized to examine and report on the regulation of aquaculture, current challenges and future prospects for the industry in Canada;

That the papers and evidence received and taken and work accomplished by the committee on this subject during the First Session of the Forty-first Parliament be referred to the committee; and

That the committee report from time to time to the Senate, but no later than June 30, 2015, and that the committee retain all powers necessary to publicize its findings for 180 days after the tabling of the final report.

The question being put on the motion, it was adopted.

Gary W. O'Brien
Clerk of the Senate

TABLE OF CONTENTS

LIST OF ACRONYMS

AAR:	Aquaculture Activities Regulations
AIS:	Aquatic Invasive Species
ALMB:	Aquaculture Leasing Management Board (Prince Edward Island)
AMAC:	Aquaculture Management Advisory Committee (British Columbia)
ASERC:	Aquaculture Site Environmental Review Committee (New Brunswick)
B.C.:	British Columbia
BCARP:	British Columbia Aquaculture Regulatory Program
BC-FLNRO:	British Columbia Ministry of Forests, Lands and Natural Resource Operations
BC-MA:	British Columbia Ministry of Agriculture
BMA:	Bay Management Area
CCFAM:	Canadian Council of Fisheries and Aquaculture Ministers
CFIA:	Canadian Food Inspection Agency
CSSP:	Canadian Shellfish Sanitation Program
DFO:	Department of Fisheries and Oceans Canada
EIA:	Environmental Impact Assessment
EMP:	Environmental Management Program (New Brunswick and Nova Scotia)
FTE:	Full-Time Equivalent
GDP:	Gross Domestic Product
IHN:	Infectious Hematopoietic Necrosis
IPMP:	Integrated Pest Management Program (New Brunswick)
ISA:	Infectious Salmon Anaemia
IMTA:	Integrated Multi-Trophic Aquaculture
LRC:	Aquaculture Leasing Referral Committee (Prince Edward Island)
MAPAQ:	Québec Department of Agriculture, Fisheries and Food
MOU:	Memorandum of Understanding
NASAPI:	National Aquaculture Strategic Action Plan Initiative
N.B.:	New Brunswick
NB-DAAF:	New Brunswick Department of Agriculture, Aquaculture and Fisheries
NB-DELG:	New Brunswick Department of Environment and Local Government
N.L.:	Newfoundland and Labrador
NL-DFA:	Newfoundland and Labrador Department of Fisheries and Aquaculture
N.S.:	Nova Scotia
NS-DFA:	Nova Scotia Department of Fisheries and Aquaculture
P.E.I.:	Prince Edward Island

PEIAA:	Prince Edward Island Aquaculture Alliance
PEI-FARD:	Prince Edward Island Department of Fisheries, Aquaculture and Rural Development
PMRA:	Pest Management Regulatory Agency
QC:	Québec
SAECOP:	Shellfish Aquaculture Environmental Code of Practice (Prince Edward Island)
SAP:	Sustainable Aquaculture Program (Federal Government)
SODIM:	Société de développement de l'industrie maricole inc. (Québec)
SOP:	Standard Operating Practices (New Brunswick)

INTRODUCTION

In January 2014, the Standing Senate Committee on Fisheries and Oceans (the Committee) began a study on aquaculture pursuant to an order of reference received from the Senate which reads as follows:

> *That the Standing Senate Committee on Fisheries and Oceans be authorized to examine and report on the regulation of aquaculture, current challenges and future prospects for the industry in Canada.*[1]

In response to this broad and complex mandate, the Committee decided to hold public hearings in Ottawa and to undertake fact-finding missions both within and outside of Canada. Within Canada, the Committee completed site visits in the provinces where the marine aquaculture sector operates: British Columbia (B.C.), New Brunswick (N.B.), Newfoundland and Labrador (N.L.), Nova Scotia (N.S.), Prince Edward Island (P.E.I.), and Québec (QC). As part of these missions, the Committee also took the opportunity to hold public hearings in some cities, including: Gander (N.L.), Halifax (N.S.), Moncton (N.B.), and Nanaimo (B.C.). International fact-finding missions brought the Committee to Norway and Scotland, two countries with aquaculture regulatory regimes comparable to Canada's.

This document constitutes Volume One in a series of three volumes the Committee has prepared on this study. In this volume, the Committee provides a brief profile of the aquaculture industry and its governance in Canada. Volume Two will present a profile of the industry in Norway and Scotland and highlight how aquaculture is regulated in these jurisdictions. The information contained in Volume One and Volume Two is based, in large part, on background material gathered in preparation for the Committee's fact-finding missions. Volume Three will include the Committee's observations and recommendations on the aquaculture industry and its governance in Canada, based on findings from the fact-finding missions and the evidence gathered during the public hearings.

This volume is divided into eight chapters. Chapter 1 presents a general overview of the federal and provincial governance of aquaculture in Canada. Chapters 2 through 7 provide a portrait of the industry in B.C., N.B., N.L., N.S., P.E.I. and QC, and describe the framework in place in each province regulating aquaculture. Chapter 8 examines the economic repercussions generated by aquaculture and highlights some of the opportunities and challenges facing the industry in Canada.

The purpose of Volume One is not to compare the performance of the aquaculture industry from one province to the other, nor is it to assess the effectiveness or comprehensiveness of the federal and provincial regulatory frameworks. Rather, it is to better understand the diversity of the industry across the country and to examine the complexity of its governance, with a view to better define the roles and responsibilities of the federal government in relation to aquaculture.

1 Senate of Canada, ***Journals of the Senate***, 2nd Session, 41st Parliament, 9 December 2013, p. 274.

CHAPTER 1: Overview of the Federal and Provincial Regulatory Framwework

1.1 Setting the Context

In Canada, federal and provincial governments share regulatory authority over aquaculture – from siting, design and operation through to decommissioning. As will be explained in more detail in the other chapters, the provincial governments in N.B., N.L., N.S., and QC are the principal regulators responsible for aquaculture licensing and a system of tenure (or lease) management; bilateral Memorandums of Understanding (MOUs) on aquaculture development between the federal government and individual provinces serve to clarify the roles and responsibilities of each level of government. In P.E.I., responsibility for aquaculture leasing has been delegated to the federal government since 1928 and the industry is subject to co-management. In B.C., the federal government has been responsible for the operational regulation of aquaculture, including licensing, site approvals, and establishing operator requirements since 2010 as a result of a court decision, but the province remains responsible for issuing leases. Aquaculture governance in Canada is complex, not only because it involves two levels of government in each jurisdiction, but also because it involves several departments and agencies from each level of government. Even the division of roles and responsibilities between the federal government and the provinces varies from one jurisdiction to another as a result of the different provisions in each MOU.

Additionally, aquaculture development may involve the participation of municipal governments in public consultations and community engagement for proposed aquaculture operations. First Nations and other Aboriginal groups may be involved as well during aquaculture licensing and review processes, consistent with legal obligations and the federal duty to consult.

1.2 Federal Departments and Agencies Involved in Aquaculture

At the federal level, the aquaculture industry is essentially regulated through seven distinct departments and agencies, involving at least twelve different but intertwined pieces of legislation and several related regulations. None of these statutes were designed to address aquaculture specifically, but some of their provisions do apply to the industry.

The Department of Fisheries and Oceans Canada (DFO) is the lead federal department responsible for aquaculture management. This responsibility was first assigned to the department by the Prime Minister in 1984 and was reaffirmed over the years. DFO assumes this lead role by ensuring that aquaculture is managed sustainably across the country in a way that protects fish and fish habitat as per the *Fisheries Act*. To improve clarity and transparency in the application of this Act to the aquaculture industry, DFO has developed the proposed *Aquaculture Activities Regulations* (AAR), which set out the conditions under which aquaculture operations can be conducted across the country.[2] Pursuant to the *Fisheries Act*, the department also manages aquaculture operations in P.E.I. and administers the *Pacific Aquaculture Regulations*, which govern aquaculture in B.C. In addition, DFO manages the federal government's Sustainable Aquaculture Program (SAP), which

2 "**Aquaculture Activities Regulations**," *Canada Gazette*, Part I, Vol. 148, No. 34, 23 August 2014.

has a strong focus on science and aims to enhance the sustainable development of the industry. The department also leads the development of plans for the integrated management of activities affecting estuaries, coastal and marine waters, and the coordination of oceans issues, as per the *Oceans Act*. Finally, DFO is responsible for aquatic species under the *Species at Risk Act*.

Environment Canada is responsible for minimizing threats to Canadians and the environment from pollution, including water pollution, under the *Canadian Environmental Protection Act*. As such, the department sets standards for triggering mandatory environmental risk assessments of substances identified in a number of acts and regulations, including the disposal at sea provisions of the *Fisheries Act* and the *New Substances Notification Regulations*.

Health Canada regulates drugs to ensure their safety for humans and animals under the *Food and Drugs Act*, including veterinary drugs administered to aquacultured fish. The department is also responsible for setting maximum levels for chemical contaminants in food, including those that can be found in fish and seafood, both captured and aquacultured. Similarly, the Pest Management Regulatory Agency (PMRA) regulates and registers pest control products under the *Pest Control Products Act*, including those used in aquaculture (to manage sea lice, for example). The AAR proposed by DFO are intended to clarify the conditions under which veterinary drugs and pest control products may be used in aquaculture and place reporting requirements on the use of these products.

The Canadian Food Inspection Agency (CFIA) manages and controls animal diseases – including diseases affecting finfish, molluscs, and crustaceans – under the *Health of Animals Act*; also under this Act, the CFIA can provide financial compensation to aquaculture facilities for the cost associated with the ordered destruction of animals – both those raised on land and in bodies of water – in response to outbreaks of reportable diseases. The CFIA further governs the manufacture and sale of livestock feeds under the *Feeds Act*, including fish feed. It also inspects processing plants and issues export certificates under the *Safe Food for Canadians Act*. Under the *Fish Inspection Regulations*, the CFIA ensures that all fish – aquacultured or wild caught – processed at federally registered establishments meet regulated requirements for safety, wholesomeness and identity. Moreover, the CFIA administers the Canadian Shellfish Sanitation Program (CSSP), jointly with DFO and Environment Canada. As part of the CSSP, the CFIA maintains a biotoxin surveillance program of shellfish aquaculture sites across the country.

Transport Canada is responsible for reviewing and approving applications for the placement of aquaculture containment and/or structures within the navigable waters of Canada; this is done to protect public rights of navigation under the *Navigation Protection Act*. The department also regulates vessel-related pollution prevention and response, vessel requirements and inspections, and vessel personnel and safety under the *Canada Shipping Act*.

Finally, under the *Department of Agriculture and Agri-Food Act*, Agriculture and Agri-Food Canada supports seafood market development and traceability initiatives, including initiatives for fresh and processed aquacultured products.

The fact that several federal departments and agencies are involved in the management of aquaculture reflects the cross-disciplinary nature of the industry. However, this leads to overlap and duplication in regulations, as well as in monitoring and compliance activities. For many years, the industry has called for a single national aquaculture statute that would reduce duplication, allow consistent oversight and harmonize the federal regulatory instruments.

1.3 Federal and Provincial Collaboration

In addition to the federal departments and agencies mentioned above, there are other ministries and agencies directly involved in the regulation and support of aquaculture in each province. In total, there are more than 70 pieces of federal and provincial legislation governing aquaculture in Canada. The Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) is currently working to address a number of challenges associated with Canadian aquaculture governance. This work is carried out as part of the National Aquaculture Strategic Action Plan Initiative (NASAPI), a federal/provincial approach to ensuring the sustainable development of the aquaculture industry in Canada[3].

3 NASAPI, ***Overarching Document***, an initiative of the CCFAM, 2010.

CHAPTER 2: British Columbia

2.1 Profile of the Industry

2.1.1 Structure and Location

The aquaculture industry in B.C. comprises essentially two sectors: finfish and shellfish. The structure of the finfish sector has changed significantly over the years as a result of consolidation and integration. While there were some 100 companies active in the sector in the 1980s, there are now only 11 left, with three of them – Marine Harvest, Cermaq and Grieg Seafood – producing 88% of all aquacultured finfish. These companies are all large and vertically integrated. The integration encompasses all four phases of the aquaculture value chain, namely: hatchery, grow-out, processing, and marketing. In contrast to the finfish sector, shellfish aquaculture in B.C. has remained highly fragmented. It involves 259 companies – including many small, family-operated businesses. A number of these companies have integrated operations and grow, process, market and distribute their own cultured shellfish.

Finfish aquaculture production takes place in many regions across the province, with primary locations in Campbell River, Port Hardy and Tofino.[4] Most shellfish aquaculture, however, is located around Vancouver Island or within the Strait of Georgia,

Marine Harvest Canada, a subsidiary of Marine Harvest Norway, is one of the three main salmon aquaculture companies in B.C. Based in Campbell River, the company holds 50% of finfish licences in the province and employs some 500 workers. Senators toured Marine Harvest Canada's hatchery in Sayward, where they also learned about how the company collaborates with the Kitasoo/Xai'xais and Quatsino First Nations.

4 British Columbia Salmon Farmers Association, ***A Snapshot of BC's Salmon Farming Industry***, n.d.

with Baynes Sound being the most important shellfish growing area in the province.[5]

B.C. is also home to the only land-based, closed-containment facility that produces Atlantic salmon at a commercial scale in Canada – the Kuterra Project, located near Port McNeill. There are also a few other land-based, closed-containment facilities growing different species of finfish in the province, such as Taste of BC Sea Farms, which produces Steelhead trout. In addition, there is one small-scale, pre-commercial polyculture (also known as Integrated Multi-Trophic Aquaculture or IMTA) facility on northwest Vancouver Island; the facility holds the first commercial multi-species licence of its kind in Canada.

There is a variety of finfish and shellfish species groups currently cultured in B.C. waters (see Table 2.1), with Atlantic salmon being the

Table 2.1 – Aquacultured Species in British Columbia

	Species
Finfish	• Salmon (Atlantic, Chinook, Coho, Sockeye) • Rainbow/Steelhead Trout • Sturgeon • Sablefish • Tilapia • Smallmouth Bass • Arctic Char
Shellfish	• Oyster • Clam (Manila, Geoduck, Littleneck, Varnish) • Mussel (Pacific Blue, Gallo) • Scallop (Japanese, Giant Rock, Sea) • Abalone
Aquatic Plants	• Kelp • Seaweed
Other Species	• California Sea Cucumber • Green Sea Urchin • Grayfish

Source: According to information provided to the Committee by DFO.

5 British Columbia Shellfish Growers Association, ***BC Shellfish Tenures***, n.d.

dominant species produced. Production of Chinook salmon, trout, oysters and clams are also well established in the province. Several other species including sturgeon, tilapia, sablefish, and scallops are at various stages of development. A few species of aquatic plants are also produced in limited quantity as part of the IMTA pilot project.

2.1.2 Production

As illustrated in Figure 2.1, aquaculture production in B.C. grew significantly in the 1980s and 1990s, reaching a peak at 93,020 tonnes in 2002. A combination of favourable growing conditions and an abundance of suitable sites provided the foundation for this rapid growth. An outbreak of the Infectious Hematopoietic Necrosis (IHN) virus in salmon grow-out sites caused production to drop to 65,666 tonnes in 2004, but with improved biosecurity practices, production recovered. Aquaculture production was relatively stable between 2006 and 2010. The farm-gate value of production followed the same general trend over that period, reaching a peak at $538 million in 2010, but declined in the two following years.

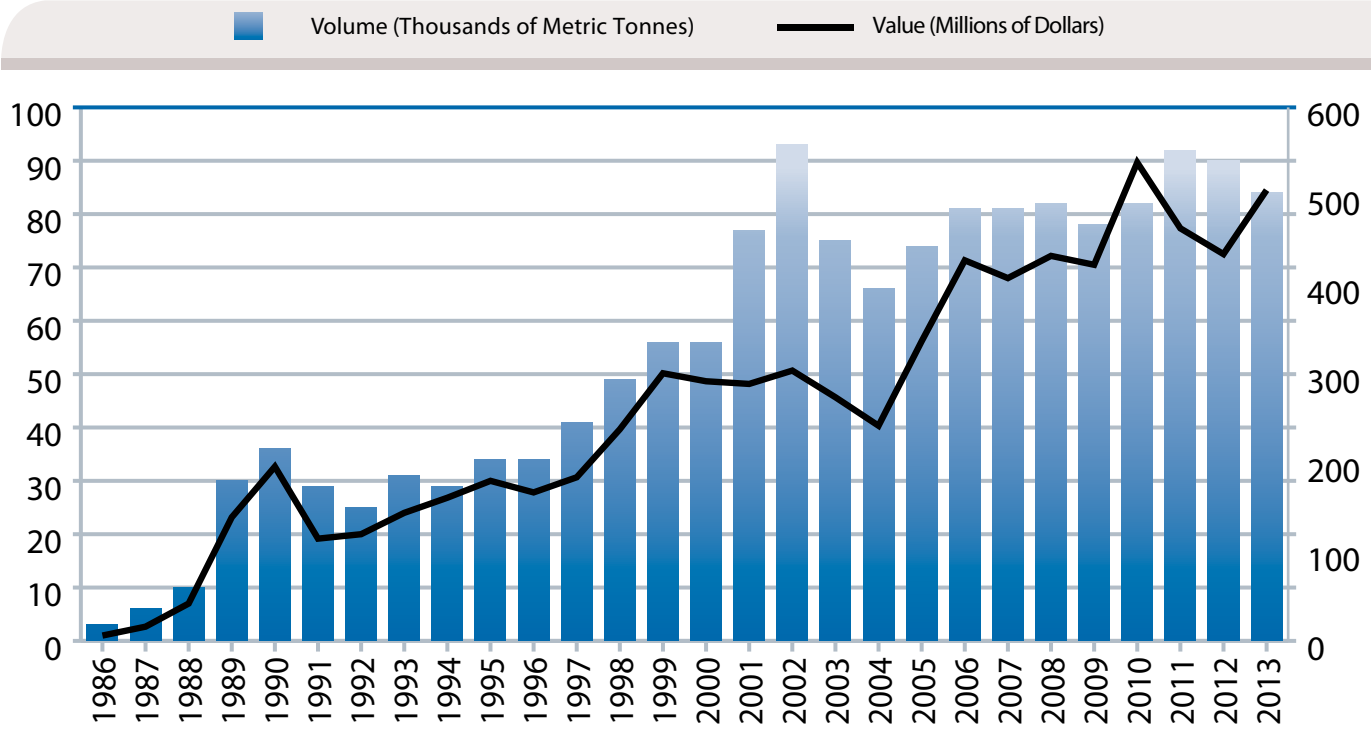
In 2013, the latest year for which data is available, B.C. produced 84,258 tonnes of aquacultured fish and shellfish, valued at $507 million. This included

Cermaq is one of the leading salmonid aquaculture companies worldwide. A subsidiary of Mitsubishi Corporation, Cermaq has operations in Canada, Chile, and Norway. In B.C., Cermaq currently holds 22% of finfish licences where it operates 27 marine grow-out sites, four land-based hatcheries and two processing plants. Cermaq was the first salmon company in Canada to achieve "two-star" Best Aquaculture Practices (BAP) certification at its processing plant in Tofino. Senators visited one of Cermaq's grow-out sites in Clayoquot Sound and toured its processing plant in Tofino.

75,808 tonnes of finfish, valued at $485 million, and 8,450 tonnes of shellfish, valued at $22 million. Figure 2.2 shows the relative importance of the species produced in the province.

B.C. is the largest producer of cultured finfish and shellfish in Canada, accounting for 49% of total volume and 53% of total value. It also ranks first in the production of salmon (75% of all volume), oysters (59%) and clams (87%) in Canada.

Figure 2.1 – Aquaculture Production[a] in British Columbia, Volume and Value,[b] 1986 to 2013

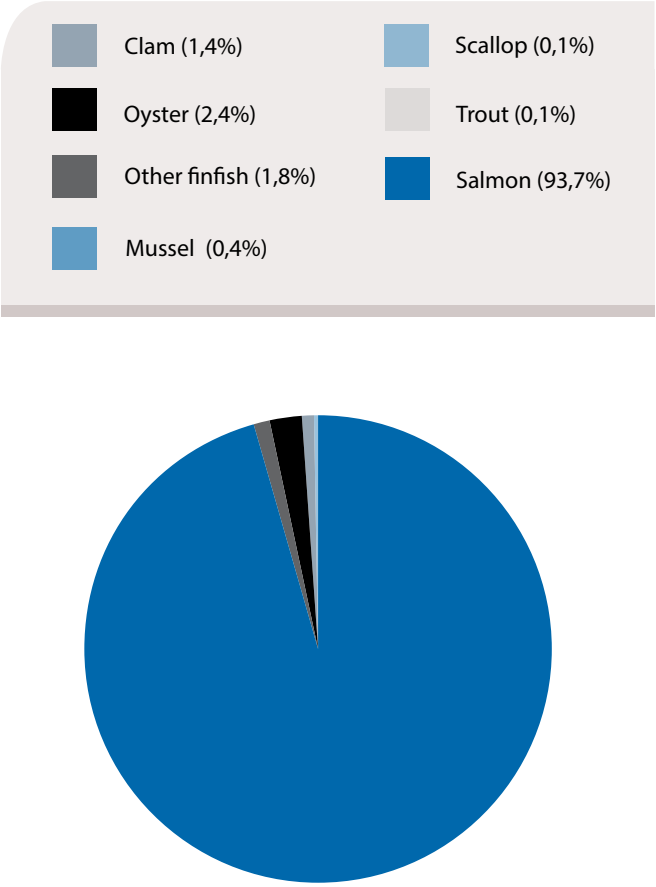


Notes: a. Aquaculture production includes the amount and value produced on sites and excludes hatcheries or processing.

b. At farm-gate price. The farm-gate value represents a product's value once it is sold by the producer.

Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values*** [accessed 12 March 2015].

Figure 2.2 – British Columbia Aquaculture Production by Species, Percentage of Value, 2013



Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values, 2013*** [accessed 12 March 2015].

2.2 Governance

2.2.1 General Framework

The province used to be the lead authority responsible for the management of the aquaculture industry and, like most other provinces, a Canada/B.C. MOU on Aquaculture Development, signed in 1988, served to delineate the respective roles and responsibilities of the federal and provincial governments. However, a British Columbia Supreme Court decision in 2009 (the *Morton* decision) ruled that aquaculture is a fishery and, accordingly, a matter of federal jurisdiction.[6] As a result, the federal government has assumed primary responsibility for the regulation and management of aquaculture in the province since December 2010. A revised MOU was signed between the two levels of governments, which identifies DFO as the main regulator of the aquaculture industry in B.C., while the provincial Ministry of Agriculture (BC-MA) is acknowledged as the lead agency for the strategic development of the industry in the province.[7] The MOU also defines the roles of other federal and provincial departments, ministries and agencies. It further committed federal and provincial regulatory authorities to establish a single-window application process for all new site tenure and licence applications as well as a management committee to oversee the implementation of the agreement.

The Pacific Aquaculture Regulations define aquaculture as "the cultivation of fish".

6 ***Morton v. British Columbia***, 2009 BCSC 136.
7 ***Canada – British Columbia Agreement on Aquaculture Management,*** 10 December 2010.

In response to the *Morton* decision, DFO developed the *Pacific Aquaculture Regulations*, under the *Fisheries Act*, to replace the previous provincial regime and solidify the new federal/provincial arrangement.[8] These regulations set conditions that state the obligations of aquaculture licence holders for each sector – marine finfish, marine shellfish, and freshwater/land-based operations; they also prescribe standards and protocols for the operation of all aquaculture facilities in the province. In response to the MOU, DFO also established an Aquaculture Management Advisory Committee (AMAC) for finfish aquaculture and an AMAC for shellfish aquaculture. These advisory committees review management plans on a regular basis and provide advice and recommendations to DFO with respect to the management of finfish and shellfish aquaculture in B.C. In its aquaculture policy framework within the Pacific Region, DFO states that it "is committed to being both an enabler and a regulator of aquaculture development, affirming its role as a department engaged in sustainable resource development."[9] In this context, "enabling" means "improving the business climate for aquaculture development to benefit Canadians."[10]

Creative Salmon is a Canadian-based aquaculture company that raises Chinook salmon. Founded in 1990, the company currently holds 5% of finfish licences in B.C. and operates in the waters of Clayoquot Sound near Tofino, on the West Coast of Vancouver Island. Creative Salmon is fully integrated and employs about 50 people. In December 2013, the company was awarded the Canadian Organic Aquaculture Standard. Senators toured Creative Salmon's grow-out site in Tofino.

8 ***Pacific Aquaculture Regulations,*** Fisheries Act, SOR/2010-270.

2.2.2 Licence Application Process

A Crown land tenure, a navigable waters approval and an aquaculture licence are required to operate marine finfish and shellfish aquaculture grow-out sites in B.C. The provincial Ministry of Forests, Lands and Natural Resource Operations (BC-FLNRO) is responsible for issuing Crown land tenures under the *Land Act*, which authorizes the use of space where an aquaculture facility will operate. The standard form of Crown land tenure for a finfish aquaculture operation is a licence of occupation, which is usually issued for a five-year term, but may be for up to 20 years at the discretion of the BC-FLNRO. The standard Crown land tenure for a shellfish aquaculture operation is a lease, which may be issued for up to 30 years. The BC-FLNRO may also grant an investigative permit for the purpose of aquaculture, which has a maximum term of two years. This permit allows for the investigation of an aquaculture project's feasibility or the placement of monitoring equipment. The BC-FLNRO will not accept competing aquaculture applications over the site during the term of the permit. An investigative permit does not guarantee any future tenure.[11]

An approval from Transport Canada is also required, under the *Navigation Protection Act*, for the placement of aquaculture containment and/or structures within the navigable waters of Canada; this approval is issued for a five-year term.

DFO issues the aquaculture licence, which allows the proponent to carry out the activity of aquaculture. The term of the aquaculture licence is currently limited to one year; recently, DFO has proposed amending the *Pacific Aquaculture Regulations* to implement multi-year aquaculture licences in B.C. However, consistent with the Cohen Commission recommendations, licences in the Discovery Islands will remain limited to one year pending the completion of scientific assessments and regulatory work in the area.

A licence application must also be submitted and approved for an amendment to an existing federal aquaculture licence (e.g., change in production level, change in species, change in net cages, ownership change), for an amendment to the Crown land tenure (e.g., size or relocation of tenure boundaries), and for any rebuild, repair or alteration of an existing infrastructure that may have an impact on public navigation.

In their review of applications for new marine finfish sites, DFO and BC-FLNRO consider a wide range of factors, including: proximity to significant anadromous salmonid streams and major herring spawning areas (within 1 kilometre); proximity to intertidal shellfish beds (within 300 metres); proximity to existing finfish aquaculture sites (within 3 kilometres); proximity to a First Nation reserve (within 1 kilometre); sensitive fish habitat; areas used extensively by marine mammals; potential for infringement of riparian rights of an upland owner; and more.[12] The review of applications for new shellfish sites also includes water quality considerations.

9 For more information, see DFO, ***Pacific Region: Integrated Management of Aquaculture Plan – Marine Finfish***, December 2013, p. 16, and ***Pacific Region: Integrated Management of Aquaculture Plan – Shellfish***, July 2014, p. 17.

10 *Ibid*.

11 BC-FLNRO, ***Land Use Operational Policy – Aquaculture***, June 2011.

12 Government of Canada and Government of British Columbia, ***Guide to the Pacific Marine Finfish Aquaculture Application***, 31 July 2014.

The licence application process includes consultations by federal and provincial regulatory authorities with First Nations in order to meet the Crown's duty to consult. In addition, aquaculture companies are encouraged to contact potentially affected First Nations early in the planning process to share information and seek their views with respect to the planned aquaculture operation/site.[13]

To simplify the aquaculture approval process, a single, harmonized application forms have been developed by DFO, BC-FLNRO and Transport Canada, one for the finfish sector and one for the shellfish sector.[14] FrontCounter BC is the office responsible for receiving and processing all aquaculture applications in the province.[15]

As per the recommendation of the Cohen Commission, there is currently a moratorium on new marine finfish aquaculture licences and on substantial amendments to existing marine finfish licences in the Discovery Islands area until the end

Fanny Bay Oysters is a Canadian company that grows Pacific oysters and Manila clams in Baynes Sound, on the East Coast of Vancouver Island. Senators were given a tour of the company's depuration facility located in Fanny Bay, which holds the shellfish in a clean seawater environment for a time, to allow them to free themselves of microorganisms. Fanny Bay Oysters exports its products to Europe, Asia, and the United States.

13 Ibid.
14 For more information, see the **Pacific Marine Finfish Application Form** and the **Pacific Shellfish Application Form**.
15 See the website at **FrontCounter BC.**

of September 2020.[16] In the meantime, scientific research is being conducted, using a new disease risk assessment framework, to evaluate some of the environmental impacts linked to aquaculture, including wild-cultured interactions related to fish health.

2.2.3 Monitoring, Compliance and Enforcement

Together with the regulations, the conditions stipulated in the DFO aquaculture licence are the primary management tools for aquaculture facilities in B.C. The conditions of licence for marine finfish aquaculture set out the specific operational and reporting requirements to which aquaculture facilities must adhere to legally operate and be in compliance with the *Fisheries Act* and its regulations. These include both generic and site-specific licence conditions, such as: species and biomass that can be cultivated, thresholds regarding impacts on the surrounding environment, introductions and transfers, escape prevention, sea lice monitoring, fish health management plans, and more. The licence conditions also require licence holders to submit a number of reports on a regular basis which relate to the ongoing operation of their facilities.

The day-to-day management of the fisheries and environmental aspects related to marine finfish and shellfish aquaculture in the province – including environmental monitoring, containment plans, fish health management, habitat protection, introductions and transfers, and more – is carried out under the British Columbia Aquaculture Regulatory Program (BCARP). As part of this program, DFO staff conduct regular monitoring and inspection activities to determine compliance with aquaculture licences, conditions of licence and other applicable legislation. They also audit industry-generated environmental information and reports to ensure their accuracy (e.g., sea lice count and benthic monitoring). In addition, they respond to complaints and undertake investigations.

The information collected by industry and that obtained by DFO from ongoing monitoring and inspection activities is compiled and released publicly by DFO on a quarterly basis through its public reporting website. The website currently provides data on: escape events, benthic monitoring, sea lice, incidental catches, marine mammal interaction, introductions and transfers, and use of lights. DFO also reports on its compliance assessment activities (number of site visits, number of sea lice audits, number of benthic site assessments) and on its fish health management activities (number of facilities audited and number of carcasses sampled), but does not report the results of these activities.[17]

16 Cohen Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River, ***Final Report***, October 2012.
17 DFO, ***Public Reporting on Aquaculture.***

Senators toured Taste of BC Aquafarms Inc., a small family business operating a land-based closed-containment facility in Nanaimo, which utilizes 15 different tanks. The company raises Steelhead salmon using recirculating aquaculture systems.

CHAPTER 3: New Brunswick

3.1 Profile of the Industry

3.1.1 Structure and Location

The aquaculture industry in N.B. comprises three sectors: finfish, shellfish and aquatic plants. The vast majority (96%) of aquaculture production in the province consists of finfish production; shellfish production accounts for the remaining 4%. The aquaculture of marine plants is still at the developmental stage. The variety of species aquacultured in N.B. is presented in Table 3.1.

Similar to other provinces and countries, the structure of the finfish sector in N.B. has changed significantly over the years as a result of consolidation and integration. In 2012, there were 92 marine finfish grow-out sites in southwestern N.B., all located in the Bay of Fundy. Forty-five of these sites were actively growing salmon, one was used for research, and the remaining 46 were fallow. The 45 active sites were controlled by five locally-owned companies, with one company operating 60% of the sites. Today, only three aquaculture companies operate in the region: Cooke Aquaculture, Northern Harvest Sea Farms, and Benson Aquaculture. Some IMTA projects take place in the Bay of Fundy, with five finfish sites licensed for additional species such as kelp and mussels. With respect to other finfish-rearing technologies, there is one producer growing sturgeon in land-based tanks, located in Charlo, Pennfield, and St. Andrews.

For its part, the shellfish aquaculture sector consists of a large number of growers located along the East Coast of the province, particularly in three major bays: Bouctouche Bay, Caraquet Bay, and Cocagne Bay. Due to weather conditions, shellfish growers in certain areas are forced to move their stocks and structures in the winter to prevent damage and losses. For this reason, they have access to overwintering sites (typically from 1 September to 1 May). In 2012, there were approximately 85 shellfish growers operating 703 grow-out sites, mostly growing oysters. Of these sites, 502 were active (including 15 overwintering sites) and 201 were vacant.

Table 3.1 – Aquacultured Species in New Brunswick

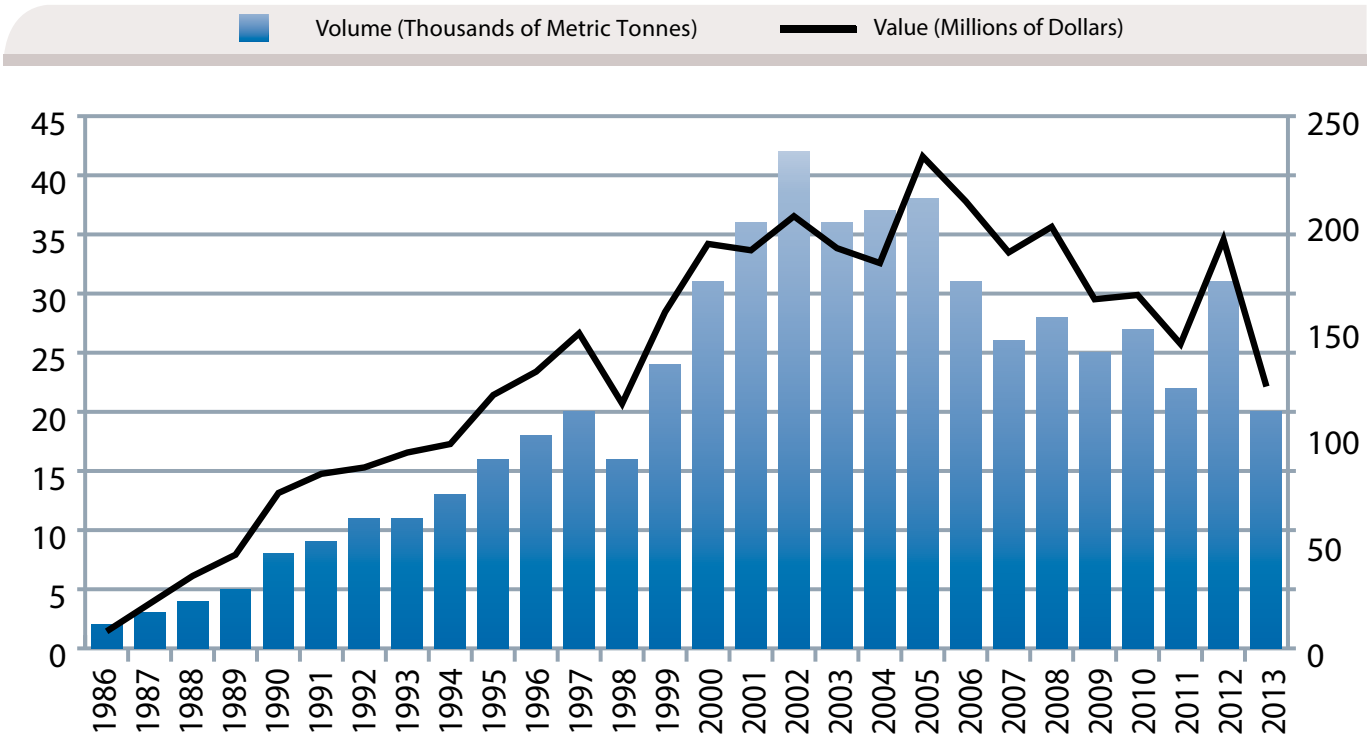
	Species
Finfish	• Atlantic Salmon • Atlantic Sturgeon • Steelhead/Rainbow Trout
Shellfish	• American Oyster • Blue Mussel
Aquatic plants	• Seaweed • Kelp

Source: According to information provided to the Committee by DFO.

3.1.2 Production

As can be seen in Figure 3.1, aquaculture production in N.B. grew continually between 1986 and 1997. Government support for the industry and the opening of commercial hatcheries contributed to this growth. A moratorium on new licence applications was placed between 1986 and 1991 and, although it slowed the growth, it did not stop it. In addition, production was affected in 1998 due to an outbreak of Infectious Salmon Anaemia (ISA) in the Bay of Fundy. The outbreak forced several grow-out sites to be completely harvested and fallowed. This was followed by a strong recovery and production reached a peak in 2002. Production declined again between 2006 and 2011, more specifically due to the introduction of a new bay area management system to better manage further ISA outbreaks. The new approach effectively

Figure 3.1 – Aquaculture Production[a] in New Brunswick,Volume and Value,[b] 1986 to 2013



Notes: a. Aquaculture production includes the amount and value produced on sites and excludes hatcheries or processing.

b. At farm-gate price. The farm-gate value represents a product's value once it is sold by the producer.

Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values*** [accessed 12 March 2015].

reduced the number of sites in production by shifting from a two-year to a three-year rotation system, with a mandatory fallowing period between consecutive year classes. Production volume reached 31,481 metric tonnes in 2012, valued at $192 million. This was followed by a reduction of more than 33% in both production volume and value in 2013.

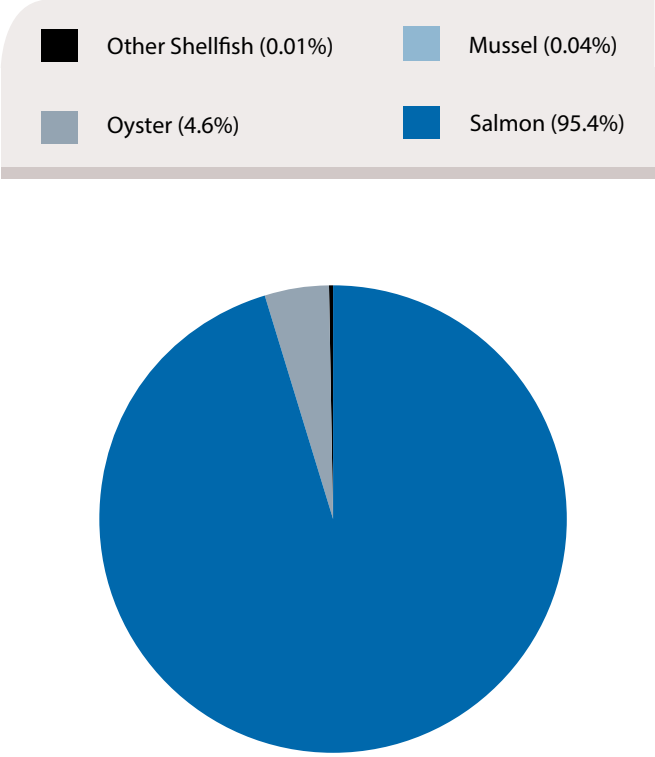
As illustrated in Figure 3.2, aquaculture production in N.B. is dominated by Atlantic salmon. The province was the second largest producer of Atlantic salmon in Canada, behind B.C., until 2013 when it was surpassed by N.L. American oyster dominates shellfish production and N.B. is the third largest producer of oysters in Canada, behind B.C. and P.E.I.

3.2 Governance

The New Brunswick Department of Agriculture, Aquaculture and Fisheries (NB-DAAF) and DFO serve as the lead provincial and federal departments in aquaculture regulation. The responsibilities of the two departments are articulated in the *1989 Canada–New Brunswick Memorandum of Understanding on Aquaculture Development*. This MOU gave the province responsibility for the licensing and leasing of aquaculture operations, while both levels of government cooperate in the development of site allocation criteria. Other departments and agencies are also involved in the support, development and regulation of the aquaculture industry. In particular, the New Brunswick Department of Environment and Local Government (NB-DELG) plays an important role in the environmental management of the industry (see section 3.2.3).

Through another MOU signed in 2008, the government of N.B. works collaboratively with the governments of N.L., N.S., and P.E.I. for the development of a sustainable aquaculture industry in the

Figure 3.2 – Aquaculture Production in New Brunswick by Species, Percentage of Value, 2013



Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values, 2013*** [accessed 12 March 2015].

Atlantic Provinces. With respect to governance, the MOU commits the four provincial governments to work towards a harmonized regulatory and policy environment, to the extent possible, in areas such as leasing and licensing, environmental monitoring, introductions and transfers, aquaculture

statistics, and aquatic animal health. The MOU also provides for a unified voice when dealing with the federal government by working towards a harmonized regulatory and policy environment.[18]

3.2.1 General Framework

When the salmon aquaculture sector began in N.B. in the late 1970s and early 1980s, there were no policies or legislation specific to aquaculture. In 1985, following a directive by a joint government-industry committee, the provincial government established guidelines on the physical separation between grow-out sites and fixed commercial fishing gear, such as herring weirs and lobster pounds, or other marine structures, such as wharfs. The distance separating these structures corresponded to a minimum of 300 meters. A moratorium on new aquaculture applications was then imposed between 1986 and 1991, in order to develop a site allocation policy specific to finfish aquaculture.

In 1988, the provincial *Aquaculture Act*[19] was passed and, in 1991, the General Regulation[20] under the Act was adopted.[21] The legislation and associated regulation, which were amended over the years, govern the aquaculture of finfish, shellfish and aquatic plants. The site allocation policy for finfish aquaculture was introduced in 1991. This policy aimed to promote industry growth, with an emphasis on getting new entrants into the industry while insisting on the need to integrate aquaculture with both the commercial fishery sector and other marine resource users. As part of the policy, guidelines on the size of finfish grow-out sites were established in 1993, including a formula for determining the maximum allowable biomass. These guidelines were used until 2005, when a performance-based standard framework focussing on environmental performance was introduced to regulate the industry (see section 3.2.3). In the mid-1990s some fish health problems emerged, which triggered the implementation of industry-wide bay-scale management practices in 2000 (see sections 3.2.4 and 3.2.5).

> The *Aquaculture Act* defines aquaculture as "the cultivation of aquatic plants and animals, but does not include the cultivation of aquatic plants and animals in a laboratory for experimental purposes or in an aquarium".

Since 2010, aquaculture governance in N.B. has also been guided by two key policy documents: the *New Brunswick Finfish Aquaculture Development Strategy*[22] and the *New Brunswick Shellfish Aquaculture Development Strategy*[23]. These two five-year strategies (2010–2014) focus on the following seven areas: governance; competitiveness and business financing; business risk management; finfish/shellfish health and biosecurity; market access and consumer confidence; strategic infrastructure; and, species diversification. The strategies, which promote the development of the finfish and shellfish sectors and their environmental sustainability, are currently under review.

18 ***Atlantic Provinces' Memorandum of Understanding for the Development of the Aquaculture Sector***, 18 January 2008.
19 **Aquaculture Act**, R.S.N.B. 2011, Chapter 112.
20 New Brunswick **Regulation 91-158** under the *Aquaculture Act*.
21 The *Aquaculture Act* is not enabling legislation in the sense that it does not include a purpose section that promotes the development of the industry. Rather, the development of this industry and its environmental sustainability are promoted in public policy documents which also recognize aquaculture as a legitimate user of the marine environment.
22 Government of New Brunswick, ***New Brunswick Finfish Aquaculture Development Strategy***, July 2010.
23 Government of New Brunswick, ***New Brunswick Shellfish Aquaculture Development Strategy***, July 2010.

3.2.2 Lease, Permit and Licence

A lease, an occupation permit, and a licence are all required to operate an aquaculture facility in N.B. The lease authorizes the company to operate on Crown lands (or waters); it is issued for a period of 10 to 20 years. The occupation permit is similar to the lease in that it allows occupation and use of a specified area for a temporary period of up to three years; in most cases it is delivered prior to the issuance of a lease. The aquaculture licence confers the authority to conduct aquaculture at a specific site; it also prescribes the various activities that can take place on the site. The aquaculture licence is valid for a period of up to 20 years.

New site allocations, changes to existing sites, subleasing of sites, and transfers of sites are further subject to one of the two following policies: the *Bay of Fundy Marine Aquaculture Site Allocation Policy*[24] applies to the aquaculture of Atlantic salmon, alternate finfish, shellfish, and aquatic plants in the Bay of Fundy, while the *Marine Aquaculture Site Allocation Policy for the East Coast of New Brunswick*[25] applies to shellfish aquaculture on the East Coast of the province.

Applicants wishing to obtain an aquaculture lease, occupation permit, or licence must submit an application to NB-DAAF and pay a fee that varies depending on the nature of the application, as set out in the *Aquaculture Act* and regulations. Further approval may be required from Transport Canada for aquaculture projects where structures are to be built or placed in, on, over, under, through, or across any navigable waters. The federal government may also have to assess the impact of proposed aquaculture sites with respect to a number of other matters, including Aboriginal rights and migratory birds. NB-DAAF appraises all applications and coordinates the review with other provincial and federal departments and agencies. Each agency evaluates applications from the standpoint of its specific jurisdiction and forwards its comments and recommendations to NB-DAAF. The decision to issue or refuse a lease, occupation permit or licence ultimately lies with NB-DAAF. The General Regulation identifies four circumstances where an aquaculture licence may be refused, including conflict with other fishery activities or the creation of unacceptable environmental risks.

Every application for a new aquaculture site must be brought to the attention of the owners of adjacent properties in the vicinity of the proposed site by means of a written notice. In addition, applications for amendments to the culture methods indicated in a licence may be subject to consultation with adjacent property owners. Similarly, every application for a vacant and a new aquaculture site must be brought to the attention of the public through announcements published in newspapers, at the applicant's expense.

The aquaculture licence indicates the species authorized for cultivation. Licences also include conditions related to: site utilization, stocking densities and production volumes; year-classes; length of the fallow period; measures to be taken to minimize the risk of environmental degradation; measures to be taken to prevent escapes; measures to be taken to minimize the risk of disease, disease agents, parasites, toxins, or contaminants spreading to other aquaculture sites; and more.

The holder of an aquaculture licence must submit a report each year on its operations using a template form provided by NB-DAAF. The licensee must prepare and keep books, records, accounts,

24 Government of New Brunswick, ***Bay of Fundy Marine Aquaculture Site Allocation Policy***, 2000.
25 Government of New Brunswick, ***Marine Aquaculture Site Allocation Policy for the East Coast of New Brunswick***, n.d.

and other documents required by or in accordance with the *Aquaculture Act* or its regulations. The licensee must be prepared to provide books, records, accounts, and other documents in such detail and form as required by the *Aquaculture Act* or its regulations in order to check the on-site activities and the accuracy of the annual report.

3.2.3 Environmental Monitoring of Marine Finfish Aquaculture

In addition to the aquaculture lease and licence, a company wishing to operate a marine finfish grow-out site in N.B. must obtain a certificate of approval, which is issued by NB-DELG. As part of this process, which rests on performance-based standards, the company must submit a production plan which is reviewed by the Aquaculture Site Environmental Review Committee (ASERC). This committee is chaired by NB-DELG and is made up of representatives from NB-DAAF and DFO. The ASERC undertakes a historic review of site production and environmental data and provides advice to NB-DELG, which is responsible for the issuance of the certificate of approval. The certificate includes conditions with respect to environmental monitoring requirements, waste management plans, chemical storage and handling, and noise control if the production plan has been approved.

As per the conditions of their certificate of approval, companies are required to conduct

Kelly Cove, a subsidiary of Cooke Aquaculture, is collaborating with the University of N.B. and DFO in an IMTA project growing seaweeds (winged and sugar kelp) along with shellfish (Blue mussels) and finfish (Atlantic salmon). Senators were given a tour of the IMTA located in Back Bay, N.B.

Photo courtesy of: Dr. Thierry Chopin.

environmental monitoring of their aquaculture sites in compliance with the *Standard Operating Practices for the Environmental Monitoring of the Marine Finfish Cage Aquaculture Industry in New Brunswick* (SOP).[26] This self-monitoring is undertaken at three different times during the year. For each monitoring activity conducted, the SOP provides guidance for determining the number and position of transects and sediment samples, video recordings, site plans, collecting and analyzing sediment samples, waste disposal and record keeping. The objective of the monitoring is to measure the sediment sulphide concentration which is related to the health of the benthic environment in the immediate area adjacent to the cage structures and lease area. In addition to this self-monitoring, marine finfish cage aquaculture sites are also monitored by NB-DELG under its Environmental Management Program (EMP)[27]. A minimum of 20% of all marine finfish cage aquaculture sites are subject to the program every year and their sediment sulphide concentration is evaluated once again to verify compliance. The results of the site monitoring are released annually on NB-DELG's website.[28]

Marine finfish grow-out sites are then rated in relation to their sediment sulfide concentrations and classified as oxic, hypoxic or anoxic (measured in micromoles/litre or µM). Oxic means that the sediment sulfide concentration is less than 1,500 µM and that the site is performing well and requires minimal remedial action. Hypoxic refers to a concentration between 1,500 µM and 6,000 µM and requires facilities to undertake a number of remedial measures as they are likely to cause adverse environmental effects. Anoxic denotes a concentration that is greater than 6,000 µM and refers to sites that are causing severe damage to the marine habitat and will be directed to work closely with regulatory agencies to remedy the situation. Remediation plans include actions to reduce organic enrichment impacts, such as improving feeding methods, cleaning nets or equipment offsite, reducing stocking densities, repositioning of cages in relation to onsite water currents, staff training, and internal and external audits to ensure that best management practices are being followed. According to NB-DELG, the EMP promotes better environmental performance, since companies must receive good environmental ratings if they wish to maintain or increase production levels.

3.2.4 Sea Lice

The salmon aquaculture sector experienced a first major outbreak of sea lice in southwest N.B. in 1994. The following year, the province established 10 sea lice management zones in the region and chemical treatment using SLICE® (or emamectin benzoate, an in-feed drug) was coordinated within each zone. The use of SLICE®, along with best management practices, was successful in controlling sea lice in the region for about a decade. That said, between 2006 and 2008, it was noted that the regular use of this single product had caused sea lice populations to become resistant. As a result, other chemical treatments were used or tested.

For example, NB-DAAF collaborated with industry to research and monitor the use of well-boats for the delivery of three different bath treatments (Paramove® – a hydrogen peroxide product,

26 NB-DELG, ***Standard Operating Practices for the Environmental Monitoring of the Marine Finfish Cage Aquaculture Industry in New Brunswick***, July 2012. .

27 NB-DELG, ***The Environmental Management Program for the Marine Finfish Cage Aquaculture Industry in New Brunswick***, August 2012.

28 NB-DELG, ***Marine Aquaculture – Environmental Monitoring Results***, various years.

Salmosan® and AlphaMax®).[29] The research showed that a lower concentration of chemotherapeutant was required for each product when used in a well-boat versus a tarped or skirted net cage.[30] It also showed that treatment in the well-boat was less costly. This project prompted NB-DAAF and DFO to develop, in 2011, an Integrated Pest Management Program (IPMP) for Sea Lice in collaboration with industry, fish health experts and other stakeholders. The IPMP encompasses three main components: prevention and control measures, monitoring, and data collection and analysis:

- Prevention and control measures include non-chemotherapeutant control strategies (Bay Management Areas or BMAs, year-class separation, fallowing, and the use of cleaner-fish, sea lice traps and well-boats); chemotherapeutant control strategies (in-feed and bath treatment); and treatment strategies (treatment thresholds; product rotation; site-based and area-based treatment; and, seasonal treatment).
- Monitoring includes: standardized sampling and counting protocols, counting frequency, reporting of sea lice counts, auditing, and treatment efficacy monitoring.
- Data collection and analysis with respect to: sea lice dynamics and trends, treatment efficacy, early signs of treatment resistance or tolerance, and regional differences.[31]

In 2013, the provincial government developed amendments to the General Regulations under the *Aquaculture Act* with respect to the reporting on sea lice. Aquaculture licence holders are now required to submit, at the beginning of each year, a sea lice management and treatment plan that includes, for each grow-out site, the following information: the names of all the products expected to be used for sea lice treatment at the site, the method of administering the treatment, and the estimated timing of treatment at the site. Each week, licence holders are required to inform NB-DAAF whether or not a sea lice treatment is planned at any of their aquaculture sites. If a treatment is planned, the licence holder must perform a sea lice count at each affected site and report this information to the department. Furthermore, the department has established trigger levels for lice infestations that dictate when treatments should occur.[32]

3.2.5 Infectious Salmon Anaemia

The next major fish health problem encountered by the salmon aquaculture sector in N.B. was ISA in 1996. At the time, there were no drug treatments for ISA, and vaccines only had limited effectiveness. It was acknowledged that the high density of grow-out sites in some areas of the Bay of Fundy was a major factor contributing to the spread of ISA. Accordingly, some grow-out sites were removed from the region in 1997 and 1998.

In 2000, as part of the *Bay of Fundy Marine Aquaculture Site Allocation Policy*, 22 BMAs were established in the region; their boundaries were based on a combination of oceanographic, fish health, and business considerations. Within each BMA, grow-out sites were required to hold fish of the same year-class (only one generation of fish on a site at any time) and to operate on a two-year crop

29 It should be noted that the PMRA approved the emergency registration of AlphaMax® but revoked it later on. This product is no longer an approved pest control product in Canada for sea lice control.
30 Atlantic Canada Fish Farmers Association, ***Evaluation of Well-Boat Technology for the Treatment of Sea Lice***, DFO, 2010.
31 Kathy Brewer-Dalton, ***Integrated Pest Management Program (IPMP) for Sea Lice***, NB-DAAF, 25 February 2013.
32 Government of New Brunswick, ***The Royal Gazette***, Volume 171, 20 February 2013, pp. 384–387.

rotation system, with smolt entries in either odd or even years. In addition to the BMAs, the new policy included Controlled Growth Areas and Exclusion Areas. The Controlled Growth Areas were identified where grow-out site densities were already high, while exclusion areas were designated regions with commercial fisheries. In these two categories of areas, new aquaculture applications were not accepted, although expansions at existing grow-out sites could be considered. These area types remain in effect to the present day.[33]

Despite the implementation of the policy in 2000 and BMA framework, ISA continued to be a challenge in southwestern N.B. In fact, the policy possessed two major caveats: it allowed for holdovers of fish on grow-out sites (i.e., up to 20% of market fish could remain on a site when the new class of smolt were introduced) and it did not make fallowing mandatory between year-classes. These two caveats appeared to be major factors contributing to the persistence of ISA in the region. Accordingly, the BMA framework was revised in 2006 and the

Breviro Caviar is a N.B. aquaculture company that grows shortnose sturgeon for both meat and caviar. The company operates three land-based closed-containment facilities located in St. Andrews, Charlo, and Pennfield. Breviro Caviar is the only company in the world to hold the licence under the Convention on International Trade in Endangered Species (CITES) to grow and sell caviar from the shortnose sturgeon. The company also collaborates with the Eel River Bar and Listuguj First Nations. Senators had the opportunity to tour the Pennfield facility.

33 Government of New Brunswick, ***Bay of Fundy Marine Aquaculture Site Allocation Policy***, 2000.

region was divided into three large BMAs operating on a three-year crop rotation system for the smolt entries: BMA1 (2006, 2009 and 2012); BMA2 (2007, 2010 and 2013) and BMA3 (2008, 2011 and 2014), the latter containing a sub-area designated as a wharf zone for the industry. The three large BMAs covered 95% of the estimated production capacity. Three smaller BMAs were also identified: BMA4 and BMA5 had no specified smolt entry times and BMA6 was designated as an alternative species zone (oceanographic studies suggested that the BMA6 area was conducive to the transmission of disease between grow-out sites and, accordingly, it was decided that only non-salmonid species could be grown in the area). The revised policy also required mandatory synchronized fallowing of sites within BMAs before restocking. It is believed that the new BMA framework, together with further improvements to biosecurity and other aquaculture management practices, have contributed to improved fish health in the Bay of Fundy as there have been no confirmed cases of ISA in the region between the fall of 2006 and the spring of 2015.

In 2009, NB-DAAF adopted the *New Brunswick Marine Aquaculture Finfish Health Policy*. The policy gives the province authority over the management of diseases of concern to fish from aquaculture. This policy, which is complementary to the Federal Fish Health Protection Regulations and the National Aquatic Animal Health Program, requires that all diseases be reported to NB-DAAF within seven days of diagnosis. In addition, the policy prescribes operational standards that apply to aquaculture operators, harvest vessels, and processing plants to ensure that all reasonable steps are taken to minimize the risk of introducing disease and/or disease agents into aquaculture facilities. NB-DAAF undertakes surveillance and monitoring activities to ensure that the industry complies with the policy.[34]

3.2.6 Containment and Recapture

In 2009, DFO and NB-DAAF finalized the *Southwest New Brunswick Breach of Containment Governance Document*, which details the provincial and federal requirements concerning breaches of containment and re-capture of escapees in the Bay of Fundy. The document, which at the time this volume was written was being revised, complements the *Code of Containment for Culture of Atlantic Salmon in Marine Net Pens in New Brunswick*, developed by the New Brunswick Salmon Growers Association in 2008.[35] The code describes the types of equipment and infrastructure that can meet the rigours of the marine environment in which they are to be deployed, prescribes how equipment must be inspected and maintained according to specific schedules, enunciates reporting requirements, and establishes contingencies to be followed in the event of escapes. The governance document and the code provide management techniques that incorporate measures to ensure that the risk of escapes is minimized. The General Regulation was also revised in 2010 to include requirements for mandatory reporting of all escapes of 100 salmon or more from an aquaculture site and a breach of containment management plan which includes inspection and mitigation.

34 Government of New Brunswick, ***New Brunswick Marine Aquaculture Finfish Health Policy***, 2009.
35 New Brunswick Salmon Growers' Association, ***Code of Containment for Culture of Atlantic Salmon in Marine Net Pens in New Brunswick***, 2008.

3.2.7 Bay Management Areas for Oyster Aquaculture

BMAs for oyster aquaculture were also developed by NB-DAAF and DFO in 2003 with the objective of streamlining the site review process for oyster aquaculture. This BMA framework currently consists of four components:

- Bay management plans: These plans were finalized in 2007 and identified four zones conducive to oyster aquaculture: class A (all culture methods – bottom, near bottom and water column); class B (bottom and near bottom culture); class C (bottom culture methods only); and class D (no water column; temporary overwintering site).
- Environmental assessment (EA) class screening report: Rather than completing an EA for each oyster culture project, projects are streamlined through a class screening report, which is built on and uses the knowledge accumulated through past EAs. The class screening report identifies measures that are known to reduce or eliminate the likelihood of adverse environmental effects for a type or class of project.
- Adaptive management process: Data from field surveys and research conducted by federal and provincial agencies are reviewed annually to track the evolving scientific and technical knowledge related to the activities of this sector. Changes in oyster aquaculture management practices are recommended when necessary.
- Code of practice: The New Brunswick Professional Shellfish Growers Association developed a Code of Practice in 2005. Although the code is a voluntary instrument, it complements the various regulatory mechanisms in place and it defines practical steps to achieve greater environment stewardship within the shellfish aquaculture sector.

Senators learned about oyster culture at the Little Shemogue Oyster Company, which leases 25 acres in Little Shemogue Bay, N.B., where it grows American oysters. The company uses bottom-culture to grow oysters in a variety of sizes and shapes and suspension methods that yield "cocktail" oysters.

CHAPTER 4: Newfoundland and Labrador

4.1 Profile of the Industry

4.1.1 Structure and Location

The aquaculture industry in N.L. is very different from that of B.C. and the other Atlantic Provinces. The biogeography, climate, oceanography, and marine resources in the province are such that the industry faces different biological and physical challenges (i.e. low water currents, low water temperatures, naturally low dissolved oxygen levels, and hard bottom substrates) compared to other regions of the country. Over the years, commercial aquaculture was attempted for a variety of species in the province with limited success. Currently, there are only three species of finfish and one species of shellfish produced commercially in N.L. waters (see Table 4.1). There are no land-based, closed-containment facilities growing finfish for commercial purposes in the province, nor are there any active IMTA sites.

The majority of finfish aquaculture takes place in the Connaigre Peninsula along the southeast coast of the island. Shellfish aquaculture occurs along all coasts, but is concentrated in the Notre Dame Bay area on the north-east coast.[36] There are no aquaculture sites in Labrador. In total, there were 87 commercial finfish site licences in 2013, covering a combined area of 2,376 hectares.[37] There were also 53 commercial shellfish site licences that covered a combined area of 4,162 hectares.[38]

The structure of the finfish sector within the province has changed significantly over the years as a result of consolidation and integration. There are now three large companies involved in the sector: Cooke Aquaculture (Cold Ocean Salmon), Gray Aquaculture (Gray Aqua Group), and Northern Harvest Sea Farms. These three companies are vertically integrated and operate salmonid hatcheries, grow-out sites and processing plants in various locations. Northern Harvest Sea Farms is also a manufacturer of finfish nets and cages. There are also a number of smaller companies, including Nova Fish Farms (which grows Steelhead trout) and Nordic Salmon Company (which grows Arctic char).

Table 4.1 – Aquacultured Species in Newfoundland and Labrador

	Species
Finfish	• Atlantic Salmon • Steelhead Trout • Arctic Char
Shellfish	• Blue Mussel

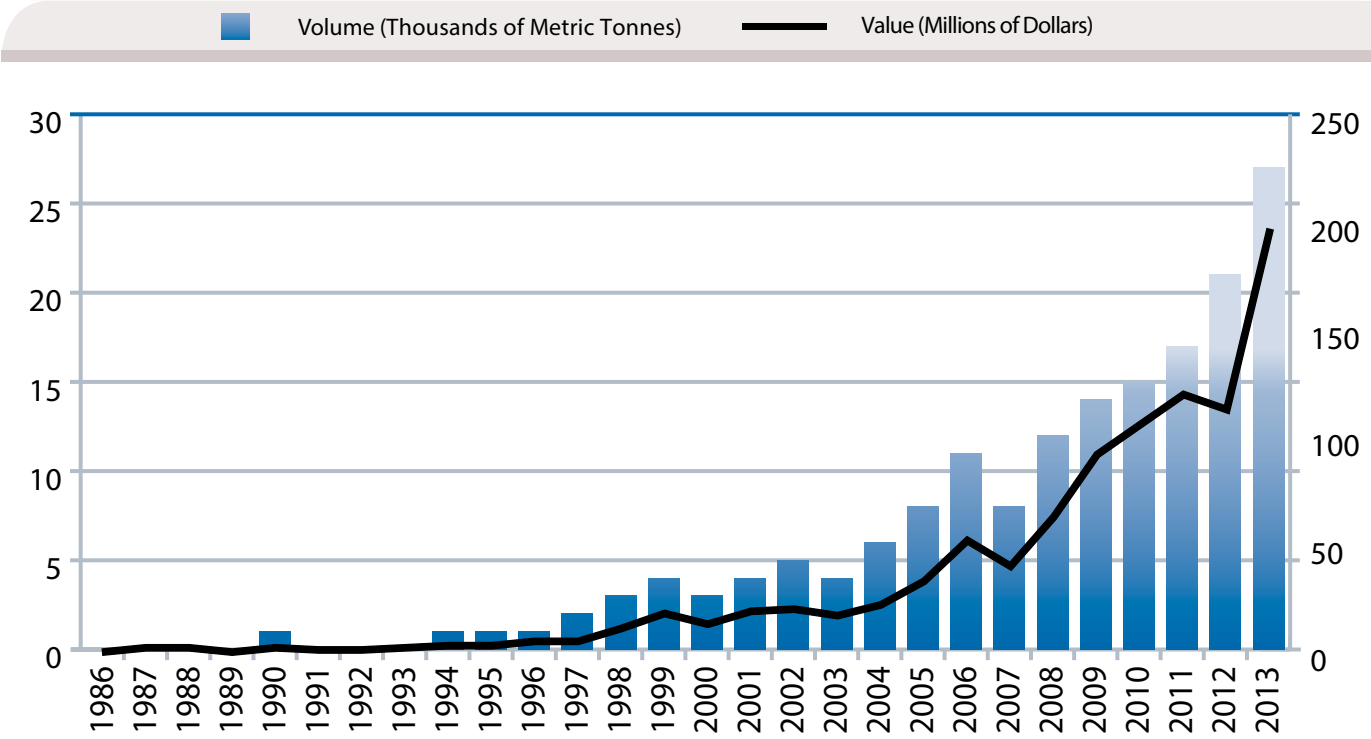
Source: According to information provided to the Committee by DFO.

36 For a location of these sites, see the following **map**.
37 Newfoundland and Labrador Department of Fisheries and Aquaculture, ***Seafood Industry Year in Review – 2013***, February 2014, p. 11.
38 *Ibid*.

The three large finfish aquaculture companies also operate facilities outside of N.L. Cooke Aquaculture has salmon operations in N.B., N.S., P.E.I., the United States (Maine), Chile and Scotland, as well as sea bass and sea bream operations in Spain. Both Northern Harvest Sea Farms and Gray Aquaculture have salmon aquaculture operations in N.B., where their head offices are located.

Over the last few years, the shellfish sector in N.L. has also witnessed some consolidation. A few companies have integrated operations that grow, process, market, and distribute their own cultured shellfish. The rest of the sector involves small family-operated businesses. Mussel growers have pooled inventory to ensure processors and marketers have sufficient product to meet the

Figure 4.1 – Aquaculture Production[a] in Newfoundland and Labrador, Volume and Value,[b] 1986 to 2013



Notes: a. Aquaculture production includes the amount and value produced on sites and excludes hatcheries or processing.

b. At farm-gate price. The farm-gate value represents a product's value once it is sold by the producer.

Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values*** [accessed 12 March 2015].

demands of their clients throughout the year. In March 2013, eight mussel growers and three primary processors in N.L. were certified to the Canadian Organic Aquaculture Standard.[39]

4.1.2 Production

As can be seen from Figure 4.1, aquaculture production in N.L. grew slowly in the 1980s and 1990s. During this period, the province lagged behind the other Atlantic Provinces and B.C. in the volume and value of aquaculture production. Since then, however, aquaculture in the province has experienced significant growth. In 2013, the latest year for which comparable data is available, N.L. had the second highest production value of aquaculture in Canada, accounting for 20% of the total, behind B.C. (53%). When considered by species, N.L. was the second largest producer of Atlantic salmon in Canada in 2013 and the second largest producer of Blue mussels.

In 2013, aquaculture production in N.L. reached a record, with 26,551 tonnes of finfish and shellfish produced, valued at $197 million. This included 22,196 tonnes of finfish, valued at $182 million, and 4,354 tonnes of shellfish, valued at $15 million. Overall production volume rose by 25% over the previous year, while production value increased by 74%. The increase in volume was largely the result of increased production of Atlantic salmon; Blue mussel production remained relatively on par with 2012 production. The significant growth in value was the result of higher production volumes of Atlantic salmon, combined with strong prices for both Atlantic salmon and Blue mussels. The development of the industry is strongly supported by the provincial government; by 2018, N.L. aims to increase production to 50,000 tonnes of salmonids and 6,000 tonnes of mussels.[40]

4.2 Governance

4.2.1 General Framework

N.L. first became involved in aquaculture in 1988 with the signing of a MOU between the province and the federal government. This MOU outlines the roles and responsibilities of each level of government. The provincial Department of Fisheries and Aquaculture (NL-DFA) is responsible for aquaculture licensing, inspections, enforcement, and development and extension services and DFO is responsible for habitat protection. Shared responsibilities include environmental protection, aquaculture science, site inspection, and fish health.[41] Through an additional MOU signed in 2008, N.L. and the three other Atlantic Provinces work collaboratively toward a harmonized aquaculture regulatory and policy environment framework in the region.[42]

4.2.2 The Aquaculture Act

To govern the aquaculture industry, the province introduced the *Aquaculture Act*[43] and the *Aquaculture Regulations*[44] in 1988, which are the responsibility of NL-DFA. The *Act* and its associated regulations were amended on several occasions over the years. Currently, the purposes of the *Act* are to: promote the development of aquaculture;

39 Newfoundland Aquaculture Industry Association, **Newfoundland Mussel Producers the First and Only to Receive Organic Aquaculture Certification in North America**, *News Release*, 21 February 2013.
40 Newfoundland and Labrador Department of Fisheries and Aquaculture, ***Vision 2018: Sustainable Aquaculture Development – A Strategic Plan Discussion Document***, 2013.
41 NL-DFA, **Provincial and Federal Responsibilities**, *About the Department* [accessed 12 March 2015].
42 ***Atlantic Provinces' Memorandum of Understanding for the Development of the Aquaculture Sector***, 18 January 2008.
43 ***Aquaculture Act***, Chapter A-13.
44 ***Aquaculture Regulations*** under the *Aquaculture Act*, O.C. 96-939.

secure the property rights of the industry; minimize conflicts with competing interests and uses; and engage in cooperative decision-making within the province and with the federal government (section 3). The major areas addressed by the *Act* include: licensing, compliance and enforcement, and inspections, as well as activities related to escapes, waste management and aspects of aquatic animal health. More specifically, the *Act* addresses the following:

- A licence is required to conduct aquaculture activities, the term of which will not extend beyond the term of the lease of the right of occupancy on the land, which is a prerequisite to a licence being issued (subsections 4(1), (5) and (7));
- The Minister may establish criteria for shore fastened mooring at aquaculture sites (sub-section 4.1(1)); the Minister may also require financial or other security for restoration of a site (section 4.2) and provides detailed requirements for restoration (section 4.3);
- The *Act* declares all aquatic plants and animals of the species specified in the licence, while within the boundaries of the licence, to be the exclusive property of the licensee until sold, traded, transferred or otherwise disposed of, and those aquacultured animals that have escaped remain their personal property while within 100 meters of the site boundary (section 5);

Northern Harvest Sea Farms is a large Canadian salmon aquaculture company that began operations in N.L. in 2008. The company was initially established in 1985 in N.B. where the company's head office is located. In October 2012, the company became the first salmon aquaculture operation in North America to receive the Global Aquaculture Alliance's Best Aquaculture Practices "three-star" certification. Senators visited one of its grow-out sites located in Pool's Cove.

- The *Act* also regulates disease reporting, introduction, transfer, transport, investigation and enforcement (sections 7 and 8); and
- The Regulations create requirements for the identification of aquaculture sites, including the placing of yellow buoys and mooring lines (section 4).

The N.L. *Aquaculture Act* defines "aquaculture" as:

"the farming of fish, molluscs, crustaceans, aquatic plants and other aquatic organisms with an intervention in the rearing process to enhance production by activities such as regular stocking, feeding, and protection from predation, and includes fallowing and processes to mitigate environmental degradation and the placement of necessary gear and equipment".

4.2.3 Lease and Licence

As noted above, an aquaculture licence will not be approved unless the proposed licensee has first been granted a lease in accordance with the *Lands Act*.[45] The authority to lease an area of Crown land, including a land covered by water, rests with the provincial Department of Environment and Conservation. It was explained to the Committee that leases would only be approved for sites located away from registered salmon rivers and away from known areas of endemic pathogens. The aquaculture lease is authorized for a 50-year period.

The application for an aquaculture licence must include information on: site location and layout; species and strain; type of operation; a business plan; specific site information; and production and harvest plans for the next five years. In addition, the application must disclose environmental concerns and/or conflicts and provide an assessment of the site's water quality. In contrast to the lease term, the aquaculture licence for the operation of a grow-out site is generally granted for one year and must be renewed annually. Although the Minister of Fisheries and Aquaculture has, since the *Aquaculture Act* was amended in 2012, the authority to issue multi-year licences, this provision has not been used to date.

During the hearings, the Committee was told that it is a long-standing practice that the provincial government would not grant an aquaculture licence that would displace traditional fishing activities. The licensing process involves a referral to the fishermen's union so that local fishing communities are aware of any aquaculture activity being proposed. This referral is part of a broader public consultation process that an aquaculture company is required to undertake in the community in which it wants to establish itself.

The licence application process is administered through a one-stop-shop via NL-DFA. Aquaculture applications are then channelled to all other relevant provincial and federal departments and agencies, including Transport Canada and DFO. DFO is responsible for reviewing new site applications and providing advice regarding siting and maximum production levels so as to minimize environmental impacts of aquaculture operations. Proposed aquaculture operations may, at the discretion of the Minister of Environment, be subject to an environmental impact assessment under the provincial *Environmental Protection Act*. The environmental assessment process also provides a procedure for public consultations.

45 ***Lands Act***, Chapter 36.

Once established, licensed aquaculture operations must, as per the *Aquaculture Act*, maintain books and records. The *Act* provides for inspections of aquaculture operations to ensure compliance with the legislation/regulations, as well as with the licence conditions. Inspectors may act as peace officers and have broad powers to enter, inspect, seize and detain items. Following an inspection, inspectors may provide directives to a licence holder. It is an offence to violate a provision of a term or condition of a licence, the *Aquaculture Act*, its regulations, or a directive issued by an inspector.

4.2.4 Integrated Pest Management

In marine areas with low salinity (such as the Bay D'Espoir), the freshwater influence acts to mitigate sea lice infestation; certain aquaculture operations on the south coast of N.L. consequently may not be affected by sea lice. However, concurrently with the rapid expansion of the industry over the past decade, the occurrences of sea lice infestations on salmon grow-out sites have increased in some bays. During regular diagnostic and surveillance site visits, NL-DFA staff conducts sea lice counts.

Senators visited Cold Ocean Salmon's hatchery in St. Alban's, N.L. The company, which started salmon aquaculture operations in the province in 2006, is a subsidiary of Cooke Aquaculture , a large Canadian salmon aquaculture company founded in 1985 which also operates in N.B., N.S., P.E.I., the United States (Maine), Chile, Scotland, and Spain. In addition to its hatchery, Cold Ocean Salmon operates several grow-out sites in the Bay D'Espoir region as well as a processing plant in Harbour Breton.

In addition, aquaculture operators also carry out weekly sea lice counts. If sea lice numbers rise above the provincial trigger point, treatment will be sought by a licensed veterinarian. NL-DFA does not currently publish the results of its sea lice monitoring program.

The availability of chemotherapeutants (SLICE®, Salmosan®, and hydrogen peroxide) to control sea lice is limited and NL-DFA and industry are currently developing an integrated pest management program that will encompass a variety of new products and technologies for controlling sea lice, including cleaner-fish (cunner) and lasers. This would be in addition to current preventative practices like fish husbandry, single-year class stocking, fallowing, and low stocking densities.[46]

4.2.5 Bay Management Area Policy

The first reported case of the ISA virus in a salmon aquaculture operation in N.L. was in 2012 and other cases of ISA outbreaks have been reported in the province since that time. The NL-DFA had been working with DFO and the salmon aquaculture sector on the development of BMAs since 2009, but the occurrence of ISA highlighted the need to further delineate and enhance these management areas. BMAs identify ideal locations for new sites, prescribe best practices (single-year class, one single stocking per site, specific fallowing periods per site, and common fallowing period per bay) along with strict biosecurity procedures. BMAs can also set a minimum distance between sites operated by the same company and another minimum distance between any sites operated by different companies. According to the NL-DFA, the use of BMAs is a sound, scientifically based and proven method of reducing disease and parasite impacts. It also enables stable and orderly management of industry practices to ensure both environmental sustainability and cooperation between companies for the long term viability of the industry.[47] BMAs were made a condition of licence in January 2014. Each company growing Atlantic salmon within the province now has grow-out sites in three distinct BMAs to facilitate continuous stocking.

4.2.6 Containment and Recapture

The *Code of Containment for the Culture of Salmonids in Newfoundland and Labrador* is a joint NL-DFA, DFO and industry commitment; each has clearly defined roles and responsibilities.[48] The code was first implemented in 1999 and is updated on a regular basis. It establishes design standards for aquaculture cage systems and outlines the procedures industry must follow to mitigate escapes through site management. It has been observed that net damage caused by ice and storms is the leading cause of escape events in N.L. For this reason, the code insists on equipment and infrastructure (e.g., nets, cages, mesh size, moorings) that can withstand the rigours of the marine environment in which they are to be deployed. It also prescribes how the equipment must be tested and maintained. Other elements of the code of containment include handling practices, documentation and reporting, inspection, and mitigation. Adhering to the code is a condition of the aquaculture licence. Each marine grow-out site is inspected by NL-DFA for code compliance twice a year.

46 Newfoundland Aquaculture Industry Association, "**Newfoundland's Aquaculture Industry Preparing for Increased World Demand while Planning Better Protection for Our Oceans**", *News Release,* 10 March 2014.
47 NL-DFA, ***Seafood Industry Year in Review 2013***, February 2014.
48 NL-DFA, ***Code of Containment for the Culture of Salmonids in Newfoundland and Labrador***, March 2014.

The code also prescribes measures for the recapture of escaped fish. DFO is responsible for the monitoring and implementation of this section of the code. Authorization of recapture is at DFO's discretion or direction, in consultation with the aquaculture operator and other stakeholders, as needed. DFO will consider the life history stage of the escaped fish, the time of year, incident-specific factors, and conservation objectives for wild fish populations. Consequently, not all escape incidents will trigger recapture efforts even though all incidents must be reported. An incident involving the loss of 100 or more fish from any one cage is deemed to constitute a significant escape and the licence holder is required to commence discussions with DFO within 24 hours of the incident to determine if recapture efforts should be initiated.

NL-DFA publishes a report that outlines industry compliance with the requirements of the code and summarizes the outcomes of its inspection activities. The report also provides information on the number of escapes and effectiveness of recapture efforts. A report is released per calendar year and the most recent covers the year 2012.[49]

4.2.7 Provincial Aquaculture Strategy

NL-DFA first developed a provincial aquaculture strategy in 1990. The strategy was reviewed in 2000 and again in 2005 when it was recognized that the aquaculture industry was expanding within the province. In 2014, following public consultations,[50] a new aquaculture strategy was released to "guide future policy and investment

Norlantic Processors Ltd. is a Blue mussel grower and processor based in Botwood, N.L. The company, which produces approximately one million pounds of mussels per year, was awarded the Canadian Organic Aquaculture Standard certification by Global Trust in 2013. In addition, its processing facility became certified to the Best Aquaculture Practices processing standard in January 2014. Senators visited one of the company's growing areas and toured its processing facility.

49 NL-DFA, ***Annual Compliance Report – 2012 on the Code of Containment for the Culture of Salmonids in Newfoundland and Labrador***, March 2014.

50 NL-DFA, ***A Summary of What we Heard: 2013 Aquaculture Consultations***, 2013.

decisions aimed at fostering the success of the industry".[51] The strategy focuses on three priorities considered critical to meeting the provincial goal of sustainable aquaculture development:

- The first priority relates to sustainable management, including issues related to fish health and environmental impacts. With respect to fish health, NL-DFA intends to further define the BMAs developed in 2009 through the collection and analysis of oceanographic and epidemiologic data. Fish health management plans will be revised and surveillance and biosecurity audits will continue to be conducted. With respect to environmental impacts, NL-DFA will implement best practices that mitigate site-specific impacts and will update the aquaculture licence applications to reflect new environmental monitoring requirements.
- The second priority deals with support capacity and encompasses financial programs, infrastructure planning, governance renewal, and communication. NL-DFA intends to review current federal and provincial financing programs that support the industry with a view to amending current or developing new financial tools available to the industry. Similarly, the department will identify current and future aquaculture infrastructure needs for both the finfish and shellfish sectors. With respect to governance, NL-DFA will undertake a review of current regulations, policies and procedures for licensing aquaculture sites. With respect to communications, the department will work with the industry to effectively communicate the facts regarding aquaculture. Actions under this item include more regularly posting information about the industry, the creation of a Ministerial Advisory Council on Aquaculture that will consist of various stakeholders and provide a forum for dialogue on aquaculture in the province, and the development of a communications strategy.
- The third priority relates to research and development in three particular fields: aquatic animal health, exploration of new potential salmonid grow-out sites, and mussel aquaculture (seed supply, invasive species, species diversification, etc.). In addition, NL-DFA will establish an Aquaculture Research and Development Advisory Committee mandated to review current research and development activities and to provide recommendations for further collaboration among the research community.

51 NL-DFA, ***Newfoundland and Labrador Sustainable Aquaculture Strategy 2014***, December 2014.

Located in St. Alban's, N.L., the Centre for Aquaculture Health and Development (CAHD) officially opened in July 2011. The Centre is a modern laboratory that supports diagnostics and surveillance and the development of advanced biosecurity practices, as well as applied and clinical aquaculture health research. It provides veterinary advice, support, facilities and quarantine assistance to the aquaculture industry and acts as the province's main laboratory in the area of fish health and aquaculture. While at the CAHD, a presentation was delivered to Senators on the various activities performed there, but it was not possible to tour the facility due to biosecurity considerations.

CHAPTER 5: Nova Scotia

5.1 Profile of the Industry

5.1.1 Structure and Location

The aquaculture industry in N.S. is one of the most diverse in the country. The wide variability in climatic and oceanographic conditions (i.e. many protected coastal waters, areas with strong tidal currents, shallower waters) has encouraged the production of a large range of species grown for commercial purposes (see Table 5.1). In addition, the aquaculture industry has established finfish and shellfish operations in almost every county across the province, including several land-based facilities.[52] The province is also home to a world-renowned land-based marine plant production facility (Acadian Seaplants Limited) which grows, harvests and processes seaweed for food, biochemical and agricultural markets.

The structure of the finfish sector has changed over the years. The sector started small and for many years was operated by small and medium-sized companies and was focussed on supplying local markets. While some of these companies continue to operate to this day, one salmon aquaculture company – Cooke Aquaculture – has expanded its operations vertically throughout the province to establish hatcheries, grow-out sites, processing plants, a feed mill (Northeast Nutrition), equipment manufacturing (cages and nets), as well as transportation and distribution services. The other finfish growers tend to be small-scale operators. For its part, the shellfish sector has remained fragmented and involves a large number of companies, including many small family-operated businesses.

Table 5.1 – Aquacultured Species in Nova Scotia

	Species
Finfish	• Atlantic Salmon • Arctic Char • Rainbow/Steelhead Trout • Atlantic Halibut
Shellfish	• Blue Mussel • Clam (Soft Shell, Hard Shell) • Oyster (American, European)
Aquatic Plants	• Irish Moss • Seaweed • Dulse

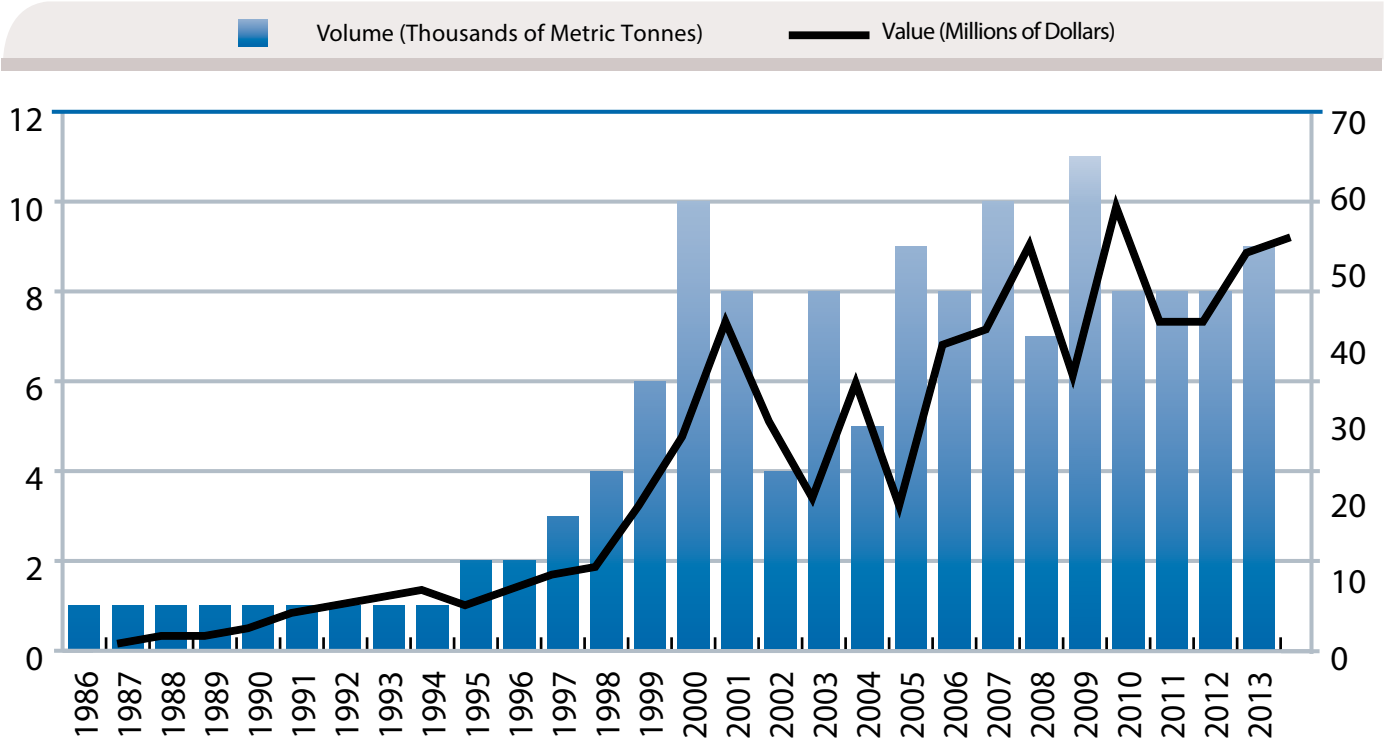
Source: According to information provided to the Committee by DFO.

52 For the location of these aquaculture operations, see the following **map**.

5.1.2 Production

As illustrated in Figure 5.1, aquaculture production in N.S. grew continually during the 1980s and 1990s, reaching a peak at 10,456 tonnes in 2000. A combination of favourable growing conditions and an abundance of suitable sites provided the basis for this growth. This was followed by a series of ups and downs in the production cycle. The reasons given to explain these fluctuations include a complex regulatory framework, the high number of small operators, a lack of business and technical skills to operate a successful aquaculture venture, weak government support and poor public acceptance[53]. Aquaculture production reached another peak in 2009, but this was followed by a decline in 2010 and 2011. Production started to grow again

Figure 5.1 –Aquaculture Production[a] in Nova Scotia, Volume and Value,[b] 1986 to 2013



Notes: a. Aquaculture production includes the amount and value produced on sites and excludes hatcheries or processing.

b. At farm-gate price. The farm-gate value represents a product's value once it is sold by the producer.

Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values*** [accessed 12 March 2015].

53 Nova Scotia Department of Agriculture and Fisheries, ***Long-Term Planning for Aquatic Farming in Nova Scotia – A Discussion Document***, February 2005.

in 2012, despite the fact that a number of grow-out sites were infected with the ISA and IPN viruses that year.

In 2013, the last year for which data is available, the N.S. aquaculture industry produced 8,748 tonnes of fish and shellfish, valued at $54 million. This included 6,780 tonnes of finfish, valued at $43 million, and 1,968 tonnes of shellfish, valued at $11 million. As shown in Figure 5.2, Atlantic salmon is the most aquacultured species in the province (75.8%); Blue mussel is the most produced shellfish species (3.06%).

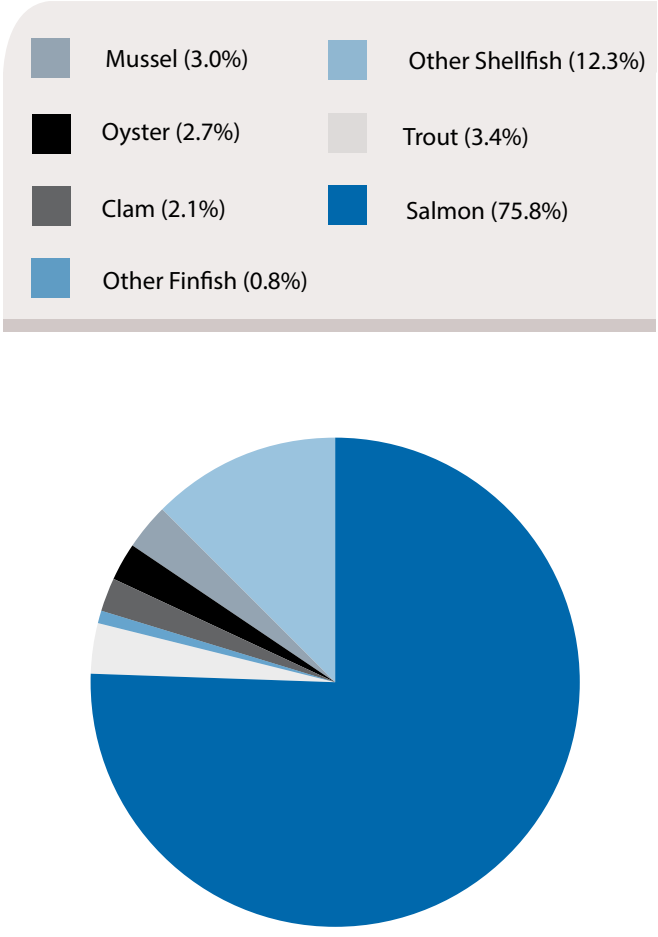
When compared to the other provinces, N.S. had the fourth highest production value of aquaculture in Canada in 2013, accounting for 6% of the total, behind B.C. (53%), N.L. (20%) and N.B. (13%). When considered by species, N.S. was the third largest producer of Blue mussels and the fourth largest producer of oysters.

5.2 Governance

5.2.1 General Framework

In N.S., a MOU on aquaculture development between the federal government and the province serves to establish the roles and responsibilities of each level of government as represented by the provincial Department of Fisheries and Aquaculture (NS-DFA) and DFO. Under this MOU, N.S. is identified as being the lead on licensing and leasing, site inspections and compliance, and fish health management. Both levels of government share in the responsibility for environmental management and monitoring. As noted previously, through an additional MOU signed in 2008, N.S. and the three other Atlantic Provinces work collaboratively toward a harmonized aquaculture regulatory and policy environment framework in the region[54].

Figure 5.2 – Nova Scotia Aquaculture Production by Species, Percentage of Value, 2013



Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values, 2013*** [accessed 12 March 2015].

54 ***Atlantic Provinces' Memorandum of Understanding for the Development of the Aquaculture Sector***, 18 January 2008.

5.2.2 The *Fisheries and Coastal Resources Act*

The first Nova Scotia Aquaculture Development Strategy was drafted in 1996. That year, the *Fisheries and Coastal Resources Act* was passed.[55] Administered by NS-DFA, the *Act* is the primary piece of legislation governing aquaculture in N.S. The *Act* is an enabling piece of legislation and its purpose, among others, is to: "encourage, promote and implement programs that will sustain and improve the fishery, including aquaculture" and "assist the aquaculture industry to increase production" (subsections 2(b) and (d)).

Part V of the *Act* deals expressly with aquaculture. Aquaculture is prohibited without a licence and aquaculture on Crown land is further prohibited without a lease. Generally, an aquaculture licence carries with it the exclusive right to possession of the water column and sub-aquatic land of the licence (section 44). The Minister of Fisheries and Aquaculture (the Minister) may refer the application for an aquaculture licence to a public hearing (subsection 48(c)).

Both a licence and a lease may be granted for an initial term of up to 10 years, with possible renewal terms of 5 years each (subsections 51(1)(e) and 52(2)(a)). The Minister has the power to designate aquaculture development areas as well as closed areas or areas not suitable for aquaculture development (subsections 56(1)(a) and (e)).

The *Act* addresses the issue of aquaculture products as property by designating all aquatic plants and animals of the species specified in a licence or lease in the leased or licenced area, except free-swimming or drifting flora and fauna not enclosed, as the exclusive property of the holder of the licence or lease (section 60). Further, escaped aquatic animals remain the exclusive property of the holder of the lease or licence while within 100 meters of the boundaries of the leased or licenced area (subsection 61(2)).

The *Aquaculture Licence and Lease Regulations* establish criteria for the location and marking of aquaculture lease sites (section 3) and list, as conditions of the licence, the requirements for reporting and recording with respect to disease, type of feed, veterinarian treatment, and information on the sale of aquacultured products (section 5). The Regulations also stipulate that the Provincial Fish Health Veterinarian may isolate, quarantine, order treatment for, restrict the movement of, or destroy cultured fish infected or thought to be infected with a disease that he/she considers a significant risk to wild or cultured fish stocks (section 9).[56]

The N.S. *Fisheries and Coastal Resources Act* defines "aquaculture" as:

"the farming for commercial purposes of aquatic plants and animals over which the Minister exercises control but does not include raising or breeding in tanks, nets, pens or cages of aquatic plants and animals either as aquarium species, in laboratory experiments or by individuals on their own property as food for their own use." (subsection 3(1)(a))

The *Act* further defines "farming" as:

"the culture, husbandry, production, development or improvement of aquatic plants and animals." (subsection 43(h))

55 ***Fisheries and Coastal Resources Act***, Chapter 25.
56 **Aquaculture Licence and Lease Regulations**, made under Section 64 of the *Fisheries and Coastal Resources Act*, chapter 25.

The Nova Scotia Aquaculture Development Strategy was revised in 2000, in 2005 and again in 2012.[57] Then in May 2013, NS-DFA announced that a new regulatory framework for aquaculture would be developed through public consultations led by the Doelle-Lahey Panel. The Panel was assisted by an advisory committee representing stakeholders and community interest groups including First Nations, the aquaculture industry, conservationists, environmentalists, fishermen, and municipalities.The Panel released a summary of issues identified by participants in public consultations in December 2013 and its final report was published in December 2014.[58] The final report recommended several changes in the provincial governance of aquaculture with the aim of minimizing environmental risks, particularly in relation to marine finfish aquaculture, while at the same time maximizing the social and economic benefits derived from the industry. One of the main recommendations was the creation of a classification system under which coastal areas would be rated as green, yellow or red based on their relative suitability for finfish aquaculture. The report also recommended the creation of a standing regulatory advisory committee that would provide ongoing advice on the implementation of the proposed regulatory framework and its continued improvement.

Senators toured Cooke Aquaculture's grow-out sites in Saddle Islands, N.S. The company also operates several hatcheries, grow-out sites and processing plants, as well as one feed mill (Northeast Nutrition) in the province.

57 NS-DFA, ***Aquaculture Strategy Creating Sustainable Wealth in Rural and Coastal Nova Scotia***, 2012.
58 Independent Aquaculture Regulatory Review for Nova Scotia (The Doelle-Lahey Panel), ***A New Regulatory Framework for Low-Impact/High-Value Aquaculture in Nova Scotia***, December 2014.

In response to the Doelle-Lahey Panel report, the provincial government tabled amendments to the *Fisheries and Coastal Resources Act* in April 2015. These amendments include, among others:

- A purpose section that recognizes aquaculture as a legitimate use of the coastal resources and as an industry that brings positive and economic benefits to communities;
- More transparent and stronger environmental regulations;
- The creation of an independent review board that will make application decisions on leases and licences.[59]

5.2.3 Environmental Monitoring

In 2002, NS-DFA established an Environmental Monitoring Program (EMP) for the marine aquaculture industry to monitor the potential effects of aquaculture on bottom sediments.[60] Monitoring is conducted on both aquaculture sites and at reference stations through the collection of both qualitative (video) and quantitative (sediment and water analysis) data from coastal areas throughout the province. All sites in production are tested and those with larger production are given higher priority. Sites of potential concern are subject to repeated sampling and, if required, remediation action is implemented. In order to minimize the organic and inorganic loading from marine finfish aquaculture sites, aquaculture operators are required to monitor their level of sediment sulphide concentrations based on standard operating practices that were initially developed in N.B.

Founded in 1981 and headquartered in Dartmouth, N.S., Acadian Seaplants Limited is the largest biotech seaweed product manufacturer of its type in the world. The company is fully integrated and cultivates, harvests, and processes seaweed into products for plants, animals and people. Senators were given a presentation on Acadian Seaplants' operations at its head office.

59 Bill No. 95, ***Fisheries and Coastal Resources Act (amended)***, 21 April 2015.
60 NS-DFA, ***Environmental Monitoring Program Framework for Marine Aquaculture in Nova Scotia***, March 2011.

CHAPTER 6: Prince Edward Island

6.1 Profile of the Industry

6.1.1 Structure and Location

The aquaculture industry in P.E.I. comprises two sectors: finfish and shellfish. In contrast to B.C., N.B., N.L. and N.S., the vast majority of aquaculture production on the Island consists of shellfish production. The variety of species aquacultured in P.E.I. for commercial purpose is presented in Table 6.1. Research and grow-out trials are being undertaken for other shellfish species, such as soft shell clams, scallops, and quahogs.

As is the case in QC (see Chapter 7), P.E.I. does not have marine finfish grow-out sites (net cages). The estuaries that surround the Island are shallow and are not conducive to marine cage aquaculture due to seasonal temperature extremes. For this reason, the finfish aquaculture sector occurs in pond cages and land-based tank systems. Currently, the finfish aquaculture sector in P.E.I. consists of five hatcheries and one grower, predominantly located in the eastern and central part of the province. AquaBounty Farms is a land-based, contained research facility located in Fortune, which produces genetically engineered Atlantic salmon eggs. Atlantic Sea Smolt Inc. operates an Atlantic salmon hatchery located in Souris; its production supplies smolt to Snow Island Salmon Inc., a salmon grower located in N.S. Northern Harvest Sea Farms, a marine finfish aquaculture company operating in both N.B. and N.L., has two Atlantic salmon hatcheries on the Island: the Cardigan Fish Hatchery[61] and the Dover Fish Hatchery. Ocean Trout Farms, located in Brookvale, is a fully-owned subsidiary of Cold Water Fisheries Ltd. that produces Rainbow trout eggs. Halibut PEI Inc. is a land-based facility growing Atlantic halibut in Victoria; it purchases juveniles from the Scotian Halibut Hatchery in Clark's Harbour, N.S., and grows halibut using salt water sourced from underneath the Island through wells.

The province's shellfish aquaculture sector is dominated by the production of mussels. Mussel culture occurs on leases in many of the rivers and estuaries on the Island, but the majority of the growing areas are concentrated along the northern and eastern

Table 6.1 – Aquacultured Species in Prince Edward Island

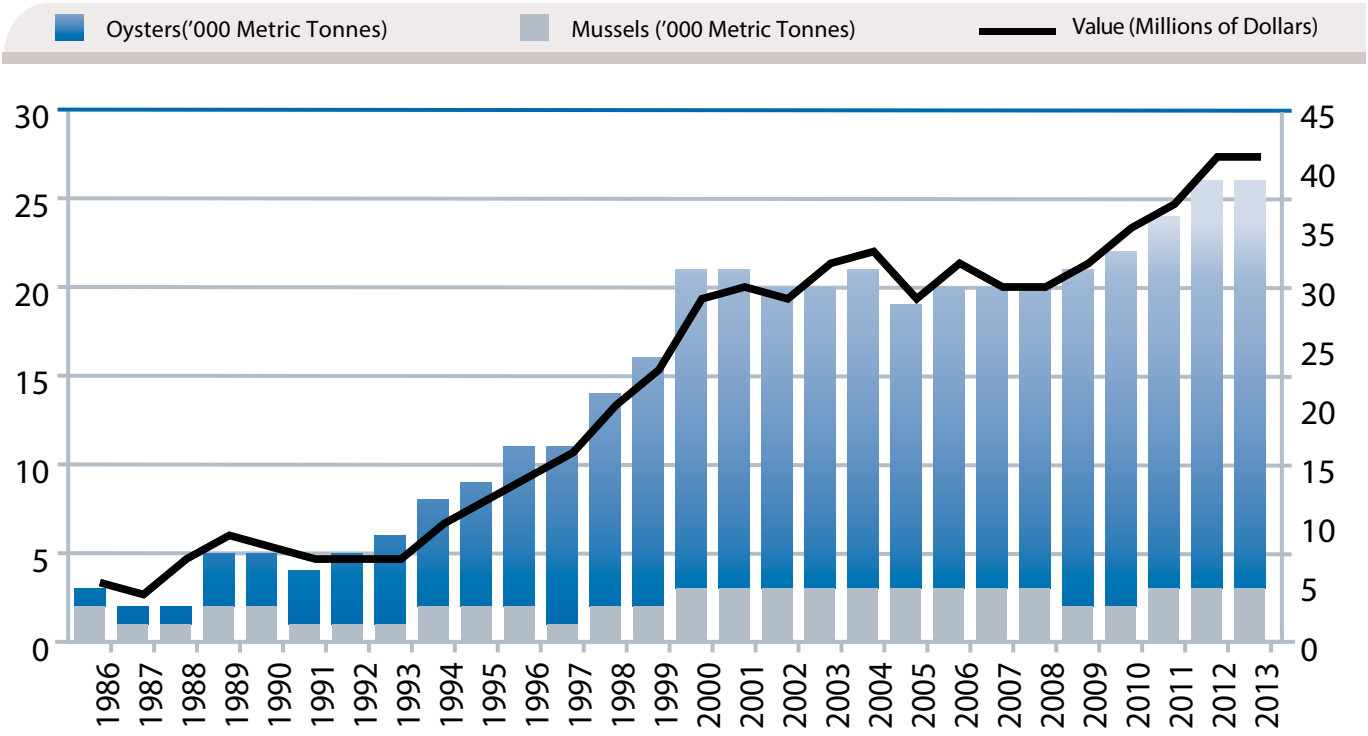
	Species
Finfish	• Atlantic Salmon • Atlantic Halibut • Steelhead/Rainbow Trout
Shellfish	• American Oyster • Blue Mussel

Source: According to information provided to the Committee by DFO.

61 The Cardigan Fish Hatchery was established on the Island by the federal government in the 1930s and was operated by the University of P.E.I. in the past.

coasts. There are 130 mussel growers whose cultivation areas cover 11,000 acres. Mussels on the Island are grown in off-bottom systems in which they are held in suspension in socks or mesh sleeves. They take 12 to 24 months to reach market size and they are harvested during every season, even when under ice during the winter. The abundance of natural seed (or spat) found in the waters around the Island eliminates the need for spat hatcheries and artificial feeding. The mussel seed is therefore collected naturally using collector lines suspended in the water column.[62]

Figure 6.1 – Aquaculture Production[a] in Prince Edward Island, Volume and Value,[b] 1986 to 2013



Notes: a. Aquaculture production includes the amount and value produced on sites and excludes hatcheries or processing.

b. At farm-gate price. The farm-gate value represents a product's value once it is sold by the producer.

Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values*** [accessed 12 March 2015].

62 Based on information available on the website of the **PEI Aquaculture Alliance**.

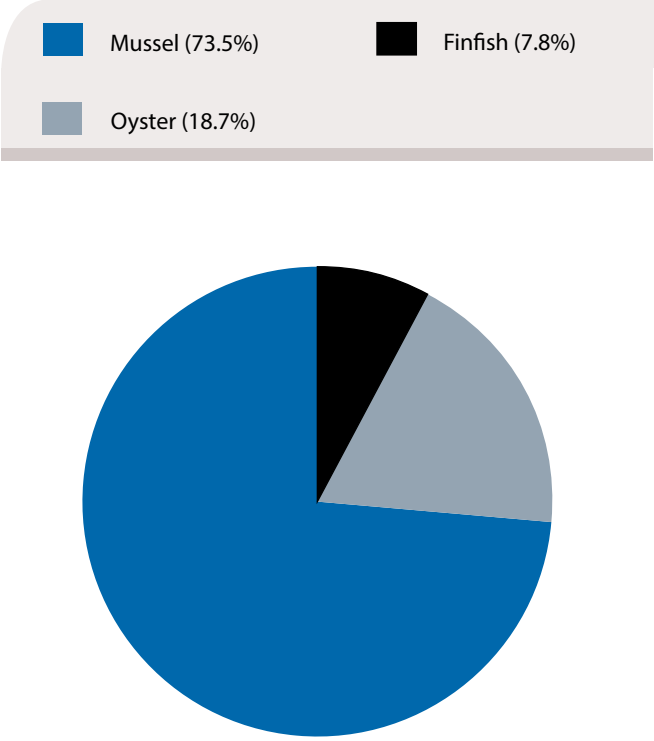
The oyster sector is concentrated on the north and south shores of the Island. There are currently 580 lease holders, occupying 7,100 acres, with 1,475 acres for off-bottom (or suspended) culture and close to 6,000 for bottom or seabed culture. Like mussels, cultured oysters are harvested year around. It takes between 2 to 5 years to grow oysters, depending on their size. Like the mussel sector, the province's oyster aquaculture sector is dependent on the collection of natural seed (in contrast to British Columbia where oyster growers mainly purchase seed from hatcheries). There are several sites in P.E.I. where wild oyster seed is collected commercially.[63]

6.1.2 Production

As can be seen from Figure 6.1, total aquaculture production in P.E.I. grew continually between 1986 and 2000, after which it stabilized to approximately 20,000 metric tonnes per year until 2008. The annual aquaculture production grew again starting in 2008 and reached a peak in 2013. That year, production volume amounted to 25,706 metric tonnes, for a farm-gate value of $41.2 million.

As illustrated in Figure 6.2, aquaculture production in P.E.I. is dominated by Blue mussel (73.5%). In fact, the province is the largest producer of mussels in Canada. The American oyster is the second most valued shellfish species grown in P.E.I. (18.7%) and the province is the second largest producer of oysters in Canada, behind B.C.

Figure 6.2 – Aquaculture Production in Prince Edward Island by Species, Percentage of Value, 2013



Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values, 2013*** [accessed 12 March 2015].

6.2 Governance

6.2.1 General Framework

Unlike the situation in the other provinces, P.E.I. does not have a provincially-based regulatory framework for aquaculture. DFO has the primary

63 Ibid.

regulatory authority to manage aquaculture on the Island. This authority is exercised through sections 7 and 58 of the *Fisheries Act*.[64] Unlike B.C., where DFO is also the main regulator, there are no regulations issued under the *Fisheries Act* to specifically govern aquaculture in P.E.I. The federal authority in this area dates back to an MOU between the federal and provincial governments signed in 1928, which granted the federal government authority to issue leases for the purpose of oyster aquaculture. The MOU was renewed in 1987; it identifies DFO as the lead agency for the administration of aquaculture leasing in the province and outlines the elements of "a mutual regime for development and regulation of commercial aquaculture" in P.E.I.[65] However, the provincial department – Fisheries, Aquaculture and Rural Development (PEI-FARD) – has certain rights and obligations, some of which may be found in the provincial *Fisheries Act*.[66]

DFO's PEI Aquaculture Leasing defines aquaculture as "a sector of fisheries that includes the rearing or raising under controlled conditions of aquatic products such as oysters, mussels, fish and other aquatic resources, in seas, bays and rivers."

The provincial *Fisheries Act* defines aquaculture as "the culture and husbandry of aquatic flora or fauna."

Accordingly, aquaculture regulation in P.E.I. is achieved through a co-management approach that includes DFO's PEI Aquaculture Leasing Division and PEI-FARD's Aquaculture Division. Representatives from the two divisions participate in the Aquaculture Leasing Management Board (ALMB), which also includes members of the aquaculture industry. The ALMB is responsible for the overall management of aquaculture in P.E.I.[67] Acting on the advice of the Board, the PEI Aquaculture Leasing Division specifies under what conditions leases may be issued, as well as how and why terms of contracts may be extended and under what conditions leases may be cancelled. The PEI Aquaculture Leasing Division is also assisted in its work by the PEI Aquaculture Leasing Referral Committee (LRC), which reviews applications for aquaculture leases. The membership of the LRC is broader than that of the ALMB and includes federal representatives from DFO (Conservation and Protection, Habitat, and Resource Management), Transport Canada (Navigable Waters Protection), and Environment Canada (Canadian Wildlife Service), as well as provincial representatives from PEI-FARD and Environment.

As mentioned previously, through an additional MOU signed in 2008, P.E.I. and the three other Atlantic Provinces work collaboratively toward a harmonized aquaculture regulatory and policy environment framework in the region.[68]

6.2.2 Zoning and Leasing

In 1987, DFO adopted the *PEI Aquaculture Zoning System*, a document that designated zones where shellfish aquaculture operations could be located[69].

64 ***Fisheries Act***, R.S.C., 1985, c. F-14.
65 No aquaculture licence is issued in PEI. Shellfish aquaculture operators are issued a lease and finfish operators a permit.
66 ***Fisheries Act***, Chapter F-13.01.
67 The Board does not discuss individual aquaculture lease applications.
68 ***Atlantic Provinces' Memorandum of Understanding for the Development of the Aquaculture Sector***, 18 January 2008.
69 This document was developed by a steering committee formed of federal and provincial departmental representatives that had jurisdiction or an interest in aquaculture, including representatives of DFO, the Coast Guard, Public Works and Government Services Canada, Environment Canada, and Parks Canada at the federal level, and PEI-FARD, Environment and Tourism at the provincial level.

The zoning system took into account environmental considerations, wildlife sanctuaries, Aboriginal rights, landowner (riparian) rights, and potential conflicts that could arise with other users (e.g., commercial fisheries, recreational boating and other marine activities). It is believed that the zoning system has created a balance between areas for aquaculture development and other marine activities and has contributed to good public acceptance of the industry. The *PEI Aquaculture Zoning System* was subject to a review in 2008 and was revisited again in 2011 to ensure that it remains reflective of the current environment in the water systems across the Island, as well as other considerations. Areas are currently designated as follows:

- acceptable for both bottom and water column culture;
- acceptable for bottom culture and conditional for off bottom culture;
- acceptable for bottom culture but not for water column;
- conditional for both bottom and off bottom culture;
- conditional for bottom culture and not acceptable for water column culture;
- not acceptable for either bottom or water column culture;
- acceptable for bottom culture and conditional for off bottom oyster culture; and
- not acceptable for bottom culture and conditional for off bottom oyster culture.

The *PEI Aquaculture Zoning System* is a key document utilized by DFO's PEI Aquaculture Leasing Division, which carries out a preliminary screening of all aquaculture lease applications. The Division acts as a one-stop agency and coordinates the work of LRC members. Once the application has passed through the initial screening process[70], it is submitted, with all supporting data, to the LRC. There is no specific timeline for the review of lease applications; the complexity of the application and site requested determine the processing turnaround time. The LRC is also guided in its work by the *Prince Edward Island Aquaculture Leasing Policy*.[71] This policy provides guidelines with respect to the issuance and management of aquaculture leases in the province. Appendix 7 of the policy describes the criteria to be used by the LRC in the review of lease applications. These criteria refer to navigation issues, past performance of the applicant/leaseholder, water depths, water quality, other water users, proximity to other fisheries, upland use, quantity of shellfish, carrying capacity, and environmental considerations.

Following its review, the LRC makes a recommendation for support or rejection, or support with conditions, to the PEI Aquaculture Leasing Division. DFO reserves the right to make the final decision on applications. Aquaculture leases are issued for a term of up to 25 years, reviewed every 5 years, with options for renewal. Three categories of leases may be issued:

- The *bottom culture lease* is for use of the bottom or seabed to cultivate shellfish species (such as oysters);

70 The applicant must provide information including location of site, site dimensions, a digital map showing location of site, species to be cultivated, a site development plan showing the proposed site and utilization at full production.

71 ALMB, ***Prince Edward Island Aquaculture Leasing Policy***, July 2011.

- The *water column (or off-bottom) lease* is a bottom lease with permission to use the water column to grow shellfish (usually for mussels, but increasingly used for oysters). Leaseholders who have a bottom culture lease but wish to conduct off-bottom (or water column) culture must make an application to place structures in the water above the lease;
- The collection of wild spat or seed is considered a fishery and requires a licence under the federal *Fisheries Act*; sites used for the collection of wild seed also require the issuance of a *spat collection licence* from the PEI Aquaculture Leasing Division.

The lease contract requires the aquaculture operator to mark the lease site. In the case of bottom culture leases, corner markers outlining the boundaries of the lease must be permanently fixed. The lease contract provides for ownership of the shellfish species within the lease boundaries and allows for the use of the seabed or water column to cultivate the approved species. A leaseholder also has the right to transfer, bequeath, sublet or cancel his/her lease. There are a number of leasing fees associated with acquiring permission to operate and maintain an aquaculture lease (application, renewal, transfer, mortgage assignment, wills/bequeaths, appeal, addition or deletion of a species, reconfiguration of leases, and more.).

Aquaculture lease operations go through a series of phases. The first five years of the lease is the developmental phase during which the aquaculture operator assesses the biological and environmental aspects of a proposed site prior to entering full-scale commercial operations. It also allows the PEI Aquaculture Leasing Division time to assess the performance of the leaseholder. If the operator is successful in developing the site in

Senators toured Atlantic Aqua Farms' processing facility located in Orwell Cove, P.E.I. Atlantic Aqua Farms operates seven suspension method mussel growing sites in the area and received the Best Aquaculture Practices certification in 2013.

accordance with the site development plan and meets the obligations in the lease contract, the lease is then considered to be in the commercial phase.

Two issues have recently surfaced regarding the aquaculture lease policy. One of them relates to the "Add a Species Policy" promoted by the ALMB in 2014. The policy allows leaseholders the opportunity to grow and harvest more than the species that their lease is designated for, so they can diversify their production (such as adding an oyster species to a mussel lease). That said, some have raised the concern that the conversion of large amounts of acreage into growing oysters would directly compete with existing oyster growers and wild oyster harvesters and that this would increase the supply of oysters on the market and drive oyster prices down. Consequently, the "Add a Species Policy" has been temporarily suspended.

The other issue relates to a moratorium on water column mussel leases that has been in place since 1999. DFO is currently studying the viability of removing the moratorium in order to lease an additional 1,500 acres to grow mussels in Malpeque Bay. Concerns have been raised regarding the structures that would have to be placed in the water above the mussel leases as this could create conflicts with other users in the area (oyster growers, lobster fishermen, and more). It is also felt that an increase in the level of mussel aquaculture in Malpeque Bay could contribute to a decline in natural oyster production in the Bay due to nutrient competition.

6.2.3 Monitoring and Compliance

Aquaculture operators are required to submit an "annual lease report" to DFO's PEI Aquaculture Leasing Division, indicating the extent of operations conducted (such as harvest information, the number of shellfish remaining on site after harvest, the quantity of seeds placed on-site, the time spent operating the lease, any problems encountered and any enhancements to bottom culture sites). They should be prepared to provide documentation to verify the activities conducted in support of their annual lease report. Annual lease reports may be subject to a random audit. Failure to submit the annual lease report may result in cancellation of the lease. Aquaculture operators are also subject to periodic review to ensure compliance with terms and conditions of the lease contract and to demonstrate that the lease is being utilized as per the site development plans. The operator may be requested to be present during a site review. DFO's PEI Aquaculture Leasing Division may cancel a lease where the operator failed to develop the lease as per the site development plan.

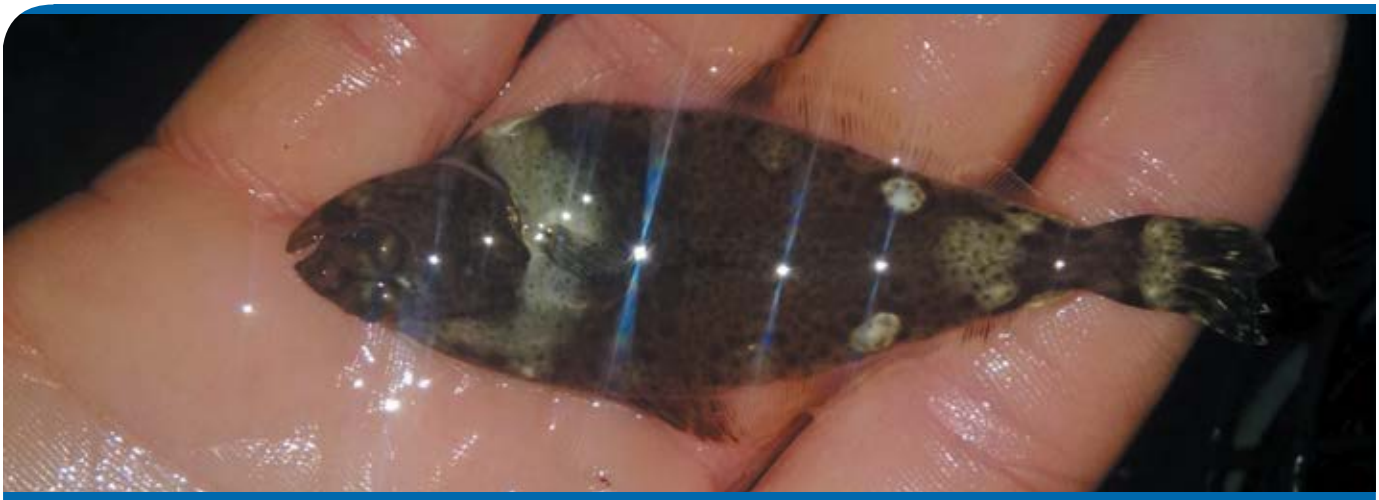
6.2.4 Environmental Monitoring

A recent report suggests that the shellfish aquaculture sector in P.E.I. is not subject to provincial EIA.[72] It should be noted, however, that the sector must operate in accordance with one industry code, the *Shellfish Aquaculture Environmental Code of Practice* (SAECOP), prepared by the Prince Edward Island Aquaculture Alliance (PEIAA). SAECOP outlines aquaculture practices that are anticipated to ensure environmental responsibility. All shellfish growers with aquaculture leases now adhere to the SAECOP. Items encompassed by the code include, but are not limited to: site planning, introductions or transfer of live shellfish, site maintenance, biofouling control, wildlife encounters, and waste management.

In addition, the *Prince Edward Island Aquaculture Leasing Policy* (discussed in section 6.2.2) requires

72 East Coast Environmental Law, ***Comparative Analysis of Five Aquaculture Regulatory Frameworks in Canada***, prepared for the Independent Aquaculture Regulatory Review for Nova Scotia (Doelle-Lahey Panel), 15 April 2014.

the establishment of an Adaptive Management Committee. Its mandate is to review monitoring and research activities annually with a view "to recommend the direction and implementation of required environmental actions" to the ALMB and DFO.[73] Accordingly, recommendations can be made to adapt or adjust aquaculture management and policy in response to a changing environment or in light of new scientific knowledge regarding the environmental impact of shellfish aquaculture operations. The Adaptive Management Committee is mandated to meet a minimum of twice per year.



Senators visited Halibut PEI, a land-based recirculation facility in Victoria, P.E.I., growing Atlantic halibut. The company purchases juveniles from Scotian Halibut Limited – a hatchery located in Clark's Harbour, N.S. – and grows halibut in tanks using salt water sourced from deep saltwater wells.

73 ALMB, ***Prince Edward Island Aquaculture Leasing Policy***, July 2011, p. 45.

CHAPTER 7: Québec

7.1 Profile of the Industry

7.1.1 Structure and Location

In QC, unlike most of the other provinces (B.C., N.B., N.S. and N.L.), the marine aquaculture industry produces only shellfish and aquatic plants. Finfish aquaculture takes place exclusively in freshwater. Finfish are not grown in seawater because the biophysical characteristics (salinity and water temperature, limited availability of protected areas, harsh winters with drifting ice and winds) restrict the industry's options in many coastal regions of the province. Few locations are protected enough for operating marine grow-out sites year-round. While year-round aquaculture in net cages in seawater is undoubtedly possible in some protected bays, the production cycle would be longer (over three years), putting QC's industry at a disadvantage as compared to that of other provinces. In the late 1980s and early 1990s, companies did try to raise salmonids at sea in the province, but they encountered other problems, such as a lack of high-quality juvenile stocks and difficulty controlling disease, in addition to the harsh environmental conditions.[74]

Table 7.1 lists the species being cultured in QC. The freshwater finfish sector mainly uses fully or partially closed containment systems (tanks and ponds) and raises salmonids such as rainbow trout and brook trout. While finfish aquaculture is underway in various parts of the province, it is concentrated in Estrie, Mauricie and Chaudière-Appalaches regions. In 2012, the sector comprised 88 companies and 169 employees.[75] It consists mainly of small, family-owned businesses.

Table 7.1 – Aquacultured Species in Québec

	Species
Finfish	• Arctic Char • Brook Trout • Lake Trout • Rainbow Trout
Shellfish	• Blue Mussel • Softshell Clam • Sea Scallop/Icelandic Scallop • Atlantic Oyster
Aquatic Plants	• Seaweed

Source: According to information provided to the Committee by DFO.

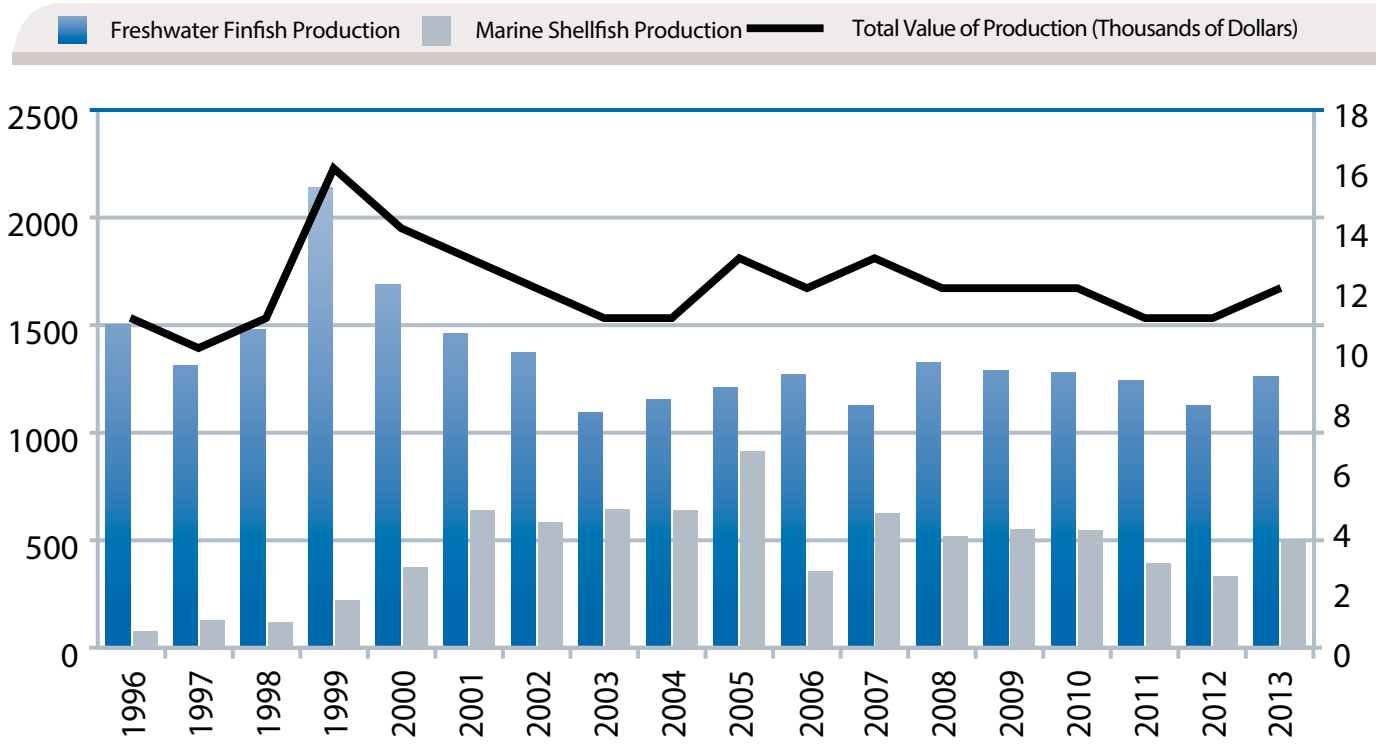
74 Société de développement de l'industrie maricole Inc., ***Atelier sur l'élevage de poissons marins au Québec – Compte rendu***, 16 and 17 November 2004.

75 Comité sectoriel de main-d'œuvre des pêches maritimes, ***Diagnostic de la main-d'œuvre de l'industrie des pêches et de l'aquaculture commerciales au Québec***, March 2014.

As for the marine aquaculture sector, operations grow mussels and scallops and are located in four regions: the Gaspé Peninsula (20 grow-out sites), the Magdalen Islands (12 sites), the North Shore (8 sites) and the Lower St. Lawrence (5 sites).[76] Production of Atlantic oysters ceased in 2006. Production of softshell clams is still in the pilot project phase. In 2012, the marine aquaculture sector comprised 27 companies and 118 employees.[77] Again, these are mainly small, family-owned businesses.

Finally, aquatic plant cultivation recently began in QC. In 2014, a company on the Gaspé Peninsula (Fermes marines de Gaspé Inc.) started growing seaweed for commercial purposes alongside its scallop culture.

Figure 7.1 – Aquaculture Production[a] in Québec, Volume and Value,[b] 1996 to 2013



Notes: a. Aquaculture production includes the amount and value produced on sites and excludes hatcheries or processing.

b. At farm-gate price. The farm-gate value represents a product's value once it is sold by the producer.

Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values*** [accessed 12 March 2015].

76 For the location of these sites, see the following maps: **Gaspé Peninsula**, **Magdalen Islands**, **North Shore**, and **Lower St. Lawrence**.

77 Comité sectoriel de main-d'œuvre des pêches maritimes, ***Diagnostic de la main-d'œuvre de l'industrie des pêches et de l'aquaculture commerciales au Québec***, March 2014.

7.1.2 Production

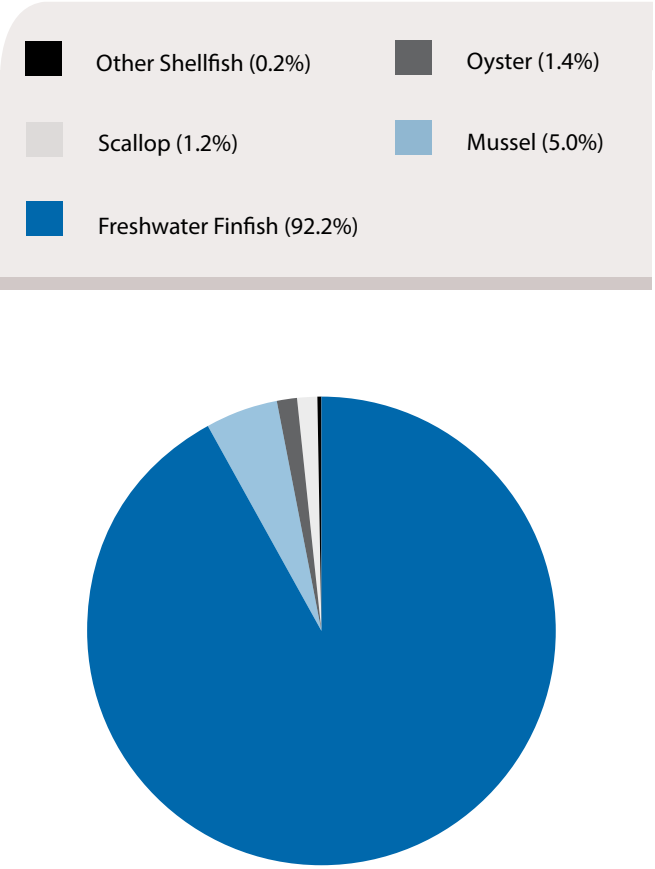
Figure 7.1 shows trends in the volume and value of the QC aquaculture industry's production from 1996 to 2013. Freshwater finfish production reached a peak of 2,139 tonnes in 1999. It then began to gradually diminish in 2000, following the emergence of environmental concerns about finfish aquaculture. The resulting pressures led a significant number of companies to shut down. In 2013, the finfish sector produced 1,263 tonnes of fish worth $10.9 million.

Production in the marine aquaculture sector increased continually from 1996 to 2005, to reach a peak of 915 tonnes. However, the sector faced a number of financial (lack of investment), environmental (poor spat collection and predation by sea ducks) and commercial (poor marketing) challenges thereafter. In 2012, production was only 316 tonnes – the lowest since 2006 – and valued at $0.5 million. In 2013, the situation improved and production increased by 55% to reach 491 tonnes, while value increased by 80% to reach $0.9 million.

In total, QC's aquaculture industry produced 1,754 tonnes of fish and shellfish worth $11.8 million in 2013. This was only 1% of the value of Canadian aquaculture production. QC is therefore a minor player in the industry.

As Figure 7.2 shows, the freshwater finfish sector is the largest component of QC's aquaculture industry, and much of its production (almost 70%) is used for restocking purposes[78]. Aquacultured finfish intended for sale are sold on local markets. In the marine aquaculture sector, mussels are the most-produced species. Part of the mussel production is sold on local markets, but a substantial portion is resold by P.E.I. companies.

Figure 7.2 – Aquaculture Production in Québec by Species, Percentage of Value, 2013



Source: Based on data from DFO, ***Aquaculture – Production Quantities and Values, 2013*** [accessed 12 March 2015].

78 Restocking refers to the raising of fry to restock lakes for wild fishing.

7.2 Governance

7.2.1 General Framework

The regulation of aquaculture is in large part a responsibility of the provincial Department of Agriculture, Fisheries and Food (MAPAQ) and DFO. The MAPAQ is the one-stop agency for aquaculture in QC. It helps businesses develop their plans and assists in drafting their licence applications. The MAPAQ and DFO coordinate and process applications with the other relevant authorities. The process involves a large number of departments. At the provincial level, the Department of Forests, Wildlife and Parks must grant its approval to ensure the conservation and development of wildlife and its habitat; the Department of Sustainable Development, the Environment and the Fight Against Climate Change is responsible for issuing aquaculture leases for waters on Crown lands; and finally, the MAPAQ issues marine aquaculture and freshwater aquaculture licences. At the federal level, Transport Canada must give its approval under the *Navigation Protection Act*, Environment Canada must approve the location pursuant to its shellfish waters classification and, finally, DFO must grant its approval in the case of harmful alteration, disruption or destruction of fish habitat under the *Fisheries Act* and issue a number of permits and licences, including introduction and transfer permits, fishing licences, and permits for activities affecting a species at risk. The assessment process for aquaculture site applications has no prescribed deadline.

7.2.2 The Act Respecting Commercial Aquaculture

QC's aquaculture industry is subject to the *Act Respecting Commercial Aquaculture*,[79] adopted in 2004, and the Commercial Aquaculture Regulation.[80] Under the *Act*, no person may carry out commercial aquaculture activities unless the person holds a licence issued by the MAPAQ. This licence is non-transferable, valid for 10 years and may be renewed for the same period.

The Regulation sets out the conditions for obtaining a licence. In their applications, companies must provide information on the location of the site, the facility layout plan, the species that will be raised, the production method, the biomass involved, the length of the production cycle, etc. The *Act* enables the MAPAQ to subject licence applications to public consultations. All the information included in a licence is kept in a registry and is publicly available.

> Under Quebec's *Act Respecting Commercial Aquaculture*, "aquaculture" is defined as "the cultivation or raising of aquatic organisms, in particular fish, amphibians, echinoderms, shellfish, crustaceans or plants, except organisms cultivated or raised for aquarium fishkeeping purposes."

The Regulation includes development and yield standards. Aquaculture companies must occupy and operate their sites in a continuous manner until they reach the proposed maximum production volume, as provided in the licence application, except in unforeseeable or uncontrollable circumstances.

Under the *Act*, companies must keep books on their ongoing production operations and provide them to MAPAQ upon request. The Regulation prescribes the information that must be entered in the books, which includes information on the

79 ***An Act Respecting Commercial Aquaculture***, Chapter A-20.2, s. 42.
80 **Commercial Aquaculture Regulation**, an Act Respecting Commercial Aquaculture, Chapter A-20.2, s. 42.

feeding and health of the aquatic organisms being raised, the medication or vaccines administered and the cleaning products, disinfectants and pest control products used. Companies must also submit an annual report on their activities to the MAPAQ.

The *Act* provides for inspections of aquaculture sites and reviews of the documents kept by companies while carrying out their activities. In the performance of their duties, inspectors have the powers of a peace officer. Persons who contravene the conditions of their licence, the *Act* or its Regulation are liable to pay a fine that varies with the type of offence.

The *Act* authorizes the MAPAQ to establish regional aquaculture development frameworks "to facilitate the ordered growth of aquaculture." In 1996, the MAPAQ adopted its first marine aquaculture development strategic plan. The plan focused on shellfish production, particularly the Blue mussel and the sea scallop. The plan's emphasis was placed on the development of companies' production capacities. Another five-year development plan was released in 2006, in collaboration with aquaculture industry stakeholders. This plan, which is currently under review, focuses on consolidating aquaculture companies, increasing productivity and marketing the industry's products.[81]

In 2008, the MAPAQ committed to preparing a marine aquaculture development framework for the Magdalen Islands.[82] The goal is to establish aquaculture zones where marine aquaculture would be the accepted priority while preserving marine heritage. The framework would also promote orderly, coordinated and standardized marine aquaculture development in the region and facilitate the application of the regulatory process. Consultations were held with producers, DFO, Transport Canada, the commercial fishing industry, and other stakeholders to introduce the plan and to agree on the zones in question.

Fermes marines du Québec Inc. is involved in the production of scallops and operates a hatchery in Newport and several grow-out sites in Gaspé, QC. Senators were given a tour of the hatchery, a state-of-the-art facility which uses saltwater and is entirely automated with touchscreen panels located in different rooms. Last year, the company started growing seaweed for commercial purposes alongside its scallop culture.

81 Société de développement de l'industrie maricole (SODIM) and Table maricole, ***Plan stratégique de développement de la mariculture 2006-2011***, 2006.

82 Meggie Desnoyers, ***Projet de cadre de développement aquacole – un survol***, MAPAQ, 11 mars 2014.

A report on the consultations is expected to be completed in early 2015.

As for the finfish aquaculture sector, in 2003 the MAPAQ adopted a sustainable development strategy for freshwater aquaculture, the *Stratégie de développement durable de l'aquaculture en eau douce au Québec*.[83] The strategy helps finfish companies limit phosphorus discharges into the environment and is still in effect. Participating companies committed to meeting the environmental target of 4.2 kg of phosphorus discharges per tonne of annual production by 31 December 2014 (compared with an average of 7.2 kg in 2003). The strategy mainly targets finfish operations producing over five tonnes a year, and participation is voluntary. To date, 26 companies have begun monitoring their phosphorus discharges to determine whether they are meeting the objective, and one company reached the target in 2013–2014.[84] The Association des aquaculteurs du Québec argues that the phosphorus discharge target for freshwater aquaculture producers is the toughest in Canada and will consequently limit the expansion of existing finfish operations and the number of new ones.[85]

More recently, under the provincial industrial development policy entitled *Plan de Développement Sectoriel en Aquaculture Commerciale*, the MAPAQ committed to taking more action to ensure the economic and environmental viability of the aquaculture industry, including the freshwater finfish and marine shellfish sectors.[86]

7.2.3 The Société de développement de l'industrie maricole inc.

The SODIM is a not-for-profit corporation established in 1997 to support the development of a profitable and competitive marine aquaculture sector in QC. It is funded by the MAPAQ and other federal and provincial departments and agencies. The SODIM provides financial assistance to marine aquaculture companies for their start-up, consolidation and expansion phases (investment funding of $7.5 million). Today, it is involved in financing nearly all the marine aquaculture companies operating in QC. The SODIM also provides technical assistance and advice to these companies. Moreover, between 2002 and 2011, the SODIM directed and funded research and development and promoted technology transfer in areas of interest to the marine aquaculture sector (research funding of $9 million).[87]

In 2010, the SODIM created the Aquamer fund through a $4-million interest-free loan from Canada Economic Development, repayable over 15 years. This funding has enabled companies to acquire, repair or replace major equipment necessary for their operations.

83 MAPAQ, ***Stratégie de Développement Durable de l'Aquaculture en Eau Douce au Québec***, November 2003.
84 MAPAQ, ***Rapport annuel de gestion 2013-2014***, Government of Quebec, 2014.
85 Association des aquaculteurs du Québec, ***Mémoire présenté dans le cadre de la Consultation sur le projet de Plan de développement durable du Québec***, 15 February 2005.
86 MAPAQ, ***Plan de Développement Sectoriel en Aquaculture Commerciale***, 2010.
87 Since 2011, the Centre d'innovation de l'aquaculture et des pêches du Québec – **Merinov** – has supported research and development in the aquaculture industry.

CHAPTER 8: Economic Repercussions, Opportunities and Challenges

During the hearings, two studies evaluating the economic repercussions of the aquaculture industry in Canada were brought to the attention of the Committee. Reference was also made to a third study that examined the opportunities and challenges facing the industry. The main findings of these studies are summarized below.

8.1 Economic Repercussions

In 2014, the government of N.L. completed a study on the economic impacts of aquaculture in the province. This study explained that, in addition to producing its own output, the aquaculture industry triggers activity elsewhere in the economy. This activity can be divided into three categories – direct, indirect and induced impacts. The direct impacts are those associated with hatchery and grow-out activities. Indirect impacts estimate the activities generated by other industries that provide goods and services to the aquaculture industry, such as net cleaning, diving services, equipment maintenance and repair, equipment manufacturing, feed, packaging supplies, and transportation. Induced impacts account for all spending that occurs in the economy generated from individuals employed in direct aquaculture operations and in indirect industries; these individuals spend their income in other areas of the economy on items such as cars, housing, and other retail goods. In the study, both indirect and induced impacts were combined to obtain what is called "spin-off impacts." These economic impacts were measured using three key indicators: Gross Domestic Product (GDP), employment, and labour income. GDP by an industry corresponds to the value generated from its production less the value of the inputs required in the production process. Employment refers to the number of workers employed in the industry and is generally measured in full-time equivalent jobs (FTEs) per year. Labour income represents the salaries and benefits earned by workers in the industry. Overall, the study estimated that the aquaculture industry generated $104 million in GDP in N.L. in 2013, with $66 million in direct GDP and $38 million in spin-off impacts (see Table 8.1). The industry created 406 direct FTEs, with an overall employment impact of 872 FTEs. It generated direct labour income of $13 million, with an overall income impact of $37 million.

Table 8.1 – Economic Impacts of Aquaculture in Newfoundland and Labrador, 2013

Production Value: $197 Million	**GDP ($ Millions)**	**Employment (FTEs)**	**Labour Income ($ Millions)**
Direct	66.2	406	12.8
Indirect and Induced	37.9	465	23.9
Total	**104.1**	**872**	**36.7**

Source: NL-DFA, ***Economic Impacts of the Newfoundland and Labrador Aquaculture Industry***, Annex 1, 2014.

The study also examined trends in the economic impacts of aquaculture in the province between 2003 and 2013. It showed that the industry experienced significant growth during this period. This was mainly due to a substantial increase in Atlantic salmon production as the industry continued to expand.

This provincial study also suggested that a large proportion of the economic repercussions of the industry occur in coastal and rural communities where aquaculture actually takes place. In many cases, these communities are in isolated areas where other economic opportunities tend to be limited. Moreover, it was stressed that these economic benefits extend across the province.

Similarly, a 2013 study by Gardner-Pinfold Consultants Inc. estimated the economic repercussions of the aquaculture industry for Canada as a whole. According to the study, the aquaculture industry generated over $1 billion in GDP in 2010, with $354 million in direct GDP and $710 million in spin-off impacts (see Table 8.2). The industry created 5,828 direct FTEs, with an overall employment impact of over 14,000 FTEs. It generated direct labour income of $193 million, with an overall income impact of $618 million. According to the study, the aquaculture industry has helped revitalize remote, rural and coastal communities, including First Nations and other Aboriginal communities, and is, overall, an important sector of economic activity for Canada.

8.2 Opportunities and Challenges

Another study by Gardner-Pinfold Consultants Inc. examined the opportunities and challenges of aquaculture in Canada in 2010.[88] The study's findings are summarized in this section and updated, using more recent information gathered during the Committee's study.

With respect to salmon aquaculture, the study noted that consolidation of the sector has helped companies operating in B.C., N.B., N.L. and N.S.

Table 8.2 – Economic Impacts of Aquaculture in Canada, 2010

Production Value: $927 Million	GDP ($ Millions)	Employment (FTEs)	Labour Income ($ Millions)
Direct	354.4	5,828	192.8
Indirect	463.7	5,638	285.7
Induced	245.9	2,614	139.5
Total	**1,064.0**	**14,079**	**618.0**

Source: Gardner-Pinfold Consultants Inc., ***Socio Economic Impact of Aquaculture in Canada***, 2013 edition, prepared for DFO, February 2013, p. 4.

88 Gardner-Pinfold Consultants Inc., ***Socio-Economic Impact of Aquaculture in Canada***, prepared for DFO, 2010, pp. 36–41.

take advantage of economies of scale and strengthened their position on global markets. It was also indicated that salmon aquaculture producers in these provinces are well positioned with their proximity to the United States to supply a growing market. In addition, trade agreements with Europe and South Korea will open new market opportunities for them. Opportunities also exist to develop products with a higher market value through further processing of fish and their by-products.

The study also suggested that there are prospects for growth in salmon aquaculture in the four provinces by increasing the productivity of existing grow-out sites. In addition, there are some opportunities for growth with more access to new grow-out sites in B.C. and N.L. However, the development of additional near-shore aquaculture sites in N.B. is very limited. According to the study, growth in salmon aquaculture and other finfish production in this province would require a move towards more exposed or offshore sites. Offshore aquaculture would necessitate the development of systems and technologies capable of withstanding higher energy environments. Gardner-Pinfold Consultants Inc. indicated that other opportunities for growth in marine finfish aquaculture in N.B. are linked with the potential for species diversification (i.e., sturgeon, Arctic char, cod, and Atlantic halibut).

Similarly, access to new sites for salmon aquaculture in N.S. is limited because many locations can only be operated three seasons of the year; this is insufficient time to raise market-sized salmon. The study suggested, however, that these conditions could be adequate for production of Rainbow trout, although supply of eggs remains a major challenge to expansion of this sector. There are also opportunities to grow Atlantic halibut in marine net cages in N.S. In addition, N.S. could benefit, like N.B., from the development of offshore aquaculture. Finally, the study noted that opportunities exist in all four provinces to develop mutually beneficial operating agreements with First Nations, on whose lands many high production aquaculture sites are located.

The study enumerated some factors that impede the ability of the salmon aquaculture sector to grow in all provinces, including a complex regulatory framework that creates operational impediments in aquaculture and discourages investment. In addition, risk of disease and sea lice may affect production levels, particularly in the context of a lack of access to a variety of veterinary drugs and pest control products. Moreover, it was stressed that low social acceptance due to environmental concerns regarding salmon aquaculture may constitute a major barrier to the expansion of the sector in some regions of the country.

With respect to shellfish aquaculture, Gardner-Pinfold Consultants Inc. noted access to vast marine lands and considerable market potential in B.C., N.B., N.L. and N.S. Increased production levels may also be achieved as a result of new trade agreements. In N.L., organic aquaculture certification may further enhance the sector's ability to compete in the marketplace. However, the sector remains fragmented. The small companies operating in this sector lack the financial resources to support technology innovation (particularly the mechanization of processes), resulting in low productivity, low profit margins and difficulty attracting investment. The study stressed that the shellfish sector also needs to address public issues about expansion based on environmental and aesthetic concerns.

The study noted that there is limited growth potential for the shellfish aquaculture sector in P.E.I. Current shellfish aquaculture activity is limited to bays and estuaries and is reaching full capacity with current operating techniques, available

technology, and the demands of multiple water users. Increased productivity could be achieved with new techniques and technologies. With respect to mussels, Malpeque Bay has been identified as the region having the greatest potential for further aquaculture development on the Island.[89] Further development in this area would have to take into consideration the views of other users of the marine resources. Other economic opportunities for the shellfish sector in the province include the potential for growing new species, such as scallops and quahogs.[90]

Furthermore, the study indicated that the shellfish sector in Canada relies, to a great extent, on wild seed collection and it needs to invest in broodstock development to increase production efficiency. The sector faces some other important challenges as well, including sea duck predation and aquatic invasive species (AIS). AIS – such as the green crab, clubbed tunicate and vase tunicate – affect growth and meat yield and cause increased maintenance and labour costs for growers and processors.

The study mentioned human resource challenges as one major difficulty facing all segments of the aquaculture industry – in the finfish and shellfish sectors, as well as in grow-out sites and seafood processing plants. These challenges were also discussed on several occasions during the Committee's hearings and site visits both on the West Coast and the East Coast. Aquaculture facilities generally establish themselves in small and remote communities and processing operations tend to locate themselves close to their product source. An aging population and the younger generation often moving away for their post-secondary education or for more lucrative jobs have led to labour shortages. This is despite the fact that the industry offers interesting employment opportunities and requires a diverse workforce – divers, veterinarians, marine biologists, IT technicians, business administrators, and more. Seasonal work associated with certain types of shellfish aquaculture and processing operations also makes it difficult to attract and retain workers. As a result, the industry has turned to temporary foreign workers to ensure that positions are filled. Labour shortages are seen as impeding the industry's growth.

Finally, the Committee learned that there is potential for diversification and innovation in the aquaculture industry in Canada, more particularly in B.C. and N.B., through the development of IMTA. In addition, seaweed monoculture already occurs in N.S., while QC is looking at the potential for developing the production of seaweed in the Gaspé region, including hatcheries on land, marine cultivation and primary processing. Moreover, there is practical and diverse experience in B.C., N.B, N.S., and P.E.I. with land-based closed-containment systems for species such as Atlantic salmon, Steelhead trout, Atlantic halibut, and Arctic char. However, access to working capital to allow operations to achieve an economy of scale required for profitability is needed.

89 VisionQuest, ***Malpeque Bay Aquaculture - The Way Ahead***, prepared for DFO, November 2008.
90 Ibid.

CONCLUDING REMARKS

Marine aquaculture in Canada is a diverse industry that is well established in B.C., N.B., N.L., N.S. and P.E.I. Although the industry is present to a lesser extent in QC, it is – as elsewhere – an important economic driver in coastal regions where other opportunities tend to be limited. A range of biophysical conditions along the West and the East Coasts have allowed the aquaculture industry to grow a variety of finfish and shellfish species for commercial production. Today, the industry is characterized by a dominant finfish sector (particularly salmon), a strong shellfish sector (particularly mussels and oysters), and an emerging aquatic plant sector (particularly seaweed), mostly associated with the recent development of IMTA.

There are prospects for growth in marine aquaculture in Canada through the development of new grow-out sites both near-shore and offshore, increased productivity of existing operations, the diversification of the species cultivated, and the use of alternative production technologies. A growing aquaculture industry would further contribute to the economic development of coastal and rural communities and generate benefits that extend beyond these regions. There are also prospects for growth in land-based, closed-containment recirculation systems, notably for high-value species. However, total aquaculture production has declined in recent years, particularly in B.C. and N.B., while it has been relatively stable in N.S. and QC. Aquaculture production continues to grow in two provinces, N.L. and P.E.I, where there appear to be close collaboration and cooperative decision-making between federal and provincial regulators along with social acceptance of the industry.

The complex regulatory framework governing aquaculture in Canada is often noted as an obstacle to further growth of the industry. Four of the provinces reviewed in this volume (N.B., N.L., N.S. and QC) have a predominantly provincially-controlled approach to aquaculture regulation, with each province having a statute dedicated to the regulation of aquaculture. The other two (B.C. and P.E.I.) have a predominantly federally-controlled approach to aquaculture regulation, with the federal *Fisheries Act* serving as the primary legislative framework. There are presently two initiatives in place to achieve more streamlined aquaculture governance: at the federal and provincial level, there is the work undertaken by the CCFAM; and in the Atlantic Provinces, collaborative work is undertaken as part of the MOU signed in 2008 towards a harmonized regulatory framework and policy environment for aquaculture.

The role DFO plays as the lead federal department for aquaculture management across Canada and its responsibilities pursuant to the *Fisheries Act* – more specifically ensuring that the industry is regulated sustainably across the country in a way that protects fish and fish habitat – are of paramount importance to the Committee's study and will be discussed in more detail in Volume Three of this report.

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VOLUME TWO – AQUACULTURE INDUSTRY AND GOVERNANCE IN NORWAY AND SCOTLAND

Standing Senate Committee on Fisheries and Oceans

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Chair

The Honourable Elizabeth Hubley
Deputy Chair

June 2016

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The Committee would like to recognize the following Honourable Senators who are no longer serving members of the Committee whose contribution to the study was invaluable.

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Ex-officio members of the Committee:

The Honourable Senators Claude Carignan, P.C., (or Yonah Martin) and James S. Cowan (or Joan Fraser).

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ORDER OF REFERENCE

Extract from the *Journals of the Senate*, Monday, December 9, 2013:

The Honourable Senator Manning moved, seconded by the Honourable Senator Unger:

That the Standing Senate Committee on Fisheries and Oceans be authorized to examine and report on the regulation of aquaculture, current challenges and future prospects for the industry in Canada;

That the papers and evidence received and taken and work accomplished by the committee on this subject during the First Session of the Forty-first Parliament be referred to the committee; and

That the committee report from time to time to the Senate, but no later than June 30, 2015, and that the committee retain all powers necessary to publicize its findings for 180 days after the tabling of the final report.

The question being put on the motion, it was adopted.

Gary W. O'Brien
Clerk of the Senate

TABLE OF CONTENTS

LIST OF ACRONYMS

B.C.:	British Columbia
CAR:	Controlled Activity Regulations (Scotland)
DFO:	Department of Fisheries and Oceans Canada
EIA:	Environmental Impact Assessment
FHL:	Norwegian Seafood Federation
FMA/S:	Farm Management Agreement / Farm Management Statement (Scotland)
IMR:	Institute of Marine Research (Norway)
IMTA:	Integrated Multi-Trophic Aquaculture
MGA:	Ministerial Group on Aquaculture (Scotland)
MGSA:	Ministerial Group for Sustainable Aquaculture (Scotland)
MOU:	Memorandum of Understanding
N.B.:	New Brunswick
N.L.:	Newfoundland and Labrador
NFSA:	Norwegian Food Safety Authority
NOFIMA:	Norwegian Institute of Food, Fisheries and Aquaculture Research
NOK:	Norwegian Krone
N.S.:	Nova Scotia
P.E.I.:	Prince Edward Island
SAIC:	Scottish Aquaculture Innovation Centre
SCNAI:	Strategy for a Competitive Norwegian Aquaculture Industry
SEPA:	Scottish Environment Protection Agency
SESNAI:	Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry
SSPO:	Scottish Salmon Producers Organisation
SMA:	Salmon Management Area (Canada)
SWOT:	Strengths, Weaknesses, Opportunities and Threats

INTRODUCTION

In January 2014, the Standing Senate Committee on Fisheries and Oceans (the Committee) began a study on aquaculture pursuant to an order of reference received from the Senate which reads as follows:

> *That the Standing Senate Committee on Fisheries and Oceans be authorized to examine and report on the regulation of aquaculture, current challenges and future prospects for the industry in Canada.*[1]

In response to this broad and complex mandate, the Committee held public hearings in Ottawa and undertook fact-finding missions in the provinces where the marine aquaculture sector operates – British Columbia (B.C.), New Brunswick (N.B.), Newfoundland and Labrador (N.L.), Nova Scotia (N.S.), Prince Edward Island (P.E.I.), and Québec (QC). Public hearings were also held in some of these provinces. In addition, the Committee held videoconferences with government representatives from Norway and Scotland, two countries with aquaculture regulatory regimes comparable to Canada's. The Committee also completed a fact-finding mission in each country, to learn more about the operation and governance of the Norwegian and Scottish aquaculture industries.

This document constitutes Volume Two in a series of three volumes prepared by the Committee on this study. This volume presents a profile of the aquaculture industry in Norway and Scotland and highlights how aquaculture is regulated in these jurisdictions; the information contained herein is based on evidence heard as part of the videoconferences with the countries in question as well as on materials gathered during the Committee's fact-finding missions. Volume One provides a brief profile of the aquaculture industry and its governance in Canada, with a particular emphasis on the regulatory framework in place in each province. Volume Three includes the Committee's observations on the aquaculture industry and its governance structure in Canada, based on findings from the fact-finding missions and the evidence gathered during the public hearings.

This volume is divided into three chapters. Chapters 1 and 2 provide a portrait of the industry in Norway and Scotland respectively, and describe the legislative framework in place in each country to regulate aquaculture. Chapter 3 briefly compares the Norwegian, Scottish and Canadian aquaculture industries and their respective governance.

1 Senate of Canada, ***Journals of the Senate***, 2nd Session, 41st Parliament, 9 December 2013, p. 274.

CHAPTER 1: Norway

Profile of the Industry

1.1.1 Structure and Location[2]

The aquaculture industry in Norway is dominated by its finfish sector, with Atlantic salmon and Rainbow trout accounting for 93.9% and 5.8% respectively of total volume produced. Blue mussel, which accounts for 0.2% of overall aquaculture production, is the main shellfish species produced. The variety of species cultivated in Norway commercially is presented in Table 1.1. Seaweed aquaculture – either as a monoculture or a polyculture – is under development but generates very little biomass.[3]

The finfish sector of the Norwegian aquaculture industry was originally an owner-operated sector with hundreds of small firms. Over the years, the number of firms has declined as a result of increased horizontal integration. Regardless, the number of companies operating in the finfish sector in Norway remains much higher than in Canada. In 2013, the sector consisted of 158 companies – small, medium and large – sharing over 1,000 licences for grow-out sites in marine waters. The sector is, however, concentrated, with the 10 largest finfish aquaculture companies being responsible for 67.2% of total production. Some of these companies include Marine Harvest, Cermaq, Grieg Seafood, Norway Royal Salmon, Lerøy and Salmar. The finfish sector has also experienced vertical integration, with companies being involved in hatcheries, grow-out sites, fish processing and export operations. For its part, the shellfish sector currently involves 65 companies holding 225 licences.

Table 1.1 – Aquacultured Species in Norway

	Species
Finfish	• Atlantic Salmon • Rainbow Trout/Trout
Shellfish	• Blue Mussel

Source: According to information obtained from the Norwegian Directorate of Fisheries (Ministry of Fisheries and Coastal Affairs), "***Key Figures from the Norwegian Aquaculture Industry***," *Aquacultural Booklet*, 2013.

2 Unless specified otherwise, the information contained in this section is from the following document: Norwegian Directorate of Fisheries (Ministry of Fisheries and Coastal Affairs), "**Key Figures from the Norwegian Aquaculture Industry**," *Aquacultural Booklet*, 2013.

3 Norwegian Institute for Agricultural and Environmental Research, ***The Norwegian Seaweed Industry***, November 2012.

4 It should be noted that Norway is divided into 19 counties (known as "fylker") which themselves comprise 430 municipalities ("kommuner").

Aquaculture in Norway takes place in the counties along most of the country's coastline, located in more than 160 municipalities.[4] In the finfish sector, Nordland is the dominant producer county, with Hordaland coming second, Møre og Romsdal third, and Troms fourth (Figure 1.1 provides a map of Norway and its counties). The shellfish sector is active in eight counties, but production is more abundant in Sør-Trøndelag, Nordland, Nor-Trøndelag and Sogn og Fjordane.

1.1.2 Production

Figure 1.2 presents aquaculture production (volume and value) in Norway between 1999 and 2013. Production volume grew steadily during the 2000s and reached a peak at 1,321,119 tonnes in 2012. This was followed by a reduction of 5.6% in 2013. That year, aquaculture production totalled 1,246,544 tonnes; this included 1,244,180 tonnes

Lerøy Seafood Group is the world's second largest producer of Atlantic salmon and Norway's largest exporter of seafood. This publicly-listed company is fully integrated and operates aquaculture facilities in Norway through three separate legal entities: Lerøy Aurora AS (North Norway), Lerøy Midst AS (Central Norway), and Lerøy Vest AS (West Norway). The company also owns 50% of Scottish Sea Farms Ltd., the second largest salmon aquaculture company in Scotland. Senators went aboard the MS Lyna, a marine vessel, to visit one of Lerøy's grow-out sites located on Bjørnafjorden, about one hour from the company's headquarters in Bergen.

of finfish and 2,363 tonnes of shellfish, for a total value of 40 billion NOK (or C$7 billion).[5] In comparison, Canada produced 130,337 tonnes of finfish and 41,760 tonnes of shellfish in 2013, valued at $963 million.[6] Currently, Norway is the largest Atlantic salmon producer in the world, accounting for about half of global production, followed by Chile, Scotland and Canada. A report estimates that the production value of the salmon and trout sector in Norway could grow sixfold by 2050 in response to the increasing global demand for seafood.[7]

1.1.3 Economic Repercussions

There has been very rapid development of Norway's aquaculture industry, and the production of Atlantic salmon has grown to become a major sector of its economy. The industry is now an economic pillar for several Norwegian coastal communities. Aquaculture alone contributes to the employment of about 8,500 people. It is estimated that when spin-off effects are taken into account (i.e. both direct and indirect impacts), the industry generates approximately 20,000 jobs in small coastal communities and contributes an additional 27 billion NOK in Gross National Product (or C$4.7 billion).[8] The Norwegian aquaculture industry is, to a significant extent, export-oriented, and 94% of overall production is exported. Currently, aquaculture represents almost 60% of all Norwegian seafood exports.

Figure 1.1 – Map of Norway and its Counties

Source: Norwegian Ministry of Local Government and Regional Development, *Local Government in Norway,* 2008, p. 3.

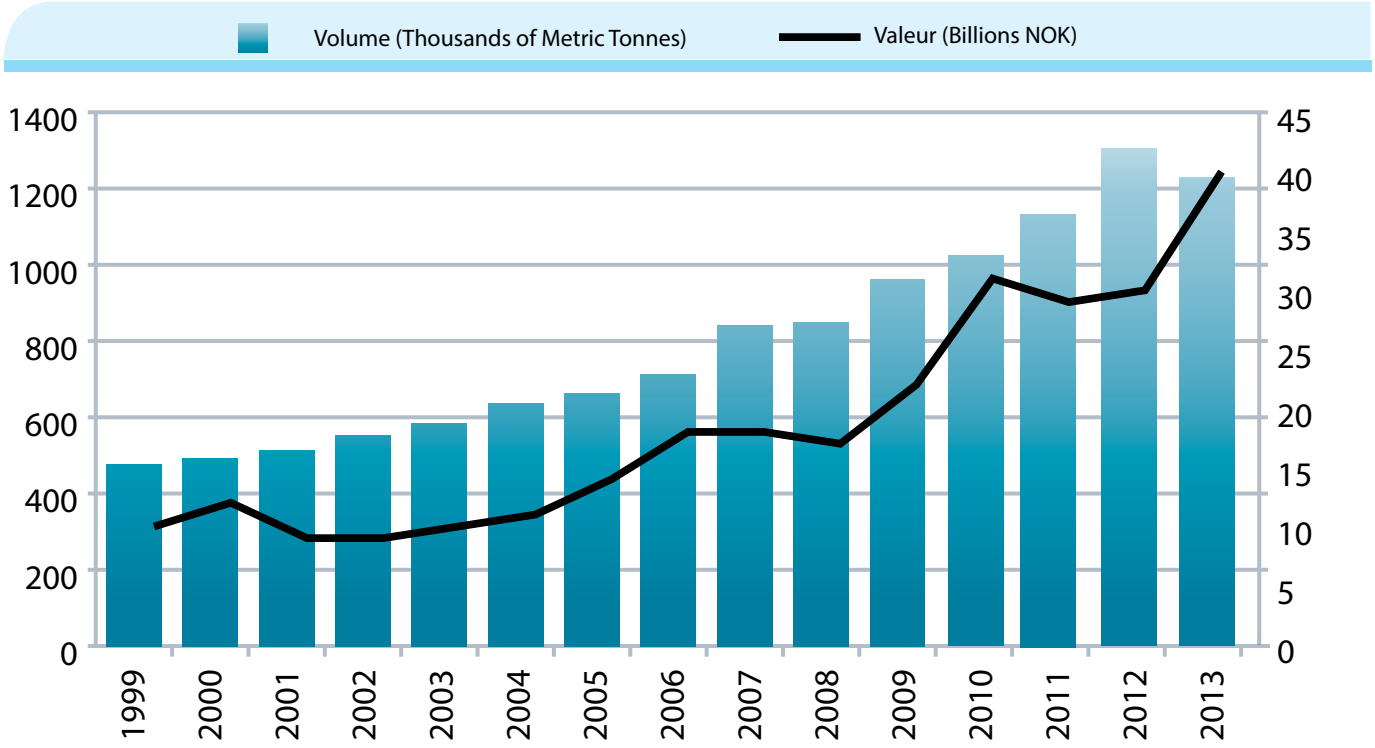
5 Norwegian Directorate of Fisheries, ***Aquaculture Statistics***, 2013 [accessed 19 March 2015].
6 Fisheries and Oceans Canada (DFO), "**Production Quantities and Values,**" *Aquaculture* [accessed 19 March 2015].
7 ***Value Created from Productive Oceans in 2050***, a Report Prepared by a Working Group Appointed by the Royal Norwegian Society of Sciences and Letters and the Norwegian Academy of Technological Sciences, 2013.
8 Norwegian Seafood Federation, ***2012 Environmental Report – Norwegian Seafood Industry***, 2013, p. 12.

1.2 Regulatory and Policy Framework[9]

1.2.1 Regulatory Framework

The aquaculture industry in Norway is subject to a large number of laws and regulations adopted at the national, county and municipal levels. At the national level, the *Aquaculture Act* of 2005, the *Food Safety Act* of 2003 and the *Animal Welfare Act* of 2009 are the three most important pieces of legislation, and several regulations governing aquaculture emanate from these three acts.

Figure 1.2 – Aquaculture Production[a] in Norway, Volume and Value, 1999 to 2013



Note: a. Aquaculture production includes the amount produced on sites and excludes hatcheries or processing. Data for 2013 are preliminary.

Source: Based on data from the Norwegian Directorate of Fisheries, ***Aquaculture Statistics***, various years [accessed 19 March 2015].

9 Unless indicated otherwise, the information presented in this section is based on the following two documents: Norwegian Directorate of Fisheries (Ministry of Fisheries and Coastal Affairs), ***Aquaculture, Introductions and Transfers and Transgenics – Focus Area Report: Norway***, n.d., and Food and Agriculture Organization of the United Nations, ***National Aquaculture Legislation Overview – Norway***, n.d.

The Department for Fisheries and Aquaculture, which is an executive body within the Ministry of Trade, Industry and Fisheries, is responsible for the administration and enforcement of the *Aquaculture Act* and its regulations[10]. The Act is an enabling piece of legislation which aims to "promote the profitability and competitiveness of the aquaculture industry within the framework of sustainable development and contribute to the creation of value on the coast." The main sections of the Act include[11]:

- Aquaculture licensing system: Licences are required to engage in aquaculture in Norway. Regulations under the Act govern the allocation of licences, the species to be produced, the geographic areas or sites where production is to take place and the maximum biomass permitted at a given location (usually 780 tonnes per licence, except in Troms and Finnmark where the maximum is set at 900 tonnes). Aquaculture licences are granted in allocation rounds determined by the Ministry[12]. Applicants with the highest bids are granted the licences. There are years during which no licences are granted. An aquaculture licence is approved in perpetuity, but may be withdrawn in case of breach of conditions set out in the licence, in the *Aquaculture Act* or in environmental legislation.
- Coordination among licensing authorities: Time limits are established for each step of the aquaculture licence application process and applicants deal with only one public agency, which coordinates the work of the other public authorities (national and local) involved in the processing of aquaculture applications. The county is the coordinating authority or "one-stop-shop," while the other authorities are: the Department for Fisheries and Aquaculture, the Norwegian Food Safety Authority, the Norwegian Costal Administration, the County Governor and, in some cases, the Norwegian Water Resources and Energy Directorate (see Figure 1.3). The application is also forwarded to the relevant municipality, which acts as the planning and construction authority. Public consultations take place at the municipal level. The Act prescribes that the different public authorities "are obligated to undertake an efficient and coordinated processing of applications." Case handling must not take longer than 22 weeks in total. All of the relevant authorities must issue their approval for a licence to ultimately be granted.

Under the *Aquaculture Act*, aquaculture is considered to be the production of aquatic organisms, where production relates to interventions that influence the weight, size, number and characteristics of aquatic organisms. Aquatic organisms refer to animals and plants that live in, on or near water. The Act applies to all facets of aquaculture in marine and inland waters, land-based aquaculture, and to sea ranching.

10 Norwegian Ministry of Fisheries and Coastal Affairs, ***The Aquaculture Act***, 2005..

11 It should be noted that, pursuant to aquaculture legislation, salmon, trout and rainbow trout are under special regulation that is not applicable to other species. In addition, licences for the production of blue mussels, cod and halibut, as well as for sea ranching, are free and can (in principle) be applied for at all times. These rules are laid out in separate sets of regulations.

12 A biological risk assessment of proposed aquaculture activities is performed as part of the aquaculture licence application process (seabed conditions, potential risk of pollution, distance from other grow-out sites, whether the site is sufficiently sheltered from ocean waves and other forces, etc.).

- Environmental sustainability: Any aquaculture operation must be established, run and decommissioned in an environmentally responsible manner. The operator must conduct the necessary environmental surveys and document the environmental condition of the site at the time of the establishment, operation and decommissioning of the aquaculture facilities[13]. Regulations require the use of certified aquaculture equipment or installations. Other regulations govern the release of "foreign organisms" or contain provisions in relation to escapes. The Act provides that the Minister may establish a ban, order the relocation of or place other conditions on aquaculture activities in order to protect areas of special value.
- Land/coastal utilization: Aquaculture licences can only be granted within the aquaculture zones that have been identified by the municipalities as part of their land use plan or coastal zone plan.
- Transfer and mortgaging of licences: The Act allows for a licence to be transferred on the open market from one holder to another without any review or approval by public authorities. The conditions stipulated in the licence continue to apply to the new holder. However, there is a ceiling that applies to the ownership of licences: a licence holder cannot control more than 25% of the total licence biomass in the country. An aquaculture licence can be mortgaged and, as such, can be used as collateral. An aquaculture register records all individual licences, including detailed information on the type of licence, species, capacity, location, and more.
- Enforcement and sanctions: Sanctions may include the execution of measures and the reimbursement of expenses, as well as the imposition of violation fines and imprisonment in case of criminal liability.

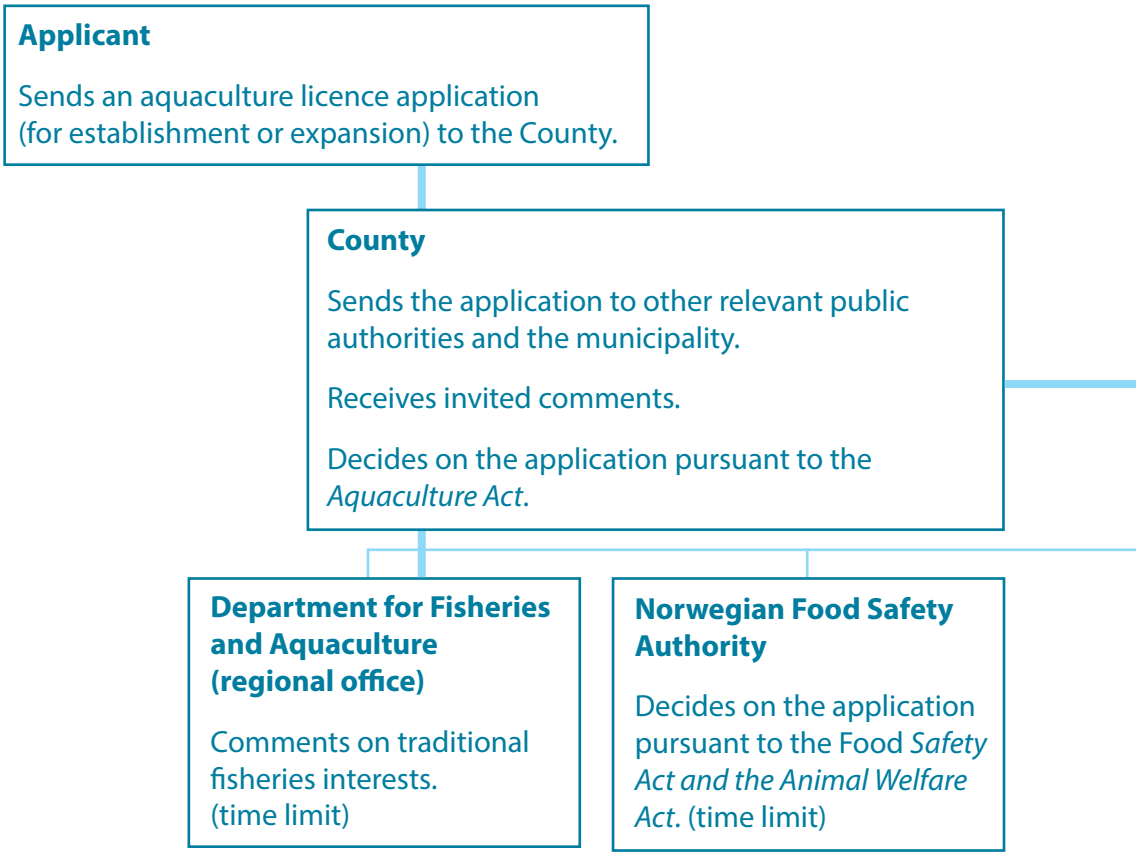
The Norwegian Food Safety Authority (NFSA) is responsible for the administration and enforcement of the *Food Safety Act*[14] and the *Animal Welfare Act*[15]. The *Food Safety Act* regulates animal health and food safety issues related to the operation of aquaculture facilities, such as the use of feed and chemotherapeutants, as well as food safety measurement. The purpose of the *Animal Welfare Act* is to promote animal welfare and respect. Together, the two pieces of legislation apply to all aspects of the aquaculture value chain, from production to processing through distribution. It is necessary to obtain an authorization from the NFSA to establish an aquaculture facility or expand an existing one. Before granting an authorization, a risk assessment of disease spread in the aquaculture facility and the surrounding environment has to be conducted. When conducting the assessment, the following aspects are of relevance: distance to other grow-out sites and rivers; species to be raised and production volume; general disease situation surrounding the location selected; risk factors that may compromise the welfare of the fish; and more. The NFSA is

13 Regular environmental surveys are undertaken as part of the operation of an aquaculture site and results are reported to the Department for Fisheries and Aquaculture. If results show unacceptable conditions, new surveys are carried out. If results still show unacceptable conditions, the Department can order that the site be left fallow until a new survey shows that the environmental conditions are acceptable. Regulations require that grow-out sites be left fallowed for at least two months between production cycles.

14 ***Food Safety Act***.

15 ***Animal Welfare Act***.

Figure 1.3 – Aquaculture Licence Application Process in Norway



Source: Adapted from Inger Elisabeth Meyer, First Secretary, Royal Norwegian Embassy, *Norwegian Aquaculture*, Brief presented to the Committee, 5 June 2014, p. 7.

Municipality

Registers and announces the application to the public in the local newspaper; holds public hearings as required by law.

Clarifies land and coastal zone plans according to the *Planning and Construction Act*.(time limit)

Norwegian Coastal Administration

Decides on the application pursuant to the *Harbour Act*. (time limit)

County Governor

Decides on the application pursuant to the *Pollution Control Act*.(time limit)

Comments on nature conservation as well as on recreational, fishing and game interests.(time limit)

Norwegian Water Resources and Energy Directorate

Only involved in cases that concern extraction of water (e.g.: hatcheries), pursuant to the *Water Resources Act*.

Decides on application and issues statements.

responsible for ensuring that aquaculture facilities are operated in compliance with the fish health and welfare-related legislation. The authority is empowered to take any decisions and measures deemed necessary to ensure implementation of the provisions contained in the legislation. For example, the NFSA may order that fish be destroyed to fight disease in an aquaculture site and to prevent infection from spreading to other sites.

Like the NFSA, the Department for Fisheries and Aquaculture monitors compliance of aquaculture facilities in accordance with the *Aquaculture Act* and its regulations. In order to carry out monitoring in a more efficient manner, the Department has introduced "AkvaRisk," a risk-based program in which companies and sites are selected based on assessment of risk of non-compliance. All marine aquaculture sites are categorized into three groups – low, medium and high risk. Monitoring focuses on the high risk group. Other monitoring is undertaken in cases of violation of the provisions. All aquaculture operations in the National Salmon Fjords are controlled every year (discussed further below).

There are also regulations in place that govern the control and registration of chemotherapeutants, establish withdrawal periods to ensure that the fish cannot be harvested until after a specified time after stopping the medication, and provide for the analysis of pharmaceutical residues in cultured fish. All pharmaceuticals that are distributed for use in aquaculture must have a prescription from a veterinarian or an authorized fish health biologist, and are registered by the NFSA. The Norwegian Institute of Public Health publishes data on the use of pharmaceuticals by the aquaculture industry on an annual basis.[16]

1.2.2 Policy Framework

Norway set out its strategic framework for aquaculture in two documents: the 2008 *Strategy for a Competitive Norwegian Aquaculture Industry* (SCNAI)[17] and the 2009 *Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry* (SESNAI).[18] Both documents outline a number of measures and goals for Norway's regulation of and prospect for aquaculture. The SCNAI focuses on four areas to ensure that Norwegian aquaculture maintains its position as a leading international producer and exporter: global market challenges; environmental sustainability; a better coordinated and more efficient licensing application process; and, research and development. Similarly, the SESNAI focuses on five areas where the negative environmental impacts of aquaculture should be mitigated. The five areas are: genetic interaction and escapees; pollution and effluents; diseases, including sea lice; the use of coastal areas; and feed and feed resources.

The SCNAI and the SESNAI may be revisited in the coming months. In fact, the Norwegian Government recently tabled in the Storting (the Norwegian Parliament) a white paper that sets out goals for the future development of the seafood industry, including aquaculture. The government is "committed to make Norway the world's foremost seafood nation" and "aquaculture will have to play a key role in achieving this" as long as it can be environmentally sustainable.[19]

16 Norwegian Institute of Public Health, ***Increased Use of Medicines in Norwegian Fish Farming***, 3 April 2014.
17 Norwegian Ministry of Fisheries and Coastal Affairs, ***Strategy for a Competitive Norwegian Aquaculture Industry***, 2008.
18 Norwegian Ministry of Fisheries and Coastal Affairs, ***Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry***, 2009.
19 Lisbeth Berg-Hansen, Norwegian Minister of Fisheries and Coastal Affairs, "**Norwegian Aquaculture – Management Policies and Regulations**," Speech, 26 June 2013.

In 2009, Norway and Scotland signed a Memorandum of Understanding (MOU) on cooperation and best practices in aquaculture.[20] The MOU covers environmental sustainability (in particular fish health and equipment standards for grow-out sites), regulation, access to financing and insurance, and collaboration on research. In 2013, the two countries agreed to enhance their collaboration and information sharing within the context of their MOU by holding regular bilateral meetings between fisheries ministers and other officials. In 2014, Norwegian officials attended – for the first time – a meeting of the Ministerial Group for Sustainable Aquaculture in Scotland.[21]

The Norwegian Ministry of Trade, Industry and Fisheries in Oslo – which acts as the secretariat for both the Minister of Trade and Industry and the Minister of Fisheries – is responsible for the country's trade, industry and seafood policy. Within the ministry, the Department for Fisheries and Aquaculture is responsible for aquaculture policy and management, the licensing system, environmental sustainability, and more. Senators were given an overview of aquaculture policy and legislation in Norway, including information about the government's view on industry growth and recent initiatives such as the "green concessions". The importance of collaboration amongst industry, government and academia in aquaculture research was highlighted.

20 ***Memorandum of Understanding on Aquaculture Cooperation between the Scottish Government and the Norwegian Ministry of Fisheries and Coastal Affairs***, 17 August 2009.

21 The Scottish Government, "**Aquaculture Ties with Norway Strengthened**," *News Release,* 8 September 2013.

The Norwegian Food Safety Authority (NFSA) regulates the aquaculture industry through its administration and enforcement of the *Food Safety Act* and *the Animal Welfare Act*. Senators met with NFSA representatives and discussed issues related to fish health and fish welfare, including sea lice and the use of pest control products, as well as monitoring and enforcement activities.

Norway and Canada also signed a MOU in 2008 that is more comprehensive and encompasses bilateral cooperation on fisheries, aquaculture and international governance.[22]

1.2.3 Research

The Committee heard that aquaculture is a priority research area in Norway and that the country is an international leader in the field. There is a high level of collaboration between government, research institutions and the industry, making Norwegian aquaculture innovative and cutting-edge.[23] Some of Norway's research institutes in this field include: the Norwegian Institute of Food, Fisheries and Aquaculture Research (NOFIMA), SINTEF Fisheries and Aquaculture, the Institute of Marine Research (IMR), and the National Veterinary Institute.

When the 2009 SESNAI was implemented, the Norwegian Government requested that the IMR propose scientifically-based sustainability indicators and related thresholds to estimate the severity of the potential environmental impacts

22 ***Memorandum of Understanding on Fisheries Cooperation between the Department of Fisheries and Oceans of Canada and the Ministry of Fisheries and Coastal Affairs of Norway on Bilateral Co-Operation on Fisheries, Aquaculture and International Governance Issues***, 22 May 2008.

23 Inger Elisabeth Meyer, First Secretary, Royal Norwegian Embassy, *Minutes of Proceedings and Evidence of the Standing Senate Committee on Fisheries and Oceans,* 5 June 2014 (**11:6**).

of aquaculture. Every year since 2010, the IMR has conducted a risk assessment of the environmental effects of salmon aquaculture. While in Norway, the Committee had the opportunity to tour the IMR and was apprised of its most recent risk assessment results[24]:

- Genetic integrity: 21 out of 37 wild salmon populations investigated face a moderate-to-high risk of genetic interbreeding from escaped salmon;
- Sea lice impact: About 27 of 109 grow-out sites investigated for sea lice infestations indicated a moderate-to-high risk of wild salmon smolt mortality, and 67 sites indicated moderate-to-high risk of mortality from sea lice for wild sea trout;
- Disease transfer: Despite viral disease outbreaks in many grow-out sites, screening of wild salmonids showed a low to very low presence of the same viruses;
- Organic load and nutrients: Only 2% of all grow-out sites displayed unacceptable levels of organic loading onto sea beds; therefore, the risk of eutrophication and organic load beyond the grow-out site is considered low.

IMR representatives noted that there are limitations to the approaches used to estimate these

The Norwegian Seafood Federation (FHL) represents the aquaculture industry, the commercial fisheries sector, and the seafood processing/distribution sector. Senators met with some FHL members and were given a general perspective on how aquaculture operates and is governed in Norway. There were also discussions on how the industry is handling sea lice and escape events, two important challenges facing aquaculture in the country.

Photo courtesy of: Norwegian Seafood Federation.

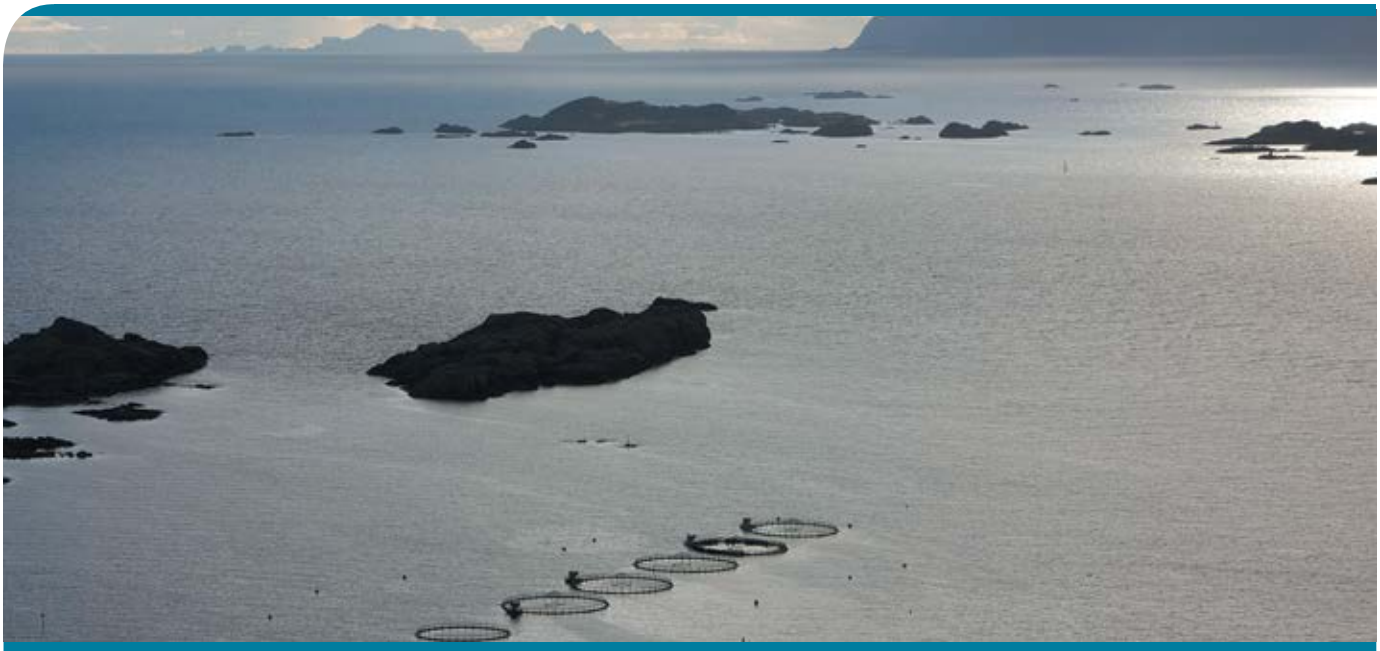
24 Geir Lasse Taranger et al., "**Risk Assessment of the Environmental Impact of Norwegian Atlantic Salmon Farming**", *ICES Journal of Marine Science,* 2 September 2014.

risks, and pointed to the need for improved monitoring, enhanced risk assessment methods and better environmental risk indicators. Nonetheless, the risk assessment suggests that sea lice and escapes are the main challenges the industry is facing.

1.3 Current Challenges

During the fact-finding mission, the Committee was told that a number of factors contributed to the continual growth of the aquaculture industry in Norway, including: good natural conditions, continuous technological development by the industry, strong government support for aquaculture, good infrastructure at close proximity (harbours, boats, roads, etc.), strong research and development, marketing through the Norwegian Seafood Council (the single organization that promotes aquaculture and commercial fishery products on the domestic and international markets), and cooperation and exchange of information between government, researchers and the industry.

The Committee also learned about the prospects and challenges of the Norwegian aquaculture industry. The main prospect mentioned on several occasions was the potential for growth of the industry along with its environmentally sustainability. In other words, environmental sustainability is a prerequisite for the long term development and growth of the industry. The main challenges mentioned were, as noted above, sea lice infestations and escapes. On a few occasions, two tools were mentioned to meet these challenges: the use of offshore sites and new technological solutions.



The IMR is the largest centre of marine science in Norway. It carries out research and monitoring activities related to marine ecosystems and the aquaculture, oil and gas and mining industries. The IMR runs its own Aquaculture Programme and performs scientific experiments in its own laboratories, as well as empirical work at grow-out sites. Research includes, but is not limited to: the environmental impacts of aquaculture systems, health of aquacultured organisms and spread of disease, and the dispersal and recapture of escaped fish. The results of its research are available to the public. Senators were given a tour of the IMR facilities and met with some of its researchers.

1.3.1 Sea Lice

In Norway, each grow-out site must count sea lice on a sampling of fish at least twice per month in accordance with specific instructions; the findings must be reported to the NFSA. If the sea lice count at a particular site exceeds a maximum allowable limit, the operator is obliged to perform a delousing treatment within 14 days. Over the last decade, the aquaculture industry has mostly relied on two methods of treatment – emamectin benzoate (SLICE®, which is delivered orally) and pyrethroids (pest control products delivered in a bath treatment) – for treating fish against sea lice. However, sea lice along the Norwegian coastline have developed a resistance against these products. New national regulations came into effect in 2009 to address this problem. Measures included:

- Mandatory reporting of all suspected or confirmed cases of reduced sensitivity or resistance of sea lice to any of the available treatments;
- Powers provided to the NFSA to demand a prompt reduction in biomass at any given grow-out site and, if necessary, slaughtering of all the fish in a given site where operators are found unable to maintain the sea lice levels under the maximum allowable levels (that year, the maximum was set at 0.5 adult female lice per fish); and
- Powers provided to the NFSA to propose and implement zone regulation in limited geographical areas that could include mandatory extension periods for fallowing, a ban against new smolt entries into the area and a ban against the use of a specific sea lice compound where resistance had been documented.

Also in 2009, the Norwegian Seafood Federation (FHL), the organization that represents the aquaculture industry (as well as the commercial fisheries sector), published a set of guidelines for sea lice treatment. In 2011, the use of closed tarpaulins during sea lice management was made mandatory to mitigate the risk of resistance-development. In addition, Norway has implemented an integrated pest management strategy for sea lice whereby all grow-out sites in selected areas are required by law to participate in a synchronized delousing treatment program. The program is mandatory along the Norwegian west coast. The primary objective is to minimize the sea lice infestation levels on Atlantic salmon during the wild smolt migratory window in the spring and early summer.

In recent years, there has been an increased interest in the use of wrasse (a cleaner-fish) as a biological delousing agent. Wrasses have initially been captured in the wild and introduced into the cages together with the fish. However, it is recognized that the wild stocks of these fish cannot supply the amount the aquaculture industry needs for sea lice management. Recent developments in experimental culture of wrasse show promising results. Lumpsucker, another species of cleaner-fish, is also used with success in salmon aquaculture for the same purpose. Another option being considered to minimize the spreading of sea lice between cages is the establishment of a minimum distance between different grow-out sites.

In June 2014, the Ministry of Trade, Industry and Fisheries announced stricter rules on sea lice.[25] In accordance with these rules, aquaculture operators would be permitted to increase their maximum biomass permitted by 5% but, in turn, they would

25 Norwegian Ministry of Trade, Industry and Fisheries, "**Environmental Compliance Demanded of New Aquaculture Growth**", *News Release,* 23 June 2014.

have to ensure that there are no more than 0.1 adult female lice per aquacultured fish on average on their sites. This limit, which is more stringent than the current limit of 0.5 lice per fish, would be required to be achieved by using a maximum of two medication treatments per production cycle. This policy is intended to help reduce the development of resistance against the delousing compounds used today. It is also expected that this would encourage the use of non-medicinal methods. Stricter requirements regarding sea lice would be followed up through increased control, especially from the NFSA. An additional 10 million NOK would be invested by government to strengthen monitoring. Any violation of these conditions would be met with predictable reactions and sanctions. The aim was for the new rules to come into force by the end of December 2014.

During the fact-finding mission in Norway, the Committee learned that the aquaculture industry has also experimented with the use of the "snorkel cage" to reduce sea lice. It was explained that sea lice primarily live at shallow depths and, accordingly, it could be possible to prevent the propagation of the parasite by placing fish in deeper waters, below the "louse zone." This new sea cage technology establishes a lice-free zone where the salmon can still thrive. A net roof is placed to hold salmon deeper than the parasite-risky surface layer. A central cylindrical passage, the snorkel, which is impermeable to parasites, allows salmon to swim to a shallower portion of the water column, where oxygen is more abundant. Senators were told the experiment showed that the use of the snorkel cage reduces sea lice infestations compared to traditional cages and that it is chemical-free.

While in Norway, the Committee had the opportunity to meet with some industry representatives who noted that salmon sea lice regulations were enforced 10 times between 2008 and 2014. These regulations were applied either nationally, to some regions only or during selected months. In their view, regulations succeeded in reducing the prevalence of sea lice on salmon, helped minimize the negative effects of lice on both wild fish and aquacultured fish, and also assisted in reducing and combating resistance to treatment. They stated, however, that there was still room for improvement and that sea lice regulations should be set by zone. In addition, they suggested that the impact of these local regulations should be subject to assessment for compliance, enforcement and goal achievement. Furthermore, it was indicated that efforts should be devoted to the eradication of sea lice on salmon, rather than mitigation efforts to reduce the presence of sea lice.

According to the Norwegian Veterinary Institute, sea lice – more particularly extensive delousing treatment and increased resistance to treatment – remains one of the most significant challenges for the aquaculture industry in Norway.[26]

1.3.2 Escapes

In Norway, the escape of fish from aquaculture establishments is considered "the most serious negative environmental consequence of aquaculture," particularly in regard to the risk of

26 The Norwegian Veterinary Institute is a government agency funded by the Ministry of Agriculture and Food, the Ministry of Trade, Industry and Fisheries and the Norwegian Research Council. The Institute routinely collects data on the health of aquacultured and wild fish and publishes fish health **reports** on an annual basis. The reports describe disease trends over the years, highlight disease outbreaks by region, provide data on number of cases by disease, discuss challenges and examine possible solutions. The latest report available describes the health situation in aquacultured fish for the year **2013**.

interbreeding with wild Atlantic salmon.[27] Norwegian authorities acknowledge that: "Scientific comparisons of wild and farmed salmon, and their cross-breeds, have shown that gene transfer from farmed to wild fish can reduce the latter's ability to survive. This is why such gene transfer is one of the main challenges with escapes. Records of escaped farm salmon in a number of Norwegian watercourses since the late 1980s document a very high proportion of escapees in many watercourses. Genetic mutation is already demonstrable in some salmon stocks."[28] Accordingly, the Department for Fisheries and Aquaculture, in collaboration with the industry, environmental non-governmental organizations and other government agencies, launched *Vision No Escapees* in 2006, an action plan on containment. Measures adopted as part of the action plan include[29]:

- NS 9415 is a standard that places strict technical specifications on the dimension, design, installation and operation of floating aquaculture installations. The standard helps ensure that aquaculture installations can cope with forces from waves, winds and currents. To ensure that the standard is adhered to by the industry, regulations were laid out stipulating that operators can only use installations, components and equipment certified in accordance with NS 9415. Since the standard was introduced in 2009, equipment damage/failure has become less frequent.
- Development of a code of containment by the industry, with regular audits and inspections of aquaculture establishments by the Department. In addition, inspectors investigate all significant escape episodes. A levy paid by the aquaculture industry helps to defray the cost of audits and inspections.
- Creation of the Escape Commission for Aquaculture, a permanent body which investigates every escape incident, analyzes the causes of escapes and proposes regulatory improvements.
- The requirement to immediately report any suspicion of escapes to the Department. Aquaculture operators are also required to take steps to capture escaped fish. Failure to report suspected escapes is a criminal offence. The Department publishes reports of escape events and escape statistics on its website.
- Severe fines for violation of environmental regulations.

In the same vein, the Storting designated 52 National Salmon Rivers and 29 National Salmon Fjords in 2007. Within these areas, the salmon aquaculture industry is subject to stricter legislation. For example, it is prohibited to establish new salmon aquaculture facilities for the production of fish and broodstock within the National Salmon Fjords and Rivers. In addition, it is not possible to increase capacity at already established locations within these areas; and, all aquaculture operations in

27 Norwegian Ministry of Fisheries and Coastal Affairs, ***Strategy for a Competitive Norwegian Aquaculture Industry***, 2008, p. 14.

28 Norwegian Ministry of Fisheries and Coastal Affairs, ***Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry***, 2009, p. 5.

29 The action plan was updated the following year. See: Norwegian Directorate of Fisheries, ***New Vision No Escapees***, December 2007.

these areas are controlled every year. Moreover, aquaculture grow-out sites must be located at least 5 km from the National Salmon Rivers. Finally, since 2011, there has been a ban against commercial salmonid aquaculture production in the 14 National Salmon Fjords of highest importance and aquaculture facilities already established were required to move out of these zones.

In 2013 and 2014, the Norwegian Government issued 45 new aquaculture licences for salmon and trout called "green concessions." These types of licences were allocated to producers who committed to use technologies or operational methods that reduce the environmental impacts from escapees and sea lice on wild salmonid stocks. The green concessions were designed to accelerate the commercialization of more environmentally friendly methods of production.

Furthermore, the Department of Fisheries and Aquaculture is also contemplating the introduction of changes to its *Aquaculture Act*, including:

- The mandatory tagging of aquaculture animals, to better distinguish between wild and escaped aquacultured salmon, and to better find the responsible operator after an escape incident;
- The use of sterile fish to reduce the negative consequences associated with salmon aquaculture escape incidents;
- The creation of a fund, financed by the salmon aquaculture industry, to cover the cost of removing escaped fish from a representative number of rivers;
- Revisions to the penal provisions of the law, providing that only companies can be given administrative fines and establishing a regime of control liability (individuals may still be prosecuted in cases of gross negligence).[30]

Finally, the Ministry of Trade, Industry and Fisheries now allows the production of smolt of up to 1 kg in weight. The decision was based on the desire to reduce the time spent in marine grow-out cages, thereby reducing the risk of escape events and exposure to sea lice and other disease agents. Several facilities for production of larger smolt are now being planed and tested. There are two main types of facilities: land-based recirculation systems and semi-closed floating containments. Production until smoltification continues to be performed as normal. Post-smolt will then be transferred to either type of facility until the fish reach 1 kg. There are only very few and small-scale facilities currently in operation.[31]

30 Norwegian Ministry of Fisheries and Coastal Affairs, ***The Norwegian Aquaculture Act***, 1 January 2014. It should be noted that the Ministry recognizes that: "The use of both sterile fish and mandatory tagging raise questions concerning animal welfare, and an actual introduction of these requirements is not likely for a couple of years."

31 Norwegian Veterinary Institute, ***The Health Situation in Norwegian Aquaculture 2013***, 2014, p. 8.

CHAPTER 2: Scotland

2.1 Profile of the Industry

2.1.1 Structure and Location

The aquaculture industry in Scotland comprises three sectors: finfish, shellfish and aquatic plants. The vast majority of aquaculture production (95%) is concentrated on finfish, while shellfish accounts for the remaining 5%. The aquatic plant sector (seaweed) is still at the developmental stage. The variety of species aquacultured in Scotland is presented in Table 2.1.

Like Canada, the finfish sector in Scotland has seen a structural change over the years with consolidation achieved through a number of mergers and takeovers. This has reduced the number of companies operating within the sector and these now tend to be more substantial in scale with connections to international corporate bodies. The finfish sector is dominated by the production of Atlantic salmon, with four companies operating 85% of the marine sites:[32] Meridian Salmon Farms (Marine Harvest),[33] Scottish Sea Farms (equally

Table 2.1 – Aquacultured Species in Scotland

	Species
Finfish	• Atlantic Salmon • Rainbow Trout • Brown/Sea Trout • Atlantic Halibut • Wrasse • Cod • Arctic Char
Shellfish	• Blue Mussel • Oyster (Pacific, Native) • Scallop (King and Queen)
Aquatic Plants	• Seaweed

Source: According to information obtained from ***Scotland's Aquaculture*** [accessed 19 March 2015].

32 Based on information obtained from the website of **Scotland's Aquaculture** [accessed 19 March 2015].

33 It should be noted that in May 2014 the Canadian-based company Cooke Aquaculture purchased Meridian Salmon Farms Limited from Marine Harvest, including assets in Shetland, Orkney and the mainland of Scotland. See Cooke Aquaculture, "**Canadian Company Closes Deal in Northern Scotland – Meridian Salmon to become Cooke Aquaculture Scotland**," *News release*, 14 May 2014.

owned by Salmar and Lerøy, two Norwegian companies), The Scottish Salmon Company and Hjaltland Seafarms Ltd (Grieg Seafood). These large companies are vertically integrated and operate hatcheries, grow-out sites and processing plants in various locations. Smaller companies include Loch Duart Ltd, Wester Ross Fisheries Ltd and Balta Island Seafare Ltd, among others. Finfish aquaculture sites are located on the west and north coasts of the Scottish Mainland and in the Western Isles, Orkney and Shetland.[34] There are currently no marine finfish aquaculture sites on the north and east coasts of Scotland. The Scottish Government introduced a presumption against further marine finfish aquaculture in these areas in 1999 to safeguard migratory fish species. This extensive zone covers a large proportion of the coastline of Scotland and its most highly productive salmon river catchments. Based on a precautionary approach, this presumption continues to apply until possible effects of aquaculture development on wild salmonid populations can be more fully assessed.[35] All marine finfish aquaculture takes place in net cages. There is no land-based closed-containment for commercial aquaculture in Scotland as it is not considered to be economically viable at this time.[36]

Marine Harvest (Scotland) is owned by Marine Harvest ASA, a Norwegian-based company that is one of the largest seafood companies in the world, and the world's largest producer of Atlantic salmon. In Scotland, the company operates hatcheries, grow-out sites, as well as primary and secondary processing installations. Senators had the opportunity to tour several facilities operated by Marine Harvest in and near Fort William including its most recent hatchery, one of its freshwater sites, its processing plant, and one of its grow-out sites by Corran, on Loch Linnhe.

34 For the location of finfish aquaculture sites, see the following **map**.

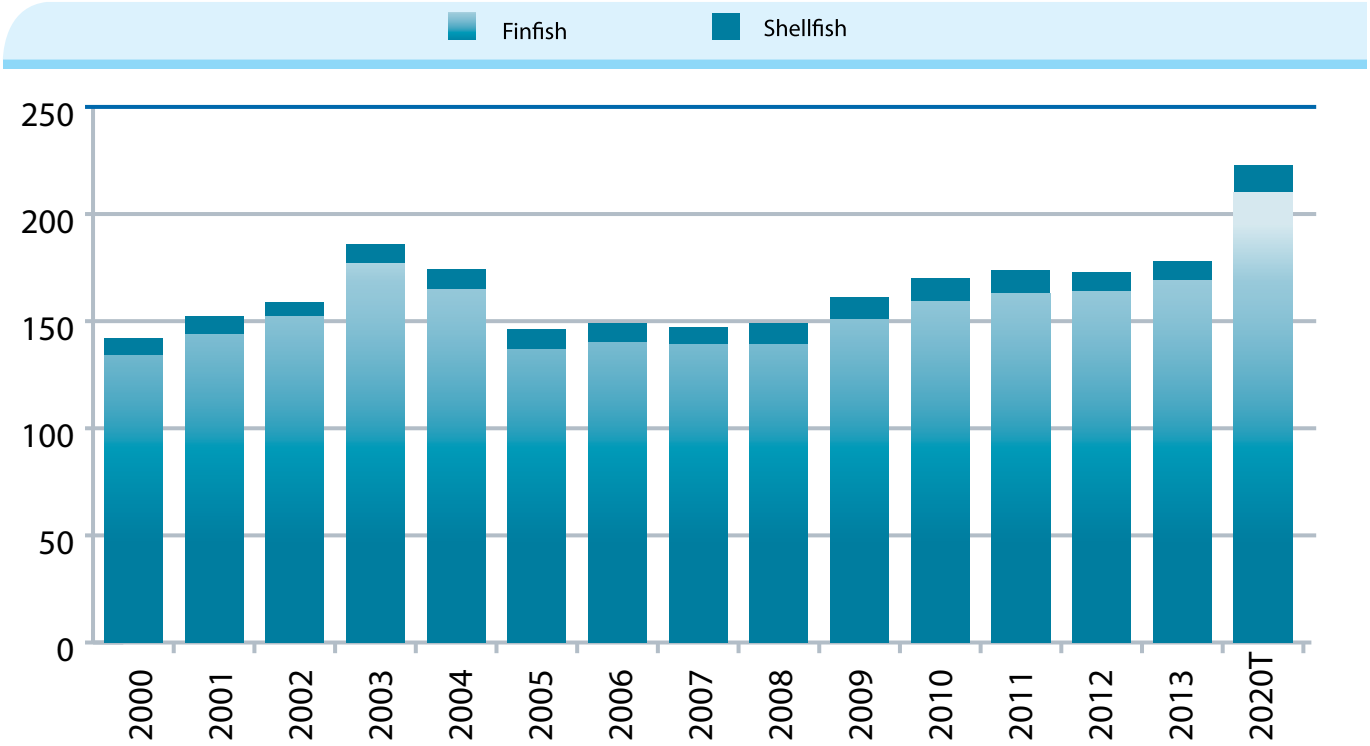
35 Marine Scotland, ***Planning Scotland's Seas – Scotland's National Marine Plan***, Consultation Draft, The Scottish Government, July 2013.

36 Willie Cowan, Head of Performance and Aquaculture, Marine Scotland, *Minutes of Proceedings and Evidence of the Standing Senate Committee on Fisheries and Oceans*, 12 June 2014 (**12:32**).

As in Canada, the shellfish sector in Scotland is highly fragmented and involves several companies, including many small family-operated businesses. There are 369 active sites run by 139 individual businesses. Shellfish aquaculture takes place on the west coast of the Scottish Mainland, as well as in the Western Isles and Shetland.[37] The shellfish sector is dominated by the production of Blue mussels.

There are also a number of small-scale seaweed cultivation sites, either in planning or operation stages in Scotland. These sites are largely located in the Western Isles, Shetland or on Scotland's west coast. They are being developed for algal production trials or as part of integrated multi-trophic aquaculture (IMTA) projects with either finfish or shellfish aquaculture.[38]

Figure 2.1 – Aquaculture Production[a] in Scotland (Thousands of Metric Tonnes), 2000 to 2013 and 2020 Target[b]



Notes: a. Aquaculture production includes the amount produced on sites and excludes hatcheries or processing.

b. Data for 2013 are preliminary while the year 2020 represents a government/industry target.

Source: Based on data from Marine Scotland Science, ***Scottish Fish Farm Production Surveys***, and ***Scottish Shellfish Farm Production Surveys***, The Scottish Government, various years [accessed 19 March 2015].

37 For the location of the shellfish aquaculture sites, see the following **map**.

38 Marine Scotland, ***Draft Seaweed Policy Statement***, Consultation Document, The Scottish Government, August 2013.

2.1.2 Production

Figure 2.1 presents aquaculture production in Scotland during the 2000–2013 period, as well as a target for 2020. Aquaculture production grew slightly in the beginning of the 2000s and reached a peak at 185,920 tonnes in 2003. This production peak was not achieved again and production declined during the two following years. Production was relatively stable between 2005 and 2008 and then began to increase slightly year after year. In 2013, aquaculture production totalled 177,928 tonnes; this included 168,947 tonnes of finfish and 8,981 tonnes of shellfish. In comparison, Canada produced 130,337 tonnes of finfish and 41,760 tonnes of shellfish.[39] By 2020, Scotland aims to increase production to 210,000 tonnes of finfish and 13,000 tonnes of shellfish.[40]

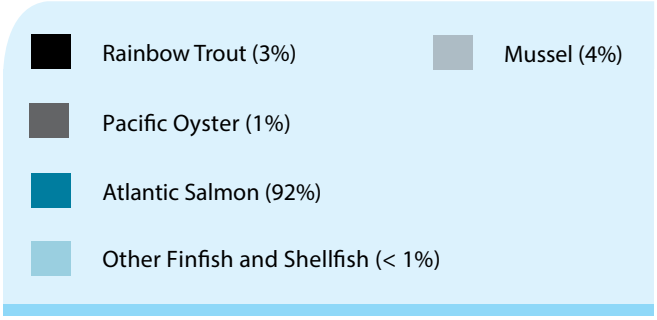
As shown in Figure 2.2, Atlantic salmon is the most aquacultured species in Scotland (92%), followed by Blue mussels (4%) and Rainbow trout (3%).

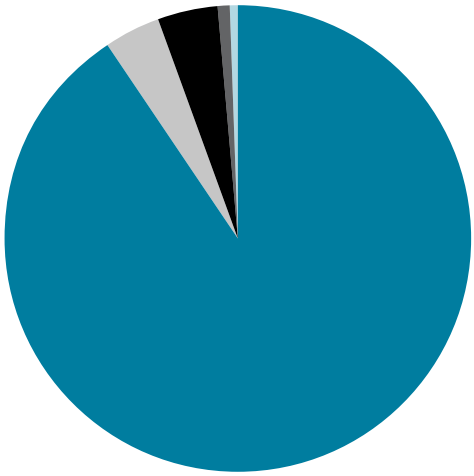
Currently, Scotland is the third largest salmon producer in the world after Norway and Chile. In comparison, Canada is the fourth largest producer of salmon on the global stage. In 2012, the farm-gate value of aquaculture production in Scotland amounted to £559 million (or C$1 billion).

2.1.3 Economic Repercussions

A recent report estimated that the aquaculture industry in 2012 supported 8,000 direct and indirect jobs and generated £1.4 billion (or C$2.6 billion) in the Scottish economy (see Table 2.2). Using the same calculation method, the report further estimated that if the 2020 production target of 223,000 tonnes were met, the industry could

Figure 2.2 – Scotland Aquaculture Production[a] by Species, Percentage, 2013





Note: a. Aquaculture production includes the amount and value produced on sites and excludes hatcheries or processing.

Source: Based on data from Marine Scotland Science, ***Scottish Fish Farm Production Surveys***, and ***Scottish Shellfish Farm Production Surveys***, The Scottish Government, various years [accessed 19 March 2015].

39 DFO, "**Production Quantities and Values**," *Aquaculture* [accessed 19 March 2015].
40 Marine Scotland, ***Planning Scotland's Seas – Scotland's National Marine Plan***, Consultation Draft, The Scottish Government, July 2013 (see Chapter 7).

support 10,000 direct and indirect jobs and generate a turnover value of £2 billion (or C$3.6 billion).

According to the report, the aquaculture industry has a positive effect on social, financial, human and physical capital in the coastal and rural communities where it operates. It generates employment and income which in turn help to maintain community structures, from schools to ferry services, to youth employment. The report further stressed that the impact of the industry extends beyond the remote and economically fragile areas in the Highlands and islands and stretches into cities and the central belt.

Table 2.2 – Economic Impact of Aquaculture in Scotland, 2012 and 2020

	2012	2020
Value of production (million)	£559	£788
Direct and indirect employment	8,000	10,000
Total economic impact (billion)	£1.4	£2.0

Source: Marine Scotland, ***An Assessment of the Benefits to Scotland of Aquaculture***, The Scottish Government, April 2014, p. 139.

The Scottish Salmon Producers Organisation (SSPO), formed in 2006, represents the salmon aquaculture industry in Scotland. It is funded by a voluntary industry levy based on production volume. Senators met with SSPO representatives at the organization's offices located in Perth for a discussion about the Scottish aquaculture industry.

Photos courtesy of: Scottish Salmon Producers Organisation.

2.2 Regulatory and Policy Framework

2.2.1 Siting: Planning and Authorization

In Scotland, the siting process involves a number of steps and several institutions have to provide their permission before a company is allowed to make use of an area for the purpose of aquaculture. The first step is initiated with the planning permission[41] granted by local authorities,[42] as per the *Town and Country Planning (Scotland) Act*.[43] Information required as part of the planning permission process includes: the capacity of an area to accommodate aquaculture development; the visual impact and the effects on the landscape; and infrastructure details (location, site plans, cage and equipment design, other structures, species, stocking density, onshore facilities, etc.). At this stage, it is recommended that the potential effects of aquaculture development on traditional fishing grounds, salmon netting stations and angling interests be also considered. The industry is encouraged to carry out pre-application discussion and consultation with local communities to seek their support in advance of submitting an application. The planning permission process is open to public consultation in which the local communities and district salmon fisheries boards[44] are encouraged to participate.

The second step is the seabed lease, granted by the Crown Estate.[45] To guide its work, the Crown Estate consults two sets of guidelines. The *Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters*,[46] prepared by Marine Scotland, provides guidance on the environmental suitability of coastal areas for marine finfish aquaculture development by identifying three categories of sites – suitable, potentially suitable and unlikely suitable for aquaculture.[47] *The Siting and Design of Aquaculture in the Landscape: Visual and Landscape Considerations*, published by the Scottish Natural Heritage,[48] helps determine the most appropriate location for aquaculture development in relation to the landscape. The Crown Estate may issue a lease for a period of up to 25 years. It may also grant a time-limited lease option for developments still without planning permission. The Crown Estate's decision on whether to grant a lease is conditional upon obtaining two other statutory consents: a licence from the Scottish Environment Protection Agency (SEPA) and another from Marine Scotland.

41 The Scottish Government, ***Planning Permissions***. For operators of sites which were established prior to 2007 (and do not already have planning permission) an application can be made through the Scottish Government.

42 **Local authorities** are equivalent to Canadian municipalities; there are currently 32 of them in Scotland.

43 ***Town and Country Planning (Scotland) Act.***

44 There are 42 district salmon fishery boards in Scotland. These boards are elected by an association of proprietors of salmon fisheries in a salmon fishery district and formed for the purpose of conserving and improving the fisheries and fisheries management within their district.

45 The **Crown Estate** holds Crown lands and property for the benefit of the state. In Scotland, it manages four rural estates, mineral and salmon fishing rights, as well as the seabed out to 12 nautical miles. For a summary of the application process to obtain a seabed lease for the finfish sector, you may consult: The Crown Estate, ***Guidance Notes for Applicants for Leases of Fish Farming Sites in Scotland***, n.d.

46 Marine Scotland, ***Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters***, March 2014.

47 There are currently no locational guidelines available to direct the development of shellfish aquaculture.

48 The **Scottish Natural Heritage** is a government agency established through an Act of Parliament in 1992. Its purpose is to promote the care and improvement of Scotland's natural heritage, as well as to encourage its sustainable use. See Scottish Natural Heritage, ***The Siting and Design of Aquaculture in the Landscape: Visual and Landscape Considerations***, November 2011.

Companies wishing to establish a finfish aquaculture operation must apply for and be granted a licence under the Controlled Activity Regulations (CAR),[49] pursuant to *The Water Environment (Controlled Activities) (Scotland) Regulations*.[50] They must provide environmental data from which a decision on discharge consent can be made. The Crown Estate and SEPA will then submit the proposal to public consultation by advertising details of the development in local newspapers. At this stage there may be objections and, if so, a review process is undertaken. A licence will be granted with conditions that set limits on the biomass (i.e., the weight of fish held on site) and on the amount of certain medicines that can be administered and discharged. The requirement for fallowing (i.e., a period where no fish production occurs on site) will also be a condition of licence. An upper limit of 2,500 tonnes has been set as the maximum biomass per site.

The process of determining what the appropriate size of the grow-out site is for a given location is quite complex. Prior to submitting a formal application, it is recommended that operators discuss their proposals with SEPA for this very reason. This pre-application consultation can limit cost and avoid disappointment should SEPA determine that the proposals are inappropriate for the site concerned. SEPA offers pre-consultation without prejudicing the formal application process. The pre-consultation process presents an

SEPA is Scotland's primary environmental regulator of the marine aquaculture industry. SEPA grants environmental licences that govern the activities of aquaculture operations. Senators met with SEPA representatives who discussed the various roles and responsibilities of the Agency in relation to aquaculture.

Photo courtesy of: Marine Harvest Scotland.

49 SEPA, ***Controlled Activity Regulations***.
50 ***The Water Environment (Controlled Activities) (Scotland) Regulations***.

opportunity to establish the validity of information that subsequently may be required to be submitted and thus minimizes the risk of rejecting incomplete applications.

SEPA may also be required to undertake an Environmental Impact Assessment (EIA) before determining whether a CAR licence may be granted or not. Any new finfish aquaculture operation or extension to an existing finfish operation[51] requires an EIA be undertaken by SEPA where the development is in a sensitive area, is designed to hold a biomass of 100 tonnes or more or covers 0.1 hectare or more in surface area of marine waters.[52]

Finally, as per the *Aquatic Animal Health Regulations*,[53] companies require a marine licence from Marine Scotland to operate finfish and shellfish aquaculture production sites. The application process will consider the impact that an activity will have on the local habitat, and any potential obstructions or dangers to navigation which may arise, either while the works are being carried out or once they have been completed. Licensing of well-boat discharges also falls under Marine Scotland.

Those regulatory agencies involved in the approval of siting for aquaculture operations have signed a Working Arrangement that delineates respective responsibilities in relation to aquaculture and allows for the sharing of relevant information with as view to minimizing overlap or duplication. The agreement covers both shellfish and finfish. This also helps ensure that their respective responses do not provide conflicting advice.[54]

Overall, it is estimated that the decision-making process for the siting of aquaculture operations may take between 18 months and two years, sometimes longer.[55] The industry contends that this process is cumbersome and too lengthy.

2.2.2 Operation, Monitoring and Enforcement

Marine Scotland, a directorate located within the Scottish Government's Department of Rural Affairs and the Environment, is the lead authority for the regulation of aquaculture. As its name suggests, this department has a broad mandate and has overall responsibility for agriculture, fisheries and aquaculture. However, Marine Scotland is not one centralized regulatory agency for aquaculture and there are several other departments and agencies involved in the governance of aquaculture operations.

Marine Scotland is responsible for the main piece of legislation governing aquaculture, the *Aquaculture and Fisheries Act*, which was enacted in 2007 and revised in 2013.[56] Overall, the legislation requires aquaculture operators to compile, retain and make available for inspection information relating to the prevention, control and reduction of fish parasites, as well as information on containment of fish and prevention of escapes. There are

51 Shellfish aquaculture applications do not require an EIA.
52 These aquaculture thresholds are set by ***The Environmental Impact Assessment (Fish Farming in Marine Waters) Regulations (1999)***.
53 ***Aquatic Animal Health Regulations***.
54 ***Working Arrangement – Requirements of Statutory Consultees (Scottish Environment Protection Agency, Scottish Natural Heritage, Marine Scotland Science and the District Salmon Fisheries Boards) and Consultation Protocol for Marine Aquaculture Planning Applications***, 6 July 2010.
55 Willie Cowan, Head of Performance and Aquaculture, Marine Scotland (**12:19**).
56 ***Aquaculture and Fisheries (Scotland) Act 2013.***

also provisions that allow inspections of grow-out sites by fish health inspectors. Inspectors may take samples of fish or material from fish, take copies of documents and records, and carry out tests that they deem necessary. Testing may be used to assess and enforce compliance with the industry's code of practice, undertake scientific or research activities, or investigate escapes. Other provisions establish fixed penalty notices to respond to issues of regulatory non-compliance. The legislation also allows Ministers to establish a scheme to pay some compensation for any fish destroyed for the purpose of disease control.

The 2013 revisions now require aquaculture facilities located within specific areas to operate under Farm Management Agreements (FMA) or Farm Management Statements (FMS).[57] The FMAs or FMS must cover arrangements for managing fish health; managing parasites; moving live fish on and off the grow-out sites; harvesting fish; and fallowing sites after harvesting. These are agreements between all aquaculture companies in the same area to operate in a way that synchronizes their operations so that they stock, treat, harvest and fallow at the same time. This is done to reduce the risk of cross infection caused by their operating in different cycles. These agreements are monitored by Marine Scotland through its Fish Health Inspectorate. Each agreement will be updated about once every two years with a view to making operations more efficient and limiting the environmental impact. The 2013 revisions also include technical requirements for equipment to be used in grow-out sites; these are location specific and cover

Marine Scotland is responsible for the main piece of legislation governing aquaculture in Scotland, the *Fisheries and Aquaculture Act*. Its Fish Health Inspectorate provides advice and diagnostic services to aquaculture establishments and carries out statutory inspections and testing programs on finfish and shellfish grow-out sites throughout Scotland, including unannounced inspections. Senators met with directorate representatives to discuss their regulatory roles in relation to aquaculture and fish health more specifically.

Photo courtesy of: Marine Scotland.

57 An FMA is an agreement between two or more aquaculture operators within a delineated management area, whereas an FMS is used if there is only one aquaculture operator located in a management area or when no agreement has been reached. For more information, see: Scottish Parliament Information Centre (SPICe), ***SPICe Briefing: Aquaculture and Fisheries (Scotland) Bill***, 5 November 2012.

The *Fisheries and Aquaculture Act* does not explicitly define "aquaculture," however the revisions made in 2013 provide the following definitions (section 63):

- fish farm: "any place used for the purposes of fish farming;"
- fish farming: "the keeping of live fish with a view to their sale or to their transfer to other waters; but only where such activity is required to be authorised as an aquaculture production business under regulation;"
- shellfish farm: "any place used for the purposes of fish farming;" and
- shellfish farming: "the cultivation or propagation of shellfish with a view to their sale or their transfer to other waters or land; but only where such activity is required to be authorised as an aquaculture production business under regulation."

physical considerations such as wave height, wind and current speeds.[58] Finally, the 2013 revisions contain measures for the control and monitoring of operations of well-boats.[59]

SEPA also plays a role in the regulation of the finfish sector (but not the shellfish sector). It recently issued a *Guidance Manual on Regulation and Monitoring of Cage Fish Farms*.[60] Marine finfish aquaculture operations are inspected one to three times per year through self-monitoring (this is a condition of the licence) and once annually through SEPA audit surveys. Aquaculture operators must report data to SEPA detailing the scale of the discharges from each of their grow-out sites. The results of both self-monitoring and audit surveys are compared to the pre-defined environmental standards applicable at the site and the impacts of the aquaculture activities are then judged to be satisfactory, borderline or unsatisfactory.

A satisfactory classification requires no further action. Borderline results may require an operator to consider taking further action; this could include a review of the management of the site to improve efficiency of feed use or an extension to the fallowing period. Unsatisfactory classifications indicate that the emissions arising from the site in question are of a scale that is beyond the assimilative capacity of the local environment. This classification may relate to benthic faunal or chemical impacts, unacceptable in-feed medicine residue concentrations or both. Unsatisfactory classifications cannot be ignored and are raised with the operator without delay; this provides an opportunity to discuss the possible reasons for the observed impacts and the steps that may be available to mitigate the immediate effects. SEPA may undertake enforcement action or consider sanctions when a licensed activity has had an unsatisfactory degree of adverse impact upon the marine environment. Enforcement action may include, but is not limited to: an extension of the fallowing period, introduction of an automated feeding system with feedback loops to avoid overfeeding, training of site staff in efficient feeding practices or reduction of licensed biomass, reduction of the quantity or rate of release of a medicine. SEPA recovers part of the cost of its monitoring regime through the levying of charges.

58 Ibid.
59 Ibid. Like in Canada, well-boats are used in the Scottish aquaculture industry primarily for the transport of live fish and in the application of therapeutant treatment for sea lice.
60 SEPA, ***Guidance Manual on Regulation and Monitoring of Cage Fish Farms***.

In addition to the statutory inspections described below, the industry has its own accredited code of good practice for finfish aquaculture which aims to ensure adherence to standards set down within the code. All grow-out sites operated by members of the SSPO are audited against the provisions of the code.[61]

The main departments and agencies responsible for the regulation of aquaculture siting and operation have joined to establish a website – entitled Scotland's Aquaculture – that serves as a single point of access to a database on aquaculture. A wide range of data is provided, such as industry location, leases, licences and reports on controlled activities, shellfish hygiene monitoring, environmental monitoring surveys, fish escapes, sea lice in-feed treatment residues, grow-out sites' monthly biomass, biotoxin monitoring, temporary shellfish area closures, etc. The information is accessible through a data search tool and an interactive map.[62]

2.2.3 Policy Developments

The Government of Scotland released its first Strategic Framework for Scottish Aquaculture in 2003, which was renewed in 2009.[63] That year, it created the Ministerial Group on Aquaculture (MGA) to bring together stakeholders and oversee implementation of the Strategy. The MGA was also involved in developing the legislative changes introduced in 2013. Since then, the MGA has been re-named the Ministerial Group for Sustainable Aquaculture (MGSA), and its work has been refocused on the Scottish Government's growth targets on increasing finfish and shellfish production to 223,000 tonnes by 2020.[64] The MGSA is chaired by the Minister of Environment and involves a broad range of stakeholders. The group aims to work in a collaborative approach in a way that addresses the different views on the impact on the environment. The MGSA is assisted by six working groups examining the following issues: containment, wellboats, interaction, cultured fish health and welfare, capacity, and shellfish. Last year, the MGSA released a national aquaculture research strategy that defines medium (five years) to long term (20 years) research requirements. It is stressed that close collaboration amongst stakeholders coupled with improved coordination of research activities are imperative to ensuring that a sustainable aquaculture industry continues to thrive.[65] In this context, the Scottish Government established the Scottish Aquaculture Innovation Centre (SAIC) in June 2014.[66] Headquartered at the University of Stirling, SAIC brings together industry, academia and other stakeholders to provide innovative solutions with the aim of growing the industry both economically and sustainably. The Centre has received £11 million over five years, with funding from both government and industry.

The Scottish Government recently completed public consultations on how marine resources should be utilized for the purposes of aquaculture as well as for recreational and commercial fisheries.[67] It was explained to the Committee that these three sectors are not mutually exclusive and are all key sectors underpinning sustainable economic

61 SSPO, ***The Code of Good Practice for Scottish Finfish Aquaculture***, 2010.
62 For more information, see **Scotland's Aquaculture**.
63 The Scottish Government, ***A Fresh Start: The Renewed Strategic Framework for Scottish Aquaculture***, May 2009.
64 For more information on the MGSA, see ***The Ministerial Group for Sustainable Aquaculture (MGSA)***.
65 MGSA Science and Research Working Group, ***Aquaculture Science and Research Strategy***, May 2014.
66 **Scottish Aquaculture Innovation Centre**.
67 Marine Scotland, ***Planning Scotland's Seas – Scotland's National Marine Plan***, Consultation Draft, The Scottish Government, 2013.

growth that supports employment and economic well-being of many coastal communities in Scotland. In the coming months, it will launch a National Marine Plan that would bring greater clarity to decision-making regarding the use of the marine environment as a result of these consultations.

As part of the proposed National Marine Plan, aquaculture applications that promote the use of biological controls for sea lice (such as wrasse, a cleaner-fish) will be encouraged. Similarly, proposals that contribute to the diversification of cultured species will be supported. Increased integration of seaweed cultivation with other production in multitrophic systems will also be encouraged. Furthermore, the current SEPA requirement which limits the biomass to a ceiling of 2,500 tonnes per site is being reconsidered with a view to increase the capacity for growth in site sizes. This research could lead to the development of larger aquaculture sites, particularly grow-out sites situated further offshore.[68]

With respect to social acceptance, the government, industry and local authorities are working together to develop a community benefit charter that explains and promotes the benefits brought by the industry to the local economy.[69] The Committee was told that community benefit charters already exist in the renewable energy sector in Scotland. A community benefit charter would aim to maximize the social and economic impact of aquaculture for the community, which could include industry re-investment in the local economy through project funding (such as for housing) or a share of the Crown Estate's income generated from the lease agreements.

2.3 Opportunities and Challenges

The report by Marine Scotland referred to in Section 2.1.3 also examined strengths, weaknesses, opportunities and threats for the aquaculture industry in Scotland. These findings are presented in Table 2.3. Both the finfish and shellfish sectors enjoy a good reputation and are well positioned with their proximity to the European markets. In addition, it is possible to increase fish and shellfish production through the development of offshore aquaculture facilities. Furthermore, growth of the industry is strongly supported by the Scottish Government. However, some factors impede the industry's ability to grow, including a complex regulatory framework.

With respect to the finfish sector, risk of disease and sea lice infestations may affect production levels. In particular, sea lice create significant problems that are costly to companies, due to losses and treatments. The use of cleaner-fish is being considered as part of an integrated pest management approach.

With respect to the shellfish sector, production is relatively expensive in comparison to elsewhere in Europe due to slow biological growth, use of more costly production methods and higher wages. Similarly, there are high capital costs associated with the start-up of a finfish operation, between £5–10 million (C$9–18 million).[70] This makes it difficult for new entrants, particularly in salmon aquaculture. Opportunities exist to develop products in both the finfish and shellfish sectors with a higher market value through further processing.

68 Ibid.
69 Willie Cowan, Head of Performance and Aquaculture, Marine Scotland (**12:24**).
70 Ibid.

Table 2.3 – SWOT Analysis for Aquaculture in Scotland

	Salmonid	Shellfish
Strengths	• A leading producer in the European Union • Close to European markets • Excellent water quality • Consolidated industry • Strong government support	• Good biophysical conditions • A leading supplier of good quality shellfish • Strong local/regional market • Good market recognition • Strong government support
Weaknesses	• Lack of suitable sites • Poor perception of the industry within the press and among some opinion groups • Slow and cumbersome regulatory process • Colder waters contribute to slow growth • Strong competition from Norway which has developed advanced infrastructure • High cost of capital	• Lack of suitable sites • Fragmented industry • Small production units with low economies of scale in comparison with other countries • Lack of access to capital • Colder waters contribute to slow growth • Production costs are relatively higher than elsewhere in Europe
Opportunities	• Scope for growth in offshore sites • Ability to deliver live and fresh fish within 24 hours • Strong demand for some species produced in Scotland • Potential for further value added processing • Potential for species diversification • Use of new technologies	• Increased site productivity • Strong demand for locally produced shellfish • IMTA could expand opportunities for mussel production
Threats	• Reduced output due to disease and sea lice • Failure to continue to improve the sustainability of production going forward • Quality perception of wild fish • A stagnant economy	• A stagnant economy

Note: "SWOT" stands for strengths, weaknesses, opportunities and threats.

Source: Adapted from Marine Scotland, ***An Assessment of the Benefits to Scotland of Aquaculture***, the Scottish Government, April 2014.

CHAPTER 3: Comparative Analysis

3.1 Industry: Structure, Production and Repercussions

The finfish sector in both Norway and Scotland, as well as in Canada, has seen structural changes over the years with consolidation achieved through a number of mergers and takeovers. This has reduced the number of companies operating within the sector in each country. Consolidation of the sector has also helped companies take advantage of economies of scale and strengthened their position on global markets. A few large Norwegian companies are multinational salmon aquaculture corporations that also conduct business in both Scotland and Canada (in B.C.). One large Canadian company operating salmon facilities in all Atlantic Provinces also conducts aquaculture activities in Scotland, as well as in Chile, Spain and the United States (Maine). These large salmon aquaculture companies are all vertically integrated with hatcheries, grow-out sites, feed mills, processing facilities, and marketing operations. In contrast to the finfish sector, shellfish aquaculture in Norway, Scotland and Canada has remained fragmented and involves a large number of companies – including many small family-operated businesses.

Total aquaculture production in Norway is seven times greater than that in Scotland or Canada, due mainly to its high finfish production volume (see Table 3.1). Atlantic salmon represents 94% of all aquaculture production in Norway, compared to 92% in Scotland and 58% in Canada (89% in B.C., 84% in N.L., 96% in N.B., and 74% in N.S.).

Aquaculture is more diversified in Canada than in Scotland and Norway, perhaps because Canada has several marine ecosystems viable for aquaculture in two distinct oceans. Shellfish production in Canada is eighteen times higher than in Norway and almost five times higher than in Scotland. Canada also has more experience with respect to commercial land-based closed-containment systems and IMTA than the two other countries.

Growth of the aquaculture industry is supported by the Scottish Government which aims to produce 210,000 tonnes of finfish and 13,000 tonnes of shellfish by 2020, or an average global growth of 5% per year. The Norwegian Government has not set specific aquaculture production targets but is committed to sustainable industry growth. There are no production targets set by governments for aquaculture in Canada, except in N.L., where the provincial government aims to increase production to 50,000 tonnes of salmonids and 6,000 of mussels by 2018.

Governments in all three countries recognize that the aquaculture industry contributes to economic development in rural regions, most particularly in

Table 3.1 – Aquaculture Production Volume (Metric Tonnes) in 2013

	Norway	Scotland	Canada
Finfish	1,244,180	168,947	130,337
Shellfish	2,363	8,981	41,760
Total	**1,246,544**	**177,928**	**172,097**

coastal and island communities, by providing well paid jobs and ensuring economic vitality. Revitalization is considered particularly critical in areas where other economic opportunities tend to be limited. The economic benefits of the aquaculture industry are wide-ranging and are felt across the countries, including in areas not traditionally associated with aquaculture. In all three countries, there are possibilities for expansion of the industry through access to new sites (both near shore and offshore) and species diversification.

3.2 Regulatory Framework

A review of the aquaculture legislation and regulations in Norway and Scotland and comparisons with aquaculture governance in Canada suggest that:

- Aquaculture is typically regulated by several pieces of legislation involving many regulatory authorities and its governance appears, by its very nature, relatively complex in all three countries. The involvement of different levels of government in Canada adds even more complexity and, from the perspective of the industry, the regulatory framework is cumbersome both during the licence application process and the day-to-day operation of aquaculture facilities. National legislation governing aquaculture in Norway and Scotland ensures that companies operating in various locations within their country are subjected to a uniform and coherent set of regulations. No such national legislation currently exists in Canada.
- Like Canada, the regulation mechanism for aquaculture used in Norway and Scotland is the licensing model. Under this model, aquaculture is prohibited unless licensed. Once licensed, the regulatory framework requires it to be conducted in accordance with the requirements and limitations that are either written into specific licences and/or in the aquaculture legislation, in which case they are applicable to all licence holders operating within the scope of the statutory requirements.
- Approval of a new aquaculture development can be a lengthy exercise. The lack of a streamlined application process is an issue often raised in Scotland and Canada as several licences, leases, permits and approvals are required to operate an aquaculture facility. It is estimated that the licence application process can take between 18 months to two years in Scotland, while it can last two years or more in Canada. In contrast, the aquaculture approval process in Norway is subject to a time limit set in legislation not exceeding 22 weeks.
- The duration of licences and leases differ from one country to another. In Norway, a licence to operate an aquaculture facility is granted in perpetuity and can be sold. In Scotland, the seabed lease is for 25 years and the aquaculture licence is issued for four years; while the environmental licence is not time-limited, it is subject to statutory review every four years. In Canada, the duration of the land tenure, the aquaculture licence and other approvals vary from province to province. For example in N.L., the seabed lease is for 50 years, the navigation approval is given for five years, and the aquaculture licence is issued for one year. In B.C., the lease is for five to 20 years for finfish aquaculture and up to 30 years for shellfish aquaculture, the navigation approval is issued for five years, and the aquaculture licence is currently granted for one year.
- In the three countries, the aquaculture licence determines the maximum biomass permitted per licence. This maximum is set at 780 tonnes per licence in all counties in Norway, except

in Troms and Finnmark where it is fixed at 945 tonnes. In both Scotland and Canada, the maximum allowable biomass for individual sites varies and is determined based on the characteristics inherent to each geographic location and included in the licence documentation. There is however a ceiling of 2,500 tonnes in maximal biomass in Scotland.

3.3 Environmental Impact Assessment and Environmental Monitoring

In Norway, an EIA is required by regulations for new, large salmon aquaculture operations. In Scotland, SEPA may be required to undertake an EIA before determining whether a CAR licence can be granted or not. Any new finfish aquaculture operation or extension to an existing finfish operation requires an EIA undertaken by SEPA where the development is in a sensitive area, is designed to hold a biomass of 100 tonnes or greater or covers 0.1 hectare or more in surface area of marine waters.

In Canada, prior to 2012, many proposed aquaculture operations were subjected to a federal EIA under the *Canadian Environmental Assessment Act*. However, amendments in 2012 to this Act as well as to the *Navigable Waters Protection Act* (now the *Navigation Protection Act*) removed the federal requirement for an EIA. An EIA may still be required at the discretion of the federal Minister of Environment, or at the discretion of provincial governments (in N.B., N.L., and P.E.I.). Conditions for requiring a provincial EIA are unclear since provincial regulators previously relied on the federal screening to identify potential significant environmental impacts. The *Environmental Protection Act* in N.L. appears to include the most comprehensive EIA triggers for proposed aquaculture operations in the country.

In the three countries, the environmental monitoring of aquaculture operations is established by legislation or regulations, is comprehensive (e.g., bottom sediment, water analysis, net testing, sea lice counts, fish health provisions, use of treatments), and is carried out on a regular basis by operators as well as by regulatory authorities for assessment of compliance and enforcement purposes. This is in addition to aquaculture practices – fallowing, site rotation, single-year class production, prescribed distances between sites – implemented to prevent the cumulative degradation of the environment and limit disease transmission.

Sea lice and escapes are considered to be the two most important environmental challenges facing the aquaculture industry in both Norway and Scotland. In Canada, sea lice, disease outbreaks and escapes (on the East Coast) also raise serious environmental concerns. Aquaculture regulators from the three countries acknowledge that environmental sustainability is a prerequisite for the long term development and growth of the industry.

3.4 Protection of Wild Atlantic Salmon Stocks

Norway has established 52 National Salmon Rivers and 29 National Salmon Fjords and, within these areas, the salmon aquaculture industry is subject to stricter legislation. All aquaculture operations in National Salmon Fjords are monitored every year. Similarly, Scotland has introduced a presumption against further marine salmon aquaculture on its north and east coasts to safeguard wild migratory species. This extensive zone covers a large proportion of the coastline of Scotland and its most highly productive salmon river catchments. For its part, Canada has 34 Atlantic Salmon Management Areas (SMAs) which group neighbouring rivers for wild stock management purposes. Marine salmon

aquaculture only occurs in six SMAs (SMA 23 in N.B., SMA 11 in N.L., and SMA 19, 20, 21, and 22 in N.S.).[71]

3.5 Reporting Industry Information to the Public

In Norway, information on a wide range of diseases and parasites affecting cultured and wild fish is routinely collected by the Norwegian Veterinary Institute and made available to the public on an annual basis. Data on the use of pharmaceuticals by the aquaculture industry is also published annually by the Norwegian Institute of Public Health. Furthermore, data on escapes from aquaculture facilities are published regularly by the Department for Fisheries and Aquaculture.

Scotland's Aquaculture website, launched in 2013, makes aquaculture regulatory information accessible through a data search tool and an interactive map. A wide range of data is made available there, such as industry location, reports on controlled activities, monthly biomass, escapes, sea lice infeed treatment residue levels, and more. In addition, Marine Scotland's Fish Health Inspectorate proactively publishes operational activity data on its website.

In Canada, given federal and provincial responsibilities over aquaculture, there is no single agency reporting information about the industry to the public. The availability of data shared with the public and the extent of the information provided vary from one province to another. In general, there is a concern in Canada about a lack of reporting of information regarding the aquaculture industry, particularly on disease outbreaks, the use of chemicals, escape events and the impacts on the benthic environment. It is also argued that, when information is made available, it is not released in a timely fashion. This concern is being addressed to some extent by DFO. Under the proposed *Aquaculture Activities Regulations*, aquaculture operators would be required to report on an annual basis the use of drugs or pest control products, the purpose of their use, the date and quantity used, and a record of consideration of alternative treatments, and the monitoring results of sediments on marine finfish facilities located over soft bottom ocean substrates. The regulations would also require the monitoring of impacts from aquaculture-related activities to fish habitat and establish conditions under which samples are to be collected and analyzed for pest control products in cases of unusual morbidity or mortality. This information would be reported annually to DFO and made public. This would be in addition to information that is already available on provincial regulatory authorities' websites as well as on DFO's website in relation to B.C. aquaculture.

3.6 Research

One message that the Committee consistently heard throughout its public hearings and site visits, in Canada and abroad, is that the future of aquaculture is dependent upon research that leads the way to economically efficient and environmentally sustainable methods of production. Therefore, governments must ensure that sustainable management of aquaculture operations is science-based, while industry must actively participate in research and development efforts directed toward environmental sustainability. This can only be achieved through collaboration between scientists and researchers from government departments, academia and the industry.

71 DFO, ***Focus Area Report on Aquaculture, Introductions and Transfers, and Transgenics***, January 2010, p. 19.

In Norway, there is a tradition of strong collaboration between the industry, the regulatory authorities and academia as it pertains to aquaculture research. The Committee was told that cooperation and exchange of information between government, researchers and the industry contributes to making Norwegian aquaculture innovative and leading-edge. The results of this collaborative research are used to reform the regulatory regime and change production practices. Scotland, like Norway, aims to foster collaboration among universities, businesses and other stakeholders in aquaculture research and, recently, it established the Scottish Aquaculture Innovation Centre. The Centre brings together industry and academia to provide innovative solutions with the aim of setting conditions for the industry to grow economically and sustainably.

There is also a strong foundation for aquaculture research in Canada. At the federal level, several departments and agencies fund and/or carry out aquaculture-related research. Within DFO, about half of the budget under the Sustainable Aquaculture Program is allocated to research. During site visits throughout Canada, the Committee visited several research facilities performing world-class research and development in a wide range of fields related to aquaculture. The need to foster cooperation and collaboration among the various stakeholders was often noted as an aspect to be improved. Of particular interest was the priority given to research in N.L. as part of the provincial aquaculture strategy launched in 2014: an advisory committee has been established to review current research activities in the province and to provide recommendations to further collaboration among the research community.

3.7 Social Licence

Norway, Scotland and Canada are confronting the same environmental issues in relation to aquaculture, including organic waste production, disease, use of therapeutic agents and chemicals, escapes from aquaculture operations, bio-fouling management, and sustainability of feed ingredients. It is clear that the three countries aspire to balance the growth of a viable aquaculture industry with the issue of environmental protection and social acceptance at the local or regional level. For example, the green concessions issued to salmon producers in Norway aim to encourage and favour the development of more environmentally friendly methods of production, such as alternative feed sources, cleaner-fish, tarpaulins, snorkels, and more. In Scotland, the government is supporting the use of "greener" methods of production, such as cleaner-fish and IMTA, while developing a community benefit charter that will explain and promote the benefits generated by aquaculture at the local level. The Scottish Government is also creating marine development plans where aquaculture can be better integrated with commercial and recreational fisheries. In Canada, broad public consultation processes were completed in 2014 in N.L. and N.S. with a view to implementing new aquaculture regulatory regimes that foster continued aquaculture development along with improved social licence.

CONCLUDING REMARKS

Aquaculture is an industry that have been well established in Norway and Scotland since the beginning of the 1970s. In many respects, the Norwegian and Scottish aquaculture industries – their structure and governance – are comparable to that of Canada. The Canadian aquaculture industry is, however, younger and subject to a more complex regulatory framework, which is the result of legislation and regulations emanating from two levels of government. Aquaculture governance also appears more complex in Canada because the division of roles and responsibilities between the federal government and the provinces vary from one jurisdiction to another. Despite these differences, there is opportunity for Canada to learn lessons from the regulatory and operational developments taking place in Norway and Scotland in relation to aquaculture. The Committee carefully reviewed the Norwegian and Scottish experiences in developing a set of recommendations on aquaculture governance in Canada.

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VOLUME THREE – AN OCEAN OF OPPORTUNITIES: Aquaculture in Canada

Standing Senate Committee on Fisheries and Oceans

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Chair

The Honourable Elizabeth Hubley
Deputy Chair

June 2016

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Ce rapport est également offert en français.

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The Committee would like to recognize the following Honourable Senators who are no longer serving members of the Committee whose contribution to the study was invaluable.

Lynn Beyak

Tobias C. Enverga Jr.

Ex-officio members of the Committee:

The Honourable Senators Claude Carignan, P.C., (or Yonah Martin) and James S. Cowan (or Joan Fraser).

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ORDER OF REFERENCE

Extract from the *Journals of the Senate*, Monday, December 9, 2013:

The Honourable Senator Manning moved, seconded by the Honourable Senator Unger:

That the Standing Senate Committee on Fisheries and Oceans be authorized to examine and report on the regulation of aquaculture, current challenges and future prospects for the industry in Canada;

That the papers and evidence received and taken and work accomplished by the committee on this subject during the First Session of the Forty-first Parliament be referred to the committee; and

That the committee report from time to time to the Senate, but no later than June 30, 2015, and that the committee retain all powers necessary to publicize its findings for 180 days after the tabling of the final report.

The question being put on the motion, it was adopted.

Gary W. O'Brien
Clerk of the Senate

TABLE OF CONTENTS

LIST OF ACRONYMS

AAR:	Aquaculture Activities Regulations
ACOA:	Atlantic Canada Opportunities Agency
ACPRD:	Aquaculture Collaborative Research and Development Program
AIMAP:	Aquaculture Innovation and Market Access Program
AIS:	Aquatic Invasive Species
AVC:	Atlantic Veterinary College (University of Prince Edward Island)
B.C.:	British Columbia
BC CAHS:	BC Centre for Aquatic Health Sciences
BMA:	Bay Management Area
CAHS:	Centre for Aquatic Health Sciences (University of Prince Edward Island)
CAIA:	Canadian Aquaculture Industry Alliance
CCFAM:	Canadian Council of Fisheries and Aquaculture Ministers
CFIA:	Canadian Food Inspection Agency
CIMTAN:	Canadian Integrated Multi-Trophic Aquaculture Network
CITES:	Convention on International Trade and Endangered Species
COSEWIC:	Committee on the Status of Endangered Wildlife in Canada
CSSP:	Canadian Shellfish Sanitation Program
DFO:	Department of Fisheries and Oceans Canada
ELA:	Experimental Lakes Area (Ontario)
FDA:	*Food and Drugs Act*
FTE:	Full-Time Equivalent
GDP:	Gross Domestic Product
HSMI:	Heart and Skeletal Muscle Inflammation
IHN:	Infectious Hematopoietic Necrosis
ISA:	Infectious Salmon Anaemia
IMTA:	Integrated Multi-Trophic Aquaculture
IRAP:	Industrial Research Assistance Program
MOU:	Memorandum of Understanding
MUMS:	Minor use, minor species
NAAHP:	National Aquatic Animal Health Program
NAFC:	Northwest Atlantic Fisheries Centre (DFO, Newfoundland and Labrador Region)
NASAPI:	National Aquaculture Strategic Action Plan Initiative
N.B.:	New Brunswick
N.L.:	Newfoundland and Labrador
NRC:	National Research Council
N.S.:	Nova Scotia
NSERC:	Natural Sciences and Engineering Research Council
ON:	Ontario

OSC:	Ocean Sciences Centre (Memorial University of Newfoundland)
PARR:	Program for Aquaculture Regulatory Research
PCPA:	*Pest Control Products Act*
P.E.I.:	Prince Edward Island
PMRA:	Pest Management Regulatory Agency
PRV:	Piscine Reovirus
QC:	Québec
RAS:	Recirculating Aquaculture System
R-D:	Research and Development
SABS:	St. Andrews Biological Station (New Brunswick)
SMA:	Salmon Management Area
SMEs:	Small and Medium Size Enterprises
UNFAO:	United Nations' Food and Agriculture Organization

EXECUTIVE SUMMARY

The central message of this report is that there is an ocean of opportunities for aquaculture in Canada. Our country has the world's longest marine coastline, the largest number of freshwater lakes, a diversified aquaculture industry, a rigorous regulatory regime and world-class aquaculture-related research. Canada is, therefore, well positioned to help supply the growing global demand for fish and seafood and to do so sustainably – environmentally, economically and socially. The Committee supports the goal of doubling Canadian aquaculture production within the next decade. To help achieve this sustainable growth, we propose a set of recommendations articulated by five main themes: legislative and regulatory framework; healthy aquacultured fish; healthy and productive ecosystems; research and development; and, social licence and public reporting.

Legislative and Regulatory Framework

Federal Regulatory Framework

Aquaculture is a multi-faceted industry and its governance is relatively complex. This is true for Norway and Scotland, as it is in Canada. That said, national legislation governing aquaculture in Norway and Scotland ensures that companies operating in various locations in these countries are subject to a uniform and coherent set of regulations. No such legislation currently exists at the federal level in Canada. Norwegian legislation promotes aquaculture development and Scottish policy has established aquaculture production targets to reach by 2020. There are no production targets set by the federal government for aquaculture in Canada. Furthermore, Norwegian legislation limits the overall aquaculture approval process to 22 weeks and a single agency coordinates the work of all the regulatory authorities. In contrast, the lack of a streamlined application process is an issue often raised in Scotland and in Canada as the different leases, licences, permits and approvals must be obtained separately before an aquaculture facility may operate. It is estimated that the licence application process can take between 18 months and two years in Scotland, while it can last two years or more in Canada.

The involvement of different levels of governments in Canada renders the governance of aquaculture more complex than in Norway and Scotland. What further complicates the situation is that the 2009 Supreme Court of British Columbia (the *Morton* decision) created two constitutional realities with respect to aquaculture. The court ruled that aquaculture is a fishery and, therefore, under the jurisdiction of the federal government; this decision was not appealed and, as a result, Fisheries and Oceans Canada (DFO) established the *Pacific Aquaculture Regulations* which govern most aspects of aquaculture in that province. Elsewhere, there has been no litigation similar to *Morton* and the various aspects relating to aquaculture are regulated by federal and provincial governments with division of responsibilities established through bilateral Memoranda of Understanding (MOUs).

Accordingly, the extent of the federal power to regulate aquaculture will remain unsettled until the Supreme Court of Canada rules on the matter in some future case. While we understand that it is not possible to establish a clear and uniform federal regime for regulating aquaculture across the country, we nonetheless believe that a strong federal role is necessary to improve aquaculture governance across the country and stimulate investment. In our view, it is imperative that new federal aquaculture legislation be enacted. The new Act will express strong federal support for aquaculture, legitimize the industry and acknowledge its important economic contribution to rural and coastal communities. By consolidating all relevant regulations, this Act will clarify the federal role with respect to aquaculture and, in particular, it will spell out how the *Fisheries Act*

applies to aquaculture. The Committee also proposes that the new statute include a federal veto on aquaculture development in order to prevent the risk of approving an aquaculture site in a potentially unsuitable location and that it be administered by DFO. We further propose that the new Act establishes one administration within DFO charged with coordinating the activities of all federal regulatory bodies involved in aquaculture, to ensure a streamlined and effective regulatory regime. Finally, the Act will set timelines for each step of the review process leading to the various federal aquaculture authorizations and contain provisions in relation to aquaculture statistics and public reporting.

Federal-Provincial Collaboration

As noted above, the specific division of roles and responsibilities in aquaculture carried out at the federal and provincial levels varies across Canada, as a result of the *Morton* decision and the various bilateral MOUs signed in each province. The Committee often heard during fact-finding missions across the country that the level of duplication and confusion and the lack of uniformity in aquaculture governance are compounded when considered from a federal/provincial perspective. It was explained that duplication could be reduced through the sharing of information between provincial and federal departments/agencies as well as the establishment of equivalent programs whereby, for example, samples taken for monitoring and compliance purposes could be tested locally for both levels of government. The MOUs were signed in the late 1980s, when the aquaculture industry began establishing operations in Canada. In B.C., the MOU between the two levels of government was revised in 2010, following the *Morton* decision. The Committee believes that it is time for the federal government to modernize the various MOUs with each individual province. Revisions could be made in light of a new federal aquaculture Act while at the same time identifying areas for harmonization of the regulatory and policy framework to ensure that federal and provincial regulatory activities within each province are coordinated and coherent.

During the past five years, work has also been carried out under the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) as part of the National Aquaculture Strategic Action Plan Initiative (NASAPI) to address challenges associated with aquaculture governance across the country. The initiative was an ambitious plan and, although a number of tasks have been completed, much remains to be done. Five years after its launch, NASAPI has not delivered on one of the major impediments to the growth of the industry in Canada, namely the lack of uniformity in federal/provincial aquaculture governance across the country. The initiative is set to come to an end in 2015, but the Committee believes that its mandate should be extended and very focussed. It should address, as a priority, the recurring issues raised during our hearings, such as the lengthy site application and review process, the lack of uniformity from one province to another in the duration of the various licences, leases and approvals needed to run aquaculture operations, and matters that hinder operational efficiency (such as the requirement to obtain approval to change the size of net, the orientation of the cage or the placement of monitoring equipment).

Healthy Aquacultured Fish

Finfish Health

Fish health is the number one priority of all aquaculture operations. Fish are introduced into aquaculture grow-out sites disease- and parasite-free. Then, a variety of preventive measures are taken to keep aquacultured fish healthy, including: vaccination, choice of location,

maximum allowable biomass, fish health management plans, biosecurity practices, bay management areas, etc. The introduction of pathogens in grow-out sites may be attributable to an infected wild fish or contaminated equipment. For this reason, aquaculture operators require access to chemotherapeutants to minimize the impact of these pathogens.

The Committee learned that Canadian aquaculture operators do not have access to the same range of pest control products and veterinary drugs as producers in other countries, including Norway and Scotland, and are therefore at a disadvantage on global markets. It was explained that the market for these products in Canada is too small to enable drug manufacturers to recoup the fixed costs associated with drug development, approval and marketing. We were told that classifying aquatic animal products under a "minor use minor species" (MUMS) template would reduce the cost associated with their registration/approval and would allow for the fast-tracking of products, while still ensuring their safety. Fish health is the foundation of the aquaculture industry and, for this reason, we believe that the Canadian aquaculture industry must be given improved and timely access to a range of drugs and pest control products through a MUMS Program for Aquaculture.

The Committee also learned that sea lice infestations are an ongoing concern worldwide in salmon aquaculture. The parasite latches onto the fish and inflicts damage both directly by feeding on the host's body and indirectly by making the host more vulnerable to secondary infections. The potential for reduced effectiveness in drug treatment and the desire to limit reliance on chemotherapeutants has led to the development of several non-chemical technologies to manage sea lice, including: cleaner-fish, snorkel cage, IMTA, mechanical removal, etc. In our view, research into sea lice epidemiology and the effectiveness of non-chemical methods need to continue. More importantly, the use of proven effective non-chemical methods must be encouraged and the use of drugs and pest control products reserved for occasional use.

Fish Feed

Finfish held in aquaculture operations are fed with special pellets designed to meet their nutritional requirements and allow for optimal health and growth. Schedule 5 of the regulations developed pursuant to the federal *Feeds Act*, which is administered by the CFIA, lists the additives or ingredients that can be used in fish feed formulations. The Committee was told that a number of feed additives which are not approved for use in the formulation of fish feed in Canada are permitted in other countries, including Norway and Scotland. Fish that have been fed using these ingredients can be imported into the country, which, in the view of several witnesses, makes little sense. In addition, some of these feed additives stimulate the immune system and increase the resistance of salmon to sea lice infestations. The Committee concurs with witnesses that there is some incoherence in federal aquaculture governance. In our view, the current regulations governing fish feed additives stifle innovation for development of improved diets and impede the industry's global competitiveness; they must be revised.

Shellfish Health

The Committee learned that several shellfish aquaculture operations on the East and West Coasts are afflicted by aquatic invasive species (AIS), such as the green crab, clubbed tunicate and vase tunicate. Some of these AIS prey directly on the cultured shellfish, while others out-compete them for habitat and resources. AIS affect growth and meat yield and cause increased maintenance and labour costs for growers and processors. The

Committee was told that, once an invasive species has become established in an area, it is essential to develop innovative technologies and practices to effectively manage it. We support this suggestion. In our view, it is especially important to initiate a rapid response in the early stages of invasion.

Healthy and Productive Ecosystems

Environmental Impact of Marine Finfish Aquaculture

It was explained to the Committee that, during the functioning of marine finfish aquaculture operations, organic material is released into the surrounding waters. Some of this material settles on the seabed at or near the cage sites where it can accumulate, while some is dispersed into the water column, spreading the wasted organic matter beyond the perimeter of the aquaculture site. Accordingly, aquaculture operations generate both near-field (localized) and far-field (distant) effects. Research conducted in Canada and Norway suggests that aquaculture has a low impact on the benthic environment, particularly in the near-field. The far-field effects, however, take longer to develop, are more difficult to detect and thus less understood. The Committee believes that these effects, which may include changes in planktonic communities around finfish operations and eutrophication, require further study.

We also heard particular concerns about the potential impact of sea lice treatments on non-target organisms, more particularly on lobster. To date, research has shown that the dilution, dispersal and toxicity levels of different sea lice control products vary with the pesticide used, the treatment method and water flow regimes. While we recommend access to a wider range of products provided by a MUMS Program for Aquaculture, we nonetheless recommend further study on the effects of these products on non-target organisms.

Impact on Wild Salmon Stocks

The escape of aquacultured fish and its impact on wild fish stocks were discussed at length during the Committee's study. On the West Coast, we learned that the risk to wild Pacific salmon stocks from escaped aquacultured Atlantic salmon is low; there is minimal interaction between the aquacultured Atlantic salmon and the wild Pacific salmon, either through competition for habitat and food or as predators. In addition, escaped aquacultured Atlantic salmon has not been shown to successfully mate with wild Pacific salmon.

On the East Coast, however, research has shown that Atlantic salmon escapes can successfully mate with wild fish of their own breed and that such interbreeding reduces the new generation's ability to survive in the wild. Larger (and therefore healthier) wild populations appear to be more resilient and therefore less affected by the escapes of aquacultured salmon. Conversely, weaker wild populations (such as those endangered or threatened) appear to be more affected by the escaped salmon and show more signs of genetic change due to interbreeding. Although the Committee is encouraging the sustainable growth of the aquaculture industry in Canada, we believe that such growth should not be supported to the detriment of wild salmon stocks. Accordingly, restrictions should be considered to ensure that aquaculture operations growing Atlantic salmon on the East Coast are located far from wild salmon populations that are deemed to be at risk.
We were pleased to learn that DFO struck the Ministerial Advisory Committee on Atlantic Salmon in an effort to better understand the health of wild salmon populations on the East Coast. This information could help DFO and the aquaculture industry to re-evaluate, if necessary, the location and functioning of aquaculture operations growing Atlantic salmon, as well as help determine the risk associated with any new proposed aquaculture sites.

On the West Coast, witnesses also spoke about the potential for transfer of disease and parasites between aquacultured and wild fish. The effect of sea lice infestations on wild salmon populations was debated. Some witnesses expressed concerns about wild juvenile salmon swimming near aquaculture grow-out sites during their outmigration. They explained that, at that stage, the fish are very small and they do not have a scale load: when one or two sea lice attach to them, they either die or become crippled and subject to predation or other pathogens. In contrast, some research presented to the Committee showed that sea lice in aquaculture grow-out sites did not play a significant role in the decrease of wild Pacific salmon productivity. Other experts explained that the risk of disease being transferred from aquacultured fish to wild fish is low: diseases from aquaculture sources kill less than 1% of wild salmon per year; this rate, it was stressed, is much lower than the estimated natural mortality of juvenile wild salmon of 3% per day. Overall, the Committee recognizes that there is a lack of knowledge about the health of wild Pacific salmon stocks. We were pleased to learn about the Strategic Salmon Health Initiative, a collaborative study by DFO, the Pacific Salmon Foundation and Genome BC. The study intends to assess the presence and/or absence of 45 pathogens in samples collected in wild, hatchery and aquacultured salmonids in B.C. between 2012 and 2018. It is the view of the Committee that this research will inform improved risk assessment related to pathogen transfer from aquacultured to wild salmon.

Environmental Impact of Shellfish Aquaculture

The Committee heard less testimony on the potential environmental impacts of shellfish aquaculture, in comparison with marine finfish aquaculture. However, witnesses who spoke about specific environmental concerns regarding this sector raised important issues. In B.C., certain shellfish aquaculture operations have been known to generate large amounts of debris, such as plastic and Styrofoam®, which are left in waters and on shores. In addition, when production comes to a close at certain locations, gear and other apparatus are abandoned in the water instead of being removed. Although these operations only represent a limited number of shellfish growers across Canada, they hinder the reputation and social licence of other shellfish growers that are vigilant in their use of the environment and considerate of other users. The Committee cannot in good conscience condone operations working in this manner. DFO is responsible for licensing shellfish aquaculture in B.C. and, accordingly we recommend that the Department strictly enforce compliance with the licence conditions and the provisions under the *Pacific Aquaculture Regulations*. In our view, site debris should be managed appropriately in all aquaculture sectors – shellfish and finfish – and in all regions – both the West and East Coasts.

Research and Development

Collaborative Research

There is a strong foundation of aquaculture research and development (R-D) in Canada. At the federal level, a number of departments and agencies fund, carry out and/or collaborate on aquaculture-related research. During site visits throughout Canada, the Committee visited several research facilities that have been performing world-class R-D on a wide range of topics related to aquaculture for decades. This research has helped improve the industry's environmental performance and led to stricter government regulations. During our fact-finding missions to Norway and Scotland, we were told that Canada is internationally recognized for the high calibre of its aquaculture R-D and that the effectiveness of its research could be further improved through stronger collaboration.

Witnesses told the Committee that the federal government had reduced its investment in aquaculture R-D programs in recent years. Given limited resources, we believe that it is imperative to prioritize research that improves the environmental management and performance in aquaculture. Furthermore, priority funding should be given to collaborative work. To achieve this, we recommend that a formal mechanism fostering R-D collaboration between all stakeholders be developed. This mechanism will facilitate the sustainable growth of the industry.

Synthesizing Research and Communicating its Findings

During Committee hearings, witnesses often pointed to the need to synthesize the results of current research. They explained that, while a considerable amount of R-D has been conducted on the effects of aquaculture on the environment in Canada and abroad, this body of research has never been compiled, synthesized, and interpreted. We share their views. This exercise, albeit a large undertaking, will identify gaps in R-D that require further study. Moreover, the Committee was told that the results of this exercise should be communicated to the general public in a way they can easily assimilate. In our view, this information will contribute to more informed discussions and debates on aquaculture and help everyone understand how the industry can continue to operate and grow sustainably into the future.

Social Licence and Public Reporting

Reporting to the Public

Public concern about the potential environmental effects of aquaculture is high in some parts of the country. Some of these concerns are genuine and stem from irresponsible practices and/or inadequate management. Correcting these situations will certainly improve the aquaculture industry's social licence. For industry, this means being responsible and capable of demonstrating its sustainability. For government, this means adopting and enforcing a rigorous and science-based governance framework that protects precious resources – our wild salmon stocks, other wild fish populations, and sensitive habitats – and preserves them for years to come.

Public trust can also be improved by government openly providing information about the aquaculture industry and disclosing the industry's environmental performance data. Norway and Scotland release information to the public on a wide range of topics related to aquaculture and such information is shown to enhance the industry's social licence. In Scotland, the main departments and agencies regulating the industry have joined to establish a website that serves as a single point of access to a database on aquaculture. There is no single agency reporting information about the industry to the public in Canada. The information that is currently available is found in separate locations; it is not released in a timely fashion and is very limited compared to what is publicly accessible in Norway and Scotland. Under the proposed *Aquaculture Activities Regulations*, DFO will collect and release annually data on benthic monitoring as well as on the use of veterinary drugs and pest control products in aquaculture operations. These data, however, will be aggregated, not presented for each operator. Other information about aquaculture operations will also be available from provincial regulatory departments and agencies. The Committee makes a recommendation to ensure that Canadians seeking information on aquaculture operations can find it in a single convenient place.

LIST OF RECOMMENDATIONS

LEGISLATIVE AND REGULATORY FRAMEWORK

1. **That Fisheries and Oceans Canada introduce a federal aquaculture Act that responds to the concerns voiced during the Committee study and that asserts the full extent of federal jurisdiction. The Committee further recommends that the Act include the following:**

- **a strong preamble that expresses federal support for the orderly expansion of an environmentally, economically, and socially sustainable aquaculture industry and that recognizes the important economic contribution of the industry in remote, rural, and coastal communities across the country, including First Nations;**

- **a consolidation of existing and proposed federal regulations governing aquaculture currently under the *Fisheries Act*;**

- **an explicit power for the Minister of Fisheries and Oceans to veto any proposed aquaculture site that, in the Minister's opinion, poses an unacceptable risk of harm to wild fish or fish habitat, or other environmental risks;**

- **a new administration housed within Fisheries and Oceans Canada charged with the coordination of the federal regulatory role in aquaculture. The new administration should be a one-stop shop responsible for all federal functions in aquaculture – including those of the Canadian Food Inspection Agency, Environment Canada, Transport Canada, Fisheries and Oceans Canada and others – to ensure a streamlined and efficient regulatory regime for aquaculture;**

- **timelines for the diverse federal decisions on aquaculture authorizations; and**

- **non-regulatory provisions in relation to aquaculture statistics and public reporting on the operation of the industry.**

2. **That Fisheries and Oceans Canada renegotiate existing bilateral Memoranda of Understanding on Aquaculture Management within 18 months of the coming into force of the new federal aquaculture Act to accelerate harmonization and reduce duplication; and**

- **That the National Aquaculture Strategic Action Plan Initiative be extended for another two-year term and be mandated to complete work on national consistency and simplicity in aquaculture regulation.**

HEALTHY AQUACULTURED FISH

3. **That Fisheries and Oceans Canada develop and establish with Health Canada and the Pest Management Regulatory Agency a Minor Use, Minor Species Program for Aquaculture.**

4. **That the Canadian Food Inspection Agency revise Schedule 5 of the regulations under the *Feeds Act* to include a wider range of additives or ingredients for use in the formulation of fish feed.**

5. **That Fisheries and Oceans Canada work with the provinces and the aquaculture industry to evaluate, within the next two years, new technologies and methods for the effective management of aquatic invasive species in the shellfish aquaculture sector.**

HEALTHY AND PRODUCTIVE ECOSYSTEMS

6. **That Fisheries and Oceans Canada undertake collaborative research on the far-field effects of marine finfish aquaculture and on the potential impacts of pest control products used for sea lice management on non-target organisms; these fields of research should be given priority.**

7. **That Fisheries and Oceans Canada regularly undertake inspections and consistently enforce compliance in relation to shellfish aquaculture in British Columbia and, in particular, in situations where any floating material or other debris (such as shells, ropes, and buoys) is not disposed of as prescribed and/or remains in the marine environment; the Department should equally act in situations where aquaculture operators in other provinces leave debris in the marine environment.**

RESEARCH AND DEVELOPMENT

8. **That Fisheries and Oceans Canada develop without delay a formal mechanism with the provinces, the research community and the industry to foster collaborative research and development in the field of aquaculture.**

9. **That Fisheries and Oceans Canada complete within the next two years a thorough assessment of aquaculture research to inform the public on the main findings and identify gaps in research and development that would become the focus of future research.**

SOCIAL LICENCE AND PUBLIC REPORTING

10. **That Fisheries and Oceans Canada, with input from the provinces via the Canadian Council of Fisheries and Aquaculture Ministers, establish within the next two years a central database accessible to the public that contains all currently available information pertaining to the licence and compliance of each aquaculture operator.**

INTRODUCTION

With the tabling of Volume Three, the Standing Senate Committee on Fisheries and Oceans (the Committee) has come to the end of a long journey that began in December 2013, during the 2nd session of the 41st Parliament, when the Committee received a mandate from the Senate "to examine and report on the regulation of aquaculture, current challenges and future prospects for the industry in Canada."[1]

Volume Three is therefore the culmination of an 18-month-long study on aquaculture. During this period, the Committee sat for 66 hours, held 34 public hearings, heard the views of 138 witnesses, and received hundreds of written submissions and other documentation. Senators also visited 23 Canadian regions in six provinces – British Columbia (B.C.), New Brunswick (N.B.), Newfoundland and Labrador (N.L.), Nova Scotia (N.S.), Prince Edward Island (P.E.I.), and Québec (QC) – and completed fact-finding missions in Norway and Scotland. Overall, the Committee met with a wide range of groups and individuals who shared their views about aquaculture, including: officials from regulatory bodies, industry representatives, workers employed in various segments of the industry, academics, researchers in not-for-profit organizations and government establishments, First Nations Chiefs and other Aboriginal individuals or groups, salmon conservation organizations, representatives from the commercial capture fisheries and recreational fishing sectors, mayors, community groups, and individual citizens.
We wish to express our sincerest thanks to all those who took the time to appear as witnesses before the Committee as well as all those who welcomed us warmly during our site visits. We gave serious consideration to their comments and suggestions as we developed our own observations and conclusions about aquaculture and the challenges and prospects for this industry in Canada.

Overall, our main message is that there is an ocean of opportunities for aquaculture in Canada. We are confident that the Canadian aquaculture industry can grow steadily within the next 10 years and do so sustainably – environmentally, economically and socially. To help achieve this sustainable growth, we propose a set of recommendations articulated by five main themes: Legislative and Regulatory Framework; Healthy Aquacultured Fish; Healthy and Productive Ecosystems; Research and Development; and Social Licence and Public Reporting. Deadlines are associated with most of our recommendations and are set to start with the tabling of this report.

This volume outlines the Committee's rationale for support of a growing sustainable aquaculture industry in Canada. It also addresses environmental considerations and proposes recommendations on what can be done to overcome constraints and impediments that keep Canada from achieving its full aquaculture potential. In our view, the set of recommendations that we propose will ensure that a robust legislative and regulatory framework exists for aquaculture – one that enables the growth of the industry, protects the broader aquatic environment, ensures its sustainability, and generates much needed tangible and long term economic benefits in many regions of the country and to Canada as a whole.

We encourage readers to consult Volume One and Volume Two to learn more about the aquaculture industry and its governance in Canada, Norway and Scotland.[2]

1 Senate of Canada, ***Journals of the Senate***, 2nd Session, 41st Parliament, 9 December 2013, p. 274.
2 Please note that, in this document, the testimony received from witnesses and printed in the ***Minutes of Proceedings and Evidence of the Standing Committee on Fisheries and Oceans*** will be hereinafter referred to only by issue number and page number in brackets within the text.

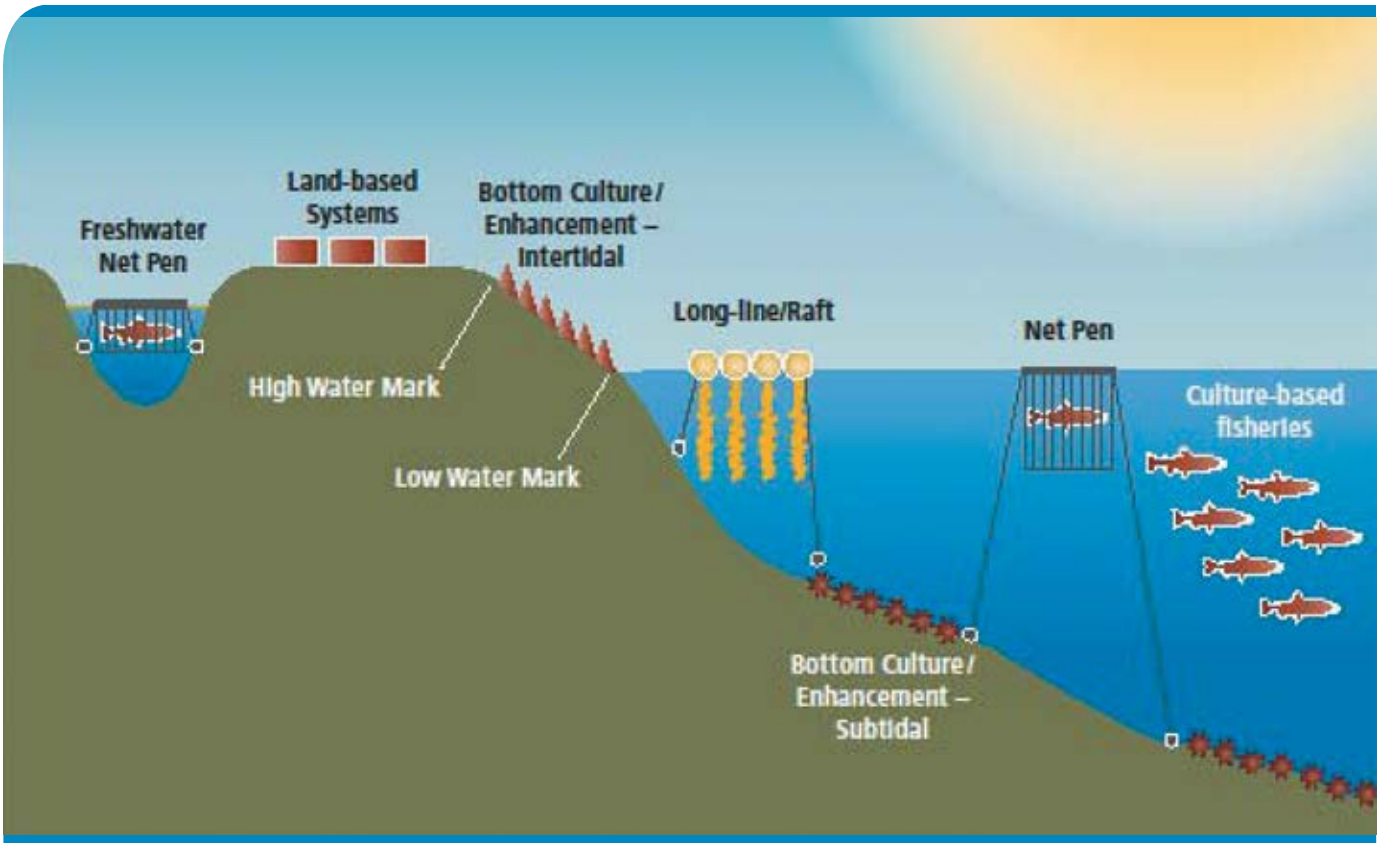
CHAPTER 1: Aquaculture: a Growing Industry

1.1 What is Aquaculture?

Aquaculture is the cultivation and harvesting of aquatic organisms – finfish, shellfish, molluscs and aquatic plants. Aquaculture can take place in a variety of environments – in the ocean (in coastal areas and offshore), in freshwater (in lakes and ponds) and on land (in tanks). The cultivation of a single species is usually referred to as a monoculture, while the cultivation of two or more complementary species in a same location is referred to as a polyculture or integrated multi-trophic aquaculture (IMTA). The techniques and technologies used in aquaculture vary depending upon the environment chosen and the species being cultivated. The principal categories of aquaculture operations are represented in Figure 1.

Cage aquaculture or "net pen" operations are used to grow finfish in freshwater and in marine environments. They have infrastructure both below and above water, which consists of floating

Figure 1 – Types of Aquaculture Operations



Source: Fisheries and Oceans Canada, ***Aquaculture in Canada in 2012: A Report on Aquaculture Sustainability***, 2012, p. 7 [REPRODUCED WITH PERMISSION].

containment structures anchored to the bottom to keep them in place, and the cages are usually surrounded by metal walkways. The net mesh sizes vary depending on the size of the fish being reared. Additional netting is often attached around the containment structures to discourage predators and a top cover also protects fish against birds. Fish raised in marine cage aquaculture are usually fed by automatic feeders that rely on underwater cameras to monitor feeding behaviour and control feed delivery; such monitoring helps ensure that fish have enough to eat while minimizing waste and reducing the impact of uneaten feed on water quality. Trout is often cultivated in freshwater, while a variety of finfish species (such as salmon, sablefish, and steelhead) are grown in the ocean. Marine cage aquaculture operations often have additional floating infrastructure including an office, fish health lab, feed storage area, and accommodation for staff. Most aquaculture in freshwater and marine environments operates in public waters. While cage aquaculture is the method used in the cultivation of finfish in Canada, closed and semi-closed floating containment technologies have been tested in freshwater and marine environments. These technologies seek to isolate the rearing environment from the natural environment in order to reduce or eliminate the interactions between the two.

Other marine aquaculture methods are used to grow a variety of shellfish species. Bottom culture in the intertidal zone consists of planting shellfish directly in the substrate of the beach. This method is used to grow clams and is also used for oysters during their nursery rearing (before being placed in grow-out sites in deeper water). Bottom culture within the sub-tidal zone is virtually identical to bottom culture in the intertidal zone, the principal difference being the location of the activities. Species such as scallops and geoducks (a large species of clam) are usually raised in a hatchery or rearing environment and then transferred onto the seabed using an underwater mechanical seeder. Long-line and raft culture operations in sub-tidal waters consist of ropes, trays, and rafts that are anchored to the seabed. This method – which is termed either as "water column culture", "off-bottom culture" or "suspended culture" – is used to grow a variety of species, including mussels, oysters and scallops (as well as aquatic plants). In contrast to finfish, shellfish only feed on naturally-occurring organisms found in the water. Furthermore, the shellfish aquaculture sector relies (to a great extent) on wild seed collection, in contrast to the finfish sector which obtains smolt from hatcheries.

Culture-based fisheries or "sea ranching" is a specific form of aquaculture that is used to supplement wild stocks with hatchery-produced fish. Examples include the Salmonid Enhancement Program in B.C. and the Alaskan culture-based salmon fishery. Culture-based fisheries are not discussed in this report.

Land-based, closed-containment facilities operate on private property and use recirculating aquaculture systems (RAS) to grow a variety of species, such as trout, char, sturgeon, and halibut. Most often, however, land-based RAS are used by the salmon aquaculture sector; these are hatcheries that grow smolt, accounting for about one third of the fish's lifecycle.[3]

During fact-finding missions in Canada and abroad, the Committee had the opportunity to visit different types of marine aquaculture operations – seven finfish and two shellfish grow-out sites,

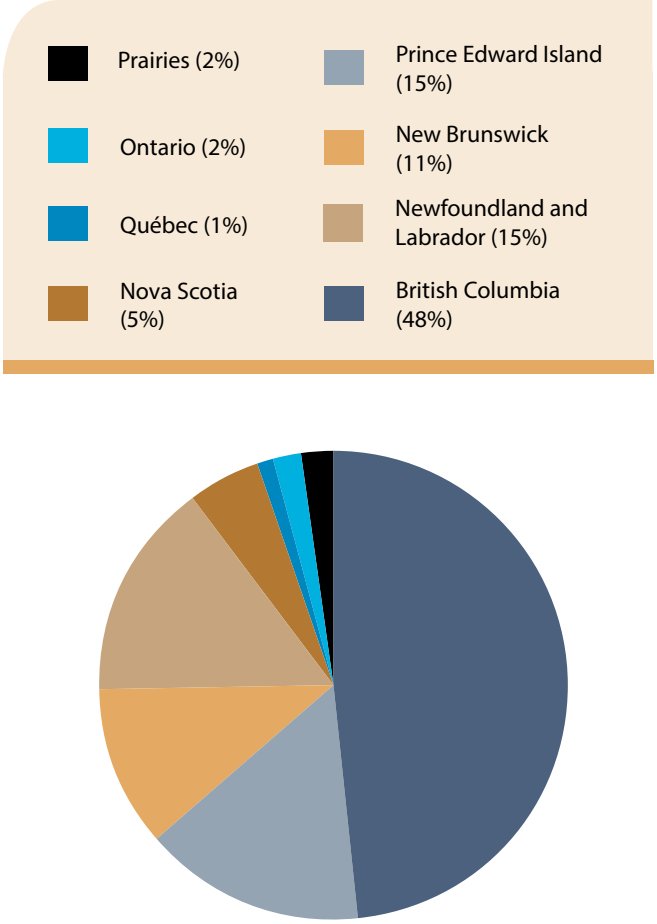
3 RAS utilizes intensive filtration processes to enable more than 90% of total process water to be continually reused within the system.

as well as two IMTA operations – and a variety of land-based RAS establishments, including three salmon smolt hatcheries, one sea scallop hatchery/nursery and three closed-containment facilities supplying niche markets. Overall, we learned a lot about the growing techniques and technologies used in aquaculture and we were impressed by the level of scientific knowledge developed by and for the industry and the robust biosecurity measures required to operate effectively and safely.

Furthermore, these site visits allowed the Committee to acknowledge the diversity of the industry, particularly across the country, and to better understand the aquaculture value-chain, which goes beyond hatchery and grow-out operations and encompasses a wide range of activities, such as net cleaning, diving services, equipment maintenance and repair, boat transportation, fish feed production, veterinary services, equipment manufacturing, fish processing, packaging supplies, and marketing. All these activities generate added value in both the upstream and downstream sectors.

We saw first-hand the important contribution the aquaculture industry makes to Canada's economy. Currently, aquaculture represents about a third of Canada's total fish and seafood production by value and 20% by volume. National aquaculture production, including both the marine and freshwater sectors, is divided about equally between the West and East coasts. As shown in Figure 2, B.C. accounted for about 48% of the total production volume in 2013, followed by P.E.I. and N.L. at 15%, N.B. at 11%, N.S. at 5%, Ontario (ON) and the Prairies at 2%, and QC at 1%. In addition, there is some aquaculture production in the Yukon Territory (however, the volume produced is too small to appear in Figure 2). In the Committee's opinion, regions across the country can all benefit from a growing and sustainable aquaculture industry.

Figure 2: Aquaculture Production in Canada by Province (Percentage of Volume), 2013



Source: Fisheries and Oceans Canada, ***Aquaculture – Production Quantities and Values*** [accessed 21 April 2015].

1.2 Canadian Aquaculture in the Global Economy

Fish and seafood are healthy and nutritious food choices and the global demand for these products is steadily increasing. Currently, nearly 50% of the fish and seafood consumed worldwide – 66 million tonnes – is produced from aquaculture. Given the stability in global capture fisheries production, the United Nations' Food and Agriculture Organization (UNFAO) forecasts that aquaculture will need to supply an additional 40 million tonnes to feed the rising world population by 2030.[4] Clearly, aquaculture is here to stay.

Canada has the world's longest marine coast line and the largest number of freshwater lakes. In addition to its abundance of "pristine" water, this country has a diversified (albeit modest) aquaculture industry, a rigorous regulatory regime and world-class aquaculture-related research. Canada is therefore well positioned to help supply the growing global demand for fish and seafood and to do so in a sustainable manner. Although Canada is the 4th largest salmon producer worldwide, behind Norway, Chile and Scotland, it remains a relatively small global aquaculture producer, ranking 21st (finfish and shellfish combined).

Between 2003 and 2013, total aquaculture production in Canada grew by 0.4% on average annually, while average annual growth reached almost 20% between 1986 and 2002 (see Figure 3). In comparison, aquaculture production grew by 8.0% on average annually in Norway and by 1.5% in Scotland between 2003 and 2013. The Scottish Government aims to produce 226,000 tonnes of aquacultured products by 2020, or an average growth of 5% per year. The Norwegian Government has not set specific aquaculture production targets but is committed to sustainable industry growth. There are no production targets set by the federal government for aquaculture in Canada at this time.

The Canadian Aquaculture Industry Alliance (CAIA) estimates that Canada could more than double its aquaculture production within 10 years (2014-2024), from about 173,000 to over 378,000 tonnes of finfish and shellfish.[5] This potential growth of 205,000 tonnes in Canadian aquaculture production over the next 10 years is less than Norway's aquaculture production increase of 301,000 tonnes between 2010 and 2012. CAIA's estimate is based on the following assumptions: an average annual production growth of 5% achieved through productivity improvements at existing aquaculture sites during the first five years; and, an average annual production growth of 10% during the following five years, achieved through a 38% increase in new sites.

The Committee wishes to note that the 5% average annual production growth between 2014 and 2019 is similar to the target established in Scotland. The 10% average growth in production between 2019 and 2024 remains much below the growth rate experienced between 1986 and 2002, when the industry established itself in Canada. Achieving these growth rates sustainably would allow Canada to become more competitive on global markets and to better position itself as a world leader in sustainable aquaculture production.

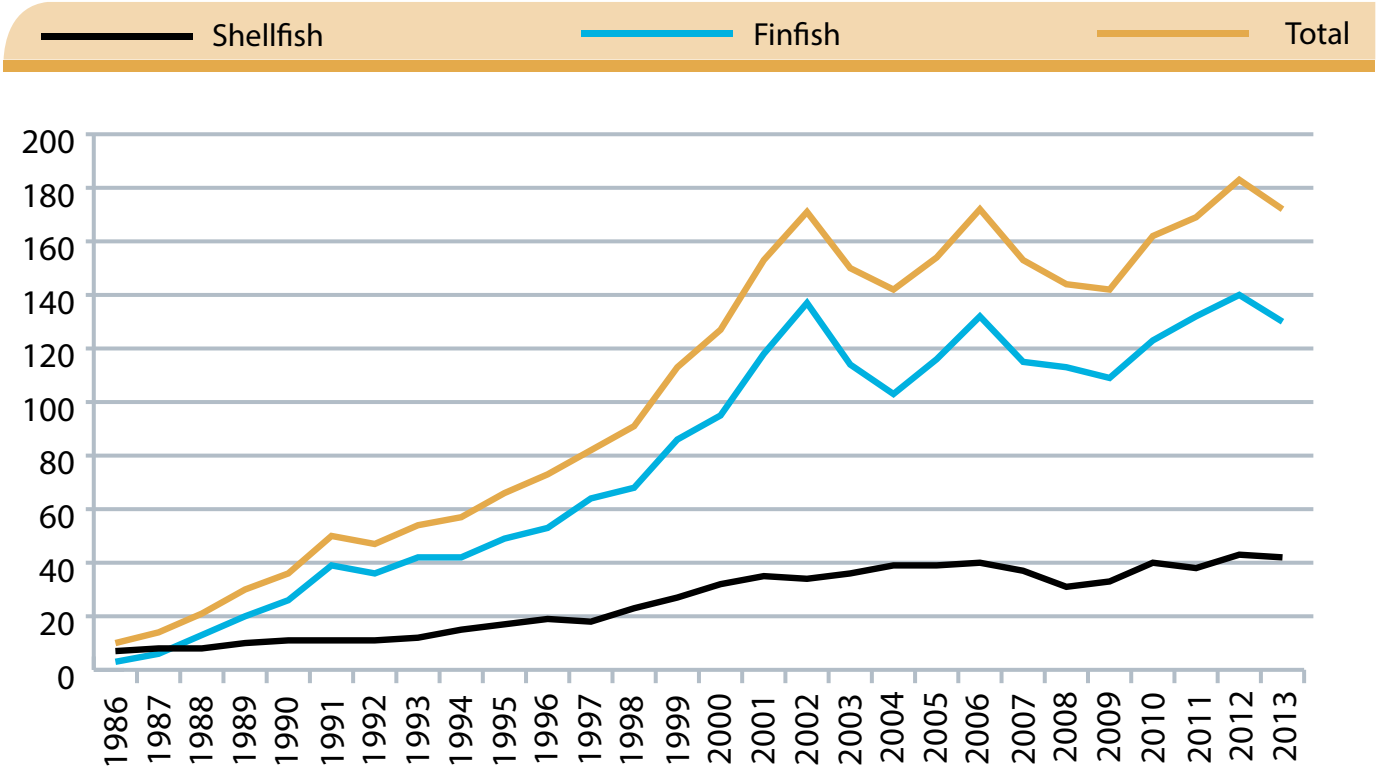
The Committee is willing to support the goal of doubling aquaculture production within the next decade, provided the following occurs: the adoption of legislative and regulatory reforms that

4 UNFAO, ***The State of World Fisheries and Aquaculture***, 2014.
5 Canadian Aquaculture Industry Alliance, *Canada's Aquaculture Industry: Potential Production Growth and Footprint*, 17 November 2014.

contribute to a rigorous governance regime and sound aquaculture management practices that minimize impacts on the environment – all informed by world-class research and development. Altogether, these conditions should help gain and maintain strong public support for Canadian aquaculture, while creating a business climate favorable to the industry's sustainable development.

Parallel to this development in the marine and freshwater aquaculture sectors, the Committee further believes that new opportunities for growth should be encouraged in the areas of land-based, closed-containment aquaculture, the monoculture of aquatic plants, and IMTA, given Canada's comparative advantage in these sectors.

Figure 3: Aquaculture Production in Canada (in Thousands of Metric Tonnes), 1986 to 2013



Source: Fisheries and Oceans Canada, ***Aquaculture – Production Quantities and Values*** [accessed 21 April 2015].

1.3 Contribution of Aquaculture to the Canadian Economy

> *For many years, (...) economic development was at a virtual standstill in Charlotte County until aquaculture came to our shores in about the late 1980s. Now, one out of four jobs in Charlotte County are directly or indirectly related to the aquaculture industry, driving millions of dollars into our local economies, and as a result of this certainty of consistent, year-round employment that the aquaculture industry offers, young families are purchasing homes and buying cars and generally pumping their disposable income into our local economies. Further, I am certain many of those dollars find their way to the economies of Saint John, Moncton and Fredericton. (...)Industry representatives can be found coaching teams, local teams, they are volunteer firefighters, school mentors, and they contribute financially to our recreational and cultural facilities. In my view, the aquaculture industry promotes healthy, sustainable communities in their entireties, and it is my hope that all levels of government assist this industry in their regulatory processes so that communities such as ours can continue to experience both social and economic growth and development. Teresa James, Mayor, Village of Black's Harbour (14:92-93)*

In Volume One and Volume Two, the Committee discussed the results of studies that estimated the economic repercussions of the aquaculture industry in Canada, Norway, and Scotland. These studies explained that, in addition to producing its own output, the aquaculture industry triggers activity elsewhere in the economy through direct, indirect and induced impacts. The direct impacts are those associated with hatchery and grow-out activities. Indirect impacts estimate the activities generated by other industries that provide goods and services to the aquaculture industry. Induced impacts account for all spending that occurs in the economy generated from individuals employed in direct aquaculture operations and in indirect industries; these individuals spend their income in other areas of the economy on items such as cars, housing, and other retail goods.

The Canadian study showed that the aquaculture industry generated over $1 billion in Gross Domestic Product (GDP) in 2010, with $354 million in direct GDP and $710 million in indirect and induced impacts. The industry created 5,828 direct full-time-equivalent jobs (FTEs), with an overall employment impact of over 14,000 FTEs. It generated direct labour income of $193 million, with an overall income impact of $618 million. According to the study, the aquaculture industry has helped revitalize remote, rural and coastal communities, including First Nations and other Aboriginal communities, and is, overall, an important sector of economic activity for Canada. The Committee wishes to stress that the indirect and induced impacts generated by the aquaculture industry and its contribution to other regions, through processing and other support activities, often remain unrecognized but are nonetheless substantial.

That said, this industry has great potential. According to the CAIA, if the goal of doubling aquaculture production by 2024 were met, this could mean a total economic impact of $2.5 billion in GDP every year and the ongoing overall employment of 32,500 FTEs.[6] The Committee believes that, for this to be fully realized, the industry must continue to demonstrate its commitment to improved environmental performance and sustainable growth,

6 Ibid.

along with a research and academic community that is well positioned to underpin that development. We want to see the aquaculture industry continue to thrive, using world-leading science and research to guide its sustainable growth.

1.4 Areas Suitable for a Growing Industry

According to the CAIA, the Canadian aquaculture industry currently produces 45 different species of finfish and shellfish, as well as a few species of aquatic plants, using approximately 37,000 leased hectares of coastal areas and lakes or about 1% of the potential areas biophysically suitable for aquaculture.[7] Achieving the goal of doubling aquaculture production within the next 10 years would require a total of 51,400 leased hectares, or 1.35% of the total biophysically suitable area, leaving "(...) untouched much of the water area biophysically suitable for aquaculture in Canada".[8]

Currently, however, it is unclear where the areas of greatest expansion potential are located in Canada. In this respect, Scotland is more advanced: coastal areas suitable, potentially suitable or unsuitable for marine finfish aquaculture development have been identified[9] and further guidance on the most appropriate location is provided in relation to visual and landscape considerations.[10] Only P.E.I. has a similar system which designates zones – as acceptable, conditional or not acceptable – where shellfish aquaculture operations can or cannot be located. A system of classification for marine finfish aquaculture based on the Scottish model has been proposed in N.S. by an independent review panel, but the provincial government has not yet responded to this recommendation. Research is underway in N.L. to investigate the oceanographic conditions in some regions of the province in order to identify areas offering further aquaculture development potential. Similarly, work is ongoing in QC to establish zones where shellfish aquaculture could be established. In N.B., the development of additional marine finfish aquaculture sites in coastal areas is very limited, although there are possibilities for establishing aquaculture operations offshore. This being said, there is potential for further development of the shellfish sector in the province; it is however unclear whether research has been undertaken to identify zones suitable or unsuitable for this purpose. In B.C., the long Pacific Coast, with its relatively temperate waters, is ideally suited for aquaculture, but again, it is unclear whether there is active investigation to identify sites suitable for aquaculture. Furthermore, there is interest in developing seaweed aquaculture and IMTA in several provinces (B.C., N.B., N.S., and QC) and suitable locations should also be identified to accommodate these sectors.

The Committee believes that work must continue to determine the areas that are most suitable for aquaculture growth in the marine and freshwater environments (for finfish, shellfish, and aquatic plants, as well as for IMTA). This work must take into account the potential environmental impacts, competing claims from other users, the landscape and visual aspects of aquaculture infrastructure, and the local community's acceptance of such

7 Ibid.
8 Ibid.
9 Marine Scotland Science, ***Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters***, March 2015.
10 Scottish Natural Heritage, ***The Siting and Design of Aquaculture in the Landscape: Visual and Landscape Considerations***, November 2011.

aquaculture development. We were told that First Nations know a great deal about the areas where they live, the surrounding waters and the aquatic ecosystems they depend on for their sustenance. This knowledge has been accumulated through generations of living in close contact with nature. The search for suitable aquaculture sites will greatly benefit from Aboriginal traditional knowledge early on in the process, along with more conventional scientific knowledge.

1.5 Emerging Technologies

1.5.1 Land-Based, Closed-Containment Technologies

For a variety of reasons, the use of RAS facilities is likely to increase. This is particularly true of freshwater RAS salmon hatcheries and smolt production units that would be needed to achieve the potential expansion of finfish aquaculture in Canada. There is also recent interest in both Norway and Scotland in rearing Atlantic salmon to an interim weight of 1 kg before transfer into marine net cages, in order to reduce interactions with wild fish populations. Such an approach may also be explored in Canada, further increasing the use of RAS technology.

Similarly, land-based RAS supplying niche markets can be expected to face an increasing demand for their seafood products. Throughout its fact-finding missions, the Committee had an opportunity to meet with innovative entrepreneurs, tour their RAS facilities and discuss future opportunities and challenges with them. A few examples include:

- In B.C., the Committee had the opportunity to visit Taste of B.C. Aquafarms Inc., a small RAS facility located in Nanaimo that raises Steelhead trout. During the tour, we were told that there is great potential for smaller "family farm scale" land-based, closed-containment facilities in developing niche markets for their products.
- In N.B., the Committee visited Breviro Caviar, a company that grows shortnose sturgeon for both meat and caviar. The company operates three land-based, closed-containment facilities in the province, located in St. Andrews, Pennfield and Charlo. Breviro is the only company in the world to hold the licence under the Convention on International Trade and Endangered Species (CITES) to grow and sell caviar from the shortnose sturgeon.
- In P.E.I., the Committee toured Halibut P.E.I., a land-based facility growing Atlantic halibut. The company purchases juveniles from Scotian Halibut Limited (N.S.) and grows them in tanks using salt water sourced from underneath the Island through wells.
- In QC, the Committee visited Fermes marines du Québec Inc., which is involved in the production of scallops and operates a hatchery and several grow-out sites. More particularly, we toured the hatchery located in Newport in the Gaspé region, a state-of-the-art building which uses saltwater and is entirely automated with touchscreen panels.

During the hearings, the Committee also heard more about land-based, closed-containment technologies:

- The 'Namgis Salmon Farm, also called the Kuterra Project, located near Port McNeill, B.C., is the first land-based, closed-containment facility in Canada that succeeded in producing Atlantic salmon at a commercial scale. The project benefited from several public and private organizations that financed its initial capital costs of about $9.5 million. The construction began in December 2011, the

first smolt entered the facility in March 2013 and the first harvest of Atlantic salmon occurred in April 2014. The Kuterra Project currently sustains five FTEs in this First Nations community.

- Scotian Halibut Limited is a N.S. company operating a hatchery and broodstock facility in Clark's Harbour, and a land-based RAS facility in Lower Woods Harbour. The company is the largest marine hatchery in Canada, the second largest producer of halibut juveniles in the world and the largest producer of market halibut in Canada.

- Sustainable Blue, a land-based RAS facility growing Arctic char, European sea bass and rainbow trout in Centre Burlington, N.S., also began growing Atlantic salmon as a demonstration project in June 2013. The trial produced encouraging results prior to its untimely termination in March 2014 due to an incident related to the facility's power and control systems.

The main message we took from all these entrepreneurs is that they need to have access to capital to allow their operations to achieve an economy of scale required for profitability in addition to start-up capital since the initial cost of building a RAS facility is daunting. As the global demand for fish and seafood increases, the demand for fish and seafood produced with "greener" technologies, such as RAS facilities, is likely to increase. The Committee supports the development of land-based, closed-contained technologies in niche markets for which opportunities for growth exist.

1.5.2 Closed and Semi-Closed Floating Tanks and Offshore Technologies

The Committee also heard testimony on other innovative technologies that are being tested for finfish aquaculture, including closed and semi-closed floating tanks and offshore technologies:

- Closed and semi-closed floating tanks have been tested in Canada with limited success growing finfish in both marine and freshwater environments. Research continues, however, to help find ways of improving the durability and efficiency of these technologies.

- Offshore aquaculture was presented to us as a way of optimizing environmental conditions (greater currents help continuously replenish oxygen levels within cages and disperse waste) while at the same time, minimizing conflicts with other ocean-user groups. Offshore aquaculture was also discussed as being interesting for use in very large aquaculture operations. The Committee was told that this emerging sector offers opportunity for further development in finfish aquaculture, particularly in N.B. and N.S. However, it was also indicated that offshore aquaculture raises technological issues such as the need to function in more remote and challenging environments, where operations would face greater weather events (e.g., storms) and would require employees to work in remote locations, far away from the coast. This could also require the automation of a large portion of aquaculture grow-out operations.

These emerging technologies offer potential to further develop aquaculture in Canada. Accordingly, the Committee believes that their environmental performance and their economic viability need to be further assessed.

CHAPTER 2: Legislative and Regulatory Framework

> *Sustainability, the principal goal of aquaculture governance, enables aquaculture to prosper over a long period. It entails economic viability, social licence, environmental integrity and technical feasibility. (UNFAO, 2014, p. 88)*

In Volume One and Volume Two, the Committee explained that aquaculture is typically regulated under several pieces of legislation involving many regulatory authorities and that its governance appears, by its very nature, relatively complex. This is true in Norway and Scotland, as it is in Canada. That said, national legislation governing aquaculture in Norway and Scotland ensures that companies operating in various locations within these countries are subject to a uniform and coherent set of regulations. No such national legislation currently exists in Canada.

Norwegian legislation is enabling and aims "to promote the profitability and competitiveness of the aquaculture industry within the framework of sustainable development and contribute to the creation of value on the coast."[11] While the promotion of aquaculture is not explicit in its legislation,[12] Scotland openly supports the sustainable growth of both the marine finfish and shellfish aquaculture sectors and has set production targets to reach by the year 2020. There are no production targets set by the federal government for aquaculture in Canada.

Furthermore, Norwegian legislation subjects each step of the aquaculture approval process to fixed timelines and, overall, the time limit cannot exceed 22 weeks; this process is facilitated by a one-stop-shop that coordinates the work of all the other regulatory authorities (national and local) involved in the aquaculture licence approval. In contrast, the lack of a streamlined application process is an issue often raised in Scotland and in Canada as several licences, leases, permits and approvals must be obtained separately before an aquaculture facility may operate. It is estimated that the licence application process can take between 18 months and two years in Scotland, while it can last two years or more in Canada.

2.1 Two Constitutional Realities

The involvement of different levels of government in Canada renders the governance of aquaculture more complex than in Norway and Scotland. What further complicates the situation is that the 2009 Supreme Court of British Columbia (the *Morton* decision) created two constitutional realities with respect to aquaculture within Canada.

Before 2009, the majority of aquaculture regulation was carried out at the provincial level, while the federal government used its fisheries power to regulate protections for wild fish and fish habitat that share waters with aquaculture facilities. In this way, the federal government regulated certain aspects of aquaculture indirectly. In the *Morton* decision, the court found that finfish aquaculture on the coast of B.C. is a fishery and therefore falls under federal jurisdiction. Because this decision was not appealed to the Supreme Court of Canada, the *Morton* ruling applies only in B.C. Following the *Morton* decision, the federal government drafted the *Pacific Aquaculture Regulations* (PAR) in order to assume its newly recognized role in regulating

11 Norwegian Ministry of Fisheries and Coastal Affairs, ***The Aquaculture Act***, 2005.
12 ***Aquaculture and Fisheries (Scotland) Act 2013***.

aquaculture in that province. Outside of B.C., there has been no litigation similar to *Morton*. In these provinces, the current division of responsibilities to regulate the various aspects relating to aquaculture is a product of bilateral Memoranda of Understanding (MOUs) between the federal and each provincial government.

Accordingly, the extent of the federal power to regulate aquaculture in Canada is a matter of unsettled law. Each province recognizes a different federal/provincial division of powers, depending on the MOU concluded in the province, while in B.C. the *Morton* ruling plus the federal jurisdiction asserted in the PAR prevail. There will be no nationally accepted common understanding of the federal/provincial division of powers in aquaculture until the Supreme Court of Canada rules on the matter in some future case.

Nonetheless, the Committee wants to propose a strong federal role in the regulation of aquaculture – one that would not encroach upon provincial jurisdiction as it is currently recognized in the various provinces, but that would reduce to a great extent the complexity of current federal governance and stimulate investment in aquaculture. While we understand that it is not possible to establish a clear and uniform federal regime for regulating aquaculture across the country, we strongly believe that the time has come for the federal government to assert the full extent of its recognized jurisdiction in this field.

2.2 A Federal Aquaculture Act

As explained in Volume One, the Canadian aquaculture industry is currently governed by several federal statutes administered by different departments. During the site application process, Fisheries and Oceans Canada (DFO) provides advice on the suitability of the site for aquaculture and on maximum production levels so as to minimize environmental impacts. Once a site is deemed to be suitable, the proposed aquaculture operation must be granted a number of federal authorizations prior to establishing any infrastructure or facility including, for example, an approval from Transport Canada for navigation purposes and from Environment Canada in relation to shellfish water classification. Once an aquaculture facility has obtained a federal (DFO in B.C.) or provincial (elsewhere) licence to operate and is established, its day-to-day operations are regulated by DFO (introductions and transfers, species at risk, use of deleterious substances, etc.), the Canadian Food Inspection Agency or CFIA (aquatic animal diseases, fish feed, biotoxin surveillance, etc.), and Health Canada and the Pest Management Regulatory Agency or PMRA (veterinary drugs and pest control products).

DFO is the lead federal department responsible for aquaculture management; its main piece of legislation governing aquaculture, the *Fisheries Act*, does not explicitly recognize aquaculture as a legitimate industry nor does it define it. The *Act* simply was not developed with aquaculture in mind. Although the *Act* regulates the aquaculture industry in order to protect wild fish and fish habitat – thereby fostering its environmental sustainability – it often addresses matters affecting aquaculture operations from a traditional fishery perspective that does not take into consideration the differences between wild and aquacultured stocks. The Committee learned about several examples of incongruence in the *Fisheries Act* that affect the aquaculture industry that need to be corrected, such as:

- Regulations under the *Fisheries Act* prohibit the harvesting of small oysters, as a means of protecting wild oyster populations. However, aquaculture producers grow "cocktail" oysters, which are deliberately grown to be smaller than other cultivated oysters. Harvesting small aquacultured oysters is nevertheless prohibited by the *Act*.

- Federal regulations under the *Act* also restrict harvesting seasons for wild shellfish; however, shellfish growers would like to be able to harvest their shellfish when their processors want them, which at this time is not permitted by the *Act*.
- Other regulations govern the fishing gear that must be used to harvest different wild fish species and only this specific gear can be used to catch them. Wild fish can occasionally crash into a net pen or jump into the cage, but an aquaculture operator does not necessarily have the particular fishing gear on hand to remove the wild fish from the net pen in accordance with the *Act*.

Accordingly, representatives of the aquaculture industry repeatedly told the Committee that it is important to make appropriate distinctions between the federal legal requirements that should apply to traditional fisheries, those that should apply specifically to aquaculture, and those that should apply to both. In their view, the approach taken by DFO – to treat aquaculture under fishery legislation – has caused confusion. For this reason, they called on the federal government to recognize aquaculture legislatively as a distinct and legitimate industry.

As noted above, the aquaculture industry is regulated at the federal level through other departments and agencies. The fact that these departments and agencies are involved in the management of aquaculture reflects the cross-disciplinary nature of the industry. However, the Committee heard concerns that this leads to overlap and duplication in activities associated with different federal regulations. One example given to the Committee is that aquaculture operations may require both a DFO Introduction and Transfer Licence and a CFIA permit under the National Aquatic Animal Health Program (NAAHP) to introduce or transfer finfish/shellfish to new waters. We also heard that there is duplication in monitoring and inspection activities carried out by different regulators. For example, a number of witnesses explained that the use of pest control products in grow-out sites may require inspections by the PMRA, Environment Canada, and DFO. Moreover, the Committee was told that aquaculture operations may, in certain circumstances, be given opposite guidance from different regulators. For example, the CFIA could order an aquaculture operation to cull the fish at its grow-out site according to the NAAHP, which could include by-catch, and DFO could issue a by-catch charge to the operator for complying with the cull ordered by the CFIA.

Furthermore, the scattering of provisions that pertain to aquaculture throughout a plethora of legislation and regulations makes it difficult to understand the federal role, as well as to develop a unified, uniform, comprehensive federal approach to aquaculture. In our view, maintaining the *status quo* in the federal governance of aquaculture is not a viable option.

Accordingly, we believe that it is imperative that new federal aquaculture legislation be enacted. Several other reasons justify our support for a federal aquaculture Act:

- A new Act would recognize aquaculture as a legitimate industry in Canada at the national level.
- A new Act would allow the federal government to state, in legislation, its intent with respect to aquaculture and clarify its role with respect to this industry.
- A new Act would, in one document, explain how aquaculture is managed at the federal level. This would increase public confidence in the environmental sustainability of aquaculture and in the government's ability and intent

to manage the sector effectively, efficiently and sustainably.

- Under a new Act, aquaculture would be a distinct area of public policy and would be given a higher profile than is now the case.
- A new Act would signal that the federal government is serious about aquaculture and accords the industry high recognition in its priorities. This signal would increase the confidence of investors (both Canadian and foreign) in the industry, allowing for enhanced private sector financing of industry expansion in this country.
- A new Act would provide more comprehensive mechanisms to encourage industry development while ensuring regulatory compliance.

During the hearings, several representatives of the industry insisted that they are "fish farmers" and that aquaculture is a farming activity or the aquatic form of agriculture. Like agriculture (and unlike commercial capture fisheries), aquaculture implies some form of ownership of the stocks being cultivated. The main difference between aquaculture and agriculture, in most cases, is the environment in which such activities take place – in bodies of water for the former and on land for the latter. Moreover, most aquaculture takes place in public waters, whereas agriculture usually takes place on private property. Some witnesses explained that, while it is accepted that agriculture removes the natural ecosystem and replaces it with fields either for forage or for crops, the opposite occurs in aquaculture: grow-out operations are undertaken in ways that do not permanently alter the ecosystem.

In New Brunswick, the Committee visited the St. Andrews Biological Station (SABS). Founded in 1908, the SABS is the oldest marine research facility in Atlantic Canada. In 2012, the station completed a major renovation and opened a science building and a wet laboratory that includes holding tanks and a bio-containment facility for research on live aquatic animals. Research conducted at the station helps inform DFO's regulatory mandate.

Photo courtesy of: Fisheries and Oceans Canada.

It is, after all, public property. This distinction is fundamental to us. Overall, it appears that aquaculture is not aligned with being a fishery, but it is not an agricultural activity either. In the Committee's opinion, it is something different: aquaculture is aquaculture and it deserves its own recognition.

Who then should be responsible for the administration of the federal aquaculture Act? DFO has been the lead federal department for aquaculture management for over 30 years. This responsibility was first assigned to the Department by the Prime Minister in 1984 and was reaffirmed over the years by successive governments. The Committee believes that DFO should continue its lead role. We further believe that the Department has developed the expertise by taking over the responsibility for the overall regulation of aquaculture in B.C. and is best suited to develop and administer the new Act.

Perhaps more importantly, what should be contained in the federal aquaculture Act? It is the view of the Committee that the Act must legitimize the aquaculture industry and acknowledge its important economic contribution to various regions of the country, including several Aboriginal communities. The Act must also encourage the sustainable growth of the industry. In addition, the new Act must consolidate the already existing aquaculture-related regulations (such as the PAR and the proposed Aquaculture Activities Regulations or AAR). The new statute should also include a federal veto on aquaculture development at any site in order to prevent a particularly high-risk situation for wild fish and fish habitat; this would minimize the risk of approving the development of an aquaculture site in a potentially unsuitable location. In coming to an opinion regarding risk, the Minister should be required to consider scientific information and Aboriginal traditional knowledge. The Committee further believes that the Act should lead to the creation of a new administrative body within DFO that would coordinate the activities of all federal regulatory authorities involved in aquaculture; this one-stop-shop would solve the problems of duplication, overlap, contradiction, cumbersomeness, lack of clarity, and inconsistency inherent to the current federal regime. Moreover, the Act should establish timelines, similar to those set in Norwegian legislation, for each step of the review process leading to the various federal aquaculture authorizations. Finally, some non-regulatory items could be included in relation to aquaculture statistics and public reporting on aquaculture operations across the country; this would help improve the aquaculture industry's social acceptance.

Accordingly, the Committee recommends:

1. **That Fisheries and Oceans Canada introduce a federal aquaculture Act that responds to the concerns voiced during the Committee study and that asserts the full extent of federal jurisdiction. The Committee further recommends that the Act include the following:**

- **a strong preamble that expresses federal support for the orderly expansion of an environmentally, economically, and socially sustainable aquaculture industry and that recognizes the important economic contribution of the industry in remote, rural, and coastal communities across the country, including First Nations;**
- **a consolidation of existing and proposed federal regulations governing aquaculture currently under the *Fisheries Act*;**

- **an explicit power for the Minister of Fisheries and Oceans to veto any proposed aquaculture site that, in the Minister's opinion, poses an unacceptable risk of harm to wild fish or fish habitat, or other environmental risks;**
- **a new administration housed within Fisheries and Oceans Canada charged with the coordination of the federal regulatory role in aquaculture. The new administration should be a one-stop shop responsible for all federal functions in aquaculture – including those of the Canadian Food Inspection Agency, Environment Canada, Transport Canada, Fisheries and Oceans Canada and others – to ensure a streamlined and efficient regulatory regime for aquaculture;**
- **timelines for the diverse federal decisions on aquaculture authorizations; and**
- **non-regulatory provisions in relation to aquaculture statistics and public reporting on the operation of the industry.**

The Northwest Atlantic Fisheries Centre (NAFC) is the regional headquarters for DFO's Newfoundland and Labrador Region. The NAFC consists of marine and freshwater aquaria, a stream tank, toxicity laboratories, wet labs, an open seawater system, as well as electronic, vessel, computer, oceanographic, diving, and library support. While at the NAFC, the Committee was given a tour of the facilities and was provided a brief presentation on research activities carried out at the NAFC.

Photo courtesy of: Fisheries and Oceans Canada.

2.3 Federal and Provincial Collaboration

As noted above, the specific division of roles and responsibilities in aquaculture carried out at the federal and provincial levels varies in Canada as a result of the *Morton* decision in B.C. and also because the federal government has signed MOUs with the other provinces. The Committee often heard during fact-finding missions across the country that the level of duplication and confusion and the lack of uniformity in aquaculture governance are compounded when considered from a federal/provincial perspective. It was explained that duplication could be reduced through the sharing of information between provincial and federal departments/agencies as well as the establishment of equivalent programs whereby, for example, samples taken for monitoring and compliance purposes could be tested locally for both levels of government.

These bilateral MOUs between the federal government and the provinces were signed in the late 1980s, when the aquaculture industry began establishing operations in Canada. In B.C., the MOU between the two levels of government was revised in 2010, following the *Morton* decision. The Committee believes that it is time for the federal government to modernize the various MOUs with each individual province. Revisions could be made in light of the new federal aquaculture Act while at the same time identify areas for harmonization of the regulatory and policy framework to ensure that federal and provincial regulatory activities are coordinated and coherent.

During the hearings, the Committee also learned that the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) is currently working to address a number of challenges associated with Canadian aquaculture governance. This work is carried out as part of the National Aquaculture Strategic Action Plan Initiative (NASAPI), a five-year initiative launched in 2010 to ensure the sustainable development of the aquaculture industry in Canada.[13] With respect to governance, it was agreed that NASAPI would: 1) develop consolidated environmental management frameworks based on sound scientific protocols in support of a streamlined and harmonized aquaculture site application and review process; 2) review and renew national policies and guidelines for aquaculture site applications under the *Navigation Protection Act*; 3) review federal and provincial on-site inspection requirements for each class of aquaculture operations and establish procedures to streamline and harmonize inspection and reporting protocols; and 4) address other regulatory and governance issues pertinent to sustainable aquaculture development, including clarifying the rights and obligations of aquaculture operators located in public waters and addressing matters that unduly hinder operational efficiency.

The Committee was told that NASAPI was an ambitious plan. A number of important tasks were completed under NASAPI, including the renewal of the National Code on Introductions and Transfers of Aquatic Organisms and modernization of the Canadian Shellfish Sanitation Program (CSSP). It was also a success in terms of coordination amongst the federal and provincial governments. Furthermore, it was stressed that the work undertaken under NASAPI is important and should continue (the initiative comes to an end in 2015).

Although the Committee concurs with witnesses that some important tasks were accomplished under NASAPI, it is very disappointing to see how

13 NASAPI, ***Overarching Document***, an initiative of the CCFAM, 2010.

little progress has been achieved in the area of aquaculture governance. Five years after its launch, NASAPI has not delivered on one of the major impediments to the growth of the industry in Canada, namely the lack of uniformity in federal/provincial aquaculture governance across the country. That said, we believe that the governance structure afforded by the CCFAM is very important since it ensures that provincial perspectives and priorities are respected and, for this reason, NASAPI's timeframe should be extended. An extended NASAPI however should be less ambitious and much more focussed. A number of concerns raised repeatedly during the hearings could be given priority, including, for example, the lengthy site application and review process, the lack of uniformity from one province to another in the duration of the various licences, leases and other approvals needed to run aquaculture operations, and matters that hinder operational efficiency (such as the requirement to obtain approval to change the size of net, the orientation of the cage or the placement of monitoring equipment).

For these reasons, the Committee recommends:

2. **That Fisheries and Oceans Canada renegotiate existing bilateral Memoranda of Understanding on Aquaculture Management within 18 months of the coming into force of the new federal aquaculture Act to accelerate harmonization and reduce duplication; and**

   That the National Aquaculture Strategic Action Plan Initiative be extended for another two-year term and be mandated to complete work on national consistency and simplicity in aquaculture regulation.

The Newfoundland and Labrador Department of Fisheries and Aquaculture regulates the aquaculture industry in the province, promotes its growth and development, supports aquaculture research, and plays a role in the coordination of aquaculture efforts in the province. While in St. John's, the Committee met with NL-DFA representatives to discuss the new provincial aquaculture strategy, with a particular focus on its identified research priorities.

CHAPTER 3: Healthy Aquacultured Fish[14]

The Committee repeatedly heard during the study that fish health should be the number one priority of all aquaculture operations. Healthy aquacultured fish are crucial to the productivity, profitability, and competitiveness of the industry on the domestic and international markets. Furthermore, rearing healthy fish stocks contributes to eliminating or reducing the environmental impacts of aquaculture, thereby improving the industry's reputation. After all, healthy aquacultured fish never or very rarely require drugs or pest control treatments, and have the lowest mortality rates in the industry. We were told that aquaculture producers provide the best care for the fish they raise through the adoption and use of science-based operating practices that span prevention to intervention.

In the field of fish health, DFO works closely with the CFIA under the NAAHP to protect aquatic animals and prevent the introduction and spread of disease in wild and aquacultured fish. While the CFIA has the lead role in managing diseases listed in the *Health of Animals Act*, DFO plays a key role through science and research, its extensive sampling and monitoring programs and, in B.C., conditions of licence related to fish health. These conditions require each site to have a fish health management plan which affects all aquaculture operating practices that can impact the health of fish on site and, by extension, minimize potential impacts on wild fish and the ecosystem. They include protocols for keeping fish healthy, as well as regular sampling, monitoring, record keeping, and reporting.

3.1 Fish are Introduced to Grow-out Sites Healthy

It was explained to the Committee that fish are introduced into aquaculture grow-out sites disease- and parasite-free. As a first step, all the eggs produced come from parents that have been screened for all the diseases common to wild fish. Then, in the hatchery – where they spend about a year of their life – fish continue to be screened for these diseases. Additionally, prior to their transfer to grow-out sites, every fish is vaccinated against some of these diseases. Once in the net cages, their general health is monitored daily, and assessments for bacteria, viruses and parasites are carried out on a weekly basis. In addition to in-house assessments, sampling is conducted by DFO and the CFIA as part of the NAAHP, as well as by independent laboratories.

The Committee was told that a variety of preventive measures are taken to keep aquacultured fish healthy, including:

- Location: During the site approval process, a risk assessment of disease spread in the proposed aquaculture site and its surrounding environment is conducted. This assessment aims to identify risk factors that may compromise the health and welfare of the fish, including: the general disease situation surrounding the location selected, proximity to other grow-out sites and rivers, species to be raised, and production volumes. Certain locations may have biophysical conditions that make them unsuitable to grow particular species, but suitable to grow others.

14 During the hearings, issues related to fish health were raised primarily in relation to marine salmon aquaculture. For this reason, this chapter focuses mainly on the health of salmon aquaculture stocks.

- Licence Conditions: Once a suitable location has been identified, the licence issued contains the maximum biomass that is allowed at the site. The Committee was told that maintaining appropriate stocking densities reduces stress on the fish, which promotes better fish health. As per the licence conditions, aquaculture producers are also required to develop fish health management plans and to participate in government health audits.

- Biosecurity Measures: These measures aim to prevent the introduction of any pathogen into an aquaculture operation. Disinfection of nets and other equipment constitutes one example of a biosecurity measure used to eliminate potential pathogenic organisms. Another biosecurity measure mentioned was the practice of delivering feed to juveniles before older fish. The Committee also learned about the biosecure inflow and outflow wharves in N.L. The inflow wharf is used to send the new fish (the smolt) to the marine aquaculture sites. The other wharves are designated for the outflow material – fouled nets, dead fish, and harvested fish. It was explained to us that using these different wharves to maintain a separation between inflow and outflow activities helps reduce the risk of cross-contamination if a disease outbreak were to occur.

- Bay Management Areas (BMAs): BMAs have been established in several jurisdictions in Canada (and more recently in Scotland) in response to the expansion of the aquaculture industry with the precise aim of preventing and reducing the impact of disease and parasites.[15] BMAs usually set a minimum distance between sites operated by the same company and another minimum distance between sites operated by different companies. BMAs identify zones in which aquaculture producers must synchronize their operations, including stocking, harvesting, and fallowing. Stocking requires year-class separation (only one generation of fish on a site at a time); it was explained that requiring a single-year class of fish within each BMA prevents older fish, that may have already been exposed to a parasite or disease present in the environment, from transferring it to smolt. Fallowing is the process whereby grow-out sites are left empty for a period of time to recover following harvesting.

The Committee heard that vaccination against diseases plays a key role in ensuring the sustainability of the aquaculture industry. We were told that the use of vaccines, combined with biosecurity measures, has led to a reduction in the use of antibiotics and allowed growth in aquaculture production over the years. The effectiveness of vaccination was discussed in relation to Infectious Hematopoietic Necrosis (IHN). An important outbreak of IHN occurred from 2001 to 2003 among 36 Atlantic salmon production sites in B.C. Since then, the only IHN outbreak occurred in 2012; it was confined to three sites, spanning three months, thanks in part to a vaccine developed and now used for all aquacultured Atlantic salmon. It is believed that if use of such a vaccine continues, B.C. may never again see another IHN outbreak among its aquaculture sites.

Similarly, the Committee was told that BMAs have been highly effective in N.B. and Scotland in containing outbreaks of Infectious Salmon

15 BMAs have not been implemented in Norway due to the industry's structure and the different sizes of aquaculture companies – small, medium and large – making it difficult to establish them.

Anaemia (ISA), for which there are no treatments or vaccines. We learned that ISA was a continual challenge between 1996 and 2006 in the Bay of Fundy, but that there have been no confirmed cases of ISA in the region since the fall of 2006 as a result of the establishment of BMAs, along with enhanced detection efforts and biosecurity measures. In Scotland, ISA is considered a significant but occasional problem; the last outbreak occurred in 2008 and was confined to a small area; the fish were removed quickly to reduce the spread of disease.

Overall, the Committee was told that Atlantic salmon produced in Canada are very healthy: on average, 90% of aquacultured fish survive in salmon grow-out sites.

3.2 How Do Aquacultured Fish Get Sick and Get Treated?

The introduction of pathogens in grow-out sites appears to be related to the level of infectious agents in the surrounding environment. The source of a pathogen may be an infected wild fish or contaminated equipment. The Committee was told that high stocking densities in grow-out sites predisposes aquacultured fish to pathogens and the close proximity of the fish facilitates their transmission. Aquaculture sites are also considered to be a potential reservoir for re-transmission of pathogens to wild fish. For these reasons, aquaculture operators require access to chemotherapeutants to minimize the impact of these pathogens. The Committee was told that

The Atlantic Veterinary College (AVC) of Prince Edward Island University is one of five veterinary colleges in Canada. In addition to its academic programs, the College undertakes various research projects in relation to both finfish and shellfish aquaculture. The AVC houses the Centre for Aquatic Health Sciences (CAHS), a world-class academic centre of expertise in finfish health research, which was toured by the Committee. Current aquaculture research undertaken at the CAHS relates, among others, to sea lice management.

Photo courtesy of: Atlantic Veterinary College, UPEI.

chemotherapeutants are classified as either a drug or a pest control product based upon their application method. Generally, products applied topically or directly into the water are considered pest control products, while products delivered through medicated feed or by injection are considered drugs.

3.2.1 Sea Lice Infestations

It was explained to the Committee that sea lice are small external parasitic crustaceans that latch onto salmonids and other marine fish species. They inflict damage both directly (by feeding on the host's body) and indirectly (by making the host more vulnerable to secondary infections). In Canada, there are different species of sea lice. We were told that sea lice on the West Coast are not nearly as pathogenic as on the East Coast and that, generally, Atlantic salmon appear to be more susceptible to sea lice infestation than Pacific salmon species (pink, coho, chum and sockeye).

It was further explained that sea lice have eight life stages and that they attach themselves to fish while in their third life stage. Water salinity and temperature, as well as water movement (from tides and currents), influence their development and survival. Sea lice reproduce year-round, but reproduction increases quickly as water temperatures rise. The Committee was told that, since each aquaculture region has a unique combination of biophysical characteristics, the life cycle and dynamics of sea lice vary from one region to another. For example, winter water temperatures on the West Coast do not significantly hinder sea lice development, but East Coast winter water temperatures can significantly slow or stop their development. Sea lice do not survive in fresh water.

Several witnesses indicated that sea lice are an ongoing concern for the industry worldwide and require constant management and control. In their view, integrated pest management is required to ensure the long-term sustainability of the salmon aquaculture sector. Fallowing can be used as a control measure for sea lice; by removing the hosts from the immediate area, the number of sea lice around the site declines. Usually, fallowing is synchronized with all the other grow-out sites in a particular area to increase its effectiveness.

The Committee learned that there is only one veterinary drug available to manage sea lice infestations in Canada – SLICE®. The drug is delivered as a coating on feed which is then eaten by salmon, metabolized and subsequently circulated to its tissues. Sea lice feeding on the salmon's tissue (skin, fins and/or gills) ingest the drug and SLICE® acts as a neuroblocker, which results in paralysis and ultimately the death of the parasite. The Committee was told that the use of SLICE® as the only method of sea lice management has led to drug resistance in Norway and Scotland, as well as in some regions within Canada (particularly in N.B.).

In addition to SLICE®, aquaculture companies in Canada have access to two pest control products, Paramove® and Salmosan®, which are applied through bath treatments. The Committee learned that bath treatments can be administered directly on site by using tarpaulins as skirts (draped around each cage) or completely closed tarpaulin systems (pulled under the cage to provide a complete enclosure) to create a temporary containment while the pest control product is applied (which increases its effectiveness at lower concentrations). Bath treatments can also be provided in well-boats, where fish are transferred from their net cage into the boat where they are being treated, and then transferred back to the cage after the treatment. We also learned that after the treatment the product is allowed to disperse into the surrounding water (no matter how the treatment is administered).

The potential for declining effectiveness of SLICE®, the desire to limit reliance on chemotherapeutants, and the move towards more effective integrated pest management plans in recent years have encouraged the research into and the development of non-chemical, biological and green technologies to manage sea lice, including the following:

- Cleaner-fish: They use their specialized mouthparts to detach lice and other parasites from fish. There is a considerable history in Norway of wrasse (a species of cleaner-fish) being successfully used in commercial production cycles. Another species of cleaner-fish, the lumpsucker, is also subject to trials in Scotland as it seems to perform better than wrasse in colder temperatures. In Canada (N.B. and N.L.), certain species of cleaner-fish – the cunner and the lumpfish – are also at various trial stages; one company is presently building a broodstock program at the Huntsman Marine Science Centre so that it does not have to rely on wild cunner in the future.
- Snorkel cage: Scotland and Norway have experimented with the use of snorkel cages to avoid sea lice infestations. Sea lice primarily live at shallow depths and, accordingly, it is possible to establish a lice-free zone where the aquacultured salmon can still thrive. To establish this zone, a net roof is placed to hold salmon deeper than the parasite-risky surface layer. A central cylindrical passage, the snorkel, which is impermeable to parasites, allows salmon to swim to a shallower portion of the water column, where oxygen is more abundant. The experiment showed that the snorkel cages reduced sea lice infestations compared to traditional cages.
- Bi-culture and IMTA: Field trials are taking place in Canada, both on the East and West coasts, to investigate whether filter-feeding shellfish (more particularly mussels and oysters) suspended at salmon grow-out sites might reduce sea lice infestations and the need for drugs and pest control products if bivalves consume sufficient quantities of sea lice larvae from the water column. These field trials are undertaken by the Canadian Integrated Multi-Trophic Aquaculture Network (CIMTAN).
- Mechanical removal: The Committee toured a research facility in Atlantic Canada that is piloting a system that mechanically removes sea lice; salmon are pumped into a cylinder where sea lice are removed by water jets.
- Genomics: The Committee learned that some species of Atlantic salmon have been found to carry lower sea lice levels than others, which has led to an interest in selective breeding for the development of species with increased sea lice resistance. This research has been conducted by Genome Canada.
- Bigger smolt: The possibility of growing smolt to a bigger size (up to 1 kg) in land-based closed RAS is being studied in Norway and Scotland with the view of shortening the period of time spent in marine grow-out cages, thereby reducing the risk of exposure to parasites and other pathogens (and reducing escapes).

According to research, non-chemical approaches to sea lice management may not be as effective as drugs and pest control products when used individually, but they could ultimately be part of an effective integrated sea lice management strategy and prevent Canada from experiencing sea lice with increased resistance to treatment as is the

case in Norway, in addition to being safer for the environment.[16]

The Norwegian government enforces strict rules on sea lice. For example, regulations authorize a 5% increase in biomass only when operators can maintain sea lice levels at a certain threshold while using a maximum of two treatments per production cycle. Prompt reduction in biomass at any given site may be ordered and, if necessary, slaughtering of all the fish in a given site where operators are found unable to maintain the sea lice levels under the maximum allowable levels. Other rules may mandate an extension to the fallowing period, a ban against new smolt entries, or a ban against the use of a specific treatment where resistance has been documented. These stricter requirements are accompanied by increased monitoring and the possibility of sanctions. Another option being considered to minimize the spread of sea lice between cages is the establishment of a minimum distance between different grow-out sites (an approach already in use in Canada).

The Committee believes that there are lessons to be learned from Norway's experience. In particular, the Canadian aquaculture industry must continue to use minimum distances between sites to prevent the spread of infestations from one grow-out site to another. In addition, research into sea lice epidemiology and the effectiveness of non-chemical methods needs to continue. More importantly, the use of proven effective non-chemical methods must be encouraged and the use of drugs and pest control products reserved for occasional use.

3.2.2 Infectious Salmon Anaemia

As previously indicated, ISA is an infectious disease present in the natural environment affecting both aquacultured and wild finfish with certain strains of the virus causing disease and others not. The Committee was told that, depending on the virus strain, outbreaks of ISA can cause death rates of up to 90% in affected finfish populations, and finfish aquaculture sites are known to be more at risk of spreading the virus rapidly due to their denser populations, therefore increasing the likelihood of an ISA outbreak. Since there are no treatment options currently available for ISA and no vaccines against the disease have been developed, aquaculture operations are very vigilant in monitoring the presence of this disease.

Since 1996, ISA has been confirmed in N.B., N.S., P.E.I. and N.L. No case of ISA has ever been confirmed by the CFIA in B.C., in either aquacultured or wild finfish, although it should be noted that certain researchers who appeared before the Committee insisted that ISA has been detected in the province.

N.B. has been able to control the virulent strain of the disease and, as a result of increased biosecurity protocols and the introduction of BMAs, there have been very few confirmed cases of ISA in the province since the fall of 2006. Moreover, management practices are ongoing to ensure that this remains the case. For example, as a best management practice, industry quickly and voluntarily harvests stocks that are suspected to be infected with ISA – often prior to the CFIA confirming the diagnosis – to mitigate the outbreak potential to both neighbouring aquaculture sites and wild stocks.

16 Fisheries and Oceans Canada, ***Sea Lice Monitoring and Non-Chemical Measures***, Canadian Science Advisory Secretariat, July 2014.

In Scotland, the Committee was told by government and industry representatives that ISA is a significant but occasional problem (in contrast to sea lice, which is a constant problem). It was explained that there is a strict ISA eradication policy in place in Scotland, which includes the slaughtering of suspected infected stocks, like in N.B.

The Committee was also told that the aquaculture industry has faced a number of other fish health challenges in the past few years and that this has highlighted the need to foster fish health-related research and development (R-D) into areas such as vaccine development and biosecurity measures.

3.2.3 Access to Drugs and Pest Control Products

A constraint often mentioned by industry and provincial government representatives related to the lack of access to aquatic animal drugs and pest control products in Canada, which limits the effectiveness of their integrated fish health/pest management plans. They stressed that collaborative efforts are required to engage Health Canada, both its Veterinary Drug Directorate and the PMRA, DFO and Environment Canada toward a responsible and efficient approval process for aquatic animal drugs and pest control products in line with international aquatic animal health standards, more particularly the minor use minor species (MUMS) template. "Minor uses" refers to small-scale (limited or infrequent) use of chemotherapeutants in animals, while "minor species" refers to food-producing species other than cattle, chicken, turkey, lamb, and the like. Scarcity of MUMS products in Canada occurs, in part, because the markets for these products are too small to enable drug manufacturers to recoup the fixed costs associated with drug development, approval, and sale. Classifying an aquatic animal product as MUMS would reduce the cost associated with its registration/approval and would allow for the fast-tracking of the product, while still ensuring its safety.

Overall, Canadian aquaculture producers do not have access to the same range of pest control products and veterinary drugs as producers in other countries, including Norway and Scotland, and are therefore at a disadvantage on global markets. Fish health is the foundation of the aquaculture industry and, for this reason, the Canadian aquaculture industry must be given improved and timely access to a range of drugs and pest control products. Therefore, the Committee recommends:

3. **That Fisheries and Oceans Canada develop and establish with Health Canada and the Pest Management Regulatory Agency a Minor Use, Minor Species Program for Aquaculture.**

Newer, more environmentally friendly and more efficient products will be made available to Canadian producers, which will help level the playing field and allow them to be more competitive in global markets.

3.3 Fish Feed

Finfish held in aquaculture operations are fed with special pellets designed to meet their nutritional requirements and allow for optimal health and growth. The Committee learned that fish feed accounts for about 60% of the cost of growing fish and is therefore a significant factor in the financial viability of an aquaculture operation. We were also told that the aquatic feed sector is working to develop more efficient and effective diets using a larger array of agriculture-based inputs while reducing the proportion of fish meals and oils.

Schedule 5 of the regulations developed pursuant to the federal *Feeds Act*, which is administered by the CFIA, lists the additives or nutrients that can be used in fish feed formulations. The Committee was told that a number of feed additives which are not approved for use in the formulation of fish feed in Canada are permitted in other countries, including

Norway and Scotland. Fish that have been fed using these ingredients can be imported into the country, which, in the view of several witnesses, makes little sense. In addition, some of these feed additives stimulate the immune system and increase the resistance of salmon to sea lice infestations.

The Committee concurs with witnesses that there is some incoherence in federal aquaculture governance. In our view, the current regulations governing fish feed additives stifle innovation for development of improved diets and impede the industry's global competitiveness. Accordingly, the Committee recommends:

4. **That the Canadian Food Inspection Agency revise Schedule 5 of the regulations under the *Feeds Act* to include a wider range of additives or ingredients for use in the formulation of fish feed.**

3.4 Shellfish Health

The CSSP is a federal food safety program jointly administered by the CFIA, Environment Canada and DFO. The goal of the program is to protect Canadians from the health risks associated with the consumption of contaminated shellfish. As part of the CSSP, Environment Canada monitors water quality in shellfish harvesting areas across Canada to ensure that water is exempt from contaminants and that shellfish produced is safe for human consumption.

As part of the program, all shellfish harvesting areas are required to have regular water sampling performed on their sites for such things as faecal coliforms, chemicals, and other contaminants. Limited resources on the East Coast have meant that only certain areas at a time can be sampled; the Committee was told that this situation has hindered expansion of the shellfish aquaculture sector in the region. In N.L., testing is no longer carried out in the province; all samples must be sent to Dartmouth and aquaculture operators must wait for the results. The Committee was also told that there are currently no resources for testing water quality of proposed shellfish aquaculture sites in N.S., unless companies bear the cost of water sampling/testing themselves, rather than waiting for the service to be performed and paid for by Environment Canada.

The Committee believes that the CSSP must be modernized to make it more responsive to the needs of aquaculture shellfish growers. The growth of this segment of the industry depends on timely access to CSSP's water testing services. We further believe that alternative methods to CSSP's current water sampling monitoring program should be explored, including, for example, the use of authorized or certified private third parties.

The Committee also learned that several shellfish aquaculture operations on the East and West Coasts are afflicted by aquatic invasive species (AIS), such as the green crab, clubbed tunicate and vase tunicate. Some of these AIS prey directly on the cultured shellfish, while others out-compete them for habitat and resources. AIS affect growth and meat yield and cause increased maintenance and labour costs for growers and processors. The Committee was told that, once an invasive species has become established in an area, it becomes essential to develop innovative technologies and practices to effectively manage it. It is especially important to initiate a rapid response in the early stages of invasion. Accordingly, the Committee recommends:

5. **That Fisheries and Oceans Canada work with the provinces and the aquaculture industry to evaluate, within the next two years, new technologies and methods for the effective management of aquatic invasive species in the shellfish aquaculture sector.**

CHAPTER 4: Healthy and Productive Ecosystems

> *I say to anyone who opposes aquaculture that some of the best stewards of the ocean are people who are involved in this industry, because we make our living every day on the ocean. So we certainly don't want to cause problems. We want to make sure it's a sustainable industry that's around for many generations to come. Terry Ennis, President and CEO, Atlantic Aqua Farms (21:25)*

Aquaculture is dependent on clean, healthy and productive waters. Industry compliance – with rigorous legislation, regulations, licence conditions, and codes of good practices – is a prerequisite to sustainable aquaculture. It is the view of the Committee that environmental protection and the maintenance of high quality aquatic ecosystems are core principles in realizing the potential of Canada's aquaculture industry in the next ten years.

4.1 Impact of Marine Finfish Aquaculture on the Benthic Environment

It was explained to the Committee that, during the functioning of marine finfish aquaculture operations, organic material is released into the surrounding waters. This organic material is the result of excess fish feed, faecal matter, and other excretion products, as well as drug and pest control products and anti-fouling treatments. Some of this material settles on the seabed at or near the cage sites where it can accumulate, while some is dispersed into the water column, spreading the wasted organic matter beyond the perimeter of the aquaculture site. Accordingly, aquaculture operations generate both near-field (localized) and far-field (distant) effects.

DFO documents indicate that the near-field effects of marine finfish aquaculture have been well studied and are the ones most frequently assessed in environmental monitoring, (primarily because they are more amenable to evaluation) and assessment is done through the collection of bottom grab samples (for soft bottom substrates) and video surveys (for hard bottom substrates). Far-field effects take longer to develop and are more difficult to detect. They are also less understood, primarily because they are often the result of many stressors (e.g., municipal or industrial wastes, agriculture runoffs, and more) and estimating the relative contribution of aquaculture as one of many environmental stressors is difficult.[17]

Government and industry representatives, as well as many researchers, who testified before the Committee, acknowledged that organic matter from aquaculture operations sinks to the bottom. They also recognized that if sufficient material accumulates on the seabed, the physical, chemical and biological composition and structure of the bottom habitat in close proximity to aquaculture operations could be affected. They noted, however, that changes to the environment from organic matter accumulation are rarely permanent and explained to us that once the excess of organic loading ceases, the benthos recovers naturally to background levels. Fallowing (the act of leaving the site empty for a time) is therefore practised in

17 D.J. Wildish, M. Dowd, T.F. Sutherland and C.D. Levings, ***Near-Field Organic Enrichment from Marine Finfish Aquaculture***, Canadian Technical Report of Fisheries and Aquatic Sciences, Vol. 3, DFO, 2004; B.T. Hargrave, ***Far-Field Environmental Effects of Marine Finfish Aquaculture***, Canadian Technical Report of Fisheries and Aquatic Sciences, Vol. 1, DFO, 2003.

all jurisdictions; the length of time for recovery depends on the local environmental conditions such as temperature, season, hydrography, flushing, bottom type, underwater depth and other characteristics of the ecosystem. More importantly, through siting and licensing requirements, the various regulatory bodies in Canada have put in place mitigation measures, such as a maximum allowable biomass, to ensure that the release of organic material does not harm fish and fish habitat.

It was explained to the Committee that, as part of their siting processes, aquaculture operations are required to undertake their own on-site investigations to identify the presence of environmental features occurring in the general area of the application (ecological reserves, marine protected areas, salmonid bearing streams, migratory routes, etc.). Then, as part of their licence application, aquaculture operations must provide the results of habitat assessment surveys completed with the DEPOMOD software, which is the aquaculture waste prediction model recommended by DFO. Predictive levels of organic deposition provided by DEPOMOD and baseline surveys of habitat are used by regulators of all provinces when authorizing new aquaculture sites in order to avoid sensitive habitats (DFO provides scientific opinions and advice to provincial governments for decision-making). Based on this information, thresholds are placed in each licence to limit the intensity and/or duration of organic matter accumulation to ensure that any sea bed changes are minor enough that ecosystem capacity and function are not seriously harmed. This seemingly long and rigorous siting process is in place to help ensure that due consideration is given to benthic impacts and that each licence includes an appropriate deposition limit.

The conditions of licence for marine finfish aquaculture in all provinces further require operators to monitor their sites on a regular basis. All industry-generated reports and video data are assessed by regulators for compliance with licence conditions; failure to comply can lead to sanctions. In addition to the monitoring and reporting required of licence holders, regulators conduct field audits to collect and assess sediment samples and video data. These audits fulfil four purposes:

- To compare industry-generated data with those obtained by the regulators to ensure procedures are being followed correctly and that there is correlation between the two data sets;
- To determine if the appropriate compliance sampling stations or transects are being utilized by industry;
- To investigate sites with poor environmental performance or issues with compliance; and
- To learn more about benthic impacts during different periods of production and the site recovery cycle.

Compliance levels for soft-bottom sites are based on the level of sulphides in a given sediment sample. For hard-bottom sites (like in N.L. and some sites in B.C.), benthic compliance thresholds are set based on the visual presence of a polychaete (a worm) and *Beggiatoa* (a bacterium). If an operation does not stay within the set limits, the regulator may require that the site be fallowed until further monitoring shows that sufficient recovery of the benthos has occurred. Additional measures may be required to reduce future accumulation of organic matter, such as: delaying restocking, changing the layout of containment structures on the grow-out site, and changes in stocking densities or feeding methods. In severe cases, sites can be relocated.

Research conducted in Canada[18] and Norway[19] suggests that aquaculture has a low impact on the benthic environment. However, the Committee received evidence and heard testimony from citizens, groups and organizations concerned with the impact aquaculture has had on the benthic environment. In certain cases, aquaculture activities have been found to alter the benthic environment near their grow-out sites and the mandatory fallowing periods were not sufficient to eliminate these effects.[20] In one example, results showed that the recovery of the benthos in the vicinity of the soft-bottom substrate grow-out site in question was incomplete after two years of fallowing. In such cases, it begs the question, "why?" Answers can include, but are not limited to: best practices not being followed by the operator (in which case immediate measures are to be taken by the responsible regulatory authority); the site not being suitable for aquaculture activities (in which case, the licence should be revoked; such a situation is unlikely to happen in the future with a federal veto on aquaculture development); changes in the environmental conditions since the issuance of the licence/lease, such as water temperature or flow (in which case the licence and/or conditions should be revised or relocation should be considered). Regardless of the reasons why, the Committee believes that the long-term alteration of the benthic environment is unacceptable and action should have been taken to remedy the situation without delay once monitoring showed that the threshold had been exceeded. These cases not only hurt the surrounding environment, but also the reputation of the aquaculture operations in the area that are not causing such damage to the benthic environment (if not the reputation of the whole industry).

On a more positive note, it is important to acknowledge that DFO's proposed AAR will require marine finfish operators across Canada to monitor the level of sulphides according to specific bottom sampling requirements on a regular basis. If the benthos exceeds the threshold, remedial actions will need to be taken. Failure to comply with the regulations or to take remedial action will result in fine or imprisonment. Moreover, DFO will use the data generated as required by the proposed AAR to review and update, if necessary, the monitoring approach and the thresholds.

Some witnesses expressed that aquaculture environmental monitoring in Canada places too much emphasis on bottom sediments and not enough attention is devoted to sediments suspended in the water column and further reaching deposition. Their position is consistent with the scientific literature review that suggests gaps in our knowledge of the far-field environmental effects of marine finfish aquaculture. The potential environmental interactions associated with aquaculture operations in the far-field mentioned

18 DFO, ***Organic Material and its Management*** [accessed 17 April 2015].

19 Geir Lasse Taranger *et al.*, "**Risk Assessment of the Environmental Impact of Norwegian Atlantic Salmon Farming**", *ICES Journal of Marine Science*, 2 September 2014; and Vivian Husa, Tina Kutti, Arne Ervik, Kjersti Sjøtun, Pia Kupka Hansen and Jan Aure, "**Regional Impact from Finfish Farming in an Intensive Production Area (Hardangerfjord, Norway)**," *Marine Biology Research*, Volume 10, Issue 3, 2014, pp. 241–252.

20 In this regard, three research papers were tabled with the Committee: Ronald H. Loucks, Ruth E. Smith, Clyde V. Fisher, and E. Brian Fisher, "**Copper in the Sediment and Sea Surface Microlayer Near a Fallowed, Open-Net Fish Farm**", *Marine Pollution Bulletin*, Volume 64, Issue 9, September 2012, pp. 1970-1973; Inka Milewski, ***Nova Scotia Environmental Monitoring Program for Finfish Aquaculture: An Update (2006-2011)***, Atlantic Coalition for Aquaculture Reform, February 2013; and Inka Milewski, ***Aquaculture Survey and Macro-Invertebrate Analysis Report (Shelburne Harbour, Former Sandy Point Lease)***, Conservation Council of New Brunswick, February 2014.

in the literature include changes in planktonic communities around finfish aquaculture sites and eutrophication. The Committee agrees that further study is required and the knowledge gained will assist in decision-making regarding the monitoring and/or mitigation of far-field impacts associated with aquaculture operations; such knowledge could also lead to the development of new siting criteria and new monitoring tools. Moreover, such a study would contribute to the sustainable development of the industry.

4.2 Impact of Pest Control Product Use on Non-Target Organisms

Products used to control sea lice infestations are released into the surrounding environment after tarped cage or well-boat treatments, raising concerns about their potential impact on other organisms and the ecosystem. The Committee heard testimony on the findings of recent research investigating the use of these products and their potential impact on non-target organisms, more particularly on lobster.

Research conducted at the Marine Institute of Memorial University of Newfoundland examined how rapidly sea lice control products diluted and dispersed following treatment within tarp cages and well-boats, using different flow regime simulations representing various grow-out conditions on the East Coast. The research also investigated the implications of the release of pest control product on non-target organisms. The results showed rapid dilution/dispersion of the

The Fisheries and Marine Institute of Memorial University of Newfoundland is a world-class comprehensive centre for education, training, applied research, and industrial support for the ocean industries. Its School of Fisheries houses the Centre for Aquaculture and Seafood Development, which offers a complete range of services to the aquaculture industry in the areas of applied research, product and process development, technology transfer, advisory services, and training. The Committee met with university representatives and, while there, Senators were able to tour certain facilities.

products in the top layers of the water column. It was concluded that pest control products used for sea lice management are not expected to reach non-target organisms on the seabed under normal treatment operating conditions.[21]

Three more recent studies examined the dilution, dispersal and toxicity levels of the following three sea lice control products: Salmosan®, Paramove® 50 and AlphaMax®. It was shown that AlphaMax® did not dilute rapidly and did not reach a non-toxic level until close to a kilometer from individual treatment sites. In addition, AlphaMax® was shown to be highly toxic to crustaceans, including lobster. As a result, AlphaMax® is no longer approved for use in Canada. The studies also showed that Paramove® dissolved more quickly and at a shorter distance from site of release than the two other products; it was also found the least toxic of the three formulations. Its active ingredient is hydrogen peroxide, which degrades to oxygen and water and does not persist or bio-accumulate. With respect to Salmosan®, the studies showed that the product takes more time to disperse than Paramove® but reaches non-toxic levels within meters of treatment sites. It was shown that the potential impact of Salmosan® on non-target organisms, such as lobsters, depended on whether they are present within the zone of influence at the time of the treatment, as well as on their life stage. Finally, the studies showed that treatments administered in a well-boat reduced the toxic potential of these pest control products by at least three times.[22]

The Committee was pleased to learn that the findings of research informed the PMRA and led to the banned use of AlphaMax®. We also believe that the development and use of non-chemical approaches to sea lice control should lessen the industry's need to resort to these treatments. That said, we consider that research on the potential impact of sea lice treatments on non-target organisms, such as the ones we just summarized, should continue, since a wider range of products may be made available as part of the MUMS Program for Aquaculture that we recommended in the previous chapter. We further believe that this research should be performed by scientists from DFO, the PMRA, and Health Canada, with data generated from the reporting requirements under the proposed AAR.

With respect to concerns over increasing resistance to treatments used for sea lice control[23], the Committee believes that the industry should continue to carry out R-D into other emerging non-chemical methods of lice control such as treatment by freshwater, laser, cleaner-fish or by changing cage depth and design.

Overall, the Committee believes that the far-field impacts of aquaculture and the impact of pest control products on non-target organisms should

21 See: ***Construction and Evaluation of a Scale Model of a Finfish Cage under Different Flow Regimes Simulating Bath Therapeutant Exposure***.

22 F. H. Page and Les Burridge, ***Estimates of the Effects of Sea Lice Chemical Therapeutants on Non-Target Organisms Associated with Releases of Therapeutants from Tarped Net-Pens and Well-Boat Bath Treatments: A Discussion Paper***, Canadian Science Advisory Secretariat, DFO, December 2014; William Ernst et al., "**Dispersion and Toxicity to Non-Target Crustaceans of Azamethiphos and Deltamethrin after Sea Lice Treatments on Salmon Farms**," *Aquaculture*, Vol. 424-425, March 2014, pp. 104-112; and, Les Burridge, ***A Review of Potential Environmental Risks Associated with the Use of Pesticides to Treat Atlantic Salmon Against Infestations of Sea Lice in Southwest New Brunswick, Canada***, Canadian Science Advisory Secretariat, DFO, August 2013

23 Sonja Saksida *et al.*, ***Population Ecology and Epidemiology of Sea Lice in Canadian Waters***, Research Document 2015/004, Canadian Science Advisory Secretariat, DFO, March 2015.

be given priority in research. Accordingly, we recommend:

6. **That Fisheries and Oceans Canada undertake collaborative research on the far-field effects of marine finfish aquaculture and on the potential impacts of pest control products used for sea lice management on non-target organisms; these fields of research should be given priority.**

4.3 Impact on Wild Salmon Stocks

> *I have asked for you to hear my words that I speak from my heart for our people. I have asked you to hear these words in the context of something that is so spiritual to our people, it is wild salmon. The foundation of our culture and our traditions largely is based on feasting, and we turn to the resources in our territories in order to be able to sustain and perpetuate our culture that has been handed down to us through the eons. We take a very clear view on the importance of wild salmon over top of any other economic opportunity because this staple food is something that has become so integral to our people that we have bestowed upon it a very sacred dance.*
> *Chief Bob Chamberlin, Vice-President, Union of B.C. Indian Chiefs (4:148–149)*

4.3.1 Escapes

Aquaculture grow-out sites typically hold large numbers of fish. Damage to containment nets as a result of storms, boat collisions, and predator attacks in addition to possible inadequate net maintenance, mishandling of fish, vandalism, and other such events may lead to the escape of aquacultured fish into the surrounding environment, and if not caught in a timely fashion, beyond.

Grow-out infrastructure is highly regulated and inspected regularly. In addition, escape events must be reported by the aquaculture operator within a short delay to ensure that they are documented and that recapture efforts are sufficient to meet regulations. The Committee heard from DFO that escapes have declined in both frequency and number over the years in Canada as a result of: improved technology, enhanced maintenance of nets, better anchoring, stricter guidelines for vessels operating near aquaculture sites, improved codes of conduct and staff training for handling fish, and mandatory escape reporting and recapture plans.

The Committee, however, understands that despite these best efforts, escape events will always occur due to severe weather and human error, and also recognizes that the number of escapes cannot always be fully known. Therefore, the Committee believes that it is important to understand the negative impacts escapes have on the environment – more specifically on wild fish stocks – something that researchers have been working to gain knowledge about in Canada and abroad for several years now.

It is important to begin by noting that Atlantic salmon is grown on both Canada's East and West Coasts; even though Atlantic salmon is not native to the Pacific Ocean, it is a very important part of the aquaculture industry there. Escapes of this non-native fish species have been studied in B.C. and, during site visits in that province, the Committee learned that Atlantic salmon had not yet established itself in B.C. waters, although it has been grown there for about 30 years. Research suggests that the risk to wild Pacific salmon stocks from escaped aquacultured Atlantic salmon is low; there is minimal interaction between the aquacultured Atlantic salmon and the wild Pacific salmon, either through competition for habitat and food or as predators. In addition, escaped aquacultured

Atlantic salmon has not been shown to successfully mate with wild Pacific salmon, although they can successfully mate with wild fish of their own breed (which they have on the East Coast). The negative environmental impact of escaped aquacultured Atlantic salmon on the West Coast therefore appears to be low for the time being. However, the same cannot be said for the East Coast.

The Committee heard multiple witnesses who noted that one of the greatest concerns regarding Atlantic salmon escapes in the Atlantic Ocean is the potential for interbreeding or introgression with wild Atlantic salmon populations, which could cause genetic changes and reduce the fitness for survival of wild salmon in the area. In addition, certain wild salmon stocks on the East Coast have been assigned endangered or threatened[24] status by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and are therefore more at risk of weakening their gene pool should they mate with escaped aquacultured Atlantic salmon.

Studies conducted in both Canada[25] and Norway[26] (another country that, like Canada, has wild Atlantic salmon populations as well as an intensive Atlantic salmon aquaculture sector) showed interbreeding between wild and aquacultured populations and that this had reduced the next generation's ability to survive in the wild. However, the Norwegian study concluded that larger (and therefore healthier) wild populations were more resilient and therefore less affected (if not at all) by the escapes of aquacultured salmon. Conversely, weaker wild populations (such as those endangered or threatened) were more affected by the escaped salmon and showed more signs of genetic change due to interbreeding.

Although the Committee is encouraging the sustainable growth of the aquaculture industry in Canada, we believe that such growth should not be supported to the detriment of wild salmon stocks. Generally speaking, areas that are often ideal for salmon aquaculture operations are also those that are inhabited by wild salmon stocks. Restrictions should therefore be considered to ensure that aquaculture operations growing Atlantic salmon are located far from wild salmon populations that are deemed to be at risk. Reducing the number of escapes is an important step, but recognizing that escapes will inevitably occur, it is equally (if not more) important to adopt measures to reduce the negative impacts of escapes on wild salmon stocks whenever possible. In N.L., the Committee was told that the provincial government intends to work with DFO in the identification of areas that would remain aquaculture-free for these very reasons.

Norway has designated 52 National Salmon Rivers and 29 National Salmon Fjords and, within these areas, the salmon aquaculture industry is subject to stricter legislation (including a moratorium on aquaculture expansion in some regions and a ban on aquaculture operations in others). Scotland has also limited further finfish aquaculture growth on its north and east coasts to safeguard wild migratory species. For its part, Canada has 34 Atlantic Salmon

24 An *endangered* status refers to a wildlife species facing imminent extirpation or extinction, while a *threatened* status means a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

25 Vincent Bourret *et al.*, "**Temporal Change in Genetic Integrity Suggests Loss of Local Adaptation in a Wild Atlantic Salmon (Salmo Salar) Population Following Introgression by Farmed Escapees**", *Heredity*, No. 106, 2011, pp. 500-510.

26 Glover *et al.*, "**Atlantic Salmon Populations Invaded by Farmed Escapees: Quantifying Genetic Introgression With a Bayesian Approach and SNPs**", *BMC Genetics*, 2013.

Management Areas (SMAs), and salmon aquaculture occurs only in six SMAs.

A second measure introduced in Norway is the creation of the Escape Commission for Aquaculture, which is a permanent body that investigates all escape incidents, analyzes the causes of the events, and proposes regulatory improvements. Failure to report suspected escapes is a criminal offence. Norway is also contemplating the mandatory tagging of aquacultured salmon, the use of sterile fish, and the creation of a fund financed by the industry, to cover the cost of removing escaped fish from a representative number of rivers.

In an effort to better understand the health of wild salmon populations on the East Coast, DFO struck the Ministerial Advisory Committee on Atlantic Salmon in March 2015; its mandate is fourfold: 1) conservation and enforcement measures, 2) predation, 3) a strategy to address international, unsustainable fishing, and 4) focused areas for advancing science.[27] DFO is therefore committed to gaining more knowledge about wild Atlantic salmon stocks and this information could help DFO and the aquaculture industry re-evaluate, if necessary, the location and functioning of aquaculture operations growing Atlantic salmon, as well as help determine the risk associated with any new proposed aquaculture sites. This work could ultimately lead DFO to designate areas that would prohibit salmon aquaculture production, particularly where wild salmon populations are endangered or threatened.

In the past, DFO has given advice against proposed salmon aquaculture developments in areas where the status of wild salmon populations is of special concern. DFO must continue to provide such advice and this advice should always be accepted.[28]

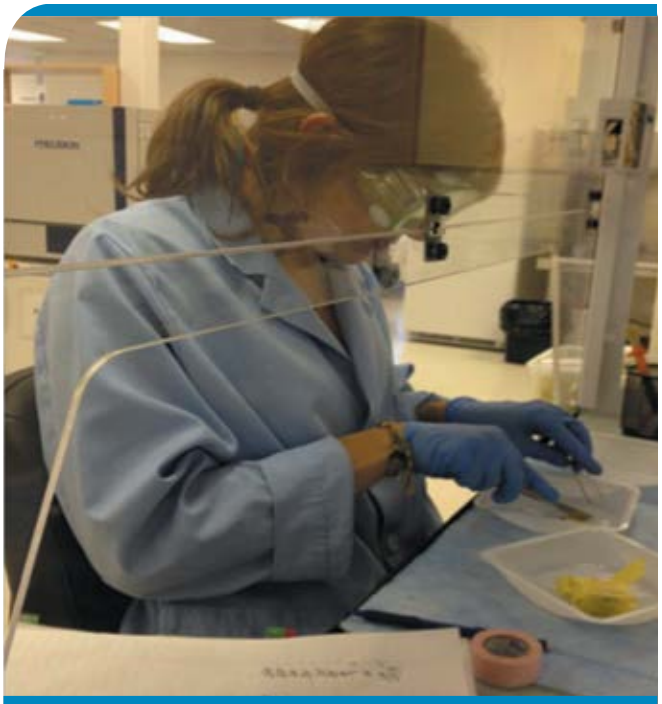
4.3.2 Pathogens in Aquaculture Operations and Out-migrating Juvenile Salmon

When fish are transferred into grow-out sites in the ocean, they come from a freshwater hatchery and, accordingly, are sea lice-free when they first enter the marine environment; they acquire sea lice from wild fish. The Committee was told that the high density of fish in a grow-out site amplifies the number of sea lice and increases the possibility of re-transmission back to wild fish. While the role of aquaculture grow-out sites, particularly those for Atlantic salmon, as potential reservoirs of sea lice is accepted, the effect of sea lice infestations on wild salmon populations is still debated. During the hearings in Nanaimo (B.C.), several witnesses expressed concerns about wild juvenile salmon swimming near aquaculture grow-out sites during their outmigration. They explained that, at that stage, the fish are very small and they do not have a scale load and are thus more susceptible to parasites like sea lice. The Committee was told that when juvenile salmon have one or two sea lice attached to them, they either die or become crippled and subject to predation or other pathogens.

In contrast, a study presented to the Committee showed that sea lice on aquacultured fish did not play a significant role in the decrease in wild Pacific (pink) salmon productivity. It noted that water temperatures, salinity and the abundance of food may be more important factors than sea lice. The study, which covered a 10-year period and used

27 DFO, "**Minister Shea Launches the Ministerial Advisory Committee on Atlantic Salmon**," *News Releases*, 9 March 2015.
28 See for example: DFO, ***Wild Salmon Populations in the Vicinity of a Proposed Finfish Aquaculture Development in St. Mary's Bay, Nova Scotia***, Canadian Scientific. Advisory Secretariat, Report 2011/001, May 2011.

data from the Broughton Archipelago region, concluded that separating aquacultured salmon from wild salmon – proposed through coordinated fallowing of juvenile salmon migration corridors or closed containment – would not increase wild salmon productivity.[29]



The BC Centre for Aquatic Health Sciences (BC CAHS) is a not-for-profit facility that undertakes research and provides services in the field of fish health for both wild and aquacultured marine species. Located in Campbell River, the BC CAHS is involved in fundamental and applied research projects with partners such as First Nations, industry, government, and academia. In operation since 2005, BC CAHS employs 11 people and is internationally renowned for its sea lice research, studying their effects on both wild and aquacultured fish populations. The Committee had the opportunity to tour the BC CAHS and meet with its researchers.

Photo courtesy of: BC Centre for Aquatic Health Sciences.

Nonetheless, the aquaculture companies operating in the Broughton Archipelago told the Committee that they are taking a precautionary approach to minimize the risk to wild juvenile salmon as they annually migrate to the open ocean in the spring.[30] For example, they may initiate winter treatment (anti-lice medication) of their fish, prior to the out-migration of wild juvenile salmon. They may also use non-medicinal methods, such as fallowing and reducing stocking densities. Furthermore, they indicated that they continue to research potential risks and new pest management techniques. They made reference to research by Peacock et al. which suggests that these measures have had positive outcomes for wild salmon populations.[31]

Similarly, witnesses spoke about the potential for transfer of disease between aquacultured and wild fish. According to some witnesses, this risk is low. The Committee was told that less than 1% of aquacultured salmon in B.C. die of diseases that might be infectious to wild Pacific salmon. Among the other 99%, 90% survive and 9% die of other causes. It was explained that the potential for infectious disease to spread from sick aquacultured salmon to other aquacultured salmon is greater than the potential for disease to spread from sick aquacultured salmon to wild salmon. Accordingly, witnesses suggested that it is reasonable to estimate that diseases from aquaculture sources

29 Gary D. Marty, Sonja M. Saksida, and Terrance J. Quinn, "**Relationship of Farm Salmon, Sea Lice and Wild Salmon Populations**," *Proceedings of the National Academy of Sciences*, 13 December 2010.

30 The most recent peer-reviewed scientific advice prepared by DFO on this topic suggests that the risk of sea lice transmission from aquaculture grow-out sites to wild juvenile salmonids is likely highest during the out-migration period. See: DFO, ***Sea Lice Monitoring and Non-Chemical Measures***, Canadian Science Advisory Secretariat, July 2014.

31 Stephanie J. Peacock, Martin Krkosek, Stan Proboszcz, Craig Orr, and Mark A. Lewis, "**Cessation of a Salmon Decline with Control of Parasites**," *Ecological Applications*, Vol. 23, No. 3, April 2013, pp. 606–620.

kill less than 1% of wild salmon per year. This rate, it was stressed, is much lower than the estimated natural mortality of juvenile wild salmon of 3% per day.

While these data are encouraging to the Committee, it must be recognized that there is a lack of knowledge about the health of wild Pacific salmon stocks. We were pleased to learn that the high mortality rate of wild juvenile salmon during their early ocean migration is the focus of a six-year (2012-2018) collaborative study by DFO, the Pacific Salmon Foundation and Genome BC. Called the Strategic Salmon Health Initiative, the study intends to clarify the presence and/or absence of 45 pathogens in samples collected in wild, hatchery and aquacultured salmonids in B.C.[32] For this study, a novel technology, the Fluidigm BioMark™ HD System, will be used and the samples will undergo histopathological analysis and gene expression profiling to identify pathogens most likely associated with disease. It is the view of the Committee that this research will inform improved risk assessment related to pathogen transfer from aquacultured to wild salmon, as well as the current moratorium on aquaculture development in the Discovery Islands area.

4.4 Impact of Shellfish Aquaculture

The Committee had the opportunity to visit several shellfish aquaculture operations (one hatchery-nursery, two grow-out sites, one depuration plant, and three processing plants) and held panel discussions specifically devoted to shellfish aquaculture in each city where public hearings took place. Overall, we heard less testimony on the environmental impacts of shellfish aquaculture, in comparison with marine finfish aquaculture.

However, witnesses who spoke about specific environmental concerns regarding this aquaculture sector raised important issues.

For example, certain shellfish aquaculture operations in B.C. have been known to generate large amounts of debris, such as plastic and Styrofoam®, which are left in waters and on shores. In addition, when production comes to a close at certain locations, gear and other apparatus are abandoned in the water instead of being removed. Although these operations only represent a limited number of shellfish growers across Canada, they hinder the reputation and social licence of other shellfish growers that are vigilant in their use of the environment and considerate of other users. The Committee cannot in good conscience condone operations working in this manner.

Whether the code of practice in place was not followed by the operators – which should have been evident to industry – or there was a lack of enforcement by DFO inspectors who are responsible for their oversight, situations such as these are unacceptable and action should be taken to stop this misuse of public waters. Regardless of the reasons why, shellfish growers who operate in this fashion should see their licences revoked. In addition, to avoid situations where equipment is left in public waters once the operation has closed, licence conditions should require operators to decommission their grow-out sites and conduct any remediation required, including shoreline remediation when required, at their own cost.

That being said, DFO is responsible for licensing shellfish aquaculture in B.C. and for ensuring compliance with the licence conditions and the provisions under the *Pacific Aquaculture Regulations*. Furthermore, the Committee believes that site

32 Genome British Columbia, ***Strategic Salmon Health Initiative***.

debris should be managed appropriately in all aquaculture sectors – shellfish and finfish – and in all regions – both the West and the East Coasts. Accordingly, we recommend:

7. **That Fisheries and Oceans Canada regularly undertake inspections and consistently enforce compliance in relation to shellfish aquaculture in British Columbia and, in particular, in situations where any floating material or other debris (such as shells, ropes, and buoys) is not disposed of as prescribed and/or remains in the marine environment; the Department should equally act in situations where aquaculture operators in other provinces leave debris in the marine environment.**

In contrast to the unfortunate examples above, the shellfish aquaculture sector in the other provinces has developed and enforced codes of conduct to complement the various regulatory mechanisms in place; these codes define practical steps to achieve greater environmental stewardship within the shellfish aquaculture sector. The B.C. shellfish aquaculture sector also has its own code of practice and the Committee strongly encourages the industry to strictly enforce it.

More common environmental concerns related to shellfish aquaculture are those related to organic matter deposition. Aquacultured shellfish are not fed in the same fashion as aquacultured finfish since they are filter feeders, which means that they feed on particulates suspended in the water column; there is therefore no wasted feed that accumulates in the benthic environment.

The Committee visited the Centre for Shellfish Research, which forms part of the Deep Bay Marine Field Station. Operated by Vancouver Island University, the Centre undertakes research activities aimed at sustainable shellfish aquaculture development, preservation of coastal ecosystems, and more.

Photo courtesy of: Deep Bay Marine Field Station.

However, fecal matter deposition does occur and does contribute to some organic matter accumulation. The Committee did not receive testimony regarding longer-term benthic impacts.

4.5 Impact of Freshwater Aquaculture

> *We [the freshwater aquaculture industry] will monitor the way we are, and we'll use the principle of adaptive management. If we grow and we find that we are having an impact … then we'll use adaptive management, which is a precautionary principle to us. We'll figure out what's going on and do what we have to do to mitigate whatever the effect is that's perceived to be or is a negative. Mike Meeker, President, Northern Ontario Aquaculture Association (17:22)*

In contrast to marine aquaculture, the Committee heard from very few witnesses who specifically discussed freshwater aquaculture. Our fact-finding missions led us to visit regions of the country where the marine aquaculture sector operates, the sector that generates most of the aquaculture production in Canada. What we learned during the hearings is that freshwater aquaculture challenges seem to differ to some extent from those faced by marine-based aquaculture. Since Canada has vast untapped freshwater aquaculture potential, it appeared to us that the continuation and expansion of research and knowledge specific to freshwater environments is crucial if this segment of the industry is to grow sustainably alongside marine-based aquaculture.

We learned that, like in marine-based aquaculture, freshwater aquaculture operators must monitor the health of their stock to help prevent disease outbreaks. Similarly, pathogens are naturally-occurring in freshwater environments as they are in marine environments. However, the Committee heard that with good management practices and vigilance about the health of stocks, disease management appears to be less of a concern in freshwater environments than it is in marine environments. In fact, the ON rainbow trout grower who appeared before the Committee has not used any drugs or pest control products in his production over the past eight years and has become the country's first producer of certified organic rainbow trout according to the Canadian standard.

The greatest concern associated with freshwater aquaculture seems to be nutrient loading – more specifically, phosphorus loading due to the environment's limited flushing capacity. For this reason, certain witnesses called for the use of closed-containment systems instead of the net cages that are presently in place in the freshwater aquaculture sector in ON. On the other hand, the Committee also heard of freshwater aquaculture operations that have coexisted at Manitoulin Island for several decades with limited negative environmental impacts.

During the hearings, we learned about research undertaken since 2001 at the Experimental Lakes Area (ELA). Considered the world's biggest natural wet lab, the ELA is operated by DFO and holds 58 small lakes in a forested region of northwest ON. A 12-tonne aquaculture cage is stocked every spring in Lake 375 with 10,000 rainbow trout (this corresponds to a higher density than a usual operation); fish are fed twice daily and harvested around the end of October. Operations take place as at a normal grow-out site, except for scientists measuring everything possible. Another adjacent reference lake is used for comparisons. What has been learned so far? We were told that some sediment builds up under the cage during normal operations, and some organisms normally present on the bottom abandon the area. Sediments taken at different intervals away from the cage show little change from background measurements.

Moreover, the wild lake trout population grows faster and reproduces more rapidly in Lake 375 than those in the reference lake.

The Committee also heard about an interesting experiment in Sudbury, ON, where fish are grown for stocking purposes at 5,000 feet underground in an abandoned mine shaft. The ambient temperature of the water in the shaft is constant, at about 22 degrees Celsius year-round and appears to be an incredible resource of free heat for use. We also heard about another innovative technology developed for use in freshwater aquaculture, the submersible cage. A commercial net cage was modified so that it can be lowered and allows ice to move over the cage during the spring season and eliminates the risk of wind-driven ice movements that may damage fish cages and cause economic and environmental losses for aquaculture operators.

The Committee was told that rainbow trout is the species generally grown in ON's freshwater aquaculture sector, but we also heard that there is great potential to branch out into other types of finfish species. If this can occur in a sustainable manner, the Committee is in favour of the development of this segment of the industry, understanding that its challenges and regulatory framework differ somewhat from those of the marine finfish sector.

Under the proposed AAR, DFO will regulate on a pan-Canadian basis the use of drugs and pest control products in marine aquaculture operations, as well as the deposition of organic matter. The Committee believes that DFO should consider the establishment of regulations similar to the AAR for application to freshwater aquaculture across the country. We further believe that, as freshwater cage aquaculture grows, it will be important to continue to monitor its effects on Canada's lakes.

CHAPTER 5: Research and Development

> *If I could leave you with one recommendation, we need our federal government to maintain and even increase funding for science, research and development. It is so fundamental to the success and the future of Canada's aquaculture sector. Michael Szemerda, VP, Saltwater Operations, Cooke Aquaculture (14:153)*

There is a strong foundation of aquaculture research in Canada. At the federal level, several departments and agencies fund, carry out and/or collaborate on aquaculture-related research. During site visits throughout Canada, the Committee visited several research facilities that have been performing world-class R-D on a wide range of topics related to aquaculture for decades. This research has helped improve the industry's environmental performance and led to stricter government regulations. During our fact-finding missions to Norway and Scotland, we were told that Canada is internationally recognized for the high calibre of its aquaculture R-D and that the effectiveness of its research could be further improved through stronger collaboration. The Committee believes that improved coordination of R-D activities coupled with effective collaboration between those that support aquaculture-related R-D will be imperative to ensuring that the aquaculture industry continues to thrive.

Furthermore, the Committee believes that it is important for R-D to continue to inform the aquaculture regulatory framework and the environmental performance of the industry. Siting criteria, aquaculture-related regulations, monitoring practices, reporting requirements, and more should regularly be revised and updated in light of new R-D findings and proven best practices. In our view, such a revision cycle is of paramount importance if the Canadian aquaculture industry wants to remain competitive in the global market and continue to foster its social licence.

5.1 Federal Aquaculture Research

DFO administers two research programs devoted to aquaculture. Under the Program for Aquaculture Regulatory Research (PARR), research focuses on: aquacultured-wild fish interactions, the cumulative effects of aquaculture on the environment, far-field effects and ecosystem interactions. Research under the PARR is funded and undertaken by DFO, and mainly serves to support industry management, management decisions, and the development of policies and regulations. For its part, the Aquaculture Collaborative Research and Development Program (ACRDP) supports research in relation to fish health optimization and the industry's environmental performance.[33] The ACRDP is a collaborative program, whereby industry provides some of the funding, but the work is undertaken by DFO researchers.

In addition to DFO, the Committee heard about a number of other federal departments and agencies funding aquaculture research. For example, the Natural Sciences and Engineering Research Council (NSERC) provides funds to universities and the academic community in Canada. Some of its programs provide research funds to university researchers who undertake aquaculture-related studies. Other NSERC programs encourage collaboration between industry and academic researchers, as well as the development of research networks. Similarly, the National Research Council of Canada (NRC) administers the Industrial Research Assistance Program (IRAP), which provides funds for innovative, technical industrial projects. In

33 DFO, ***Canada's Sustainable Aquaculture Program – Increasing our Scientific Knowledge***, Backgrounder, 14 February 2014.

addition, regional development agencies, such as the Atlantic Canada Opportunities Agency (ACOA), fund developmental projects in various regions.

Industry representatives told the Committee that, while they understood the importance of regulatory research and DFO's focus on regulatory science, they felt that more federal funding should be available for research into operational aspects of aquaculture that would be useful to the whole of the industry. For the finfish aquaculture sector, this could include research into stock development, fish development, vaccine development, and fish health, as well as genomic research in the areas of elite broodstock development, feed optimization, and effective disease and pest management strategies. In the area of shellfish aquaculture, we were told that research into AIS should be prioritized, as well as into the potential impact of ocean acidification on shellfish aquaculture. Furthermore, we were reminded that many segments of the aquaculture industry consist almost entirely of small and medium size enterprises (SMEs), including several shellfish growers and most RAS facilities supplying niche markets, and the freshwater sector. These SMEs have a very limited research capacity, and it is important to invest in the type of research that can help these companies become or remain competitive globally, including: research on production efficiencies; processing efficiencies and automation; fish health; integrated pest management; environmental impacts of aquaculture; broodstock genetics; and by-product utilization.

Several witnesses noted that the federal government had reduced investments in aquaculture research programs in recent years. Furthermore, it was stressed that budget cutbacks at the federal and provincial levels make it difficult for industry, particularly for SMEs, to leverage funding and expertise for collaborative research.

The Committee believes that PARR provides critical insight to further improve the regulatory regime under which Canadian aquaculture is managed. The current emphasis of the program on aquacultured-wild fish interactions, the cumulative effects of aquaculture, and far-field impacts is in line with the priority areas of research noted during our study. Similarly, we believe that the ACRDP has great potential as it encourages industry and DFO researchers to undertake collaborative research activities with the goal of improving the competitiveness of the Canadian aquaculture industry. The R-D activities carried out under the two programs are important. Given limited resources, it is imperative to prioritize research to improve environmental management and environmental performance in aquaculture. In the context of limited financial resources, priority funding should be given to collaborative work.

5.2 Collaborative Research

> *When I think about how to increase aquaculture [in Canada], it's clear to me that the direction of this industry must be science-based in partnership with industry and ecosystem managers. It's less costly to ensure that investments into science are put at the front end of the development of the industry than to have problems develop and require science to find mitigation solutions after the fact. Sarah Stewart-Clark, Assistant Professor, Shellfish Aquaculture, Faculty of Aquaculture, Dalhousie University (10:70–71)*

A message consistently heard by the Committee during site visits in Canada and abroad relates to the need to foster aquaculture research collaboration between scientists and researchers from government departments, academia and industry.

We learned that in Norway, there is a tradition of strong collaboration between industry, regulatory authorities and academia in aquaculture research. The Committee was told that cooperation and exchange of information between government, academic researchers and the industry contribute to making Norwegian aquaculture innovative and cutting-edge. The results of this collaborative research are used to reform the regulatory regime and make improvements in production practices. Scotland, like Norway, aims to foster collaboration between universities, businesses and other stakeholders in aquaculture research and recently established the Scottish Aquaculture Innovation Centre. The Centre brings together industry and academia to provide innovative solutions with the aim of setting winning conditions for the industry to grow economically and sustainably.

In N.L., as part of the provincial aquaculture strategy launched in 2014, an advisory committee has been established to review current research activities in the province and to provide recommendations to strengthen collaboration among that research community. Stronger collaboration in the field of research is seen as a prerequisite to a growing aquaculture industry in the province.

The Committee also learned that, between 1999 and 2006, the federal government financially supported AquaNet, a network of centres of excellence whose goal was to foster the sustainable

While in St. John's, the Committee visited the Ocean Sciences Centre (OSC) of Memorial University, which is a world-class marine research and training facility that provides oceanfront training on a year-round basis and embodies one of Canada's largest marine laboratories. The Committee had the opportunity to visit two of the OSC's facilities: the Dr. Joe Brown Aquatic Research Building, which supports research, training, pre commercial production, and small scale commercial trials in marine aquaculture; and the Cold-Ocean Deep-Sea Research Facility, which provides several multi-tank systems and equipment for the study of deep-sea life, aquatic infectious diseases, and invasive organisms.

Photo courtesy of: Ocean Sciences Centre, Memorial University.

development of aquaculture in Canada through collaborative research. To facilitate the growth of a sustainable aquaculture industry in the next ten years in Canada, the Committee believes that a formal mechanism fostering research collaboration between federal and provincial departments, all segments of the industry and academia should be developed. Therefore, the Committee recommends:

8. **That Fisheries and Oceans Canada develop without delay a formal mechanism with the provinces, the research community and the industry to foster collaborative research and development in the field of aquaculture.**

5.3 Synthesizing Research and Communicating its Findings

On more than one occasion during the hearings, witnesses pointed to the need for synthesizing the results of current research. They explained that, while a considerable amount of research has been conducted on the potential effects of aquaculture on the environment in Canada and abroad, this body of research has never been compiled, synthesized, and interpreted to provide a "big picture" view of the industry in terms the general public can understand. The research carried out by a wide range of experts and groups, research foundations, DFO scientists, Canadian universities, and international experts is disjointed and needs to be brought together. This exercise, albeit a large undertaking, could: 1) help inform Canadians about research already conducted and its main findings; 2) highlight the research currently underway to identify R-D gaps or areas for which there are no conclusive findings, that are causes of particular concern or simply require further study; and 3) continue to make Canada a leader in aquaculture research.

Moreover, the results of this exercise should be communicated to the general public in a way they can easily assimilate. It is the view of the Committee that this information will contribute to more informed discussions and debates on aquaculture, and help everyone understand how the industry can continue to operate and grow sustainably into the future. Therefore, the Committee recommends:

9. **That Fisheries and Oceans Canada complete within the next two years a thorough assessment of aquaculture research to inform the public on the main findings and identify gaps in research and development that would become the focus of future research.**

CHAPTER 6: Social Licence and Public Reporting

> *"One of the reasons we think that people are unsure about our industry is because salmon farming is ever changing… There is a natural inclination to fear what we don't understand (…)." Pamela Parker, Executive Director, Atlantic Canada Fish Farmers Association (10:9-10)*

The Canadian aquaculture industry annually generates $1 billion worth of positive benefits, including direct and indirect employment and the production of healthy and nutritious proteins. Nonetheless, public concern about its environmental effects remains high in some parts of the country, reducing its social licence.

As we have noted in the previous chapters, some of these concerns are genuine and stem from irresponsible practices and/or inadequate management. Correcting these situations will certainly help improve the aquaculture industry's social acceptance. For industry, this means being socially responsible and capable of demonstrating its sustainability – economically, socially and environmentally.

Government can help improve aquaculture's social licence by adopting and enforcing a rigorous and science-based governance framework that protects precious resources – our wild salmon stocks, other wild fish populations, and sensitive habitats – and preserves them for years to come. Public trust can also be improved by government openly providing information about the aquaculture industry and disclosing the industry's environmental performance data.

It is difficult, however, for the industry to gain and maintain public confidence when misinformation circulates about aquaculture. As a first step, such misinformation must be addressed.

6.1 Correcting Misinformation

What struck us during our study was the amount of contradicting testimony in relation to the environmental impacts of aquaculture, where some witnesses were stating one thing with certainty, while others would state the complete opposite... with certainty! On more than one occasion, we found ourselves discussing this issue and the possibility that misinformation was being presented – although the Committee does not believe that it was done intentionally.

We believe that contradicting testimony was often the result of the generalization of certain facts rather than sound conclusions pulled from scientific research. In our view, misinformation, generalization, and misinterpretation should be avoided at all costs. Through the experience gained over this 18-month study, the Committee would like to clarify certain matters that, at first sight, seemed very contentious, but with time and information, were found to be the perpetuation of perceptions and misinformation. It is our hope that these explanations will provide clarity on certain contentious topics and consequently improve the debate on aquaculture in Canada.

6.1.1 Benthic Environment

One such perception is that waste from finfish aquaculture operations simply accumulates in lake and ocean bottom sediments over time and surpasses the environment's carrying capacity. In fact, as noted previously, aquaculture licence conditions require that once aquaculture finfish have been harvested, sites must remain fallow for a time to ensure the environment returns to its natural state prior to new stock being introduced. In addition, siting criteria ensure that potential aquaculture sites are biophysically suitable for this type of activity, while licence conditions require

regular sediment sample testing to monitor benthic health. New monitoring requirements for organic matter deposition to be implemented pursuant to DFO's proposed AAR for finfish operations will ensure that thresholds are respected by operators and enforced by inspectors.

The science presented to the Committee clearly demonstrated that in the long-term, when practised as per stipulated conditions and applicable legislation, aquaculture activities do not negatively impact the benthic environment and on the rare occasions when it does, monitoring is in place to minimize (or reverse) negative impacts. Unfortunately, certain benthic environments have not fully recovered from aquaculture activities (as discussed in Chapter 4), but these represent a minority of sites. In addition to these sites no longer being used for aquaculture, events such as these help update the regulatory framework to ensure it does not occur again. These few examples should not be generalized as they unfairly taint the industry as a whole.

In Gaspé, the Committee met with representatives from the Québec Fisheries and Aquaculture Innovation Centre (Merinov) to learn about its aquaculture activities. Established in 2010, Merinov is a not-for-profit organization that carries out projects involving research and development, technology transfer, technical assistance, and monitoring. Its goal is to "contribute to the sustainable development and competitiveness of Québec's aquaculture industry."

6.1.2 Infectious Salmon Anaemia

There is an ongoing debate about the presence of ISA on Canada's West Coast. DFO and the CFIA as well as other researchers are adamant that ISA is not present in B.C. waters. However, a few independent researchers continue to claim that the disease is present in B.C. waters and threatens wild fish populations. The Committee was made aware of one laboratory obtaining a positive ISA reading in the Pacific Ocean, but was told that at times, false-positive results can be obtained. In addition, the Committee was informed that the laboratory in question had been stripped of certain accreditations due to poor practices.

As we understand it, should an ISA outbreak occur, the virus could spread quickly if no mitigation measures are taken immediately. As a corollary, if ISA was in fact present in B.C. waters, it is likely that at least one ISA outbreak would have occurred and been reported to CFIA, which simply has not happened. Two explanations therefore lend themselves to the current situation: 1) ISA is not present in B.C. waters, or 2) if ISA is present in B.C. waters, the strain is one that does not cause disease. Either way, we do not believe that ISA is presently a concern in regards to the health of aquacultured or wild fish stocks in B.C. However, it remains a highly contentious topic that maims the reputation of salmon aquaculture operations in B.C.

6.1.3 Piscine Reovirus

During the Nanaimo hearings, a witness suggested that a new virus – the Piscine Reovirus (PRV) – had been introduced to B.C. waters by salmon aquaculture companies through smolt imported from Norway and that the virus was a causative agent of Heart and Skeletal Muscle Inflammation (HSMI). However, a recent study found that PRV is not a new virus in the Pacific Ocean and that it was first identified in 1977 in a wild-source steelhead trout from B.C.; thus, predating the start of salmon aquaculture in the province. The study also confirmed that the fish that carry PRV did not show any signs of disease, such as HSMI.[34] Unfortunately, the perpetuation of such misinformation causes harm to the aquaculture industry in B.C. and across Canada and feeds the fear that aquaculture will or has already introduced foreign pathogens into B.C. waters, which is simply not the case.

A recent Federal Court Decision, *Morton v. Canada (Fisheries and Oceans)*,[35] briefly discussed PRV as a possible viral precursor to HSMI. The decision did not rule on that point since it was not the matter in question, but it is important to note, however, that this became a focal point of interest when the ruling was covered by the media. The decision does, however, note that the causal relationship between PRV and HSMI had not been conclusively established.

6.1.4 Sea Lice Treatments

During the public hearings in N.S., the Committee often heard witnesses from that province express concerns about the use of sea lice control products; they noted that these products harm their local marine environments as well as non-target species. However, industry representatives informed the Committee that, over the last 10 years, there have not been any sea lice treatments in N.S. at salmon grow-out sites. They explained that sea lice levels in N.S. are below the levels at which treatment

34 Gary Marty et al., "**Piscine Reovirus in Wild and Farmed Salmonids in British Columbia, Canada: 1974–2013**," *Journal of Fish Diseases*, 22 July 2014.
35 Federal Court of Canada, **Decision 2015 FC 575**, 6 May 2015.

would be required. We were told that the low prevalence of sea lice is, at least in part, due to the relatively limited scale and wider distribution of the salmon aquaculture sector in the province. Although the Committee understands why witnesses from other provinces expressed concern about the environmental impact of the use of sea lice control products, why witnesses from N.S. discussed this issue is unclear. It is the view of the Committee that this is a good example of the generalization of a concern, which leads some to think that salmon aquaculture operations are regularly treating sea lice in N.S., which is not the case.

6.1.5 Aquaculture Activities Regulations

A number of witnesses raised objection to DFO's proposed AAR on several occasions during the Committee's study. In their opinion, the proposed regulations would allow industry to use deleterious substances such as veterinary drugs and pest control products more freely and more intensively. The goal of the AAR is precisely the opposite; it aims to regulate the use of deleterious substances more strictly through monitoring and reporting of each treatment and encourage recourse to non-chemical alternatives.

Provisions governing the use of veterinary drugs and pest control products such as those proposed in the AAR are necessary to correct an important incoherence in the current federal aquaculture regulatory framework. The aquaculture industry has used products considered to be "deleterious substances" pursuant to the *Fisheries Act* definition in its ongoing activities for several years. In doing so, aquaculture operators are in breach of the *Fisheries Act*, even though the products used are sanctioned by the *Food and Drugs Act* (FDA) and the *Pest Control Products Act* (PCPA), which places the industry as a whole in an awkward position. The proposed AAR will eliminate that incoherence, by setting out exceptions under sections 35 and 36 of the *Fisheries Act*, while still regulating the industry's use of the substances under the FDA and PCPA as is presently done.

Unfortunately, when the proposed AAR were discussed by some witnesses, the concern over the use of deleterious substances overtook discussions, which not only leads to misinformation, but also paints a grim picture of the regulations, which in fact, when implemented, will solidify the legislative framework governing aquaculture in Canada (not weaken it).

6.2 Involving Communities

> *Social licence needs to be earned and then maintained by companies at the community level and it is not likely or expected to ever represent a 100 per cent consensus. Murray Hill, Regional Manager, Atlantic Canada Fish Farmers Association (14:39)*

The Committee was told that the industry's most important tool to gain or enhance social licence vis-à-vis aquaculture is public consultation/engagement very early in the siting and licence application process. This provides a forum where the industry can: explain how it operates; demonstrate the potential economic opportunities that can be realized within the community; and answer any questions, speak to any concerns and discuss any potential conflicts raised by residents. The sooner these issues are identified, the better they can be addressed. As noted in Chapter 1, First Nations know a great deal about the areas where they live and aquaculture companies could greatly benefit from their traditional knowledge in their search for suitable aquaculture sites.

Today, several First Nations throughout Canada are engaged in aquaculture development to generate employment and prosperity in their communities.

The Committee had the opportunity to meet with many of them or heard about their participation in aquaculture as part of our hearings and site visits, including: Ahousaht, Kitasoo, Kyuquot, Quatsino, and K'omoks in B.C.; Eel River Bar and Listuguj in N.B.; Miawpukek in N.L.; Potlotek and Waycobah in N.S.; and Mi'kmaq in P.E.I. In contrast, some other First Nations are more reluctant to become involved in aquaculture as they are uncertain about the environmental effects of aquaculture development. Still, the Committee heard from other First Nations who are opposed to aquaculture development within their traditional territories. Increasing awareness of the potential opportunities afforded by aquaculture and correcting misinformation regarding the environmental effects of the industry would certainly contribute to broader engagement in aquaculture by First Nations and other Aboriginal communities.

The Committee also heard that public engagement must be maintained once aquaculture operations are established. For example, some companies have a community liaison committee in each of the areas where they operate, with membership that includes business people, fishermen, harbour authority representatives, Aboriginal groups, community leaders and citizens – both those who support aquaculture as well as those who do not. An independent facilitator chairs the committee. This forum provides a place for dialogue where people can have open and honest conversations (not debates) about the industry in their community.

6.3 Reporting to the Public

The Committee heard that it is not the government's duty to grant social licence and that it should be done at the community level. Nevertheless, government can aid the aquaculture industry gain social licence by establishing a sound and science-based regulatory framework, such as the one we recommend in this report. Government can also contribute to social acceptance by publicly recognizing best practices and demonstrating industry legitimacy. Certain industry representatives suggested that certificates of compliance should be issued to aquaculture companies for display; these certificates would show other stakeholders and the public that companies are operating in a sustainable and responsible manner. Other members of the industry suggested that annual reports be published by government on compliance. Communicating the results of research as discussed in Chapter 5 and demystifying the regulatory framework surrounding the industry would go a long way to encouraging public acceptance of aquaculture, and increase confidence that aquaculture development is being managed in a manner that is congruent with the values of Canadian society.

In Norway and Scotland, reporting information to the public on a wide range of topics related to the aquaculture industry is a tool used to enhance social acceptance. As shown in Volume Two, information on disease and parasites affecting aquacultured and wild fish is routinely collected by the Norwegian Veterinary Institute and made available to the public on an annual basis. Data on the use of pharmaceuticals is also published annually by the Norwegian Institute of Public Health. Furthermore, data on aquaculture facility escapes are published regularly by the Department for Fisheries and Aquaculture.

Similarly, the Scottish Government makes aquaculture regulatory information accessible through a data search tool and an interactive map available on Scotland's Aquaculture website, launched in 2013. A wide range of data is provided, such as industry location, reports on controlled activities, monthly biomass measurements, escapes, sea lice in-feed treatment residues, and more. In addition, Marine Scotland's Fish Health

Inspectorate proactively publishes information on its inspections and operational activities on a quarterly basis. Moreover, the Scottish Salmon Producers Organisation voluntarily publishes quarterly information on sea lice levels per region.

In Canada, given federal and provincial responsibilities over aquaculture, there is no single agency reporting information about the industry to the public. The availability of data shared with the public and the extent of the information provided vary from one province to another. In general, there is a concern in Canada about a lack of reporting of information regarding the aquaculture industry, particularly on disease outbreaks, the use of chemicals, escape events and impacts on the benthic environment. It is also argued that, when information is made available, it is not released in a timely fashion. This concern is being addressed to some extent by DFO. Under the proposed AAR, aquaculture operators will be required to report, on an annual basis, the use of drugs or pest control products, the purpose of use, the date and quantity used, and a record of consideration of treatment alternatives, as well as the results of benthic monitoring, and more. This information will be reported annually to DFO and subsequently made public. This will be in addition to information that is already available on provincial regulatory authorities' websites, as well as on DFO's website in relation to B.C.

The Committee was pleased to learn that the information DFO will collect under the proposed AAR will be made available to Canadians to demonstrate how DFO is managing aquaculture, but more importantly, to demonstrate the industry's actual environmental performance across the country. However, these data will be aggregated, not presented for each operator. Furthermore, other information/data reported to the provinces will be found in separate locations. In order to ensure that Canadians seeking information on aquaculture operations can find it in a single convenient place, the Committee recommends:

10. **That Fisheries and Oceans Canada, with input from the provinces via the Canadian Council of Fisheries and Aquaculture Ministers, establish within the next two years a central database accessible to the public that contains all currently available information pertaining to the licence and compliance of each aquaculture operator.**

CONCLUSION

The Committee carefully reviewed the vast amount of evidence received and is confident that the Canadian aquaculture industry can continue to innovate and grow sustainably – environmentally, economically and socially. With untapped marine and freshwater resources, a diversified industry, innovative RAS entrepreneurs, world-class aquaculture research, a rigorous, science-based and streamlined regulatory framework, and transparent communication and information about the industry, Canada has the potential to become a major player in global aquaculture production.

We feel that there is a window of opportunity for implementing the recommendations proposed in Volume Three. The industry, rural, coastal and Aboriginal communities, research institutes, universities, government representatives, and more all called for a change to the regulatory framework in one way or another. There is also a momentum building, both within Canada (particularly in N.L. and N.S.) and abroad – particularly Norway and Scotland – to review and renew aquaculture-related legislation and policy to help encourage the sustainable growth of this industry. Let's not miss this opportunity, because aquaculture capital is mobile; companies willing to invest may look elsewhere to expand their operations, leaving Canada treading water, when it has an ocean of opportunities!

APPENDIX A: Glossary

Aquaculture	The cultivation and harvesting of aquatic organisms – finfish, shellfish, molluscs and aquatic plants – in the marine environment, freshwater environment (in lakes and ponds) or in tanks on land. Monoculture refers to the cultivation of a single crop or species, while polyculture or IMTA refers to the rearing of two or more complementary species in the same grow-out site.
Bay Management Area	Government, with industry's collaboration, delimits zones where aquaculture operations are synchronized. These zones prescribe best practices and strict biosecurity procedures. The use of BMAs is considered a sound and scientifically-based method of reducing pathogens.
Benthic environment or Benthos	Refers to the bottom under a body of water. The term "benthos" refers to organisms that inhabit the bottom environment.
Biomass	The total live weight of a stock of aquatic organisms in a growing area, at a particular time.
Biosecurity	Refers to the precautionary measures taken to minimize the risk of introduction and spread of potential pathogens in an aquaculture facility.
Broodstock	Population of mature animals selected for breeding; they will produce the next generation of cultivated fish.
Capacity (Assimilative or Carrying)	Assimilative or carrying capacity refers to the capacity of a particular body of water to support the growth of healthy aquatic animals over a long period without negative effects to an ecosystem's productivity, adaptability and capacity for renewal.
Chemotherapeutant	Means vaccines, veterinary drugs and pest control products used to combat disease and pests in aquatic organisms.
Cleaner-fish	Species of fish that can use their specialized mouthparts to detach lice and other parasites from fish.
Depuration	Technique whereby aquatic organisms, usually shellfish, are placed and held in clean water to clean themselves of undesirable substances (sand, pollutants, etc.) of possible harm to human beings.
Economic Impact	Include direct, indirect and induced impacts of an industry.
Eutrophication	Natural or artificial nutrient enrichment in a body of water, associated with extensive plankton blooms and subsequent reduction of dissolved oxygen.
Fallowing	A process where grow-out sites normally used for production are left to recover for a period of time.
Farm-gate value	The farm-gate value represents a product's value once it is sold by the producer.

Fouling organism or biofouling	Organisms that grow on submersed aquaculture equipment (such as algae) often to the detriment of the equipment and the health of the aquacultured organisms.
Genome	An organism's entire genetic make-up or complete DNA structure.
Grow-out site	Refers to the area in which the aquacultured finfish or shellfish will be grown to maturity.
Hatchery	Place for artificial breeding, hatching and rearing through the early life stages of aquatic organisms. Generally, in finfish aquaculture, hatcheries and nurseries are closely associated. On the contrary, in shellfish aquaculture, specific nurseries are common, where larvae produced in hatcheries are grown until ready for stocking grow-out sites.
Integration (Horizontal or Vertical) and Consolidation	Horizontal integration or consolidation refers to the process through which companies grow laterally by gaining control over other firms performing similar activities at the same level in the marketing sequence. Vertical integration refers to the process of bringing two or more successive stages of production and/or distribution of a product under the same control. For example, aquaculture hatcheries, grow-out operations, feed manufacturing, processing, and product marketing.
Level or Trophic Level	The position an organism occupies in the food web (e.g. primary producers, primary consumer, predators).
Net cage	Enclosure where aquaculture products are grown in marine and freshwater environments. Enclosures are closed on the bottom as well as on the sides, generally with mesh or net screens and allow natural water exchange. Often, enclosures are also fitted with a top mesh to reduce predation.
Ocean Acidification	A process by which the atmospheric carbon dissolves in the ocean, reacts with water molecules and produces carbonic acid. Acidification has an impact on marine life.
Organic Load or Nutrient Load	The accumulation of organic matter or nutrients in a given area or on a given surface.
Pathogen	Refers to infectious bacteria, viruses, or parasites that cause disease (pathology) in a living host. Not all bacteria, viruses or parasites are pathogens. Many pathogens are common and naturally present in the ecosystem.
Salmonid	A group of fish that includes salmon, trout, and char, belonging to the taxonomic family of Salmonidae.
Sea lice	Several species of small parasitic crustaceans commonly found on finfish in the marine environment, but not found in the freshwater environment.

Sediment Sulphide Concentration	Sediment sulphide concentrations help determine the health of the benthic environment in soft-bottom ecosystems.
Seed or Spat	Seed or spat refer to fertilized shellfish larvae found in the water column. A seed or spat collector is an underwater device used to collect shellfish larvae for later use in aquaculture facilities.
Single-year-class	Makes reference to the grouping of fish based on their time spent within the marine environment.
Siting	Process during which a site application is considered for aquaculture by regulatory departments and agencies; many criteria are used to determine if a site is suitable for aquaculture. Conditions can be identified at this stage and imposed later in the terms of the licence.
Smolt (or Juvenile)	A smolt is a juvenile salmon that has completed rearing in freshwater and migrates into the marine environment. Smolt vary in size and age depending on the species of salmon.
Soft and hard ocean substrate	Soft refers to seabed types that can be sampled using sediment grab devices (e.g., gravel, sand, or mud). Hard seabed types cannot be sampled using sediment grab devices (e.g., rock or shell) and are usually monitored through video transects generated by an underwater camera.
Tarpaulin	Tarp-like systems used in grow-out sites to help administer sea lice bath treatments; the tarp surrounds the net cage and keeps the pest control product in to ensure that the fish are treated.
Well-boat	Specialized boats used to help administer sea lice bath treatments; less labour-intensive method of administering sea lice bath treatments than using tarpaulins.

Source: Adapted from the Food and Agriculture Organization of the United Nations, ***Glossary of Aquaculture***. Also based on information from DFO's website.

APPENDIX B: Witnesses

March 31, 2015

Canadian Aquaculture Industry Alliance
Ruth Salmon, Executive Director

Terry Ennis, President, Board of Directors Executive

Pamela Parker, Member, Board of Directors Executive and Government Relations Committee

Fisheries and Oceans Canada
Eric Gilbert, Director General, Aquaculture Management, Ecosystems and Fisheries Management

Kevin Stringer, Senior Assistant Deputy Minister, Ecosystems and Fisheries Management

Jay Parsons, Director, Aquaculture Science, Ecosystems and Fisheries Management

March 24, 2015

Fisheries and Oceans Canada
Stewart Johnson, Science Section Head, Aquatic Animal Health, Pacific Region

Susan Farlinger, Regional Director General, Pacific Region

'Namgis First Nation
Debra Hanuse, Chief

British Columbia Ministry of Agriculture
Gary Marty, Fish Pathologist, Animal Health Centre

As an Individual
Alexandra Morton

Watershed Watch Salmon Society
Stan Proboszcz, Science Advisor

Marine Harvest Canada
Ian Roberts, Communications Manager

March 10, 2015

Fisheries and Oceans Canada
Eric Gilbert, Director General, Aquaculture Management, Ecosystems and Fisheries Management

Trevor Swerdfager, Assistant Deputy Minister, Ecosystems and Oceans Science

Michael Alexander, Acting Assistant Deputy Minister, Ecosystems and Fisheries Management

As Individuals
William Ernst

Michael van den Heuvel, Canada Research Chair in Watershed Ecological Integrity, Canadian Rivers Institute, Department of Biology, University of Prince Edward Island

Ecology Action Centre
Robert Johnson, Sustainable Seafood Program Manager

February 17, 2015

Dalhousie University, Schulich School of Law
William Lahey, Associate Professor of Law

January 27, 2015

Northern Ontario Aquaculture Association
Mike Meeker, President

December 2, 2014

Fisheries and Oceans Canada
Eric Gilbert, Director General, Aquaculture Management

Wayne Moore, Director General, Strategic and Regulatory Science

Kevin Stringer, Senior Assistant Deputy Minister, Ecosystems and Fisheries Management

November 20, 2014

Government of Prince Edward Island
The Honourable Ron W. MacKinley, MLA, Minister of Fisheries, Aquaculture and Rural Development

Richard Gallant, Deputy Minister, Department of Fisheries, Aquaculture and Rural Development

Neil MacNair, Director, Aquaculture Division, Department of Fisheries, Aquaculture and Rural Development

New Brunswick Department of Agriculture, Aquaculture and Fisheries
Kimberly Watson, Regional Director, Regional Development Division of St. George

Joseph LaBelle, Director, Policy Advocacy and Strategic Projects Branch

Katherine Brewer-Dalton, Senior Advisor, Regional Development Division

Mi'kmaq Confederacy of Prince Edward Island
Randy Angus, Director, Integrated Resource Management

Skretting
Steven Backman, Aquaculture Veterinarian

New Brunswick Research & Productivity Council
Benjamin Forward, Head, Food, Fisheries and Aquaculture Department

Atlantic Canada Fish Farmers Association
Betty House, Research and Development Coordinator

Center for Aquaculture Technologies Canada
Debbie Plouffe, Vice-President, Research

Cooke Aquaculture Inc.
Michael Szemerda, Vice-President, Saltwater Operations

Atlantic Salmon Federation
Jonathan Carr, Executive Director, Research and Environment

NSERC Canadian Integrated Multi-Trophic Aquaculture Network
Thierry Chopin, Professor of Marine Biology, University of New Brunswick

Town of St. Andrews
Stan Choptiany, Mayor

As an Individual
William Ernst

Village of Blacks Harbour
Teresa James, Mayor

Conservation Council of New Brunswick
Inka Milewski, Science Advisor

Huntsman Marine Science Centre
Jamey Smith, Executive Director

Table maricole du Québec

Sophie Fortier, Coordinator

Atlantic Canada Fish Farmers Association
Larry Ingalls, Chair and President, Northern Harvest Sea Farms

Murray Hill, Regional Manager

PEI Aquaculture Alliance
Dawn Runighan, President (PEIAA), and Facility Manager, Aqua Bounty Canada

David Lewis, Board Member, Island Oyster Growers Group & Shellfish Grower, Owner

Ann Worth, Executive Director

New Brunswick Professional Shellfish Grower's Association
Martin Mallet, Chair

Confederation Cove Mussel Co. Ltd
Stephen Stewart, President

October 7, 2014

The Georgian Bay Association
Claudette Chabot, Chair, Aquaculture Committee

Bob Duncanson, Executive Director

June 12, 2014

Marine Scotland
Willie Cowan, Head of Performance and Aquaculture

Paul Haddon, Aquaculture Policy Manager

June 5, 2014

Royal Norwegian Embassy
Inger Elisabeth Meyer, First Secretary

May 29, 2014

Potlotek First Nation
Charles Doucette, Fishery Manager

Genome Atlantic
Steve Armstrong, President and CEO

Eel Lake Oyster
Nolan d'Eon, Owner and President

As individuals
James Duston, Professor, Aquaculture, Department Plant and Animal Sciences, Dalhousie University

Jon Grant, NSERC-Cooke Industrial Research Chair in Sustainable Aquaculture, Department of Oceanography, Dalhousie University

Sarah Stewart-Clark, Assistant Professor, Shellfish Aquaculture, Faculty of Agriculture, Dalhousie University

The Ecology Action Centre
Susanna Fuller, Marine Conservation Coordinator

Lobster Council of Canada
Stewart Lamont, Managing Director of Tangier Lobster Company Limited

St. Mary's Bay Coastal Alliance
Brenda Patterson, Member

Nova Scotia Salmon Association
Carl Purcell, Past President

Aquaculture Association of Nova Scotia
Peter Corey, President

Dr. Vicki Swan, Research and Development Coordinator

Robin Stuart, Member

Brian Blanchard, Member

Bryan Bosien, Member

Cooke Aquaculture
Nell Halse, Vice President, Communications

Atlantic Canada Fish Farmers Association
Pamela Parker, Executive Director

Northeast Nutrition Inc.
Tom Taylor, Sales and Technical Support Manager

May 27, 2014

Collier Aqua Service Ltd.
Clyde Collier, Aquaculture Management Consultant

Miawpukek First Nation
Shayne McDonald, Lawyer and Director of Justice

Newfoundland and Labrador House of Assembly
Jim Bennett, member of the House of Assembly for St. Barbe

As individuals
Danny Boyce, Facility and Business Manager, Memorial University of Newfoundland

Cyr Couturier, Research Scientist and Chair, Aquaculture Programs, Fisheries and Marine Institute, Memorial University

Dr. Jillian Westcott, Aquaculture Instructor and Researcher, School of Fisheries, Fisheries and Marine Institute, Memorial University

Municipality of Harbour Breton
Roy Drake, Mayor

Sunrise Fish Farms Inc.
Dr. Laura Halfyard, General Manager

Salmonid Council Newfoundland and Labrador (SCNL)
Donald L. Hutchens, President

Town of St. Alban's Newfoundland and Labrador
Jamie LeRoux, Mayor

Newfoundland Aquaculture Industry Association
Cyr Couturier, President

Miranda Pryor, Executive Director

Darrell Green, Research and Development Coordinator

Newfoundland and Labrador Outfitter's Association
Tony Tuck, Fishing Committee Chair

Badger Bay Mussel Farms Ltd.
Rebecca White, Project Manager

Northern Harvest Sea Farms NL Ltd.
Jennifer Caines, Project Manager

Government of Newfoundland and Labrador
The Honourable Keith Hutchings, Member of the House of Assembly for Ferryland, Minister of Fisheries and Aquaculture

Newfoundland and Labrador Department of Fisheries and Aquaculture
Brian Meaney, Assistant Deputy Minister

Dr. Daryl Whelan, Director, Aquatic Health Division/ Chief Aquaculture Veterinarian

Newfoundland Aqua Service Ltd.
Boyd Pack, Owner and President

Sweeney International Marine Corp. and SIMCorp. Marine Environmental Inc.
Robert Sweeney, President and Senior Project Manager, Head Office

May 6, 2014

Canadian Food Inspection Agency
Dr. Debbie J. Barr, Acting Director, Animal Health, Welfare & Biosecurity Division, Policy and Programs Branch

Dr. Harpreet S. Kochhar, Ph.D., Executive Director, Animal Health Directorate, Policy and Programs Branch

Health Canada
Anatole Papadopoulos, Director, Bureau of Policy, Regulatory and Governmental Affairs, Food Directorate, Health Products and Food Branch

April 29, 2014

Canadian Aquaculture Industry Alliance
Clare Backman, President

Ruth Salmon, Executive Director

April 8, 2014

Tides Canada
Catherine Emrick, Senior Associate, Aquaculture Innovation

SOS Marine Conservation Foundation
Eric Hobson, President

April 1, 2014

Health Canada

Dr. Daniel Chaput, Director General, Veterinary Drugs Directorate, Health Products and Food Branch

Jason Flint, Director, Policy and Regulatory Affairs Division, Pest Management Regulatory Agency

John Worgan, Director, New Substances Assessment and Control Bureau, Healthy Environments and Consumer Safety Branch

March 26, 2014

Union of British Columbia Indian Chiefs
Chief Bob Chamberlin, Vice-President (Kwicksutaineuk Ah-kwa-mish First Nation)

Aboriginal Aquaculture Association
Chief Richard Harry, President

Sable Fish Canada Ltd. (Kyuquot Sound)
Linda Hiemstra, Projects Manager

First Nations Fisheries Council of British Columbia
Jordan Point, Executive Director

Genome British Columbia
Anthony Brooks, Chief Financial Officer and Corporate Secretary

North Island College
Stephen Cross, NSERC Industrial Research Chair for Colleges in Sustainable Aquaculture

K'omoks First Nation
Richard Hardy, Member

Taplow Feeds
Brad Hicks, Executive Vice- President

Town of Campbell River
Walter Jakeway, Mayor

Grieg Seafood BC Ltd.
Barry Milligan, Director Production, Veterinarian

As an individual
Alexandra Morton

Fisheries and Oceans Canada
Laura Richards, Regional Director Science

Andrew Thomson, Area Director, South Coast

Marine Harvest Canada
Clare Backman, Sustainability Programs Director

BC Salmon Farmers Association
Jeremy Dunn, Executive Director

Grieg Seafood British Columbia Ltd.
Stewart Hawthorn, Regional Director

Association for Responsible Shellfish Farming
Dr. Brian Hayden, President

Shelley McKeachie, Member

Dianne Sanford, Member

Island Scallops Ltd.
Robert Saunders, CEO

British Columbia Shellfish Growers Association
Roberta Stevenson, Executive Director

Kuterra Limited Partnership
Garry Ullstrom, CEO

AgriMarine Holdings Inc.
Sean James Wilton, President and CEO

February 25, 2014

Fisheries and Oceans Canada
The Honourable Gail Shea, P.C., M.P., Minister

David Bevan, Associate Deputy Minister

Dave Gillis, A/Assistant Deputy Minister, Ecosystems and Oceans Science

Trevor Swerdfager, Assistant Deputy Minister, Ecosystems and Fisheries Management Operations

February 4, 2014

Environment Canada
Louise Métivier, Director General, Industrial Sectors Directorate, Environmental Stewardship Branch

APPENDIX C: Fact-finding missions

British Columbia – March 24-25, 2014

Creative Salmon, Clayquot Sound (Grow-Out Site)	Tim Rundle, General Manager Lisa Stewart, HR and Communications Manager Ian Francis, Operations Manager Barb Cannon, Biology Manager
Cermaq, Clayquot Sound (Grow-Out Site)	Fernando Villarroel, CEO Laurie Jensen, Communications and Licenses Manager James Costello, Community Liaison Don McIntyre, Regional Production Manager Eric Jensen, Area Manager German Campos, Salt Water Manager Ron Carson, Site Manager
Cermaq, Tofino (Processing Plant)	Fernando Villarroel, CEO Terry Prosnia, Plant Manager James Costello, Community Liaison
Shelter, Tofino	Moses Martin, Chief Coucillor, Tla-o-qui-aht First Nation Wally Samuel, Protocol Committee Member, Ahouset First Nation Fernando Villarroel, CEO, Cermaq Tim Rundle, General Manager, Creative Salmon Lisa Stewart, HR and Communications Manager, Creative Salmon Laurie Jensen, Communications and Licenses Manager, Cermaq James Costello, Community Liaison, Cermaq
BC Centre for Aquatic Health Science, Campbell River	Dr. Sonja Saksida, CEO Dr. Ahmed Siah, Research Scientist Sandra Milligan, Board Member

Marine Harvest Canada, Sayward (Salmon Hatchery)	Clare Backman, Sustainability Programs Director Ian Roberts, Communications Manager Dean Guest, Freshwater Production Manager
Deep Bay Marine Field Station and Centre for Shellfish Research, Vancouver Island University, Bowser	Brian Kingzett, Manager Dr. Greg Crawford, Dean, Faculty of Science and Technology Dr. Helen Gurney-Smith, Research Scientist Stephanie Richards, Facility Coordinator William Litchfield, Director, Advancement and Alumni Claire Vine, Public Education Assistant
Fanny Bay Oysters, Union Bay	Bill Taylor, President, Taylor Shellfish (owner of FBO) Brian Yip, Manager Roberta Stevenson, Executive Director, BC Shellfish Growers Association
Taste of BC Aquafarm, Nanaimo (Land-based Closed-Containment Grow-Out Site)	Steve Atkinson, Owner Janet Atkinson, Owner

NEWFOUNDLAND AND LABRADOR AND NOVA SCOTIA – MAY 26, 28 and 30, 2014

Mike's Place, St. Alban's	Cyr Couturier, President, Newfoundland Aquaculture Industry Association (NAIA) Miranda Pryor, Executive Director, NAIA Jamie Leroux, Mayor, St. Alban's Jerry Kearley, Mayor, Milltown Elizabeth Barlow, Director, Aquaculture Development, NL Department of Fisheries and Aquaculture (DFA) Sheldon George, Production Manager, Cold Ocean Salmon Julia Jensen, Environmental Compliance Manager, Cold Ocean Salmon Jamie Kendall, Production Manager, Newfoundland Aqua Services Trenton Johansen, Operations Manager, Sunrise Fish Farms Jennifer Caines, Project Manager, Northern Harvest Sea Farms
Centre for Aquaculture Health and Development, NL DFA, St. Alban's	Dr. Daryl Whelan, Provincial Aquaculture Veterinarian and Director, Aquatic Animal Health Dr. Amanda Borchart, Aquaculture Veterinarian Elizabeth Barlow, Director, Aquaculture Development
Cold Ocean, Swanger Cove (Salmon Hatchery)	Brian Hull, Senior Manager Jim Murphy, Facility Manager Melissa Burke, Development Officer, Aquaculture, DFA
Northern Harvest Sea Farms Ltd, Fortune Bay (Grow-Out Site)	Jennifer Caines, Project Manager Doug Caines, General Manager Tanya Savory, Site Manager Jason Smith, Skipper Lee Fizzard, Site Worker

Southern Port Hotel, Harbour Breton	Cyr Couturier, President, NAIA Miranda Pryor, ED, NAIA Melissa Burke, Development Officer, Aquaculture, DFA
Aquaculture Facilities and Wharf, Harbour Breton	Cyr Couturier, President, NAIA Miranda Pryor, ED, NAIA Melissa Burke, Development Officer, Aquaculture, DFA
Norlantic, Pleasantview (Mussel Farm and Plant)	Terry Mills, President, Norlantic Miranda Pryor, ED, NAIA
Aquatron Laboratory, Dalhousie University, Halifax	Kevin Dunn, Director, Industry Liaison and Innovation Jim Eddington, Marine Biologist
Acadian Seaplants, Dartmouth	Louis Deveau, Chairman
Cooke Aquaculture, Saddle Islands (Grow-Out Site)	Nell Halse, V-P Communications Jeff Nickerson, Nova Scotia Production Manager John Garland, Southwest Nova Scotia Area Manager Scott Leslie, Site Manager Tim Fraser, Lead Farm Hand
Trellis, Hubbards	Jeff Nickerson, NS Production Manager, CA Scott Leslie, Saddle Islands Site Manager, CA

SCOTLAND AND NORWAY – SEPTEMBER 22 to 26, 2014

Marine Scotland, Victoria Quay, Edinburgh, Scotland	Willie Cowan, Head of Performance & Aquaculture Paul Haddon, Aquaculture Policy Manager Alastair Mitchell, Aquaculture Policy Officer Douglas Sinclair, Aquaculture Specialist, Scottish Environmental Protection Agency Charles Allan, Group Leader, Fish Health Inspectorate
Scottish Salmon Producers Organisation, Perth, Scotland	Phil Thomas, Chairman Scott Landsburgh, Chief Executive Jamie Smith, Technical Executive Alan Balfour, Deputy Managing Director, Loch Duart Ltd, & President, Snow Island
Marine Harvest Scotland, Lochailort, Scotland (Salmon Hatchery)	Steve Bracken, Business Support Manager Allan MacDonald, Hatchery Manager
Marine Harvest Scotland, Loch Shiel, Scotland (Freshwater Grow-Out Site)	Steve Bracken, Business Support Manager Sandy MacKinnon, Site Manager
Glenfinnan House, Glenfinnan, Scotland	Steve Bracken, Business Support Manager
Marine Harvest Scotland, Fort William, Scotland (Processing Plant)	Steve Bracken, Business Support Manager Donald MacIsaac, Plant Manager
Marine Harvest Scotland, Corran, Loch Leven, Scotland (Marine Grow-Out Site)	Steve Bracken, Business Support Manager Chris Ryan, Site Manager
Loch Fyne Oysters Ltd and Scottish Salmon Co., Ardcastle, Loch Fyne, Scotland (Integrated Multi-Trophic Aquaculture Site)	Richard Hunt-Smith, Marketing Executive
Loch Fyne Oysters Ltd, Clachan, Cairndow, Scotland	Richard Hunt-Smith, Marketing Executive
Embassy of Canada, Oslo, Norway	David Sproule, Ambassador Alanna Zulkifli, Trade Commissioner Renato Caldart, Counsellor and Senior Trade Commissioner
Norwegian Ministry of Trade, Industry and Fisheries, Oslo, Norway	Martin Bryde, Director, Fisheries and Aquaculture Marie Bjørland, Fisheries and Aquaculture

Norwegian Seafood Federation, Oslo, Norway	Trond Davidsen, Director of Aquaculture Dr. Ketil, Rykhus, Veterinarian Morten Vike, CEO, Grieg Seafood Geir Molvik, Chief Operating Officer, Cermaq
Norwegian Directorate of Fisheries, Bergen, Norway	Liv Holmefjord, Director General Jens Holm, Director, Aquaculture and Coastal Management Lise Torkildsen, Section Head, Seafood, Norwegian Food Safety Authority Martin Binde, Senior Advisor, Aquatic Animals, Norwegian Food Safety Authority
Institute of Marine Research, Bergen, Norway	Harald Loeng, Research Director Terje Svåsand, Researcher Kari Østervold Toft, Director, Communications
Lerøy Seafood Group, Bergen & Bjørnafjorden, Norway (Headquarters and Grow-Out Site)	Henning Beltestad, CEO

NEW BRUNSWICK, PRINCE EDWARD ISLAND AND QUÉBEC – NOVEMBER 17-19, 2014

Breviro Caviar, Pennfield, NB	Jonathan Barry, President and Managing Director Bill Wentworth, Senior Technician
Cooke Aquaculture, Back Bay, NB	Nell Halse, V-P Communications Michael Szemerda, V-P Saltwater Operations Dr. Thierry Chopin, Professor of Marine Biology, University of New Brunswick
Atlantic Canada Sea Farmer Association	Larry Ingalls, Chair, Board of Directors Bev Bacon, Board Member Nell Halse, Board Member Trevor Stanley, Board Member Pamela Parker, Executive Director Betty House, Research and Development Coordinator
St. Andrews Biological Station, St. Andrews, NB	Dr. Shannon McGladdery, Station Director Alain Vézina, Director of Science, DFO Halifax Office Dr. Shawn Robinson, Senior Researcher, Aquaculture Lara Cooper, Head, Aquaculture & Biological Interactions Blythe Chang, Biologist, Coastal Ocean Research Steven Leadbeater, Biosecurity Officer
Little Shemogue Oyster Company, Botsford, NB	Mitchell Feigenbaum, Owner Paul Firminger, General Manager Amy Firminger, Office Manager
Halibut PEI, Victoria, PEI (Headquarters and Land-based Closed-containment Facilities)	Jim Dunphy, President Bob Johnston, V-P Government Relations Dr. Gerry Johnson, Company Veterinarian

Atlantic Veterinary College, Charlottetown, PEI	Dr. Dan Hurnik, Interim Dean Dr. Robert Gilmour, Vice-President, Research, UPEI Dr. Sophie St-Hilaire, Canada Research Chair in Integrated Health Research for Sustainable Aquaculture Dr. Ian Gardner, Canada Excellence Research Chair in Aquatic Epidemiology Dr. Mark Fast, Novartis Research Chair in Fish Health Dr. Dave Groman, Aquatics Diagnostic Services Anna MacDonald, External Relations Officer
Atlantic Aqua Farms, Orwell Cove, PEI (Head Office and Processing Plant)	Terrry Ennis, President and CEO Bobby MacMillan, V-P Sales
Fermes marines de Gaspé, Newport, QC (Head Office and Plant)	Jean-Philippe Hébert, President
Québec Fisheries and Aquaculture Innovation Centre (Merinov), Gaspé, QC	Julie Boyer, Member, Board of Directors Laurent Girault, Director, Biomass Validation Laurent Millot, Director, Biomass Production Michel Cotton, Acting Director General Luc Leclerc, Project Coordinator Noëlla Coulombe, Laboratory Technician Nadine Renaud, Process Specialist Technician Piotr Bryl, Food Technologist Julie Rousseau, Communications

ST. JOHN'S, NEWFOUNDLAND AND LABRADOR – FEBRUARY 20, 2015

Newfoundland and Labrador Department of Fisheries and Aquaculture, St. John's	Dave Lewis, Acting Deputy Minister Brian Meaney, Assistant Deputy Minister, Aquaculture & Seafood Marketing Dr. Nicole O'Brien, Aquaculture Veterinarian, Aquatic Health Division Steve Moyse, Program & Policy Development Specialist
Ocean Sciences Centre, Memorial University, Logy Bay	Dr. Gary Kachanoski, President & Chancellor Dr. Mark Abrahams, Dean of Science Dr. Garth Fletcher, OSC Director Danny Boyce, Business & Facility Manager Danielle Nichols, Research Marketing Manager Steven Hill, Cold Ocean & Deep Sea Research
Fisheries and Marine Institute, Memorial University, St. John's	Dr. Gary Kachanoski, President & Chancellor Dr. Glen Blackwood, V-P Marine Institute Dr. Mark Abrahams, Dean of Science Dr. Jillian Westcott, Finfish Scientist Cyr Couturier, Research Scientist Heather Manuel, Director, Aquaculture & Seafood Development Keith Rideout, Salmonid Researcher Kim Thornhill, Communications Officer
Northwest Atlantic Fisheries Centre, Fisheries and Oceans Canada, St. John's	Lillian Abbas, Acting Director General, NL Region Dounia Hamoudene, Acting Director & Research Scientist Dr. Ben Davis, Division Manager, Aquatic Resources Geoff Perry, Regional Aquaculture Coordinator Kevin Anderson, Fisheries Management Jackie Perry, Strategic Services

SENATE SÉNAT

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CANADA

VOLUME UN – INDUSTRIE AQUACOLE ET GOUVERNANCE AU CANADA

Comité sénatorial permanent des pêches et des océans

L'honorable Fabian Manning
Président

L'honorable Elizabeth Hubley
Vice-présidente

Juin 2016



Pour plus d'information, prière de communiquer avec nous :

par courriel : **pofo@sen.parl.gc.ca**
par téléphone : 613 990-0088
sans frais : 1-800-267-7362
par la poste : Comité sénatorial permanent des pêches et océans
Sénat, Ottawa (Ontario), Canada, K1A 0A4

Le rapport peut être téléchargé à l'adresse suivante :
www.senate-senat.ca/pofo.asp

Le Sénat du Canada est sur Twitter : **@SenatCA**. Suivez le Comité avec le mot clé diésé #POFO.

This report is also available in English

MEMBRES

Sénateurs qui ont participé à cette étude :

L'honorable
Fabian Manning
Président

L'honorable
Elizabeth Hubley
Vice-présidente

Les honorables sénateurs :

George Baker

Sandra
M. Lovelace
Nicholas

Thomas Johnson
McInnis

Don Meredith

Jim Munson

Rose-May Poirier

Nancy Greene
Raine

Carolyn Stewart
Olsen

David M. Wells

Le Comité désire souligner la contribution inestimable des honorable sénateurs suivants qui ne siègent plus sur le Comité :

Lynn Beyak

Tobias C. Enverga Jr.

Membres d'office du Comité :

Les honorable sénateurs : Claude Carignan, C.P., (ou Yonah Martin) et James S. Cowan (ou Joan Fraser).

Autrse sénateurs ayant participé à cette étude :

Les honorables sénateurs: Batters, Demers, Fortin-Duplessis, Lang, McIntyre, Mercer, Plett et Tannas.

Service d'information et de recherche parlementaires, Bibliothèque du Parlement :

Odette Madore, analyste

Direction des comités du Sénat:

Maxwell Hollins, greffier du comité
Debbie Larocque, adjointe administrative

ORDRE DE RENVOI

Extrait des *Journaux du Sénat* du lundi 9 décembre 2013 :

L'honorable sénateur Manning propose, appuyé par l'honorable sénatrice Unger,

Que le Comité sénatorial permanent des pêches et des océans soit autorisé à étudier, afin d'en faire rapport, la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada;

Que les documents reçus, les témoignages entendus et les travaux accomplis par le comité à ce sujet au cours de la première session de la quarante et unième législature soient renvoyés au comité;

Que le comité fasse de temps à autre rapport au Sénat, mais au plus tard le 30 juin 2015, et qu'il conserve tous les pouvoirs nécessaires pour diffuser ses conclusions dans les 180 jours suivant le dépôt du rapport final.

La motion, mise aux voix, est adoptée.

Gary W. O'Brien

Greffier du Sénat

TABLE DES MATIÈRES

LISTE DES ACRONYMES

AA-ÎPE	Alliance aquacole de l'Île-du-Prince-Édouard
ACIA	Agence canadienne d'inspection des aliments
AIS	Anémie infectieuse du saumon
AMTI	Aquaculture multitrophique intégrée
ARLA	Agence de réglementation de la lutte antiparasitaire
C.-B.	Colombie-Britannique
CCGA	Comité consultatif sur la gestion de l'aquaculture (Colombie-Britannique)
CCMPA	Conseil canadien des ministres des pêches et de l'aquaculture
CESA	Comité d'évaluation des sites aquacoles(Nouveau-Brunswick)
CGCA	Conseil de gestion des concessions aquacoles (Île-du-Prince-Édouard)
CECA	Conseil d'examen des concessions aquacoles (Île-du-Prince-Édouard)
EAE	Espèces aquatiques envahissantes
EIE	Étude d'impact sur l'environnement
ETP	Équivalent temps plein
INPASA	Initiative nationale pour des plans d'action stratégiques en aquaculture
Î.-P.-É.	Île-du-Prince-Édouard
MAAP-NB	Ministère de l'Agriculture, de l'Aquaculture et des Pêches du Nouveau-Brunswick
MA-CB	Ministères de l'Agriculture de la Colombie-Britannique
MAPAQ	Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec
MEGL-NB	Ministère de l'Environnement et des gouvernements locaux du Nouveau-Brunswick
MFTRN-CB	Ministère des Forêts, des Terres et des Ressources naturelles de la Colombie-Britannique
MPADR-ÎPE	Ministère des Pêches, de l'Aquaculture et du Développement rural de l'Île-du-Prince-Édouard
MPA-NÉ	Ministère des Pêches et de l'Aquaculture de la Nouvelle-Écosse
MPA-TNL	Ministère des Pêches et de l'Aquaculture de Terre-Neuve-et Labrador
MPO	Ministère des Pêches et des Océans du Canada
N.-B.	Nouveau-Brunswick
N.-É.	Nouvelle-Écosse
NHI	Nécrose hématopoïétique infectieuse
PAD	Programme d'aquaculture durable (gouvernement fédéral)
PCCSM	Programme canadien de contrôle de la salubrité des mollusques
PE	Protocole d'entente
PGE	Programme de gestion environnementale (Nouveau Brunswick et Nouvelle-Écosse)
PIB	Produit intérieur brut

PLIEC	Programme de lutte intégrée contre les ennemis des cultures (Nouveau-Brunswick)
POS	Pratiques opérationnelles standard (Nouveau-Brunswick)
PRACB	Programme de réglementation de l'aquaculture de la Colombie-Britannique
QC	Québec
RAA	*Règlement sur les activités d'aquaculture*
SAECOP	Shellfish Aquaculture Environmental Code of Practice (Île-du-Prince-Édouard)
SODIM	Société de développement de l'industrie maricole inc. (Québec)
T.-N.-L.	Terre-Neuve-et-Labrador
ZGB	Zone de gestion des baies

INTRODUCTION

En janvier 2014, le Comité sénatorial permanent des pêches et des océans (le Comité) a entrepris une étude sur l'aquaculture conformément à l'ordre de renvoi suivant du Sénat :

> *Que le Comité sénatorial permanent des pêches et des océans soit autorisé à étudier, afin d'en faire rapport, la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada*[1].

Pour s'acquitter de ce mandat à la fois vaste et complexe, le Comité a décidé de tenir des audiences publiques à Ottawa et d'effectuer des missions d'étude au Canada et à l'étranger. Au Canada, le Comité a visité des installations dans des provinces où l'aquaculture en mer est pratiquée : la Colombie-Britannique (C.-B.), le Nouveau-Brunswick (N.-B.), Terre-Neuve-et-Labrador (T.-N.-L.), la Nouvelle-Écosse (N.-É.), l'Île-du-Prince-Édouard (Î.-P.-É.) et le Québec (QC). Il a profité de ses missions pour tenir des audiences publiques dans certaines villes, notamment Gander (T.-N.-L.), Halifax (N.-É.), Moncton (N.-B.) et Nanaimo (C.-B.). Le Comité a aussi mené des missions d'étude en Norvège et en Écosse, deux pays ayant des cadres de réglementation de l'aquaculture comparables.

Le présent document est le premier d'une série de trois volumes produits par le Comité dans le cadre de son étude. Dans ce premier volume, le Comité donne un bref aperçu de l'industrie aquacole et de son cadre de gouvernance au Canada. Dans le deuxième, il présentera le profil de l'industrie en Norvège et en Écosse et expliquera comment l'aquaculture est réglementée dans ces deux pays. Les renseignements contenus dans les deux premiers volumes reposent en grande partie sur la documentation rassemblée en vue des missions d'étude du Comité. Le volume trois présentera les observations et recommandations du Comité au sujet de l'industrie et du cadre de gouvernance de l'aquaculture au Canada. Celles-ci reposeront sur les renseignements tirés des missions et les témoignages recueillis durant les audiences publiques.

Le présent volume est divisé en huit chapitres. Le chapitre 1 donne un aperçu général du cadre de gouvernance de l'aquaculture au Canada exercée aux échelons fédéral et provincial. Les chapitres 2 à 7 dressent un portrait de l'industrie en C.-B., au N.-B., à T.-N.-L., en N.-É., à Î.-P.-É. et au QC et décrivent le cadre de réglementation en place dans chacune de ces provinces. Le chapitre 8 traite des retombées économiques de l'aquaculture et souligne quelques possibilités et défis pour l'industrie au Canada.

Le Volume Un n'a pas pour but de comparer le rendement de l'industrie aquacole des provinces, ni d'évaluer l'efficacité ou l'exhaustivité des cadres de réglementation fédéral et provinciaux. Il s'agit plutôt de bien comprendre la diversité de l'industrie dans l'ensemble du pays et d'examiner la complexité de son cadre de gouvernance, dans le but de mieux définir les rôles et responsabilités du gouvernement fédéral en matière d'aquaculture.

1 Sénat du Canada, ***Journaux du Sénat***, 2e session, 41e législature, 9 décembre 2013, p. 274.

CHAPITRE 1 : Aperçu du cadre de réglementation fédéral et provincial

1.1 Contexte

Au Canada, la réglementation de l'aquaculture est assurée conjointement par les gouvernements fédéral et provinciaux, qu'il s'agisse du choix de l'emplacement, de l'aménagement, de l'exploitation ou du démantèlement des installations. Comme on l'explique plus en détail dans d'autres chapitres, les gouvernements du N.-B., de T.-N.-L., de la N.-É. et du QC sont les principaux responsables de la réglementation en matière de délivrance de permis d'aquaculture et de gestion des concessions (ou baux). Des protocoles d'entente (PE) bilatérale sur le développement de l'aquaculture conclus entre le gouvernement fédéral et les provinces individuelles précisent les rôles et responsabilités de chacun. À l'Î.-P.-É., le gouvernement fédéral est responsable des concessions aquacoles depuis 1928, et l'industrie est gérée conjointement par les deux ordres de gouvernement. En C.-B., le gouvernement fédéral est chargé de la réglementation de l'aquaculture sur le plan opérationnel, y compris de l'octroi des permis, de l'approbation des sites et de l'établissement des exigences applicables aux exploitants depuis 2010, en raison d'un jugement de la cour; cependant, la province continue de s'occuper de l'octroi des concessions. Le cadre de gouvernance de l'aquaculture au Canada est complexe, non seulement parce que deux ordres de gouvernement ont des rôles à jouer dans chaque province, mais parce que ces rôles sont exercés par divers ministères et organismes des deux paliers. Même la répartition des rôles et des responsabilités entre le gouvernement fédéral et les provinces varie d'une administration à l'autre en raison des dispositions contenues dans chacun des PE en place.

De plus, le développement de l'aquaculture peut nécessiter la participation des gouvernements municipaux en matière de consultation publique et d'engagement communautaire au sujet des installations aquacoles proposées. Les Premières nations et d'autres groupes autochtones sont aussi appelés à participer aux processus d'examen et de délivrance des permis d'aquaculture, conformément à des exigences légales et l'obligation fédérale de consulter.

1.2 Ministères et organismes fédéraux responsables de l'aquaculture

À l'échelon fédéral, l'industrie aquacole est réglementée essentiellement par sept ministères et organismes distincts. Elle est assujettie à au moins 12 lois différentes, mais interreliées, et à plusieurs règlements s'y rapportant. Aucune de ces lois ne porte entièrement sur l'aquaculture, mais certaines de leurs dispositions s'appliquent à cette industrie.

Pêches et Océans du Canada (MPO) est le principal ministère responsable à l'échelon fédéral de la gestion de l'aquaculture. Cette responsabilité lui a été confiée par le premier ministre en 1984 et a été réaffirmée au fil des ans. Le MPO exerce ce rôle de premier plan en veillant à une gestion durable de l'aquaculture partout au pays, de manière à protéger les poissons et leur habitat conformément à la *Loi sur les pêches*. Pour appliquer de manière plus claire et transparente cette loi à l'industrie aquacole, le MPO a mis au point le projet de *Règlement sur les activités d'aquaculture* (RAA), qui définit les conditions dans lesquelles peuvent être exercées ces activités dans l'ensemble du pays[2]. En vertu de la *Loi sur les pêches*, le ministère

2 ***Règlement sur les activités d'aquaculture***, *Gazette du Canada*, Partie I, vol. 148, nº 34, 23 août 2014.

gère aussi l'industrie aquacole à l'Î.-P.-É. et veille à l'application du *Règlement du Pacifique sur l'aquaculture*, qui gouverne l'aquaculture en C.-B. Par ailleurs, le MPO gère le Programme d'aquaculture durable (PAD) du gouvernement fédéral, qui mise fortement sur la science et vise à promouvoir le développement durable de l'industrie. Il dirige également l'élaboration de plans en vue de la gestion intégrée des activités touchant les eaux des estuaires, des côtes et des mers, ainsi que la coordination des enjeux liés aux océans, conformément à la *Loi sur les océans*. Enfin, il est responsable des espèces aquatiques aux termes de la *Loi sur les espèces en péril*.

Environnement Canada a pour responsabilité de réduire les risques pour les Canadiens et l'environnement que présente la pollution, y compris la pollution de l'eau, conformément à la *Loi canadienne sur la protection de l'environnement*. Par conséquent, le ministère établit des normes précisant les circonstances dans lesquelles il est obligatoire de procéder à une évaluation des risques pour l'environnement que posent des substances énumérées dans des lois et règlements divers, notamment dans le contexte des dispositions sur l'immersion en mer de la *Loi sur les pêches* et du *Règlement sur les renseignements concernant les substances nouvelles*.

Pour sa part, Santé Canada réglemente les drogues conformément à la *Loi sur les aliments et drogues* afin d'en assurer l'innocuité pour les personnes et les animaux, ce qui comprend les médicaments vétérinaires administrés aux poissons d'élevage. Il établit également les concentrations maximales de contaminants chimiques dans les aliments, y compris ceux que l'on peut trouver dans les poissons et fruits de mer capturés et élevés. Dans le même ordre d'idées, l'Agence de réglementation de la lutte antiparasitaire (ARLA) réglemente et homologue les produits antiparasitaires conformément à la *Loi sur les produits antiparasitaires*, ce qui comprend les produits utilisés dans le contexte de l'aquaculture (pour gérer le pou du poisson, par exemple). Le RAA proposé par le MPO vise à préciser les conditions d'utilisation des médicaments vétérinaires et des produits antiparasitaires dans l'industrie aquacole et à exiger la production de rapports à ce sujet.

L'Agence canadienne d'inspection des aliments (ACIA) s'occupe de la gestion et du contrôle des maladies animales, y compris des maladies qui touchent les poissons, les mollusques et les crustacés, conformément à la *Loi sur la santé des animaux*. En vertu de cette loi, l'ACIA peut dédommager les installations aquacoles lorsqu'elle ordonne l'élimination d'animaux, élevés sur terre ou dans les eaux, en cas d'éclosions de maladies à déclaration obligatoire. Elle régit également la fabrication et la vente des aliments du bétail, ce qui comprend la nourriture pour poissons, en vertu de la *Loi relative aux aliments du bétail*. Elle inspecte les usines de transformation et délivre les certificats d'exportation selon la *Loi sur la salubrité des aliments au Canada*. Aux termes du *Règlement sur l'inspection du poisson*, l'ACIA veille à ce que tous les poissons d'élevage ou capturés à l'état sauvage, transformés dans des installations assujetties à la réglementation fédérale répondent aux exigences réglementaires en matière de salubrité, de comestibilité et d'identité. Elle gère aussi le Programme canadien de contrôle de la salubrité des mollusques (PCCSM) en collaboration avec le MPO et Environnement Canada. Dans le cadre de ce programme, elle administre un programme de surveillance des biotoxines dans les sites de conchyliculture partout au pays.

Transports Canada examine et approuve les demandes visant la mise en place de structures de confinement aquacole et autres dans les eaux

navigables du Canada afin de protéger les droits publics de navigation en vertu de la *Loi sur la protection de la navigation*. Il réglemente aussi la prévention de la pollution par les navires et les interventions en cas de pollution, les exigences applicables aux navires et les inspections des bâtiments, ainsi que le personnel et la sécurité des navires conformément à la *Loi sur la marine marchande du Canada*.

Pour terminer, aux termes de la *Loi sur le ministère de l'Agriculture et de l'Agroalimentaire*, Agriculture et Agroalimentaire Canada appuie les initiatives de développement du marché des poissons et fruits de mer et de traçabilité des produits, notamment celles visant les produits aquacoles frais ou transformés.

La participation de plusieurs ministères et organismes fédéraux à la gestion de l'aquaculture reflète la nature interdisciplinaire de l'industrie. Or, elle mène également à un chevauchement et un dédoublement de la réglementation et des activités de surveillance et de contrôle de la conformité. Depuis des années, l'industrie demande une seule loi nationale sur l'aquaculture pour réduire les chevauchements, assurer uniformément la surveillance et harmoniser les instruments réglementaires fédéraux.

1.3 Collaboration entre le gouvernement fédéral et les provinces

En plus des ministères et organismes fédéraux susmentionnés, d'autres ministères et organismes participent directement à l'application des règlements et appuient l'aquaculture dans chacune des provinces. Au total, plus de 70 textes législatifs fédéraux et provinciaux régissent l'aquaculture au Canada. Le Conseil canadien des ministres des pêches et de l'aquaculture (CCMPA) cherche actuellement à régler certaines des questions liées à la gouvernance de l'aquaculture canadienne. Ces travaux s'inscrivent dans l'Initiative nationale pour des plans d'action stratégiques en aquaculture (INPASA), qui propose une approche fédérale et provinciale afin d'assurer le développement durable de l'industrie aquacole au pays[3].

3 INPASA, ***Document Synthèse***, une initiative du CCMPA, 2010.

CHAPITRE 2 : Colombie-Britannique

2.1 Aperçu de l'industrie

2.1.1 Structure et emplacement

L'industrie aquacole en C.-B. comporte essentiellement deux secteurs : la pisciculture (élevage des poissons) et la conchyliculture (élevage des mollusques). La pisciculture a passablement changé au fil des ans en raison de la consolidation et de l'intégration au sein de l'industrie. Des quelque 100 sociétés actives dans les années 1980, il n'en reste que 11, dont trois – Marine Harvest, Cermaq et Grieg Seafood – qui comptent pour 88 % de la production du poisson d'élevage. Il s'agit dans les trois cas de grandes sociétés intégrées verticalement. Cette intégration combine les quatre étapes de la chaîne de valeur de l'aquaculture : écloserie, grossissement, transformation et mise en marché. Au contraire, la conchyliculture reste fortement fragmentée avec 259 entreprises, pour la plupart de petites entreprises familiales. Un certain nombre d'entre elles ont intégré leurs activités et assurent elles-mêmes le grossissement, la transformation, la mise en marché et la distribution.

La pisciculture se pratique dans plusieurs régions de la province, mais surtout à Campbell River, à Port Hardy et à Tofino[4]. Cependant, la conchyliculture se pratique surtout autour de l'île de Vancouver et dans le détroit de Georgia, mais se retrouve particulièrement concentrée dans la région de Baynes Sound[5].

Marine Harvest Canada, une filiale de Marine Harvest Norway, est l'une des trois grandes sociétés salmonicoles de la C.-B. Située à Campbell River, la société détient 50 % des permis de pisciculture dans la province et emploie quelque 500 personnes. Les sénateurs visitent l'écloserie de Marine Harvest Canada située à Sayward, où ils apprennent aussi comment l'entreprise collabore avec les Premières nations Kitasoo/Xai'xais et Quatsino.

4 British Columbia Salmon Farmers Association, ***A Snapshot of BC's Salmon Farming Industry***, sans date.
5 British Columbia Shellfish Growers Association, ***BC Shellfish Tenures***, sans date.

C'est en C.-B. que l'on trouve la seule installation terrestre en parcs clos d'élevage du saumon de l'Atlantique à l'échelle commerciale au Canada – le projet Kuterra, près de Port McNeill. On y retrouve aussi quelques autres installations terrestres en parcs clos où l'on fait l'élevage de différentes espèces de poisson, comme Taste of BC Sea Farms, une entreprise qui élève du saumon arc-en-ciel. La C.-B. compte également une petite installation de polyculture précommerciale (aussi appelée aquaculture multitrophique intégrée ou AMTI) dans le nord-ouest de l'île de Vancouver. Cette entreprise est la première au Canada à détenir un permis commercial pour l'élevage d'espèces multiples.

Plusieurs espèces de poissons et de mollusques sont élevés dans les eaux de la C.-B. (tableau 2.1), le saumon de l'Atlantique occupant de loin le premier rang. L'élevage du saumon quinnat, de la truite, des huîtres et des palourdes est bien établi. L'élevage d'autres espèces, dont l'esturgeon, le tilapia, la morue charbonnière et les pétoncles sont à différents stades de développement. Quelques espèces de plantes aquatiques sont également

Tableau 2.1 – Espèces d'élevage en Colombie-Britannique

	Espèces
Poissons	• Saumon (Atlantique, quinnat, coho, rouge) • Truite arc-en-ciel • Esturgeon • Morue charbonnière • Tilapia • Achigan à petite bouche • Omble chevalier
Mollusques	• Huîtres • Palourdes (palourde japonaise, panope, palourde du Pacifique, nuttalie obscure) • Moules (bleue du Pacifique, bleue de la Méditerranée) • Pétoncles (japonais, des roches, géant) • Ormeau
Plantes aquatiques	• Kombu • Algue
Autres espèces	• Concombre de mer de Californie • Oursin vert • Morue grise

Source : Selon des données fournies par le MPO au Comité.

produites en quantité limitée dans le cadre du projet pilote d'AMTI.

2.1.2 Production

Comme le montre la figure 2.1, la production aquacole en C.-B. a beaucoup augmenté dans les années 1980 et 1990 pour atteindre un sommet de 93 020 tonnes en 2002. Cette expansion rapide s'explique par les conditions de croissance favorables et l'abondance des sites propices. Par suite d'une éclosion du virus de nécrose hématopoïétique infectieuse (NHI) dans des installations d'élevage du saumon, la production est tombée à 65 666 tonnes en 2004, mais elle a repris grâce à l'amélioration des mesures de biosécurité. La production aquacole a été relativement stable de 2006 à 2010. La valeur de la production aux prix à la ferme a suivi la même tendance générale pendant cette période pour atteindre un sommet de 538 millions de dollars en 2010, mais elle a connu un déclin dans les deux années qui ont suivi.

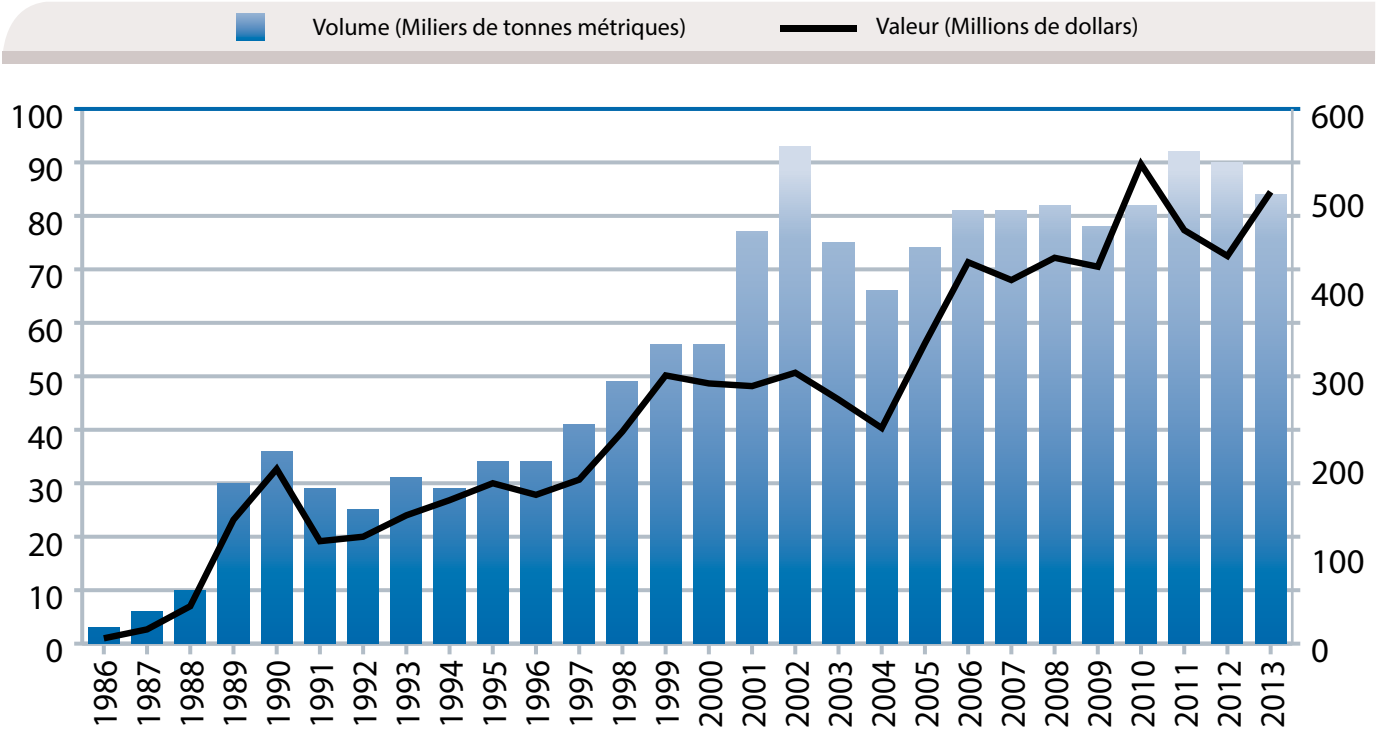
En 2013, la dernière année pour laquelle on dispose de données, la C.-B. a produit 84 258 tonnes de poissons et de mollusques d'élevage, d'une valeur

Cermaq est l'un des leaders de l'élevage de salmonidés à l'échelle mondiale. Une filiale de Mitsubishi Corporation, la société est active au Canada, au Chili et en Norvège. En C.B., Cermaq détient actuellement 22 % des permis de pisciculture où elle exploite 27 sites de grossissement, quatre écloseries terrestres et deux usines de transformation. Cermaq est la première société salmonicole à avoir obtenu une certification « deux étoiles » BAP pour son application de pratiques aquacoles exemplaires à son usine de transformation à Tofino. Les sénateurs visitent l'un des sites de grossissement de Cermaq à Clayoquot Sound ainsi que son usine de transformation de Tofino.

de 507 millions de dollars, soit 75 808 tonnes de poissons d'une valeur de 485 millions de dollars, et 8 450 tonnes de mollusques d'une valeur de 22 millions de dollars. La figure 2.2 illustre l'importance relative de chaque espèce élevée dans la province.

La C.-B. est le plus grand producteur de poissons et de mollusques d'élevage au Canada, représentant 49 % du volume total et 53 % de la valeur totale. Elle arrive également au premier rang pour ce qui est de l'élevage du saumon (75 % du volume), des huîtres (59 %) et des palourdes (87 %) au pays.

Figure 2.1 – Production aquacole[a] en Colombie-Britannique, selon le volume et la valeur[b] de 1986 à 2013

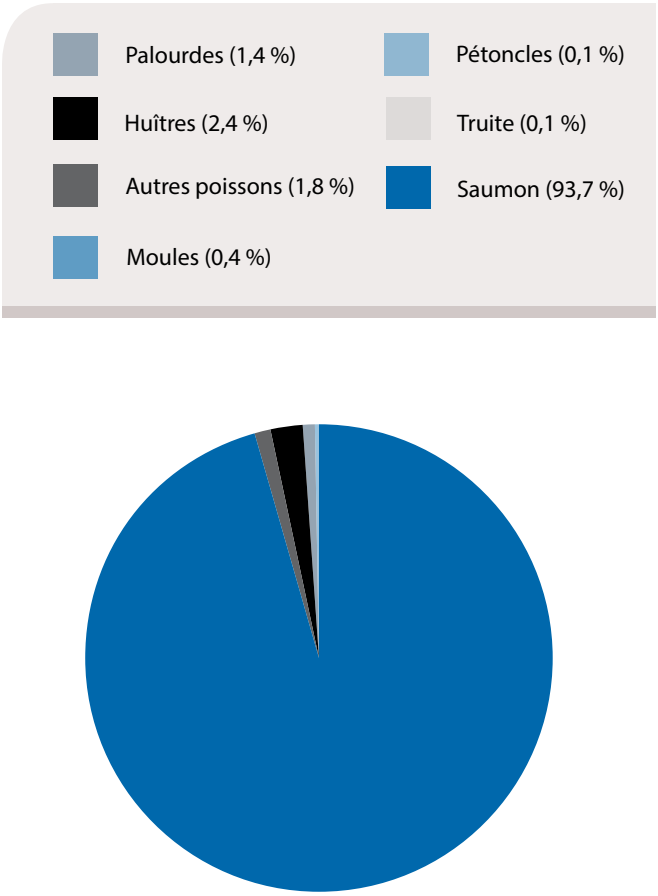


Nota : a. La production aquacole comprend la quantité et la valeur des poissons et mollusques produits sur place et exclut les écloseries et les usines de transformation.

b. Prix à la ferme. La valeur à la ferme représente la valeur d'un produit une fois qu'il est vendu par le producteur.

Source : À partir de données provenant du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

Figure 2.2 – Production aquacole en Colombie-Britannique, par espèce, en pourcentage de la valeur, 2013



Source : À partir de données provenant du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

2.2 Cadre de gouvernance

2.2.1 Cadre général

La C.-B. était autrefois la principale responsable de la gestion de l'industrie aquacole. Comme dans bien d'autres provinces, un PE sur le développement de l'aquaculture, conclu entre le gouvernement fédéral et la province en 1988, définissait les rôles et responsabilités de chacun. Or, en 2009, la Cour suprême de la Colombie-Britannique a déterminé, dans l'affaire *Morton*, que l'aquaculture était une forme de pêches et relevait donc de la compétence du gouvernement fédéral[6]. Pour cette raison, le gouvernement fédéral est, depuis décembre 2010, le premier responsable de la réglementation et de la gestion de l'aquaculture dans cette province. Un nouveau PE est intervenu entre les deux ordres du gouvernement. Selon celui-ci, le MPO est le principal organisme de réglementation de l'industrie aquacole en C.-B., tandis que le ministère de l'Agriculture de la C.-B. (MA-CB) est responsable du développement stratégique de l'industrie dans la province[7]. Ce protocole définit également les rôles des autres ministères et organismes fédéraux et provinciaux. Il engage les organismes fédéraux et provinciaux de réglementation à mettre en place un processus à guichet unique pour le traitement des demandes de permis et de concession touchant de nouvelles installations et à créer un comité de gestion chargé de surveiller la mise en œuvre du PE.

Dans le Règlement *du Pacifique sur l'aquaculture*, l'aquaculture est définie comme l'« élevage du poisson ».

6 ***Morton cv. British Columbia***, 2009 BCSC 136.
7 ***Accord Canada-Colombie-Britannique sur la gestion de l'aquaculture***, 10 décembre 2010.

En réponse à la décision dans l'affaire *Morton*, le MPO a édicté le *Règlement du Pacifique sur l'aquaculture*, en application de la *Loi sur les pêches*, pour remplacer l'ancien régime provincial et cimenter le nouvel accord entre le gouvernement fédéral et la province[8]. Ce règlement fixe les conditions auxquelles sont assujettis les titulaires de permis de chaque secteur – pisciculture, conchyliculture et opérations terrestres et en eau douce – ainsi que les normes et les protocoles touchant le fonctionnement des exploitations aquacoles dans la province. Aux fins d'application du PE, le MPO a également créé un Comité consultatif sur la gestion de l'aquaculture (CCGA) pour la pisciculture et un autre pour la conchyliculture. Ces comités étudient périodiquement les plans de gestion et fournissent des conseils et des recommandations au MPO au sujet de la gestion des élevages de poissons et de mollusques dans la province. Dans son cadre stratégique en matière d'aquaculture pour la région du Pacifique, le MPO « s'engage à agir à la fois à titre de promoteur et d'organisme de réglementation du développement de l'aquaculture, confirmant son rôle de ministère

Creative Salmon est une société aquacole canadienne qui fait l'élevage du saumon quinnat en C.-B. Fondée en 1990, elle détient actuellement 5 % des permis de pisciculture dans la province et exploite des installations dans les eaux de Clayoquot Sound près de Tofino, sur la côte ouest de l'île de Vancouver. Pleinement intégrée, Creative Salmon emploie une cinquantaine de personnes. En décembre 2013, elle a été certifiée conforme à la norme canadienne sur l'aquaculture biologique. Les sénateurs visitent son site de grossissement à Tofino.

8 **Règlement du Pacifique sur l'aquaculture**, *Loi sur les pêches*, DORS/2010-270.

promoteur du développement durable[9] ». Par « promoteur », on entend « améliorer le climat commercial dans lequel se développe l'aquaculture au profit des Canadiens[10] ».

2.2.2 Processus de demande de permis

Pour exploiter des installations piscicoles ou conchylicoles en C.-B., il faut obtenir une concession sur des terres publiques, une approbation pour l'installation de structure dans les eaux navigables et un permis d'aquaculture. Le ministère des Forêts, des Terres et des Ressources naturelles de la C.-B. (MFTRN-CB) accorde les concessions sur des terres publiques conformément à la *Land Act* (Loi sur terres), qui autorise l'utilisation de l'espace où seront menées les activités aquacoles. Les concessions de terre de l'État à des fins piscicoles prennent généralement la forme de permis d'occupation. D'ordinaire, les permis sont valides pour cinq ans, mais cette période peut aller jusqu'à 20 ans, selon la discrétion du MFTRN-CB. Pour les installations conchylicoles, on parle généralement de concessions d'une durée maximale de 30 ans. Le MFTRN-CB peut également délivrer un permis d'investigation à des fins d'aquaculture d'une durée maximale de deux ans. Ce permis permet d'étudier la faisabilité d'un projet aquacole ou encore d'installer du matériel de surveillance. Le MFTRN-CB n'accepte aucune demande rivale pour le site en question pendant la durée du permis d'investigation. Ce permis ne garantit pas une éventuelle concession[11].

Aux termes de la *Loi sur la protection de la navigation*, il faut aussi obtenir l'autorisation de Transports Canada pour installer des structures de confinement et autres dans les eaux navigables du Canada. Cette autorisation est valide pour une période de cinq ans.

C'est le MPO qui délivre le permis permettant à son titulaire de pratiquer l'aquaculture. La durée du permis d'aquaculture est présentement fixée à un an; récemment, le MPO a proposé d'amender le *Règlement du Pacifique sur l'aquaculture* afin d'établir des permis pluriannuels en C.-B. Cependant, conformément aux recommandations de la commission Cohen, les permis des îles Discovery resteront limités à un an, en attendant l'achèvement d'autres évaluations scientifiques et travaux réglementaires dans la région.

Il faut aussi présenter et faire approuver une demande de permis pour apporter une modification à un permis d'aquaculture fédéral existant (p. ex. changement concernant les niveaux de production, les espèces, les cages en filet ou les propriétaires), modifier la concession sur les terres de l'État (p. ex. taille de la concession et déplacement des limites) ou encore reconstruire, réparer ou altérer une infrastructure existante si ces travaux peuvent avoir une incidence sur la navigation publique.

Lorsqu'ils étudient les demandes visant l'établissement de nouvelles installations piscicoles en mer, le MPO et le MFTRN-CB prennent en considération un vaste éventail de facteurs, y compris la proximité à des cours d'eau de salmonidés anadromes et à des zones importantes de fraie du hareng (limite d'un kilomètre); la proximité à des bancs coquilliers dans des zones intertidales (limite de 300 mètres); la proximité à des sites de pisciculture existants (trois kilomètres); la proximité à une réserve des Premières Nations (un kilomètre); les habitats

9 Pour plus de renseignements, voir MPO, ***Région du Pacifique : Poissons de mer – Plan de gestion intégrée de l'aquaculture***, décembre 2013, p. 18, et ***Région du Pacifique : Plan de gestion intégrée de l'aquaculture pour les mollusques et les crustacés***, juillet 2014, p. 20.

10 *Ibid*.

11 MFTRN-CB, ***Land Use Operational Policy – Aquaculture***, juin 2011.

sensibles du poisson; les zones très fréquentées par des mammifères marins; les atteintes possibles aux droits des propriétaires riverains et autres[12]. Ils tiennent aussi compte de la qualité de l'eau dans le cas de nouvelles exploitations conchylicoles.

Dans le cadre du processus d'examen des demandes de permis, les organes de réglementation fédéraux et provinciaux consultent les Premières Nations afin de s'acquitter du devoir de consultation de l'État. En outre, les entreprises aquacoles sont également

Fanny Bay Oysters est une entreprise canadienne qui fait l'élevage d'huîtres creuses du Pacifique et de palourdes japonaises à Baynes Sound, sur la côte est de l'île de Vancouver. Les sénateurs visitent les installations de dépuration de l'entreprise à Fanny Bay, où les mollusques sont placés dans de l'eau de mer propre pendant un certain temps pour éliminer les microorganismes. Fanny Bay Oysters exporte ses produits en Europe, en Asie et aux États-Unis.

12 Gouvernement du Canada et gouvernement de la Colombie-Britannique, ***Guide to the Pacific Marine Finfish Aquaculture Application***, 31 juillet 2014.

encouragées à communiquer avec les Premières Nations concernées dès le début du processus de planification afin d'échanger de l'information avec elles et d'obtenir leurs vues au sujet des installations et des activités aquacoles prévues[13].

Pour simplifier le processus d'approbation des demandes d'aquaculture, le MPO, le MFTRN-CB et Transports Canada ont mis en place un formulaire harmonisé pour le secteur piscicole et un autre pour le secteur conchylicole[14]. FrontCounter BC est le bureau chargé de recevoir et de traiter toutes les demandes dans la province[15].

Conformément à la recommandation faite par la Commission d'enquête Cohen, il y a actuellement un moratoire sur l'octroi de nouveaux permis d'élevage en mer de poisson et les modifications importantes aux permis existants pour la région des îles Discovery jusqu'à la fin de septembre 2020[16]. Entre-temps, des recherches scientifiques sont en cours, conformément à un nouveau cadre d'évaluation des risques de maladie, afin d'étudier certaines des répercussions environnementales de l'aquaculture, y compris l'incidence des interactions entre les espèces sauvages et d'élevage sur la santé des poissons.

2.2.3 Surveillance, contrôle de la conformité et application de la loi

Combinées aux règlements, les conditions du permis d'aquaculture délivré par le MPO constituent les principaux outils de gestion des installations aquacoles en C.-B. Les conditions des permis d'élevage en mer du poisson établissent les exigences opérationnelles et en matière de rapports que doivent respecter les installations pour mener leurs activités en conformité avec la *Loi sur les pêches* et ses règlements. Les permis comprennent des conditions générales ainsi que des conditions particulières au site : espèces pouvant être élevées et biomasse, seuils à respecter quant aux impacts sur l'environnement immédiat, introductions et transferts, prévention des évasions, surveillance du pou du poisson, plan de gestion de la santé du poisson, etc. Les titulaires de permis sont également tenus, par les conditions du permis, de présenter des rapports périodiques sur le fonctionnement de leurs installations.

Le Programme de réglementation de l'aquaculture de la Colombie-Britannique (PRACB) régit la gestion au quotidien de l'élevage marin de poissons et de mollusques dans la province – notamment la surveillance environnementale, les plans de confinement, la gestion de la santé des poissons, la protection des habitats, et les introductions et transferts. Dans le cadre de ce programme, le personnel du MPO exerce périodiquement des activités de surveillance et d'inspection pour s'assurer que les exploitants respectent les conditions des permis d'aquaculture et les lois applicables. Il vérifie également les renseignements et rapports relatifs à l'environnement produit par l'industrie pour s'assurer de leur exactitude (p. ex. dénombrement des cas de pou du poisson et surveillance de l'habitat benthique). Il répond également aux plaintes et mène des enquêtes.

Les données recueillies par l'industrie et celles obtenues par le MPO dans le cadre de ses activités courantes de surveillance et d'inspection sont compilées et communiquées au public à chaque trimestre par le MPO sur son site réservé aux rapports publics sur l'aquaculture. Ce site Web

13 *Ibid*.
14 Pour plus de renseignements, voir les formulaires ***Pacific Marine Finfish Application Form*** et ***Pacific Shellfish Application Form***.
15 Voir le site Web de ***FrontCounter BC.***
16 Commission d'enquête Cohen sur le déclin des populations de saumon rouge du fleuve Fraser, ***Rapport final***, octobre 2012.

fournit des données sur les évasions, la surveillance des organismes benthiques, le pou du poisson, les captures accidentelles, les interactions avec des mammifères marins, les introductions et transferts, et l'utilisation d'éclairage. Le MPO rend également compte de ses activités de surveillance de la conformité (nombre de visites sur place, de vérification des cas de pou du poisson, d'évaluation de sites benthiques) et de ses activités de gestion de la santé du poisson (nombre d'installations ayant fait l'objet d'une vérification et nombre de carcasses échantillonnées), mais il ne présente pas les résultats de ces activités[17].

Les sénateurs visitent Taste of BC Aquafarms Inc., une petite entreprise familiale qui opère une installation terrestre en parc clos située à Nanaimo. Cette entreprise fait l'élevage de saumon arc-en-ciel dans 15 réservoirs différents, utilisant des systèmes de recirculation.

17 MPO, ***Rapports publics concernant l'aquaculture.***

CHAPITRE 3 : Nouveau-Brunswick

3.1 Aperçu de l'industrie

3.1.1 Structure et emplacement

L'industrie aquacole du N.-B. est composée de trois secteurs : la pisciculture, la conchyliculture, et la culture des plantes aquatiques. La pisciculture représente la grande majorité (96 %) de la production aquacole de la province; la conchyliculture représente les 4 % restants. La culture des plantes marines est encore à l'étape du développement. Le tableau 3.1 présente les espèces dont on fait l'élevage dans la province.

Comme c'est le cas dans d'autres provinces et pays, la structure du secteur piscicole au N.-B. a connu de grands changements au fil des ans en raison de la tendance vers la consolidation et l'intégration. En 2012, on comptait 92 sites marins de grossissement de poissons dans le sud-ouest de la province, tous situés dans la baie de Fundy. De ces sites, 45 servaient à la salmoniculture, un était consacré à la recherche, et les 46 autres étaient en période de jachère. Les 45 sites actifs étaient contrôlés par cinq entreprises locales, dont une était responsable de 60 % des sites. Aujourd'hui, seulement trois entreprises aquacoles ont des opérations dans la région : Cooke Aquaculture, Northern Harvest Sea Farms et Benson Aquaculture. Certains projets d'AMTI sont en cours dans la baie de Fundy, cinq sites de pisciculture ayant obtenu les permis nécessaires pour également faire la culture d'autres espèces, comme le kombu et les moules. En ce qui concerne les autres technologies piscicoles, une entreprise fait l'élevage de l'esturgeon dans des parcs clos terrestres, à Charlo, Pennfield et St. Andrews.

Pour sa part, le secteur conchylicole regroupe un grand nombre d'éleveurs dont les installations sont situées le long de la côte est de la province, plus particulièrement dans trois grandes baies : la baie de Bouctouche, la baie de Caraquet et la baie de Cocagne. En raison des conditions climatiques, dans certaines régions, les producteurs conchylicoles sont forcés de déplacer leurs produits et leurs infrastructures en hiver afin de prévenir

Tableau 3.1 – Espèces d'élevage au Nouveau-Brunswick

	Espèces
Poissons	• Saumon de l'Atlantique • Esturgeon noir • Truite arc-en-ciel
Mollusques	• Huître américaine • Moule bleue
Plantes aquatiques	• Algue • Kombu

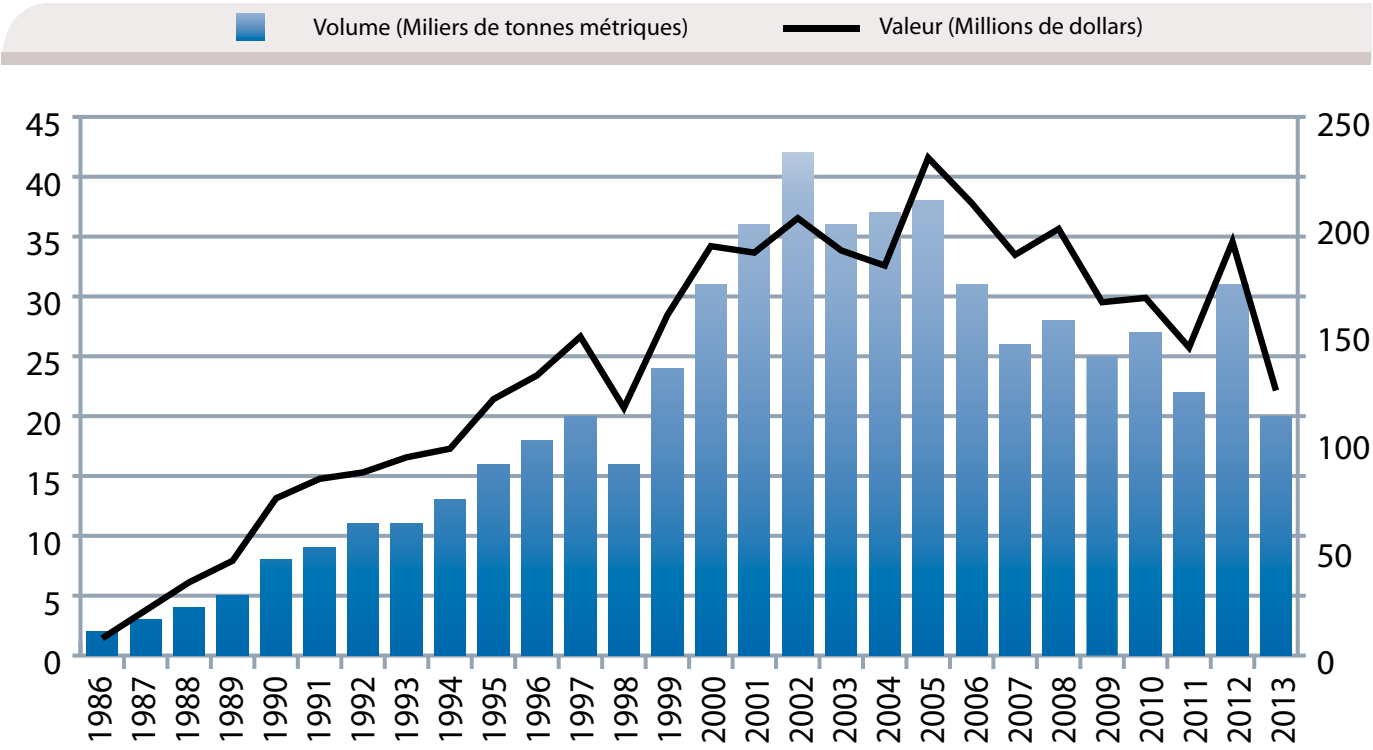
Source : Selon des données fournies par le MPO au Comité.

les dommages et les pertes. Ces producteurs ont accès à des sites d'hivernage (habituellement du 1er septembre au 1er mai). En 2012, on comptait environ 85 producteurs conchylicoles exploitant 703 sites de grossissement, la majorité d'entre eux se consacrant à l'élevage de l'huître. De ces sites, 502 étaient actifs (y compris 15 sites d'hivernage) et 201 étaient vacants.

3.1.2 Production

Comme le montre la figure 3.1, la production aquacole au N.-B. a connu une croissance continue entre 1986 et 1997. Le soutien du gouvernement à l'industrie et l'ouverture d'écloseries commerciales ont contribué à cette croissance. Un moratoire sur les nouvelles demandes de permis a été imposé

Figure 3.1 – Production aquacole[a] au Nouveau-Brunswick, selon le volume et la valeur[b], de 1986 à 2013



Nota : a. La production aquacole comprend la quantité et la valeur des poissons et mollusques produits sur place et exclut les écloseries et les usines de transformation.

b. Prix à la ferme. La valeur à la ferme représente la valeur d'un produit une fois qu'il est vendu par le producteur.

Source : Selon des données du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

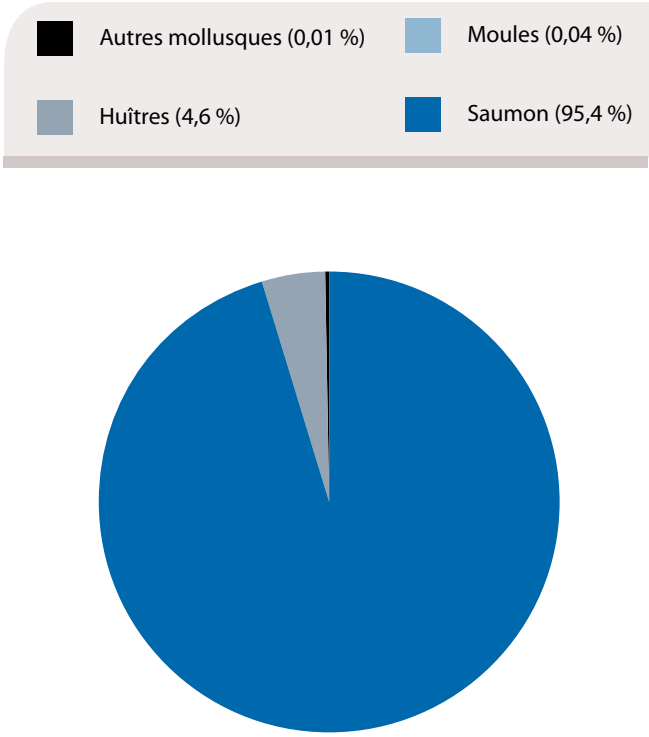
entre 1986 et 1991, mais la croissance, même si elle a ralenti, n'a pas été interrompue. La production a été touchée en 1998 en raison d'une épidémie d'anémie infectieuse du saumon (AIS) dans la baie de Fundy puisqu'il a fallu vider entièrement plusieurs sites de grossissement et à les placer en jachère. L'industrie s'est par la suite bien rétablie, et la production a atteint un sommet en 2002. La production a connu une nouvelle baisse de 2006 à 2011 en raison de la mise en place d'un nouveau système de gestion des baies visant à mieux gérer les prochaines épidémies d'AIS. La nouvelle approche a eu pour conséquence de réduire le nombre de sites actifs en faisant passer de deux à trois ans le cycle de rotation et en imposant une période de jachère entre les classes d'âge consécutives. Le volume de production a atteint 31 481 tonnes métriques en 2012, pour une valeur de 192 millions de dollars. En 2013, il y a eu une réduction du volume et de la valeur de plus de 33 %.

Comme le montre la figure 3.2, la production aquacole au N.-B. est dominée par le saumon de l'Atlantique. La province en était le deuxième plus grand producteur après la C.-B. jusqu'en 2013, lorsqu'elle a été surpassée par T.-N.-L. Pour ce qui est de la production conchylicole, le N.-B. produit surtout des huîtres américaines et arrive au troisième rang au Canada, derrière la C.-B. et l'Î.-P.-É.

3.2 Cadre de gouvernance

La réglementation de l'aquaculture relève du ministère provincial de l'Agriculture, de l'Aquaculture et des Pêches (MAAP- NB) et du MPO. Les responsabilités des deux ministères sont définies dans le PE entre le Canada et le N.-B. sur le développement de l'aquaculture de 1989. Selon ce PE, la province est responsable de l'octroi des permis et des concessions, et les deux ordres de gouvernement coopèrent pour établir les critères d'attribution des sites. D'autres ministères et organismes participent également au soutien, à la promotion et à la réglementation de l'industrie aquacole. Plus particulièrement, le ministère de l'Environnement et des Gouvernements locaux de la province (MELG-NB) joue un rôle important dans la gestion environnementale de l'industrie (voir la section 3.2.3).

Figure 3.2 – Production aquacole au Nouveau-Brunswick par espèce, en pourcentage de la valeur, 2013



Source : À partir de données provenant du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

Conformément à un autre PE signé en 2008, le gouvernement du N.-B. travaille en collaboration avec ceux des provinces de la N.-É., de l'Î.-P.-É. et de T.-N.-L. au développement d'une industrie aquacole durable dans les provinces de l'Atlantique. En vertu de ce PE, les quatre gouvernements provinciaux s'engagent à travailler à l'harmonisation, dans la mesure du possible, des politiques et règlements concernant les concessions et les permis, la surveillance environnementale, les introductions et transferts, les données sur l'aquaculture et la santé des animaux aquatiques. L'entente prévoit également que les provinces signataires s'expriment d'une même voix lorsqu'elles traitent avec le gouvernement fédéral, en travaillant à l'harmonisation de la réglementation et des politiques environnementales[18].

3.2.1 Cadre général

Lorsque le secteur salmonicole a commencé à se développer au N.-B. à la fin des années 1970 et au début des années 1980, il n'existait aucune politique ni loi sur l'aquaculture. En 1985, en raison de l'adoption d'une directive par un comité mixte représentant le gouvernement et l'industrie, le gouvernement provincial a établi des lignes directrices sur la séparation physique entre les sites de grossissement et l'équipement de pêche commercial fixe, comme les fascines à hareng et les viviers à homards, et d'autres structures marines comme les quais. La distance minimum entre ces structures a été établie à 300 mètres. Un moratoire sur les nouvelles demandes de permis d'aquaculture a été imposé de 1986 à 1991 afin de mettre au point une politique d'attribution des sites de pisciculture.

En 1988, la province a adopté la *Loi sur l'aquaculture*[19] et, en 1991, un règlement général[20] a été pris en vertu de la *Loi*[21]. Cette loi et son règlement, qui ont été modifiés au fil des ans, régissent la pisciculture, la conchyliculture et l'élevage de plantes aquatiques. Mise en place en 1991, la politique d'attribution des sites de pisciculture visait à promouvoir la croissance de l'industrie, et plus particulièrement à attirer de nouveaux participants à l'industrie tout en insistant sur le besoin d'intégrer l'aquaculture au secteur de la pêche commerciale et aux activités des autres utilisateurs des ressources marines. Dans le cadre de cette politique, des lignes directrices sur la taille des sites de grossissement du poisson ont été établies en 1993, y compris une formule pour déterminer la biomasse maximale permise. Ces lignes directrices sont demeurées en vigueur jusqu'en 2005, année où un cadre fondé sur le rendement et axé sur la performance environnementale a été adopté afin de réglementer l'industrie (voir la section 3.2.3). En raison de l'éclosion de maladies du poisson au milieu des années 1990, il a été nécessaire de mettre en place en 2000 de pratiques de gestion des baies visant l'ensemble de l'industrie (voir les sections 3.2.4 et 3.2.5).

Depuis 2010, la gouvernance de l'aquaculture dans la province repose sur deux documents stratégiques clés : la *Stratégie de développement*

18 ***Atlantic Provinces' Memorandum of Understanding for the Development of the Aquaculture Sector***, 18 janvier 2008.
19 ***Loi sur l'aquaculture***, *L.R.N.B. 2011, chapitre 112*.
20 ***Règlement du Nouveau-Brunswick 91-158*** pris en vertu de la Loi sur l'aquaculture.
21 *La Loi sur l'aquaculture* n'est pas une loi habilitante en ce sens qu'elle ne contient pas une disposition précisant qu'elle a pour objet de favoriser le développement de l'industrie. En fait, le développement de l'industrie et la viabilité sur le plan environnemental font l'objet de documents stratégiques publics, qui reconnaissent également que l'aquaculture représente une utilisation légitime de l'environnement marin.

Selon la *Loi sur l'aquaculture*, on entend par aquaculture la « culture des plantes et des animaux aquatiques. Est exclue de la […] définition la culture des plantes et des animaux aquatiques dans un laboratoire à des fins expérimentales ou dans un aquarium ».

de la pisciculture du Nouveau-Brunswick[22] et la *Stratégie de développement de la conchyliculture du Nouveau-Brunswick*[23]. Ces deux stratégies quinquennales (2010-2014) mettent l'accent sur sept aspects : gouvernance; compétitivité et financement des entreprises; gestion des risques de l'entreprise; santé des poissons/mollusques et biosécurité; accès au marché et confiance des consommateurs; infrastructure stratégique; et diversification des espèces. Ces stratégies, qui encouragent le développement des secteurs piscicole et conchylicole et leur viabilité du point de vue de l'environnement, font actuellement l'objet d'un examen.

3.2.2 Concessions, permis et autorisations

Pour exploiter une installation aquacole au N.-B., il faut une concession, une autorisation d'occupation et un permis. Délivrée pour une période de 10 à 20 ans, la concession autorise l'entreprise à mener ses activités sur des terres (ou eaux) de la Couronne. L'autorisation d'occupation est semblable à la concession en ce sens qu'elle permet l'occupation et l'utilisation temporaires d'un lieu donné pour une période maximale de trois ans; dans la plupart des cas, la concession ou l'autorisation est accordé avant l'octroi du permis. Le permis d'aquaculture donne le droit de mener des activités aquacoles sur un site déterminé; il établit également les limites des activités qui peuvent être entreprises sur le site. Le permis d'aquaculture est valide pour une période maximale de 20 ans.

L'attribution de nouveaux sites, les changements à des sites existants, ainsi que la sous-location et le transfert de sites sont également assujettis à l'une des politiques suivantes : la *Politique d'attribution des sites aquacoles marins dans la baie de Fundy*[24], qui s'applique à l'élevage du saumon de l'Atlantique, d'autres espèces de poissons, de mollusques et de plantes aquatiques dans la baie de Fundy, et la *Politique d'attribution des sites aquacoles marins de la côte est du Nouveau-Brunswick*[25] qui s'applique à la conchyliculture sur la côte est de la province.

Toute personne qui désire obtenir une concession, une autorisation ou un permis d'aquaculture doit présenter une demande au MAAP-NB et payer le montant correspondant à la nature de sa demande, conformément à la *Loi sur l'aquaculture* et aux règlements connexes. Il est possible que Transports Canada doive également donner son approbation pour les projets aquacoles pour lesquels les structures construites ou installées se trouvent dans des eaux navigables ou sur, sous, au-dessus ou à travers celles-ci. Le gouvernement fédéral doit également évaluer l'impact des sites aquacoles proposés sur, par exemple, les droits des Autochtones et les oiseaux migrateurs. Le MAAP-NB évalue toutes

22 Gouvernement du Nouveau-Brunswick, ***Stratégie de développement de la pisciculture au Nouveau-Brunswick***, juillet 2010.
23 Gouvernement du Nouveau-Brunswick, ***Stratégie de développement de la conchyliculture au Nouveau-Brunswick***, juillet 2010.
24 Gouvernement du Nouveau-Brunswick, ***Politique d'attribution des sites aquacoles marins dans la baie de Fundy***, 2000.
25 Gouvernement du Nouveau-Brunswick, ***Politique d'attribution des sites aquacoles marins de la côte est du Nouveau Brunswick***, sans date.

les demandes et en coordonne l'examen avec d'autres ministères et organismes provinciaux et fédéraux. Chaque organisme évalue les demandes selon ses propres compétences et présente ses commentaires et recommandations au MAAP-NB. Au bout du compte, la décision d'accorder ou de refuser une concession, une autorisation d'occupation ou un permis d'aquaculture revient au MAAP-NB. Le *Règlement général* établit quatre circonstances dans lesquelles le ministère peut refuser un permis, notamment en cas de conflit avec d'autres activités de pêche ou de risques inacceptables pour l'environnement.

Il faut informer, au moyen d'un avis écrit, les propriétaires des sites adjacents de toute demande en vue de l'établissement d'un site aquacole. En outre, les demandes de modification des méthodes d'élevage permises peuvent faire l'objet de consultations avec les propriétaires de sites adjacents. De la même manière, toute demande visant un site aquacole vacant ou la création d'un site aquacole doit être présentée au public au moyen d'annonces publiées dans les journaux aux frais du demandeur.

Kelly Cove, une filiale de Cooke Aquaculture, collabore avec l'Université du N.-B. et le MPO à un projet d'AMTI de culture d'algues (alaire et laminaire sucrée), de mollusques (moules bleues) et de poisson (saumon de l'Atlantique). Les sénateurs visitent le site d'AMTI à Back Bay, au N.-B.

Photo utilisée avec l'autorisation de : Dr Thierry Chopin.

Le permis d'aquaculture précise quelles espèces peuvent être élevées. Il comprend également des conditions concernant l'utilisation du site; la densité des stocks et le volume de production; les classes d'âge; la durée des périodes de jachère; les mesures à prendre pour réduire les risques de dégradation de l'environnement; les mesures à prendre pour réduire le risque d'évasion et les mesures à prendre pour réduire le risque que des maladies, des vecteurs de maladie, des parasites, des toxines et des contaminants se propagent vers d'autres sites aquacoles, etc.

Le détenteur d'un permis d'aquaculture doit présenter chaque année un rapport sur ses activités en remplissant le formulaire fourni par le MAAP-NB. Il doit préparer et conserver des livres, des dossiers, des comptes et d'autres documents conformément à la *Loi sur l'aquaculture* et les règlements connexes. En outre, il doit pouvoir fournir ces documents dans les détails et la forme exigés par la *Loi sur l'aquaculture* et les règlements connexes aux fins d'évaluation des activités du site et de l'exactitude des rapports annuels.

3.2.3 Surveillance environnementale des activités piscicoles

En plus d'une concession et d'un permis d'aquaculture, une entreprise qui désire exploiter un site de grossissement de poissons en milieu marin au N.-B. doit obtenir un certificat d'approbation du MELG-NB. Dans le cadre de ce processus, qui repose sur des normes fondées sur le rendement, l'entreprise doit présenter un plan de production qui est étudié par le Comité d'évaluation des sites aquacoles (CESA). Ce comité, qui est présidé par le MELG-NB, est composé de représentants du MAAP-NB et du MPO. Le CESA évalue la production historique du site et les données environnementales et conseille le MELG-NB, qui est responsable d'octroyer le certificat d'approbation. Si le plan de production est approuvé, le certificat d'approbation établit des exigences en matière de surveillance environnementale, de gestion des déchets, d'entreposage et de manipulation de produits chimiques et de contrôle du bruit.

Conformément aux conditions assorties au certificat d'approbation, les entreprises sont tenues d'effectuer une surveillance environnementale de leurs sites aquacole conformément aux *Pratiques opérationnelles standards pour la surveillance environnementale de l'industrie aquacole des poissons de mer en cage au Nouveau-Brunswick* (POS) [26]. Ce processus d'autosurveillance est effectué trois fois par année. Dans chaque cas, les POS déterminent le nombre et l'emplacement des transects et des échantillons de sédiments, les enregistrements vidéo, les plans de site, la collecte et l'analyse des échantillons de sédiments, l'élimination des déchets et la tenue de dossiers. Ces mesures visent à contrôler la concentration de sulfure dans les sédiments du milieu benthique à proximité des cages et de la zone visée. En plus de l'autosurveillance, les sites de pisciculture marine en cage font également l'objet d'une surveillance par le MELG-NB en vertu de son Programme de gestion environnementale (PGE)[27]. Chaque année, le programme vise au moins 20 % de l'ensemble des sites de pisciculture marine, et la concentration de sulfure dans les sédiments est évaluée une fois de plus pour assurer le respect des normes. Les résultats de ces activités de surveillance des sites sont publiés chaque année sur le site Web du MELG-NB[28].

26 MELG-NB, ***Pratiques opérationnelles standard pour la surveillance environnementale de l'industrie aquacole des poissons de mer en cage au Nouveau-Brunswick***, juillet 2012.

27 MELG-NB, ***Programme de gestion environnementale pour l'industrie aquacole des poissons de mer en cage au Nouveau-Brunswick***, août 2012

28 MELG-NB, ***Aquacole marin : Résultats de la surveillance***, années diverses.

Les sites marins de grossissement de poissons sont ensuite classés en fonction des concentrations de sulfure dans les sédiments selon les catégories « Oxique », « Hypoxique » et « Anoxique » (mesure en micromoles par litre ou µM). La catégorie « Oxique » comprend les concentrations de sulfure de moins de 1 500 µM et indique que le site fonctionne bien et que seules des mesures correctives mineures doivent être appliquées. La catégorie « Hypoxique » comprend les concentrations situées entre 1 500 µM et 6 000 µM et indique que le site nécessite certaines mesures correctives puisque la concentration pourrait avoir des effets néfastes sur l'environnement. La catégorie « Anoxique » comprend les concentrations supérieures à 6 000 µM et indique que le site cause des dommages graves au milieu marin et que l'exploitant devra collaborer de près avec les organismes réglementaires pour rectifier la situation. Les plans de rétablissement comprennent des mesures visant à réduire les effets de l'enrichissement organique, notamment par l'amélioration des méthodes d'alimentation, le nettoyage des filets ou de l'équipement hors du site, la réduction de la densité du stock, le repositionnement des cages par rapport aux courants, la formation du personnel et des vérifications internes et externes afin de s'assurer que les pratiques exemplaires en matière de gestion sont respectées. Selon le MELG-NB, le PGE améliore la performance environnementale puisque les entreprises doivent obtenir de bons résultats s'ils désirent maintenir ou augmenter leur production.

3.2.4 Pou du poisson

Le secteur salmonicole a connu sa première grande éclosion de pou du poisson dans le sud-ouest du N.-B. en 1994. L'année suivante, la province a créé dans la région dix zones de gestion du pou du poisson dans lesquelles l'administration du traitement chimique SLICE® (ou benzoate d'émamectine, un médicament ajouté à la nourriture) était coordonnée. L'utilisation de SLICE®, de concert avec l'application de pratiques de gestion exemplaires, a permis de contenir la propagation du pou du poisson dans la région pendant environ dix ans. Toutefois, entre 2006 et 2008, on a noté que l'utilisation courante de ce seul produit a permis aux populations de poux du poisson de développer une résistance au traitement. Par conséquent, d'autres traitements chimiques ont été utilisés ou mis à l'essai.

Par exemple, le MAAP-NB a collaboré avec l'industrie pour étudier et surveiller l'utilisation de bateaux-viviers pour administrer trois différents traitements (bains) contre le pou du poisson (Paramove® – dont l'ingrédient actif est le peroxyde d›hydrogène, Salmosan® et AlphaMax®).[29] Le projet de recherche a fait ressortir qu'il fallait une plus faible concentration de ces produits lorsqu'on l'utilisait dans un bateau-vivier comparativement à une utilisation dans un parc en filet muni de bâches ou de jupes[30]. Il a aussi démontré que cette méthode était moins coûteuse. Ces résultats ont encouragé le MAAP-NB et le MPO à élaborer, en 2011, un Programme de lutte antiparasitaire intégrée (PLAI) contre le pou

29 Il est à noter que l'ARLA a approuvé l'homologation d'urgence du produit AlphaMax® mais l'a révoqué par la suite. Ce produit n'est plus autorisé comme produit antiparasitaire au Canada pour la gestion du pou du poisson.

30 Atlantic Canada Fish Farmers Association, ***Évaluation de l'utilisation de la technologie des bateaux viviers aux fins de traitement du pou du poisson***, MPO, 2010.

du poisson en collaboration avec l'industrie, des experts en santé du poisson et d'autres intervenants. Le PLAI est composé de trois volets : les mesures de prévention et de contrôle; la surveillance; et la collecte et l'analyse de données :

- Les mesures de prévention et de contrôle comprennent les mesures de contrôle qui ne sont pas fondées sur des agents chimiothérapeutiques (zones de gestion des baies ou ZGB, séparation des classes d'âge, jachère et recours à des poissons-nettoyeurs, à des pièges à pou du poisson et à des bateaux-viviers); les stratégies de contrôle fondées sur des agents chimiothérapeutiques (médicaments ajoutés aux aliments et médicaments topiques); et les stratégies de traitement (seuils de traitement, rotation de produit, traitements adaptés au site et à la région et traitements saisonniers).
- La surveillance comprend : les protocoles d'échantillonnage et de dénombrement normalisés; la fréquence des dénombrements; la production de rapport sur le dénombrement du pou du poisson; les vérifications; et l'examen de l'efficacité des traitements.
- La collecte et l'analyse de données concernent la dynamique et les tendances relatives au pou du poisson; l'efficacité des traitements; les signes avant-coureurs de la résistance ou de la tolérance aux traitements; et les différences régionales[31].

En 2013, le gouvernement provincial a apporté des modifications au *Règlement pris en vertu de la Loi sur l'aquaculture* touchant la production de rapports sur le pou du poisson. Les détenteurs de permis d'aquaculture sont désormais tenus de présenter, au début de chaque année, un plan de gestion et de traitement relatif au pou du poisson qui comprend, pour chaque site de grossissement, les renseignements suivants : le nom de tous les produits que l'on prévoit utiliser pour le traitement contre le pou du poisson sur le site, la méthode employée pour administrer les traitements et le calendrier provisoire des traitements sur le site. Chaque semaine, les détenteurs de permis doivent aviser le MAAP-NB si un traitement contre le pou du poisson est prévu ou non sur l'un de leurs sites aquacoles. Si un traitement est prévu, le détenteur doit déterminer la quantité de poux du poisson pour chaque site touché et présenter les résultats au ministère. En outre, le ministère a établi des seuils pour les infestations de poux qui déterminent à quel moment les traitements doivent être administrés[32].

3.2.5 Anémie infectieuse du saumon

La deuxième grande maladie du poisson qu'a connue le secteur salmonicole au N.-B. est l'AIS en 1996. À cette époque, il n'existait aucun traitement médicamenteux contre l'AIS, et l'efficacité des vaccins était limitée. On a reconnu que la forte densité des sites de grossissement dans certaines parties de la baie de Fundy était un facteur important ayant contribué à propagation de l'AIS. Par conséquent, certains sites de grossissement ont été retirés de la région en 1997 et en 1998.

En 2000, dans le cadre de la Politique d'attribution des sites aquacoles marins dans la baie de Fundy, 22 ZGB ont été établies dans la région; leurs limites ont été tracées en fonction de considérations océaniques et commerciales et en fonction de la santé des poissons. Dans chaque ZGB, les sites de grossissement étaient tenus d'élever des poissons

31 Kathy Brewer-Dalton, ***Integrated Pest Management Program (IPMP) for Sea Lice***, MAAP-NB, 25 février 2013.
32 Gouvernement du Nouveau-Brunswick, ***Gazette royale***, volume 171, 20 février 2013, p. 384–387.

de la même classe d'âge (un site ne pouvait contenir qu'une seule génération de poisson à la fois) et de fonctionner selon un système de rotation des élevages biennal, l'introduction de saumoneau devant être effectuée soit au cours des années paires, soit au cours des années impaires. En plus des ZGB, la nouvelle politique établissait des zones de croissance contrôlée et des zones d'exclusion. Les zones de croissance contrôlée visaient les secteurs où la densité des stocks des sites de grossissement était élevée, tandis que les zones d'exclusion concernaient les secteurs de pêche commerciale. Les nouveaux projets d'aquaculture n'étaient pas acceptés dans ces deux types de zone, mais les projets d'expansion des sites existants étaient néanmoins évalués. Ces zones sont encore en vigueur aujourd'hui[33].

Malgré la mise en œuvre de la politique en 2000 et du cadre touchant les ZGB, l'AIS a continué de poser un problème dans le sud-ouest de la province. En fait, la politique contenait deux grandes failles : elle permettait de rescaper une partie des poissons dans les sites de grossissement (jusqu'à 20 % des poissons destinés au marché pouvaient demeurer sur le site lorsqu'une nouvelle

Breviro Caviar est une entreprise aquacole du N.-B. qui fait l'élevage de l'esturgeon à museau court pour en récolter la chair et le caviar. Elle exploite trois installations terrestres en parcs clos à St. Andrews, à Charlo, et à Pennfield. Elle est la seule entreprise au monde à détenir un permis en vertu de la Convention sur le commerce international des espèces menacées d'extinction l'autorisant à faire l'élevage de l'esturgeon à museau court et à en vendre le caviar. L'entreprise travaille aussi en collaboration avec les Premières nations d'Eel River Bar et de Listuguj. Les sénateurs ont l'occasion de visiter l'installation à Pennfield.

33 Gouvernement du Nouveau-Brunswick, ***Politique d'attribution des sites aquacoles marins dans la baie de Fundy***,

classe de saumoneau était introduite) et elle n'exigeait pas la mise en jachère entre les classes d'âge. Ces deux failles auraient contribué de manière importante à la persistance de la maladie dans la région. Par conséquent, une révision du système de ZGB a été entreprise en 2006, à la suite de laquelle la région a été divisée en trois grandes ZGB fonctionnant selon un système de rotation des élevages triennal en ce qui concerne l'introduction de saumoneaux : ZGB1 (2006, 2009 et 2012); ZGB2 (2007, 2010 et 2013) et ZGB3 (2008, 2011 et 2014), cette dernière zone contenant une sous-zone désignée « zone de quai » à l'usage de l'industrie. Les trois grandes ZGB couvraient 95 % de la capacité de production estimée. Trois petites ZGB ont également été établies : la ZGB4 et la ZGB5 n'étaient assujetties à aucun calendrier précis pour l'introduction de saumoneaux et la ZGB6 a été désignée zone d'espèce alternative (selon des études océanographiques, la ZGB6 contribuait à la transmission de maladie entre les sites de croissance et, par conséquent, il a été décidé que seule l'élevage d'espèces autres que le saumon était permise dans cette zone). La politique révisée prévoyait également la mise en jachère synchronisée obligatoire des sites se trouvant dans les ZGB avant l'introduction d'un nouveau stock. On estime que le nouveau système de ZGB, de concert avec les améliorations à la biosécurité et à d'autres pratiques de gestion aquacole, a permis d'améliorer la santé des poissons dans la baie de Fundy puisque l'on n'a recensé aucun cas d'AIS dans la région entre l'automne 2006 et le printemps 2015.

En 2009, le MAAP-NB a adopté la *Politique sur la santé des poissons d'aquaculture marine au Nouveau-Brunswick*. Conformément à cette politique, le gouvernement provincial est responsable de la gestion des maladies touchant les poissons d'élevage. Selon la politique, qui complète le *Règlement sur la protection de la santé des poissons* du gouvernement fédéral et le Programme national sur la santé des animaux aquatiques, toute maladie doit être signalée au MAAP-NB dans les sept jours suivant le diagnostic. En outre, la politique établit des normes opérationnelles que doivent respecter les exploitants aquacoles, les bateaux de récolte et les usines de transformation afin de veiller à ce que toutes les mesures raisonnables soient en place pour réduire les risques d'introduction de maladie ou de vecteurs de maladie dans les installations aquacoles. Le MAAP-NB contrôle et surveille l'industrie pour s'assurer qu'elle respecte la politique[34].

3.2.6 Confinement et recapture

En 2009, le MPO et le MAAP-NB ont élaboré un document de gouvernance sur le bris de confinement dans le sud-ouest de la province, qui fait état des exigences provinciales et fédérales concernant les bris de confinement et la capture des poissons évadés dans la baie de Fundy. Ce document, qui était en cours de révision pendant la rédaction de ce volume, complète le code de confinement du saumon d'élevage dans les parcs en filet marins au N.-B., élaboré par la New Brunswick Salmon Growers Association en 2008[35] Le code décrit les types d'équipement et d'infrastructure qui sont en mesure de résister aux rigueurs de l'environnement marin où ils seront déployés, établit les méthodes d'inspection et d'entretien de l'équipement en fonction de

34 Gouvernement du Nouveau-Brunswick, ***Politique sur la santé des poissons d'aquaculture marine au Nouveau-Brunswick***, 2009.

35 New Brunswick Salmon Growers' Association, ***Code of Containment for Culture of Atlantic Salmon in Marine Net Pens Nouveau-Brunswick***, 2008.

calendriers, dresse la liste des exigences en matière de reddition de compte et prévoit les mesures à suivre en cas d'évasion. Le document de gouvernance et le code présentent des techniques de gestion qui incorporent des mesures de réduction du risque d'évasion. On a également apporté des modifications au *Règlement pris en vertu de la Loi sur l'aquaculture* en 2010 afin d'obliger la déclaration des cas d'évasion de 100 saumons ou plus d'un site aquacole et la préparation d'un plan de gestion de bris de confinement comprenant des mesures d'inspection et d'atténuation.

3.2.7 Zones de gestion des baies pour l'élevage des huîtres

Le MAAP-NB et le MPO ont également établi, en 2003, des ZGB pour l'élevage de l'huître afin de simplifier le processus d'évaluation des sites d'élevage de ce mollusque. Ce système de ZGB comprend quatre volets :

- Plans de gestion des baies : Ces plans ont été finalisés en 2007 et définissaient quatre zones propices à l'élevage des huîtres : classe A (toutes les méthodes d'élevage – sur fond, près du fond et colonne d'eau); classe B (méthodes d'élevage sur le fond ou près du fond);

Les sénateurs découvrent l'ostréiculture dans les installations de la Little Shemogue Oyster Company, qui loue 25 acres dans la baie Little Shemogue, au N.-B., où elle fait l'élevage d'huîtres américaines. Cette entreprise utilise la méthode de l'élevage sur le fond pour l'élevage d'huîtres de tailles et formes variées et celle de l'élevage en suspension pour produire des huîtres « cocktail ».

classe C (méthodes d'élevage sur le fond seulement); et classe D (colonne d'eau interdite; site d'hivernage temporaire).

- Évaluation environnementale – Rapport d'examen par catégorie : Pour simplifier le processus, plutôt que d'effectuer une évaluation environnementale pour chaque projet d'élevage de l'huître, on a recours à des rapports d'examen par catégorie, qui tirent profit des connaissances accumulées grâce aux évaluations environnementales passées. Les rapports d'examen par catégorie définissent les mesures qui permettent, preuve à l'appui, de réduire ou d'éliminer les risques de dommages à l'environnement pour un type ou une classe de projet donné.
- Processus de gestion adaptatif : Les résultats des enquêtes et des recherches sur le terrain effectuées par les organismes fédéraux et provinciaux sont examinés chaque année afin de faire le point sur l'évolution des connaissances scientifiques et techniques liées aux activités du secteur. Lorsque nécessaires, des changements aux pratiques de gestion de la conchyliculture sont proposés.
- Code de pratique : La New Brunswick Professional Shellfish Growers Association a élaboré un code de pratique en 2005. Bien que le respect du code demeure facultatif, le document complète les différents mécanismes réglementaires en vigueur et définit des mesures pratiques afin d'assurer une meilleure gouvernance environnementale au sein du secteur conchylicole.

CHAPITRE 4 : Terre-Neuve-et-Labrador

4.1 Aperçu de l'industrie

4.1.1 Structure et emplacement

L'industrie aquacole de T.-N.-L. est très différente de celle de la C.-B. et des autres provinces de l'Atlantique. La biogéographie, le climat, l'océanographie et les ressources marines de la province sont tels que l'industrie fait face à des défis biologiques et physiques différents de ceux que l'on retrouve dans d'autres régions du pays (p.ex., courants faibles, basse température de l'eau, concentrations d'oxygène dissous naturellement faibles et substrats durs). Au fil des ans, on a tenté l'élevage commercial de différentes espèces dans la province, et les résultats ont été mitigés. À l'heure actuelle, il n'y a que trois espèces de poissons et qu'une espèce de mollusques élevés à des fins commerciales dans les eaux de la province (voir le tableau 4.1). Il n'y a pas d'installations terrestres en parc clos qui font d'élevage du poisson à des fins commerciales, et il n'y a pas non plus de sites d'AMTI.

La pisciculture se concentre dans la péninsule Connaigre, le long de la côte sud-ouest de l'île. La conchyliculture se fait dans toutes les régions côtières, mais se pratique surtout dans la baie Notre Dame, sur la côte nord-est[36]. Il n'y a aucun site aquacole au Labrador. En 2013, on dénombrait, au total, 87 licences d'exploitation piscicoles commerciales couvrant une superficie combinée de 2 376 hectares[37]. On comptait également 53 permis d'exploitation conchylicoles commerciales pour une superficie combinée de 4 162 hectares[38].

La structure du secteur piscicole dans la province a considérablement évolué au fil des ans en raison de la consolidation et de l'intégration. Aujourd'hui, trois grandes entreprises dominent le secteur : Cooke Aquaculture (Cold Ocean Salmon), Gray

Tableau 4.1 – Espèces d'élevage à Terre-Neuve-et-Labrador

	Espèces
Poissons	• Saumon de l'Atlantique • Truite arc-en-ciel • Omble chevalier
Mollusques	• Moule bleue

Source : Selon des données fournies par le MPO au Comité.

36 Pour connaître l'emplacement de ces sites, voir la **carte**.
37 Ministère des Pêches et de l'Aquaculture de Terre-Neuve-et-Labrador, ***Seafood Industry Year in Review – 2013***, février 2014, p. 11.
38 *Ibid.*

Aquaculture (Gray Aqua Group) et Northern Harvest Sea Farms. Intégrées verticalement, ces trois entreprises exploitent des écloseries de salmonidés, des sites de grossissement et des usines de transformation à divers endroits dans la province. Northern Harvest Sea Farms fabrique également des filets et des cages pour les pisciculteurs. Il existe aussi plusieurs petites entreprises, dont Nova Fish Farms (qui fait l'élevage de la truite arc-en-ciel) et la Nordic Salmon Company (qui fait l'élevage de l'omble chevalier).

Les trois grandes entreprises piscicoles mènent aussi des activités à l'extérieur de la province. Cooke Aquaculture possède des installations de salmoniculture au N.-B., en N.-É., à l'Î.-P.-É., aux États-Unis (Maine), au Chili et en Écosse, ainsi que des installations d'élevage du bar commun et de la dorade en Espagne. Northern Harvest Sea Farms et Gray Aquaculture font toutes les deux l'élevage du saumon au N.-B., où elles ont établi leur siège social.

Ces dernières années, le secteur conchylicole de T.-N.-L. s'est consolidé un peu lui aussi. Quelques entreprises se sont intégrées et assurent elles-mêmes le grossissement, la transformation, la commercialisation et la distribution de leur production. Le reste du secteur est occupé par de petites entreprises familiales. Les mytiliculteurs (éleveurs de moules) ont mis leurs stocks en commun afin de s'assurer que les transformateurs et les négociants aient des quantités suffisantes de produits pour satisfaire à la demande de leurs clients à longueur d'année. En mars 2013, les produits de huit mytiliculteurs et de trois transformateurs primaires de la province ont été certifiés conformes aux normes canadiennes d'aquaculture biologique.[39]

4.1.2 Production

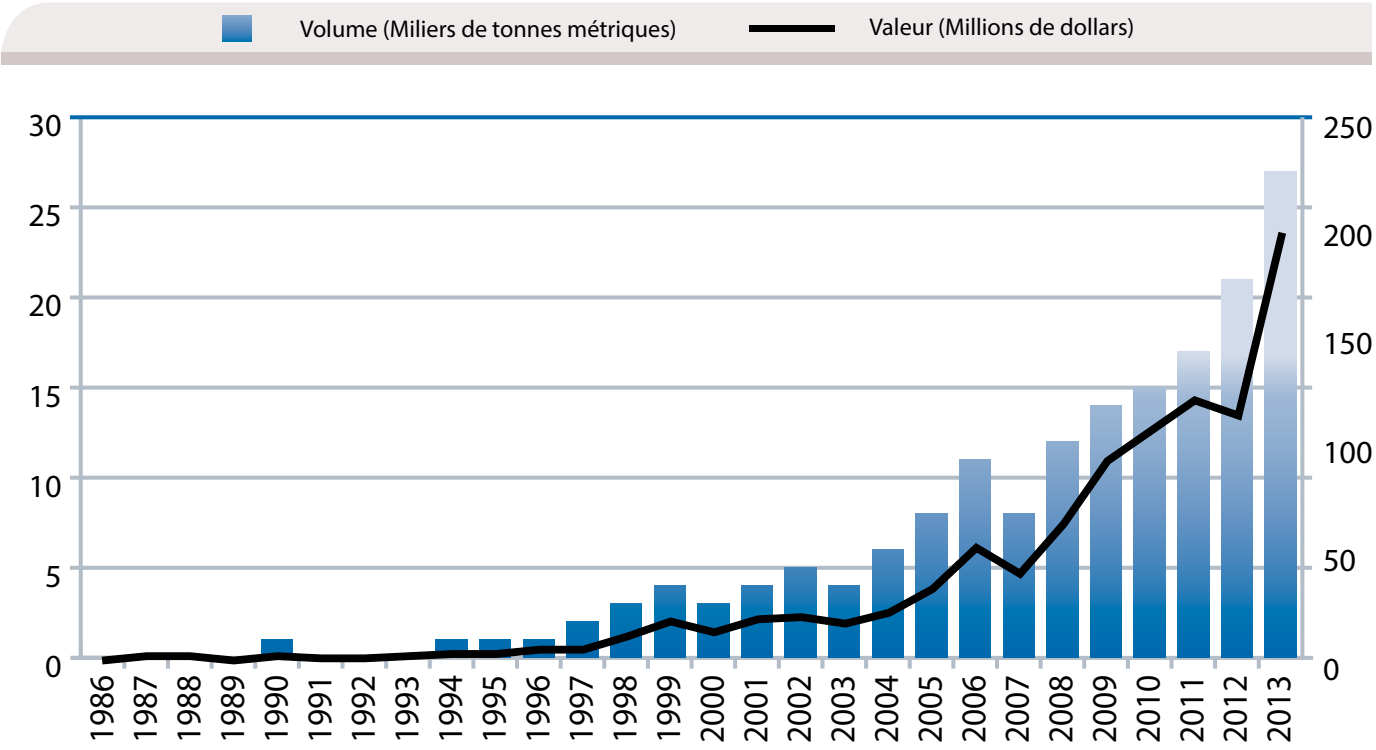
Comme le montre la figure 4.1, la production aquacole a progressé lentement dans les années 1980 et 1990 dans la province. En effet, durant cette période, la province accusait un retard par rapport aux autres provinces de l'Atlantique et à la C.-B. pour ce qui est du volume et de la valeur de la production aquacole. Depuis, l'aquaculture à T.-N.-L. a connu une forte croissance. En 2013, la dernière année pour laquelle des données comparatives existent, T.-N.-L. occupait le deuxième rang au pays pour la valeur de sa production aquacole, avec 20 % de la valeur totale, derrière la C.-B. (53 %). Lorsqu'on analyse les données par espèce pour cette même année, la province était le deuxième producteur en importance au Canada de saumons de l'Atlantique et le deuxième producteur de moules bleues.

En 2013, la production aquacole de T.-N.-L. a atteint un sommet, avec 26 551 tonnes de poissons et de mollusques d'élevage d'une valeur de 197 millions de dollars. Plus précisément, cela représentait 22 196 tonnes de poissons d'une valeur de 182 millions de dollars, et 4 354 tonnes de mollusques d'une valeur de 15 millions de dollars. Le volume global de production a grimpé de 25 % par rapport à l'année précédente, et la valeur de la production a bondi de 74 %. L'augmentation des quantités était largement attribuable à la hausse de la production de saumons de l'Atlantique; quant à la production de moules bleues, elle est demeurée relativement inchangée par rapport à 2012. L'accroissement significatif de la valeur tient à l'effet combiné de l'augmentation des volumes de production de saumons de l'Atlantique et de la vigueur des prix, tant du saumon de l'Atlantique

39 Newfoundland Aquaculture Industry Association, ***Newfoundland Mussel Producers the First and Only to Receive Organic Aquaculture Certification in North America***, communiqué, 21 février 2013.

que des moules bleues. Le gouvernement provincial appuie fortement le développement de l'industrie. D'ici 2018, la province vise à produire 50 000 tonnes de salmonidés et 6 000 tonnes de moules[40].

Figure 4.1 – Production aquacole[a] à Terre-Neuve-et-Labrador, selon le volume et la valeur [b], de 1986 à 2013



Nota : a. La production aquacole comprend la quantité et la valeur des poissons et mollusques produits sur place et exclut les écloseries et les usines de transformation.

b. Prix à la ferme. La valeur à la ferme représente la valeur d'un produit une fois qu'il est vendu par le producteur.

Source : Selon des données du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

40 Ministère des Pêches et de l'Aquaculture de Terre-Neuve-et-Labrador, ***Vision 2018: Sustainable Aquaculture Development – A Strategic Plan Discussion Document***, 2013.

4.2 Cadre de gouvernance

4.2.1 Cadre général

T.-N.-L. s'est investie pour la première fois dans le domaine de l'aquaculture en 1988, avec la signature d'un PE avec le gouvernement fédéral. Ce protocole définissait les rôles et responsabilités de chaque ordre de gouvernement. Le ministère des Pêches et de l'Aquaculture de la province (MPA-TNL) s'occupe des permis d'aquaculture, des inspections, de l'application de la loi, du développement et des services de soutien. Le MPO a pour mandat la protection de l'habitat. Ensemble, ils ont pour responsabilité la protection de l'environnement, la science de l'aquaculture, l'inspection des sites et la santé des poissons[41]. En vertu d'un autre PE signé en 2008, T.-N.-L. est les trois autres provinces de l'Atlantique collaborent à l'élaboration d'un cadre harmonisé des politiques environnementales et de la réglementation de l'aquaculture dans la région.[42]

4.2.2 L'Aquaculture Act

Pour régir l'industrie aquacole, la province a adopté en 1988 la Loi sur l'aquaculture[43] (*Aquaculture Act*) et le Règlement sur l'aquaculture[44] (*Aquaculture Regulations*), qui relèvent du MPA-TNL. Ces textes

Northern Harvest Sea Farms est une grande société canadienne d'élevage du saumon qui a étendu ses activités à T.-N.-L. en 2008. La société a été fondée en 1985 au N.-B., où elle a son siège social. En octobre 2012, elle est devenue la première entreprise salmonicole en Amérique du Nord à obtenir de la Global Aquaculture Alliance la certification « trois étoiles » pour son application de pratiques exemplaires en aquaculture. Les sénateurs visitent un de ses sites de grossissement situé à Pool's Cove.

41 MPA-TNL, « ***Provincial and Federal Responsibilities*** », *About the Department* [consulté le 12 mars 2015].
42 ***Protocole d'entente des provinces de l'Atlantique sur le développement du secteur aquacole***, 18 janvier 2008.
43 ***Aquaculture Act***, chapitre A-13.
44 **Aquaculture Regulations** pris en vertu de la *Aquaculture Act*, O.C. 96-939.

législatifs ont été modifiés à plusieurs reprises au fil des ans. À l'heure actuelle, La *Loi* vise notamment : à promouvoir le développement de l'aquaculture; à protéger les droits de propriété de l'industrie; à limiter les conflits avec des intérêts et des usages divergents; et à établir un processus décisionnel coopératif au sein de la province et avec le gouvernement fédéral (article 3). Les principaux sujets traités par la *Loi* sont la délivrance de permis, le respect de la conformité et de la loi, les inspections, les activités concernant les évasions, la gestion des déchets et certains aspects de la santé de la faune aquatique. De plus :

- Selon la *Loi,* il faut posséder un permis pour mener des activités aquacoles, permis dont la validité ne dépassera pas la durée de la concession donnant droit à l'occupation d'une terre, ce qui est une condition préalable à la délivrance de tout permis (dispositions 4(1), (5) et (7)).
- selon la *Loi*, le ministre peut définir les critères applicables aux dispositifs d'ancrage pour les amarres de terre sur les sites aquacoles (paragraphe 4.1(1)); il peut aussi exiger des garanties financières ou autres pour la restauration d'un site (article 4.2) et préciser les conditions de cette restauration (article 4.3).
- La *Loi* établit que toutes les espèces de la flore et de la faune aquatiques indiquées sur le permis demeurent la propriété exclusive du détenteur du permis tant qu'elles se trouvent dans les limites précisées sur le permis, jusqu'à ce qu'elles soient vendues, échangées, transférées ou cédées; et que les animaux échappés demeurent la propriété privée du détenteur du permis tant qu'ils se trouvent dans un périmètre de 100 mètres autour des limites du site (article 5).
- La *Loi* régit également les déclarations de maladies ainsi que les questions d'introduction, de transfert, de transport, d'enquête et d'application de la loi (articles 7 et 8).
- Le *Règlement* établit quant à lui les exigences relatives à l'identification des sites aquacoles, notamment le balisage des emplacements au moyen de bouées jaunes et d'amarres (article 4).

> La Loi sur l'aquaculture de T.-N.-L. définit l'« aquaculture » en ces termes :
>
> Élevage de poissons, de mollusques, de crustacés, de plantes aquatiques et d'autres organismes aquatiques, avec intervention dans le processus d'élevage pour accroître la production, comme un repeuplement régulier, l'alimentation et la protection contre les prédateurs, et la mise en jachère ainsi que l'instauration de processus pour atténuer la dégradation environnementale et l'installation des engins et équipements nécessaires […] » [traduction].

4.2.3 Concessions et permis

Comme on l'a déjà mentionné, le permis d'aquaculture n'est délivré que si le demandeur a tout d'abord obtenu une concession en vertu de la *Lands Act* (Loi sur les terres)[45]. C'est le ministère de l'Environnement et de la Conservation de la province qui octroie les concessions touchant les terres de l'État, y compris celles recouvertes d'eau. On a expliqué au Comité que les concessions ne sont approuvées que si les sites ne sont pas situés à proximité de rivières au saumon inscrites et de lieux connus de pathogènes endémiques. La concession aux fins d'aquaculture est valide pour une période de 50 ans.

45 ***Lands Act***, chapitre 36.

La demande de permis doit comporter des informations sur le lieu et l'aménagement du site, les espèces et les souches, le type d'activités, le plan d'affaires, le site en soi, ainsi que les plans de production et de récolte pour les cinq prochaines années. Elle doit aussi faire état des préoccupations environnementales et des conflits et présenter les résultats d'une évaluation de la qualité de l'eau sur le site. À l'opposé de la concession, le permis d'aquaculture visant l'exploitation d'un site d'élevage est généralement délivré pour une période d'un an et doit être renouvelé annuellement. Depuis que la loi a été modifiée en 2012, le MPA-TNL peut octroyer des permis valides pour plusieurs années, mais il ne l'a pas encore fait.

Pendant les audiences, le Comité a appris que le gouvernement provincial a depuis longtemps comme pratique de refuser un permis si l'aquaculture avait pour effet de déplacer des activités de pêche traditionnelle. Dans le cadre du processus de délivrance de permis, le syndicat des pêcheurs

Les sénateurs visitent l'écloserie de Cold Ocean Salmon à St. Alban's, T.-N.-L. Cette entreprise, qui a commencé à pratiquer la salmoniculture dans la province en 2006, est une filiale de Cooke Aquaculture, une grande société d'élevage de saumon au Canada. Fondée en 1985, Cooke Aquaculture est également présente au N.-B., en N.-É., à l'Î.-P.-É., aux États-Unis (Maine), au Chili, en Écosse et en Espagne. En plus de l'écloserie, Cold Ocean Salmon exploite plusieurs sites de grossissement dans la région de la baie d'Espoir et une usine de transformation à Harbour Breton.

est informé de la demande pour que les pêcheurs locaux soient mis au courant des activités aquacoles proposées. Ce renvoi fait partie d'un vaste processus de consultations publiques que l'entreprise aquacole est tenue de mener dans la collectivité où elle souhaite s'établir.

Le processus de demande de permis est administré en entier par le MPA-TNL, qui achemine les demandes reçues à tous les autres ministères et organismes provinciaux et fédéraux concernés, y compris Transports Canada et le MPO. Le MPO étudie les demandes concernant la création de nouveaux sites et fournit des conseils sur le choix de l'emplacement et les niveaux de production maximale afin de minimiser les répercussions écologiques des activités aquacoles. De plus, à la discrétion du ministère de l'Environnement, les activités aquacoles proposées peuvent faire l'objet d'une étude d'impact sur l'environnement (EIE) conformément à la *Environmental Protection Act* (Loi sur la protection de l'environnement) de la province. Des consultations publiques font également partie du processus d'EIE.

Une fois en place, les exploitations aquacoles détentrices de permis doivent tenir des livres et des registres en vertu de l'*Aquaculture Act*. Cette loi prévoit des inspections des lieux dans le but d'assurer le respecter des lois et règlements et fixe les conditions des permis. Les inspecteurs sont des agents de paix; ils peuvent pénétrer sur les lieux et les inspecter ainsi que saisir et détenir des articles. Après une inspection, les inspecteurs peuvent donner des directives au détenteur de permis. Commet une infraction quiconque ne respecte pas les conditions du permis, les dispositions de la loi et du règlement, ou une directive donnée par un inspecteur.

4.2.4 Lutte antiparasitaire intégrée

Dans les secteurs maritimes à faible salinité (comme la baie d'Espoir), l'eau douce a pour effet d'atténuer les risques de pou du poisson. Pour cette raison, certaines installations aquacoles sur la côte sud de la province ne sont pas touchées par la maladie. Toutefois, vu la croissance rapide de l'industrie au cours des dix dernières années, les cas d'infestations de pou du poisson dans les exploitations salmonicoles se sont multipliés dans certaines baies. Dans le cadre de visites périodiques effectuées à des fins de diagnostic et de surveillance, le MPA-TNL procède au dénombrement de ces cas. Les exploitants aquacoles sont également tenus de procéder à un tel dénombrement toutes les semaines. Si le nombre dépasse le seuil établi par la province, ils doivent faire appel à un vétérinaire autorisé pour traiter leurs stocks. Le MPA-TNL ne publie pas pour l'instant les résultats de son programme de surveillance du pou du poisson.

L'accès aux agents chimiothérapeutiques (SLICE®, Salmosan® et peroxyde d'hydrogène) pour lutter contre le pou du poisson est limité. Le MPA-TNL et l'industrie sont en train de mettre au point un programme de lutte antiparasitaire intégrée qui englobera toute une gamme de nouveaux produits et de technologies de lutte contre le pou du poisson, y compris le tanche-tautogue (poisson-nettoyeur) et le laser. Ces outils s'ajouteraient aux pratiques de prévention actuelles comme l'application du principe d'élevage d'une seule classe d'âge, la mise en jachère et des seuils peu élevés de densité des stocks[46].

46 Newfoundland Aquaculture Industry Association, ***Newfoundland's Aquaculture Industry Preparing for Increased World Demand while Planning Better Protection for Our Oceans***, communiqué, 10 mars 2014.

4.2.5 Politique touchant les zones de gestion des baies

Le premier cas d'AIS dans une exploitation de salmoniculture de T.-N.-L. a été signalé en 2012, et il y a eu d'autres flambées depuis. Le MPA-TNL travaille en collaboration avec le MPO et le secteur salmonicole à l'élaboration de ZGB depuis 2009, mais il s'est avéré nécessaire de préciser et d'améliorer ces zones par suite de l'apparition de la maladie. Les ZGB délimitent les endroits idéaux pour la mise en place de nouveaux sites, définissent les pratiques exemplaires (classe d'âge unique, une seule catégorie d'ensemencement par site, périodes de mise en jachère propres à chaque site et période commune de mise en jachère pour la baie) ainsi que les procédures de biosécurité. Elles peuvent également imposer une distance minimale entre les sites exploités par une même entreprise et une distance minimale différente dans le cas de sites exploités par des entreprises différentes. Selon le MPA-TNL, les ZGB sont un moyen sûr, scientifique et éprouvé de réduire l'incidence des maladies et des parasites. Cela favorise également une gestion stable et ordonnée des pratiques de l'industrie, afin de garantir le respect de l'environnement et la coopération entre les entreprises pour la viabilité à long terme de l'industrie[47]. Les ZGB sont devenues une condition de la délivrance de permis en janvier 2014. Chaque entreprise salmonicole active dans la province doit maintenant avoir des sites de grossissement dans trois ZGB distinctes pour faciliter un repeuplement continu.

4.2.6 Confinement et recapture

Le code de confinement pour l'élevage de salmonidés à T.-N.-L. découle d'un engagement pris par le MPA-TNL, le MPO et l'industrie, chacun ayant un rôle et des responsabilités bien définis[48]. Mis en œuvre en 1999 et mis à jour régulièrement, ce code fixe les normes d'aménagement des systèmes de cage et définit les procédures que l'industrie doit respecter pour réduire les risques d'évasion en assurant la gestion des sites. On a signalé que les dommages aux filets causés par la glace et les tempêtes sont à l'origine de la plupart des évasions dans la province. Pour cette raison, le code insiste sur le fait que l'équipement et l'infrastructure (notamment les filets, les cages, le maillage et les amarres) doivent être en mesure de résister aux rigueurs de l'environnement marin où ils seront déployés. Il prévoit aussi les méthodes de mise à l'essai et d'entretien de l'équipement. Le code traite aussi des pratiques de manutention, des documents et rapports à produire, des inspections et des mesures d'atténuation. Le respect du code est une condition du permis d'aquaculture. Tous les sites de grossissement en mer sont inspectés deux fois par année par le MPA-TNL pour s'assurer qu'on y observe les règles.

Le code prévoit également les mesures à prendre pour capturer les poissons évadés. Le MPO est responsable de la surveillance et de la mise en œuvre des dispositions connexes du code. Le MPO autorise ou ordonne la recapture, en consultation avec l'exploitant et d'autres parties intéressées selon le cas. Il tient compte du stade biologique des poissons évadés, du moment de l'année, des facteurs liés à l'incident et des objectifs de conservation des populations de poissons sauvages. Par conséquent, une recapture n'est pas nécessaire chaque fois qu'un incident se produit, mais tous les cas d'évasions doivent être signalés. Les cas où 100 poissons ou plus s'échappent d'une

47 MPA-TNL, ***Seafood Industry Year in Review 2013***, février 2014.
48 MPA-TNL, ***Code of Containment for the Culture of Salmonids in Newfoundland and Labrador***, mars 2014.

cage sont considérés comme graves, et le titulaire du permis doit entreprendre des discussions avec le MPO dans les 24 heures pour déterminer s'il y a lieu de tenter de les capturer.

Le MPA-TNL publie un rapport indiquant dans quelle mesure l'industrie respecte le code et résume les résultats de ses activités d'inspection. Ce rapport contient également des données sur le nombre d'évasions et l'efficacité des activités de recapture. Un rapport est produit pour chaque année civile, et le plus récent porte sur l'année 2012[49].

4.2.7 Stratégie provinciale d'aquaculture

Le MPA-TNL a élaboré pour la première fois une stratégie provinciale d'aquaculture en 1990. Cette stratégie a été revue en 2000 et 2005, lorsque l'on s'est rendu compte que l'industrie aquacole était en plein essor dans la province. En 2014, à la suite de consultations publiques[50], une nouvelle stratégie a été publiée dans le but d'orienter les décisions stratégiques et les investissements visant à encourager le succès de l'industrie[51]. La stratégie

Norlantic Processors Ltd. est une entreprise d'élevage et de transformation de moules bleues située à Botwood, à T.-N.-L. En 2013, cette entreprise, qui produit environ un million de livres de moules par année, a été certifiée conforme à la norme canadienne sur l'aquaculture biologique par Global Trust. En janvier 2014, son usine de transformation a obtenu la certification Best Aquaculture Practices pour son application de pratiques exemplaires en matière de transformation. Les sénateurs visitent l'un des sites de grossissement ainsi que l'usine de transformation de l'entreprise.

49 MPA-TNL, ***Annual Compliance Report – 2012 on the Code of Containment for the Culture of Salmonids in Newfoundland and Labrador***, mars 2014.
50 MPA-TNL, ***A Summary of What we Heard: 2013 Aquaculture Consultations***, 2013.
51 MPA-TNL, ***Newfoundland and Labrador Sustainable Aquaculture Strategy 2014***, décembre 2014.

met l'accent sur trois priorités que le gouvernement juge essentiel pour respecter son objectif de développement durable de l'aquaculture :

- La première priorité porte sur la gestion durable, notamment les enjeux liés à la santé des poissons et aux répercussions environnementales. Pour ce qui est de la santé des poissons, le MPA-TNL a l'intention de mieux définir les ZGB établies en 2009 en recueillant et en analysant des données océanographiques et épidémiologiques. Les plans de gestion de la santé des poissons seront revus, et on continuera de mener des vérifications de la surveillance et de la biosécurité. Au chapitre des répercussions environnementales, le MPA-TNL mettra en place des pratiques exemplaires pour atténuer les incidences propres aux sites et mettra à jour les demandes de permis d'aquaculture pour tenir compte des nouvelles exigences en matière de surveillance environnementale.
- La deuxième priorité a trait à la capacité d'appoint et englobe les programmes financiers, la planification des infrastructures, le renouvellement du cadre de gouvernance et les communications. Le MPA-TNL a l'intention de passer en revue les programmes financiers fédéraux et provinciaux à l'appui de l'industrie dans le but de modifier les outils financiers à la disposition de l'industrie et d'en établir de nouveaux. Dans le même ordre d'idées, il recensera les besoins actuels et futurs en matière d'infrastructure pour les secteurs piscicole et conchylicole. Pour ce qui est de la gouvernance, le MPA-TNL étudiera les règlements, politiques et procédures en place touchant l'octroi de permis d'aquaculture. Sur le plan des communications, il travaillera en collaboration avec l'industrie pour bien communiquer les faits concernant l'aquaculture. Il prévoit notamment afficher plus souvent de l'information sur l'industrie, créer un conseil consultatif ministériel sur l'aquaculture, qui sera composé de divers intervenants et offrira une tribune favorisant le dialogue sur l'aquaculture dans la province, et élaborer une stratégie de communication.
- La troisième priorité touche la recherche et le développement dans trois domaines précis : la santé des animaux aquatiques, l'exploration de nouveaux sites possibles d'élevage du saumon et l'élevage des moules (approvisionnement en naissains, espèces envahissantes, diversification des espèces, etc.). Le MPA-TNL formera également un comité consultatif sur la recherche et le développement aquacole, qui sera chargé d'examiner les activités de recherche et de développement en cours et de fournir des recommandations pour favoriser la collaboration parmi les chercheurs.

Situé à St. Alban's, à T.-N.-L., le Centre for Aquaculture Health and Development (CAHD) a officiellement ouvert ses portes en juillet 2011. Ce laboratoire moderne appuie les activités de diagnostic et de surveillance ainsi que de développement de pratiques de biosécurité avancées et la recherche appliquée et clinique sur la santé en aquaculture. Il fournit des conseils vétérinaires, du soutien ainsi que des installations et services de quarantaine à l'industrie aquacole. Il est le principal laboratoire de la province sur la santé des poissons et l'aquaculture. Sur place, les sénateurs ont droit à une présentation sur les différentes activités qui se livrent au CAHD, mais ils ne peuvent visiter les installations en raison de considérations liées à la biosécurité.

CHAPITRE 5 : Nouvelle-Écosse

5.1 Aperçu de l'industrie

5.1.1 Structure et emplacement

L'industrie aquacole de la N.-É. est l'une des plus diversifiées au pays. La grande variété de conditions climatiques et océanographiques (comme les nombreuses eaux côtières protégées, les zones où les courants de marée sont forts et les eaux peu profondes) a favorisé la production commerciale d'un large éventail d'espèces (voir tableau 5.1). De plus, l'industrie aquacole a implanté des élevages de poissons et de mollusques dans presque chaque comté de la province, y compris plusieurs installations terrestres[52]. La province héberge également un établissement de production terrestre de plantes marines de réputation internationale (Les Algues Acadiennes Limitée) qui cultive, récolte et transforme des algues pour les marchés de l'alimentation, de la biochimie et de l'agriculture.

La structure du secteur piscicole a évolué au fil des années. D'envergure modeste au départ, le secteur a été pendant de nombre d'années composé de petites et moyennes entreprises approvisionnant les marchés locaux. Certaines de ces entreprises sont toujours actives, mais une compagnie salmonicole – Cooke Aquaculture – a réalisé une expansion verticale de ses activités dans toute la province, établissant des écloseries, des sites de grossissement, des usines de transformation, une usine de fabrication d'aliments pour poisson (Northeast Nutrition) et des installations de manufacture d'équipement (cages et filets), ainsi que des services de transport et de distribution.

Tableau 5.1 – Espèces d'élevage en Nouvelle-Écosse

	Espèces
Poissons	• Saumon de l'Atlantique • Omble chevalier • Truite arc-en-ciel • Flétan de l'Atlantique
Mollusques	• Moule bleue • Palourde (mye, palourde américaine) • Huître (américaine, plate)
Plantes aquatiques	• Mousse d'Irlande • Algue • Main-de-mer palmée

Source : Selon des données fournies par le MPO au Comité.

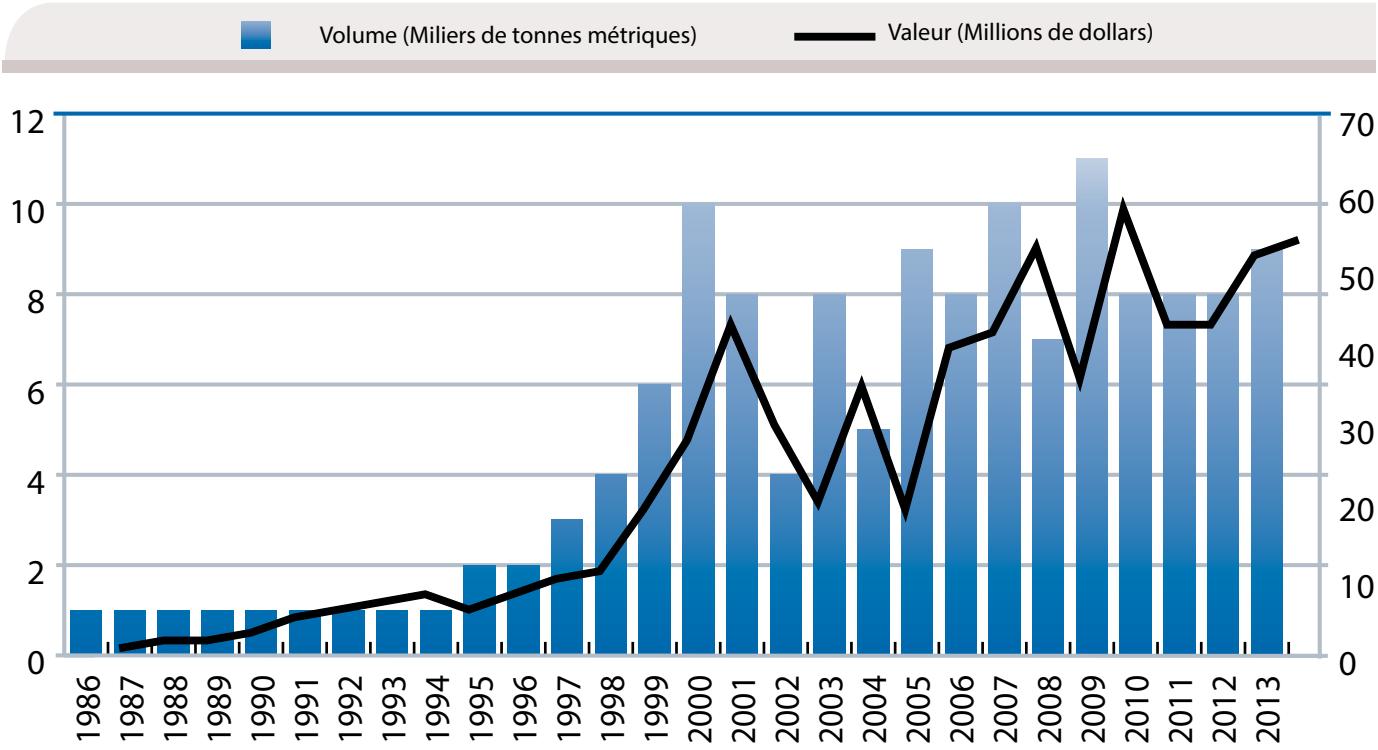
52 Pour connaître l'emplacement de ces sites, voir la **carte.**

Les autres pisciculteurs exploitent surtout de petites entreprises. De son côté, le secteur conchylicole demeure fragmenté, avec plusieurs entreprises, notamment de nombreuses petites exploitations familiales.

5.1.2 Production

Comme le montre la figure 5,1, la production aquacole en Nouvelle-Écosse a connu une croissance constante pendant les années 1980

Figure 5.1 – Production aquacole[a] en Nouvelle-Écosse, selon le volume et la valeur[b], de 1986 à 2013



Nota : a. La production aquacole comprend la quantité et la valeur des poissons et mollusques produits sur place et exclut les écloseries et les usines de transformation.

b. Prix à la ferme. La valeur à la ferme représente la valeur d'un produit une fois qu'il est vendu par le producteur.

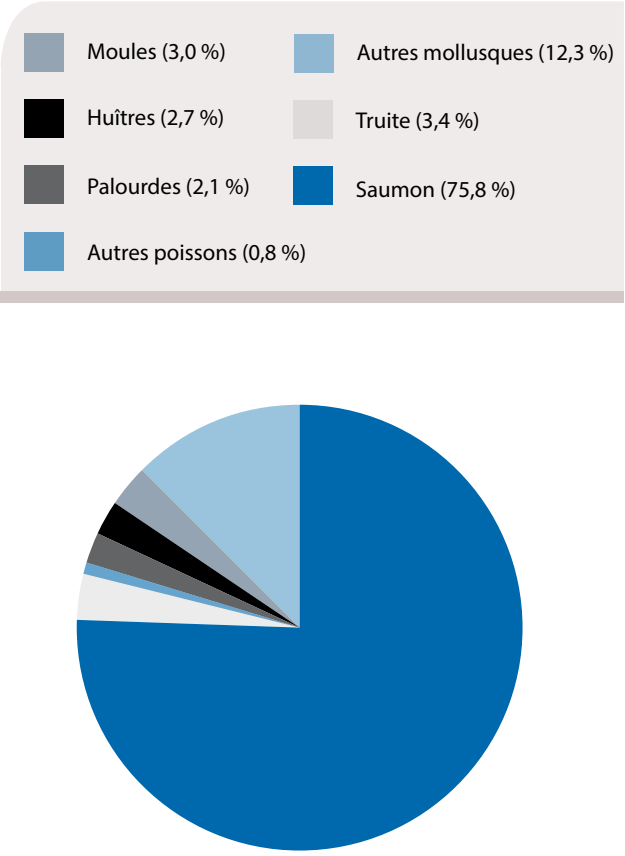
Source : Selon des données du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

et 1990, atteignant un sommet de 10 456 tonnes en 2000. Des conditions d'élevage favorables et l'abondance de sites propices sont à l'origine de cette croissance. Ce sommet a été suivi d'une suite de hauts et de bas dans le cycle de production. Les motifs invoqués pour expliquer ces fluctuations comprennent un cadre réglementaire complexe, la multiplicité des petites exploitations, l'insuffisance des compétences techniques et d'affaires nécessaires à la réussite d'une entreprise aquacole, le peu de soutien gouvernemental et un faible degré d'acceptation sociale.[53] La production aquacole a atteint un nouveau sommet en 2009, suivi d'un recul en 2010 et en 2011. La production a augmenté de nouveau en 2012, malgré les infections d'AIS et de NHI dans plusieurs sites de grossissement pendant cette année.

En 2013, la dernière année pour laquelle on dispose de données, l'industrie aquacole en N.-É. a produit 8 748 tonnes de poissons et de mollusques, d'une valeur de 54 millions de dollars, plus précisément, 6 780 tonnes de poissons, d'une valeur de 43 millions de dollars, et 1 968 tonnes de mollusques, d'une valeur de 11 millions de dollars. Comme l'indique la figure 5.2, le saumon de l'Atlantique arrivait au premier rang des espèces élevés dans la province (75,8 %); et les moules bleues étaient au premier rang des mollusques d'élevage (3,06 %).

En comparaison avec les autres provinces, la N.-É. affichait la quatrième valeur de production aquacole la plus élevée au Canada en 2013, comptant pour 6 % du total, devancée par la C.-B. (53 %), T.-N.-L. (20 %) et le N.-B. (13 %). Dans une comparaison par espèce, la Nouvelle-Écosse était le troisième producteur de moules bleues, et le quatrième producteur d'huîtres.

Figure 5.2 – Production aquacole de la Nouvelle-Écosse par espèce, en le pourcentage de la valeur, 2013



Source : À partir de données provenant du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

53 Ministère de l'Agriculture et des Pêches de la Nouvelle-Écosse, ***Long-Term Planning for Aquatic Farming in Nova Scotia – A Discussion Document***, février 2005.

5.2 Cadre de gouvernance

5.2.1 Cadre général

En N.-É., un PE sur le développement de l'aquaculture conclu par le gouvernement fédéral et la province énonce les rôles et responsabilités de chacun, plus précisément du ministère des Pêches et de l'Aquaculture de la province (MPA-NÉ) et le MPO. En vertu de ce PE, la N.-É. est responsable des permis et des concessions, de l'inspection et de la conformité des sites, ainsi que de la gestion de la santé des poissons. Les deux ordres de gouvernement exercent une responsabilité partagée à l'égard de la surveillance et de la gestion environnementale. Tel que mentionné précédemment, en vertu d'un autre PE signé en 2008, la N.-É. et les trois autres provinces de l'Atlantique collaborent à l'élaboration d'un cadre harmonisé des politiques environnementales et de la réglementation de l'aquaculture dans la région.[54]

5.2.2 La Fisheries and Coastal Resources Act

La N.-É. a formulé sa première stratégie de développement de l'aquaculture en 1996, et adoptait la même année la *Fisheries and Coastal Resources Act*[55] (Loi sur les pêches et les ressources côtières). Administrée par le MPA-NÉ, la *Loi* constitue le principal instrument législatif régissant l'aquaculture en N.-É. Ce texte de loi habilitant a notamment pour objectifs d'encourager, de promouvoir et de mettre en œuvre des programmes en vue d'améliorer et de rendre durables les pêches, y compris l'aquaculture, et d'aider l'industrie aquacole à accroître sa production (paragraphes 2(b) et (d)).

La partie V de la *Loi* traite explicitement de l'aquaculture. Il est interdit de pratiquer l'aquaculture sans permis et de la pratiquer sur des terres publiques sans concession. Habituellement, un permis d'aquaculture s'accompagne du droit exclusif de possession de la colonne d'eau et des terres sous-marines visées par le permis (article 44). Le ministre des Pêches et de l'Aquaculture (le ministre) peut renvoyer une demande de permis d'aquaculture en audience publique (paragraphe 48(c)).

Un permis et une concession peuvent être accordés pour une période initiale de dix ans, avec renouvellement possible pour des périodes successives de cinq ans (paragraphes 51(1)(e) et 52(2)(a)). Le ministre est habilité à désigner des zones de développement de l'aquaculture, ainsi que des zones exclues ou ne convenant pas au développement de l'aquaculture (paragraphes 56(1)(a) et (e)).

La *Fisheries and Coastal Resources Act* définit comme suit l'aquaculture :

« Élevage ou culture à des fins commerciales d'animaux et de plantes aquatiques sur lesquels le ministre exerce un contrôle, à l'exclusion de l'élevage ou de la reproduction dans des réservoirs, des filets, des enclos ou des cages d'animaux ou de plantes aquatiques d'espèces d'aquarium, à des fins d'expériences de laboratoire, ou par des particuliers sur leur propriété à des fins d'alimentation à leur usage propre » (paragraphe 3(1)(a)) [traduction].

La *Loi* définit l'élevage comme suit :

« Culture, élevage, production, développement ou amélioration d'animaux et de plantes aquatiques » (paragraphe 43(h)) [traduction].

54 **Protocole d'entente des provinces de l'Atlantique sur le développement du secteur aquacole**, 18 janvier 2008.
55 ***Fisheries and Coastal Resources Act***, chapitre 25.

La *Loi* traite de la question de la propriété des produits de l'aquaculture en désignant l'ensemble des plantes et des animaux aquatiques des espèces précisés dans le permis ou la concession touchant la zone en cause, exception faite des espèces fauniques ou végétales qui dérivent ou nagent librement dans une aire non enclose, comme propriété exclusive du détenteur du permis ou de la concession (article 60). De plus, les animaux aquatiques qui s'échappent demeurent la propriété exclusive du détenteur du permis ou de la concession jusqu'à 100 mètres à l'extérieur des limites de la zone du permis ou de la concession (paragraphe 61(2)).

Le Règlement sur les permis et les concessions d'aquaculture (*Aquaculture Licence and Lease Regulations*) établit des critères quant à l'emplacement et au marquage des sites aquacoles à concession (article 3) et énumère, à titre de conditions du permis, les exigences de consignation et de production de renseignements sur les maladies, les types d'aliments, les traitements vétérinaires et la vente de produits d'aquaculture (article 5). Le Règlement stipule également que le vétérinaire provincial responsable de la santé des poissons peut isoler, mettre en quarantaine, ordonner un traitement, restreindre les déplacements ou détruire des poissons d'élevage infectés, ou soupçonnés d'être infectés, par une maladie que le vétérinaire estime présenter un risque important pour les stocks de poissons sauvages ou d'élevage (article 9)[56].

Les sénateurs visitent un site de grossissement de Cooke Aquaculture à Saddle Islands, en N.-É. La société exploite aussi plusieurs écloseries, sites de grossissement et usines de transformation, ainsi qu'une usine d'aliments pour poissons (Northeast Nutrition) dans la province.

56 ***Aquaculture Licence and Lease Regulations***, pris en vertu de l'article 64 de la *Fisheries and Coastal Resources Act*, chapitre 25.

La N.-É. a révisé sa stratégie de développement de l'aquaculture en 2000, en 2005 et à nouveau en 2012[57]. En mai 2013, le MPA-NÉ annonçait qu'un nouveau cadre de réglementation de l'aquaculture serait élaboré à partir de consultations publiques dirigées par le Panel Doelle-Lahey. Le Panel avait le soutien d'un comité consultatif regroupant des représentants d'intervenants et d'intérêts communautaires, notamment les Premières Nations, l'industrie aquacole, des agents de protection de la nature, des environnementalistes, des pêcheurs et des municipalités. Le Panel a publié en décembre 2013 un sommaire des enjeux signalés par les participants aux consultations publiques, et a rendu son rapport final en décembre 2014[58]. Dans ce rapport, il recommande plusieurs changements au cadre de gouvernance de l'aquaculture dans la province dans le but de réduire les risques pour l'environnement, particulièrement dans le contexte de la pisciculture, tout en tirant le plus possible profit des avantages sociaux et économiques que procure l'industrie. Parmi ses plus importantes recommandations, le Panel a proposé la création d'un système de classification, selon lequel les zones côtières seraient désignées vertes, jaunes ou rouges selon qu'elles conviennent ou non à la pisciculture. Il a également recommandé la création d'un comité consultatif permanent sur la réglementation chargé de fournir des conseils sur la mise en œuvre du cadre réglementaire proposé et son amélioration continue par la suite.

En réponse au rapport du Panel Doelle-Lahey, le gouvernement provincial a déposé en avril 2015 des amendements à la *Fisheries and Coastal Resources Act*, dont les suivants :

- Une section qui reconnaît l'aquaculture comme une utilisatrice légitime des ressources côtières et comme une industrie qui apporte des bénéfices positifs et économiques dans les collectivités;
- Une réglementation environnementale plus transparente et plus stricte;
- La création d'un comité de révision indépendant qui sera chargé de rendre des décisions relatives aux demandes de concessions et de permis d'aquaculture.[59]

5.2.3 Surveillance environnementale

En 2002, le MPA-NÉ établissait le programme de surveillance environnementale pour l'industrie aquacole en milieu marin, afin de surveiller les effets possibles de l'aquaculture sur les sédiments des fonds marins[60]. La surveillance vise les installations aquacoles et les stations de référence, au moyen de la collecte de données qualitatives (vidéo) et quantitatives (analyse de l'eau et des sédiments) de zones côtières partout dans la province. Tous les sites en production font l'objet d'analyses, la priorité étant accordée aux sites ayant une production élevée. Les sites potentiellement préoccupants

57 MPA-NÉ, ***Aquaculture Strategy Creating Sustainable Wealth in Rural and Coastal Nova Scotia***, 2012.58 Examen indépendant de la réglementation sur l'aquaculture en Nouvelle-Écosse (Panel Doelle-Lahey), ***A New Regulatory Framework for Low-Impact/High-Value Aquaculture in Nova Scotia***, décembre 2014.

59 Projet de loi no. 95, ***Fisheries and Coastal Resources Act (amended)***, 21 avril 2015.

60 MPA-NÉ, ***Environmental Monitoring Program Framework for Marine Aquaculture in Nova Scotia***, mars 2011.

sont soumis à des échantillonnages répétés et, s'il y a lieu, des correctifs sont apportés. Afin de réduire au minimum les charges organiques et inorganiques des sites où se fait la pisciculture en mer, les exploitants sont tenus de surveiller les concentrations de sulfure dans les sédiments en appliquant des pratiques opérationnelles exemplaires élaborées à l'origine au N.-B.

Fondée en 1981, Les Algues Acadiennes Limitée, dont le siège social est situé à Dartmouth, en N.-É., est le plus grand producteur de produits biotechnologiques à base d'algues du genre dans le monde. Pleinement intégrée, elle cultive, récolte et transforme des algues en produits pour les plantes, les animaux et l'être humain. On présente aux sénateurs les activités de l'entreprise au siège social.

CHAPITRE 6 : Île-du-Prince-Édouard

6.1 Aperçu de l'industrie

6.1.1 Structure et emplacement

L'industrie aquacole de l'Î.-P.-É comporte deux secteurs : la pisciculture et la conchyliculture. Par opposition à la C.-B., au N.-B., à T.-N.-L. et à la N.-É., la conchyliculture représente la grande majorité de la production aquacole sur l'île. La diversité des espèces élevées à des fins commerciales à l'Î.-P.-É est présentée au tableau 6.1. On procède à des recherches et à des essais de grossissement pour d'autres espèces de mollusques, comme la mye, le pétoncle et le quahog.

Comme le QC (voir le chapitre 7), l'Î.-P.-É n'a pas de sites de grossissement de poissons de mer (cages en filet). Les estuaires qui entourent l'île sont peu profonds et ne se prêtent pas à l'aquaculture en cage en raison des extrêmes de températures saisonnières. C'est pour cette raison que le secteur piscicole est concentré dans des bassins et des installations d'élevage terrestres en parc clos. Actuellement, la pisciculture dans la province se compose de cinq écloseries et d'un élevage, essentiellement situés dans l'est et le centre de la province. AquaBounty Farms, une installation de recherche terrestre en milieu clos située à Fortune, produit des œufs de saumon de l'Atlantique génétiquement modifiés. Atlantic Sea Smolt Inc. exploite une écloserie de saumon de l'Atlantique située à Souris; sa production approvisionne en saumoneaux l'entreprise Snow Island Salmon Inc. en N.-É. Northern Harvest Sea Farms – une entreprise d'élevage piscicole présente au N.-B. et à T.-N.-L. – compte deux écloseries de saumon de l'Atlantique sur l'île : l'écloserie de Cardigan[61] et l'écloserie de Dover. Située à Brookvale, Ocean Trout Farms est une filiale à 100 % de Cold Water Fisheries Ltd qui produit des œufs de truite arc-en-ciel. Halibut PEI Inc. est une installation terrestre de production de flétan de l'Atlantique à Victoria; elle achète des poissons juvéniles de l'écloserie Scotian Halibut à Clark's Harbour (N.-É.) et élève les flétans dans de l'eau de mer issue de puits sous l'île.

Tableau 6.1 – Espèces d'élevage à l'Île-du-Prince-Édouard

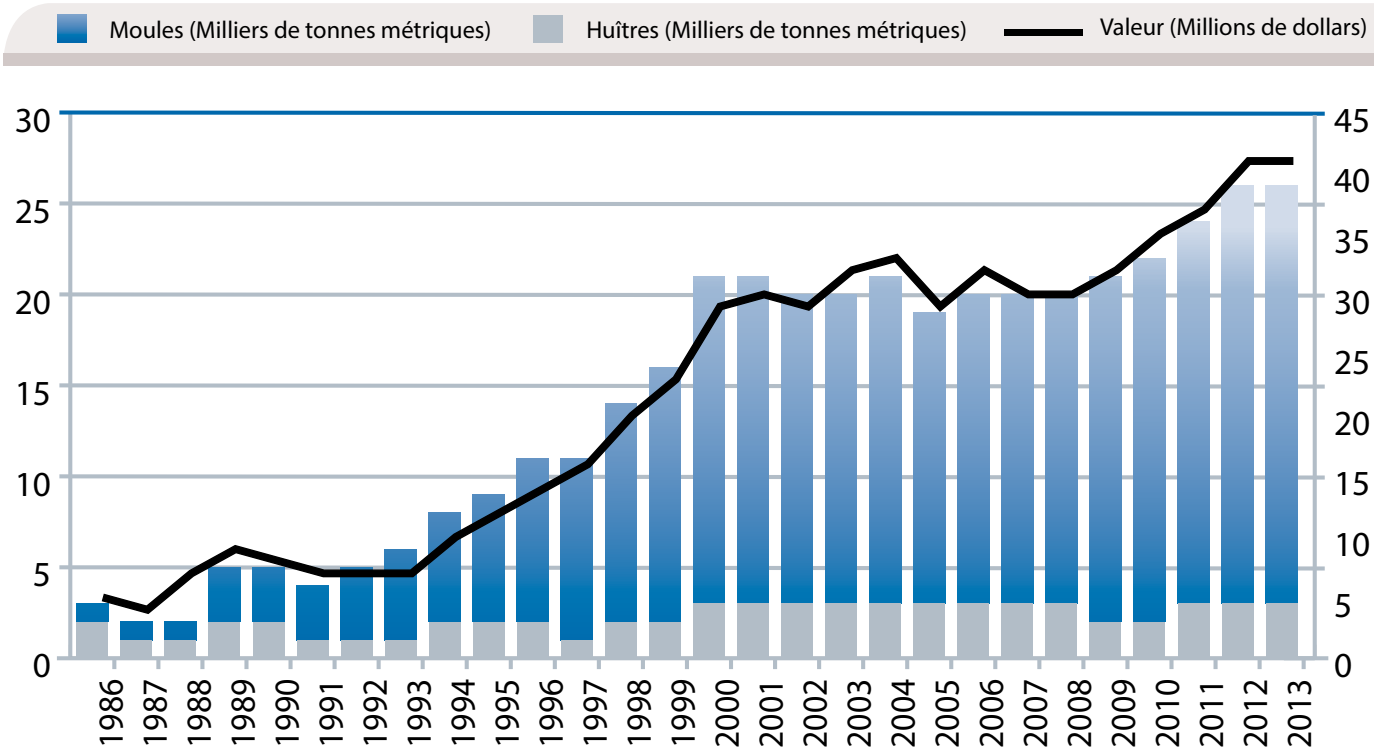
	Espèces
Poissons	• Saumon de l'Atlantique • Flétan de l'Atlantique • Truite arc-en-ciel
Mollusques	• Huître américaine • Moule bleue

Source : Selon des données fournies par le MPO au Comité.

61 L'écloserie de Cardigan a été établie sur l'île par le gouvernement fédéral en 1930 et a déjà été exploitée par l'Université de l'Î.-P.-É.

Le secteur conchylicole est dominé par l'élevage des moules. La mytiliculture se pratique en vertu de concessions dans bon nombre des rivières et des estuaires de l'île, mais la majorité des sites d'élevage sont concentrés sur les côtes du nord et de l'est de l'île. On dénombre 130 éleveurs de moules occupant au total une superficie de 11 000 acres. Les moules de l'île sont élevées dans des structures en suspension, dans des boudins ou des manchons à maille. Il faut entre 12 et 24 mois pour qu'elles atteignent la taille de marché. Elles sont récoltées chaque saison, même à travers la glace durant l'hiver. L'abondance de naissains naturels (ou embryons) que l'on trouve dans les eaux autour de l'île élimine le besoin d'écloseries de naissains et d'alimentation artificielle. Les

Figure 6.1 –Production aquacole[a] à l'Île-du-Prince-Édouard,selon le volume et la valeur[b], de 1986 à 2013



Nota : a. La production aquacole comprend la quantité et la valeur des poissons et mollusques produits sur place et exclut les écloseries et les usines de transformation.

b. Prix à la ferme. La valeur à la ferme représente la valeur d'un produit une fois qu'il est vendu par le producteur.

Source : Selon des données du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

naissains de moule sont captés au moyen de lignes collectrices suspendues dans la colonne d'eau[62].

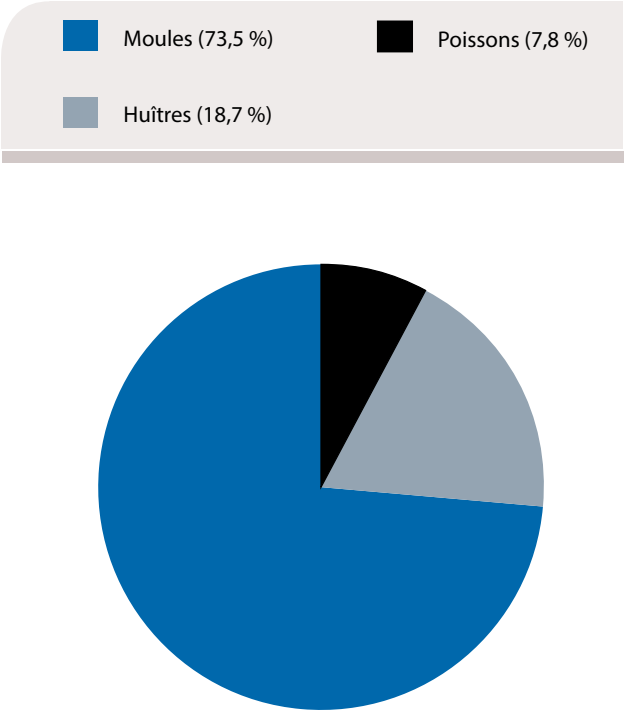
L'ostréiculture (élevage d'huîtres) est concentrée le long des côtes nord et sud de l'île. On recense actuellement 580 détenteurs de concessions occupant 7 100 acres, dont 1 475 acres sont réservées à l'élevage en suspension et près de 6 000 à l'élevage sur le fond. Tout comme les moules, les huîtres d'élevage sont récoltées tout au long de l'année. Il faut de deux à cinq ans pour élever des huîtres, selon leur taille. À l'instar du secteur des moules, l'ostréiculture dans la province dépend du captage de naissains naturels (contrairement aux ostréiculteurs de la C.-B. qui achètent essentiellement leurs naissains d'écloseries). Il existe plusieurs sites dans la province où l'on capte commercialement des naissains d'huître sauvages[63].

6.1.2 Production

Comme on peut le constater à la figure 6.1, la production aquacole totale dans la province n'a cessé de croître entre 1986 et 2000. Elle s'est ensuite stabilisée, se situant à environ 20 000 tonnes métriques par année jusqu'en 2008. La production aquacole annuelle totale a de nouveau progressé en 2008 pour atteindre un sommet en 2013. Cette année-là, le volume de production s'est chiffré à 25 706 tonnes métriques pour une valeur à l'élevage de 41,2 millions de dollars.

Comme l'illustre la figure 6.2, la production aquacole à l'Î.-P.-É. est dominée par la moule bleue (73,5 %). De fait, la province est le plus important producteur de moules du Canada. L'huître américaine est la deuxième espèce de mollusques en importance que l'on cultive dans la province (18,7 %), et la province est le deuxième plus important producteur d'huîtres, derrière la C.-B.

Figure 6.2 – Production aquacole à l'Île-du-Prince-Édouard par espèce, en pourcentage de la valeur, 2013



Source : À partir de données provenant du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

62 À partir de renseignements se trouvant sur le site Web de **PEI Aquaculture Alliance.**
63 Ibid.

6.2 Cadre de gouvernance

6.2.1 Cadre général

Les concessions aquacoles de l'Î.-P.-É. du MPO définissent l'aquaculture comme « un secteur des pêches qui inclut l'élevage ou la croissance dans des conditions contrôlées des produits aquatiques tels que les huîtres, les moules, les poissons et d'autres ressources aquatiques, dans les mers, des baies et des fleuves. »

La *Loi sur les pêches (Fisheries Act)* de l'Î.-P.-É. définit l'aquaculture comme « la culture et l'élevage de la flore ou de la faune aquatiques. » [TRADUCTION]

Contrairement à bien d'autres provinces, l'Î.-P.-É. n'a pas de cadre de réglementation provincial régissant l'aquaculture. Le MPO est le principal responsable de la réglementation de l'aquaculture sur l'île. Il exerce ce pouvoir en vertu des articles 7 et 58 de la *Loi sur les pêches*[64]. Contrairement à la situation en C.-B., où le MPO est également le principal organisme de réglementation, aucun règlement spécifique n'a été pris en vertu de la *Loi sur les pêches* pour régir l'aquaculture à l'Î.-P.-É. Le pouvoir du gouvernement fédéral remonte à un PE signé par les gouvernements fédéral et provincial en 1928 qui conférait au gouvernement fédéral le pouvoir d'émettre des concessions aux fins de l'élevage d'huîtres. Le PE a été renouvelé en 1987 : il identifie le MPO comme l'organisme principal chargé de l'administration des concessions aquacoles dans la province et il définit les éléments d'un cadre mutuel pour le développement de l'aquaculture commerciale et de son régime réglementaire à l'Î.-P.-É[65]. Toutefois, le ministère provincial des Pêches, de l'Aquaculture et du Développement rural (MPADR-ÎPE) a conservé certains droits et obligations, dont certains sont définis dans la *Loi sur les pêches* de la province (*Fisheries Act*)[66].

En conséquence, la réglementation de l'aquaculture à l'Î.-P.-É. se fait en vertu d'une approche de cogestion qui comprend la Division de gestion de l'aquaculture de l'Î.-P.-É. du MPO et la Division de l'aquaculture du MPADR-ÎPE. Des représentants des deux divisions participent aux travaux du Conseil de gestion des concessions aquacoles de l'Î.-P.-É. (CGCA), qui regroupe également des membres de l'industrie. Le CGCA est responsable de la gestion globale de l'aquaculture dans la province[67]. Agissant sur les avis du Conseil, la Division de gestion de l'aquaculture de l'Î.-P.-É. précise les conditions dans lesquelles les concessions peuvent être octroyées, de quelle façon et la raison pour laquelle la durée des contrats peut être prolongée et dans quelles conditions les concessions peuvent être annulées. La Division de gestion de l'aquaculture de l'Î.-P.-É. bénéficie également pour ses travaux de l'aide du Conseil d'examen des concessions aquacoles de l'Î.-P.-É. (CECA), qui examine les demandes de concessions aquacoles. Les membres du CECA sont plus nombreux que ceux du CGCA et comptent des représentants du MPO (Conservation et protection, Habitat et Gestion des ressources), de Transports Canada (Protection des eaux navigables) et d'Environnement Canada (Service canadien de la

64 ***Loi sur les pêches***, L.R.C., 1985, ch. F-14.
65 Il n'y a pas de permis d'aquaculture dans la province. Les conchyliculteurs obtiennent une concession, et les pisciculteurs, un permis.
66 ***Fisheries Act***, chapitre F-13.01.
67 Le Conseil ne discute pas de chaque demande de concession aquacole.

faune), ainsi que des représentants provinciaux du MPADR-ÎPE et du ministère de l'Environnement.

Tel que mentionné précédemment, en vertu d'un autre PE signé en 2008, l'Î.-P.-É. et les trois autres provinces de l'Atlantique collaborent à l'élaboration d'un cadre harmonisé des politiques environnementales et de la réglementation de l'aquaculture dans la région[68].

6.2.2 Zonage et concessions

En 1987, le MPO a adopté le Système de zonage aquacole de l'Î.-P.-É., document qui désignait les zones où pouvaient être situés les élevages de mollusques[69] . Le système de zonage tenait compte de facteurs environnementaux, des refuges fauniques, des droits des Autochtones, des droits des propriétaires (riverains) et des conflits susceptibles de survenir avec d'autres usagers (comme les pêches commerciales, la navigation de plaisance et autres activités maritimes). Le système semble avoir établi un équilibre entre les zones de développement de l'aquaculture et celles réservées aux autres activités maritimes, ce qui a aidé le public à bien accepter l'industrie. Le système de zonage aquacole de l'Î.-P.-É. a fait l'objet d'un examen en 2008 et de nouveau en 2011, pour s'assurer qu'il continue de tenir compte de l'environnement actuel des systèmes hydrographiques de toute l'île et d'autres paramètres. Les zones sont actuellement désignées comme suit :

- acceptable pour l'élevage sur le fond et en suspension;
- acceptable pour l'élevage sur le fond et conditionnelle pour l'élevage en suspension;
- acceptable pour l'élevage sur le fond, mais pas en suspension;
- conditionnelle à la fois pour l'élevage sur le fond et l'élevage en suspension;
- conditionnelle pour l'élevage sur le fond et inacceptable pour l'élevage en suspension;
- inacceptable pour l'élevage sur le fond et en suspension;
- acceptable pour l'élevage sur le fond et conditionnelle pour l'ostréiculture en suspension;
- inacceptable pour l'élevage sur le fond et conditionnelle pour l'ostréiculture en suspension.

Le Système de zonage aquacole de l'Î.-P.-É. est un document clé qu'utilise la Division de gestion de l'aquaculture de l'Î.-P.-É., qui procède à l'examen préliminaire de toutes les demandes de concession aquacole. La Division agit comme organisme à guichet unique et coordonne les travaux des membres du CECA. Une fois que la demande a franchi le processus d'examen préliminaire[70], elle est soumise avec toutes les pièces justificatives au CECA. Il n'y a pas de délai précis pour l'examen

68 ***Protocole d'entente des provinces de l'Atlantique sur le développement du secteur aquacole***, 18 janvier 2008.

69 Ce document a été préparé par un comité directeur composé des ministères fédéraux et provinciaux qui avaient compétence ou un intérêt dans l'aquaculture, notamment des représentants du MPO, de la Garde côtière, de Travaux publics, du ministère de l'Environnement et de Parcs Canada à l'échelon fédéral ainsi que du MPADR-ÎPE, et des ministères de l'Environnement et du Tourisme à l'échelon provincial.

70 Le requérant doit fournir des renseignements, notamment sur l'emplacement du site, ses dimensions, une carte numérisée indiquant l'emplacement du site, les espèces, un plan d'aménagement du site illustrant le site prévu et son utilisation selon sa capacité de production.

des demandes de concession; la complexité de la demande et du site demandé détermine le délai de traitement. Le CECA est également guidé dans ses travaux par la Politique de gestion des concessions aquacoles de l'.-P.-É[71].Cette politique contient des lignes directrices régissant l'octroi et la gestion des concessions aquacoles dans la province. L'annexe 7 de la politique décrit les critères dont le CECA doit se servir dans l'examen des demandes de concession. Ces critères font état des questions liées à la navigation, des résultats passés du demandeur ou titulaire de la concession, de la profondeur et de la qualité de l'eau, des autres utilisateurs de l'eau, de la proximité d'autres pêches, de l'utilisation en amont, de la quantité de mollusques, de la capacité de charge et de paramètres environnementaux.

Suivant son examen, le CECA recommande à la Division de gestion de l'aquaculture de l'Î.-P.-É d'appuyer, d'appuyer moyennant certaines conditions ou de ne pas appuyer la demande. Le MPO se réserve le droit de prendre la décision finale au sujet des demandes. Les concessions aquacoles sont octroyées pour une durée maximale de 25 ans avec plusieurs options de renouvellement, et sont revues tous les cinq ans. Trois catégories de concessions peuvent être octroyées :

- La concession d'élevage sur le fond vise l'utilisation du fond ou du fond marin pour élever des espèces de mollusques (comme des huîtres).
- La concession d'élevage en suspension est une concession d'élevage sur le fond qui confère le droit d'utiliser la colonne d'eau pour élever des crustacés (généralement des moules, mais de plus en plus des huîtres). Les détenteurs d'une concession qui ont une concession d'élevage sur le fond, mais qui souhaitent pratiquer l'élevage en suspension doivent présenter une demande pour installer leurs structures dans l'eau au-dessus de la concession.
- Le captage de naissains est assimilé à une pêche et nécessite un permis en vertu de la *Loi sur les pêches fédérale*. Les sites qui servent au captage des naissains nécessitent aussi l'octroi d'un permis de captage de naissains auprès de la Division de gestion de l'aquaculture de l'Î.-P.-É.

La convention de concession exige de l'éleveur aquacole qu'il marque le site de la concession. Dans le cas des concessions d'élevage sur le fond, les bornes d'angle qui établissent les limites de la concession doivent être installées de manière permanente. Elle prévoit la propriété des mollusques dans les limites de la concession et autorise l'utilisation du fond marin ou de la colonne d'eau pour élever les espèces approuvées. Le détenteur a également le droit de céder, de léguer, de sous-louer ou d'annuler sa concession. Il y a un certain nombre de frais qui se rattachent à l'acquisition du permis d'exploiter et de maintenir une concession aquacole (demande, renouvellement, cession, prêt hypothécaire, testament/legs, appel, adjonction ou annulation d'une espèce, reconfiguration, etc.).

Les élevages assujettis à une concession aquacole franchissent une série de phases. Les cinq premières années de la concession représentent la phase de développement au cours de laquelle l'aquaculteur évalue les paramètres biologiques et environnementaux d'un site envisagé avant de se lancer dans un élevage commercial à grande échelle. Elles donnent également le temps à la Division de gestion de l'aquaculture de l'Î.-P.-É. d'évaluer le rendement du titulaire. Si l'exploitant réussit à aménager le site conformément au plan

71 CGCA, ***Prince Edward Island Aquaculture Leasing Policy***, juillet 2011.

d'aménagement du site et s'acquitte des obligations qui figurent dans la convention, la concession sera réputée être dans sa phase commerciale.

Deux questions se sont récemment posées au sujet de la politique sur les concessions aquacoles. L'une a trait à la « Politique d'adjonction d'une espèce » promue par le CGCA en 2014. La politique donne aux titulaires d'une concession la possibilité d'élever plus que les espèces mentionnées dans la convention, pour qu'ils puissent diversifier leur production (notamment en ajoutant une espèce d'huître à une concession de moules). On s'inquiète en effet que si un mytiliculteur convertit une grande superficie à l'ostréiculture, il entrera alors directement en concurrence avec les ostréiculteurs existants et les pêcheurs d'huîtres sauvages; ce qui aura pour effet d'augmenter l'offre d'huîtres sur le marché et de faire baisser les prix. La politique sur l'adjonction d'une espèce a donc été provisoirement suspendue.

L'autre question concerne un moratoire décrété sur les élevages de moules en suspension qui est en place depuis 1999. Le MPO étudie actuellement la possibilité de lever le moratoire afin de louer 1 500 acres pour l'élevage des moules dans la baie de Malpèque. Certains s'inquiètent que les structures qui devront être mises en place dans l'eau au-dessus des concessions de moules entraîneront des conflits avec d'autres usagers de la zone (comme les ostréiculteurs, les pêcheurs de homard, etc.). On craint également qu'une augmentation de la mytiliculture dans la baie de Malpèque ne contribue à une baisse de la production d'huîtres naturelles dans la baie, les huîtres ne parvenant pas à se procurer les éléments nutritifs dont elles ont besoin.

Les sénateurs visitent l'usine de transformation d'Atlantic Aqua Farms à Orwell Cove, à l'Î.-P.-É. L'entreprise exploite sept sites d'élevage de moules en suspension dans la région. En 2013, elle a obtenu la certification Best Aquaculture Practices pour l'application de pratiques exemplaires en aquaculture.

6.2.3 Surveillance et contrôle de la conformité

Les aquaculteurs sont tenus de présenter un « rapport annuel sur la concession » à la Division de gestion de l'aquaculture de l'Î.-P.-É. du MPO, précisant l'ampleur des activités menées (comme des renseignements sur la récolte, le nombre de mollusques demeurant sur le site après la récolte, la quantité de naissains mis sur le site, le temps passé à exploiter la concession, les problèmes rencontrés et les améliorations apportées aux sites d'élevage sur le fond). Ils doivent donc être prêts à fournir des documents pour vérifier les activités menées à l'appui de leur rapport annuel. Les rapports annuels sur la concession peuvent être assujettis à une vérification aléatoire. Les éleveurs qui omettent de présenter leur rapport annuel risquent de voir annuler leur concession. Les entreprises aquacoles sont également assujetties à un examen périodique pour assurer la conformité avec les conditions de la convention de concession et pour prouver que la concession est utilisée conformément aux plans d'aménagement du site. L'exploitant peut être tenu d'assister à un examen sur place. La Division de gestion de l'aquaculture de l'Î.-P.-É. du MPO peut annuler une concession lorsque l'exploitant omet d'aménager la concession conformément au plan d'aménagement du site.

6.2.4 Surveillance environnementale

Un rapport publié récemment laisse entendre que le secteur conchylicole à l'Î.-P.-É. ne fait pas l'objet d'une EIE[72]. Il importe toutefois de noter que le secteur doit mener ses activités conformément à un code régissant le secteur, le *Shellfish Aquaculture Environmental Code of Practice* (SAECOP), préparé par l'Alliance aquacole de l'île (AA-ÎPE). Le SAECOP définit les pratiques aquacoles prévues pour assurer la responsabilité environnementale. Tous les conchyliculteurs détenteurs de concession adhèrent maintenant au SAECOP. Ce code traite entre autres de la planification des sites, des introductions ou transferts de mollusques vivants, de l'entretien des sites, du contrôle des biosallissures, de la présence d'animaux sauvages et de la gestion des déchets.

En outre, la Politique sur les concessions aquacoles de l'Î.-P.-É. (dont on a parlé à la section 6.2.2) exige l'établissement d'un comité de gestion adaptatif ayant pour mandat d'examiner les activités de surveillance et de recherche chaque année en vue de « recommander l'orientation et la mise en œuvre des mesures environnementales prescrites » au CGBA et au MPO.[73] En conséquence, il est possible de formuler des recommandations pour adapter ou rajuster la gestion et la politique aquacoles afin de tenir compte de l'évolution du milieu ou des nouvelles connaissances scientifiques sur l'impact de l'élevage des mollusques sur l'environnement. Le Comité de gestion adaptatif doit se réunir au moins deux fois par an.

72 East Coast Environmental Law, ***Comparative Analysis of Five Aquaculture Regulatory Frameworks in Canada***, préparé pour le conseil indépendant d'examen de la réglementation en Nouvelle-Écosse (Panel Doelle-Lahey), 15 avril 2014.

73 CGCA, ***Prince Edward Island Aquaculture Leasing Policy***, juillet 2011, p. 45.

Les sénateurs visitent Halibut PEI et son installation terrestre de recirculation située à Victoria, à l'Î.-P.-É. où on produit du flétan de l'Atlantique. L'entreprise achète des juvéniles de Scotian Halibut Limited – une écloserie de Clark's Harbour, en N.-É. – et fait l'élevage de flétan dans des réservoirs alimentés d'eau salée provenant de puits profonds.

CHAPITRE 7 : Québec

7.1 Aperçu de l'industrie

7.1.1 Structure et emplacement

Au QC, contrairement à bien des provinces (C.-B., N.-B., N.-É. et T.-N.-L.), l'industrie aquacole en milieu marin (ou « mariculture ») produit uniquement des mollusques et des plantes aquatiques. La pisciculture se fait exclusivement en eau douce. Il ne se fait pas d'élevage de poissons en milieu marin car les caractéristiques biophysiques (la salinité et la température de l'eau, la faible disponibilité de zones protégées, les rigueurs de l'hiver avec les glaces dérivantes et les vents, etc.) limitent le potentiel de l'industrie dans plusieurs régions côtières de la province. Peu de sites sont suffisamment protégés pour permettre l'élevage à l'année. Même si l'élevage à l'année dans des cages marines flottantes y est sans doute possible dans quelques baies protégées, il faut s'attendre à un cycle d'élevage long (plus de trois ans), ce qui rend le secteur beaucoup moins concurrentiel que dans les autres provinces. Des entreprises ont bien tenté, vers la fin des années 1980 et le début des années 1990, de faire l'élevage de salmonidés en milieu marin dans la province, mais ils ont rencontré d'autres obstacles, comme le manque d'accès à des souches de juvéniles de qualité et des difficultés à contrôler les maladies, en plus des conditions environnementales ardues[74].

Le tableau 7.1 présente les espèces dont on fait l'élevage au Québec. Le secteur piscicole en eau douce opère principalement en système entièrement ou partiellement clos (bassins et étangs). On y fait l'élevage des salmonidés, comme la truite arc-en-ciel et l'omble de fontaine. Bien que la

Tableau 7.1 – Espèces d'élevage au Québec

	Espèces
Poissons	• Omble chevalier • Omble de fontaine • Touladi • Truite arc-en-ciel
Mollusques	• Moule bleue • Mye commune • Pétoncle géant/Pétoncle d'Islande • Huître américaine
Plantes aquatiques	• Laminaire

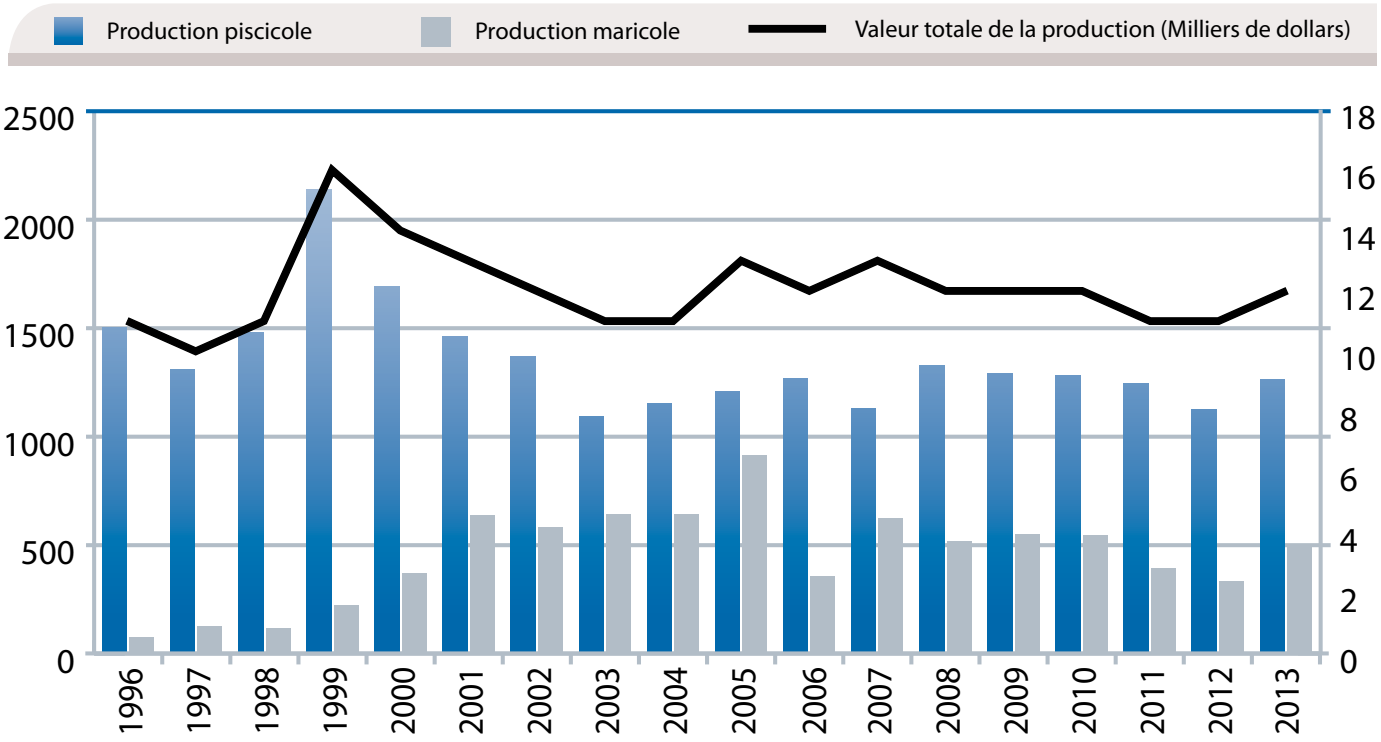
Source : Selon des données fournies par le MPO au Comité.

74 Société de développement de l'industrie maricole Inc., ***Atelier sur l'élevage de poissons marins au Québec – Compte rendu***, 16 et novembre 2004.

pisciculture se pratique dans plusieurs régions de la province, le secteur est plus concentré en Estrie, en Mauricie et dans la région Chaudière-Appalaches. En 2012, on dénombrait 88 entreprises et 169 employés[75]. Il s'agit essentiellement d'entreprises de petite taille et de type familial.

Quant au secteur maricole, on trouve des sites d'élevage de moules et de pétoncles dans quatre régions : la Gaspésie (20 sites de grossissement), les Îles-de-la-Madeleine (12 sites),

Figure 7.1 – Production aquacole[a] an Québec, selon le volume et la valeur[b], de 1996 à 2013



Nota : a. La production aquacole comprend la quantité et la valeur des poissons et mollusques produits sur place et exclut les écloseries et les usines de traitement.

b. Prix à la ferme. La valeur à la ferme représente la valeur d'un produit une fois qu'il est vendu par le producteur.

Source : Selon des données du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

75 Comité sectoriel de main-d'œuvre des pêches maritimes, ***Diagnostic de la main-d'œuvre de l'industrie des pêches et de l'aquaculture commerciales au Québec***, mars 2014.

la Côte-Nord (8 sites) et le Bas-St-Laurent (5 sites) [76]. La production d'huîtres américaines a cessé en 2006. La production de la mye commune est toujours à l'étape de projet-pilote. En 2012, le secteur maricole comptait 27 entreprises et 118 employés[77]. Encore une fois, il s'agit d'entreprises de type familial de petite taille.

Enfin, la culture de plantes aquatiques est une activité relativement récente au Québec. En 2014, une entreprise de la Gaspésie (Fermes marines de Gaspé Inc.) a commencé à faire la culture de laminaire à des fins commerciales en complément de son élevage de pétoncles.

7.1.2 Production

La figure 7.1 montre l'évolution du volume et de la valeur de la production de l'industrie aquacole du Québec de 1996 à 2013. La production du secteur piscicole en eau douce a atteint un sommet de 2 139 tonnes en 1999. Elle a ensuite diminué progressivement à partir de 2000, à la suite des préoccupations environnementales qu'a commencé à soulever la pisciculture. Les pressions subséquentes ont mené à la fermeture d'un nombre important d'entreprises. En 2013, la production du secteur piscicole a atteint 1 263 tonnes, pour une valeur de 10,9 millions de dollars.

Pour sa part, la production du secteur maricole a augmenté continuellement de 1996 à 2005, pour atteindre cette année-là un sommet de 915 tonnes. Par la suite, le secteur a fait face à plusieurs problèmes d'ordre financier (manque de fonds), environnemental (mauvais captage de naissains et prédation par les canards de mer) et commercial (mauvais marketing). En 2012, la production du secteur maricole était de 316 tonnes métriques, son niveau le plus bas depuis 2006, pour une valeur 0,5 million de dollars. La situation s'est améliorée en 2013, la production ayant connu une hausse de 55 % et atteint 491 tonnes, d'une valeur de 0,9 million de dollars, ce qui représente une augmentation de la valeur de 80 %.

Au total, l'industrie aquacole du Québec a produit 1 754 tonnes de poissons et mollusques en 2013, pour une valeur de 11,8 millions de dollars. Cela ne représente que 1 % de la valeur de la production aquacole canadienne. Le Québec est donc encore très peu présent dans l'industrie.

Comme le montre la figure 7.2, le secteur piscicole en eau douce est le principal acteur de l'industrie aquacole du Québec, et une forte proportion de sa production (près de 70 %) est destinée à l'ensemencement de cours d'eau[78]. Les poissons d'élevage destinés à la commercialisation sont vendus sur les marchés locaux. Dans le secteur maricole, la moule est la principale espèce cultivée. Une partie de la production de moules est vendue sur les marchés locaux, mais une forte proportion est revendue par des entreprises de l'Î.-P.-É.

76 Pour connaître l'emplacement de ses sites, voir les cartes suivantes : **Gaspésie**, **Île-de-la-Madeleine**, **Côte Nord** et **Bas Saint-Laurent**.

77 Comité sectoriel de main-d'œuvre des pêches maritimes, ***Diagnostic de la main-d'œuvre de l'industrie des pêches et de l'aquaculture commerciales au Québec***, mars 2014.

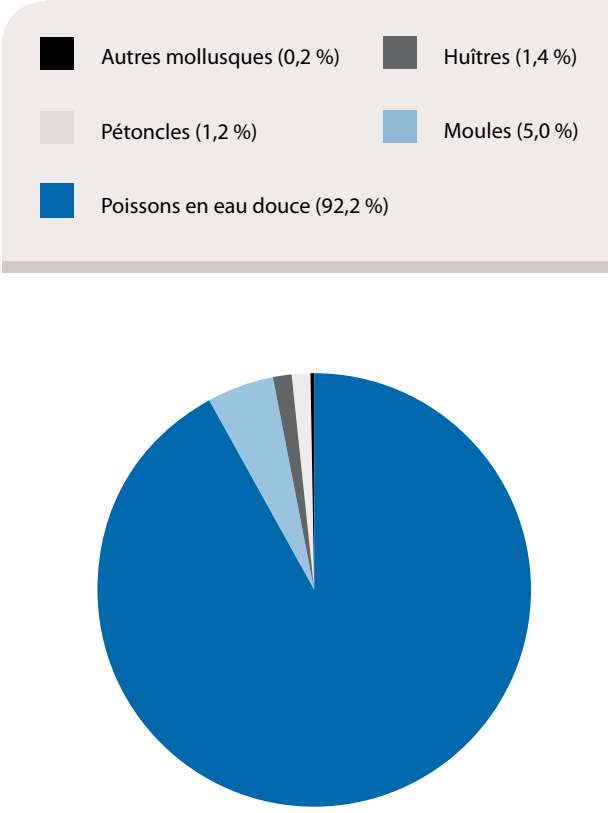
78 Élevage d'alevins en vue de l'ensemencent de lac à des fins de pêches sauvages.

7.2 Cadre de gouvernance

7.2.1 Cadre général

La réglementation de l'aquaculture relève en grande partie du ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ) et du MPO. Le MAPAQ constitue le guichet unique en aquaculture au QC. Le ministère aide les entreprises à élaborer leurs plans et à préparer leurs demandes de permis. Le MAPAQ et le MPO assurent la coordination et le traitement des demandes avec les autres parties concernées. Le processus fait intervenir un grand nombre de ministères. À l'échelon provincial, le ministère des Forêts, de la Faune et des Parcs doit accorder une autorisation dans le but d'assurer la conservation et la mise en valeur de la faune et son habitat; le ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques est chargé de la délivrance de concession aquacole pour l'occupation du domaine hydrique de l'État; enfin, le MAPAQ délivre le permis d'aquaculture en milieu marin et le permis d'aquaculture en eau douce. Au niveau fédéral, Transports Canada doit donner son approbation en vertu de la *Loi sur la protection des eaux navigables*; Environnement Canada doit approuver le site en vertu de sa classification des eaux coquillères; enfin, le MPO doit accorder son autorisation s'il y a destruction, perturbation ou détérioration de l'habitat du poisson en vertu de la *Loi sur les pêches*, en plus de délivrer plusieurs permis, y compris le permis d'introduction et de transfert, le permis de pêche et le permis pour les activités touchant une espèce en péril. Il n'y a pas de délai prescrit dans le processus d'évaluation des demandes de sites aquacoles.

Figure 7.2 – Production aquacole au Québec, par espèce, en pourcentage de la valeur, 2013



Source : À partir de données provenant du MPO, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 12 mars 2015].

7.2.2 La Loi sur l'aquaculture commerciale

Selon la *Loi sur l'aquaculture commerciale*, on entend par aquaculture la « culture ou l'élevage d'organismes aquatiques, notamment les poissons, amphibiens, échinodermes, mollusques, crustacés et végétaux, à l'exception des organismes cultivés ou élevés à des fins d'aquariophilie ».

L'industrie aquacole québécoise est assujettie à la *Loi sur l'aquaculture commerciale*[79] de 2004 et au *Règlement sur l'aquaculture commerciale*[80]. En vertu de la *Loi*, nul ne peut exercer des activités d'aquaculture commerciale à moins d'être titulaire d'un permis délivré par le MAPAQ. Le permis, qui ne peut être cédé, est valable pour une période de 10 ans et peut être renouvelé pour la même période.

Le *Règlement* édicte les conditions relatives à l'obtention du permis. Dans sa demande, l'entreprise doit fournir des renseignements sur l'emplacement du site, le plan d'aménagement des lieux, les espèces élevées, la méthode de production, la quantité, la durée du cycle de -production, etc. En vertu de la *Loi*, le MAPAQ peut exiger la tenue d'audiences publiques relativement aux demandes de permis. Toutes les informations inscrites au permis sont tenues dans un registre et disponibles au public.

Le *Règlement* comporte des normes de mise en valeur et de rendement. Ainsi, l'entreprise aquacole s'engage à occuper et exploiter son site de manière continue jusqu'à l'atteinte de son volume de production maximum projeté, tel qu'indiqué dans sa demande de permis, sous réserve de circonstances imprévisibles ou hors de son contrôle.

En vertu de la *Loi*, l'entreprise doit tenir des livres relativement à ses opérations en cours de production et les fournir au MAPAQ à sa demande. Le *Règlement* prescrit les renseignements qui doivent être consignés dans les livres, y compris la nourriture, la santé des organismes aquatiques élevés, les médicaments ou vaccins administrés, les nettoyants, désinfectants et pesticides utilisés, etc. L'entreprise doit également présenter un rapport annuel au MAPAQ sur ses activités.

La *Loi* prévoit l'inspection des sites aquacoles et l'examen des documents tenus par l'entreprise dans l'exercice de ses activités. Dans l'exercice de leurs fonctions, les inspecteurs ont les pouvoirs des agents de paix. Quiconque contrevient aux conditions du permis, à la *Loi* ou au *Règlement* est passible d'une amende qui varie selon le type de contravention.

La *Loi* autorise le MAPAQ à établir des cadres régionaux de développement aquacole « favorisant la croissance ordonnée de l'aquaculture ». C'est en 1996 que le MAPAQ a adopté son premier plan stratégique de développement de la mariculture. Le plan misait alors essentiellement sur la production de mollusques, en particulier la moule bleue et le pétoncle géant. Le plan était davantage orienté vers le développement de la capacité de production des entreprises. Un autre plan quinquennal de développement a été lancé en 2006, en collaboration avec les intervenants du secteur maricole. Ce plan, qui fait maintenant l'objet d'un examen, mise sur la consolidation des entreprises maricoles, l'amélioration de la productivité et la commercialisation de la production[81].

79 ***Loi sur l'aquaculture commerciale***, chapitre A-20.2, art. 42.
80 ***Règlement sur l'aquaculture commerciale***, pris en vertu de la *Loi sur l'aquaculture commerciale*, chapitre A-20.2, art. 42.
81 Société de développement de l'industrie maricole (SODIM) et Table maricole, ***Plan stratégique de développement de la mariculture 2006-2011***, 2006.

En 2008, le MAPAQ s'est engagé à élaborer un cadre de développement maricole pour les Îles-de-la-Madeleine[82]. Le but est de mettre en place des zones aquacoles qui seraient acceptées comme étant prioritaires à la mariculture, tout en conservant le patrimoine marin. Le cadre cherche aussi à favoriser un développement ordonné, concerté et harmonisé de la mariculture dans cette région et à faciliter l'application du processus réglementaire. Des consultations ont été tenues entre les producteurs, le MPO, Transport Canada, le secteur de la pêche commerciale, et d'autres parties intéressées, pour présenter le projet et s'entendre sur les zones. Un rapport présentant les résultats de ces consultations devrait être produit au début de 2015.

Quant au secteur piscicole, le MAPAQ a adopté en 2003 la *Stratégie de développement durable de l'aquaculture en eau douce au Québec*[83]. La stratégie,

Fermes marines du Québec Inc. fait l'élevage de pétoncles et exploite une écloserie à Newport ainsi que plusieurs sites de grossissement à Gaspé, au Québec. Les sénateurs ont eu droit à une visite de l'écloserie, une installation de pointe alimentée à l'eau de mer et entièrement automatisée où l'on trouve des écrans tactiles dans différentes salles. L'an dernier, l'entreprise s'est lancée dans la culture d'algues à des fins commerciales en plus de faire l'élevage de pétoncles.

82 Meggie Desnoyers, ***Projet de cadre de développement aquacole – un survol***, MAPAQ, 11 mars 2014.
83 MAPAQ, ***Stratégie de développement durable de l'aquaculture en eau douce au Québec***, novembre 2003.

qui est toujours en vigueur, vise à soutenir les entreprises piscicoles afin de limiter les rejets de phosphore dans l'environnement. Les entreprises participantes se sont engagées à atteindre la cible environnementale de rejets de phosphore de 4,2 kilogrammes par tonne de production annuelle d'ici le 31 décembre 2014 (comparativement à une moyenne de 7,2 kg en 2003). La stratégie s'applique en priorité aux pisciculture produisant plus de cinq tonnes annuellement et l'adhésion y est volontaire. À ce jour, 26 entreprises ont commencé à faire un suivi visant à vérifier si elles satisfont à cet objectif, et une seule entreprise l'a atteint en 2013-2014[84]. L'Association des aquaculteurs du Québec soutient que la cible relative aux rejets de phosphore imposée aux producteurs aquacoles en eau douce est la plus sévère au pays et qu'elle aura pour conséquence de limiter l'expansion des pisciculture existantes et l'implantation de nouvelles pisciculture[85].

Tout récemment, dans le cadre d'une politique provinciale de développement du secteur intitulée *Plan de développement sectoriel en aquaculture commerciale*, le MAPAQ s'est engagé à en faire plus pour assurer la viabilité économique et environnementale de l'industrie aquacole, y compris des secteurs de la pisciculture en eau douce et de la conchyliculture en mer[86].

7.2.3 La Société de développement de l'industrie maricole inc.

La SODIM est une corporation sans but lucratif créée en 1997 dans le but « de contribuer au développement d'une industrie maricole rentable et compétitive au Québec ». Son financement provient du MAPAQ ainsi que d'autres ministères et organismes provinciaux et fédéraux. La SODIM offre une aide financière aux entreprises maricoles pour leurs projets d'implantation, de consolidation et d'expansion (fonds d'investissement de 7,5 millions de dollars). De nos jours, elle participe financièrement dans la presque totalité des entreprises maricoles actives du QC. La SODIM fournit aussi des services d'aide technique et de conseil aux entreprises maricoles. De plus, entre 2002 et 2011, elle a orienté et financé la recherche et le développement et favorisé le transfert technologique sur des domaines d'intérêt pour le secteur maricole (fonds de recherche de 9 millions de dollars)[87].

En 2010, la SODIM a créé le fonds Aquamer, grâce à un prêt de 4 millions de dollars, sans intérêt et remboursable sur un horizon de 15 ans, accordé par Développement économique Canada. Ce fonds permet aux entreprises d'acheter, de réparer ou de remplacer de l'équipement nécessaire à leurs opérations de financer l'acquisition, la réparation ou le remplacement d'équipement majeur nécessaire à leurs activités.

84 MAPAQ, ***Rapport annuel de gestion 2013-2014***, gouvernement du Québec, 2014.
85 Association des aquaculteurs du Québec, ***Mémoire présenté dans le cadre de la Consultation sur le projet de Plan de développement durable du Québec***, 15 février 2005.
86 MAPAQ, ***Plan de développement sectoriel en aquaculture commerciale***, 2010.
87 Depuis 2011, c'est le Centre d'innovation de l'aquaculture et des pêches du Québec – **Merinov** – qui soutient la recherche et le développement de l'industrie aquacole.

CHAPITRE 8 : Retombées économiques, possibilités et défis

Pendant les audiences, deux études portant sur les retombées économiques de l'industrie aquacole au Canada ont été portées à l'attention du Comité. Il a aussi été question d'une troisième étude touchant les possibilités et les défis pour l'industrie. Les paragraphes qui suivent résument les points importants de ces études.

8.1 Retombées économiques

En 2014, le gouvernement de T.-N.-L. a réalisé une étude sur l'incidence économique de l'aquaculture dans la province. Selon l'étude, en plus de générer ses propres produits, l'industrie aquacole donne lieu à des activités dans d'autres secteurs de l'économie. Ces activités peuvent être regroupées selon trois catégories : les effets directs, indirects et secondaires. Les effets directs sont ceux associés aux écloseries et aux opérations de grossissement. Les effets indirects sont une estimation des activités générées par d'autres industries qui fournissent des biens et des services aux entreprises aquacoles, comme le nettoyage des filets, les services de plongeurs, l'entretien et la réparation du matériel, la fabrication d'équipement, les aliments, les fournitures d'emballage et le transport. Les effets secondaires représentent toutes les dépenses dans d'autres secteurs engagées par des personnes qui travaillent directement dans des exploitations aquacoles ou dans des industries indirectes. Ces personnes dépensent leur revenu dans d'autres secteurs de l'économie, par exemple pour acheter une voiture, une maison et d'autres biens vendus au détail. Dans le cadre de cette étude, les effets indirects et secondaires étaient combinés en une catégorie : les effets d'entraînement. Ces effets étaient mesurés au moyen de trois indicateurs clés : le produit intérieur brut (PIB), l'emploi et le revenu de travail. Le PIB d'une industrie correspond à la valeur générée par sa production, à laquelle est soustraite la valeur des intrants nécessaires au processus de production. L'emploi correspond au nombre de travailleurs employés par le secteur et est généralement mesuré par le nombre d'équivalents temps plein (ETP) par année. Le revenu du travail représente les salaires

Tableau 8.1 – Retombées économiques de l'aquaculture à Terre-Neuve-et-Labrador, 2013

Valeur de la production : 197 M$	PIB (M$)	Emplois (ETP)	Revenu du travail (M$)
Effets directs	66,2	406	12,8
Effets indirects et secondaires	37,9	465	23,9
Total	**104,1**	**872**	**36,7**

Source : MPA-TNL, ***Economic Impacts of the Newfoundland and Labrador Aquaculture Industry***, Annexe 1, 2014.

et avantages sociaux des travailleurs du secteur. Selon l'étude, l'industrie aquacole a généré 104 millions de dollars en PIB à T.-N.-L. en 2013, soit 66 millions de dollars en retombées directes et 38 millions de dollars en effets d'entraînement (voir le tableau 8.1). L'industrie a créé 406 ETP directs, et a pour effet global de créer 872 ETP. Elle a généré pour 13 millions de dollars de revenus de travail directs avec un impact global sur le revenu de 37 millions de dollars.

L'étude portait également sur les tendances liées aux retombées économiques de l'aquaculture dans la province de 2003 à 2013. Elle a révélé que, durant cette période, l'industrie a connu une forte croissance, qui tenait essentiellement à la forte augmentation de la production de saumons de l'Atlantique et à l'expansion continue de l'industrie.

Cette étude provinciale laissait également entendre que les retombées économiques de l'industrie profitent surtout aux collectivités côtières et rurales où l'aquaculture est pratiquée. Dans bien des cas, il s'agit de communautés isolées où les débouchés économiques sont plutôt limités. L'étude insistait toutefois sur le fait que ces retombées sont ressenties partout dans la province.

De même, une étude réalisée en 2013 par le cabinet d'experts-conseils Gardner-Pinfold Consultants Inc. examinait les retombées économiques de l'aquaculture dans l'ensemble du Canada. Selon cette étude, l'industrie aquacole a contribué un peu plus d'un milliard de dollars au PIB du Canada en 2010, soit 354 millions de dollars en effets directs sur le PIB et 710 millions de dollars en effets d'entraînement (voir le tableau 8.2). L'industrie a généré 5 828 ETP directs, et l'effet global sur l'emploi était de 14 000 ETP. Elle a généré pour 193 millions de dollars de revenus de travail directs avec un impact global sur le revenu de 618 millions de dollars. Selon cette étude, l'industrie aquacole a contribué à revitaliser des collectivités éloignées, rurales et côtières, y compris des collectivités autochtones et des Premières Nations, et il s'agit d'un secteur important de l'activité économique pour le Canada.

8.2 Possibilités et défis

Une autre étude menée par Gardner-Pinfold Consultants Inc. portait sur les possibilités et les défis pour l'industrie aquacole au Canada en 2010[88]. Les principales constatations sont résumées dans la présente section, et les données ont été mises à jour à partir des dernières informations recueillies dans le cadre de l'étude menée par le Comité.

Au sujet de la salmoniculture, l'étude signale que la consolidation du secteur a permis à des entreprises de la C.-B., du N.-B., de T.-N.-L et de la N.-É. de profiter d'économies d'échelle et de renforcer leur position sur le marché mondial. Elle précisait aussi que les éleveurs de saumons de ces provinces sont bien situés, en raison de leur proximité aux États-Unis, pour fournir un marché en plein essor. En outre, les ententes de libre-échange avec l'Europe et la Corée du Sud ouvriront de nouveaux débouchés pour ces entreprises. Il existe aussi des perspectives de développement de produits à valeur marchande plus élevée si l'on améliore la transformation du poisson et des produits dérivés.

Selon l'étude, il y a également des possibilités de croissance pour ce qui est de l'élevage du saumon dans les quatre provinces si l'on augmente la productivité des sites de grossissement existants. Il y a aussi des perspectives de croissance associées à

88 Gardner-Pinfold Consultants Inc., ***Effet socio-économique de l'aquaculture au Canada***, préparé pour le MPO, 2010, p. 3844.

un accès accru à de nouveaux sites de grossissement en C.-B. et à T.-N.-L. Par contre, le développement de nouveaux sites aquacoles près des côtes au N.-B. est très limité. Selon l'étude, pour accroître la production du saumon et des autres poissons d'élevage dans la province, il faudrait mettre en place des installations dans des zones plus exposées ou extracôtières. Or, l'aquaculture extracôtière nécessite des systèmes et des technologies susceptibles de résister à des forces énergétiques plus élevées. Les experts de Gardner-Pinfold Consultants Inc. ont également mentionné que la croissance de l'aquaculture marine au N.-B. était possible grâce à une éventuelle diversification des espèces (p. ex. esturgeon, omble chevalier, morue et flétan de l'Atlantique).

De même, l'accès à de nouveaux sites salmonicoles est limité en N.-É., car l'aquaculture est possible seulement pendant trois saisons à bien des endroits, ce qui n'est pas assez long pour élever un saumon de la taille requise pour le marché. L'étude laisse entendre que ces conditions sont peut-être propices à l'élevage de la truite arc-en-ciel, bien que l'approvisionnement en œufs demeure un obstacle important à l'expansion dans ce secteur. Il est également possible d'élever le flétan de l'Atlantique en mer dans des cages en filet en N.É. Par ailleurs, la N.-É., à l'instar du N.-B., pourrait profiter du développement de l'aquaculture extracôtière. Enfin, l'étude signalait que les quatre provinces pourraient conclure des ententes opérationnelles mutuellement avantageuses avec les Premières Nations, où sont situés un grand nombre de sites aquacoles très productifs.

L'étude énumérait certains des facteurs nuisant à la croissance de la salmoniculture dans toutes les provinces, notamment le cadre réglementaire complexe qui crée des obstacles opérationnels à l'aquaculture et décourage les investisseurs. De plus, le risque de maladies et de pou du poisson peut nuire à la production, surtout que l'accès à différents produits vétérinaires et produits antiparasitaires est limité. L'étude soulignait également que l'aquaculture est mal acceptée par la société en raison des préoccupations environnementales que suscite la salmoniculture, ce qui peut nuire de manière importante à l'expansion du secteur dans certaines régions du pays.

Tableau 8.2 – Retombées économiques de l'aquaculture au Canada, 2010

Valeur de la production : 927 M$	**PIB (M$)**	**Emplois (ETP)**	**Revenu du travail (M$)**
Effets directs	354,4	5 828	192,8
Effets indirects	463,7	5 638	285,7
Effets secondaires	245,9	2 614	139,5
Total	**1 064,0**	**14 079**	**618,0**

Source : Gardner-Pinfold Consultants Inc., ***Effets socio-économiques de l'aquaculture au Canada***, édition 2013, préparé pour le MPO, février 2013, p. 4.

Pour ce qui est de la conchyliculture, l'étude de Gardner-Pinfold Consultants Inc. mentionnait que la C.-B., le N.-B., T.-N.-L. et la N.-É. ont accès à de vastes espaces maritimes et d'importants marchés potentiels. De nouveaux accords de libre-échange pourraient aussi avoir pour effet d'accroître les niveaux de production. À T.-N.-L., la certification de l'aquaculture biologique pourrait aider le secteur à être plus concurrentiel sur le marché, mais le secteur demeure fragmenté. Les petites entreprises actives dans ce secteur n'ont pas les ressources financières nécessaires pour favoriser l'innovation technologique (plus particulièrement la mécanisation des procédés). Résultat : la productivité et les marges de profit sont moins élevées, et il est plus difficile d'attirer les investissements. Dans l'étude, on insistait aussi sur le fait que le secteur conchylicole doit aborder certaines des préoccupations au sujet de l'expansion soulevées par le public pour des raisons environnementales et esthétiques.

Par ailleurs, l'étude mentionnait qu'il y a peu de place à l'expansion du secteur conchylicole à l'Î.-P.-É. À l'heure actuelle, l'élevage de mollusques se fait seulement dans les baies et les estuaires, et la pleine capacité est presque déjà atteinte à l'aide des techniques et des technologies existantes et vu la demande provenant de nombreux utilisateurs des eaux. Il est peut-être possible d'accroître la productivité grâce à de nouvelles techniques et technologies. Pour ce qui est des moules, en particulier, la baie de Malpèque présenterait le plus grand potentiel de développement de l'aquaculture sur l'île[89]. Pour pousser le développement dans la région, il faudra tenir compte des points de vue d'autres usagers des ressources maritimes. Parmi les autres débouchés économiques qui s'offrent au secteur conchylicole dans la province, mentionnons la possibilité d'élever de nouvelles espèces, comme les pétoncles et les quahogs[90].

En outre, l'étude signale que le secteur conchylicole au Canada dépend, dans une large mesure, de la capture de naissains dans la nature et qu'il faut investir dans le développement du stock des géniteurs pour accroître la production. Le secteur fait face à certaines difficultés importantes, notamment la prédation par les canards sauvages et les espèces aquatiques envahissantes, comme le crabe vert, l'ascidie plissée et l'ascidie jaune, qui peuvent nuire à la croissance et à la production de chair, en plus d'accroître les coûts d'entretien et de main-d'œuvre pour les éleveurs et les transformateurs.

L'étude mentionne les ressources humaines comme un enjeu majeur auquel font face tous les segments de l'industrie – les secteurs piscicole et conchylicole tout comme les sites de grossissement et les usines de transformation des produits de la mer. Cet enjeu a aussi fait l'objet de plusieurs discussions au cours des audiences publiques et des visites du Comité sur les côtes est et ouest. Les installations aquacoles s'établissent généralement dans des petites collectivités côtières et les usines de transformation s'installent à proximité de leur source en intrants. Une population vieillissante et une génération plus jeune qui déménage au loin pour poursuivre des études post-secondaires ou obtenir des emplois mieux rémunérés ont contribué à des pénuries de main-d'œuvre. Cela s'est produit malgré le fait que l'industrie offre des emplois à temps plein et intéressants qui nécessitent une main-d'œuvre diversifiée – des plongeurs, des vétérinaires, des biologistes marins, des techniciens TI, des administrateurs en gestion des affaires, et plus encore. Le caractère saisonnier

89 VisionQuest, ***Aquaculture dans la baie Malpeque — La voie à suivre***, préparé pour le MPO, novembre 2008.
90 *Ibid*.

associé au travail dans certains types d'opérations conchylicoles et de transformation des produits de la mer a aussi contribué à la difficulté d'attraction et de rétention des travailleurs. Ainsi, l'industrie a dû se tourner vers les travailleurs étrangers temporaires pour combler des postes. Les pénuries de main-d'œuvre sont considérées comme une contrainte majeure à l'expansion de l'industrie.

Pour terminer, le Comité a appris que la diversification et l'innovation dans l'industrie aquacole canadienne étaient possibles, plus particulièrement en C.-B. et au N.-B., si l'on développe l'AMTI. De plus, la N.-É. pratique déjà la monoculture d'algues, et le Québec étudie la possibilité de le faire en Gaspésie (écloseries terrestres, culture en mer et transformation primaire). En outre, la C.-B., le N.-B., la N.-É. et l'Î.-P.-É. ont une expérience pratique et diversifiée des installations terrestres d'élevage en parc clos pour des espèces comme le saumon de l'Atlantique, la truite arc-en-ciel, le flétan de l'Atlantique et l'omble chevalier. Toutefois, les exploitants ont besoin d'accéder à des fonds de roulement pour réaliser les économies d'échelle nécessaires à leur profitabilité.

CONCLUSION

L'aquaculture marine au Canada est une industrie très diversifiée. Bien établie en C.-B., au N.-B., à T.-N.-L., en N.-É. et à l'Î.-P.-É., mais bien que moins présente au QC, elle est partout un moteur économique important dans les régions côtières, où les autres débouchés sont souvent limités. Les conditions biophysiques diverses le long des côtes est et ouest du pays ont permis à l'industrie de faire l'élevage commercial d'espèces variées de poissons et de mollusques. De nos jours, l'industrie est dominée par le secteur piscicole (en particulier l'élevage du saumon) et se caractérise par un secteur conchylicole énergique (élevage de moules et huîtres surtout) et un nouveau secteur de culture de plantes aquatiques (particulièrement les algues), dont l'émergence est attribuable en grande partie au développement récent de l'AMTI.

Il existe des possibilités de croissance de la mariculture au Canada liées au développement de nouveaux sites de grossissement près des côtes et en milieu extracôtier. Il est également possible d'accroître la productivité des exploitations en place, de diversifier les espèces d'élevage et d'utiliser d'autres technologies de production. La croissance de l'aquaculture continuerait de favoriser le développement économique des collectivités côtières et rurales et de procurer des avantages à l'extérieur de ces régions. Il existe aussi des perspectives de croissance pour ce qui est des installations terrestres de recirculation en parc clos, surtout pour les espèces à valeur élevée. Toutefois, la production aquacole totale a diminué au cours des dernières années, surtout en C.-B. et au N.-B., bien qu'elle soit demeurée relativement stable en N.-É. et au QC. Elle continue de croître dans deux provinces, T.-N.-L. et l'Î.-P.-É., où les organismes de réglementation fédéraux et provinciaux semblent travailler et prendre des décisions en étroite collaboration et où la population semble mieux disposée envers l'industrie.

Le cadre de réglementation complexe qui régit l'aquaculture au Canada est souvent identifié comme un obstacle à la croissance de l'industrie. Quatre des provinces mentionnées dans le présent volume (N.-B., T.-N.-L., N.-É. et QC) ont adopté une approche selon laquelle elles réglementent en grande partie l'industrie, chacune ayant édicté une loi régissant l'aquaculture. Les deux autres (C.-B. et Î.-P.-É.) ont opté pour une approche où la réglementation relève surtout du gouvernement fédéral, et dans ces provinces, la *Loi sur les pêches* constitue le principal cadre législatif. Deux processus sont en place pour simplifier la gouvernance de l'aquaculture. Il y a d'abord les travaux du CCMPA aux échelons fédéral et provincial. Ensuite, les provinces de l'Atlantique travaillent ensemble dans le cadre d'un PE signé en 2008 en vue de l'harmonisation de la réglementation et des politiques en matière d'aquaculture.

Le rôle que joue le MPO en tant que ministère responsable de la gestion de l'aquaculture au Canada et dans l'exercice du rôle que lui confère la *Loi sur les pêches*, soit de veiller à ce que l'industrie soit réglementée d'une manière qui en assure la viabilité dans l'ensemble du pays tout en protégeant les poissons et leurs habitats, est de la plus haute importance aux fins de l'étude entreprise par le Comité; il fera l'objet d'une discussion plus détaillée dans le troisième volume.

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VOLUME DEUX – INDUSTRIE AQUACOLE ET GOUVERNANCE EN NORVÈGE ET EN ÉCOSSE

Comité sénatorial permanent des pêches et des océans

L'honorable Fabian Manning
Président

L'honorable Elizabeth Hubley
Vice-présidente

Juin 2016

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MEMBRES

Sénateurs qui ont participé à cette étude :

L'honorable
Fabian Manning
Président

L'honorable
Elizabeth Hubley
Vice-présidente

Les honorables sénateurs :

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Le Comité désire souligner la contribution inestimable des honorable sénateurs suivants qui ne siègent plus sur le Comité :

Lynn Beyak

Tobias C. Enverga Jr.

Membres d'office du Comité :

Les honorable sénateurs : Claude Carignan, C.P., (ou Yonah Martin) et James S. Cowan (ou Joan Fraser).

Autrse sénateurs ayant participé à cette étude :

Les honorables sénateurs: Batters, Demers, Fortin-Duplessis, Lang, McIntyre, Mercer, Plett et Tannas.

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Odette Madore, analyste

Direction des comités du Sénat:

Maxwell Hollins, greffier du comité
Debbie Larocque, adjointe administrative

ORDRE DE RENVOI

Extrait des *Journaux du Sénat* du lundi 9 décembre 2013 :

L'honorable sénateur Manning propose, appuyé par l'honorable sénatrice Unger,

Que le Comité sénatorial permanent des pêches et des océans soit autorisé à étudier, afin d'en faire rapport, la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada;

Que les documents reçus, les témoignages entendus et les travaux accomplis par le comité à ce sujet au cours de la première session de la quarante et unième législature soient renvoyés au comité;

Que le comité fasse de temps à autre rapport au Sénat, mais au plus tard le 30 juin 2015, et qu'il conserve tous les pouvoirs nécessaires pour diffuser ses conclusions dans les 180 jours suivant le dépôt du rapport final.

La motion, mise aux voix, est adoptée.

Gary W. O'Brien

Greffier du Sénat

TABLE DES MATIÈRES

LISTE DES ACRONYMES

AMTI	Aquaculture multitrophique intégrée
CAR	Controlled Activity Regulations (Écosse)
C.-B.	Colombie-Britannique
EIE	Étude d'impact sur l'environnement
FFPM	Forces, faiblesses, possibilités, menaces
FHL	Fédération norvégienne des poissons et des fruits de mer
FMA/FMS	Accord de gestion des fermes/ Déclarations relatives à la gestion des fermes (Écosse)
IMR	Institut de recherche océanographique (Norvège)
Î.-P.-É.	Île-du-Prince-Édouard
MGA	Ministerial Group on Aquaculture (Écosse)
MGSA	Ministerial Group for Sustainable Aquaculture (Écosse)
MPO	Ministère des Pêches et des Océans du Canada
N.-B.	Nouveau-Brunswick
N.-É.	Nouvelle-Écosse
NFSA	Autorité sur la salubrité alimentaire de la Norvège
Nofima	Institut norvégien de recherche sur l'alimentation, les pêches et l'aquaculture
NOK	Couronne norvégienne
PE	Protocole d'entente
QC	Québec
SAIC	Scottish Aquaculture Innovation Centre
SCNAI	Strategy for a Competitive Norwegian Aquaculture Industry
SEPA	Agence écossaise de protection de l'environnement
SESNAI	Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry
SSPO	Scottish Salmon Producers Organisation
T.-N.-L.	Terre-Neuve-et-Labrador
ZGS	Zone de gestion du saumon (Canada)

INTRODUCTION

En janvier 2014, le Comité sénatorial permanent des pêches et des océans (le Comité) a entrepris une étude sur l'aquaculture conformément à un ordre de renvoi reçu du Sénat, formulé dans les termes suivants :

> *Que le Comité sénatorial permanent des pêches et des océans soit autorisé à étudier, afin d'en faire rapport, la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada*[1].

En réponse à ce mandat vaste et complexe, le Comité a tenu des audiences publiques à Ottawa et a effectué des missions d'étude dans les provinces où le secteur de l'aquaculture marine est actif, soit en Colombie-Britannique (C.-B.), à l'Île-du-Prince-Édouard (Î.-P.-É.), au Nouveau-Brunswick (N.-B.), en Nouvelle-Écosse (N.-É.), au Québec (QC) et à Terre-Neuve-et-Labrador (T.-N.-L.). Des audiences publiques ont également été tenues dans certaines de ces provinces. De plus, le Comité a organisé des vidéoconférences avec des représentants des gouvernements de la Norvège et de l'Écosse, deux pays dotés de cadres réglementaires comparables en matière d'aquaculture. Le Comité a également effectué une mission d'étude dans chacun de ces deux pays afin d'en apprendre davantage sur le fonctionnement et le cadre de gouvernance des industries aquacoles de la Norvège et de l'Écosse.

Le présent document, le deuxième d'une série de trois volumes produits par le Comité relativement à cette étude, contient un aperçu des industries aquacoles de la Norvège et de l'Écosse et décrit la réglementation de l'aquaculture dans ces deux pays; l'information fournie ici est fondée sur les témoignages entendus au cours des vidéoconférences avec des représentants des deux pays en question ainsi que sur les renseignements recueillis au cours des missions d'étude du Comité. Le premier volume contient un aperçu de l'industrie et du cadre de gouvernance de l'aquaculture au Canada, plus particulièrement le cadre réglementaire en place dans chaque province. Le troisième volume comprend les observations et les recommandations du Comité sur l'industrie aquacole et son cadre réglementaire au Canada selon les conclusions de ses missions d'étude et des renseignements recueillis au cours des audiences publiques.

Le présent volume est divisé en trois chapitres. Les chapitres 1 et 2 dressent le portrait de l'industrie en Norvège et en Écosse respectivement et décrivent le cadre de réglementation de l'aquaculture dans chacun des deux pays. Le chapitre 3 compare brièvement les industries aquacoles de la Norvège, de l'Écosse et du Canada ainsi que leur cadre de gouvernance respectif.

1 Sénat du Canada, ***Journaux du Sénat***, 2e session, 41e législature, 9 décembre 2013, p. 274.

CHAPITRE 1 : La Norvège

1.1 Aperçu de l'industrie

1.1.1 Structure et emplacement[2]

L'industrie aquacole en Norvège est dominée par le secteur piscicole, le saumon atlantique et la truite arc-en-ciel représentant respectivement 93,9 % et 5,8 % du volume total de la production. La moule bleue, qui représente 0,2 % de la production aquacole, est la principale espèce produite par le secteur conchylicole au pays. Le tableau 1.1 fait état des différentes espèces d'élevage aquacole en Norvège dans le secteur commercial. L'aquaculture des algues – en monoculture ou en polyculture – est en développement, mais ce secteur produit très peu de biomasse[3].

À l'origine, le secteur piscicole en Norvège était dominé par des centaines de petites entreprises à la fois propriétaires et exploitantes. Au fil du temps, le nombre d'entreprises a décliné en raison de l'intégration horizontale. Toutefois, le nombre d'entreprises œuvrant dans ce secteur en Norvège demeure bien plus élevé qu'au Canada. En 2013, on y comptait 158 entreprises – petites, moyennes et grandes – se partageant plus de 1 000 permis pour des sites de grossissement en milieu marin. Le secteur est toutefois concentré, et les 10 plus grandes entreprises piscicoles de la Norvège sont responsables de 67,2 % de la production totale au pays. Parmi ces grandes entreprises, on compte Marine Harvest, Cermaq, Grieg Seafood, Norway Royal Salmon, Lerøy et Salmar. Le secteur piscicole a également fait l'objet d'intégration verticale : les entreprises sont aussi propriétaires d'écloseries, de sites de grossissement, d'usines de transformation et d'opérations d'exportation. Pour sa part, le secteur conchylicole est composé de 65 entreprises se partageant 225 permis.

Tableau 1.1 – Espèces d'élevage aquacole en Norvège

	Espèces
Poisson	• Saumon atlantique • Truite arc-en-ciel/truite
Mollusques	• Moule bleue

Source : Selon des données fournies par la Direction des pêches (ministère des Pêches et des Affaires côtières de la Norvège), « **Key Figures from the Norwegian Aquaculture Industry** », *Aquacultural Booklet*, 2013.

2 Sauf mention contraire, l'information contenue dans la présente section est tirée du document suivant : Direction des pêches (ministère des Pêches et des Affaires côtières de la Norvège), « **Key Figures from the Norwegian Aquaculture Industry** », *Aquacultural Booklet*, 2013.

3 Institut norvégien de la recherche sur l'agriculture et l'environnement, ***The Norwegian Seaweed Industry***, novembre 2012.

4 Il faut noter que la Norvège comprend 19 comtés (appelés « fylker ») englobant les 430 municipalités (« kommuner ») du pays.

Les activités aquacoles en Norvège ont lieu dans les comtés situés tout au long du littoral et touchent plus de 160 municipalités[4]. Dans le secteur piscicole, le comté de Nordland est le plus grand producteur, le comté de Hordaland arrive au second rang, celui de Møre og Romsdal, au troisième, et le comté de Troms, en quatrième place (voir la figure 1.1 pour une carte de la Norvège et de ses comtés). Les activités du secteur conchylicole sont réparties dans huit comtés, mais la production est plus forte dans les comtés de Sør-Trøndelag, de Nordland, de Nord-Trøndelag et de Sogn og Fjordane.

1.1.2 Production

La figure 1.2 présente la production aquacole (volume et valeur) en Norvège entre 1999 et 2013. Le volume a progressé constamment au cours des années 2000 pour atteindre un sommet en 2012, à 1 321 119 tonnes. Le pays a ensuite connu une diminution de production de 5,6 % en 2013. Cette année-là, la production aquacole totale s'est élevée à 1 246 544 tonnes, soit 1 244 180 tonnes dans le secteur piscicole et 2 363 tonnes dans le secteur conchylicole, ce qui représente une valeur totale de 40 milliards NOK (ou 7 milliards de dollars canadiens)[5]. En parallèle, le Canada a produit

Le Lerøy Seafood Group se classe au deuxième rang des plus grands producteurs de saumon atlantique au monde et est le plus grand exportateur de poissons et fruits de mer de la Norvège. Cette société cotée en bourse est entièrement intégrée et exploite des installations aquacoles en Norvège par l'intermédiaire de trois entités morales : Lerøy Aurora AS (Nord de la Norvège), Lerøy Midst AS (Centre de la Norvège), et Lerøy Vest AS (Ouest de la Norvège). En outre, la société possède 50 % de Scottish Sea Farms Ltd., la deuxième société salmonicole en importance en Écosse. Les sénateurs sont montés à bord du MS Lyna, un navire, afin de visiter des sites de grossissement de Lerøy situés à Bjørnafjorden, à environ une heure du siège de la société, à Bergen.

5 Direction des pêches de la Norvège, ***Aquaculture Statistics***, 2013, consulté le 19 mars 2015.

130 337 tonnes de poisson et 41 760 tonnes de mollusques et crustacés en 2013, ce qui représente une valeur de 963 millions de dollars[6]. À l'heure actuelle, la Norvège est le plus grand producteur de saumon atlantique au monde. Elle est responsable de la moitié de la production mondiale et est suivi par le Chili, l'Écosse et le Canada. Selon un rapport, la valeur de production du secteur salmonicole et de la truite en Norvège pourrait être six fois plus importante d'ici 2050 en raison de la croissance de la demande mondiale pour les poissons et les fruits de mer[7].

Figure 1.1 – Carte de la Norvège et de ses comtés

Source : Ministère des Administrations locales et du Développement régional de la Norvège, *Local Government in Norway*, 2008, p. 3.

1.1.3 Répercussions économiques

Le développement de l'aquaculture en Norvège s'est produit très rapidement et la production de saumon atlantique est devenue l'un des principaux secteurs de son économie. L'industrie est désormais un pilier économique de plusieurs collectivités côtières de la Norvège. À elle seule, l'aquaculture contribue à l'emploi d'environ 8 500 personnes. Si l'on tient compte des retombées directes et indirectes, l'industrie génère environ 20 000 emplois dans les petites communautés côtières et contribue au produit national brut à hauteur de 27 milliards NOK (ou 4,7 milliards de dollars canadiens)[8]. L'industrie aquacole de la Norvège est, dans une forte mesure, axée sur l'exportation; 94 % de la production globale est destinée à l'exportation. À l'heure actuelle, l'aquaculture représente 60 % de l'exportation de poissons et fruits de mer de la Norvège.

6 Pêches et Océans Canada (MPO), « **Production d'aquaculture en quantité et en valeur** », *Aquaculture*, consulté le 19 mars 2015.

7 ***Value Created from Productive Oceans in 2050, a Report Prepared by a Working Group Appointed by the Royal Norwegian Society of Sciences and Letters and the Norwegian Academy of Technological Sciences***, 2013.

8 Fédération norvégienne des poissons et des fruits de mer, ***2012 Environmental Report – Norwegian Seafood Industry***, 2013, p. 12.

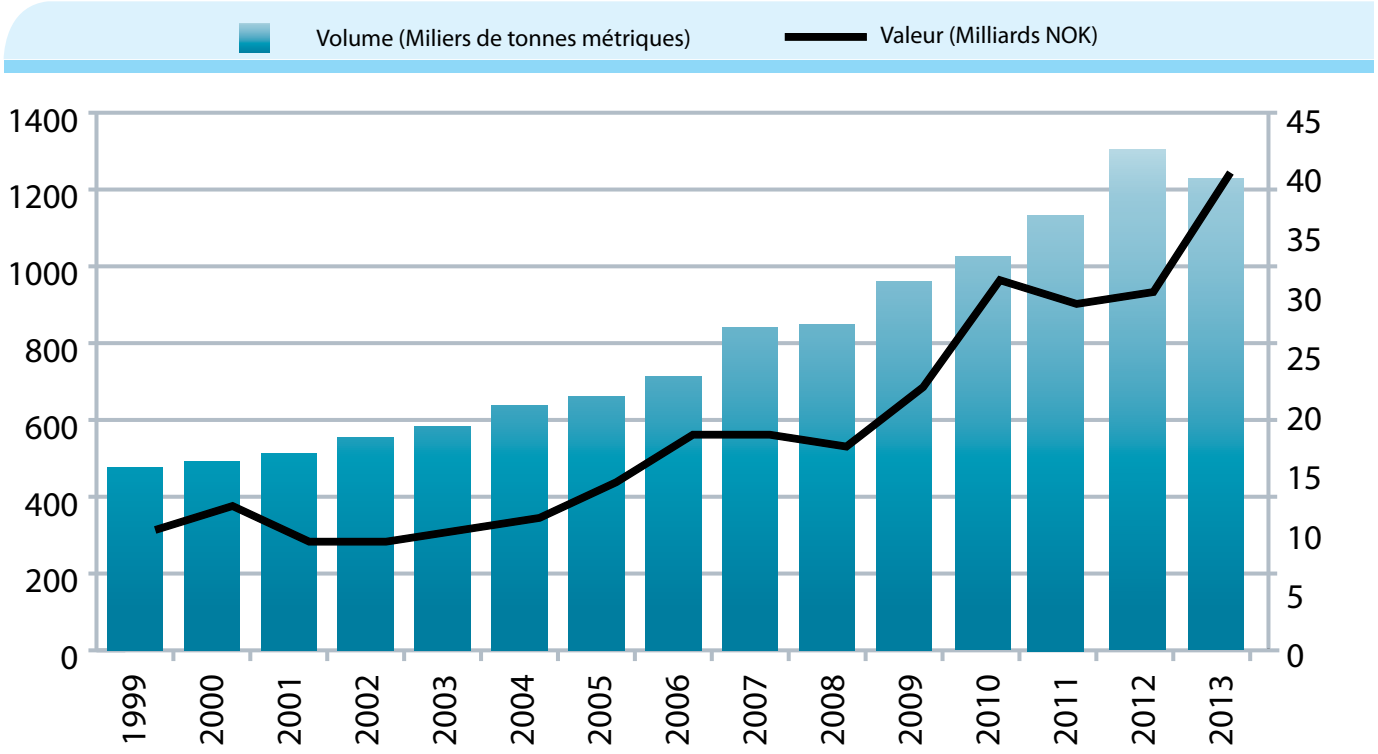
1.2 Cadre réglementaire et stratégique[9]

1.2.1 Cadre réglementaire

L'industrie aquacole en Norvège est encadrée par un grand nombre de lois et règlements adoptés par le gouvernement national, les gouvernements régionaux et les administrations municipales.

À l'échelle nationale, la *Loi sur l'aquaculture* de 2005, la *Loi sur la salubrité des aliments* de 2003 et la *Loi sur le bien-être des animaux* de 2009 constituent les trois principaux textes législatifs régissant l'aquaculture, et plusieurs règlements découlent de ces trois lois.

Figure 1.2 – Production aquacole[a] en Norvège, volume et valeur, de 1999 à 2013



Note : a. La production aquacole comprend les volumes produits sur les sites et exclut les écloseries et les usines de transformation. Les données pour l'année 2013 sont préliminaires.

Source : Selon des données fournies par la Direction des pêches de la Norvège, ***Aquaculture Statistics***, plusieurs années [consulté le 19 mars 2015].

9 Sauf mention contraire, l'information contenue dans la présente section est tirée des deux documents suivants : Direction des pêches, ministère des Pêches et des Affaires côtières de la Norvège, ***Aquaculture, Introductions and Transfers and Transgenics – Focus Area Report: Norway***, sans date, et Organisation des Nations Unies pour l'alimentation et l'agriculture, ***National Aquaculture Legislation Overview – Norway***, sans date.

Le Département des pêches et de l'aquaculture, un organisme exécutif du ministère du Commerce, de l'Industrie et des Pêches, est responsable de l'administration et de l'application de la *Loi sur l'aquaculture* et des règlements connexes[10]. Cette loi habilitante vise, d'une part, à promouvoir la profitabilité et la compétitivité de l'industrie aquacole tout en respectant le cadre du développement durable et, d'autre part, à contribuer à la création de valeur le long de la côte. Parmi les principaux articles de la *Loi*, on retient les suivants[11] :

- Système d'octroi de permis d'aquaculture : En Norvège, il faut détenir un permis pour entreprendre des activités liées à l'aquaculture. Les règlements pris en vertu de la *Loi* déterminent les conditions d'octroi de permis, les espèces qui peuvent être produites, les régions ou sites géographiques où les activités peuvent avoir lieu et la biomasse maximale qui peut être produite dans un lieu donné (habituellement 780 tonnes par permis, à l'exception des comtés de Troms et Finnmark, où la limite est fixée à 900 tonnes). Les permis d'aquaculture sont octroyés lors de systèmes d'encan établis par le ministère. Les permis sont accordés aux exploitants qui offrent le plus. Le nombre de permis est limité (959 permis pour le saumon atlantique et la truite arc-en-ciel en 2013) et des frais doivent être acquittés[12]. Au cours de certaines années, aucun permis n'est octroyé. Les permis d'aquaculture n'expirent jamais, mais ils peuvent être retirés en cas de violation des dispositions établies dans le permis lui-même, dans la *Loi sur l'aquaculture* ou dans les lois sur l'environnement.

Selon la *Loi sur l'aquaculture*, l'aquaculture est définie comme la production d'organismes aquatiques, où on entend par « production » les interventions qui influencent le poids, la taille, le nombre et les caractéristiques des organismes aquatiques. Les organismes aquatiques comprennent les animaux et les végétaux qui vivent dans l'eau, sur l'eau ou près de l'eau. La *Loi* vise tous les aspects de l'aquaculture dans les eaux de mer et les eaux intérieures, de l'aquaculture terrestre et du pacage marin.

- Coordination entre les autorités chargées d'octroyer les permis : Des échéances sont établies pour chaque étape du processus de demande de permis d'aquaculture, et les personnes qui présentent une demande n'ont à s'adresser qu'à un seul organisme public, qui coordonne l'acheminement du dossier aux différentes autorités publiques (nationales et locales) responsables des demandes de permis. Le comté coordonne le dossier (il agit comme guichet unique), et les autres autorités sont : le Département des pêches et de l'aquaculture, l'Autorité sur la salubrité alimentaire de la Norvège,

10 Ministère des Pêches et des Affaires côtières de la Norvège, ***Aquaculture Act*** [loi sur l'aquaculture], 2005.

11 Il y a lieu de noter que, en vertu des lois sur l'aquaculture, le saumon, la truite et la truite arc-en-ciel sont visés par des règlements spéciaux qui ne s'appliquent pas aux autres espèces. Les permis de production de moule bleue, de morue et de flétan et les permis de pacage marin sont gratuits et peuvent, en principe, faire l'objet d'une demande en tout temps. Ces dispositions sont définies dans différents ensembles de règlements.

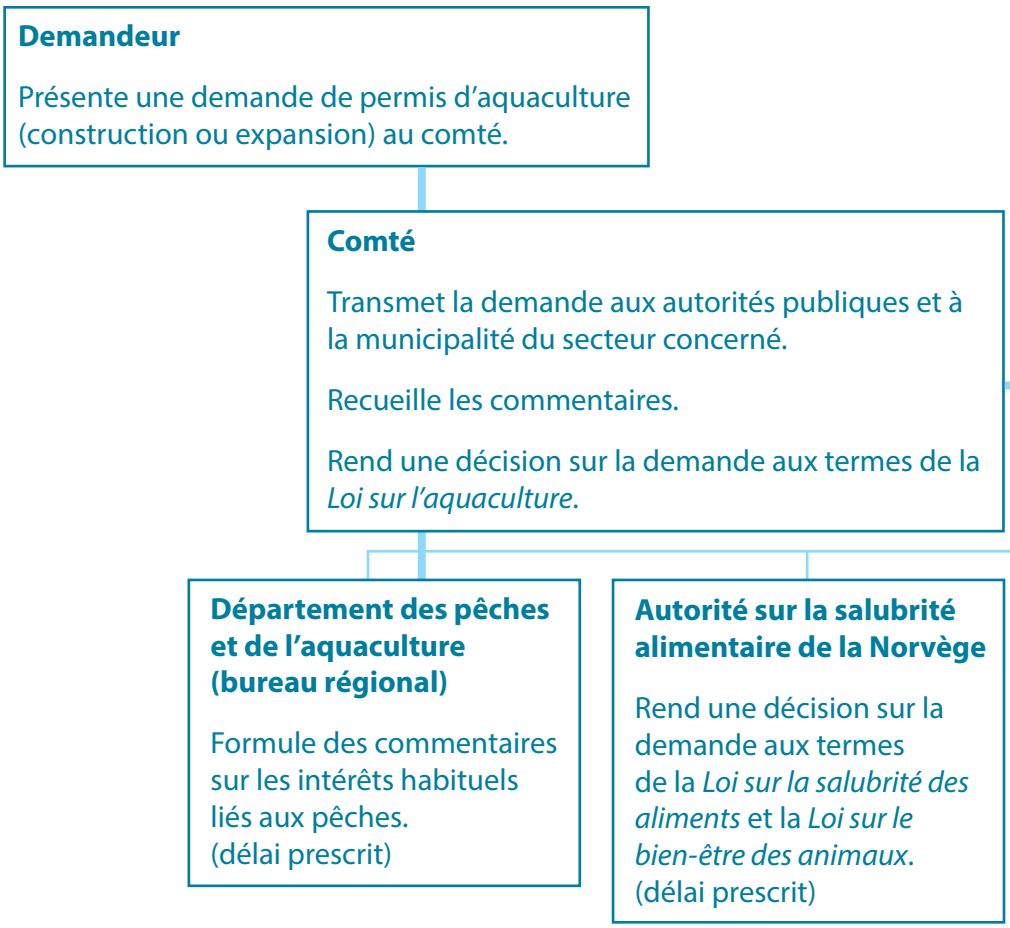
12 Une évaluation des risques biologiques des activités aquacoles proposées est effectuée au cours du traitement des demandes de permis (état du fond marin, risques de pollution, distance par rapport à d'autres sites de grossissement, protection du site contre les vagues et autres forces, etc.).

l'Administration côtière de la Norvège, le gouverneur du comté et, dans certains cas, la Direction des ressources hydriques et de l'énergie de la Norvège (voir la figure 1.3). La demande de permis est également transmise à l'administration municipale visée, et celle-ci devient l'autorité en matière de planification et de construction. Des consultations publiques sont tenues à l'échelle de l'administration municipale. Selon la *Loi*, les différentes autorités publiques sont tenues de traiter les demandes de manière efficace et coordonnée. Au total, le traitement des demandes ne doit pas prendre plus de 22 semaines. Pour qu'un permis soit octroyé, toutes les autorités concernées doivent donner leur accord.

- Durabilité environnementale : Tous les sites d'aquaculture doivent être construits, exploités et désaffectés de manière responsable sur le plan de l'environnement. L'exploitant doit effectuer les évaluations environnementales nécessaires et consigner les conditions environnementales du site au cours de la construction et de la désaffectation des installations aquacoles et tout au long de leur exploitation[13]. Les règlements exigent l'utilisation de matériel et d'équipement d'aquaculture certifiés. Les règlements visent également le rejet d'« organismes étrangers » et contiennent des dispositions concernant les évasions. La *Loi* donne au ministre le pouvoir d'établir des interdictions, d'ordonner la réinstallation des activités d'aquaculture dans un autre site ou d'imposer d'autres conditions sur l'aquaculture afin de protéger des régions ayant une valeur particulière.
- Utilisation des terres et de la côte : Les permis d'aquaculture peuvent uniquement être octroyés dans les zones d'aquaculture établies par les municipalités dans leur plan d'utilisation du territoire et des côtes.
- Transfert et mise en hypothèque des permis : Un permis peut être transféré (c'est-à-dire vendu librement sur le marché) d'une personne à une autre, et ce, sans qu'il faille une évaluation ou l'approbation des autorités publiques. Les dispositions du permis s'appliquent au nouveau détenteur. Toutefois, il existe une limite à la possession de permis : un détenteur de permis ne peut pas contrôler plus de 25 % de la biomasse totale au pays. En outre, un permis d'aquaculture peut être mis en hypothèque et, par conséquent, peut être utilisé comme garantie. Un registre contient de l'information sur chacun des permis, y compris des renseignements détaillés sur le type de permis, l'espèce, la capacité, l'emplacement, etc.
- Application et sanctions : Les sanctions peuvent comprendre l'adoption de mesures et le remboursement des dépenses et, dans le cas d'actes criminels, l'imposition d'amendes et l'emprisonnement.

13 Des évaluations environnementales sont effectuées régulièrement dans le cadre de l'exploitation des sites aquacoles, et les résultats sont communiqués au Département des pêches et de l'aquaculture. Dans les cas où les résultats sont inacceptables, d'autres évaluations sont entreprises. Si ces évaluations supplémentaires montrent que les conditions environnementales sont encore inacceptables, le Département peut ordonner à ce que le site soit mis en jachère jusqu'à ce que les conditions s'améliorent. Selon le règlement, les sites de grossissement doivent être mis en jachère pendant au moins deux mois entre les cycles de production.

Figure 1.3 – Traitement d'une demande de permis d'aquaculture en Norvège



Source : Information adaptée à partir de l'information fournie par Inger Elisabeth Meyer, première secrétaire, Ambassade royale de la Norvège, *L'aquaculture norvégienne*, mémoire présenté au Comité, 5 juin 2014, p. 7.

Municipalité

Enregistre la demande et en fait l'annonce dans le journal local; organise des audiences publiques conformément à la *Loi*.

Clarifie les plans d'utilisation des terres et de la côte conformément à la *Loi sur la planification et de la construction*. (délai prescrit)

Administration côtière de la Norvège

Rend une décision sur la demande aux termes de la *Loi sur les ports*. (délai prescrit)

Gouverneur du comté

Rend une décision sur la demande aux termes de la *Loi sur le contrôle de la pollution*. (délai prescrit)

Formule des commentaires sur les intérêts liés à la conservation de la nature, aux loisirs, à la pêche et à la chasse. (délai prescrit)

Direction des ressources hydriques et de l'énergie de la Norvège

Intervient seulement lorsqu'il est question d'extraction d'eau (p. ex. : écloseries), conformément à la *Loi sur les ressources hydriques*.

Rend une décision sur la demande et formule des commentaires.

L'Autorité sur la salubrité alimentaire de la Norvège (Norwegian Food Safety Authority ou NFSA) est responsable de l'administration et de l'application de la *Loi sur la salubrité des aliments*[14] et de la *Loi sur le bien-être des animaux*[15]. La *Loi sur la salubrité des aliments* vise les questions de santé des animaux et de la salubrité des aliments liées aux installations aquacoles, comme l'utilisation de nourriture et des agents chimiothérapeutiques et le contrôle de la salubrité alimentaire. La *Loi sur le bien-être des animaux* vise à assurer le bien-être et le respect des animaux. Ensemble, ces deux lois s'appliquent à tous les aspects de la chaîne de valeur de l'aquaculture, de la production à la distribution. Il est obligatoire d'obtenir l'autorisation de la NFSA avant de construire ou d'agrandir un site aquacole. Avant qu'une telle autorisation ne soit accordée, une évaluation des risques de transmission de maladies dans l'installation aquacole et l'environnement doit être effectuée. Parmi les points évalués, on compte : la distance par rapport à d'autres sites de grossissement et aux rivières; les espèces produites et le volume de production; les maladies généralement présentes près du site aquacole choisi et les facteurs de risques pouvant compromettre le bien-être des poissons. La NFSA s'assure que les installations aquacoles respectent les dispositions sur la santé et le bien-être des poissons. Elle a le pouvoir de prendre des décisions et des mesures pour assurer le respect des dispositions des lois. Par exemple, la NFSA peut ordonner qu'un stock de poissons soit éliminé afin de lutter contre une maladie dans une installation aquacole et pour réduire les risques de transmission à d'autres sites.

À l'instar de la NFSA, le Département des pêches et de l'aquaculture s'assure que les sites aquacoles respectent la *Loi sur l'aquaculture* et les règlements connexes. Afin d'assurer un contrôle efficace, le Département a mis sur pied « AkvaRisk », un programme fondé sur le risque qui vise des entreprises et des sites selon le risque de non-conformité. Tous les sites aquacoles marins sont classés selon trois groupes : risque faible, risque moyen et risque élevé. Les activités de surveillance visent le groupe de risque élevé. D'autres mesures de surveillance sont prises en cas de violation des dispositions. Toutes les installations aquacoles situées dans les fjords à saumon nationaux font l'objet d'une évaluation chaque année (voir les sections suivantes).

Il existe également des règlements assurant le contrôle et l'enregistrement de l'utilisation d'agents chimiothérapeutiques, l'imposition de délais d'attente afin d'empêcher la récolte pour une période donnée après l'administration d'un médicament, et l'analyse de résidus de produits pharmaceutiques retrouvés dans les poissons d'élevage. Tous les produits pharmaceutiques destinés à l'aquaculture doivent être prescrits par un vétérinaire ou un biologiste de la santé des poissons autorisé. Ces produits sont également enregistrés par la NFSA. Chaque année, l'Institut de santé publique de la Norvège publie des données sur l'utilisation des agents chimiothérapeutiques dans l'industrie de l'aquaculture[16].

14 ***Food Safety Act*** [loi sur la salubrité des aliments].
15 ***Animal Welfare Act*** [loi sur le bien-être des animaux].
16 Institut de la santé publique de la Norvège, ***Increased Use of Medicines in Norwegian Fish Farming***, 3 avril 2014.

1.2.2 Cadre stratégique

La Norvège a établi un cadre stratégique sur l'aquaculture à l'aide de deux documents : la *Strategy for a Competitive Norwegian Aquaculture Industry* (SCNAI)[17], en 2008, et la *Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry* (SESNAI)[18], en 2009. Les deux documents définissent un certain nombre de mesures et d'objectifs concernant la réglementation et l'avenir de l'aquaculture en Norvège. La SCNAI a pour but d'assurer la place de la Norvège parmi les chefs de file mondiaux de la production et de l'exportation et est axée sur quatre piliers : les défis liés au marché mondial; la durabilité de l'environnement; l'amélioration de la coordination et de l'efficacité du processus de traitement des demandes de permis; et la recherche et le développement.

Le ministère du Commerce, de l'Industrie et des Pêches de la Norvège à Olso, qui agit à titre de secrétariat pour le ministre du Commerce et de l'Industrie et le ministre des Pêches, est responsable des politiques du pays relatives au commerce, à l'industrie et aux poissons et fruits de mer. Au sein du ministère, le Département des pêches et de l'aquaculture est responsable, entre autres, de la politique et de la gestion de l'aquaculture, du système d'octroi de permis et de la durabilité de l'environnement. On présente aux sénateurs un aperçu de la politique et de la législation relatives à l'aquaculture en Norvège, y compris des renseignements sur la position du gouvernement par rapport à la croissance de l'industrie et des initiatives récentes, comme les « concessions écologiques ». On leur souligne également l'importance de la collaboration entre l'industrie, le gouvernement et le milieu universitaire dans la recherche en aquaculture.

17 Ministère des Pêches et des Affaires côtières de la Norvège, ***Strategy for a Competitive Norwegian Aquaculture Industry***, 2008..

18 Ministère des Pêches et des Affaires côtières de la Norvège, ***Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry***, 2009.

De la même manière, la SESNAI porte sur cinq secteurs où les répercussions négatives de l'aquaculture sur l'environnement devraient être atténuées, à savoir : les interactions génétiques et les poissons évadés; la pollution et les effluents; les maladies, y compris le pou du poisson; l'utilisation des zones côtières; et l'alimentation animale et les ressources connexes.

La SCNAI et la SESNAI pourraient être revues au cours des prochains mois. En fait, le gouvernement norvégien a récemment présenté au Storting (le parlement de la Norvège) un livre blanc fixant des objectifs pour le développement de l'industrie des poissons et des fruits de mer, qui englobe l'aquaculture. Le gouvernement veut faire de la Norvège un chef de file mondial dans le domaine des poissons et des fruits de mer, et l'aquaculture jouera pour beaucoup dans cet objectif, dans la mesure où cette activité demeure durable sur le plan de l'environnement[19].

L'Autorité sur la salubrité alimentaire de la Norvège (NFSA) réglemente l'industrie aquacole par l'intermédiaire de l'administration et de l'application de la *Loi sur la salubrité des aliments* et de la *Loi sur le bien-être des animaux*. Les sénateurs rencontrent des représentants de la NFSA et discutent avec eux de questions liées à la santé et au bien-être des poissons, notamment du pou du poisson et de l'utilisation de produits antiparasitaires ainsi que des activités de surveillance et d'application.

19 Lisbeth Berg-Hansen, ministre des Pêches et des Affaires côtières de la Norvège, « **Norwegian Aquaculture – Management Policies and Regulations** », discours, 26 juin 2013.

En 2009, la Norvège et l'Écosse ont signé un protocole d'entente (PE) sur la coopération et les pratiques exemplaires en aquaculture[20]. Le PE porte sur la durabilité de l'environnement (plus particulièrement la santé des poissons et les normes visant l'équipement des sites de grossissement), la réglementation, l'accès aux ressources financières et aux assurances, et la collaboration dans le domaine de la recherche. En 2013, les deux pays ont convenu de renforcer leurs efforts bilatéraux et la communication de renseignements dans le cadre du PE en organisant des rencontres bilatérales régulières entre les ministres des Pêches et les dirigeants des ministères. En 2014, des représentants norvégiens ont participé – pour la première fois – à une rencontre du Ministerial Group for Sustainable Aquaculture en Écosse[21].

La Norvège et le Canada ont également signé, en 2008, un PE plus exhaustif. Il porte sur la coopération bilatérale dans les domaines des pêches, de l'aquaculture et de la gouvernance internationale[22].

La Fédération norvégienne des fruits de mer (FHL) représente l'industrie aquacole, le secteur de la pêche commerciale et le secteur de la transformation et de la distribution des produits de la mer. Les sénateurs rencontrent des membres de la FHL, qui leur présentent une vue d'ensemble du fonctionnement et du cadre de gouvernance de l'aquaculture en Norvège. Les sénateurs ont également l'occasion de tenir des discussions concernant les mesures prises par l'industrie pour lutter contre le pou du poisson et régler les cas d'évasions, deux défis de taille auxquels est confrontée l'industrie aquacole en Norvège.

Photo utilisée avec l'autorisation de : Fédération norvégienne des fruits de mer.

20 ***Memorandum of Understanding on Aquaculture Cooperation between the Scottish Government and the Norwegian Ministry of Fisheries and Coastal Affairs***, 17 août 2009.

21 Gouvernement de l'Écosse, ***Aquaculture Ties with Norway Strengthened***, communiqué, 8 septembre 2013.

22 ***Memorandum of Understanding on Fisheries Cooperation between the Department of Fisheries and Oceans of Canada and the Ministry of Fisheries and Coastal Affairs of Norway on Bilateral Co-Operation on Fisheries, Aquaculture and International Governance Issues***, 22 mai 2008.

1.2.3 Recherche

Le Comité a appris que la recherche en matière d'aquaculture est une priorité en Norvège et que le pays est un leader mondial dans ce domaine. Grâce au fort degré de collaboration entre le gouvernement, les institutions de recherche et l'industrie, l'aquaculture norvégienne se démarque par son innovation et se place parmi les meilleures au monde[23]. Parmi les institutions de recherche norvégiennes en aquaculture, on retient : l'Institut norvégien de recherche sur l'alimentation, les pêches et l'aquaculture (Nofima), SINTEF Pêches et aquaculture, l'Institut de recherche océanographique (IMR), et l'Institut national de médecine vétérinaire.

Lorsque la SESNAI a été mise en œuvre en 2009, le gouvernement norvégien a demandé à l'IMR de proposer des indicateurs de durabilité fondés sur des données scientifiques ainsi que des seuils connexes permettant d'évaluer la gravité des répercussions potentielles de l'aquaculture sur l'environnement. Chaque année depuis 2010, l'IMR effectue une évaluation du risque des répercussions environnementales de la salmoniculture. Lors de sa mission d'étude en Norvège, le Comité a eu l'occasion de visiter l'IMR et de prendre connaissance des résultats de sa plus récente évaluation du risque[24] :

- Intégrité génétique : 21 des 37 populations de saumons sauvages étudiées sont exposées à un risque moyen ou élevé de croisement avec des saumons évadés;
- Pou du poisson : Environ 27 des 109 sites de grossissement ayant fait l'objet de dépistage d'infestation au pou du poisson montrent un risque moyen ou élevé de mortalité de saumoneaux sauvages, et 67 sites présentaient un risque moyen ou élevé de mortalité de la truite de mer sauvage causée par le pou du poisson;
- Propagation de maladies : Malgré les éclosions de maladies virales dans de nombreux sites de grossissement, les tests de dépistage chez les salmonidés sauvages ont montré une très faible présence des mêmes virus dans les populations sauvages;
- Charge organique et nutriments : Seulement 2 % de tous les sites de grossissement affichaient des niveaux inacceptables de charge organique sous les sites; le risque d'eutrophisation et d'étalement de la charge organique dans le milieu environnant est donc jugé faible.

Les représentants de l'IMR ont noté que les approches utilisées pour estimer ces risques ont des limites et qu'il est nécessaire d'améliorer la surveillance, d'adopter de meilleures méthodes d'évaluation des risques et d'appliquer des indicateurs de risques environnementaux utiles. Néanmoins, selon l'évaluation des risques, le pou du poisson et les évasions demeurent les principaux défis auxquels est confrontée l'industrie.

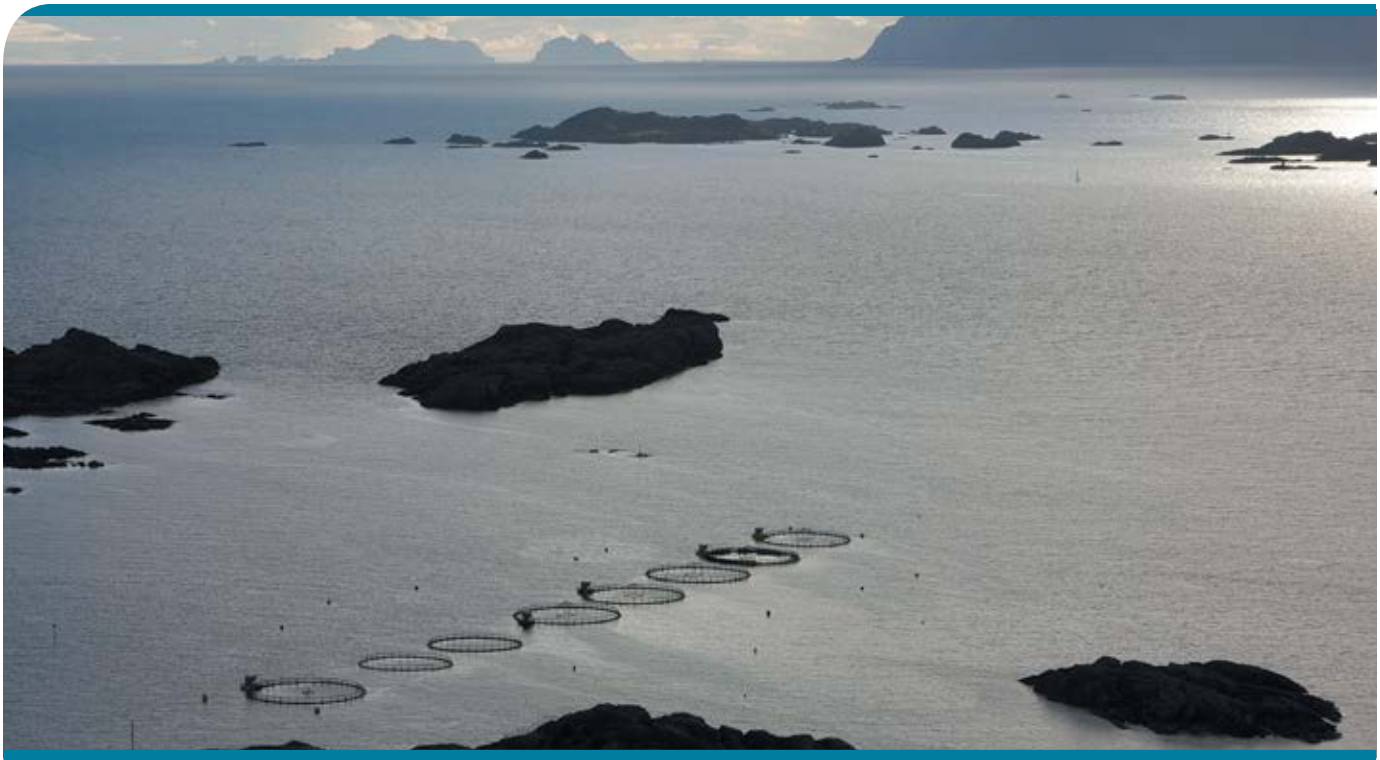
23 Inger Elisabeth Meyer, première secrétaire, Ambassade royale de la Norvège, ***Délibérations du Comité sénatorial permanent des pêches et des océans***, 5 juin 2014 (11:6).

24 Geir Lasse Taranger *et al.*, « **Risk Assessment of the Environmental Impact of Norwegian Atlantic Salmon Farming** », *ICES Journal of Marine Science*, 2 septembre 2014.

1.3 Défis actuels

Au cours de sa mission d'étude, le Comité a appris qu'un certain nombre de facteurs contribuent à la croissance continue de l'industrie de l'aquaculture en Norvège, notamment : des conditions naturelles favorables, le développement technologique suivi de la part de l'industrie, un soutien fort du gouvernement à l'aquaculture, les bonnes infrastructures près des sites aquacoles (ports, bateaux, bon réseau routier, etc.), les solides efforts de recherche et développement, le marketing par l'intermédiaire du Conseil norvégien des poissons et des fruits de mer (un organisme unique qui fait la promotion des produits de l'aquaculture et de la pêche commerciale sur les marchés nationaux et internationaux), et la collaboration et l'échange d'information entre le gouvernement, les chercheurs et l'industrie.

Il a également été question des perspectives d'avenir et des défis que connaît l'industrie aquacole de la Norvège. La principale perspective d'avenir mentionnée à plusieurs reprises est le potentiel d'expansion de l'industrie ainsi que sa croissance durable sur le plan environnemental.
En d'autres mots, le développement et la croissance à long terme de l'industrie reposent sur la durabilité environnementale de l'aquaculture.
Les principaux défis mentionnés étaient, comme



L'IMR est le plus grand centre de science de la mer de la Norvège. Il mène des recherches et des activités de surveillance liées aux écosystèmes marins et aux industries aquacole, pétrolière, gazière et minière. L'IMR a mis sur pied son propre programme sur l'aquaculture et effectue des expériences scientifiques dans ses propres laboratoires ainsi que des travaux empiriques dans des sites de grossissement. Les recherches qu'effectue l'IMR portent, entre autres, sur les répercussions environnementales des systèmes aquacoles, la santé des organismes d'élevage et la propagation de maladies, et les évasions et la capture de poissons évadés. Les résultats de la recherche sont rendus publics. Les sénateurs visitent les installations de l'IMR et rencontrent certains des chercheurs qui y travaillent.

il a été noté précédemment, le pou du poisson et les évasions. À quelques occasions, on a mentionné deux outils qui permettraient de régler ces problèmes : le recours à des sites extracôtiers et les nouvelles solutions technologiques.

1.3.1 Pou du poisson

En Norvège, chaque site de grossissement doit faire le recensement des poux du poisson sur un échantillon de poissons au moins deux fois par mois conformément à des instructions précises. Les résultats de ces tests doivent être communiqués à la NFSA. Si le nombre de poux dans un site dépasse la limite fixée, l'exploitant dispose de 14 jours pour entreprendre un traitement d'épouillage. Au cours de la dernière décennie, l'industrie aquacole a principalement eu recours à deux types de produit antiparasitaire – le benzoate d'émamectine (SLICE®, administré oralement) et les pyréthroïdes (administrés par bain) – pour éliminer le pou du poisson. Cependant, les poux le long de la côte norvégienne ont développé une résistance à ces produits. De nouveaux règlements nationaux sont entrés en vigueur en 2009 pour régler ce problème, y compris les suivants :

- déclaration obligatoire de tout cas soupçonné ou confirmé de réduction de sensibilité ou de résistance du pou du poisson aux traitements disponibles;
- attribution à la NFSA du pouvoir d'exiger la réduction rapide de la biomasse à n'importe quel site de grossissement et, si nécessaire, d'exiger l'extermination de tous les poissons sur un site donné lorsqu'il est déterminé que les exploitations sont incapables de maintenir le niveau de poux du poisson en dessous des limites maximales permises (cette année-là, la limite était fixée à 0,5 pou femelle adulte par poisson);
- attribution à la NFSA du pouvoir de proposer et d'appliquer des règlements dans des zones géographiques restreintes, notamment la prolongation obligatoire des périodes de mise en jachère, l'interdiction d'introduire de nouveaux saumoneaux et l'interdiction d'utiliser un produit d'épouillage lorsqu'une résistance a été décelée.

En 2009 également, la Fédération norvégienne des poissons et fruits de mer, organisme qui représente l'industrie aquacole (ainsi que le secteur de la pêche commerciale), a publié un ensemble de lignes directrices sur le traitement du pou du poisson. En 2011, l'utilisation de bâches hermétiques dans le cadre de mesures de contrôle du pou du poisson est devenue obligatoire afin d'atténuer les risques de développement d'une résistance aux traitements. En outre, la Norvège a mis en place une stratégie de lutte antiparasitaire intégrée pour le pou du poisson qui prévoit que tous les sites de grossissement dans une région définie sont tenus par la loi de prendre part à un programme d'épouillage simultané. Le programme est obligatoire le long de la côte ouest de la Norvège. Son principal objectif est de réduire l'infestation de pou chez le saumon atlantique au cours de la période de migration du saumoneau sauvage, du printemps et au début de l'été.

Depuis quelques années, on s'intéresse de plus en plus à la tanche-tautogue (un poisson-nettoyeur) comme agent d'épouillage biologique. Ainsi, des tanches sauvages ont été capturées et placées dans les cages avec les poissons d'élevage. Toutefois, il a été démontré que le stock naturel de la tanche n'est pas suffisant pour répondre aux besoins de l'industrie aquacole. Des développements récents dans la culture expérimentale de la tanche-tautogue semblent toutefois prometteurs. La lompe, une autre espèce de poisson-nettoyeur,

est également utilisée avec succès dans le secteur salmonicole. Pour réduire la propagation du pou du poisson entre les cages, on envisage aussi l'établissement d'une distance minimale entre les sites de grossissement.

En juin 2014, le ministère du Commerce, de l'Industrie et des Pêches a annoncé l'adoption de règlements plus stricts concernant le pou du poisson[25]. Selon ces dispositions, les exploitants auraient le droit d'augmenter de 5 % leur biomasse maximale, sous réserve qu'ils maintiennent la proportion moyenne de poux du poisson à 0,1 pou adulte femelle par poisson d'élevage. En outre, un maximum de deux produits pharmaceutiques par cycle de production pourront être utilisés pour respecter cette limite, qui est plus stricte que celle actuellement en vigueur (0,5 pou femelle adulte par poisson). Ces règlements ont pour but d'atténuer le développement de la résistance aux produits d'épouillage utilisés aujourd'hui. On s'attend à ce que l'adoption de ces mesures encourage l'utilisation de méthodes non médicales. Les autorités, plus particulièrement la NFSA, feraient un contrôle plus serré du respect de ces règlements, c'est pourquoi le gouvernement consacrerait 10 millions NOK supplémentaires aux mesures de contrôle. Toute violation aux règlements entraînerait des mesures et des sanctions définies. Les règlements devaient entrer en vigueur avant la fin de décembre 2014.

Au cours de la mission d'étude en Norvège, le Comité a appris que l'industrie aquacole a également mis à l'essai des « cages à tuba » pour lutter contre le pou du poisson. On a expliqué que ce dernier vit principalement en eau peu profonde et que, par conséquent, il est possible de prévenir la propagation du parasite en plaçant les poissons en eau plus profonde, sous la « zone du pou ». Cette nouvelle technologie de cage d'élevage établit une zone exempte du pou du poisson où le saumon peut croître. Le sommet du filet garde les poissons sous les eaux où risquent de se trouver des poux. Un cylindre central qui ne peut être traversé par le pou du poisson – le tuba – permet aux saumons d'atteindre la surface, où l'oxygène est plus abondant. Les sénateurs ont appris que, selon des essais, les cages à tuba réduisent les infestations au pou du poisson par rapport aux cages traditionnelles. Cette méthode ne fait appel à aucun produit chimique.

Durant sa mission en Norvège, le Comité a eu l'occasion de rencontrer des représentants de l'industrie, qui ont indiqué que dix règlements sur le pou du poisson affectant le saumon ont été appliqués entre 2008 et 2014, à l'échelle nationale, dans certaines régions seulement ou au cours de certains mois. Selon eux, les règlements ont réussi à réduire l'incidence du pou sur le saumon, contribué à garder au minimum les effets négatifs du pou sur le poisson sauvage comme sur le poisson d'élevage, et contribué aussi à réduire et à combattre la résistance aux médicaments. Ils ont toutefois ajouté qu'il restait place à l'amélioration et que la réglementation du pou du poisson devrait s'effectuer par zone, avec évaluation de cette réglementation locale (conformité, application et atteinte de l'objectif). En outre, ils ont noté que les efforts devraient être axés sur l'éradication du pou du poisson affectant le saumon plutôt que d'adopter des initiatives d'atténuation pour en réduire la présence.

25 Ministère du Commerce, de l'Industrie et des Pêches de la Norvège, ***Environmental Compliance Demanded of New Aquaculture Growth***, communiqué, 23 juin 2014.

Selon l'Institut de médecine vétérinaire de la Norvège, le pou du poisson – plus particulièrement les traitements d'épouillage exhaustifs et l'augmentation de la résistance aux traitements – demeure l'un des principaux défis que doit relever l'industrie aquacole de la Norvège[26].

1.3.2 Évasions

En Norvège, l'évasion de poissons d'élevage est considérée comme l'un des pires effets nuisibles de l'aquaculture sur l'environnement, plus particulièrement en ce qui a trait aux risques de croisement avec le saumon atlantique sauvage[27]. Les autorités norvégiennes reconnaissent que : « Les études comparatives scientifiques entre le saumon sauvage, le saumon d'élevage et leur croisement montrent que le transfert de gènes des poissons d'élevage aux poissons sauvages peut réduire la capacité de survie des saumons sauvages. C'est pourquoi le transfert de gènes constitue l'un des principaux problèmes liés aux évasions. Selon les registres des évasions dans certains cours d'eau de la Norvège tenus depuis la fin des années 1980, de nombreux cours d'eau abritent une forte proportion de poissons évadés. Les mutations génétiques sont déjà décelables dans certains stocks de saumon[28]. » Par conséquent, le Département des pêches et de l'aquaculture, en collaboration avec l'industrie, des organismes environnementaux non gouvernementaux et d'autres organismes gouvernementaux, a lancé, en 2006, un plan d'action sur les mesures de confinement intitulé Vision Zero Escape (Objectif : Aucune évasion). Parmi les mesures adoptées dans ce plan d'action, on retient les suivantes[29] :

- La norme NS 9415, qui établit des exigences techniques strictes sur la taille, le modèle, l'installation et l'exploitation de l'équipement d'aquaculture flottant. Par l'adoption de cette norme, on veut s'assurer que l'équipement d'aquaculture peut résister aux forces des vagues, des vents et des courants. Pour surveiller le respect de la norme par l'industrie, des règlements ont été adoptés. Par exemple, les exploitants ne peuvent utiliser que de l'équipement et du matériel certifié en vertu de la norme NS 9415. Depuis l'adoption de cette norme en 2009, les cas de bris ou de défaillance de l'équipement se font moins nombreux.
- Élaboration d'un code de confinement par l'industrie, assorti de vérifications et d'inspections des établissements aquacoles par le Département. En outre, des enquêtes sont tenues pour chaque cas d'évasion considérable. Des droits sont imposés à l'industrie aquacole pour financer ces vérifications et inspections.

26 L'Institut de médecine vétérinaire de la Norvège est un organisme gouvernemental financé par le ministère de l'Agriculture et de l'Alimentation, le ministère du Commerce, de l'Industrie et des Pêches et le Conseil de recherche de la Norvège. L'Institut recueille régulièrement des données sur la santé des poissons sauvages et des poissons d'élevage et publie des **rapports** annuels sur la santé des poissons. Ces rapports font état de l'évolution des maladies au fil des ans, des éclosions de maladie selon les régions et du nombre de cas recensés pour chaque maladie et décrivent les défis et les solutions possibles. Le rapport le plus récent porte sur la santé des poissons d'élevage pour l'année 2013.

27 Ministère des Pêches et des Affaires côtières de la Norvège, ***Strategy for a Competitive Norwegian Aquaculture Industry***, 2008, p. 14.

28 Ministère des Pêches et des Affaires côtières de la Norvège, ***Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry***, 2009, p. 5 [traduction].

29 Le plan d'action a été mis à jour l'année suivante. Voir : Direction des pêches de la Norvège, ***New Vision No Escapees***, décembre 2007.

- Création de la Commission des évasions en aquaculture, un organisme permanent qui tient des enquêtes sur chaque cas d'évasion, analyse les causes des évasions et propose des améliorations réglementaires.
- Obligation de déclarer immédiatement tout cas soupçonné d'évasion au Département. Les exploitants d'installations aquacoles sont également tenus de prendre des mesures pour capturer les poissons évadés. Le défaut de déclaration de cas soupçonnés d'évasion est considéré comme un acte criminel. Le Département publie sur son site Web des rapports et des données sur les évasions.
- Imposition d'amendes sévères en cas de violation des règlements environnementaux.

Dans la même veine, le Storting a établi 52 rivières à saumon nationales et 29 fjords à saumon nationaux en 2007. Dans ces régions, les lois visant l'industrie salmonicole sont plus strictes. Par exemple, il est interdit d'installer du nouvel équipement de salmoniculture pour la production de poisson et de stock de géniteurs dans les rivières et fjords à saumon nationaux. En outre, il est impossible d'augmenter la capacité des sites déjà établis dans ces régions et toutes les installations aquacoles de la région font l'objet d'une vérification annuelle. Les sites de grossissement doivent être situés à au moins 5 km des rivières à saumon nationales. Enfin, depuis 2011, la production commerciale du saumon est interdite dans les 14 plus importants fjords à saumon nationaux, et les installations déjà établies dans ces régions ont dû s'installer ailleurs.

En 2013 et en 2014, le gouvernement norvégien a octroyé 45 nouveaux permis d'aquaculture du saumon et de la truite nommés « concessions écologiques ». Ces permis ont été octroyés à des producteurs qui se sont engagés à utiliser des technologies ou des méthodes opérationnelles qui réduisent les répercussions environnementales des évasions et du pou du poisson sur les stocks de salmonidés sauvages. Les concessions écologiques ont été établies de manière à accélérer la commercialisation de méthodes de production favorables à l'environnement.

En outre, le ministère des Pêches et de l'Aquaculture envisage d'apporter des changements à la *Loi sur l'aquaculture*, notamment :

- Le marquage obligatoire des poissons d'élevage pour faire plus facilement la distinction entre les saumons évadés et les saumons sauvages et pour déterminer plus facilement quel exploitant est à l'origine de l'évasion;
- L'utilisation de poissons stériles afin de réduire les conséquences des évasions de saumons d'élevage;
- La création d'un fond commun, financé par l'industrie salmonicole, pour couvrir le coût du retrait des poissons évadés d'un nombre représentatif de rivières;
- Modification des dispositions pénales de la *Loi* de manière à ce que seules les entreprises puissent se faire imposer des amendes administratives et afin d'établir un régime de contrôle de la responsabilité (des personnes peuvent encore être poursuivies à titre personnel en cas de négligence grave)[30].

30 Ministère des Pêches et des Affaires côtières de la Norvège, ***The Norwegian Aquaculture Act***, 1er janvier 2014. Il y a lieu de noter que le Ministère reconnaît que le recours aux poissons stériles et le marquage obligatoire des poissons soulèvent des questions concernant le bien-être des animaux, et que l'entrée en vigueur de ces règlements est peu probable au cours des prochaines années.

Enfin, le ministère du Commerce, de l'Industrie et des Pêches permet désormais la production de saumoneaux d'un poids maximum de 1 kg. Cette décision découle du fait que l'on désirait réduire le temps d'élevage dans les sites de grossissement et de réduire, par le fait même, les risques d'évasion et d'exposition au pou du poisson et à d'autres maladies. À l'heure actuelle, on planifie et met à l'essai plusieurs établissements d'élevage de saumoneaux de poids plus élevé.

Il existe deux grands types d'établissements : les systèmes de recirculation terrestres et les systèmes de confinement flottants semi-fermés. La production jusqu'à la smoltification n'est pas touchée par ces changements. Après la smoltification, la production est transférée à l'un ou l'autre des types d'établissement jusqu'à ce que le poisson atteigne 1 kg. Pour l'heure, les établissements existants sont très peu nombreux et leur production se fait à petite échelle[31].

31 Institut de médecine vétérinaire de la Norvège, ***The Health Situation in Norwegian Aquaculture 2013***, 2014, p. 8.

CHAPITRE 2 : L'Écosse

2.1 Aperçu de l'industrie

2.1.1 Structure et emplacement

En Écosse, l'industrie aquacole comprend trois secteurs : la pisciculture, la conchyliculture et l'algoculture. La grande majorité de la production aquacole (95 %) est concentrée sur le poisson à nageoires, tandis que les mollusques et crustacés comptent pour les 5 % restants. Le secteur de l'algoculture est encore au stade du développement. La diversité des espèces aquacoles cultivées en Écosse est présentée au tableau 2.1.

Comme au Canada, le secteur piscicole de l'Écosse a connu un changement structurel au cours des années à la suite de la consolidation réalisée au moyen d'un certain nombre de fusions et de prises de contrôle. Ce changement a réduit le nombre d'entreprises exploitant le secteur, qui ont maintenant tendance à fonctionner à plus grande échelle, en partie en lien avec d'autres sociétés internationales. Le secteur piscicole est dominé par le saumon de l'Atlantique, les quatre entreprises suivantes exploitant 85 % des sites marins[32] : Meridian Salmon Farms (Marine Harvest)[33], Scottish Sea Farms (détenue à parts égales par Salmar et Lerøy, deux compagnies norvégiennes), The Scottish Salmon Company et Hjaltland Seafarms Ltd (Grieg Seafood).

Tableau 2.1 – Espèces d'élevage aquacole en Écosse

	Espèces
Poisson	• Saumon atlantique • Truite arc-en-ciel • Truite brune/de mer • Flétan de l'Atlantique • Tanche-tautogue • Morue • Omble chevalier
Mollusques et crustacés	• Moule bleue • Huîtres (du Pacifique, indigènes) • Pétoncles (coquilles St-Jacques et vanneaux)
Plantes aquatiques	• Algues

Source : Selon des données fournies fournies par ***Scotland's Aquaculture*** [consulté le 19 mars 2015].

32 Selon l'information obtenue du site Web de **Scotland's Aquaculture** [consulté le 19 mars 2015].

33 Veuillez noter que, en mai 2014, l'entreprise canadienne Cooke Aquaculture a acheté la Meridian Salmon Farms Limited de Marine Harvest, y compris les actifs de Shetland, Orkney et de l'Écosse continentale. Voir Cooke Aquaculture, ***Canadian Company Closes Deal in Northern Scotland – Meridian Salmon to become Cooke Aquaculture Scotland***, Communiqué, 14 mai 2014.

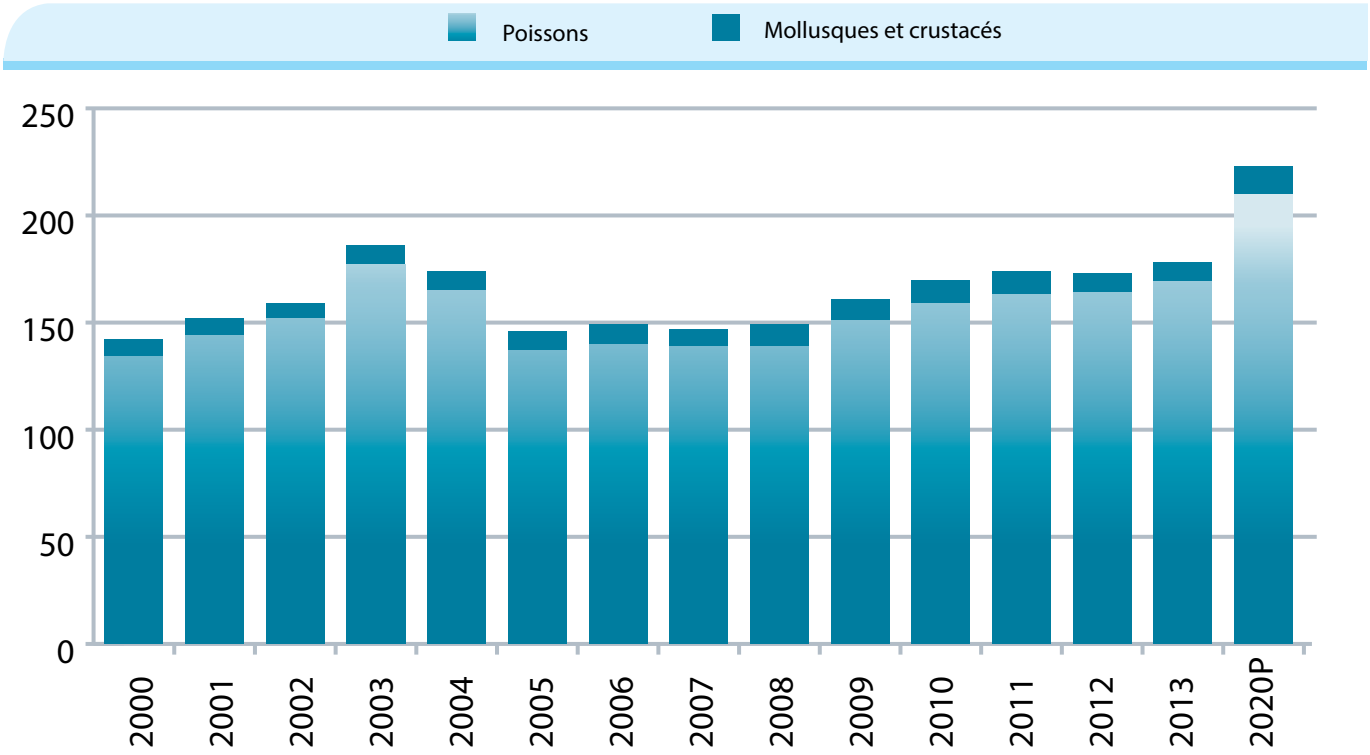
Ces grandes entreprises sont intégrées verticalement et exploitent des écloseries, des sites de grossissement et des usines de transformation à divers emplacements. Les petites entreprises comprennent Loch Duart Ltd, Wester Ross Fisheries Ltd et Balta Island Seafare Ltd, entre autres. Les sites piscicoles sont situés sur les côtes Ouest et Nord de l'Écosse continentale, et dans les îles occidentales, les Orcades et les îles Shetland[34]. Actuellement, il n'y a pas de sites piscicoles sur les côtes nord et est de l'Écosse. En 1999, le gouvernement écossais a introduit une présomption contre la poursuite de la pisciculture marine dans ces régions, afin de protéger les espèces de poissons migratoires. Cette vaste zone couvre une grande partie du littoral de l'Écosse ainsi que les bassins versants extrêmement productifs de ses rivières à saumons. Fondée sur une approche préventive, cette présomption continuera de s'appliquer jusqu'à ce que les effets possibles du développement de l'aquaculture sur les populations de salmonidés sauvages aient fait l'objet d'une évaluation plus approfondie[35]. Toute la pisciculture marine se fait dans des cages en filet. Il n'y a pas d'installations aquacoles terrestres en parc clos en Écosse, parce que cette méthode n'est pas considérée comme économiquement viable actuellement[36].

Marine Harvest (Scotland) relève de Marine Harvest ASA, une société norvégienne qui figure parmi les plus grandes sociétés de poissons et fruits de mer au monde et qui est la plus grande productrice de saumon atlantique au monde. En Écosse, la société exploite des écloseries, des sites de grossissement ainsi que des usines de transformation primaire et secondaire. Les sénateurs ont l'occasion de visiter plusieurs installations de Marine Harvest à Fort William et dans les environs, y compris sa plus récente écloserie, l'un de ses sites en eau douce, son usine de transformation et l'un de ses sites de grossissement près de Corran, sur le Loch Linnhe.

34 Pour connaître l'emplacement des sites d'aquaculture de poissons à nageoire, veuillez consulter la **carte**.
35 Marine Scotland, ***Planning Scotland Seas – Scotland's National Marine Plan***, projet de consultation, gouvernement de l'Écosse, juillet 2013.
36 Willie Cowan, chef de la performance et de l'aquaculture, Marine Scotland, *Délibérations du Comité sénatorial permanent des pêches et des océans*, 12 juin 2014 (**12:32**).

Comme au Canada, le secteur de la conchyliculture de l'Écosse est très fragmenté et compte plusieurs compagnies, y compris de nombreuses petites entreprises familiales. Actuellement, il y a 369 sites actifs gérés par 139 entreprises individuelles. La conchyliculture se pratique sur la côte ouest de l'Écosse continentale, ainsi que dans les îles occidentales et les îles Shetland[37].

Figure 2.1 – Production aquacole[a] de l'Écosse (en milliers de tonnes métriques), 2000 à 2013 et objectif pour 2020[b]



Note : a. La production aquacole comprend la quantité produite sur les sites et exclut les écloseries et les usines de transformation.

b. Les données pour 2013 sont des données préliminaires, tandis que celles de l'année 2020 représentent un objectif gouvernemental/industriel.

Source : Selon des données obtenues de Marine Scotland Science, ***Scottish Fish Farm Production Survey***, et ***Scottish Shellfish Farm Production Surveys***, gouvernement de l'Écosse, diverses années [consultés le 19 mars 2015].

37 Pour connaître l'emplacement des sites de conchyliculture, veuillez consulter la **carte**.

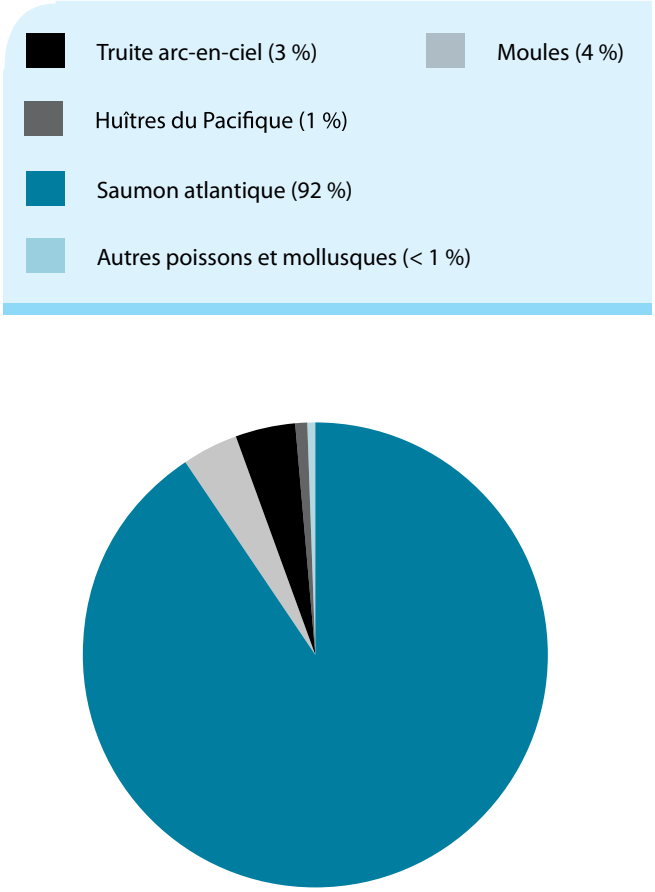
Le secteur conchylicole est dominé par la production de moules bleues.

Il y a également, en Écosse, un certain nombre de sites d'algoculture à petite échelle, au stade de la planification ou de l'exploitation. Ces sites sont situés principalement dans les îles occidentales, ou sur la côte ouest de l'Écosse continentale. Ils sont en cours de développement à des fins d'essai de production d'algues ou dans le cadre de projets d'aquaculture multitrophique intégrée (AMTI), où l'on y fait l'élevage piscicole et conchylicole[38].

2.1.2 Production

La figure 2.1 présente la production aquacole de l'Écosse au cours de la période de 2000 à 2013, ainsi que la production projetée pour 2013 et la production cible pour 2020. La production aquacole a augmenté légèrement au début de 2000 et a atteint un sommet, à 185 920 tonnes, en 2003. Cette pointe n'a pas été atteinte de nouveau et la production a diminué au cours des deux années qui ont suivi. La production est demeurée relativement stable entre 2005 et 2008, puis a commencé à augmenter faiblement année après année. En 2013, la production aquacole se chiffrait à 177 928 tonnes, ce qui comprenait : 168 947 tonnes de poissons à nageoires et 8 981 tonnes de mollusques et crustacés. Par comparaison, le Canada a produit 130 337 tonnes de poissons à nageoires et 41 760 tonnes de mollusques et crustacés[39]. Les données préliminaires pour 2013 indiquent que la production aquacole de l'Écosse se chiffrait à 168 295 tonnes, soit 3 % de moins que l'année précédente. L'Écosse se donne pour objectif de hausser la production à 210 000 tonnes

Figure 2.2 – Production aquacole[a] de l'Écosse par espèce et pourcentage, 2013



Note : a. La production aquacole comprend la quantité et la valeur produites sur les sites, à l'exclusion des écloseries et des usines de transformation.

Source : Selon des données obtenues de Marine Scotland Science, ***Scottish Fish Farm Production Survey***, et ***Scottish Shellfish Farm Production Surveys***, gouvernement de l'Écosse, diverses années [consultés le 19 mars 2015].

38 Marine Scotland, ***Draft Seaweed Policy Statement***, document de consultation, gouvernement de l'Écosse, août 2013.
39 MPO, « **Production d'aquaculture en quantité et en valeur** », *Aquaculture* [consulté le 19 mars 2015].

de poissons à nageoires et 13 000 tonnes de mollusques et crustacés, d'ici 2020[40].

Comme l'illustre la figure 2.2, le saumon de l'Atlantique est l'espèce la plus exploitée de l'Écosse (92 %), suivie des moules bleues (4 %) et de la truite arc-en-ciel (3 %).

Actuellement, l'Écosse est le troisième plus important producteur de saumon au monde, après la Norvège et le Chili. Par comparaison, le Canada occupe la quatrième place. En 2012, la valeur à la ferme de la production aquacole en Écosse se chiffrait à 559 millions de livres sterling (1 milliard de dollars canadiens).

2.1.3 Répercussions économiques

Selon un rapport récent, il est estimé que, en 2012, l'industrie aquacole a soutenu 8 000 emplois directs et indirects et généré 1,4 milliard de livres sterling (2,6 milliards de dollars canadiens) pour l'économie écossaise (voir le tableau 2.2). Au moyen de la même méthode de calcul, le rapport a également estimé que, si l'objectif de production de 223 000 tonnes établi pour 2020 était atteint, l'industrie pourrait soutenir 10 000 emplois directs et indirects et générer un chiffre d'affaires de 2 milliards de livres sterling (3,6 milliards de dollars canadiens).

Selon le rapport, l'industrie aquacole a un effet positif sur le capital social, financier, humain et physique dans les collectivités rurales où elle est présente. Elle crée de l'emploi et génère des revenus, ce qui aide à maintenir les structures communautaires, des écoles aux services de traversier en passant par l'emploi des jeunes. Le rapport souligne en outre que l'impact de l'industrie se fait ressentir au-delà des régions éloignées et fragiles sur le plan économique dans les Highlands et les îles pour s'étendre aux villes et la ceinture centrale.

Tableau 2.2 – Impact économique de l'aquaculture en Écosse, 2012 et 2020

	2012	2020
Valeur de la production (millions)	559 £	788 £
Emplois directs et indirects	8 000	10 000
Impact économique total (milliards)	1,4 £	2,0 £

Source : Adapté de : Marine Scotland, ***An Assessment of the Benefits to Scotland of Aquaculture***, gouvernement de l'Écosse, avril 2014, p. 139.

40 Marine Scotland, ***Planning Scotland Seas – Scotland's National Marine Plan***, projet de consultation, gouvernement de l'Écosse, juillet 2013 (voir le chapitre 7).

2.2 Cadre réglementaire et stratégique

2.2.1 Sélection de site : aménagement et autorisation

En Écosse, le processus de sélection d'un site aquacole comporte un certain nombre d'étapes et plusieurs institutions doivent donner leur autorisation avant qu'une entreprise puisse utiliser une zone à des fins d'aquaculture. La première étape est entreprise avec l'autorisation d'aménagement[41] qui est accordée par les autorités locales[42], conformément à la *Loi écossaise sur l'aménagement des zones urbaines et rurales*[43]. L'information requise dans le cadre du processus d'autorisation d'aménagement comprend : la capacité d'une zone d'intégrer l'exploitation aquacole; l'impact visuel et les effets sur le paysage; l'infrastructure (emplacement, plans de site, conception des cages et du matériel, autres structures, espèces, densité des stocks, installations côtières, etc.). À ce stade, il est recommandé que les effets éventuels de l'exploitation aquacole sur les zones de pêche traditionnelle, les postes de pêche au saumon au filet et la pêche à la ligne soient pris en compte. L'industrie est encouragée à tenir des discussions et des consultations avec les collectivités locales avant de présenter une demande, afin d'obtenir leur appui. Le processus d'autorisation de l'aménagement est ouvert à la consultation

La Scottish Salmon Producers Organisation (SSPO), fondée en 2006, représente l'industrie salmonicole en Écosse. Elle est financée au moyen de droits volontaires versés par l'industrie et fixés selon le volume de production. Les sénateurs rencontrent des représentants de la SSPO au siège de l'organisme, à Perth, pour discuter de l'industrie aquacole de l'Écosse.

Photos utilisées avec l'autorisation de : Scottish Salmon Producers Organisation.

41 Gouvernement de l'Écosse, ***Planning Permissions***. Dans le cas des exploitants de sites qui ont été établis avant 2007 (et qui ne détiennent pas déjà un permis d'aménagement), une demande peut être présentée par l'intermédiaire du gouvernement écossais.

42 Les **Local Authorities** [autorités locales] correspondent aux municipalités canadiennes; actuellement, on en compte 32 en Écosse.

43 ***Town and Country Planning (Scotland) Act*** [Loi écossaise sur l'aménagement des zones urbaines et rurales].

publique et les collectivités locales ainsi que les conseils de la pêche au saumon de district[44] sont encouragés à participer.

La deuxième étape a trait au bail d'exploitation dans les fonds marins accordé par le Domaine de la Couronne[45]. Pour guider son travail, le Domaine de la Couronne consulte deux ensembles de lignes directrices. Les *Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters* [lignes directrices pour l'autorisation d'exploitations piscicoles marines][46] préparées par Marine Scotland fournissent des directives sur l'acceptabilité environnementale des zones côtières aux fins de la pisciculture marine, en définissant trois catégories

L'Agence écossaise de protection de l'environnement (SEPA) est le principal organisme de réglementation en matière d'environnement en ce qui concerne l'industrie aquacole en milieu marin. La SEPA octroie des permis environnementaux qui réglementent les activités des sites aquacoles. Les sénateurs rencontrent des représentants de la SEPA, avec qui ils discutent des rôles et responsabilités de l'Agence en ce qui a trait à l'aquaculture.

Photo utilisée avec l'autorisation de : Marine Harvest Scotland.

44 Il y a 42 conseils de district de la pêche au saumon en Écosse. Ils sont élus par une association de propriétaires d'exploitations de pêche au saumon d'un district de pêche au saumon et établis dans le but de préserver et d'améliorer les pêches et la gestion des pêches dans leur district.

45 Le **Crown Estate** [Domaine de la Couronne] détient les terres et les propriétés de la Couronne pour le bénéfice de l'État. En Écosse, il gère quatre domaines ruraux, les droits d'exploitation minière et de la pêche au saumon, ainsi que le fond de mer jusqu'à une distance de 12 milles nautiques. Pour trouver un sommaire du processus de demande en vue de l'obtention d'un bail d'exploitation dans les fonds marins pour le secteur piscicole, on peut consulter : The Crown Estate, ***Guidance Notes for Applicants for Leases of Fish Farming Sites in Scotland***, sans date.

46 Marine Scotland, ***Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters***, mars 2014.

de sites – convenables, potentiellement convenables et probablement non convenables pour l'aquaculture[47]. Le document *The Siting and Design of Aquaculture in the Landscape : Visual and Landscape Considerations* [aménagement et intégration de l'aquaculture dans le paysage : considérations visuelles et paysagères], publié par le Scottish Natural Heritage[48], aide à déterminer l'emplacement le plus approprié pour l'exploitation aquacole par rapport au paysage. Le Domaine de la Couronne peut délivrer un bail pour une période maximale de 25 ans. Il peut également accorder une option de location-achat limitée dans le temps pour des projets d'exploitation dont l'aménagement n'a pas encore été autorisé. La décision du Domaine de la Couronne quant à l'octroi d'un bail est conditionnelle à l'obtention de deux autres autorisations légales : un permis de l'Agence écossaise de protection de l'environnement (SEPA), et un autre de Marine Scotland.

Les entreprises qui désirent établir une installation piscicole doivent demander et obtenir un permis conformément aux Controlled Activity Regulatiions (CAR)[49], aux termes du *Règlement sur l'environnement marin (activités contrôlées)*[50]. Elles doivent fournir des données environnementales sur lesquelles peut être fondée la décision sur le consentement au rejet. Le Domaine de la Couronne et la SEPA soumettent ensuite la proposition à des consultations publiques en publiant les détails de l'exploitation dans les journaux locaux. À ce stade, il peut y avoir des oppositions et, le cas échéant, un processus d'examen est entrepris. Un permis peut être octroyé, assorti de conditions qui établissent des limites quant à la biomasse (c.-à-d. le poids du poisson gardé sur place) et quant à la quantité de certains médicaments qui peuvent être administrés et rejetés. Les exigences relatives à la mise en jachère (c.-à-d. la période durant laquelle il n'y a pas de production piscicole sur place) constituent également une condition du permis. Un plafond de 2 500 tonnes a été fixé comme biomasse maximale par site.

Le processus de détermination de la taille appropriée du site piscicole exploité à un endroit donné est très complexe. Avant de soumettre une demande formelle, il est recommandé que les exploitants discutent de leurs propositions avec la SEPA. Cette consultation préalable à la demande peut restreindre les coûts et éviter les déceptions, dans l'éventualité où la SEPA déterminerait que les propositions sont inappropriées pour le site concerné. La SEPA offre la possibilité de tenir des consultations préalables sans porter atteinte au processus de demande formelle. Le processus de consultation préalable offre l'occasion d'établir la validité de l'information qui devra être soumise par la suite et, par conséquent, de réduire la nécessité de rejeter les demandes incomplètes.

La SEPA peut également être tenue d'entreprendre une étude d'impact sur l'environnement (EIE) avant de déterminer si un permis CAR peut être octroyé ou non. Toute nouvelle installation piscicole et tout

47 Actuellement, il n'y a pas de lignes directrices sur les emplacements pour diriger le développement de la conchyliculture.
48 Le **Scottish Natural Heritage** est un organisme gouvernemental établi en 1992 par une loi du Parlement. Il a pour but de promouvoir le soin et l'amélioration du patrimoine naturel de l'Écosse, ainsi que d'encourager son utilisation durable. Voir Scottish Natural Heritage, ***The Siting and Design of Aquaculture in the Landscape: Visual and Landscape Considerations***, novembre 2011.
49 SEPA, ***Controlled Activity Regulations***.
50 ***Water Environment (Controlled Activities) (Scotland) Regulations*** [règlement sur l'environnement aquatique (activités contrôlées)].

agrandissement d'une telle installation existante[51] doit faire l'objet d'une EIE par la SEPA lorsque le site se trouve dans une zone délicate, qu'elle est conçue pour garder une biomasse de 100 tonnes ou plus, ou qu'elle couvre 0,1 hectare ou plus d'eaux marines[52].

Enfin, conformément aux *Règlement sur la santé de la faune aquatique*[53], les entreprises doivent obtenir un permis d'exploitation marine de Marine Scotland pour exploiter des sites de pisciculture et de conchyliculture. Le processus de demande tiendra compte des incidences de l'activité en question sur l'habitat local et de tout obstacle ou danger éventuel pour la navigation qui est susceptible d'en découler, soit pendant l'exécution des travaux ou après leur achèvement. L'octroi d'un permis de rejet de bateaux-viviers relève également de Marine Scotland.

Les autorités qui participent à l'approbation d'un choix d'emplacement pour une installation aquacole ont signé un accord de collaboration qui délimite les responsabilités respectives en matière d'aquaculture et qui permet de partager les renseignements pertinents dans le but de minimiser le chevauchement et le double emploi. L'accord porte à la fois sur les mollusques et crustacés et sur les poissons à nageoires. Cette mesure aide à assurer que les réponses respectives ne se traduisent pas par des conseils contradictoires[54].

Dans l'ensemble, il est estimé que le processus décisionnel relatif à la sélection de sites aquacoles peut prendre de 18 mois à 2 ans, parfois plus[55]. L'industrie estime que ce processus est encombrant et trop long.

2.2.2 Exploitation, surveillance et application de la loi

Marine Scotland, une direction faisant partie du ministère des Affaires rurales et de l'Environnement du gouvernement écossais, est l'autorité principale en matière de réglementation de l'aquaculture. Comme son appellation le laisse entendre, ce ministère a un vaste mandat qui regroupe la responsabilité générale de l'agriculture, des pêches et de l'aquaculture. Toutefois, Marine Scotland n'est pas un organisme de réglementation centralisé en matière d'aquaculture, et il y a plusieurs autres ministères et organismes qui participent à la gouvernance des exploitations aquacoles.

Marine Scotland est responsable de la principale loi régissant l'aquaculture, la *Loi sur l'aquaculture et les pêches*, qui a été mise en œuvre en 2007 et modifiée en 2013[56]. Dans l'ensemble, la loi exige que les aquaculteurs regroupent, conservent et rendent disponibles à des fins d'inspection des renseignements sur la prévention, la maîtrise et la réduction des parasites du poisson, de même

51 Les nouvelles demandes pour la conchyliculture ne nécessitent pas d'EIE.
52 Ces plafonds relatifs à l'aquaculture sont établis aux termes de l'***Environmental Impact Assessment (Fish Farming in Marine Waters) Regulations*** [règlement sur l'évaluation des incidences environnementales (pisciculture en milieu marin)].
53 ***Aquatic Animal Health Regulations*** [règlement sur la santé des anumaux aquatiques].
54 ***Working Arrangement – Requirements of Statutory Consultees (Scottish Environment Protection Agency, Scottish Natural Heritage, Marine Scotland Science and the District Salmon Fisheries Boards) and Consultation Protocol for Marine Aquaculture Planning Applications,*** 6 juillet 2010.
55 Willie Cowan, chef de la performance et de l'aquaculture, Marine Scotland **(12:19)**.
56 ***Aquaculture and Fisheries (Scotland) Act 2013*** [Loi sur l'aquaculture et les pêches de 2013 (Écosse)].

que sur le confinement du poisson et la prévention des évasions. Il y a également des dispositions qui permettent des inspections des installations piscicoles par les inspecteurs de la santé des poissons. Les inspecteurs peuvent prendre des échantillons de poisson ou de matières provenant du poisson, faire des copies des documents et des dossiers et effectuer les analyses qu'ils estiment nécessaires. Des analyses peuvent être effectuées pour évaluer et faire respecter la conformité au code de pratiques de l'industrie, entreprendre des activités scientifiques ou de recherche, ou faire enquête sur les évasions. D'autres dispositions prévoient des notifications d'amendes fixes pour sanctionner les manquements aux règlements. La loi permet également au ministre d'établir un mécanisme de dédommagement pour le poisson détruit pour lutter contre les maladies.

À la suite des modifications de 2013, les sites piscicoles situés dans des zones spécifiques doivent être exploités dans le cadre d'accords de gestion de ferme (FMA) ou de déclarations relatives à la gestion de ferme (FMS)[57]. Les FMA ou FMS doivent porter sur les mesures de gestion de la santé des poissons, de gestion des parasites, de transport de poissons vivants en provenance ou à destination des sites de grossissement, la récolte

Marine Scotland est responsable de la principale loi encadrant l'aquaculture en Écosse, la *Loi sur l'aquaculture et les pêches*. Sa Direction de la santé des poissons [Fish Health Inspectorate] fournit des conseils et des services de diagnostic aux installations aquacoles et mène des inspections obligatoires et des programmes de test sur les sites de grossissement piscicoles et conchylicoles partout en Écosse, y compris des inspections non annoncées. Les sénateurs rencontrent des représentants de la Direction afin de discuter de leurs rôles en matière de réglementation, plus particulièrement dans les domaines de l'aquaculture et de la santé des poissons.

Photo utilisée avec l'autorisation de : Marine Scotland.

57 Un FMA est une entente entre deux aquaculteurs ou plus d'une aire de gestion délimitée, tandis qu'une FMS est utilisée s'il n'y a qu'un aquaculteur dans une aire de gestion ou si aucune entente n'a été conclue. Pour de plus amples renseignements, voir : Scottish Parliament Information Centre (SPICe), ***SPICe Briefing: Aquaculture and Fisheries (Scotland) Bill***, 5 novembre 2012.

du poisson, et la mise en jachère des sites après la récolte. Il s'agit d'ententes conclues entre toutes les entreprises aquacoles d'une même zone dans le but de synchroniser leurs activités de manière à stocker, à traiter, à récolter et à mettre en jachère simultanément, en vue de réduire le risque d'infection croisée liée à l'exploitation selon des cycles différents. Ces ententes font l'objet d'un suivi de Marine Scotland par l'intermédiaire de sa Direction de la santé des poissons. Chaque entente sera mise à jour environ une fois aux deux ans, afin de rendre les activités plus efficaces et de restreindre davantage les incidences environnementales. Les modifications de 2013 comprennent également des exigences techniques relatives au matériel à utiliser sur les sites de grossissement. Ces exigences sont fonction de l'emplacement et portent sur des facteurs physiques comme la hauteur des vagues et la vitesse du vent et du courant[58]. Enfin, les modifications de 2013 prévoient des mesures de contrôle et de surveillance des activités relatives aux bateaux-viviers[59].

La SEPA joue également un rôle en matière de réglementation du secteur piscicole (mais non pas du secteur conchylicole). Récemment, elle a publié un guide sur la réglementation et la surveillance de la pisciculture en cages de filet[60]. Les installations piscicoles marines sont inspectées d'une à trois fois par année par autocontrôle (ce qui est une condition du permis) et une fois par année au moyen d'enquêtes de vérification de la SEPA. Les producteurs de poissons doivent soumettre des rapports de données à la SEPA, faisant le détail de la quantité de rejets de chacun de leurs sites de grossissement. Les résultats des autocontrôles et des enquêtes de vérification sont comparés aux normes environnementales définies au préalable qui sont applicables au site, puis les incidences des activités aquacoles sont jugées satisfaisantes, à la limite, ou insatisfaisantes.

Une classification « satisfaisante » n'exige aucune autre mesure. Les résultats « à la limite » peuvent exiger que l'exploitant envisage de prendre

La *Loi sur l'aquaculture et les pêches* ne définit pas explicitement le terme « aquaculture »; toutefois, les modifications apportées en 2013 fournissent les définitions suivantes (article 63) :

- Ferme ou installation piscicole : tout lieu utilisé pour l'élevage de poissons;
- Pisciculture : maintien de poissons vivants en vue de leur vente ou de leur transfert à d'autres eaux, mais uniquement lorsque cette activité doit être autorisée en tant qu'entreprise de production aquacole assujettie à la réglementation;
- Ferme ou exploitation conchylicole : tout lieu utilisé pour l'élevage de mollusques et crustacés;
- Conchyliculture : élevage ou propagation de mollusques et crustacés en vue de leur vente ou de leur transfert à d'autres eaux ou sur terre, mais uniquement lorsque cette activité doit être autorisée en tant qu'entreprise de production aquacole assujettie à la réglementation [traduction].

58 *Ibid.*
59 *Ibid.* Comme au Canada, les bateaux-viviers utilisés par l'industrie aquacole écossaise servent principalement au transport de poissons vivants et à l'application de traitements thérapeutiques contre le pou du poisson.
60 SEPA, ***Guidance Manual on Regulation and Monitoring of Cage Fish Farms***.

d'autres mesures, qui pourraient comprendre un examen de la gestion du site en vue d'améliorer l'efficacité de l'utilisation de la nourriture ou une prolongation de la période de mise en jachère. Une classification « insatisfaisante » indique que les effluents provenant du site en question sont d'une échelle qui dépasse la capacité d'absorption de l'environnement local. Cette classification peut avoir trait aux incidences sur la faune de fond ou aux incidences chimiques, à des concentrations inacceptables de résidus de médicaments ajoutés aux aliments pour poissons, ou les deux. Les classifications « insatisfaisantes » ne peuvent pas être passées sous silence et sont signalées sans délai à l'exploitant, ce qui donne l'occasion de discuter des raisons possibles des incidences observées et des mesures possibles à prendre pour atténuer les effets immédiats. La SEPA peut prendre des mesures d'application de la loi ou envisager des sanctions lorsqu'une activité autorisée a eu un degré insatisfaisant d'effets indésirables sur le milieu aquatique. Ces mesures peuvent comprendre une prolongation de la période de mise en jachère, l'installation d'un système d'alimentation automatisé doté de boucles de rétroaction afin d'éviter la suralimentation; la formation du personnel du site en matière de pratiques d'alimentation efficaces ou la réduction de la biomasse indiquée dans le permis, la réduction de la quantité ou du taux de rejet d'un médicament, etc. La SEPA recouvre une partie du coût de son régime de surveillance en percevant des droits.

Outre les inspections obligatoires décrites ci-dessus, l'industrie a son propre code de pratiques exemplaires agréé pour la pisciculture, visant à assurer la conformité aux normes industrielles établies dans ce document. Tous les sites salmonicoles exploités par les membres de la Scottish Salmon Producers Organisation font l'objet de vérifications au regard des dispositions du code[61].

Les principaux ministères et organismes responsables de la réglementation de la sélection de l'emplacement et des exploitations aquacoles se sont concertés pour établir un site Web – Scotland's Aquaculture – qui sert de point d'accès unique à une base de données sur l'aquaculture. On y trouve une vaste gamme de données, comme les emplacements de l'industrie, les baux, les permis et les rapports sur les activités contrôlées, la surveillance de l'hygiène des mollusques et crustacés, les enquêtes de surveillance environnementale, les évasions de poissons, les résidus des traitements contre les poux du poisson intégrés dans les aliments, la biomasse mensuelle des sites piscicoles, la surveillance des biotoxines, les fermetures temporaires des zones coquillières, etc. On peut accéder à l'information au moyen d'un outil de recherche de données et d'une carte interactive[62].

2.2.3 Cadre stratégique

En 2003, le gouvernement écossais a publié son premier cadre stratégique pour l'aquaculture, qui a été refondu en 2009[63]. Cette année-là, il a créé le Ministerial Group for Aquaculture (groupe ministériel pour l'aquaculture ou MGA) en vue de regrouper les intervenants et de surveiller la mise en œuvre de la stratégie. Le MGA a également participé à l'élaboration des modifications législatives apportées en 2013. Depuis, l'appellation du groupe a été changée pour le Ministerial Group for

61 Scottish Salmon Producers Organisation, ***The Code of Good Practice for Scottish Finfish Aquaculture***, 2010.
62 Pour plus de renseignements, voir **Scotland's Aquaculture**.
63 Gouvernement de l'Écosse, ***A Fresh Start: The Renewed Strategic Framework for Scottish Aquaculture***, mai 2009.

Sustainable Aquaculture (groupe ministériel pour l'aquaculture durable ou MGSA), et son travail a été réorienté sur les objectifs de croissance fixés par le gouvernement écossais en vue d'accroître la production piscicole et conchylicole à 223 000 tonnes d'ici 2020[64]. Le MGSA est présidé par le ministre de l'Environnement et fait appel à un large éventail d'intervenants. Le groupe vise à travailler selon une approche axée sur la collaboration, de manière à tenir compte des différents points de vue concernant les incidences sur l'environnement. Le MGSA est assisté par six groupes de travail qui examinent les questions suivantes : confinement, bateaux-viviers, interaction, santé et bien-être des poissons d'élevage, capacité, et mollusques et crustacés. L'année dernière, le MGSA a publié une stratégie nationale de recherche sur l'aquaculture qui définit les besoins en recherche à moyen (5 ans) et à long (20 ans) terme. On a souligné que la proche collaboration entre les intervenants jumelée au resserrement de la coordination des activités de recherche est essentielle pour que l'on puisse assurer la prospérité d'une industrie aquacole durable[65]. Dans ce contexte, le gouvernement de l'Écosse a établi le Scottish Aquaculture Innovation Centre [centre d'innovation en aquaculture d'Écosse] (SAIC) en juin 2014[66]. Basé à l'Université de Stirling, le SAIC réunit l'industrie, le milieu universitaire et d'autres intervenants afin d'élaborer des solutions qui assureront la croissance de l'industrie sur le plan économique et de la durabilité environnementale. Le SAIC a reçu un financement de 11 millions de livres sterling sur cinq ans, provenant du gouvernement et de l'industrie.

Récemment, le gouvernement de l'Écosse a complété des consultations publiques sur la façon dont les ressources marines devraient être utilisées aux fins de l'aquaculture, ainsi que des pêches récréatives et commerciales[67]. On a expliqué que ces trois secteurs ne sont pas mutuellement exclusifs et qu'ils sont la base d'une croissance économique durable qui stimule l'emploi et le bien-être économique de nombreuses collectivités côtières de l'Écosse. Au cours des mois à venir, il lancera un plan national sur les zones marines, qui éclairera davantage la prise de décisions concernant l'utilisation de l'environnement marin à la suite de ces consultations.

Dans le cadre du projet de plan national sur les zones marines, les demandes de permis d'exploitation aquacole favorisant l'utilisation de méthodes de lutte biologique contre le pou du poisson (comme les labridés, un poisson-nettoyeur) seront encouragées. De même, les propositions susceptibles de contribuer à la diversification des espèces d'élevage seront appuyées. L'intégration accrue de l'algoculture à d'autres systèmes de production multitrophiques sera également encouragée. De plus, on est en train de revoir l'exigence de la SEPA qui limite la biomasse à un plafond de 2 500 tonnes par site, dans le but d'augmenter la capacité de production des sites de grossissement. Cette étude pourrait mener à l'établissement de sites d'aquaculture de plus grande taille, en particulier pour ce qui est des sites de grossissement extracôtiers[68].

64 Pour plus de renseignements sur le MGSA, voir ***Ministerial Group for Sustainable Aquaculture (MGSA)***.
65 Groupe de travail de science et de recherche du MGSA, ***Aquaculture Science and Research Strategy***, mai 2014.
66 **Scottish Aquaculture Innovation Centre**.
67 Marine Scotland, ***Planning Scotland's Seas – Scotland's National Marine Plan***, projet de consultation, gouvernement de l'Écosse, 2013.
68 *Ibid.*

Aux fins de l'acceptation sociale, le gouvernement, l'industrie et les autorités locales travaillent ensemble à l'élaboration d'une charte sur les avantages communautaires, qui explique et promeut les avantages apportés à l'économie locale par l'industrie[69]. Le Comité a appris que des chartes sur les avantages communautaires sont déjà en place dans le secteur de l'énergie renouvelable. Une charte de ce type viserait à maximiser les avantages sociaux et économiques de l'aquaculture pour la communauté, qui comprennent les réinvestissements de l'industrie dans l'économie locale par l'intermédiaire de financement de projets (par exemple de logement) ou une part des recettes du Domaine de la Couronne provenant des ententes de bail.

2.3 Possibilités et défis

Le rapport de Marine Scotland auquel il est fait référence à la section 2.1.3 porte également sur les forces, les faiblesses, les possibilités et les menaces pour l'industrie aquacole de l'Écosse. Les résultats à ce sujet sont présentés dans le tableau 2.3. Les secteurs de la pisciculture et de la conchyliculture jouissent d'une bonne réputation et sont bien positionnés, compte tenu de leur proximité avec les marchés européens. En outre, il est possible d'augmenter la production dans ces deux secteurs au moyen du développement des sites d'aquaculture extracôtiers. De plus, la croissance de l'industrie est fortement appuyée par le gouvernement écossais. Toutefois, certains facteurs, dont le cadre de réglementation complexe, nuisent à la capacité de croissance de l'industrie.

En ce qui concerne le secteur piscicole, le risque de maladie et d'infestation par le pou du poisson peut avoir des incidences sur la production. Plus particulièrement, le pou du poisson peut causer des problèmes considérables qui entraînent des coûts élevés pour les entreprises en raison des pertes et des traitements. Le recours aux poissons-nettoyeurs est envisagé dans le cadre d'une approche intégrée à la lutte antiparasitaire.

En ce qui a trait au secteur conchylicole, la production est relativement coûteuse par comparaison aux autres pays de l'Europe, en raison de la croissance biologique lente, de l'utilisation de méthodes de production plus coûteuses et des salaires plus élevés. De même, il y a des coûts en capital importants liés au démarrage d'une installation de pisciculture, variant de 5 à 10 millions de livres sterling (9 à 18 millions de dollars canadiens)[70]. Ces facteurs posent des difficultés pour les nouveaux venus, en particulier dans le domaine de la salmoniculture. Il existe des possibilités de développement de produits, tant dans le secteur piscicole que dans le secteur conchylicole, et d'une valeur marchande plus élevée par une transformation plus poussée.

69 Willie Cowan, chef de la performance et de l'aquaculture, Marine Scotland (**12:24**).
70 *Ibid*.

Tableau 2.3 – Analyse FFPM pour l'aquaculture en Écosse

	Salmonidés	Mollusques et crustacés
Forces	• L'un des principaux producteurs de l'Union européenne • Proche des marchés européens • Excellente qualité de l'eau • Industrie consolidée • Fort appui du gouvernement	• Bonnes conditions biophysiques • L'un des principaux fournisseurs de mollusques et crustacés de bonne qualité • Marché local/régional solide • Bonne notoriété sur le marché • Fort appui du gouvernement
Faiblesses	• Manque de sites convenables • Piètre perception de l'industrie dans la presse et chez certains groupes d'opinion • Processus réglementaire lent et encombrant • Eaux froides contribuant à ralentir la croissance • Forte concurrence de la Norvège, qui a mis au point une infrastructure avancée • Coût en capital élevé	• Manque de sites convenables • Industrie fragmentée • Petites unités de production à faibles économies d'échelle par comparaison à d'autres pays • Manque d'accès au capital • Eaux froides contribuant à une croissance plus lente • Coûts de production relativement plus élevés qu'ailleurs en Europe
Possibilités	• Perspectives de croissance pour les sites au large • Capacité de livrer du poisson vivant et frais dans un délai de 24 heures • Forte demande pour certaines espèces produites en Écosse • Potentiel de transformation à plus grande valeur ajoutée • Potentiel de diversification des espèces • Utilisation de nouvelles technologies	• Accroissement de la productivité des sites • Forte demande pour les mollusques et crustacés produits localement • L'AMTI pourrait accroître les possibilités de production de palourdes
Menaces	• Production réduite en raison de la maladie et du pou du poisson • Omission de continuer à améliorer la durabilité de la production pour l'avenir • Perception relative à la qualité du poisson sauvage • Économie stagnante	• Économie stagnante

Note : « FFPM » signifie forces, faiblesses, possibilités et menaces.

Source : Adapté de : Marine Scotland, ***An Assessment of the Benefits to Scotland of Aquaculture***, gouvernement de l'Écosse, avril 2014.

CHAPITRE 3 : Analyse comparative

3.1 Industrie : structure, production et répercussions

Le secteur piscicole en Norvège et en Écosse, de même qu'au Canada, a connu des changements structurels au cours des dernières années à la suite de la consolidation réalisée au moyen d'un certain nombre de fusions et de prises de contrôle. Ce changement a réduit le nombre d'entreprises exploitant le secteur. La consolidation du secteur a aidé les entreprises à réaliser des économies d'échelle et à renforcer leur position sur les marchés mondiaux. Quelques grandes entreprises norvégiennes sont des sociétés salmonicoles multinationales qui ont des activités en Écosse et au Canada (en C.-B.). Une grande entreprise canadienne qui exploite des installations salmonicoles dans les provinces de l'Atlantique a également des activités aquacoles en Écosse, ainsi qu'au Chili, en Espagne et aux États-Unis (Maine). Ces grandes entreprises salmonicoles sont toutes intégrées verticalement; elles possèdent des écloseries, des sites de grossissement, des usines d'aliments pour poissons, des usines de transformation et des activités de marketing. À titre comparatif, le secteur conchylicole de la Norvège, de l'Écosse et du Canada est demeuré fragmenté et compte un grand nombre d'entreprises, y compris de nombreuses entreprises familiales.

La production aquacole en Norvège est sept fois plus élevée que celle de l'Écosse et du Canada, en grande partie en raison de son grand volume de poissons à nageoires (voir le tableau 3.1). Le saumon de l'Atlantique représente 94 % de toute la production aquacole en Norvège, comparativement à 92 % en Écosse et à 58 % au Canada (89 % en C.-B., 84 % à T.-N.-L., 96 % au N.-B., et 74 % en N.-É.).

L'aquaculture est plus diversifiée au Canada qu'en Écosse et en Norvège, peut-être en raison des ses multiples écosystèmes marins propices à l'aquaculture qui se retrouvent dans deux océans distincts. La production de mollusques au Canada est 18 fois plus élevée qu'en Norvège et près de cinq fois plus élevée qu'en Écosse. En outre, le Canada a plus d'expérience en ce qui concerne les installations terrestres en parc clos commerciaux et l'AMTI que les deux autres pays.

La croissance de l'industrie aquacole est appuyée par le gouvernement de l'Écosse, qui vise à atteindre un volume de production de 210 000 tonnes de poissons et de 13 000 tonnes de mollusques d'ici 2020, ou une croissance annuelle globale de 5 %. Le gouvernement de la Norvège n'a pas fixé d'objectifs de production aquacole précis,

Tableau 3.1 – Volume de production aquacole (en tonnes métriques) en 2013

	Norvège	Écosse	Canada
Poisson	1 244 180	168 947	130 337
Mollusques et crustacés	2 363	8 981	41 760
Total	**1 246 544**	**177 928**	**172 097**

mais il s'est engagé à appuyer la croissance durable de l'industrie. Au Canada, les gouvernements n'ont pas adopté de cibles de production en aquaculture, à l'exception de T.-N.-L., où le gouvernement provincial vise à augmenter la production à 50 000 tonnes de salmonidés et à 6 000 tonnes de moules d'ici 2018.

Les gouvernements des trois pays reconnaissent l'apport de l'industrie aquacole dans le développement économique des régions rurales, plus particulièrement dans les collectivités côtières et insulaires, puisqu'elle offre des emplois bien rémunérés et assure la vitalité économique. La revitalisation est jugée particulièrement cruciale dans certaines régions où les autres occasions économiques sont généralement limitées. Les avantages économiques de l'industrie aquacole sont vastes et touchent l'ensemble des pays, même dans les régions qui ne sont pas traditionnellement associées à l'aquaculture. Dans les trois pays, il existe des possibilités d'expansion de l'industrie par l'établissement de nouveaux sites (côtiers ou extracôtiers) et la diversification des espèces d'élavage.

3.2 Cadre réglementaire

L'examen comparatif des lois et règlements qui régissent l'aquaculture en Norvège et en Écosse par rapport au cadre réglementaire de l'aquaculture au Canada permet de tirer certaines conclusions :

- L'aquaculture est généralement encadrée par plusieurs lois désignant de nombreux organismes réglementaires, et la gouvernance semble, par sa nature même, relativement complexe dans chacun des trois pays. La participation des différents ordres de gouvernement au Canada rend encore plus complexe cette situation et, du point de vue de l'industrie, le cadre réglementaire semble encombrant tant au cours du processus de demande de permis que dans le cadre des activités quotidiennes des installations aquacoles. Les lois nationales sur l'aquaculture en Norvège et en Écosse garantissent que les entreprises des différentes régions du pays sont visées de manière uniforme et cohérente par les mêmes règlements. Le Canada ne s'est pas doté d'une loi nationale de ce type.
- Comme le Canada, la réglementation de l'aquaculture en Norvège et en Écosse passe par l'octroi de permis. Selon ce modèle, les activités aquacoles sont interdites à moins qu'elles aient été approuvées par un permis. Une fois le permis octroyé, les activités doivent, conformément à la réglementation, respecter les exigences et les restrictions qui ont été ajoutées aux permis en particulier et/ou qui se trouvent dans les lois sur l'aquaculture, auquel cas elles s'appliquent à l'ensemble des détenteurs de permis visés par les lois.
- L'approbation de nouveaux sites d'aquaculture peut être un long exercice. L'absence d'un processus de demande simplifié est un problème souvent mentionné en Écosse et au Canada puisqu'il faut détenir plusieurs permis, baux et approbations afin d'exploiter une installation aquacole. On estime que le processus de demande d'un permis peut prendre de 18 mois à deux ans en Écosse et qu'il peut prendre deux ans ou plus au Canada. À titre comparatif, le processus d'approbation des activités aquacoles en Norvège est assujetti à un délai établi dans la loi, en l'occurrence 22 semaines.
- La durée des permis et des baux n'est pas la même entre les trois pays. En Norvège, le permis d'exploitation d'une installation aquacole n'expire jamais et peut être transféré. En Écosse, le bail d'exploitation dans les fonds marins a une durée de 25 ans, et le permis

d'aquaculture expire après quatre ans; le permis environnemental n'expire pas, mais il doit faire l'objet d'une évaluation obligatoire tous les quatre ans. Au Canada, la durée des baux, du permis d'aquaculture et des autres autorisations varient d'une province à l'autre. Par exemple, à T.-N.-L., le bail d'exploitation dans les fonds marins est valide pendant 50 ans, l'autorisation de navigation dure cinq ans, et le permis d'aquaculture expire après une année. En C.-B., la durée des baux varie de cing à 20 ans pour le secteur piscicole mais peut aller jusqu'à 30 ans pour le secteur conchylicole; le permis de navigation est accordé pour cinq ans, tandis que le permis d'aquaculture est présentement valide pour un an.

- Dans les trois pays, le permis d'aquaculture détermine la biomasse maximale autorisée par permis. Le maximum est fixé à 780 tonnes par permis dans tous les comtés de la Norvège, à l'exception de Troms et Finnmark, où il est fixé à 945 tonnes. En Écosse et au Canada, la biomasse maximale permise varie d'un site à l'autre et est déterminée en fonction des caractéristiques de chaque région géographique et incluse dans les documents relatifs au permis. Il existe toutefois un plafond à la biomasse maximale en Écosse, fixé à 2 500 tonnes.

3.3 Étude d'impact sur l'environnement et surveillance environnementale

En Norvège, le règlement oblige la tenue d'une EIE pour tout nouveau grand site d'activités salmonicoles. En Écosse, la SEPA peut être tenue de mener une EIE avant de déterminer si un permis CAR peut être octroyé. Toute nouvelle exploitation piscicole et tout agrandissement d'une telle exploitation existante doit faire l'objet d'une EIE par la SEPA lorsque l'exploitation est située dans une zone délicate, qu'elle est conçue pour garder une biomasse de 100 tonnes ou plus, ou qu'elle couvre 0,1 hectare ou plus d'eaux marines.

Au Canada, avant 2012, de nombreuses propositions d'activités aquacoles étaient assujetties aux EIE conformément à la *Loi canadienne sur l'*évaluation environnementale. Toutefois, des modifications apportées en 2012 à cette loi ainsi qu'à la *Loi sur la protection des eaux navigables* (maintenant appelée *Loi sur la protection de la navigation*) ont retiré l'obligation fédérale de tenir des EIE. Une EIE peut encore être exigée à la demande du ministre fédéral de l'Environnement ou des gouvernements provinciaux (au N.-B., à T.-N.-L., et à l'Î.-P.-É.). Les conditions permettant d'exiger la tenue d'une EIE par une province ne sont pas claires puisque les organismes de réglementation provinciaux s'en remettaient auparavant aux études fédérales pour relever les risques de répercussions environnementales considérables. Il semble que le *Loi sur la protection de l'environnement* de T.-N.- L. est la loi qui définit le plus clairement les situations où une EIE doit être effectuée dans le cas de proposition d'activités aquacoles.

Dans les trois pays, la surveillance environnementale des activités aquacoles est définie par les lois ou les règlements, est exhaustive (p. ex. analyse des sédiments du fond marin, analyse de l'eau, test sur les filets, recensement du pou du poisson, examen de la santé des poissons, recours aux traitements, etc.), et est menée régulièrement par les exploitants ainsi que par les organismes réglementaires afin d'assurer la conformité et l'application des dispositions. Ces mesures s'ajoutent aux pratiques aquacoles – mise en jachère, rotation des sites, production par classe d'âge unique, distances minimales obligatoires entre les sites – mises en place afin de prévenir les effets néfastes cumulatifs sur l'environnement et de restreindre la transmission de maladies.

Le pou du poisson et les évasions sont considérés comme les deux principaux défis environnementaux auxquels est confrontée l'industrie de l'aquaculture en Norvège et en Écosse. Au Canada, le pou du poisson, les maladies et les évasions (sur la côte Est) causent également de sérieuses préoccupations en ce qui concerne l'environnement. Les organismes de réglementation de l'aquaculture des trois pays sont d'avis que la durabilité environnementale est essentielle au développement et à la croissance à long terme de l'industrie.

3.4 Protection des populations de saumons atlantiques sauvages

La Norvège a établi 52 rivières à saumon nationales et 29 fjords à saumon nationaux. Dans ces régions, l'industrie salmonicole est assujettie à des règlements plus stricts. Toutes les activités aquacoles effectuées dans les fjords à saumon nationaux font l'objet d'un contrôle annuel. Dans la même veine, l'Écosse a introduit une présomption contre la poursuite de la salmoniculture en mer sur les côtes nord et est afin de protéger les espèces sauvages migratrices. Cette vaste zone couvre une grande proportion du littoral de l'Écosse ainsi que les bassins versants extrêmement productifs des rivières à saumons. Pour sa part, le Canada a établi 34 zones de gestion du saumon atlantique (ZGS), qui regroupent des rivières d'une même région aux fins de gestion des populations de poissons sauvages. On ne trouve des activités de salmoniculture marine que dans six des ZGS, soit la ZGS 23 au N.-B., la ZGS 11 à T.-N.-L., et les ZGS 19, 20, 21 et 22 en N.-É.[71].

3.5 Publication de l'information relative à l'industrie

En Norvège, l'Institut de médecine vétérinaire recueille régulièrement de l'information sur de nombreuses maladies et parasites qui touchent les poissons d'élevage et les poissons sauvages et rend publics ces renseignements chaque année. De plus, les données sur l'utilisation de médicaments par l'industrie aquacole sont publiées annuellement par l'Institut de santé publique de la Norvège. Les données sur les évasions de poisson des sites d'aquaculture sont publiées sur une base régulière par le Département des pêches et de l'aquaculture.

Le site Web de Scotland's Aquaculture, lancé en 2013, rend accessible l'information réglementaire au moyen d'un outil de recherche et d'une carte interactive. Une vaste gamme de renseignements y sont accessibles, notamment l'emplacement de l'industrie, des rapports sur les activités contrôlées, des données mensuelles sur la biomasse, les évasions, les résidus des produits de traitement contre le pou du poisson ajouté à la nourriture. En outre, la Direction de la santé des poissons divulgue proactivement des données sur les activités opérationnelles sur son site Web.

Au Canada, compte tenu de la séparation des compétences en matière d'aquaculture entre le gouvernement fédéral et les provinces, il n'existe pas d'organisme unique publiant de l'information au sujet de l'industrie. Les données publiées et la portée de l'information rendue disponible varient d'une province à l'autre. De manière générale, on s'inquiète au Canada du manque de communication des renseignements concernant l'industrie aquacole, plus particulièrement en ce qui a trait aux éclosions de maladies, à l'utilisation de produits chimiques, aux évasions et aux répercussions sur l'environnement benthique. On fait également valoir que, lorsque de l'information est rendue disponible, la publication ne se fait pas assez rapidement. Le MPO essaie dans une certaine mesure

71 MPO, ***Focus Area Report on Aquaculture, Introductions and Transfers, and Transgenics***, janvier 2010, p. 19.

de régler ce problème. Selon le Règlement proposé sur les activités d'aquaculture, les exploitants aquacoles seraient tenus de présenter des rapports annuels sur l'utilisation de médicaments et de produits de lutte antiparasitaire, les raisons pour lesquelles ils sont utilisés, la date de leur application et la quantité utilisée ainsi qu'un document détaillant les méthodes de traitement de substitution envisagées et les résultats des analyses des sédiments pour les sites piscicoles au-dessus d'un fond meuble. Le règlement obligerait également la surveillance des répercussions des activités aquacoles sur les habitats du poisson et définirait les conditions dans lesquelles les échantillons doivent être prélevés et analysés en ce qui concerne les produits de lutte antiparasitaire en cas de morbidité ou de mortalité inhabituelle. Ces renseignements seraient présentés annuellement au MPO et rendus publics. Cette approche s'ajouterait aux renseignements qui sont déjà publiés sur les sites Web des organismes réglementaires provinciaux ainsi que sur le site Web du MPO en ce qui concerne l'aquaculture de la C.-B.

3.6 Recherche

Tout au long des audiences publiques et des missions d'étude du Comité, on a répété que, au Canada et ailleurs dans le monde, l'avenir de l'aquaculture repose sur les recherches visant à établir des méthodes de production à la fois efficientes et durables sur le plan de l'environnement. Par conséquent, les gouvernements doivent s'assurer que la gestion durable des activités aquacoles est fondée sur des données scientifiques, et l'industrie doit activement participer aux efforts de recherche et de développement en matière de durabilité environnementale. Cet objectif ne peut être atteint que par la collaboration entre les scientifiques et les chercheurs des ministères, des établissements universitaires et de l'industrie.

En Norvège, il y a toujours eu une étroite collaboration entre l'industrie, les organismes de réglementation et le milieu universitaire en recherche sur l'aquaculture. Le Comité a appris que la coopération et l'échange d'information entre le gouvernement, les chercheurs et l'industrie contribuent à faire de l'aquaculture norvégienne un secteur de pointe innovateur. Les résultats des efforts de recherche collaboratifs sont appliqués afin de réformer le régime réglementaire et de modifier les pratiques de production. L'Écosse, à l'instar de la Norvège, vise à encourager la collaboration entre les universités, les entreprises et d'autres intervenants dans la recherche en aquaculture. Elle a récemment inauguré le Scottish Aquaculture Innovation Centre, où l'industrie et le milieu universitaire travaillent de concert pour trouver des solutions innovatrices afin d'établir les conditions qui favoriseront la croissance économique et la durabilité de l'industrie.

On trouve également de solides fondements pour la recherche en aquaculture au Canada. À l'échelle fédérale, plusieurs ministères et organismes financent la recherche sur l'aquaculture ou en mènent eux-mêmes. Au MPO, près de la moitié du budget du Programme d'aquaculture durable est affecté à la recherche. Au cours de ses missions d'étude au Canada, le Comité a visité plusieurs établissements de recherche où l'on mène des activités de recherche et de développement de classe mondiale sur une foule de domaines liés à l'aquaculture. On a souvent fait valoir au Comité la nécessité d'encourager la coopération et la collaboration entre les différents intervenants du secteur. Il y a lieu de noter la priorité que l'on accorde à la recherche à T.-N.-L. dans le cadre de la stratégie provinciale sur l'aquaculture lancée en 2014 : un comité consultatif a été créé afin qu'il évalue les activités de recherche en cours dans la province et formule des recommandations pour renforcer la collaboration au sein de la communauté de chercheurs.

3.7 Acceptation sociale

La Norvège, l'Écosse et le Canada sont tous trois confrontés aux mêmes problèmes environnementaux dans le secteur de l'aquaculture, notamment la production de déchets organiques, les maladies, l'utilisation de médicaments et de produits chimiques, les évasions de poissons des sites d'aquaculture, la gestion de la biosalissure et la durabilité des ingrédients de la nourriture. Il est clair que les trois pays cherchent à établir un équilibre entre la croissance d'une industrie aquacole viable d'une part et la protection environnementale et l'acceptation sociale à l'échelle locale et régionale d'autre part. Par exemple, les concessions écologiques octroyées aux producteurs de saumons en Norvège visent à encourager le développement de méthodes de production écologiques, comme le recours à d'autres types de nourriture, à des poissons-nettoyeurs, à des bâches, aux cages à tuba. En Écosse, le gouvernement appuie les méthodes de production jugées écologiques, comme l'utilisation de poissons-nettoyeurs et l'AMTI, tout en élaborant une charte sur les avantages communautaires qui présentera en détail les bienfaits de l'aquaculture à l'échelle locale et en fera la promotion. En outre, le gouvernement de l'Écosse en est à l'élaboration de plans de développement marins qui visent à mieux intégrer l'aquaculture aux pêches commerciales et récréatives. Au Canada, de vastes processus de consultation publique ont été effectués en 2014 à T.-N.-L. et en N.-É. afin de mettre en œuvre de nouveaux régimes de réglementation de l'aquaculture qui encourageront le développement de l'aquaculture tout en améliorant l'acceptation sociale de l'industrie.

CONCLUSION

L'aquaculture, en tant qu'industrie, est bien établie en Norvège et en Écosse depuis le début des années 1970. À de nombreux égards, les industries aquacoles de ces deux pays – leur structure et leur cadre de gouvernance – sont comparables à celle du Canada. L'industrie aquacole canadienne est néanmoins plus jeune et assujettie à un cadre réglementaire plus complexe découlant des lois et règlements adoptés par deux ordres de gouvernement. Le cadre de gouvernance de l'aquaculture au Canada semble plus complexe puisque la séparation des rôles et des responsabilités entre le gouvernement fédéral et les gouvernements provinciaux varie d'une province à l'autre. Malgré ces différences, le Canada a l'occasion de tirer des leçons de l'évolution de la réglementation et du fonctionnement de l'industrie en Norvège et en Écosse. Le Comité a étudié avec attention la situation en Norvège et en Écosse lorsqu'il a formulé des recommandations sur le cadre de gouvernance de l'aquaculture au Canada.

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VOLUME TROIS – UN OCÉAN DE POSSIBILITÉS : L'aquaculture au Canada

Comité sénatorial permanent des pêches et des océans

L'honorable Fabian Manning
Président

L'honorable Elizabeth Hubley
Vice-présidente

Juin 2016



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ORDRE DE RENVOI

Extrait des *Journaux du Sénat* du lundi 9 décembre 2013 :

L'honorable sénateur Manning propose, appuyé par l'honorable sénatrice Unger,

Que le Comité sénatorial permanent des pêches et des océans soit autorisé à étudier, afin d'en faire rapport, la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada;

Que les documents reçus, les témoignages entendus et les travaux accomplis par le comité à ce sujet au cours de la première session de la quarante et unième législature soient renvoyés au comité;

Que le comité fasse de temps à autre rapport au Sénat, mais au plus tard le 30 juin 2015, et qu'il conserve tous les pouvoirs nécessaires pour diffuser ses conclusions dans les 180 jours suivant le dépôt du rapport final.

La motion, mise aux voix, est adoptée.

Gary W. O'Brien

Greffier du Sénat

TABLE DES MATIÈRES

LISTE DES ACRONYMES

ACIA	Agence canadienne d'inspection des aliments
AICA	Alliance de l'industrie canadienne de l'aquaculture
AIS	Anémie infectieuse du saumon
AMTI	Aquaculture multitrophique intégrée
APECA	Agence de promotion économique du Canada atlantique
ARLA	Agence de réglementation de la lutte antiparasitaire
AVC	Collège vétérinaire de l'Atlantique (Université de l'Île-du-Prince-Édouard)
BC CAHS	BC Centre for Aquatic Health Sciences
C.-B.	Colombie-Britannique
CAHS:	Centre for Aquatic Health Sciences (Université de l'Île-du-Prince-Édouard)
CCMPA	Conseil canadien des ministres des Pêches et de l'Aquaculture
CITES	Convention sur le commerce international des espèces de faune et de flore sauvages menacées d'extinction
CNRC	Conseil national de recherches du Canada
COSEPAC	Comité sur la situation des espèces en péril au Canada
CPANO	Centre des pêches de l'Atlantique du nord-ouest (MPO, région de Terre-Neuve-et-Labrador)
CRSNG	Conseil de recherches en sciences naturelles et en génie
EAE	Espèce aquatique envahissante
ETP	Équivalent temps plein
HSMI	Inflammation des muscles squelettiques et cardiaques
Î.-P.-É.	Île-du-Prince-Édouard
INPASA	Initiative nationale pour des plans d'action stratégiques en aquaculture
LAD	*Loi sur les aliments et drogues*
LPA	*Loi sur les produits antiparasitaires*
MPO	Ministère des Pêches et des Océans Canada
N.-B.	Nouveau-Brunswick
N.-É.	Nouvelle-Écosse
NHI	Nécrose hématopoïétique infectieuse
ON	Ontario
OSC	Ocean Sciences Centre (Université Memorial de Terre-Neuve-et-Labrador)
PARI	Programme d'aide à la recherche industrielle
PCCSM	Programme canadien de contrôle de la salubrité des mollusques
PCRDA	Programme coopératif de recherche-développement en aquaculture
PE	Protocole d'entente
PIAAM	Programme d'innovation en aquaculture et d'accès au marché
PIB	Produit intérieur brut
PME	Petite et moyenne entreprise

PNSAA	Programme national sur la santé des animaux aquatiques
PRRA	Programme de recherche sur la réglementation de l'aquaculture
QC	Québec
RAA	*Règlement sur les activités d'aquaculture*
RCAMTI	Réseau canadien d'aquaculture multitrophique intégrée
R-D	Recherche et développement
RLE	Région des lacs expérimentaux (Ontario)
RVP	Réovirus pisciaire
SBSA	Station biologique de St. Andrews (Nouveau-Brunswick)
SAR	Système d'aquaculture en recirculation
T.-N.-L.	Terre-Neuve-et-Labrador
UMEM	Utilisations mineures et espèces mineures
UNFAO	Organisation des Nations Unies pour l'alimentation et l'agriculture
ZGB	Zone de gestion des baies
ZGS	Zone de gestion du saumon

SOMMAIRE EXÉCUTIF

Le message principal de ce rapport est qu'il y a un océan de possibilités pour l'aquaculture au Canada. Notre pays possède le plus long littoral maritime au monde, le plus grand nombre de lacs d'eau douce, une industrie aquacole diversifiée, un solide régime réglementaire et un secteur de recherche aquacole de calibre mondial. Le Canada est donc bien placé pour répondre à la demande mondiale croissante pour les poissons et les fruits de mer et pour le faire de manière durable sur le plan environnemental, économique et social. Le Comité appuie l'objectif visant à doubler la production aquacole canadienne au cours de la prochaine décennie. Afin d'appuyer cette croissance durable, nous proposons un ensemble de recommandations qui s'articulent autour de cinq grands thèmes : cadre législatif et réglementaire; santé des poissons d'élevage; écosystèmes sains et productifs; recherche et développement; et acceptation sociale et présentation de rapports destinés au public.

Cadre législatif et réglementaire

Cadre de réglementation fédéral

L'aquaculture est une industrie à multiples facettes et son cadre de gouvernance est relativement complexe. Cette réalité s'observe autant en Norvège et en Écosse qu'au Canada. Cela dit, les lois nationales encadrant l'aquaculture en Norvège et en Écosse font en sorte que les entreprises situées à différents endroits dans ces pays sont visées par un ensemble de règlements uniforme et cohérent. Au Canada, il n'existe pas de telle loi sur l'aquaculture à l'échelon fédéral. La loi norvégienne promeut le développement de l'aquaculture et la politique écossaise vise des cibles de production aquacole à atteindre d'ici 2020. Le gouvernement fédéral n'a pas adopté de cible de production aquacole pour le Canada. De plus, la loi norvégienne assujettit le processus d'approbation des activités aquacoles à un délai total de 22 semaines et un guichet unique coordonne le travail de tous les organismes réglementaires. Par comparaison, l'absence d'un processus de demandes simplifié est un problème que l'on soulève souvent en Écosse et au Canada, où il faut obtenir séparément plusieurs permis, baux et approbations avant de pouvoir établir une opération aquacole. Selon les estimations, le processus de demande peut prendre de 18 mois à deux ans en Écosse et dure plus de deux ans au Canada.

La participation des différents ordres de gouvernement au Canada rend le cadre de gouvernance de l'aquaculture au pays plus complexe que celui en place en Norvège et en Écosse. La décision rendue par la Cour Suprême de la Colombie-Britannique (la décision *Morton*) a exacerbé la situation, créant deux réalités constitutionnelles au Canada en ce qui a trait à l'aquaculture. La cour a déterminé que l'aquaculture constitue une forme de pêche et, par conséquent, relève de la compétence fédérale; cette décision n'a pas été portée en appel à la Cour Suprême du Canada et Pêches et Océans Canada (MPO) a pris le *Règlement du Pacifique sur l'aquaculture* qui régit la plupart des aspects de l'industrie aquacole dans cette province. Ailleurs au pays, aucun litige semblable à l'affaire *Morton* n'a été porté devant les tribunaux et la division des responsabilités entre le fédéral et chaque province concernant la réglementation des différents aspects de l'aquaculture est définie par des protocoles d'entente (PE) bilatéraux.

Par conséquent, l'étendue du pouvoir du gouvernement fédéral en matière de réglementation de l'aquaculture au Canada restera une question de droit non résolue tant que la Cour Suprême du Canada n'aura pas statué à ce sujet. Quoique nous comprenions qu'il n'est pas possible d'établir un régime de réglementation de l'aquaculture clair et uniforme qui s'appliquerait à l'échelle du pays, nous sommes convaincus qu'un rôle fort du gouvernement fédéral est nécessaire

pour améliorer le cadre de gouvernance de l'aquaculture au pays et stimuler l'investissement. Nous estimons qu'il est impératif d'adopter une loi fédérale sur l'aquaculture. La nouvelle loi exprimera un soutien fort du gouvernement fédéral pour l'aquaculture, reconnaîtra la légitimité de l'industrie et soulignera son importante contribution au développement économique des collectivités rurales et côtières. En consolidant les règlements pertinents, la loi clarifiera le rôle fédéral en ce qui a trait à l'aquaculture et, en particulier, elle précisera comment la *Loi sur les pêches* s'applique à l'aquaculture. Le Comité propose aussi que la loi accorde au gouvernement fédéral un pouvoir de véto qui lui permette de freiner un développement dans un site potentiellement inapproprié et qu'elle soit administrée par le MPO. Nous proposons aussi la création d'un nouvel organisme au sein du MPO qui sera chargé de la coordination des activités de tous les ministères et agences qui régissent l'industrie, pour établir un cadre de réglementation simplifié et efficient. Enfin, la loi établira des délais pour les différentes décisions devant être rendues par les organismes fédéraux relativement aux autorisations visant les opérations aquacoles et elle contiendra des dispositions relatives aux statistiques sur l'aquaculture et la présentation de rapports publics sur l'industrie.

Collaboration entre le gouvernement fédéral et les gouvernements provinciaux

Les activités aquacoles sont diverses et le gouvernement responsable de leur gouvernance – soit le gouvernement fédéral, le gouvernement provincial ou les deux – varie selon l'aspect des opérations. En outre, le partage des rôles et des responsabilités varie d'une province à l'autre puisque le gouvernement fédéral a conclu des PE sur la gestion de l'aquaculture avec chacune des provinces. On a indiqué à plusieurs reprises au Comité au cours de ses missions d'étude au Canada que le degré de chevauchement et de confusion et l'absence d'uniformité dans la gouvernance de l'aquaculture prennent une tout autre ampleur lorsqu'ils sont examinés du point de vue du partage des responsabilités entre le gouvernement fédéral et les provinces. On a expliqué qu'il est possible de réduire les chevauchements si les ministères et organismes provinciaux et fédéraux communiquent l'information entre eux et s'ils établissent des programmes équivalents selon lesquels, par exemple, des échantillons pris aux fins de contrôle seraient testés localement pour le compte du gouvernement fédéral et du gouvernement provincial concerné. Ces PE bilatéraux ont été signés vers la fin des années 1980, alors que l'industrie aquacole commençait tout juste à s'établir au Canada. En C.-B., le PE a été revu en 2010, à l'issue de la décision *Morton*, selon laquelle l'aquaculture est une activité de pêche et, par conséquent, est de compétence fédérale. Le Comité est d'avis qu'il est temps pour le gouvernement fédéral de renégocier les PE avec chacune des provinces. Il devrait y apporter des modifications en fonction de l'éventuelle loi fédérale sur l'aquaculture tout en cernant les parties du cadre réglementaire et stratégique devant être harmonisées de manière à s'assurer que les activités de réglementation du gouvernement fédéral et de chaque province sont coordonnées et cohérentes.

Au cours des cinq dernières années, le Conseil canadien des ministres des Pêches et de l'Aquaculture (CCMPA) a travaillé, dans le cadre de l'Initiative nationale pour des plans d'action stratégiques en aquaculture (INPASA), à surmonter certains défis associés au cadre de gouvernance de l'aquaculture. L'initiative était un plan ambitieux et, même si certains objectifs ont été atteints, il reste encore bien du travail à accomplir. Cinq ans après son lancement, l'INPASA n'a rien accompli relativement à l'un des principaux obstacles à la croissance de l'industrie au Canada, à savoir le

manque d'uniformité de gouvernance fédérale et provinciale. L'initiative se terminera à la fin 2015, mais le Comité estime que son mandat devrait être prolongé et davantage ciblé. Elle devrait accorder la priorité à des préoccupations soulevées à plusieurs reprises au cours des audiences, notamment la longueur du processus de soumission et d'évaluation des demandes de sites; l'absence d'uniformité entre les provinces en ce qui a trait à la durée des permis, des baux et d'autres approbations nécessaires pour exploiter un site aquacole; et les situations qui entravent l'efficacité opérationnelle (par exemple la nécessité d'obtenir une approbation avant de modifier la taille des filets, l'orientation des cages ou l'emplacement du matériel de surveillance).

Santé des poissons d'élevage

Santé des poissons à nageoires

La santé des poissons est la principale priorité de toute opération aquacole. Les poissons introduits dans les sites de grossissement sont exempts de maladies et de parasites. Après l'introduction, une multitude de mesures préventives sont prises pour assurer la santé des poissons d'élevage, notamment la vaccination, le choix des sites, la biomasse maximale permise, les plans de gestion de la santé des poissons, les pratiques de biosécurité et les zones de gestion des baies. L'introduction d'agents pathogènes dans les sites de grossissement pourrait survenir en raison de poissons sauvages infectés ou d'équipement contaminé. Par conséquent, les opérateurs aquacoles doivent avoir accès à des produits chimiothérapeutiques pour atténuer les répercussions des agents pathogènes.

Le Comité a appris que les aquaculteurs canadiens n'ont pas accès à l'ensemble des produits antiparasitaires et aux médicaments vétérinaires que peuvent utiliser leurs homologues dans d'autres pays, y compris la Norvège et l'Écosse, et se retrouvent donc désavantagés sur les marchés mondiaux. On a expliqué que les marchés pour ces produits sont trop petits au Canada pour permettre à un fabricant de médicaments de recouvrer les coûts fixes associés à leur mise au point, leur approbation et leur commercialisation. Nous avons appris que si l'on classifie les produits visant les animaux aquatiques sous le modèle des « utilisations mineures et espèces mineures » (UMEM), on réduirait les coûts associés au processus d'enregistrement et d'approbation des produits, ce qui accélèrerait leur approbation et mise en marché sans miner leur innocuité. La santé des poissons constitue le fondement de l'industrie aquacole et, pour cette raison, nous estimons que l'industrie canadienne doit avoir un accès plus facile et rapide aux produits antiparasitaires et aux médicaments par l'entremise d'un programme UMEM pour l'aquaculture.

Le Comité a également appris que le pou du poisson constitue une préoccupation en salmoniculture partout dans le monde. Le parasite s'attache au poisson et cause des dommages directs en se nourrissant du corps de son hôte et des dommages indirects en rendant son hôte vulnérable aux infections secondaires. Le risque de réduction de l'efficacité des médicaments et le désir de limiter la dépendance aux produits chimiothérapeutiques ont mené à l'élaboration de plusieurs technologies non chimiques de gestion du pou du poisson, notamment les poissons-nettoyeurs, les cages à tuba, l'AMTI et l'élimination mécanique. Nous sommes d'avis que la recherche sur l'épidémiologie du pou du poisson et sur l'efficacité des méthodes non chimiques doit se poursuivre. Plus important encore, il faut encourager l'utilisation de méthodes non chimiques éprouvées et n'avoir recours aux médicaments et aux produits antiparasitaires qu'à l'occasion.

Aliments pour poissons

On nourrit les poissons à nageoires d'élevage à l'aide de granules spécialement conçues pour satisfaire leurs besoins alimentaires et favoriser une croissance et un état de santé optimaux. L'annexe 5 des règlements établis en vertu de la *Loi relative aux aliments du bétail*, qui relève de l'ACIA, dresse la liste des additifs ou ingrédients qui peuvent être utilisés dans les aliments pour poissons. Le Comité a appris qu'un certain nombre d'additifs pour les aliments pour poissons ne sont pas permis au Canada alors qu'ils le sont dans d'autres pays, comme la Norvège et l'Écosse. Les poissons dont la nourriture contenait ces ingrédients peuvent être importés pour consommation au Canada, ce qui, selon plusieurs témoins, est illogique. En outre, certains des additifs stimulent le système immunitaire des poissons et augmentent la résistance du saumon au pou du poisson. Le Comité est d'accord avec les témoins qui sont d'avis qu'il existe des incohérences dans le cadre de gouvernance fédéral de l'aquaculture. À notre avis, la réglementation actuelle sur les additifs aux aliments pour poissons entrave l'innovation et l'amélioration des régimes alimentaires et fait obstacle à la compétitivité de l'industrie sur les marchés mondiaux; elle doit être modifiée.

Santé des mollusques et des crustacés

Le Comité a appris que plusieurs opérations conchylicoles sur les côtes Est et Ouest sont aux prises avec des espèces aquatiques envahissantes (EAE), comme le crabe européen, l'ascidie plissée et l'ascidie jaune. Certaines de ces EAE se nourrissent directement des mollusques et crustacés d'élevage, tandis que d'autres les supplantent pour l'habitat et les ressources. Les EAE ont des répercussions sur la croissance et le rendement en chair et engendrent des coûts d'entretien et de main-d'œuvre supplémentaires pour les producteurs et les transformateurs.

On a fait valoir au Comité que, dès qu'une espèce envahissante s'établit dans une région, il est essentiel d'élaborer des technologies et des pratiques novatrices pour en assurer efficacement la gestion. Nous appuyons cette suggestion. À notre avis, il est particulièrement important de mettre rapidement en place des mesures d'intervention dès les premières phases d'une invasion.

Écosystèmes sains et productifs

Répercussions environnementales de la pisciculture en mer

On a expliqué au Comité que, en raison de l'exploitation de sites piscicoles marins, des matières organiques sont rejetées dans les eaux environnantes. Certaines de ces matières se déposent sur le fond marin ou près des sites, où elles s'accumulent, alors que d'autres sont dispersées dans la colonne d'eau, ce qui répand des matières organiques bien au-delà du périmètre du site aquacole. Ainsi, les opérations aquacoles ont à la fois des effets à proximité (circonscrits) et des effets à très grande distance (lointains). Selon des recherches menées au Canada et en Norvège, l'aquaculture a peu de répercussions sur l'environnement benthique, plus particulièrement à proximité des sites. Les effets à très grande distance, par contre, prennent du temps à se faire sentir et sont plus difficiles à déceler; ils sont donc moins bien compris. Le Comité considère que ces effets, qui peuvent comprendre des changements dans les communautés planctoniques aux alentours des sites aquacoles et l'eutrophisation, doivent faire l'objet d'études approfondies.

Le Comité a aussi pris connaissance de préoccupations concernant les effets potentiels des produits antiparasitaires sur les espèces non visées, plus particulièrement sur le homard. Jusqu'à maintenant, les recherches ont montré que la dilution, la dispersion et la toxicité des

produits antiparasitaires varient selon le produit antiparasitaire utilisé, la méthode de traitement appliquée et le débit de circulation de l'eau. Même si nous recommandons un accès à une plus grande gamme des produits par l'intermédiaire d'un programme UMEM, nous sommes également d'avis qu'il faudra mener davantage d'études sur les effets de ces produits sur les espèces non visées.

Répercussions sur les stocks de saumons sauvages

On a discuté en profondeur des évasions de poissons d'élevage et de leurs répercussions sur les stocks de poissons sauvages au cours de l'étude du Comité. Sur la côte Ouest, nous avons appris que le risque que posent les évasions de saumon atlantique d'élevage pour les stocks de saumons du Pacifique sauvages est faible; le saumon atlantique d'élevage et le saumon du Pacifique sauvage ont peu d'interactions, qu'il s'agisse de compétition pour l'habitat ou la nourriture ou de relation prédateur-proie. En outre, il n'a pas été prouvé que les saumons atlantiques d'élevage qui s'enfuient parviennent à se reproduire avec des saumons du Pacifique sauvages.

Sur la côte Est, toutefois, les recherches montrent que les saumons atlantiques qui s'enfuient parviennent à se reproduire avec les saumons sauvages de leur espèce, et que les croisements réduisent la capacité de survie en milieu sauvage de la nouvelle génération. Les grandes populations de poissons sauvages (et, par conséquent, les populations en santé) se sont montrées plus résilientes et, donc, moins touchées par les évasions de saumons d'élevage. À l'inverse, les populations sauvages fragiles (comme les espèces en voie de disparition ou menacées) étaient plus vulnérables aux évasions de saumons et portaient plus de signes de modifications génétiques découlant de croisements. Bien que le Comité encourage la croissance durable de l'industrie aquacole au Canada, il estime que cette croissance ne doit pas se faire au détriment des stocks de saumons sauvages. Il y a donc lieu d'envisager des restrictions pour veiller à ce que les opérations aquacoles faisant l'élevage du saumon atlantique soient situées loin des populations de saumons sauvages à risque. Nous avons été heureux d'apprendre que le MPO a mis sur pied le Comité consultatif ministériel sur le saumon de l'Atlantique afin de mieux comprendre la santé des populations de saumons sauvages sur la côte Est. Les renseignements recueillis aideront le MPO et l'industrie aquacole à réévaluer, si nécessaire, l'emplacement et le fonctionnement des opérations aquacoles consacrées à l'élevage du saumon atlantique ainsi qu'à déterminer les risques associés aux propositions de sites aquacoles.

Des témoins ont souligné le risque de transmission de maladies et de parasites entre les poissons d'élevage et les poissons sauvages sur la côte Ouest. On a discuté des effets des infestations au pou du poisson dans les populations de saumons sauvages. Certains témoins ont soulevé des préoccupations concernant le passage de saumoneaux à proximité des sites de grossissement aquacoles au cours de leur migration en mer. Ils ont expliqué que, à cette étape de leur croissance, les poissons sont très petits et n'ont pas encore d'écailles : il suffit d'un pou du poisson ou deux pour tuer un saumoneau ou le mutiler et le rendre vulnérable aux prédateurs et autres agents pathogènes. En revanche, selon une étude présentée au Comité, le pou du poisson chez les poissons d'élevage n'a pas contribué de manière considérable au déclin de la productivité du saumon du Pacifique sauvage. D'autres spécialistes ont expliqué que le risque de transmission de maladie des poissons d'élevage aux poissons sauvages est faible : les maladies provenant des sites aquacoles tuent moins de 1 % des saumons sauvages par année. Ce taux, a-t-on indiqué, se situe bien en dessous du taux de mortalité naturelle des saumoneaux sauvages, qui est évalué à 3 % par jour. Globalement, le Comité reconnaît qu'il y a des

lacunes dans les connaissances sur la santé des stocks de saumons du Pacifique sauvage. Nous avons été heureux d'en apprendre sur l'Initiative stratégique visant la santé du saumon, une étude collaborative menée par le MPO, la Fondation du saumon du Pacifique et Genome BC, qui vise à déterminer la présence ou l'absence de 45 agents pathogènes dans des échantillons recueillis sur des saumons sauvages, des saumons dans des écloseries et des saumons d'élevage en C.-B. entre 2012 et 2018. Le Comité est d'avis que les conclusions de cette recherche seront utiles pour l'évaluation des risques liés à la transmission d'agents pathogènes des saumons d'élevage aux saumons sauvages.

Répercussions environnementales de la conchyliculture

Comparativement à la pisciculture en mer, le Comité a entendu un moins grand nombre de témoignages sur les répercussions environnementales potentielles de la conchyliculture. Toutefois, les témoins qui ont abordé la question ont soulevé des préoccupations importantes. En C.-B., certaines opérations conchylicoles produisent un grand volume de déchets, comme du plastique et du Styrofoam®, qu'elles rejettent dans l'eau ou sur les berges. En outre, lorsque des opérations se terminent dans certains secteurs, le matériel et l'équipement sont abandonnés dans les eaux plutôt que d'être retirés. Bien que ces opérations ne constituent qu'un nombre limité parmi les conchyliculteurs canadiens, leurs actions minent la réputation et l'acceptation sociale des conchyliculteurs qui utilisent l'environnement avec vigilance et qui tiennent compte des autres utilisateurs du milieu. Le Comité ne saurait, en toute conscience, tolérer les opérations qui posent ce type d'actions. Le MPO est responsable de l'octroi de permis pour la conchyliculture en C.-B. et, par conséquent, nous recommandons au Ministère de faire respecter rigoureusement les conditions des permis et les dispositions du *Règlement du Pacifique sur l'aquaculture*. À notre avis, les débris sur les sites aquacoles devraient être gérés de façon appropriée dans tous les secteurs de l'industrie – qu'il s'agisse de la conchyliculture ou de la pisciculture – et dans tous les régions du pays – sur la côte Ouest comme sur la côte Est.

Recherche et développement

Recherche collaborative

La recherche et le développement (R-D) sur l'aquaculture au Canada reposent sur des bases solides. À l'échelon fédéral, plusieurs ministères et organismes financent et réalisent des études sur l'aquaculture ou y collaborent. Dans le cadre de ses visites partout au Canada, le Comité s'est rendu dans plusieurs centres de recherche qui effectuent depuis des décennies des travaux de R-D de calibre mondial sur un large éventail de sujets liés à l'aquaculture. Ces travaux ont contribué à améliorer le rendement environnemental de l'industrie et ont mené à un resserrement de la réglementation par les gouvernements. Au cours de nos missions d'étude en Norvège et en Écosse, nous avons appris que le Canada est reconnu à l'échelle internationale pour la grande qualité de ses travaux de R-D dans le domaine aquacole, mais qu'il est possible de rehausser ces travaux grâce à une collaboration encore plus étroite.

Des témoins ont indiqué au Comité que le gouvernement fédéral a réduit les montants qu'il investit dans les programmes de R-D sur l'aquaculture au cours des dernières années. Puisque les ressources sont limitées, nous jugeons qu'il est essentiel d'accorder la priorité aux recherches visant à améliorer la gestion et le rendement environnemental dans l'industrie aquacole. En outre, le financement devrait en priorité être accordé aux travaux menés en collaboration. Pour faciliter cette collaboration

nous recommandons la mise en place d'un mécanisme officiel favorisant la recherche collaborative parmi tous les intervenants. Ce mécanisme favorisera la prospérité d'une industrie aquacole durable.

Synthétiser et communiquer les résultats des recherches

Au cours des audiences du Comité, des témoins ont signalé à plusieurs reprises qu'il faut faire une synthèse des résultats des recherches. Ils ont expliqué que, bien que de nombreuses études aient été réalisées sur les effets possibles de l'aquaculture sur l'environnement au Canada et à l'étranger, les résultats n'ont jamais été compilés, synthétisés et interprétés pour donner une « vue d'ensemble » de l'industrie. Bien que complexe, un tel exercice permettrait de relever les lacunes en matière de R-D et les questions qui doivent être approfondies. En outre, on a indiqué au Comité que les résultats d'un tel exercice devraient être communiqués au grand public d'une manière facilement assimilable. Le Comité estime que ces renseignements pourraient éclairer les discussions et les débats sur l'aquaculture et aider tout un chacun à mieux comprendre comment l'industrie peut poursuivre ses activités et continuer de croître de manière viable dans les années à venir.

Acceptation sociale et rapports publics

Rapports à l'intention du public

Dans certaines régions du pays, le public demeure très inquiet des effets possibles de l'aquaculture sur l'environnement, de sorte que l'industrie n'y est pas bien acceptée. Certaines de ces préoccupations sont fondées et découlent de pratiques irresponsables ou d'une gestion inadéquate. Le fait de corriger ces erreurs du passé contribuera certes à accroître l'acceptation sociale. Pour sa part, l'industrie doit se montrer socialement responsable et être en mesure de prouver que ses pratiques sont viables.

Le gouvernement doit adopter et appliquer un cadre de gouvernance rigoureux fondé sur la science pour protéger les ressources précieuses – comme les stocks de saumons sauvages, les autres espèces de poissons sauvages et les habitats fragiles – et les préserver dans les années à venir.

Le gouvernement peut également gagner la confiance du public en donnant ouvertement des informations sur l'industrie aquacole et en divulguant des données sur le rendement environnemental des entreprises. Par exemple, la Norvège et l'Écosse divulguent de l'information au public sur une foule de sujets liés à l'aquaculture; cette pratique renforce l'acceptation sociale de l'industrie. Il est intéressant de noter que les principaux ministères et organismes écossais responsables de la réglementation de l'aquaculture ont collaboré pour mettre sur pied un site Web permettant d'accéder à toutes les données sur l'aquaculture. À titre comparatif, aucun organisme unique au Canada ne communique au public des renseignements sur l'industrie aquacole. Les renseignements disponibles se trouvent à différents endroits; ils ne sont pas publiés en temps opportun et ont une portée très restreinte comparativement aux renseignements disponibles en Norvège et en Écosse. Selon le *Règlement sur les activités aquacoles* proposé, le MPO recueillera et publiera chaque année des données sur la surveillance de l'environnement benthique ainsi que sur l'utilisation de médicaments vétérinaires et de produits antiparasitaires dans les opérations aquacoles. Cependant, ces données seront agrégées et ne seront pas disponibles pour chaque opérateur. Les ministères et organismes de réglementation provinciaux publieront également d'autres renseignements sur les opérations aquacoles. Le Comité veut s'assurer que les Canadiens qui désirent s'informer sur les opérations aquacoles peuvent trouver les renseignements voulus à partir d'un guichet unique pratique et fait une recommandation dans ce sens.

LISTE DES RECOMMANDATIONS

CADRE LÉGISLATIF ET RÉGLEMENTAIRE

1. **Que Pêches et Océans Canada dépose une Loi fédérale sur l'aquaculture qui réponde aux préoccupations soulevées pendant l'étude du Comité et qui affirme la pleine étendue de la juridiction fédérale. Le Comité recommande aussi que la Loi comprenne ce qui suit :**

- **un préambule fort exprimant le soutien du gouvernement fédéral en faveur de l'expansion méthodique d'une industrie aquacole durable sur le plan environnemental, économique et social et reconnaissant le potentiel important de contribution économique que génère l'industrie dans les collectivités éloignées, rurales et côtières partout au pays, y compris les Premières nations;**

- **une consolidation des règlements en place et des projets de règlements fédéraux qui encadrent l'aquaculture en vertu de la *Loi sur les pêches*;**

- **un pouvoir explicite au ministre des Pêches et des Océans d'imposer un véto sur toute proposition de site aquacole qui, de l'avis du ministre, pose un risque inacceptable aux poissons sauvages ou à l'habitat du poisson, ou d'autres risques environnementaux;**

- **un nouvel organisme au sein de Pêches et Océans Canada chargé de la coordination du rôle du gouvernement fédéral en matière de réglementation de l'aquaculture. Ce nouvel organisme devrait agir comme guichet unique responsable de toutes les fonctions fédérales liées à l'aquaculture – y compris celles de l'Agence canadienne d'inspection des aliments, Environnement Canada, Transports Canada, Pêches et Océans Canada et autres – pour établir un régime de réglementation de l'aquaculture simplifié et efficient;**

- **des délais pour les décisions relatives à l'octroi des diverses autorisations fédérales;**

- **des dispositions non réglementaires sur les statistiques sur l'aquaculture et la présentation de rapports destinés au public sur le fonctionnement de l'industrie.**

2. **Que Pêches et Océans Canada renégocie les protocoles d'entente bilatéraux sur la gestion de l'aquaculture dans les 18 mois suivant l'entrée en vigueur de la nouvelle Loi fédérale sur l'aquaculture afin d'accélérer l'harmonisation et réduire les chevauchements; et**

- **Que l'Initiative nationale pour des plans d'action stratégiques en aquaculture soit prolongée pour une période de deux ans et que son mandat soit de compléter le travail sur l'uniformité et la simplification du cadre national qui régit l'aquaculture.**

SANTÉ DES POISSONS D'ÉLEVAGE

3. **Que Pêches et Océans Canada établisse et mette en œuvre, de concert avec Santé Canada et l'Agence de réglementation de la lutte antiparasitaire, un programme « utilisations mineures et espèces mineures » pour l'aquaculture.**

4. **Que l'Agence canadienne d'inspection des aliments revoie l'Annexe 5 des règlements pris en vertu de la *Loi relative aux aliments du bétail* pour inclure un plus grand éventail d'additifs et d'ingrédients permis dans les formulations des aliments pour poissons.**

5. **Que Pêches et Océans Canada travaille avec les provinces et l'industrie aquacole afin d'évaluer dans les deux prochaines années de nouvelles technologies et méthodes permettant la gestion efficace des espèces aquatiques envahissantes dans le secteur conchylicole.**

ÉCOSYSTÈMES SAINS ET PRODUCTIFS

6. **Que Pêches et Océans Canada entreprenne des recherches collaboratives sur les effets à très grande distance de la pisciculture en mer et les effets potentiels des produits antiparasitaires utilisés dans la lutte contre le pou du poisson sur les espèces non visées; ces domaines de recherche devraient être priorisés.**

7. **Que Pêches et Océans Canada effectue des inspections régulières et s'assure de manière cohérente du respect de la réglementation par le secteur conchylicole en Colombie-Britannique, plus particulièrement dans les cas où du matériel flottant ou autre débris (comme des coquillages, des cordes et des bouées) n'est pas enlevé comme le prévoit la réglementation et/ou reste dans l'environnement marin; le Ministère devrait agir de la même façon lorsque des opérateurs aquacoles d'autres provinces laissent des débris dans l'environnement marin.**

RECHERCHE ET DÉVELOPPEMENT

8. **Que Pêches et Océans Canada établisse dans les plus brefs délais un mécanisme officiel avec les provinces, le milieu de la recherche et l'industrie afin d'appuyer la recherche-développement collaborative sur l'aquaculture.**

9. **Que Pêches et Océans Canada complète dans les deux prochaines années une évaluation approfondie des recherches sur l'aquaculture pour informer le public des principaux constats et cerner les lacunes en matière de recherche-développement qui doivent faire l'objet de recherches futures.**

ACCEPTATION SOCIALE ET RAPPORTS PUBLICS

10. **Que Pêches et Océans Canada, avec la participation des provinces par l'entremise du Conseil canadien des ministres des Pêches et de l'Aquaculture, établisse dans un délai de deux ans une base de données centrale publique contenant toutes les informations disponibles au sujet des permis et du respect des règles pour chaque aquaculteur.**

INTRODUCTION

Par le dépôt du Volume Trois, le Comité sénatorial permanent des pêches et des océans (le Comité) termine un long périple qui a commencé en décembre 2013, au cours de la 2e session de la 41e législature, lorsque le Sénat lui a confié le mandat d'« étudier, afin d'en faire rapport, la réglementation de l'aquaculture, les défis actuels et les perspectives d'avenir de l'industrie au Canada[1] ».

Le présent volume est le point culminant de cette étude de 18 mois sur l'aquaculture. Au cours de cette période, le Comité a siégé pendant 66 heures, a tenu 34 audiences publiques, a entendu les témoignages de 138 personnes et a reçu des centaines de mémoires et d'autres documents. En outre, les sénateurs ont visité 23 régions canadiennes dans six provinces – à savoir la Colombie-Britannique (C.-B.), l'Île-du-Prince-Édouard (Î.-P.-É.), le Nouveau-Brunswick (N.-B.), la Nouvelle-Écosse (N.-É.), le Québec (QC) et Terre-Neuve-et-Labrador (T.-N.-L.) – et ont effectué des missions d'étude en Norvège et en Écosse. Dans l'ensemble, le Comité a rencontré une vaste gamme de groupes et de personnes qui lui ont présenté leurs opinions sur l'aquaculture, notamment des représentants d'organismes de réglementation, des représentants de l'industrie, des travailleurs œuvrant dans différents segments de l'industrie, des universitaires, des chercheurs affiliés à des organismes sans but lucratif ou à des institutions gouvernementales, des chefs de Premières Nations et des personnes ou des groupes autochtones, des organismes de conservation du saumon, des représentants du secteur de la pêche commerciale et de la pêche récréative, des maires, des groupes communautaires et des citoyens à titre individuel. Nous désirons remercier sincèrement toutes les personnes qui ont pris le temps de livrer un témoignage au Comité ainsi que celles qui nous ont chaleureusement accueillis au cours de nos visites. Nous avons étudié avec sérieux les commentaires et les suggestions que nous avons entendus au cours de la formulation de nos observations et de nos conclusions sur l'aquaculture et les défis et les occasions qui se présentent pour cette industrie au Canada.

Tout compte fait, notre principal message est qu'il y a un océan de possibilités pour l'aquaculture au Canada. Nous sommes convaincus que l'industrie aquacole canadienne peut croître progressivement au cours des 10 prochaines années, et ce, de manière durable sur le plan environnemental, économique et social. Afin d'appuyer cette croissance durable, nous proposons un ensemble de recommandations qui s'articulent autour de cinq grands thèmes : cadre législatif et réglementaire; santé des poissons d'élevage; écosystèmes sains et productifs; recherche et développement; et acceptation sociale et présentation de rapports destinés au public. Des délais sont associés avec la plupart de nos recommandations et ils débutent à la date du dépôt de ce rapport.

1 Sénat du Canada, ***Journaux du Sénat***, 2e session, 41e législature, 9 décembre 2013, p. 274.

Ce volume présente les arguments du Comité à l'appui du soutien à la croissance durable de l'industrie aquacole au Canada. Il souligne en outre des considérations environnementales et contient des recommandations sur les mesures possibles pour surmonter les obstacles empêchant l'aquaculture canadienne d'atteindre son plein potentiel. À notre avis, ces recommandations assureront l'établissement d'un cadre législatif et réglementaire robuste pour l'aquaculture, un cadre qui favorisera la croissance de l'industrie, protégera l'environnement aquatique dans son ensemble, assurera la durabilité de ce secteur d'activité et produira, dans de nombreuses régions mais également pour le Canada dans son ensemble, des avantages économiques tangibles et à long terme dont on a grandement besoin.

Nous encourageons les lecteurs à consulter le Volume Un et le Volume Deux pour en apprendre davantage sur l'industrie aquacole et le cadre de gouvernance établi au Canada, en Norvège et en Écosse[2].

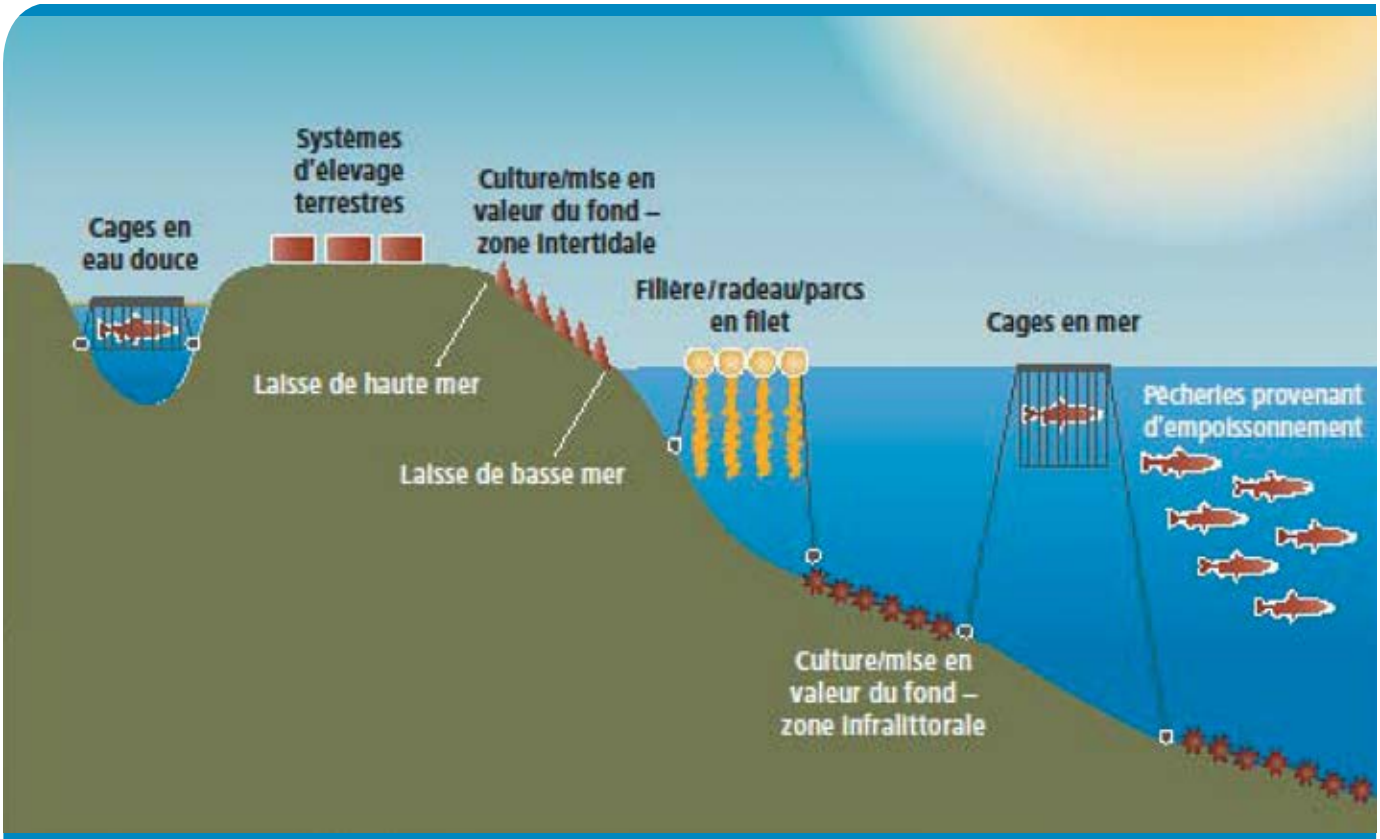
2 Veuillez noter que, dans le présent document, les références aux témoignages livrés au cours des séances et imprimés dans les ***Procès-verbaux et les témoignages du Comité sénatorial permanent des pêches et des océans*** seront indiqués entre parenthèses, à même le corps du texte, selon le numéro de fascicule et la page correspondante.

CHAPITRE 1 : l'aquaculture : une industrie en pleine croissance

1.1 Qu'est-ce que l'aquaculture?

L'aquaculture est l'élevage et la récolte d'organismes aquatiques, c'est-à-dire des poissons à nageoires, des mollusques et des crustacés et des plantes aquatiques. L'aquaculture peut avoir lieu dans différents milieux : dans l'océan (en zone côtière ou en milieu extracôtier), en eau douce (dans un lac ou un étang) ou sur terre (dans des réservoirs). On utilise habituellement le terme « monoculture » pour faire référence à l'élevage d'une seule espèce, alors que l'élevage de deux ou de plusieurs espèces complémentaires dans un même site est nommé « polyculture » ou « aquaculture multitrophique intégrée » (AMTI). Les techniques et les technologies appliquées en aquaculture dépendent de l'environnement sélectionné et de l'espèce d'élevage. Les principales catégories d'opérations aquacoles sont représentées à la Figure 1.

Figure 1 – Types d'opérations aquacoles



Source : Pêches et Océans Canada, ***L'aquaculture au Canada 2012, un rapport sur la durabilité de l'aquaculture***, 2012, p. 7 [REPRODUCTION AUTORISÉE].

L'aquaculture en cage ou en « parcs en filet », est utilisée pour l'élevage des poissons à nageoires en eau douce et en milieu marin. Elle nécessite des infrastructures en surface et sous l'eau, à savoir des structures d'élevage flottantes ancrées au fond de l'eau pour qu'elles demeurent en place ainsi que des cages, habituellement entourées de passerelles métalliques. La taille des mailles des filets varie selon la taille du poisson dont on fait l'élevage. Des filets supplémentaires sont souvent placés autour des structures d'élevage pour protéger les poissons des prédateurs, et un revêtement est placé sur les cages pour les protéger des oiseaux. Les poissons élevés dans ces cages sont habituellement nourris par des distributeurs automatiques liés à des caméras sous-marines qui permettent de surveiller le comportement alimentaire et de contrôler la distribution des aliments. Ce type de contrôle permet de s'assurer que les poissons ont suffisamment de nourriture tout en minimisant les déchets ainsi que les répercussions de la nourriture non consommée sur la qualité de l'eau. On fait souvent l'élevage de la truite en eau douce, alors que l'élevage de plusieurs espèces de poissons à nageoires (comme le saumon, la morue noire et la truite arc-en-ciel) s'effectue dans l'océan. Les opérations aquacoles marines en cage sont souvent dotées d'autres structures flottantes, comme un bureau, un laboratoire spécialisé dans la santé des poissons, un entrepôt pour la nourriture et des installations pour le personnel. La plupart des sites aquacoles en eau douce et en mer sont situés dans les eaux publiques. Bien que l'aquaculture en cage soit la méthode utilisée pour l'élevage de poissons à nageoires au Canada, des réservoirs clos et semi-clos ont été mis à l'essai en eau douce et en milieu marin. Ces technologies visent à isoler l'environnement d'élevage de l'environnement naturel afin de réduire, voire d'éliminer, les interactions entre les deux milieux.

D'autres méthodes d'aquaculture marine sont utilisées pour l'élevage d'une variété d'espèces de mollusques et de crustacés. L'élevage sur le fond dans la zone intertidale consiste à placer les espèces directement dans le substrat de la plage. On a recours à cette méthode pour l'élevage de la mye ainsi que pour l'élevage d'huîtres dans les nourriceries (avant qu'elles ne soient placées dans des sites de grossissement en eau profonde). L'élevage sur le fond dans la zone infralittorale est pratiquement identique à l'élevage sur le fond dans la zone intertidale, la principale différence étant l'emplacement des activités. Les espèces comme le pétoncle et la panope du Pacifique (une espèce de mye de grande taille) sont habituellement élevées dans une écloserie ou un environnement de croissance avant d'être transférées au fond marin à l'aide d'un semoir mécanique sous-marin. Les opérations d'élevage en suspension et sur radeau dans la zone infralittorale ont recours à des cordes, à des plateaux et à des radeaux ancrés au fond marin. Cette méthode, que l'on appelle « élevage dans la colonne d'eau », « élevage en suspension » et « culture en filière », est utilisée dans l'élevage de plusieurs espèces, notamment la moule, l'huître et le pétoncle (ainsi que les plantes aquatiques). Contrairement aux poissons à nageoires, les mollusques et les crustacés ne se nourrissent que d'organismes présents naturellement dans l'eau. En outre, le secteur conchylicole dépend (dans une forte mesure) de la collecte de naissains sauvages, alors que le secteur piscicole s'approvisionne plutôt en alevins auprès d'écloseries.

Les pêches fondées sur l'élevage, ou « pacage marin », sont une forme particulière d'aquaculture utilisée pour enrichir les stocks de poissons sauvages avec des poissons produits dans des écloseries. On peut donner l'exemple du Salmonid Enhancement Program (programme d'enrichissement des

salmonidés) en C.-B. ainsi que la pêche du saumon fondée sur l'élevage en Alaska. Le présent rapport ne couvre pas le pacage marin.

Les installations terrestres en parcs clos se trouvent sur des propriétés privées et sont dotées de systèmes d'aquaculture en recirculation (SAR) pour assurer l'élevage d'une variété d'espèces, comme la truite, l'omble, l'esturgeon et le flétan. Cependant, dans la plupart des cas, les SAR terrestres sont utilisés dans le secteur salmonicole; il s'agit d'écloseries où l'on fait la croissance des saumoneaux. Les poissons y passent environ le tiers de leur vie[3].

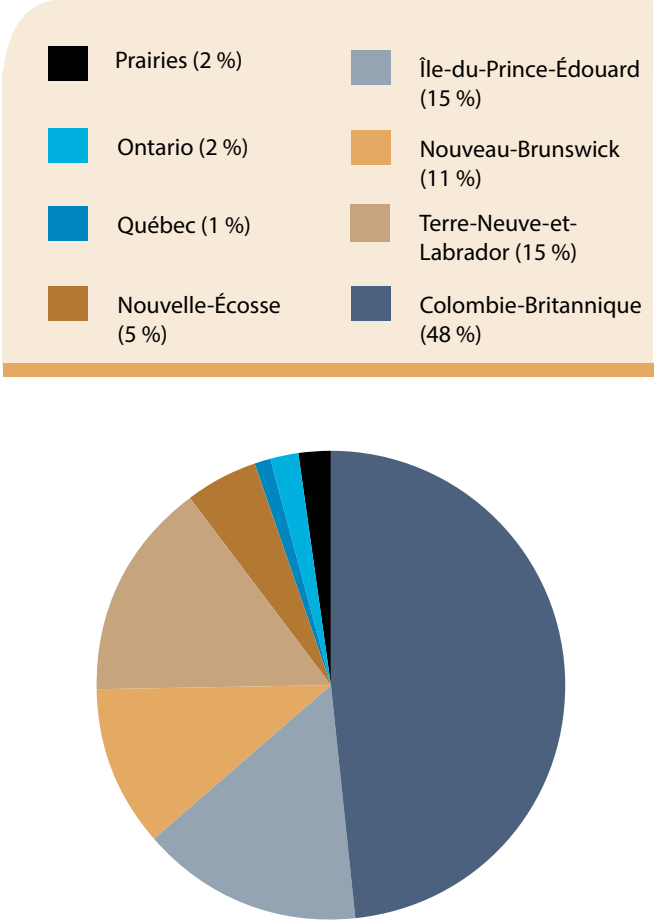
Au cours de ses missions d'étude au Canada et à l'étranger, le Comité a eu l'occasion de visiter différents types d'opérations aquacoles marines – plus précisément, sept sites de grossissement de poissons à nageoires, deux sites de grossissement de crustacés et de mollusques et deux sites d'AMTI – ainsi que plusieurs installations terrestres dotées d'un SAR, notamment trois écloseries de saumoneaux, une écloserie/nourricerie de pétoncles géants et trois installations en parc clos approvisionnant des marchés à créneaux. Dans l'ensemble, nous en avons appris beaucoup sur les techniques et les technologies de croissance utilisées en aquaculture, et nous avons été impressionnés par le degré de connaissances scientifiques développées par et pour l'industrie ainsi que par les robustes mesures de biosécurité exigées pour assurer l'exploitation efficace et sécuritaire des sites aquacoles.

En outre, les sites visités ont permis au Comité de reconnaître la diversité de l'industrie, en particulier à travers le pays, et de mieux comprendre la chaîne de valeur de l'aquaculture, qui va au-delà des écloseries et des sites de grossissement et comprend un vaste éventail d'activités, comme le nettoyage des cages, les services de plongée, l'entretien et la réparation de l'équipement, le transport par bateau, la production d'aliments pour poissons, les services vétérinaires, la fabrication de l'équipement, la transformation du poisson, l'emballage des fournitures et le marketing. Toutes ces activités produisent une valeur ajoutée tant dans les secteurs en amont que dans les secteurs en aval de l'aquaculture.

Nous avons pu constater par nous-mêmes l'importante contribution qu'apporte l'aquaculture à l'économie canadienne. À l'heure actuelle, l'aquaculture représente environ le tiers de la production canadienne totale de poissons et de fruits de mer du point de vue de la valeur, et 20 % du total du point de vue du volume. La production aquacole nationale, qui comprend les secteurs d'élevage en mer et d'élevage en eau douce, est divisée presqu'à part égale entre la côte Ouest et la côte Est. Comme le montre la Figure 2, la C.-B. était responsable d'environ 48 % de la production totale en 2013, suivie par l'Î.-P.-É. et T.-N.-L. à 15 %, le N.-B. à 11 %, la N.-É. à 5 %, l'Ontario (ON) et les Prairies à 2 %, et le QC à 1 %. Le Yukon a également une production aquacole, mais son volume de production était trop faible pour qu'il apparaisse dans la Figure 2. Le Comité est d'avis que des régions partout au Canada peuvent tirer profit de la croissance durable de l'industrie aquacole.

3 Les SAR utilisent des processus de filtration intensifs qui permettent au système de recirculer continuellement plus de 90 % de l'eau traitée.

Figure 2 : Production aquacole au Canada par province (pourcentage du volume total), 2013



Source : Pêches et Océans Canada, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 21 avril 2015].

1.2 L'aquaculture canadienne dans l'économie mondiale

Les poissons et les fruits de mer sont des aliments sains et nutritifs, et la demande mondiale pour ces produits est en constante augmentation. À l'heure actuelle, près de 50 % des poissons et des fruits de mer consommés dans le monde – soit 66 millions de tonnes – proviennent de l'aquaculture. Compte tenu de la stabilité de la production de la pêche de capture mondiale, l'Organisation des Nations Unies pour l'alimentation et l'agriculture (UNFAO) prévoit que l'aquaculture devra produire 40 millions de tonnes supplémentaires pour qu'il soit possible de nourrir la population mondiale croissante d'ici 2030[4]. De toute évidence, l'aquaculture est un secteur qui n'est pas prêt de disparaître.

Le Canada possède le plus long littoral maritime au monde et le plus grand nombre de lacs d'eau douce. En plus de son abondance d'eau « pure », le Canada a une industrie aquacole diversifiée (quoique modeste), un solide régime réglementaire et un secteur de recherche en aquaculture de calibre mondial. Le Canada est donc bien placé pour répondre à la demande mondiale croissante pour les poissons et les fruits de mer et pour le faire de manière durable. Le Canada est le 4e producteur de saumons au monde après la Norvège, le Chili et l'Écosse, mais il demeure un producteur aquacole relativement petit à l'échelle internationale, se classant au 21e rang (pisciculture et conchyliculture combinées).

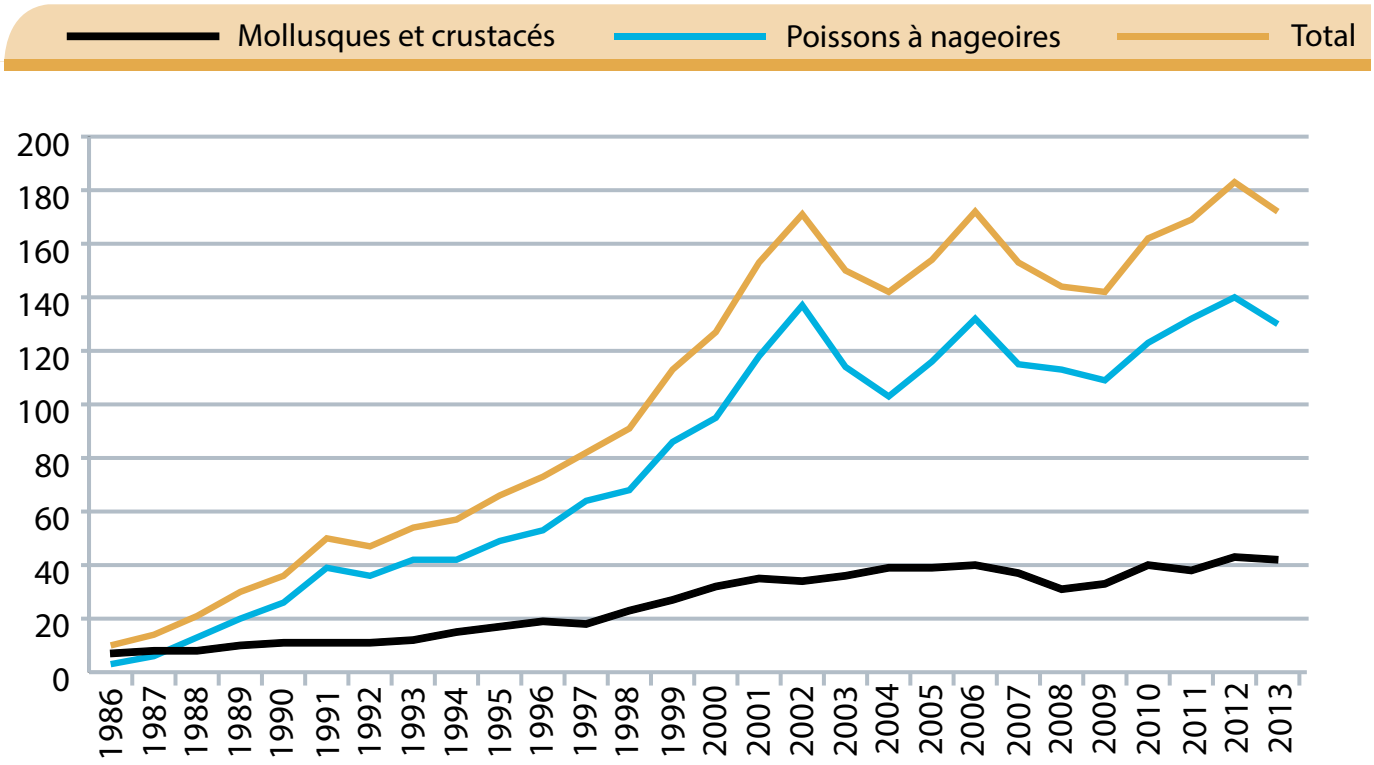
Entre 2003 et 2013, la production aquacole totale au Canada a augmenté en moyenne de 0,4 % par année, alors que le taux de croissance annuel moyen a atteint près de 20 % entre 1986 et 2002 (voir la Figure 3). À titre comparatif, la production aquacole a connu une croissance annuelle moyenne

4 UNFAO, ***La situation mondiale des pêches et de l'aquaculture***, 2014.

de 8 % en Norvège et de 1,5 % en Écosse entre 2003 et 2013. Le gouvernement de l'Écosse vise à produire 226 000 tonnes de produits aquacoles d'ici 2020, soit atteindre une croissance moyenne de 5 % par année. Le gouvernement de la Norvège, quant à lui, n'a pas fixé d'objectifs de production aquacole précis, mais il s'est engagé à appuyer la croissance durable de l'industrie. À l'heure actuelle, le gouvernement fédéral n'a pas établi d'objectifs de production aquacole pour le Canada.

L'Alliance de l'industrie canadienne de l'aquaculture (AICA) estime que le Canada pourrait plus que doubler sa production aquacole en 10 ans (2014-2024), la faisant passer d'environ 173 000 tonnes à plus de 378 000 tonnes de poissons et de fruits de mer[5]. Cette croissance

Figure 3 : Production aquacole au Canada (en milliers de tonnes métriques), de 1986 à 2013



Source : Pêches et Océans Canada, ***Aquaculture – Production d'aquaculture en quantité et en valeur*** [consulté le 21 avril 2015].

5 Alliance de l'industrie canadienne de l'aquaculture, *Canada's Aquaculture Industry: Potential Production Growth and Footprint*, 17 novembre 2014.

potentielle de 205 000 tonnes échelonnée sur 10 ans est inférieure à l'augmentation de la production aquacole de la Norvège entre 2010 et 2012, qui s'est élevée à 301 000 tonnes. Les prévisions de l'AICA sont fondées sur les hypothèses suivantes : une croissance annuelle moyenne de la production de 5 % grâce à l'amélioration du rendement des sites aquacoles existants au cours des cinq premières années; et une croissance annuelle moyenne de la production de 10 % au cours des cinq années suivantes grâce à une augmentation de 38 % du nombre de sites aquacoles.

Le Comité souligne qu'une croissance moyenne annuelle de 5 % entre 2014 et 2019 est semblable à l'objectif que s'est fixé l'Écosse. La croissance moyenne de 10 % entre 2019 et 2024 se situe bien en dessous du taux de croissance enregistré entre 1986 et 2002, alors que l'industrie s'établissait au Canada. S'il parvient à atteindre ces objectifs de manière durable, le Canada pourrait renforcer sa compétitivité sur les marchés mondiaux et devenir un leader mondial de la production aquacole durable.

Le Comité est prêt à appuyer l'objectif visant à doubler la production aquacole au cours des 10 prochaines années sous réserve que les mesures suivantes soient prises : l'adoption de réformes législatives et réglementaires contribuant à un régime de gouvernance robuste et à des politiques de gestion de l'aquaculture saines qui réduisent les répercussions sur l'environnement, le tout étant fondé sur des efforts de recherche et de développement de calibre mondial. Si elles sont réunies, ces conditions permettraient d'obtenir et de maintenir un solide appui du public pour l'aquaculture canadienne tout en créant un environnement d'affaires favorisant le développement durable de l'industrie.

En parallèle à ce développement dans les secteurs de l'aquaculture en mer et en eau douce, le Comité estime également que de nouvelles occasions de croissance devraient être encouragées dans les secteurs de l'aquaculture terrestre en parcs clos, de la monoculture de plantes aquatique, et de l'AMTI compte tenu de l'avantage comparatif que détient le Canada dans ces secteurs.

1.3 Contribution de l'aquaculture à l'économie canadienne

> *Pendant de nombreuses années [...] la croissance économique était pratiquement neutre, dans le comté de Charlotte, jusqu'à ce que l'aquaculture débarque, vers la fin des années 1980. Aujourd'hui, un emploi sur quatre, dans le comté de Charlotte, est lié directement ou indirectement à l'industrie [aquacole], qui injecte des millions de dollars dans nos économies locales et, en raison de la stabilité qu'elle procure, des emplois permanents offerts dans cette industrie, les jeunes familles achètent des maisons et des automobiles et, de manière générale, dépensent leurs revenus disponibles dans nos économies locales. En outre, je suis certaine qu'une bonne partie de cet argent se retrouve dans les économies de Saint John, Moncton et Fredericton [. . .] Les représentants de l'industrie se retrouvent parfois à entraîner des équipes, des équipes locales; ils sont aussi parmi les rangs des pompiers volontaires, ils font du mentorat à l'école, ils contribuent financièrement en soutenant les installations récréatives et culturelles. À mon avis, l'industrie de l'aquaculture fait la promotion de collectivités saines et durables, et j'entretiens l'espoir que tous les ordres de gouvernement vont l'aider, dans le processus de réglementation, afin que des collectivités comme la nôtre puissent continuer à profiter de la croissance et du développement sur les plans social et économique.*
> *Teresa James, mairesse, village de Black's Harbour (14:92-93)*

Dans le Volume Un et le Volume Deux, le Comité a discuté des résultats d'études sur les répercussions économiques de l'industrie aquacole au Canada, en Norvège et en Écosse. Ces études ont montré que, en plus de générer ses propres produits, l'industrie aquacole entraîne des activités dans d'autres secteurs économiques en raison de ses effets directs, indirects et secondaires. Les effets directs sont ceux associés aux activités des écloseries et des sites de grossissement. Les effets indirects sont une estimation des activités générées par d'autres industries qui offrent des biens et des services à l'industrie aquacole. Les effets secondaires représentent toutes les dépenses dans d'autres secteurs engagées par les personnes qui travaillent directement dans des opérations aquacoles ou dans des industries indirectes. Ces personnes dépensent leur revenu dans d'autres secteurs de l'économie, par exemple pour acheter une voiture, une maison et d'autres biens vendus au détail.

Selon l'étude sur le Canada, l'industrie aquacole a contribué plus d'un milliard de dollars au produit intérieur brut (PIB) en 2010, soit 354 millions de dollars en effets directs sur le PIB et 710 millions de dollars en effets indirects et secondaires. L'industrie a généré 5 828 équivalents temps plein (ETP) directs, et l'effet global sur l'emploi était de 14 000 ETP. Elle a généré pour 193 millions de dollars de revenus de travail directs avec un impact sur le revenu de 618 millions de dollars. Selon cette étude, l'industrie aquacole a contribué à revitaliser des collectivités éloignées, rurales et côtières, y compris des collectivités autochtones et des Premières Nations, et il s'agit d'un secteur important de l'activité économique pour le Canada. Le Comité désire souligner que les effets indirects et secondaires produits par l'industrie aquacole ainsi que sa contribution dans d'autres régions, par l'intermédiaire des activités de transformation et d'autres activités, sont souvent négligés, mais qu'ils sont toutefois considérables.

Cela dit, l'industrie a un grand potentiel. Selon l'AICA, si l'on atteint l'objectif de doubler la production aquacole d'ici 2024, la contribution économique annuelle totale de l'industrie au PIB pourrait s'élever à 2,5 milliards de dollars et avoir un effet global sur l'emploi de 32 500 ETP[6]. Le Comité estime que, pour que ce potentiel se concrétise entièrement, l'industrie doit continuer de démontrer son engagement envers le renforcement du rendement environnemental et de la croissance durable, et la communauté de chercheurs et d'universitaires doit être bien placée pour appuyer ce développement. Nous voulons que l'industrie aquacole continue de prospérer grâce à des avancées scientifiques et des recherches de pointe qui guideront sa croissance durable.

1.4 Zones propices à une industrie en croissance

Selon l'AICA, l'industrie aquacole du Canada produit à l'heure actuelle 45 espèces différentes de poissons à nageoires et de mollusques et crustacés, ainsi que quelques espèces de plantes aquatiques, sur une superficie d'environ 37 000 hectares loués dans des zones côtières ou des lacs, soit environ 1 % des zones potentiellement propices à l'aquaculture sur le plan biophysique[7]. Pour doubler la production aquacole au cours des 10 prochaines années, il faudrait une superficie totale de 51 400 hectares loués, ou 1,35 % des zones propices à l'aquaculture sur le plan biophysique, ce qui laisserait intactes la plupart des zones propices aux opérations aquacoles au Canada[8].

6 *Ibid.*
7 *Ibid.*
8 *Ibid.*

Néanmoins, à l'heure actuelle, on ne sait pas clairement quelles zones offrent le meilleur potentiel d'expansion au Canada. À cet égard, l'Écosse a une longueur d'avance : le pays a cerné les zones côtières propices à la pisciculture marine, les zones potentiellement propices et les zones ne pouvant accueillir ce type d'activité[9], et offre des directives approfondies sur l'emplacement le mieux adapté selon des considérations esthétiques ou liées au paysage[10]. Seule l'Î.-P.-É. est dotée d'un système semblable de catégorisation des zones – acceptable, conditionnelle ou inacceptable – qui indique si des opérations conchylicoles peuvent ou non y être menées. Un Comité d'examen indépendant a proposé l'adoption d'un système de catégorisation pour la pisciculture marine inspiré du modèle écossais en N.-É., mais le gouvernement provincial ne s'est pas encore prononcé sur cette recommandation. Des recherches sont en cours à T.-N.-L. pour définir les conditions océanographiques de certaines régions de la province et ainsi relever les zones ayant un potentiel de développement aquacole. De manière semblable, des travaux sont en cours au QC pour établir des zones où des opérations conchylicoles pourraient être établies. Au N.-B., le développement de sites piscicoles en zone côtière est très limité, mais il y a des possibilités d'établir des opérations aquacoles en milieu extracôtier. Cela dit, on note un potentiel de développement du secteur conchylicole dans la province. Il n'est toutefois pas certain si des recherches ont été entreprises pour déterminer les zones propices à ce type d'activité. En C.-B., la longue côte du Pacifique et ses eaux relativement tempérées sont idéales pour l'aquaculture, mais, encore une fois, il n'est pas clair si des recherches sont en cours pour cerner les zones les plus propices à l'aquaculture. En outre, on note un intérêt pour le développement de la culture d'algues marines et de l'AMTI dans plusieurs provinces (C.-B., N.-B., N.-É. et QC), et il y aurait lieu de déterminer les zones propices à ces activités.

Le Comité estime qu'il faut poursuivre les travaux pour déterminer les zones les plus propices à la croissance de l'aquaculture dans les milieux marins et d'eau douce (pour les poissons, les mollusques, les crustacés et les plantes aquatiques de même que pour l'AMTI). Cet exercice doit tenir compte des répercussions environnementales potentielles, des demandes concurrentes provenant d'autres utilisateurs, des effets esthétiques et liés au paysage de l'infrastructure aquacole et de l'acceptation des collectivités locales pour le développement de l'aquaculture. Nous avons appris que les Premières Nations en connaissent beaucoup sur les régions où elles vivent, les eaux avoisinantes et les écosystèmes aquatiques qui leur fournissent des moyens de subsistance. Elles ont accumulé ces connaissances au fil des générations grâce à leur proximité avec la nature. On gagnerait beaucoup à inclure le plus tôt possible les connaissances traditionnelles des Autochtones au processus de recherche de sites propices à l'aquaculture, en plus des connaissances scientifiques conventionnelles.

1.5 Technologies émergentes

1.5.1 Technologies d'aquaculture terrestre en parcs clos

Pour différentes raisons, l'utilisation d'installations dotées de SAR augmentera probablement, plus particulièrement dans le cas des écloseries de saumons en eau douce équipées d'un SAR et des installations de production de saumoneaux qui

9 Marine Scotland Science, ***Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters***, mars 2015.
10 Scottish Natural Heritage, ***The Siting and Design of Aquaculture in the Landscape: Visual and Landscape considerations***, novembre 2011.

seront nécessaires afin de concrétiser l'expansion potentielle de la pisciculture au Canada. Récemment, on a noté un intérêt en Norvège et en Écosse pour l'élevage du saumon atlantique jusqu'à un poids de 1 kg avant qu'il ne soit transféré dans des cages en filet en mer afin de réduire les interactions avec les populations de poissons sauvages. Une telle approche pourrait être envisagée au Canada, ce qui augmenterait l'utilisation de la technologie de SAR.

De manière semblable, les SAR terrestres qui approvisionnent des marchés à créneaux pourraient connaître une augmentation de la demande pour les poissons et fruits de mer qu'ils produisent. Durant ses missions d'étude, le Comité a eu l'occasion de rencontrer des entrepreneurs innovateurs, de visiter leurs installations équipées d'un SAR et de discuter avec eux des occasions et des défis à venir. Pour nommer quelques exemples :

- En C.-B., le Comité a visité Taste of B.C. Aquafarms Inc., une petite installation équipée d'un SAR située à Nanaimo et consacrée à l'élevage de la truite arc-en-ciel. Au cours de la visite, on nous a indiqué qu'il y a un grand potentiel de développement des marchés à créneaux pour les petites installations terrestres en parcs clos « d'envergure familiale ».
- Au N.-B., le Comité a visité Breviro Caviar, une entreprise faisant l'élevage de l'esturgeon à museau court tant pour sa chair que pour son caviar. L'entreprise exploite trois installations terrestres en parcs clos dans la province, soit à St. Andrews, à Pennfield et à Charlo. Breviro est la seule entreprise au monde à détenir un permis de culture et de vente du caviar de l'esturgeon à museau court conformément à la Convention sur le commerce international des espèces de faune et de flore sauvages menacées d'extinction (CITES).
- À l'Î.-P.-É., le Comité a visité Halibut P.E.I., une installation terrestre consacrée à l'élevage du flétan de l'Atlantique. L'entreprise se procure des alevins de Scotian Halibut Limited (N.-É.) et en fait l'élevage dans des réservoirs à l'aide d'eau salée puisée de puits creusés dans l'Île.
- Au QC, le Comité a visité les Fermes marines du Québec Inc., qui produisent des pétoncles et exploitent une écloserie et plusieurs sites de grossissement. Plus particulièrement, le Comité a visité l'écloserie située à Newport, dans la région de Gaspé. Il s'agit d'une installation à la fine pointe de la technologie qui utilise de l'eau salée et qui est entièrement automatisée et contrôlée à l'aide d'écrans tactiles.

Au cours des audiences, le Comité en a également appris davantage sur les technologies terrestres en parcs clos :

- La 'Namgis Salmon Farm, aussi appelée le projet Kuterra, située près de Port McNeill, en C.-B., est la première installation terrestre en parcs clos au Canada à produire avec succès du saumon atlantique à l'échelle commerciale. Le projet a joui du soutien de plusieurs organismes publics et privés, qui ont couvert ses coûts initiaux en capital d'environ 9,5 millions de dollars. La construction de l'installation a commencé en décembre 2011, les premiers saumoneaux ont été introduits en mars 2013, et la première récolte de saumons atlantiques a eu lieu en avril 2014. Le projet Kuterra génère à l'heure actuelle cinq ETP au sein de cette collectivité de Première nation.
- Scotian Halibut Limited est une entreprise de la N.-É. exploitant une écloserie et une installation produisant des géniteurs à Clark's Harbour ainsi qu'une installation terrestre dotée d'un SAR à Lower Woods Harbour. L'entreprise possède la plus grande écloserie

marine au Canada, est le deuxième producteur de flétans juvéniles au monde et le plus grand producteur de flétans commerciaux au Canada.

- Sustainable Blue, une installation terrestre équipée d'un SAR et consacrée à l'élevage de l'omble chevalier, du bar commun et de la truite arc-en-ciel à Centre Burlington, en N.-É., a également commencé l'élevage du saumon atlantique dans le cadre d'un projet de démonstration en juin 2013. Le projet a produit des résultats prometteurs avant qu'on y mette fin prématurément en mars 2014 en raison d'un incident lié au système électrique et au système de contrôle de l'installation.

Le principal message que nous retirons des commentaires de ces entrepreneurs est qu'ils ont besoin, d'une part, d'un accès aux capitaux pour permettre à leurs opérations de réaliser des économies d'échelle et ainsi devenir rentables et, d'autre part, de capital de démarrage puisque les coûts initiaux de construction d'une installation équipée d'un SAR sont considérables. À mesure qu'augmentera la demande mondiale pour les poissons et les fruits de mer, il est probable que la demande pour les poissons et fruits de mer produits selon des techniques « écologiques » – dans des installations dotées d'un SAR, par exemple – augmentera elle aussi. Le Comité appuie le développement de technologies terrestres en parcs clos dans les marchés à créneaux pour lesquels il existe des occasions de croissance.

1.5.2 Réservoirs flottants clos ou semi-clos et technologies extracôtières

Le Comité a également entendu des témoignages sur des technologies novatrices utilisées en pisciculture, y compris les réservoirs flottants clos et semi-clos et les technologies extracôtières :

- Les réservoirs flottants clos et semi-clos ont été mis à l'essai au Canada pour la pisciculture en milieu marin et en eau douce et ont produit des résultats positifs limités. Toutefois, l'effort de recherche se poursuit pour trouver des moyens d'améliorer la durabilité et l'efficience de ces technologies.

- L'aquaculture extracôtière nous a été décrite comme une manière de tirer profit des conditions environnementales (les courants plus forts permettent de rétablir en permanence le niveau d'oxygène dans l'eau des cages et de disperser les déchets) tout en réduisant les conflits avec les autres utilisateurs de l'océan. Selon les témoins, l'aquaculture extracôtière serait utile pour les opérations aquacoles de très grande envergure. Le Comité a appris que ce secteur émergent permettrait de développer davantage la pisciculture, plus particulièrement au N.-B. et en N.-É. Toutefois, on a aussi indiqué que l'aquaculture extracôtière comporte certains défis sur le plan technologique, comme la nécessité d'exploiter un site dans des environnements éloignés et rigoureux où les activités sont davantage exposées à des événements météorologiques (p. ex. des tempêtes), et qu'elle oblige les employés à travailler dans des lieux éloignés, loin des côtes. Cette situation pourrait également mener à l'automatisation d'une grande partie des opérations des sites de grossissement aquacoles.

Les technologies émergentes ont le potentiel de contribuer au développement de l'aquaculture au Canada. Par conséquent, le Comité estime que leur rendement environnemental et leur viabilité économique doivent faire l'objet d'une évaluation approfondie.

CHAPITRE 2 : cadre législatif et réglementaire

> *[C]ette durabilité, principal objectif de gouvernance de l'aquaculture, est la condition de la réussite à long terme de ce secteur. Elle comprend la viabilité économique, l'acceptabilité sociale, l'intégrité écologique et la faisabilité technique. (UNFAO, 2014, p. 100)*

Dans le Volume Un et le Volume Deux, le Comité a indiqué que l'aquaculture est généralement encadrée par plusieurs lois et de nombreux organismes de réglementation et que sa gouvernance, par sa nature même, est relativement complexe. Cette réalité s'observe autant en Norvège et en Écosse qu'au Canada. Cela dit, les lois nationales encadrant l'aquaculture en Norvège et en Écosse font en sorte que les entreprises situées à différents endroits dans le pays sont visées par un ensemble de règlements uniforme et cohérent. Il n'existe pas de gouvernance semblable au Canada.

La loi norvégienne est habilitante et vise à « promouvoir la rentabilité et la compétitivité de l'industrie aquacole dans le cadre du développement durable et à contribuer à la création de valeur sur la côte[11] ». En Écosse, bien que la loi ne mentionne pas explicitement la promotion de l'aquaculture[12], le gouvernement appuie ouvertement la croissance durable des secteurs de la pisciculture et de la conchyliculture en mer et a fixé des cibles de production à atteindre d'ici 2020. À titre comparatif, le gouvernement fédéral n'a pas établi de cibles de production aquacole au Canada.

En outre, la loi norvégienne définit pour chaque étape du processus d'approbation des opérations aquacoles des délais fixes; au final, le traitement des demandes ne peut prendre plus de 22 semaines. Le processus est simplifié grâce à un guichet unique qui coordonne le travail des organismes réglementaires (nationaux et locaux) qui participent au processus d'octroi de permis. Par comparaison, l'absence d'un processus de demandes simplifié est un problème que l'on soulève souvent en Écosse et au Canada, où il faut obtenir séparément plusieurs permis, baux et approbations avant de pouvoir lancer une opération aquacole. Selon les estimations, le processus de demande peut prendre entre 18 mois et 2 ans en Écosse et dure plus de deux ans au Canada.

2.1 Deux réalités constitutionnelles

La participation des différents ordres de gouvernement au Canada rend le cadre de gouvernance de l'aquaculture au pays plus complexe que celui en place en Norvège et en Écosse. La décision rendue par la Cour Suprême de la Colombie-Britannique en 2009 (la décision *Morton*) a exacerbé la situation, créant deux réalités constitutionnelles au Canada en ce qui a trait à l'aquaculture.

Avant 2009, les provinces s'acquittaient de la majorité de la réglementation de l'aquaculture alors que le gouvernement fédéral utilisait ses pouvoirs en matière de pêche pour protéger les poissons sauvages et les habitats du poisson se trouvant près des installations aquacoles. De cette manière, le gouvernement fédéral règlementait certains aspects de l'aquaculture de manière

11 Ministère des Pêches et des Affaires côtières de la Norvège, ***The Aquaculture Act***, 2005.
12 ***Aquaculture and Fisheries (Scotland) Act 2013***.

indirecte. Toutefois, dans l'affaire *Morton*, la Cour a déterminé que les activités piscicoles sur la côte de la C.-B. constituent une forme de pêche et, par conséquent, relèvent de la compétence fédérale. Puisque la décision n'a pas été portée en appel à la Cour Suprême du Canada, la décision *Morton* ne s'applique qu'à la C.-B.. Dans la foulée de la décision, le gouvernement fédéral a pris le *Règlement du Pacifique sur l'aquaculture* (RPA) afin d'assumer son nouveau rôle dans la réglementation de l'aquaculture dans la province. Ailleurs au pays, aucun litige semblable à l'affaire *Morton* n'a été porté devant les tribunaux. Dans les provinces autres que la C.-B., la division des responsabilités concernant la réglementation des différents aspects de l'aquaculture est définie par des protocoles d'entente (PE) bilatéraux entre le gouvernement fédéral et chacune des provinces.

Par conséquent, l'étendue du pouvoir du gouvernement fédéral en matière de réglementation de l'aquaculture au Canada est une question de droit non résolue. Chaque province reconnaît une division différente des compétences en fonction du PE qu'elle a conclu, alors qu'en C.-B., ce sont la décision *Morton* et les responsabilités définies dans le RPA qui établissent la division des compétences. On n'établira une compréhension commune à l'échelle nationale de la division des pouvoirs entre le gouvernement fédéral et les provinces que lorsque la Cour Suprême du Canada sera saisie de la question.

Néanmoins, le Comité désire proposer au gouvernement fédéral de jouer un rôle important dans la réglementation de l'aquaculture, un rôle qui n'empièterait pas sur les différentes compétences provinciales établies, mais qui permettrait de réduire la grande complexité de la gouvernance fédérale actuelle et de stimuler les investissements dans le secteur aquacole. Nous comprenons qu'il n'est pas possible d'établir un régime de réglementation de l'aquaculture clair et uniforme qui s'appliquerait à l'échelle du pays, mais nous sommes convaincus qu'il est temps pour le gouvernement fédéral d'assumer pleinement ses compétences reconnues en aquaculture.

2.2 Une loi fédérale sur l'aquaculture

Comme il a été décrit dans le Volume Un, l'industrie aquacole du Canada est encadrée à l'heure actuelle par différentes lois relevant de plusieurs ministères. Au cours du processus de choix du site, Pêches et Océans Canada (MPO) se prononce sur le caractère propice du site proposé pour l'aquaculture et sur les limites de production afin d'atténuer les répercussions sur l'environnement. Lorsqu'un site est réputé propice, l'aquaculteur doit obtenir des autorisations du gouvernement fédéral avant de pouvoir installer des infrastructures, notamment une autorisation de Transports Canada aux fins de la navigation et une autorisation d'Environnement Canada en ce qui concerne la classification des eaux pour les mollusques et crustacés. Une fois qu'un aquaculteur a obtenu un permis fédéral (MPO pour la C.-B.) ou provincial (ailleurs au pays) pour exploiter un site et que ce dernier est établi, les opérations quotidiennes sont encadrées par le MPO (introductions et transferts, espèces menacées, utilisation de substances nocives, etc.), par l'Agence canadienne d'inspection des aliments ou ACIA (maladies des animaux aquatiques, aliments pour poisson, contrôle des biotoxines, etc.), par Santé Canada et l'Agence de réglementation de la lutte antiparasitaire ou ARLA (médicaments vétérinaires et produits antiparasitaires).

Le MPO est le principal ministère fédéral responsable de la gestion de l'aquaculture; la principale loi fédérale qui encadre l'aquaculture, la *Loi sur les pêches*, ne reconnaît pas explicitement l'aquaculture comme une industrie légitime et ne définit aucunement cette activité. En fait, on ne pensait pas du tout à l'aquaculture lors

de la rédaction de la *Loi*. Bien que cette dernière encadre l'industrie aquacole afin de protéger les poissons sauvages et l'habitat du poisson – ce qui encourage par le fait même sa durabilité environnementale –, elle aborde souvent les questions liées aux opérations aquacoles du point de vue de la pêche traditionnelle, une approche qui ne tient pas compte des différences entre les populations de poissons sauvages et les poissons d'élevage. On a présenté au Comité plusieurs cas d'incongruités dans la *Loi sur les pêches* qui touchent l'industrie aquacole et qui doivent être réglés, par exemple :

- Les règlements pris en vertu de la *Loi sur les pêches* interdisent la récolte d'huîtres de petite taille afin de protéger les populations d'huîtres sauvages. Toutefois, les aquaculteurs produisent des huîtres « pour cocktail », qui sont cultivées précisément de manière à ce qu'elles soient plus petites que les autres huîtres d'élevage. Aux termes de la *Loi*, ce type de récolte est néanmoins interdit.
- Les règlements fédéraux pris en vertu de la *Loi* restreignent les périodes de récolte des crustacés et des mollusques sauvages; cependant, les conchyliculteurs aimeraient pouvoir récolter leurs produits au moment où les usines de transformation en ont besoin, ce qui est interdit par la *Loi*.
- D'autres règlements définissent précisément quel équipement de pêche doit être utilisé pour pêcher les différentes espèces de poissons sauvages. Toutefois, il arrive que des poissons sauvages se percutent aux cages en filet ou qu'ils sautent dans les cages et les exploitants aquacoles ne disposent pas nécessairement de l'équipement prescrit pour retirer ces poissons des cages conformément à la *Loi*.

Par conséquent, des représentants de l'industrie aquacole ont répété au Comité qu'il est important de faire les distinctions appropriées entre les dispositions fédérales visant les pêches traditionnelles et celles qui devraient s'appliquer spécifiquement à l'aquaculture d'une part, et celles qui doivent s'appliquer aux deux secteurs d'autre part. Selon eux, l'approche adoptée par le MPO – soit celle d'encadrer l'aquaculture selon l'angle de la législation sur les pêches – entraîne une certaine confusion. Par conséquent, ils ont demandé au gouvernement de reconnaître, dans les lois, la légitimité et le caractère distinct de l'industrie.

Comme il a été mentionné précédemment, l'industrie aquacole est réglementée par d'autres ministères et organismes fédéraux. Le fait que ces ministères et organismes participent tous à la gestion de l'aquaculture reflète la nature multidisciplinaire de l'industrie. Toutefois, on a exprimé au Comité des craintes que cette situation mène à des chevauchements des activités associées à la réglementation fédérale. Par exemple, il est possible qu'une opération aquacole doive obtenir un permis d'introduction et de transfert du MPO ainsi qu'un permis de l'ACIA octroyé en vertu du Programme national sur la santé des animaux aquatiques (PNSAA) avant de pouvoir introduire ou transférer des poissons à nageoires ou des mollusques et crustacés dans de nouvelles eaux. Nous avons également pris connaissance de chevauchements dans les activités de contrôle et d'inspection menées par les différents organismes de réglementation. Par exemple, des témoins ont expliqué que l'utilisation de certains produits antiparasitaires dans les sites de grossissement peut nécessiter des inspections par l'ARLA, Environnement Canada et le MPO. En outre, le Comité a appris que les opérations aquacoles peuvent, dans certaines circonstances, recevoir des avis contraires de la part d'organismes de réglementation. Par exemple, il est possible

que l'ACIA ordonne à une opération aquacole, conformément au PNSAA, d'éliminer les poissons d'un site de grossissement, ce qui pourrait mener à des captures accessoires, mais le MPO pourrait alors porter des accusations pour ces prises accessoires.

Qui plus est, en raison de l'éparpillement des dispositions sur l'aquaculture dans plusieurs règlements et lois, il est difficile de saisir le rôle que joue le gouvernement fédéral dans ce domaine et d'établir une approche cohérente à l'échelle fédérale, uniforme et exhaustive vis-à-vis l'aquaculture. À notre avis, le maintien du *statu quo* en ce qui a trait à la gouvernance fédérale en aquaculture n'est pas une solution viable. Par conséquent, nous estimons qu'il est impératif d'adopter une loi fédérale sur l'aquaculture. Plusieurs autres arguments justifient notre appui à la création d'une telle loi :

- La nouvelle loi reconnaîtrait la légitimité de l'industrie aquacole au Canada à l'échelle nationale.
- La nouvelle loi permettrait au gouvernement fédéral de déclarer, au moyen d'une loi, ses intentions concernant l'aquaculture et de clarifier son rôle en ce qui a trait à l'industrie.
- La nouvelle loi préciserait, en un seul document, la gestion de l'aquaculture à l'échelle fédérale. Cette mesure renforcerait l'opinion du public envers la durabilité environnementale de l'aquaculture et la capacité et l'intention du gouvernement de gérer ce secteur de manière efficace, efficiente et durable.
- La nouvelle loi ferait de l'aquaculture un nouveau domaine de politique publique et donnerait au secteur un plus grand rayonnement.
- L'adoption de la nouvelle loi attesterait que le gouvernement fédéral aborde l'aquaculture avec sérieux et qu'il lui accorde une grande importance dans ses priorités. Cette mesure renforcerait la confiance des investisseurs (canadiens et étrangers) dans le secteur, ce qui ferait croître le financement privé de l'expansion de l'industrie au Canada.
- La nouvelle loi établirait des mécanismes plus exhaustifs qui encourageraient le développement de l'industrie tout en assurant le respect de la réglementation.

Au cours des audiences, plusieurs représentants de l'industrie ont fait valoir qu'ils sont des « pisciculteurs » et que l'aquaculture est une activité agricole ou une forme de l'agriculture en milieu aquatique. Tout comme l'agriculture (et contrairement à la pêche de capture commerciale), l'aquaculture sous-entend une certaine forme de propriété des stocks de poissons cultivés. La principale différence entre l'aquaculture et l'agriculture, dans la plupart des cas, réside dans le milieu où les activités ont lieu : dans l'eau pour l'aquaculture et sur terre pour l'agriculture. En outre, la plupart des opérations aquacoles ont lieu dans les eaux publiques, alors que l'agriculture s'effectue en général sur des propriétés privées. Selon certains témoins, si on accepte en agriculture que l'on supprime l'écosystème naturel pour le remplacer par des cultures de plantes destinées à la consommation humaine ou animale, c'est le cas opposé qui s'applique en aquaculture : les sites de grossissement sont opérés de telle sorte qu'ils n'altéreront pas l'écosystème de manière permanente. Il s'agit, après tout, d'une propriété publique. À notre avis, cette distinction est fondamentale. Dans l'ensemble, il apparaît que l'aquaculture n'est ni une activité de pêche ni une activité agricole. Le Comité est d'avis qu'il s'agit d'une activité à part entière : l'aquaculture doit être reconnue comme telle.

Dans ce cas, qui devrait être responsable de l'application de la loi fédérale sur l'aquaculture? Le MPO est le ministère fédéral chargé de la

gestion de l'aquaculture depuis plus de 30 ans. Cette responsabilité lui a été attribuée par le premier ministre en 1984, une décision qui a été confirmée au fil des ans par les gouvernements successifs. Le Comité estime que le MPO devrait conserver ce rôle. En outre, selon nous, le Ministère a acquis une expertise dans le domaine depuis qu'il est devenu responsable de la réglementation générale de l'aquaculture en C.-B. et il est le mieux placé pour élaborer et appliquer la loi.

Question plus importante encore, que devrait contenir la loi fédérale sur l'aquaculture? Le Comité est d'avis que la loi doit reconnaître la légitimité de l'industrie aquacole et son importante contribution économique dans plusieurs régions du pays, y compris au sein de plusieurs collectivités autochtones. La loi doit également encourager la croissance durable de l'industrie. En outre, la loi doit consolider les règlements en vigueur sur l'aquaculture (comme le RPA et le Règlement sur les activités d'aquaculture ou RAA). De plus, la loi devrait accorder au gouvernement fédéral un pouvoir de véto lui permettant de freiner le développement aquacole sur un site donné afin d'éviter une situation posant de grands risques pour les poissons sauvages et leur habitat; cette mesure réduirait le risque qu'un site aquacole soit exploité dans un lieu potentiellement inapproprié. Pour déterminer la gravité des risques, le ministre devrait être tenu d'évaluer les données scientifiques et les connaissances traditionnelles des peuples autochtones. En outre, le Comité estime que la loi devrait mener à la création d'un nouvel organisme administratif au sein du MPO responsable de coordonner les activités de tous les

Au Nouveau-Brunswick, le Comité a visité la Station biologique de St. Andrews (SBSA). Fondée en 1908, la SABS est l'établissement de recherche marine le plus ancien du Canada atlantique. En 2012, on a terminé d'importants travaux de rénovation dans la station et on y a inauguré une installation scientifique, un laboratoire en milieu humide doté de réservoirs-viviers ainsi qu'une installation de bioconfinement permettant la recherche sur des animaux aquatiques vivants. Le MPO s'appuie sur les recherches effectuées à la SABS pour remplir ses responsabilités en matière de réglementation.

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organismes fédéraux de réglementation touchant à l'aquaculture. Ce guichet unique règlerait les problèmes découlant du chevauchement des activités, des ordres contradictoires, de la complexité, du manque de clarté et du manque d'uniformité inhérent au régime de gouvernance fédéral actuel. Depuis, la loi devrait fixer des délais, semblables à ceux établis par la loi norvégienne, pour chaque étape du processus d'évaluation des différents organismes fédéraux devant accorder leur autorisation en matière d'aquaculture. Enfin, certaines dispositions non réglementaires pourraient être ajoutées au sujet des statistiques sur l'aquaculture et de la présentation de rapports destinés au public sur les opérations aquacoles du pays. Cette mesure permettrait d'améliorer l'acceptation sociale de l'industrie.

Par conséquent, le Comité recommande :

1. **Que Pêches et Océans Canada dépose une Loi fédérale sur l'aquaculture qui réponde aux préoccupations soulevées pendant l'étude du Comité et qui affirme la pleine étendue de la juridiction fédérale. Le Comité recommande aussi que la Loi comprenne ce qui suit :**

- **un préambule fort exprimant le soutien du gouvernement fédéral en faveur de l'expansion méthodique d'une industrie aquacole durable sur le plan environnemental, économique et social et reconnaissant le potentiel important de contribution économique que génère l'industrie dans les collectivités éloignées,**

Le Centre des pêches de l'Atlantique du nord-ouest (CPANO) est le centre régional du MPO à Terre-Neuve-et-Labrador. Il abrite des aquariums en milieu marin et en eau douce, un réservoir, des laboratoires d'analyse toxicologique, des laboratoires en milieu humide, un dispositif à eau de mer libre, ainsi que des services de soutien électronique, informatique, océanographique, de plongée, de bibliothèque et des services de soutien aux bateaux. Lors de son passage au CPANO, le Comité a visité les installations et a entendu une brève présentation sur les activités de recherche qu'on y mène.

Photo utilisée avec l'autorisation de : Pêches et Océans Canada.

rurales et côtières partout au pays, y compris les Premières nations;

- **une consolidation des règlements en place et des projets de règlements fédéraux qui encadrent l'aquaculture en vertu de la *Loi sur les pêches*;**
- **un pouvoir explicite au ministre des Pêches et des Océans d'imposer un véto sur toute proposition de site aquacole qui, de l'avis du ministre, pose un risque inacceptable aux poissons sauvages ou à l'habitat du poisson, ou d'autres risques environnementaux;**
- **un nouvel organisme au sein de Pêches et Océans Canada chargé de la coordination du rôle du gouvernement fédéral en matière de réglementation de l'aquaculture. Ce nouvel organisme devrait agir comme guichet unique responsable de toutes les fonctions fédérales liées à l'aquaculture – y compris celles de l'Agence canadienne d'inspection des aliments, Environnement Canada, Transports Canada, Pêches et Océans Canada et autres – pour établir un régime de réglementation de l'aquaculture simplifié et efficient;**
- **des délais pour les décisions relatives à l'octroi des diverses autorisations fédérales;**
- **des dispositions non réglementaires sur les statistiques sur l'aquaculture et la présentation de rapports destinés au public sur le fonctionnement de l'industrie.**

2.3 Collaboration entre le gouvernement fédéral et les gouvernements provinciaux

Comme il a été mentionné précédemment, le partage des rôles et des responsabilités du gouvernement fédéral et des provinces en aquaculture varie au Canada en raison de la décision *Morton* et des différents PE conclus avec les autres provinces. On a indiqué à plusieurs reprises au Comité au cours de ses missions d'étude au Canada que le degré de chevauchement et de confusion et l'absence d'uniformité dans la gouvernance de l'aquaculture prennent une tout autre ampleur lorsqu'ils sont examinés du point de vue du partage des responsabilités entre le gouvernement fédéral et les provinces. On a expliqué qu'il est possible de réduire les chevauchements si les ministères et organismes provinciaux et fédéraux communiquent l'information entre eux et s'ils établissent des programmes équivalents selon lesquels, par exemple, des échantillons pris aux fins de contrôle seraient testés localement pour le compte du gouvernement fédéral et du gouvernement provincial concerné.

Les PE bilatéraux entre le gouvernement fédéral et les provinces ont été conclus vers la fin des années 1980, alors que l'industrie aquacole commençait tout juste à s'établir au Canada. En C.-B., le protocole d'entente a été revu en 2010, à l'issue de la décision *Morton*. Le Comité est d'avis qu'il est temps pour le gouvernement fédéral de moderniser les PE avec chacune des provinces. Il devrait y apporter des modifications en fonction de l'éventuelle loi fédérale sur l'aquaculture tout en cernant les parties du cadre réglementaire et stratégique devant être harmonisées de manière à s'assurer que les activités de réglementation du gouvernement fédéral et des provinces sont coordonnées et cohérentes.

Au cours des audiences, le Comité a appris que le Conseil canadien des ministres des Pêches et de l'Aquaculture (CCMPA) travaille à surmonter certains défis associés au cadre de gouvernance de l'aquaculture. Ces efforts s'inscrivent dans l'Initiative nationale pour des plans d'action stratégiques en aquaculture (INPASA), une initiative quinquennale lancée en 2010 pour veiller au développement durable de l'industrie aquacole au Canada[13]. En ce qui concerne le cadre de gouvernance, l'INPASA a convenu : 1) d'élaborer des cadres de gestion environnementale consolidés basés sur des protocoles scientifiques rigoureux, en appui à un processus rationalisé et harmonisé de soumission et d'évaluation des demandes de sites aquacoles; 2) de réviser et de renouveler les politiques et directives nationales sur l'examen des demandes de sites d'aquaculture, en vertu de la *Loi sur la protection de la navigation*; 3) de réviser, pour chaque catégorie d'exploitation aquacole, les exigences fédérales et provinciales/territoriales en matière d'inspection des sites et établir des procédures pour rationaliser et harmoniser les protocoles d'inspection et de préparation des rapports; 4) de traiter des autres questions de réglementation et de gouvernance liées au développement aquacole durable, entre autres en clarifiant les droits et les obligations des aquaculteurs dont la production provient des eaux publiques et en résolvant les problèmes qui réduisent indûment l'efficacité opérationnelle.

On a expliqué au Comité que l'INPASA était un plan ambitieux. De nombreuses mesures importantes ont été menées à terme en vertu de l'INPASA, notamment le renouvellement du Code national sur l'introduction et le transfert d'organismes aquatiques et la modernisation du Programme canadien de contrôle de la salubrité des mollusques (PCCSM). L'INPASA a également connu du succès dans la coordination entre les gouvernements fédéral et provinciaux. En outre, on a fait valoir au Comité que les travaux entrepris en vertu de l'INPASA sont importants et qu'ils devraient se poursuivre (l'initiative se terminera à la fin 2015).

Bien que le Comité partage l'avis des témoins que l'INPASA a permis de mener à bien d'importantes tâches, il est très déçu de constater le peu de progrès réalisés dans le domaine de la gouvernance de l'aquaculture. Cinq ans après son inauguration, l'INPASA n'a rien accompli relativement à l'un des principaux obstacles à la croissance de l'industrie au Canada, à savoir le manque d'uniformité de gouvernance fédérale-provinciale de l'aquaculture au pays. Cela dit, nous estimons que la structure de gouvernance que représente le CCMPA est très importante puisqu'elle fait en sorte que l'on respecte le point de vue et les priorités des provinces; pour cette raison, le mandat de l'INPASA devrait être prolongé. Toutefois, si elle est renouvelée, l'INPASA devrait être moins ambitieuse et beaucoup plus ciblée. Certaines des préoccupations soulevées à plusieurs reprises au cours des audiences pourraient être traitées comme des priorités, notamment la longueur du processus de soumission et d'évaluation des demandes de sites; l'absence d'uniformité entre les provinces en ce qui a trait à la durée des permis, des baux et d'autres approbations nécessaires pour exploiter un site aquacole; et les situations qui entravent l'efficacité opérationnelle (par exemple la nécessité d'obtenir une approbation avant de modifier la taille des filets, l'orientation des cages ou l'emplacement du matériel de surveillance).

13 INPASA, ***Document synthèse***, une initiative du CCMPA, 2010.

Par conséquent, le Comité recommande :

2. **Que Pêches et Océans Canada renégocie les protocoles d'entente bilatéraux sur la gestion de l'aquaculture dans les 18 mois suivant l'entrée en vigueur de la nouvelle Loi fédérale sur l'aquaculture afin d'accélérer l'harmonisation et réduire les chevauchements; et**

Que l'Initiative nationale pour des plans d'action stratégiques en aquaculture soit prolongée pour une période de deux ans et que son mandat soit de compléter le travail sur l'uniformité et la simplification du cadre national qui régit l'aquaculture.

Le ministère des Pêches et de l'Aquaculture de Terre-Neuve-et-Labrador réglemente l'industrie aquacole de la province, appuie sa croissance et son développement, encourage la recherche en aquaculture, et participe à la coordination des activités aquacoles dans la province. Lors de son passage à St. John's, le Comité a rencontré des représentants du Ministère, qui ont discuté de la nouvelle stratégie provinciale sur l'aquaculture, plus particulièrement des priorités en matière de recherche qu'elle contient.

CHAPITRE 3 : santé des poissons d'élevage[14]

Au cours de l'étude, on a souligné à de nombreuses reprises au Comité que la santé des poissons devrait être la principale priorité de toute opération aquacole. D'abord, la santé des poissons d'élevage est essentielle à la productivité, à la rentabilité et à la compétitivité de l'industrie sur les marchés nationaux et internationaux. En outre, l'élevage de poissons en santé contribue à l'élimination ou, du moins, à la réduction des répercussions environnementales de l'aquaculture, ce qui renforce la réputation de l'industrie. Tout bien considéré, les poissons d'élevage en santé ont rarement, voire jamais, besoin de traitements médicaux ou de traitements antiparasitaires et ont le taux de mortalité le plus bas de l'industrie. Nous avons appris que les aquaculteurs prennent le meilleur soin possible des poissons en appliquant des pratiques d'exploitation fondées sur des données scientifiques qui vont de la prévention à l'intervention.

Dans le domaine de la santé des poissons, le MPO collabore de près avec l'ACIA dans le cadre du PNSAA afin de protéger les animaux aquatiques et de prévenir l'introduction et la propagation de maladie au sein des populations de poissons sauvages et de poissons d'élevage. L'ACIA participe grandement à la gestion des maladies figurant dans la *Loi sur la santé des animaux*, et le MPO joue un rôle important dans le domaine par l'intermédiaire d'efforts scientifiques et de la recherche, de ses programmes exhaustifs d'échantillonnage et de contrôle et, en C.-B., des conditions imposées lors de l'octroi du permis relativement à la santé des poissons. Selon ces dernières, chaque site doit posséder un plan de gestion de la santé des poissons visant l'ensemble des pratiques d'exploitation aquacole pouvant avoir des répercussions sur la santé des poissons sur le site et, par extension, réduisant les répercussions sur les poissons sauvages et l'écosystème. Les plans comprennent des protocoles pour le maintien de la santé des poissons ainsi que pour l'échantillonnage, le contrôle, la tenue de dossiers et la reddition de comptes sur des bases régulières.

3.1 Introduction de poissons en santé dans les sites de grossissement

On a expliqué au Comité que les poissons introduits dans les sites de grossissement sont exempts de maladies et de parasites. D'abord, tous les œufs proviennent de géniteurs qui ont passé un test de dépistage des maladies les plus courantes chez les poissons sauvages. Puis on continue de dépister ces mêmes maladies dans l'écloserie, où les poissons demeurent pendant environ un an. Avant qu'ils ne soient transférés à un site de grossissement, tous les poissons sont vaccinés contre certaines maladies. Une fois que les poissons se trouvent dans les cages en filet, on surveille quotidiennement leur état de santé, et des tests pour déceler des bactéries, des virus et des parasites sont effectués chaque semaine. En plus des évaluations internes, des tests sur des échantillons sont menés par le MPO et l'ACIA dans le cadre du PNSAA ainsi que par des laboratoires indépendants.

Le Comité a appris qu'une multitude de mesures préventives sont prises pour assurer la santé des poissons d'élevage, notamment :

14 Au cours des audiences, les préoccupations concernant la santé des poissons touchaient principalement la salmoniculture marine. Par conséquent, le présent chapitre porte en grande partie sur la santé des stocks de saumons d'élevage.

- Emplacement : Au cours du processus d'approbation des sites, on effectue une évaluation du risque de propagation de maladie dans le site aquacole proposé et dans l'environnement immédiat. Cette évaluation vise à cerner les facteurs de risque qui pourraient mettre en péril la santé et le bien-être des poissons, par exemple la présence de maladies dans l'environnement du site proposé, la proximité d'autres sites de grossissement et de rivières, les espèces dont on fera l'élevage et les volumes de production. Les conditions biophysiques peuvent rendre certains sites défavorables à l'élevage d'espèces en particulier, mais propices à l'élevage d'autres espèces.

- Conditions des permis : Lorsqu'un site propice est déterminé, le permis octroyé définit la biomasse maximale permise dans l'opération aquacole. Le Comité a appris que le maintien d'une densité convenable des stocks réduit le stress chez les poissons, ce qui favorise leur santé. Conformément aux conditions de leur permis, les aquaculteurs doivent également établir des plans de gestion de la santé des poissons et participer aux vérifications sur la santé des poissons menées par le gouvernement.

- Mesures de biosécurité : Ces mesures visent à prévenir l'introduction d'agents pathogènes dans une opération aquacole. La désinfection des filets et de l'équipement constitue un exemple de mesure de biosécurité appliquée afin d'éliminer les agents pathogènes potentiels. Une autre mesure consiste à nourrir les poissons juvéniles avant de nourrir les poissons adultes. On a également décrit au Comité les quais pour débit entrant et les quais pour débit sortant biosécuritaires en place à T.-N.-L. Les quais de débit entrant sont utilisés pour transférer les nouveaux poissons (les saumoneaux) aux sites aquacoles marins. Les quais de débit sortant servent à transporter le matériel qui quitte les opérations aquacoles : les filets souillés, les poissons morts et les poissons récoltés. On a expliqué au Comité que cette technique visant à séparer les activités d'entrée des activités de sortie permet d'atténuer les risques de contamination croisée en cas d'éclosion de maladie.

- Zone de gestion des baies (ZGB) : Des ZGB ont été établies dans plusieurs régions au Canada (et plus récemment en Écosse) en raison de l'expansion de l'industrie aquacole dans le but précis de prévenir et de réduire les répercussions des maladies et des parasites[15]. Les ZGB sont habituellement assorties d'une distance minimale entre les sites exploités par la même entreprise et d'une autre distance minimale entre les sites exploités par des entreprises différentes. Les ZGB définissent des zones où les aquaculteurs doivent synchroniser leurs opérations, notamment l'empoissonnement, la récolte et la mise en jachère. L'empoissonnement doit être effectué par classe d'âge unique (une seule génération de poissons dans un même site à la fois). Le Comité a appris que la restriction sur la classe d'âge dans une même ZGB permet d'empêcher que les poissons plus âgés ne transmettent aux saumoneaux les parasites ou les maladies auxquels ils ont peut-être été exposés dans l'environnement. La mise

15 La Norvège n'a pas établi de zones de gestion des baies en raison de la structure de l'industrie et de la taille variée des entreprises aquacoles – petites, moyennes, grandes –, qui rendent difficile la mise en place de cette approche.

en jachère consiste à laisser au repos les sites de grossissement pendant une période déterminée pour leur permettre de se rétablir après la récolte.

On a indiqué au Comité que la vaccination contre les maladies est une mesure clé assurant la durabilité de l'industrie aquacole. Nous avons appris que les vaccins, utilisés de concert avec d'autres mesures de biosécurité, réduisent le recours aux antibiotiques et ont stimulé la croissance de la production aquacole au fil des ans. L'efficacité de la vaccination a été soulevée en ce qui concerne la nécrose hématopoïétique infectieuse (NHI). Une éclosion importante de la NHI s'est produite de 2001 et 2003 dans 36 sites de production salmonicole en C.-B. Le seul autre cas de NHI signalé depuis est survenu en 2012; la propagation s'est limitée à trois sites et a duré trois mois grâce en partie au vaccin maintenant administré à tous les saumons atlantiques d'élevage. Certains estiment que, si l'on continue d'administrer des vaccins de ce type, les sites aquacoles de la C.-B. ne seront plus jamais touchés par la NHI.

De manière semblable, le Comité a appris que les ZGB ont constitué un moyen très efficace au N.-B. et en Écosse de contenir les éclosions du virus de l'anémie infectieuse du saumon (AIS), pour lequel il n'existe aucun traitement ni vaccin. Nous avons appris que l'AIS a été un problème persistent de 1996 à 2006 dans la baie de Fundy, mais qu'il n'y a eu aucun cas confirmé de la maladie depuis l'automne 2006 en raison de l'établissement des ZGB et du renforcement des efforts de détection et des mesures de biosécurité. En Écosse, l'AIS est un problème considérable, mais occasionnel. La dernière éclosion remonte à 2008 et s'est limitée à une petite région; les poissons ont été retirés rapidement afin de réduire les risques de propagation de la maladie.

Le Comité a appris que, globalement, l'état de santé du saumon atlantique produit au Canada est très bon. En moyenne, le taux de survie des saumons dans les sites de grossissement s'élève à 90 %.

3.2 Comment les poissons d'élevage contractent-ils des maladies et comment les traite-t-on?

L'introduction d'agents pathogènes dans les sites de grossissement semble être liée à la quantité d'agents infectieux présents dans l'environnement où se trouvent les sites. Les vecteurs de maladies peuvent être des poissons sauvages infectés ou du matériel contaminé. Le Comité a appris que les fortes densités des stocks dans les sites de grossissement rendent les poissons d'élevage vulnérables aux agents pathogènes et que l'étroite proximité favorise la transmission des maladies. Les sites aquacoles sont également considérés comme des réservoirs potentiels de retransmission d'agents pathogènes aux poissons sauvages. Pour ces raisons, les aquaculteurs doivent avoir accès à des produits chimiothérapeutiques afin d'atténuer les répercussions des agents pathogènes. On a indiqué au Comité que les produits chimiothérapeutiques sont catégorisés soit comme médicament, soit comme produit antiparasitaire selon leur méthode d'application. En règle générale, les produits appliqués localement ou directement dans l'eau sont considérés comme des produits antiparasitaires, alors que les produits administrés par l'intermédiaire d'aliments médicamentés ou par injection sont considérés comme des médicaments.

3.2.1 Infestation au pou du poisson

On a expliqué au Comité que le pou du poisson est un petit crustacé ectoparasitaire qui s'attache aux salmonidés et à d'autres espèces de poissons marins. Il cause des dégâts directs (il se nourrit

du corps de son hôte) et indirects (il rend l'hôte vulnérable aux infections secondaires). Au Canada, il existe différentes espèces de poux du poisson. Nous avons appris que les poux du poisson de la côte Ouest n'ont pas un potentiel pathogène aussi marqué que ceux de la côte Est et que, en général, le saumon atlantique est plus susceptible aux infestations au pou du poisson que les espèces de saumon du Pacifique (saumon rose, saumon coho, saumon kéta et saumon rouge).

On a également expliqué au Comité que le pou du poisson traverse huit phases au cours de sa vie et qu'il s'attache aux poissons au cours de la troisième. La salinité et la température, de même que le mouvement de l'eau (marées et courants), influencent le développement et la survie du pou du poisson. Ce dernier se reproduit tout au long de l'année, mais le taux de reproduction augmente rapidement lorsque la température de l'eau croît. Le Comité a appris que, puisque chaque région où sont menées des opérations aquacoles a des caractéristiques biophysiques uniques, le cycle de vie et la dynamique du pou du poisson varient d'un secteur à l'autre. Par exemple, les températures de l'eau pendant l'hiver sur la côte Ouest ne sont pas suffisamment basses pour entraver considérablement le développement du pou du poisson, alors que, sur la côte Est, les températures de l'eau en hiver ralentissent grandement leur développement, le stoppant dans certains cas. Le pou du poisson ne peut survivre en eau douce.

Le Collège vétérinaire de l'Atlantique de l'Université de l'Île-du-Prince-Édouard est l'un des cinq collèges vétérinaires du Canada. En plus d'offrir des programmes universitaires, le Collège mène des projets de recherche liés à la pisciculture et à la conchyliculture. On trouve au Collège le Centre for Aquatic Health Sciences (CAHS), un centre universitaire de calibre mondial spécialisé dans la recherche sur la santé des poissons à nageoires. Le Comité l'a visité. Les recherches que mène à l'heure actuelle le CAHS portent entre autres sur la gestion du pou du poisson.

Photo utilisée avec l'autorisation de : Atlantic Veterinary College, UPEI.

Plusieurs témoins ont indiqué que le pou du poisson constitue une préoccupation en aquaculture partout dans le monde et nécessite l'application constante de mesures de gestion et de contrôle. Selon eux, la gestion antiparasitaire intégrée est nécessaire pour assurer la durabilité à long terme du secteur salmonicole. La mise en jachère peut être utilisée pour contrôler le pou du poisson; en retirant les poissons infectés de la zone immédiate, le nombre de poux du poisson autour du site diminue. Habituellement, la mise en jachère est mise en place en même temps par tous les sites de grossissement d'un secteur donné afin de renforcer son efficacité.

Le Comité a appris qu'un seul médicament vétérinaire est disponible pour lutter contre le pou du poisson au Canada : SLICE®. Ce médicament est administré sous forme d'enrobage des aliments; les saumons le consomment, le produit est métabolisé et se rend dans les tissus de l'animal. Le pou du poisson, qui se nourrit des tissus du poisson (peau, nageoires ou branchies), ingère le médicament. Ce dernier agit comme bloqueur neuronal : il paralyse le pou du poisson avant de provoquer sa mort. Le Comité a appris que l'utilisation exclusive de SLICE® comme méthode de gestion du pou du poisson a favorisé le développement d'une résistance au médicament en Norvège et en Écosse ainsi que dans certaines régions du Canada (particulièrement au N.-B.).

En plus de SLICE®, les entreprises aquacoles au Canada ont accès à deux produits antiparasitaires, soit Paramove® et Salmosan®, qui sont appliqués au moyen de traitements thérapeutiques. Le Comité a appris que ces traitements peuvent être administrés sur le site même, en entourant les côtés de chaque cage d'une bâche ou à l'aide de systèmes de bâches clos (fermés sous les cages pour les isoler entièrement) de manière à confiner temporairement les cages pour la durée du traitement (qui est plus efficace à de petites concentrations). Les traitements thérapeutiques peuvent également être administrés dans des bateaux viviers : les poissons sont transférés de leur cage à un bateau où ils reçoivent le traitement, puis remis dans les cages une fois que le médicament a été appliqué. En outre, nous avons appris que, après le traitement, le produit est dilué dans l'eau environnante (peu importe la méthode d'administration du traitement).

Le risque de diminution de l'efficacité de SLICE®, le désir de limiter la dépendance aux produits chimiothérapeutiques, et l'adoption de plans de lutte antiparasitaire intégrés au cours des dernières années ont encouragé la recherche et le développement sur les technologies de gestion du pou du poisson écologiques, biologiques et non chimiques. Voici quelques exemples :

- Poissons-nettoyeurs : Avec leur bouche spécialement adaptée, ces poissons détachent le pou du poisson et d'autres parasites des poissons infectés. En Norvège, on a recours avec succès depuis longtemps à la vieille (une espèce de poisson-nettoyeur) dans les cycles de production commerciale. Une autre espèce de poisson-nettoyeur, la lompe, fait l'objet d'essais en Écosse puisqu'elle semble plus efficace que la vieille dans les eaux froides. Au Canada (N.-B. et T.-N.-L.), les essais sur certaines espèces de poissons-nettoyeurs – la tanche-tautogue et la lompe – se trouvent à différentes étapes; une entreprise en particulier est en train d'élaborer un programme de stocks de géniteurs au Huntsman Marine Science Centre pour éliminer le recours aux tanches-tautogues sauvages.
- Cage à tuba : L'Écosse et la Norvège ont mis à l'essai des cages à tuba comme moyen de prévention des infestations au pou du poisson. Ce dernier vit en eau peu profonde et, par conséquent, il est possible d'établir une zone

exempte de ce parasite où faire l'élevage du saumon. Pour ce faire, un filet est placé sur le sommet de la cage pour maintenir les poissons loin de la surface, où peuvent se trouver des poux. Un passage cylindrique central ne pouvant être traversé par le pou du poisson – le tuba – permet au saumon de nager jusqu'à la surface, où se trouve une plus grande concentration d'oxygène. L'expérience a montré que les cages à tuba réduisent davantage les infestations au pou du poisson comparativement aux cages traditionnelles.

- Biculture et AMTI : Des essais sur des sites sont en cours au Canada, tant sur la côte Est que la côte Ouest, pour déterminer si les mollusques filtreurs (plus particulièrement les moules et les huîtres) suspendus dans les sites de grossissement de saumons consomment suffisamment de larves du pou du poisson dans la colonne d'eau pour réduire les infestations au pou du poisson et diminuer le recours aux médicaments et aux produits antiparasitaires. Ces essais sont entrepris dans le cadre du Réseau canadien d'aquaculture multitrophique intégrée (RCAMTI).
- Élimination mécanique : Le Comité a visité une installation de recherche dans le Canada atlantique qui met à l'essai un système d'élimination mécanique du pou du poisson : les saumons sont aspirés dans un cylindre où les poux sont retirés à l'aide de jets d'eau.
- Génomique : Le Comité a appris que certaines espèces de saumon atlantique sont moins susceptibles au pou du poisson que d'autres, ce qui soulève un certain intérêt pour la reproduction sélective en vue de créer une espèce possédant une plus grande résistance au pou du poisson. Cette recherche est menée par Génome Canada.
- Saumoneaux de plus grande taille : En Norvège et en Écosse, on étudie la possibilité d'élever des saumoneaux jusqu'à une plus grande taille (1 kg) dans des installations terrestres munies d'un SAR afin de raccourcir la période que passent les poissons dans les sites de grossissement en mer, ce qui réduit ainsi le risque d'exposition aux parasites et aux autres pathogènes (et le nombre d'évasions).

Selon les recherches, les approches non chimiques à la gestion du pou du poisson ne sont peut-être pas aussi efficaces que les médicaments et les produits antiparasitaires lorsqu'elles sont appliquées individuellement, mais elles pourraient faire partie d'une stratégie efficace de gestion du pou du poisson et ainsi prévenir, au Canada, les cas de résistance aux traitements, comme c'est le cas en Norvège. En outre, ces approches sont plus respectueuses de l'environnement[16].

Le gouvernement de la Norvège a mis en place des règlements stricts concernant le pou du poisson. Par exemple, la réglementation permet une augmentation de 5 % de la biomasse uniquement si l'aquaculteur parvient à maintenir le niveau de poux du poisson sous un certain seuil à l'aide d'un maximum de deux traitements par cycle de production. On peut ordonner une réduction rapide de la biomasse à n'importe quel site et, si nécessaire, il est également possible d'ordonner l'abattage de tous les poissons d'un site s'il est déterminé que l'opérateur n'est pas en mesure de maintenir le niveau de poux du poisson sous le seuil permis. Selon d'autres règlements,

16 Pêches et Océans Canada, ***Surveillance du pou du poisson et mesures non chimiques***, Secrétariat canadien de consultation scientifique, juillet 2014.

il est possible d'ordonner la prolongation d'une période de jachère, d'interdire l'introduction de saumoneaux et d'interdire l'utilisation d'un produit en particulier lorsque des cas de résistance ont été enregistrés. Ces exigences strictes sont accompagnées d'un contrôle resserré et de sanctions en cas d'infraction. En outre, la Norvège envisage également d'établir des distances minimales entre les sites de grossissement afin d'atténuer la propagation du pou du poisson d'une cage à l'autre (cette méthode est déjà en vigueur au Canada).

Le Comité estime qu'il y a des leçons à tirer du cas de la Norvège. Plus particulièrement, l'industrie aquacole du Canada doit continuer d'imposer des distances minimales entre les sites afin de prévenir la propagation du pou du poisson. De plus, il est essentiel de poursuivre les efforts de recherche sur l'épidémiologie du pou du poisson et sur l'efficacité des méthodes non chimiques. Plus important encore, il faut encourager l'utilisation de méthodes non chimiques éprouvées et n'avoir recours aux médicaments et aux produits antiparasitaires qu'à l'occasion.

3.2.2 Anémie infectieuse du saumon

Comme il a été mentionné précédemment, le virus de l'anémie infectieuse du saumon (AIS) est présent dans l'environnement naturel et touche tant les poissons d'élevage que les poissons sauvages; certaines souches du virus causent une maladie, et d'autres non. Le Comité a appris que, selon la souche du virus, les éclosions d'AIS peuvent entraîner des taux de mortalité atteignant jusqu'à 90 % des poissons infectés; les sites aquacoles sont plus susceptibles à la propagation rapide du virus en raison de la densité des populations, ce qui augmente par le fait même les risques d'éclosion de l'AIS. Puisqu'il n'existe aucun traitement ni vaccin pour l'AIS, les opérations aquacoles contrôlent avec vigilance la présence de la maladie.

Depuis 1996, des cas de l'AIS ont été confirmés au N.-B., en N.-É., à l'Î.-P.-É. et à T.-N.-L. L'ACIA n'a confirmé aucun cas de l'AIS en C.-B., tant chez les poissons d'élevage que chez les poissons sauvages, mais il faut noter que certains chercheurs qui ont comparu devant le Comité ont affirmé que des cas de la maladie ont été dépistés dans la province.

Le N.-B. est parvenu à contrôler la souche virulente de la maladie et, en raison du resserrement des protocoles de biosécurité et de l'établissement des ZGB, on relève très peu de cas confirmés de l'AIS dans la province depuis 2006. En outre, des pratiques de gestion sont en place pour s'assurer que la maladie ne réapparaisse pas. Par exemple, comme pratique de gestion exemplaire, l'industrie récolte rapidement et volontairement les stocks de poissons que l'on suspecte d'être atteints de l'AIS – souvent avant même que l'ACIA confirme le diagnostic – afin d'atténuer les risques de propagation de la maladie dans les sites aquacoles voisins et dans les populations de poissons sauvages.

En Écosse, des représentants du gouvernement et de l'industrie ont indiqué au Comité que l'AIS est un problème considérable, quoique peu fréquent (comparativement au pou du poisson, qui est un problème constant). Ils ont expliqué qu'il existe en Écosse des politiques d'éradication strictes concernant l'AIS, notamment l'abattage des stocks que l'on soupçonne d'être infectés, une mesure également en place au N.-B.

De plus, le Comité a appris que l'industrie aquacole a été confrontée à d'autres problèmes liés à la santé des poissons au cours des dernières années et que cette situation a mis en évidence le besoin d'appuyer les efforts de recherche et développement (R-D) sur la santé des poissons,

notamment pour la création de vaccins et l'élaboration de mesures de biosécurité.

3.2.3 Accès aux médicaments et aux produits antiparasitaires

L'un des obstacles souvent mentionnés par les représentants de l'industrie et des gouvernements provinciaux concerne le manque d'accès, au Canada, aux médicaments et aux produits antiparasitaires pour les animaux aquatiques, une situation qui entrave l'efficacité des plans de gestion intégrés de la santé des poissons et de la lutte antiparasitaire. Les représentants ont souligné qu'une collaboration est nécessaire pour mobiliser Santé Canada, sa Direction des médicaments vétérinaires et l'ARLA, le MPO et Environnement Canada afin qu'ils établissent un processus d'approbation responsable et efficient des médicaments et produits antiparasitaires pour animaux aquatiques qui respecte les normes internationales relatives à la santé des animaux aquatiques, plus particulièrement le modèle « utilisations mineures et espèces mineures » (UMEM). Le terme « utilisations mineures » fait référence aux utilisations à petite échelle (limitées ou peu fréquentes) de médicaments chez les animaux, alors que le terme « espèces mineures » renvoie à des espèces destinées à l'alimentation autre que le bétail, le poulet, la dinde, l'agneau, et autres. La rareté des médicaments destinés aux UMEM est attribuable, en partie, au fait que les marchés pour de tels produits sont trop petits pour permettre à un fabricant de médicaments de recouvrer les coûts fixes associés à leur mise au point, à leur approbation et à leur commercialisation. La classification d'un médicament destiné aux UMEM permettrait de réduire les coûts liés à son homologation ou à son approbation et favoriserait son développement accéléré tout en assurant son innocuité.

De manière générale, les aquaculteurs canadiens n'ont pas accès à l'ensemble des produits antiparasitaires et aux médicaments vétérinaires que peuvent utiliser les aquaculteurs dans d'autres pays, y compris la Norvège et l'Écosse, et se retrouvent donc désavantagés sur les marchés mondiaux. La santé des poissons constitue le fondement de l'industrie aquacole et, pour cette raison, l'industrie canadienne doit avoir un accès plus facile et rapide aux produits antiparasitaires et aux médicaments. Par conséquent, le Comité recommande :

3. **Que Pêches et Océans Canada établisse et mette en œuvre, de concert avec Santé Canada et l'Agence de réglementation de la lutte antiparasitaire, un programme « utilisations mineures et espèces mineures » pour l'aquaculture.**

De nouveaux produits plus efficients et plus écologiques seront disponibles aux aquaculteurs canadiens, ce qui les mettra sur un pied d'égalité et leur permettra d'être davantage compétitifs sur les marchés mondiaux.

3.3 Aliments pour poissons

On nourrit les poissons à nageoires d'élevage à l'aide de granules spécialement conçues pour satisfaire leurs besoins alimentaires et favoriser une croissance et un état de santé optimaux. Le Comité a appris que les aliments pour poissons représentent environ 60 % des coûts de l'élevage du poisson; il s'agit donc d'un facteur important de la viabilité des opérations aquacoles. Nous avons appris que le secteur des aliments pour poissons cherche à élaborer des régimes alimentaires plus efficaces et efficients à l'aide d'un plus grand nombre de produits agricoles tout en réduisant la proportion de farines et d'huiles de poissons.

L'Annexe 5 des règlements établis en vertu de la *Loi relative aux aliments du bétail*, qui relève de l'ACIA, dresse la liste des additifs et éléments nutritifs qui peuvent être utilisés dans les aliments pour poissons. Le Comité a appris qu'un certain nombre d'additifs pour les aliments pour poissons ne sont pas permis au Canada alors qu'ils le sont dans d'autres pays, comme la Norvège et l'Écosse. Les poissons dont la nourriture contenait ces ingrédients peuvent être importés au Canada, ce qui, selon plusieurs témoins, est illogique. En outre, certains des additifs stimulent le système immunitaire des poissons et augmentent la résistance du saumon au pou du poisson.

Le Comité est d'accord avec les témoins qui sont d'avis qu'il existe des incohérences dans le cadre de gouvernance fédéral de l'aquaculture. À notre avis, la réglementation actuelle sur les additifs aux aliments pour poissons entrave l'innovation et l'amélioration des régimes alimentaires et fait obstacle à la compétitivité de l'industrie sur les marchés mondiaux. Par conséquent, le Comité recommande :

4. **Que l'Agence canadienne d'inspection des aliments revoie l'Annexe 5 des règlements pris en vertu de la *Loi relative aux aliments du bétail* pour inclure un plus grand éventail d'additifs et d'ingrédients permis dans les formulations des aliments pour poissons.**

3.4 Santé des mollusques et crustacés

Le PCCSM est un programme fédéral de salubrité des aliments géré conjointement par l'ACIA, Environnement Canada et le MPO. Le programme a pour objectif de protéger les Canadiens des risques de santé associés à la consommation de mollusques et crustacés contaminés. Dans le cadre du PCCSM, Environnement Canada surveille la qualité de l'eau dans les régions où l'on fait l'élevage de mollusques ou de crustacés au Canada afin de s'assurer que l'eau est exempte des contaminants et que les mollusques et crustacés produits ne posent pas de danger pour la consommation humaine.

Selon le Programme, on doit effectuer, dans tous les sites où l'on récolte des mollusques et des crustacés, des analyses sur des échantillons d'eau afin de déceler des contaminants comme des coliformes fécaux et des produits chimiques. En raison des ressources limitées sur la côte Est, seules certaines régions peuvent faire l'objet d'analyses au même moment. Le Comité a appris que cette situation a ralenti l'expansion de la conchyliculture dans la région. À T.-N.-L., les analyses ne sont plus effectuées dans la province : tous les échantillons doivent être envoyés à Dartmouth, et les aquaculteurs doivent attendre les résultats. En outre, on a indiqué au Comité qu'il n'y a aucune ressource disponible pour mener des analyses de qualité de l'eau sur les sites de conchyliculture proposés en N.-É., à moins que les entreprises couvrent elles-mêmes les coûts associés à la prise d'échantillon et à l'analyse plutôt que d'attendre qu'Environnement Canada s'en charge.

Selon le Comité, le PCCSM doit être modernisé pour qu'il s'adapte mieux aux besoins des conchyliculteurs. La croissance de ce secteur de l'industrie dépend de la facilité d'accès aux services d'analyse de l'eau offerts par le Programme. Nous estimons qu'il y aurait lieu de trouver d'autres méthodes pour assurer l'analyse de l'eau conformément au PCCSM, par exemple le recours à des tiers autorisés ou certifiés.

De plus, le Comité a appris que plusieurs opérations conchylicoles sur les côtes Est et Ouest sont aux prises avec des espèces aquatiques envahissantes (EAE), comme le crabe européen, l'ascidie plissée et l'ascidie jaune. Certaines de

ces EAE se nourrissent directement des mollusques et crustacés d'élevage, tandis que d'autres les supplantent pour l'habitat et les ressources. Les EAE ont des répercussions sur la croissance et le rendement en chair et engendrent des coûts d'entretien et de main-d'œuvre supplémentaires pour les producteurs et les transformateurs. On a fait valoir au Comité que, dès qu'une espèce envahissante s'établit dans une région, il est essentiel d'élaborer des technologies et des pratiques novatrices pour en assurer efficacement la gestion. Il est particulièrement important de mettre rapidement en place des mesures d'intervention dès les premières phases d'une invasion. Par conséquent, le Comité recommande :

5. **Que Pêches et Océans Canada travaille avec les provinces et l'industrie aquacole afin d'évaluer dans les deux prochaines années de nouvelles technologies et méthodes permettant la gestion efficace des espèces aquatiques envahissantes dans le secteur conchylicole.**

CHAPITRE 4 : écosystèmes sains et productifs

> *Je dirais à quiconque s'oppose à l'aquaculture que certains des meilleurs gardiens de l'océan sont les gens qui travaillent dans cette industrie, parce qu'ils gagnent leur vie tous les jours sur l'océan. Nous ne voulons certainement pas créer de problèmes. Nous voulons assurer la viabilité et la durabilité de notre industrie pour de nombreuses générations à venir. Terry Ennis, président et chef de la direction, Atlantic Aqua Farms (21:25)*

L'aquaculture dépend d'eaux propres, saines et productives. Le respect par l'industrie des lois, règlements, conditions de permis et codes de pratiques exemplaires rigoureux constitue un élément essentiel de la durabilité de l'aquaculture. Le Comité est d'avis que la protection de l'environnement et le maintien d'écosystèmes aquatiques de grande qualité sont des principes fondamentaux qui permettront de réaliser le potentiel de l'industrie aquacole canadienne au cours des 10 prochaines années.

4.1 Répercussions de la pisciculture marine sur l'environnement benthique

On a expliqué au Comité que, en raison de l'exploitation de sites piscicoles marins, des matières organiques sont rejetées dans les eaux environnantes. Ces matières sont constituées de la nourriture excédentaire, de matières fécales et d'autres sécrétions, ainsi que de médicaments, de produits antiparasitaires et de produits de traitement antisalissure. Certaines de ces matières se déposent sur le fond marin ou près des parcs, où elles s'accumulent, alors que d'autres sont dispersées dans la colonne d'eau, ce qui répand des matières organiques bien au-delà du périmètre du site aquacole. Ainsi, les opérations aquacoles ont à la fois des effets à proximité (circonscrits) et des effets à très grande distance (lointains).

Selon des documents du MPO, les effets à proximité de la pisciculture marine ont été étudiés et sont ceux qui sont généralement analysés dans le cadre de la surveillance environnementale (principalement parce qu'ils se prêtent mieux aux évaluations). Les évaluations s'effectuent au moyen d'échantillons du fond marin (pour les substrats meubles) et de surveillance vidéo (pour les substrats durs). Les effets à très grande distance prennent plus de temps à se faire sentir et sont plus difficiles à déceler. Ils sont également moins bien compris, en grande partie parce qu'ils résultent de nombreux facteurs (p. ex. les déchets municipaux ou industriels, le ruissellement agricole) et qu'il est difficile d'estimer la contribution relative de l'aquaculture par rapport aux nombreux autres stresseurs environnementaux[17].

Au cours de leur témoignage, des représentants gouvernementaux et de l'industrie de même que de nombreux chercheurs ont reconnu que les matières organiques rejetées par les opérations aquacoles se déposent sur le fond marin. Ils ont également reconnu que, si suffisamment de matières s'accumulent sur le fond, la composition et la structure physique, chimique et biologique des habitats des fonds marins près des opérations aquacoles pourraient être altérées. Ils ont toutefois

17 D.J. Wildish, M. Dowd, T.F. Sutherland et C.D. Levings, « ***Enrichissement organique à proximité des installations piscicoles en mer*** », *Rapports techniques canadiens des sciences halieutiques et aquatiques*, vol. 3, MPO, 2004; B.T. Hargrave, ***Far-Field Environmental Effects of Marine Finfish Aquaculture***, *Rapports techniques canadiens des sciences halieutiques et aquatiques*, vol. 1, MPO, 2003.

souligné que les changements environnementaux causés par l'accumulation de matières organiques sont rarement permanents et ont expliqué que, lorsque l'accumulation excessive de matières organiques cesse, le benthos reprend naturellement son état d'origine. C'est la raison pour laquelle la mise en jachère (une technique visant à laisser un site inactif pour une période de temps) est appliquée dans toutes les régions; la durée de la mise en jachère varie en fonction des conditions environnementales de la zone, comme la température, la saison, l'hydrographie, le rinçage, le type de substrat, la profondeur et autres caractéristiques de l'écosystème. Surtout, par l'intermédiaire du choix des sites et des conditions d'octroi de permis, les organismes de réglementation au Canada ont mis en place des mesures d'atténuation comme une limite de biomasse pour s'assurer que les matières organiques rejetées n'ont pas d'effets nocifs sur les poissons et leur habitat.

On a expliqué au Comité que, au cours du processus de choix du site, les opérateurs aquacoles doivent effectuer leur propre évaluation du site pour relever les caractéristiques environnementales de la zone générale visée par leur demande (réserves écologiques, aires marines protégées, rivières à saumons, les voies de migration, etc.). Puis, au cours du processus d'octroi de permis, ils doivent présenter les résultats de l'évaluation de l'habitat effectuée à l'aide du logiciel DEPOMOD, le modèle prédictif du dépôt de matières organiques recommandé par le MPO. Les organismes de réglementation de chacune des provinces se fondent sur les niveaux d'accumulation de matières organiques prévus par DEPOMOD ainsi que les évaluations initiales des habitats lors du processus d'autorisation des sites afin de protéger les habitats vulnérables (le MPO présente des commentaires et des avis scientifiques aux gouvernements provinciaux au cours de leur processus décisionnel). Pour chaque permis, des seuils sont établis en fonction de ces données afin de restreindre l'intensité ou la durée de l'accumulation de matières organiques, de sorte que les changements au fond marin seront bénins et n'auront pas d'effets néfastes graves sur la capacité et les fonctions de l'écosystème. Ce processus de choix des sites long et rigoureux permet de veiller à ce que l'on accorde suffisamment d'importance aux répercussions sur l'environnement benthique et à ce que chaque permis soit assorti de limites d'accumulation adaptées.

En outre, dans toutes les provinces, les conditions des permis pour les activités piscicoles en mer obligent les opérateurs à surveiller sur une base régulière leurs sites. Tous les rapports et les données vidéo produits par l'industrie sont évalués par les organismes de réglementation pour garantir le respect des conditions des permis. Toute infraction peut entraîner des sanctions. En plus des activités de surveillance et de la production de rapports par les détenteurs de permis, les organismes de réglementation effectuent des vérifications des sites afin de recueillir et d'analyser des échantillons de sédiments et des documents vidéo. Ces vérifications ont quatre objectifs, soit :

- comparer les données produites par l'industrie avec celles obtenues par les organismes de réglementation pour s'assurer du respect des procédures et de la corrélation entre les deux ensembles de données;
- déterminer si les transects ou les stations de surveillance de la conformité appropriés sont utilisés par l'industrie;
- examiner les sites présentant un faible rendement environnemental ou des problèmes de conformité;

- en apprendre davantage sur les répercussions sur l'environnement benthique à différents moments du cycle de production et du cycle de rétablissement des sites.

Les seuils pour les sites sur substrat meuble sont fondés sur les niveaux de sulfure dans les échantillons de sédiments. Pour les sites sur substrat dur (à T.-N.-L. et dans certaines régions de la C.-B., par exemple), les seuils sont fondés sur la présence visible d'un polychète (un ver) et de *Beggiatoa* (une bactérie). Si un site ne respecte pas les limites établies, l'organisme de réglementation peut ordonner la mise en jachère du site jusqu'à ce que des analyses montrent un rétablissement suffisant de l'environnement benthique. D'autres mesures peuvent être imposées pour réduire l'accumulation de matières organiques, par exemple en retardant l'empoissonnement, en modifiant la disposition des structures d'élevage dans les sites de grossissement, et en modifiant les densités des stocks ou les méthodes de distribution de la nourriture. Dans les cas extrêmes, il est possible de changer l'emplacement d'un site.

Selon des recherches menées au Canada[18] et en Norvège[19], l'aquaculture a peu de répercussions sur l'environnement benthique. Toutefois, le Comité a reçu des documents et entendu des témoignages de citoyens, de groupes et d'organismes qui s'inquiètent des effets de l'aquaculture sur l'environnement benthique.

Dans certains cas, il a été montré que les activités aquacoles ont altéré l'environnement benthique près des sites de grossissement et que la mise en jachère obligatoire n'a pas permis d'éliminer ces altérations[20]. Dans un cas en particulier, les données ont montré que deux ans de mise en jachère n'ont pas suffi pour rétablir le benthos près du substrat meuble d'un site de grossissement. Il y a lieu de déterminer ce qui cause ces situations. Les facteurs peuvent comprendre, entre autres, le non-respect des pratiques exemplaires par l'aquaculteur (auquel cas l'organisme de réglementation doit immédiatement prendre des mesures); le fait que le site n'est pas propice aux activités aquacoles (auquel cas le permis devrait être révoqué; une telle situation ne risque pas de se produire si le ministre fédéral dispose d'un pouvoir de véto sur le développement de sites aquacoles); des changements aux caractéristiques environnementales du site depuis l'octroi du permis ou de la concession, comme la température de l'eau ou le courant (auquel cas le permis ou ses conditions devraient être examinés, ou le site, déplacé). Peu importe les facteurs, le Comité estime que l'altération à long terme de l'environnement benthique est inacceptable et que des mesures devraient être prises pour remédier à la situation dès qu'il y a dépassement des seuils. Ces situations sont néfastes pour l'environnement, mais elles nuisent également à la réputation des opérations aquacoles de la région qui ne causent pas de

18 MPO, ***Gestion des matières biologiques***, consulté le 17 avril 2015.

19 Geir Lasse Taranger *et al.*, « **Risk Assessment of the Environmental Impact of Norwegian Atlantic Salmon Farming** », *ICES Journal of Marine Science*, 2 septembre 2014; Vivian Husa, Tina Kutti, Arne Ervik, Kjersti Sjøtun, Pia Kupka Hansen et Jan Aure, « **Regional Impact from Finfish Farming in an Intensive Production Area (Hardangerfjord, Norway)** », *Marine Biology Research*, vol. 10, nº 3, 2014, p. 241-252.

20 Trois articles de recherche sur ce sujet ont été présentés au Comité : Ronald H. Loucks, Ruth E. Smith, Clyde V. Fisher et E. Brian Fisher, « **Copper in the Sediment and Sea Surface Microlayer Near a Fallowed, Open-Net Fish Farm** », *Marine Pollution Bulletin*, vol. 64, nº 9, septembre 2012, p. 1970-1973; Inka Milewski, ***Nova Scotia Environmental Monitoring Program for Finfish Aquaculture: An Update (2006-2011)***, Atlantic Coalition for Aquaculture Reform, février 2013; et Inka Milewski, ***Aquaculture Survey and Macro-Invertebrate Analysis Report (Shelburne Harbour, Former Sandy Point Lease)***, Conseil de la conservation du Nouveau-Brunswick, février 2014.

dommages à l'environnement benthique (voire la réputation de l'industrie dans son ensemble).

Sur une note plus positive, il est important de reconnaître que le RAA du MPO obligera les pisciculteurs en mer au Canada à surveiller régulièrement les niveaux de sulfure selon des critères précis d'échantillonnage du substrat. Si le benthos dépasse les seuils établis, des mesures de rétablissement doivent être imposées. Les opérateurs qui ne respectent pas la réglementation ou qui ne se plient pas à l'obligation de prendre des mesures de rétablissement sont passibles d'amendes, voire d'emprisonnement. En outre, le MPO utilisera des données recueillies en vertu du RAA afin d'évaluer et, au besoin, de modifier l'approche de la surveillance et les seuils.

Certains témoins ont indiqué que la surveillance de l'environnement aquacole au Canada accorde trop d'importance aux sédiments du substrat et ne tient pas suffisamment compte des sédiments en suspensions dans la colonne d'eau et de l'accumulation de matières sur le fond marin dans les régions éloignées du site. Cette position fait écho aux conclusions d'une revue de la littérature scientifique, qui a recensé des lacunes dans les connaissances sur les effets environnementaux à très grande distance de la pisciculture en mer. Parmi les effets environnementaux à très grande distance potentiels des opérations aquacoles relevés dans la littérature scientifique, on note les changements dans les communautés planctoniques aux alentours des sites aquacoles et l'eutrophisation. Le Comité est d'avis qu'il faut mener davantage de recherches et que les renseignements qui en découleront appuieront la prise de décision concernant la surveillance et l'atténuation des effets à très grande distance associés aux opérations aquacoles. En outre, ces connaissances pourraient mener à l'élaboration de nouveaux critères de choix de sites et de nouveaux outils de surveillance. Elles pourraient également contribuer au développement durable de l'industrie.

4.2 Effets des produits antiparasitaires sur les espèces non visées

Les produits utilisés pour lutter contre le pou du poisson sont rejetés dans l'environnement à la fin des traitements administrés à l'aide de bâches ou de bateaux-viviers, ce qui soulève des préoccupations sur leurs effets potentiels sur les autres organismes et l'écosystème. Le Comité a entendu des témoignages sur les conclusions de recherches menées récemment sur l'utilisation de ces produits et de leurs effets potentiels sur les espèces non visées, plus particulièrement sur le homard.

Dans le cadre de recherches menées au Marine Institute de l'Université Memorial de T.N.-L., on a examiné la vitesse à laquelle les produits de lutte contre le pou du poisson se diluent et se dispersent à la suite d'un traitement administré à l'aide de bâches et sur des bateaux-viviers en fonction de différents régimes d'écoulement simulés reproduisant les conditions des sites de grossissement sur la côte Est. Les recherches portaient également sur les répercussions du rejet des produits antiparasitaires sur des espèces non visées. Les expériences ont montré que les produits se diluent et se dispersent rapidement dans les couches supérieures de la colonne d'eau. On a conclu que, dans des conditions de traitement normales, les espèces non visées vivant sur le fond marin ne sont pas touchées par les produits de lutte contre le pou du poisson[21].

21 Voir ***Captage potentiel des ingrédients actifs des agents thérapeutiques chimiques avant leur rejet dans l'environnement***.

Plus récemment, trois études ont porté sur la dilution, la dispersion et la toxicité de trois produits de lutte contre le pou du poisson : Salmosan®, Paramove® 50 et AlphaMax®. Les recherches ont montré qu'AlphaMax® ne se dilue pas rapidement et qu'il faut s'éloigner de près d'un kilomètre d'un site où il est administré avant que sa concentration passe sous les seuils de toxicité. En outre, on a relevé qu'AlphaMax® est hautement toxique pour les crustacés, y compris les homards. Par conséquent, l'utilisation d'Alphamax® n'est plus autorisée au Canada. En outre, les recherches ont montré que Paramove® se dilue plus rapidement et se propage dans une région plus restreinte que les deux autres produits; il s'agit également du produit le moins toxique des trois traitements étudiés. Son ingrédient actif est le peroxyde d'hydrogène; cette substance se dégrade en oxygène et en eau, ne persiste pas dans l'environnement et n'entraîne pas de bioaccumulation. En ce qui concerne Salmosan®, les recherches ont montré que le produit prend plus de temps pour se diluer que Paramove®, mais qu'il ne faut que quelques mètres pour que les concentrations tombent sous les seuils de toxicité. Il a été montré que les effets potentiels de Salmosan® sur les espèces non visées, comme le homard, dépendent de la présence de ces espèces dans la zone d'influence au moment de l'administration du traitement ainsi que de leur état de croissance. Enfin, les recherches ont montré que, si les produits antiparasitaires sont administrés dans des bateaux-viviers, le potentiel

Le Fisheries and Marine Institute de l'Université Memorial de Terre-Neuve-et-Labrador est un centre de calibre mondial de formation, d'apprentissage, de recherche appliquée et de soutien technologique aux industries océaniques. La School of Fisheries abrite le Centre for Aquaculture and Seafood Development, qui offre au secteur aquacole tout un éventail de services dans les domaines de la recherche appliquée, du développement de produits et de procédés, du transfert de technologies, des services de conseil et de la formation. Le Comité a rencontré des représentants de l'Université et a visité certaines des installations de l'Institut.

toxique des traitements est au minimum trois fois moins important[22].

Le Comité a été heureux d'apprendre que les résultats des recherches ont été utilisés par l'ARLA et qu'ils ont mené à l'interdiction d'Alphamax®. Nous estimons que l'élaboration et l'application d'approches non chimiques à la lutte contre le pou du poisson devraient réduire la dépendance de l'industrie aux traitements chimiques. Cela dit, nous estimons que les recherches sur les effets potentiels des traitements contre le pou du poisson sur les espèces non visées, comme celles que nous avons mentionnées, devraient se poursuivre puisque les aquaculteurs auraient accès à une plus grande gamme de produits dans le cadre du programme « utilisations mineures et espèces mineures », qui fait l'objet d'une recommandation dans le chapitre précédent. En outre, nous croyons que ces recherches devraient être menées par des scientifiques du MPO, de l'ARLA et de Santé Canada à l'aide de données recueillies grâce aux rapports devant être présentés conformément au RAA.

En ce qui concerne les préoccupations sur la résistance croissante aux traitements contre le pou du poisson[23], le Comité estime que l'industrie devrait entreprendre de la R-D sur les nouvelles méthodes non chimiques de contrôle du pou du poisson, comme le traitement par eau douce, le laser, les poissons-nettoyeurs, le changement de profondeur des cages ou les changements à la conception des cages.

Dans l'ensemble, le Comité estime que la recherche devrait se concentrer en priorité sur les effets à très grande distance de l'aquaculture et les effets des produits antiparasitaires sur les espèces non ciblées. Par conséquent, le Comité recommande :

6. **Que Pêches et Océans Canada entreprenne des recherches collaboratives sur les effets à très grande distance de la pisciculture en mer et les effets potentiels des produits antiparasitaires utilisés dans la lutte contre le pou du poisson sur les espèces non visées; ces domaines de recherche devraient être priorisés.**

22 F. H. Page et Les Burridge, ***Estimates of the Effects of Sea Lice Chemical Therapeutants on Non-Target Organisms Associated with Releases of Therapeutants from Tarped Net-Pens and Well-Boat Bath Treatments: A Discussion Paper***, Secrétariat canadien de consultation scientifique, MPO, décembre 2014; William Ernst *et al.*, « **Dispersion and Toxicity to Non-Target Crustaceans of Azamethiphos and Deltamethrin after Sea Lice Treatments on Salmon Farms** », *Aquaculture*, vol. 424-425, mars 2014, p. 104-112; Les Burridge, ***A Review of Potential Environmental Risks Associated with the Use of Pesticides to Treat Atlantic Salmon Against Infestations of Sea Lice in Southwest New Brunswick, Canada***, Secrétariat canadien de consultation scientifique, MPO, août 2013.

23 Sonja Saksida *et al.*, ***Population Ecology and Epidemiology of Sea Lice in Canadian Waters***, document de recherche 2015/004, Secrétariat canadien de consultation scientifique, MPO, mars 2015.

4.3 Répercussions sur les stocks de saumons sauvages

> *J'ai demandé que vous prêtiez l'oreille aux mots que je prononce et qui viennent du fond du cœur de ma nation. J'ai demandé que vous prêtiez l'oreille à ces mots en pensant à une chose qui représente beaucoup pour la spiritualité de notre nation; je parle du saumon sauvage. Notre culture et nos traditions sont en grande partie fondées sur le festin, et nous devons pouvoir compter sur les ressources de nos territoires si nous voulons soutenir et perpétuer notre culture, qui nous vient des temps immémoriaux. Nous voyons clairement l'importance du saumon sauvage par-dessus tout autre débouché économique, étant donné que cet aliment de base est devenu à ce point indissociable, chez nous, que nous avons créé en son honneur une danse très sacrée.*
> *Chef Bob Chamberlin, vice-président, Union of British Columbia Indian Chiefs (4:148–149)*

4.3.1 Évasions

Les sites de grossissement aquacoles contiennent habituellement un grand nombre de poissons. Les dommages causés aux structures d'élevage par, entre autres, les tempêtes, les collisions avec des bateaux, les attaques de prédateurs ainsi que par l'entretien inadéquat des filets, la mauvaise manipulation des poissons et le vandalisme peuvent entraîner des évasions de poissons d'élevage dans l'environnement immédiat ou, s'ils ne sont pas capturés rapidement, dans l'environnement en général.

Les infrastructures de grossissement font l'objet de règlements rigoureux et sont régulièrement inspectées. De plus, les opérateurs aquacoles doivent signaler dans de brefs délais les cas d'évasion pour s'assurer de consigner ces incidents et que les efforts de capture sont conformes aux règlements. Des représentants du MPO ont indiqué au Comité que les évasions ont diminué tant en fréquence qu'en nombre au fil des ans au Canada grâce à l'amélioration de la technologie, au meilleur entretien des filets, au meilleur ancrage des structures, aux lignes directrices plus strictes pour les navires naviguant près des sites aquacoles, à l'amélioration des codes de conduite et de la formation du personnel sur la manipulation des poissons, au signalement obligatoire des évasions et aux plans de recapture.

Le Comité comprend toutefois que, malgré la bonne volonté, les évasions sont inévitables, que ce soit en raison de temps violent ou d'erreur humaine, et il reconnaît qu'il est parfois impossible de connaître le nombre d'évasions. Par conséquent, le Comité estime qu'il est important de comprendre les effets néfastes des évasions sur l'environnement, plus particulièrement sur les stocks de poissons sauvages, un domaine auquel les chercheurs s'intéressent depuis plusieurs années au Canada et à l'étranger.

Il faut tout d'abord noter qu'on pratique l'élevage du saumon atlantique sur la côte Est et la côte Ouest; bien qu'il ne soit pas une espèce indigène de l'océan Pacifique, le saumon atlantique est très important pour l'industrie aquacole de la côte Ouest. Des études ont porté sur l'évasion de cette espèce non indigène en C.-B. et, au cours des visites de sites dans la province, le Comité a appris que le saumon atlantique ne s'est pas encore établi dans les eaux de la C.-B., et ce, même si on en fait l'élevage depuis environ 30 ans. Selon des recherches, le risque que posent les évasions de saumons atlantiques d'élevage pour les stocks de saumons du Pacifique sauvages est faible; le saumon atlantique d'élevage et le saumon du Pacifique sauvage ont peu d'interactions, qu'il s'agisse de compétition pour l'habitat ou la nourriture ou de relation prédateur-proie. En outre, il n'a pas été prouvé que les saumons atlantiques d'élevage qui s'enfuient parviennent à se

reproduire avec des saumons du Pacifique sauvages, bien qu'ils puissent se reproduire avec des poissons sauvages de leur propre espèce (une situation qui se produit sur la côte Est). Les effets environnementaux néfastes des évasions de saumons atlantiques sur la côte Ouest semblent donc, pour l'instant, faibles. Toutefois, la situation est toute autre sur la côte Est.

De nombreux témoins ont indiqué au Comité que l'une des plus grandes préoccupations concernant les évasions de saumons atlantiques dans l'océan Atlantique est le risque de croisement et d'introgression avec les populations de saumons atlantiques sauvages, ce qui pourrait entraîner des modifications génétiques et réduire la capacité de survie des saumons sauvages dans la région. En outre, le Comité sur la situation des espèces en péril au Canada (COSEPAC) a attribué à certains stocks de saumons sauvages de la côte Est le statut d'espèce en voie de disparition ou d'espèce menacée[24]; ces espèces sont donc plus vulnérables à l'affaiblissement de leur patrimoine génétique si elles se reproduisent avec des saumons atlantiques d'élevage qui se sont enfuis des sites aquacoles.

Dans le cadre d'études menées au Canada[25] et en Norvège[26] (pays qui, comme le Canada, a des populations de saumons atlantiques sauvages ainsi qu'un secteur d'élevage du saumon atlantique très actif), on a observé des cas de croisement entre les populations sauvages et les populations d'élevage, et ces croisements ont diminué la capacité de survie en milieu sauvage de la nouvelle génération. Néanmoins, selon l'étude norvégienne, les grandes populations de saumons sauvages (et, par conséquent, les populations en santé) se sont montrées plus résilientes et, donc, moins touchées (voire aucunement touchées) par les évasions de saumons d'élevage. À l'inverse, les populations sauvages vulnérables (comme les espèces en voie de disparition ou menacées) étaient plus vulnérables aux évasions de saumons et portaient plus de signes de modifications génétiques découlant de croisements.

Bien que le Comité encourage la croissance durable de l'industrie aquacole au Canada, il estime que cette croissance ne doit pas se faire au détriment des stocks de saumons sauvages. De manière générale, les régions les plus propices aux opérations salmonicoles sont également celles où vivent des stocks de saumons sauvages. Il y a donc lieu d'envisager des restrictions pour veiller à ce que les opérations aquacoles faisant l'élevage du saumon atlantique soient situées loin des populations de saumons sauvages à risque. La réduction du nombre d'évasions est une étape importante, mais il est tout aussi important (voire plus) de reconnaître que les évasions sont inévitables si l'on veut adopter des mesures atténuant le plus possible leurs effets néfastes sur les stocks de saumons sauvages. À T.-N.-L., le Comité a appris que le gouvernement provincial envisage de collaborer avec le MPO pour relever les zones où les activités aquacoles devraient être interdites pour cette raison précise.

24 Une *espèce en voie de disparition* est une espèce sauvage exposée à une disparition de la planète ou à une disparition du pays imminente, alors qu'une *espèce menacée* est une espèce sauvage susceptible de devenir « en voie de disparition » si rien n'est fait pour contrer les facteurs menaçant de la faire disparaître.

25 Vincent Bourret *et al.*, « **Temporal Change in Genetic Integrity Suggests Loss of Local Adaptation in a Wild Atlantic Salmon (Salmo Salar) Population Following Introgression by Farmed Escapees** », *Heredity*, nº 106, 2011, p. 500-510.

26 Glover *et al.*, « **Atlantic Salmon Populations Invaded by Farmed Escapees: Quantifying Genetic Introgression With a Bayesian Approach and SNPs** », *BMC Genetics*, 2013.

La Norvège a désigné 52 rivières à saumons nationales et 29 fjords à saumons nationaux. Dans ces zones, l'industrie salmonicole est assujettie à des lois plus strictes (notamment un moratoire sur l'expansion des opérations aquacoles dans certaines régions et une interdiction d'établir des opérations aquacoles dans d'autres). L'Écosse a également limité la croissance de la pisciculture sur les côtes Nord et Est afin de protéger les espèces migratrices sauvages. Pour sa part, le Canada a établi 34 zones de gestion du saumon atlantique (ZGS), dont seulement six d'entre elles abritent des opérations salmonicoles.

En outre, la Norvège a adopté une autre mesure à cet égard, soit la création de la Commission des évasions en aquaculture, un organisme permanent qui tient des enquêtes sur chaque cas d'évasion, analyse les causes des évasions et propose des améliorations réglementaires. Le défaut de signalement des cas soupçonnés d'évasion est un acte criminel. La Norvège envisage également le marquage obligatoire des saumons d'élevage, l'utilisation de poissons stériles et la création d'un fonds financé par l'industrie pour couvrir le coût du retrait des poissons évadés d'un nombre représentatif de rivières.

Afin de mieux comprendre la santé des populations de saumons sauvages sur la côte Est, le MPO a mis sur pied le Comité consultatif ministériel sur le saumon de l'Atlantique en mars 2015; son mandat comprend quatre volets : 1) les mesures de conservation et d'application, 2) la prédation, 3) une stratégie visant la pêche étrangère non durable, 4) des domaines ciblés pour faire progresser la science[27]. Par conséquent, le MPO s'est engagé à recueillir plus de renseignements sur les stocks de saumons atlantiques sauvages; ces renseignements aideront le Ministère et l'industrie aquacole à réévaluer, si nécessaire, l'emplacement et le fonctionnement des opérations aquacoles consacrées à l'élevage du saumon atlantique ainsi qu'à déterminer les risques associés aux propositions de sites aquacoles. Ces travaux pourraient mener le MPO à désigner des zones où la production salmonicole est interdite, plus particulièrement dans les régions où les populations de saumons sauvages sont menacées ou en voie de disparition.

Dans le passé, le MPO s'est prononcé contre les propositions d'opérations salmonicoles dans les régions où l'état des populations de saumons sauvages est préoccupant. Le MPO doit poursuivre cette approche, et son avis devrait toujours être accepté[28].

4.3.2 Agents pathogènes dans les opérations aquacoles et la migration en mer de saumoneaux

Lorsque les poissons sont introduits dans les sites de grossissement en mer, ils proviennent directement d'une écloserie en eau douce. Ils sont donc exempts de pou du poisson lorsqu'ils sont introduits dans l'environnement marin; le pou du poisson provient des poissons sauvages. Le Comité a appris que la forte densité des poissons dans les sites de grossissement augmente le nombre de poux du poisson et multiplie les risques de retransmission vers les poissons sauvages. Bien que l'on reconnaisse que les sites de grossissement aquacoles, plus particulièrement ceux consacrés au

27 MPO, « **La ministre Shea lance le Comité consultatif ministériel sur le saumon de l'Atlantique** », *Communiqué de presse*, 9 mars 2015.

28 Voir, par exemple, MPO, ***Populations de saumon sauvage à proximité d'un développement de l'aquaculture des poissons à nageoires proposé dans la baie St. Mary's, en Nouvelle-Écosse***, Secrétariat canadien de consultation scientifique, rapport 2011/001, mai 2011.

saumon atlantique, sont des réservoirs potentiels pour le pou du poisson, les effets des infestations au pou du poisson sur les saumons sauvages font encore l'objet de débats. Durant les audiences tenues à Nanaimo (C.-B.), plusieurs témoins ont exprimé des préoccupations concernant le passage des saumoneaux à proximité des sites de grossissement aquacoles au cours de leur migration en mer. Ils ont expliqué que, à cette étape de leur croissance, les poissons sont très petits et n'ont pas encore d'écailles, ce qui les rend plus vulnérables aux parasites comme le pou du poisson. On a indiqué au Comité qu'il suffit d'un ou deux poux du poisson pour tuer un saumoneau ou le mutiler et le rendre vulnérable aux prédateurs et aux autres agents pathogènes.

En revanche, selon une étude présentée au Comité, le pou du poisson chez les poissons d'élevage n'a pas contribué de manière considérable au déclin de la productivité du saumon du Pacifique (rose) sauvage. L'étude souligne plutôt que les températures des eaux, la salinité et l'abondance de nourriture seraient des facteurs plus importants que le pou du poisson. Cette étude, qui couvrait une période de 10 ans et se fondait sur des données de la région de l'archipel Broughton, a conclu que la séparation du saumon d'élevage et du saumon sauvage – par la mise en jachère des sites se trouvant dans les corridors de migration des saumoneaux – n'améliorerait pas la productivité du saumon sauvage[29].

Néanmoins, les entreprises aquacoles dans l'archipel Broughton ont indiqué au Comité qu'elles ont adopté une approche préventive afin d'atténuer les risques aux saumoneaux sauvages au cours de leur migration en mer annuelle au printemps[30]. Par exemple, elles peuvent administrer à leurs poissons des traitements antiparasitaires en hiver, avant la période de migration en mer des saumoneaux sauvages. Les entreprises peuvent également utiliser des méthodes non médicinales, comme la mise en jachère et la réduction des densités des stocks. En outre, elles ont indiqué qu'elles continuent leurs recherches sur des techniques de gestion des risques et des nouveaux parasites. Elles ont cité une étude effectuée par Peacock *et coll.*, selon laquelle ces mesures ont eu des effets bénéfiques pour les populations de saumons sauvages[31].

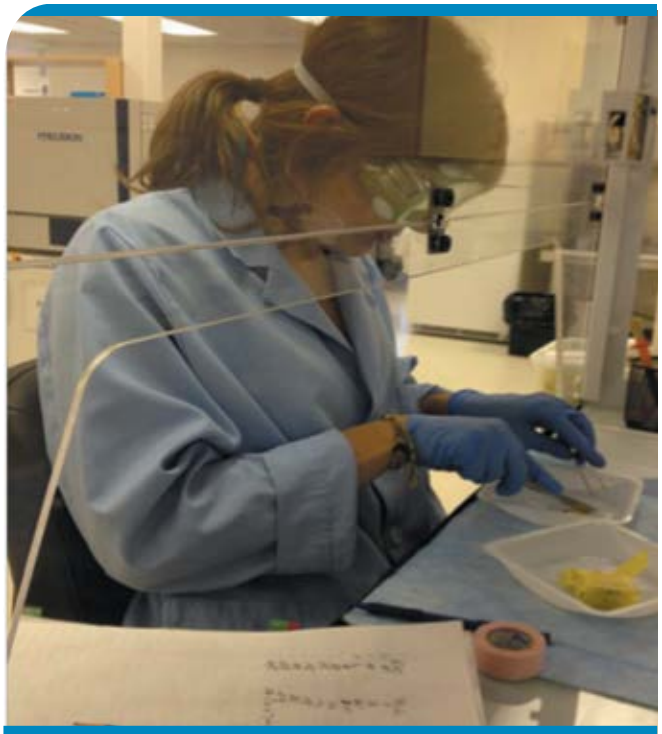
De manière semblable, des témoins ont souligné le risque de transmission de maladies entre les poissons d'élevage et les poissons sauvages. Selon certains, ce risque est faible. Le Comité a appris que moins de 1 % des saumons d'élevage en C.-B. meurent de maladies pouvant être transmises aux saumons du Pacifique sauvages. Des 99 % restants, 90 % survivent et 9 % meurent d'autres causes. On a expliqué que le risque de propagation de maladies infectieuses parmi les saumons d'élevage est plus élevé que le risque de transmission des maladies des saumons d'élevage aux saumons sauvages. Par conséquent, des témoins ont fait valoir qu'il est raisonnable de croire que les maladies provenant des sites aquacoles tuent

29 Gary D. Marty, Sonja M. Saksida, et Terrance J. Quinn, « **Relationship of Farm Salmon, Sea Lice and Wild Salmon Populations** », *Proceedings of the National Academy of Sciences*, 13 décembre 2010.

30 Selon le plus récent conseil scientifique du MPO évalué par les pairs sur cette question, le risque de transmission du pou du poisson des sites de grossissement aquacoles aux saumoneaux sauvages atteint probablement un sommet au cours de la période de migration en mer. Voir MPO, ***Surveillance du pou du poisson et mesures non chimiques***, Secrétariat canadien de consultation scientifique, juillet 2014.

31 Stephanie J. Peacock, Martin Krkosek, Stan Proboszcz, Craig Orr, et Mark A. Lewis, « **Cessation of a Salmon Decline with Control of Parasites** », *Ecological Applications*, vol. 23, nº 3, avril 2013, p. 606–620.

moins de 1 % de saumons sauvages par année. Ce taux, a-t-on souligné, se situe bien en dessous du taux de mortalité naturelle des saumoneaux sauvages, qui est évalué à 3 % par jour.



Le BC Centre for Aquatic Health Sciences (BC CAHS) est une installation sans but lucratif qui effectue des recherches et offre des services liés à la santé des poissons sauvages et des poissons d'élevage. Situé à Campbell River, le BC CAHS mène des projets de recherche fondamentale et appliquée de concert avec des partenaires, comme des Premières Nations, l'industrie, le gouvernement et le milieu universitaire. Actif depuis 2005, le BC CAHS emploie 11 personnes et est reconnu mondialement pour ses recherches sur le pou du poisson et ses effets tant sur les populations de poissons sauvages que sur les poissons d'élevage. Le Comité a eu l'occasion de visiter le BC CAHS et de discuter avec les chercheurs qui y travaillent.

Photo utilisée avec l'autorisation de : BC Centre for Aquatic Health Sciences.

Bien que le Comité soit encouragé par ces statistiques, il faut reconnaître les lacunes dans les connaissances sur la santé des stocks de saumons du Pacifique sauvages. Nous avons été heureux d'apprendre que le haut taux de mortalité des saumoneaux sauvages au cours de leur migration en mer fait l'objet d'une étude collaborative de six ans (2012-2018) menée par le MPO, la Fondation du saumon du Pacifique et Genome BC. Nommée Initiative stratégique visant la santé du saumon, cette étude vise à déterminer la présence ou l'absence de 45 agents pathogènes dans des échantillons recueillis sur des saumons sauvages, des saumons dans des écloseries et des saumons d'élevage en C.-B.[32]. Aux fins de l'étude, une nouvelle technologie, le Fluidigm BioMark™ HD System, sera utilisée; on effectuera une analyse histopathologique des échantillons et on dressera le profil d'expression génétique afin de cerner les agents pathogènes qui risquent le plus d'être associés à une maladie. Le Comité est d'avis que les conclusions de cette recherche seront utiles pour l'évaluation des risques liés au transfert d'agents pathogènes des saumons d'élevage aux saumons sauvages, et pour le moratoire imposé au développement aquacole dans la région des îles Discovery.

4.4 Répercussions de la conchyliculture

Le Comité a eu l'occasion de visiter plusieurs opérations conchylicoles (une écloserie-nourricerie, deux sites de grossissement, une usine d'assainissement, et trois usines de transformation) et de tenir des groupes de discussions consacrées entièrement à la conchyliculture dans toutes les villes où des audiences publiques ont eu lieu. En général, nous avons entendu moins de témoignages sur les répercussions environnementales de la conchyliculture

32 Genome British Columbia, ***Strategic Salmon Health Initiative***.

comparativement à la pisciculture en mer. Toutefois, les témoins qui ont abordé la question ont soulevé des préoccupations importantes.

Par exemple, certaines opérations conchylicoles en C.-B. produisent un grand volume de déchets, comme du plastique et du Styrofoam®, qu'elles rejettent dans l'eau ou sur les berges. En outre, lorsque des opérations se terminent dans certains secteurs, le matériel et l'équipement sont abandonnés dans les eaux plutôt que d'être retirés. Bien que ces opérations ne constituent qu'un nombre limité parmi les conchyliculteurs canadiens, leurs actions minent la réputation et l'acceptation sociale des conchyliculteurs qui utilisent l'environnement avec vigilance et qui tiennent compte des autres utilisateurs du milieu. Le Comité ne saurait, en toute conscience, tolérer les opérations qui posent ce type d'actions.

Peut-être le code de conduite en place n'a-t-il pas été respecté par les opérateurs – une situation qui aurait été évidente pour l'industrie –, peut-être y a-t-il eu un manque d'application réglementaire de la part des inspecteurs du MPO responsables du secteur, il n'en demeure pas moins que ces situations sont inacceptables et que des mesures devraient être prises pour mettre un terme au mauvais usage des eaux publiques. Peu importe les raisons, il faudrait révoquer dans les plus brefs délais les permis des conchyliculteurs qui agissent de la sorte. En outre, afin d'éviter que du matériel soit abandonné dans les eaux publiques après la fermeture d'une opération, les opérateurs devraient être tenus, en vertu des conditions de leur permis, de désaffecter le site de grossissement et d'appliquer les mesures de rétablissement nécessaires, y compris,

Le Comité a visité le Centre for Shellfish Research, qui fait partie de la Deep Bay Marine Field Station. Dirigé par l'Université Vancouver Island, le Centre mène des activités de recherche, notamment sur le développement durable de la conchyliculture et la protection des écosystèmes côtiers.

Photo utilisée avec l'autorisation de : Deep Bay Marine Field Station.

au besoin, le rétablissement de la côte, à leurs frais.

Cela dit, le MPO est responsable de l'octroi de permis pour la conchyliculture en C.-B. et d'assurer le respect des conditions des permis et des dispositions du *Règlement du Pacifique sur l'aquaculture*. Par ailleurs, le Comité considère que les débris sur les sites aquacoles devraient être gérés de façon appropriée dans tous les secteurs de l'industrie – qu'il s'agisse du secteur conchylicole ou piscicole – et dans toutes les régions du pays – sur la côte Ouest comme sur la côte Est. Par conséquent, nous recommandons :

7. **Que Pêches et Océans Canada effectue des inspections régulières et s'assure de manière cohérente du respect de la réglementation par le secteur conchylicole en Colombie-Britannique, plus particulièrement dans les cas où du matériel flottant ou autre débris (comme des coquillages, des cordes et des bouées) n'est pas enlevé comme le prévoit la réglementation et/ou reste dans l'environnement marin; le Ministère devrait agir de la même façon lorsque des opérateurs aquacoles d'autres provinces laissent des débris dans l'environnement marin.**

Contrairement aux malheureux exemples ci-dessus, on a élaboré et mis en place, dans le secteur conchylicole des autres provinces, des codes de conduite qui complètent les différents mécanismes réglementaires; ces codes définissent les étapes à suivre pour assurer une meilleure protection environnementale dans le domaine de la conchyliculture. Le secteur conchylicole de la C.-B. s'est lui aussi doté d'un code de conduite, et le Comité encourage fortement l'industrie à l'appliquer rigoureusement.

Les préoccupations environnementales les plus courantes dans le secteur de la conchyliculture sont associées au dépôt de matières organiques. On ne nourrit pas les mollusques et crustacés d'élevage de la même manière que les poissons d'élevage puisqu'il s'agit d'organismes filtreurs, c'est-à-dire qu'ils se nourrissent de particules en suspension dans la colonne d'eau. Il n'y a donc pas d'excès d'aliments qui se dépose dans l'environnement benthique. Toutefois, les matières fécales, elles, se déposent et contribuent à une certaine accumulation de matières organiques. Aucun témoin n'a abordé les effets à long terme de cette accumulation sur l'environnement benthique.

4.5 Répercussions de l'aquaculture en eau douce

> *Nous [l'industrie aquacole en eau douce] surveillerons nos activités, et nous utiliserons le principe de la gestion adaptative. Si nous découvrons que nos activités ont une incidence […] nous utiliserons la gestion adaptative, qui constitue, selon nous, un principe de précaution. Nous déterminerons ce qui se passe et nous ferons ce qui s'impose pour atténuer l'effet qui est perçu ou qui est négatif. Mike Meeker, président, Association d'aquaculture du Nord de l'Ontario (17:22)*

Comparativement à l'aquaculture en milieu marin, le Comité a entendu très peu de témoignages portant précisément sur l'aquaculture en eau douce. Au cours de nos missions d'étude, nous avons visité les régions du pays où le secteur de l'aquaculture en mer est présent, soit le secteur responsable de la plus grande portion de la production aquacole au Canada. Selon les témoignages entendus au cours des audiences, les défis auxquels est confrontée l'aquaculture en eau douce diffèrent dans une certaine mesure

de ceux relevés dans le secteur de l'aquaculture en mer. Puisque le Canada a un immense potentiel non exploité pour l'aquaculture en eau douce, il semble que la poursuite et le développement de la recherche et des connaissances sur les environnements en eau douce sont cruciaux si l'on veut faire croître ce secteur de l'industrie parallèlement à l'aquaculture en mer.

Nous avons appris que, à l'instar de leurs homologues de l'aquaculture en mer, les opérateurs aquacoles en eau douce doivent surveiller la santé de leurs stocks de poissons pour prévenir l'éclosion de maladies. Tout comme c'est le cas pour l'environnement marin, les agents pathogènes sont naturellement présents dans les environnements en eau douce. Toutefois, le Comité a appris que, grâce à la vigilance et aux pratiques exemplaires de gestion de la santé des stocks, la gestion des maladies ne semble pas être un problème aussi important dans l'environnement en eau douce qu'elle ne l'est dans les environnements marins. En fait, le producteur de truite arc-en-ciel de l'ON qui a comparu devant le Comité n'a utilisé aucun médicament ni produit antiparasitaire dans ses installations au cours des huit dernières années, et il est aujourd'hui le principal producteur canadien de truites arc-en-ciel détenant une certification biologique selon les normes canadiennes.

La principale préoccupation associée à l'aquaculture en eau douce semble être la charge en éléments nutritifs – plus précisément la charge en polluants phosphorés découlant de la faible capacité de rinçage de l'environnement. C'est pourquoi certains témoins ont recommandé le recours aux systèmes d'élevage clos plutôt qu'aux parcs en filet actuellement utilisés dans le secteur de l'aquaculture en eau douce en ON. Toutefois, le Comité a appris que des opérations aquacoles en eau douce sont présentes dans la région de l'île Manitoulin depuis plusieurs décennies et qu'elles ont peu d'effets néfastes sur l'environnement.

Au cours des audiences, nous avons pris connaissance de recherches menées depuis 2001 dans la région des lacs expérimentaux (RLE). Reconnue comme le plus grand laboratoire humide naturel au monde, la RLE, dirigée par le MPO, contient 58 petits lacs dans une région forestière du Nord-Ouest de l'ON. Chaque printemps, on introduit dans la cage aquacole de 12 tonnes du lac 375 quelque 10 000 truites arc-en-ciel (ce qui correspond à une densité supérieure à une opération aquacole normale). Les poissons sont nourris deux fois par jour et sont récoltés vers la fin du mois d'octobre. Les opérations se déroulent de la même manière que dans un site de grossissement habituel, sauf que les scientifiques mesurent tout ce qu'ils peuvent. Un lac adjacent est utilisé comme référence aux fins de comparaison. Qu'ont montré ces recherches jusqu'à maintenant? Nous avons appris que des sédiments s'accumulent sous les cages au cours des opérations normales et que certains organismes qui se trouvent normalement sur le fond quittent le secteur. Les échantillons de sédiments recueillis à différentes distances de la cage montrent peu de changements par rapport aux niveaux naturels. En outre, la population de truites sauvages croît et se reproduit plus rapidement dans le lac 375 que dans le lac de référence.

Le Comité a de plus pris connaissance d'une expérience intéressante menée à Sudbury, en ON, dans le cadre de laquelle on fait l'élevage de poissons à des fins d'empoissonnement à 5 000 pieds sous terre, dans un puits de mine abandonné. La température ambiante de l'eau dans le puits demeure constante à l'année, à près de 22 °C, et semble constituer une incroyable

source de chaleur naturelle. Nous avons également pris connaissance d'une technologie novatrice élaborée pour l'aquaculture en eau douce : la cage submersible. Une cage en filet commerciale a été modifiée de manière à ce que l'on puisse la placer en profondeur et ainsi laisser la glace passer en surface au printemps. De plus, cette technologie élimine les risques que présentent les glaces poussées par le vent, qui peuvent endommager les cages et ainsi causer des pertes économiques et environnementales pour les aquaculteurs.

Le Comité a appris que la truite arc-en-ciel est l'espèce dont on fait le plus couramment l'élevage dans le secteur de l'aquaculture en eau douce de l'ON, mais qu'il y a un grand potentiel pour l'élevage d'autres espèces de poissons à nageoires. Le Comité, reconnaissant que les défis et le cadre réglementaire de ce secteur de l'industrie diffèrent quelque peu de ceux de la pisciculture en mer, appuie cette diversification de l'aquaculture en eau douce si elle est faite de manière durable.

Selon le RAA, le MPO sera responsable, pour l'ensemble du Canada, de la réglementation sur les médicaments et les produits antiparasitaires administrés dans les opérations piscicoles en mer ainsi que de la réglementation sur le dépôt de matières organiques. Le Comité est d'avis que le MPO devrait envisager l'établissement de règlements semblables au RAA, mais visant l'aquaculture en eau douce partout au pays. En outre, nous estimons que, à mesure que croît l'aquaculture en cage en eau douce, il sera important de poursuivre la surveillance de ses effets sur les lacs du Canada.

CHAPITRE 5 : recherche et développement

> *Si je peux vous faire une recommandation en terminant, ce serait la suivante : il faut que le gouvernement fédéral maintienne et accroisse même le financement destiné à la science, à la recherche et au développement. C'est un élément fondamental pour assurer le succès et l'avenir de l'aquaculture au Canada. Michael Szemerda, vice-président, Division des opérations de l'eau salée, Cooke Aquaculture (14:153)*

La recherche sur l'aquaculture au Canada repose sur des bases solides. À l'échelon fédéral, plusieurs ministères et organismes financent et réalisent des études sur l'aquaculture ou y collaborent. Dans le cadre de ses visites partout au Canada, le Comité s'est rendu dans plusieurs centres de recherche qui effectuent depuis des décennies des travaux de recherche et de développement (R-D) de calibre mondial sur un large éventail de sujets liés à l'aquaculture. Ces travaux ont contribué à améliorer le rendement environnemental de l'industrie et ont mené à un resserrement de la réglementation par les gouvernements. Au cours de nos missions d'étude en Norvège et en Écosse, nous avons appris que le Canada est reconnu à l'échelle internationale pour la grande qualité de ses travaux de R-D dans le domaine aquacole, mais qu'il est possible de rehausser ces travaux grâce à une collaboration encore plus étroite. Selon le Comité, pour que l'industrie aquacole continue de fleurir, il est essentiel d'améliorer la coordination des activités de R-D et la collaboration avec ceux qui appuient ces travaux dans le secteur aquacole.

Par ailleurs, le Comité estime qu'il est important que la R-D continue d'éclairer le cadre de réglementation de l'aquaculture et le rendement environnemental de l'industrie. Les critères quant au choix du site, les règlements sur l'aquaculture, les pratiques de surveillance, les exigences en matière de rapports, etc. devraient être revus périodiquement et mis à jour en fonction des résultats des travaux de R-D et des pratiques exemplaires éprouvées. À notre avis, cet examen cyclique est d'une importance cruciale si l'industrie aquacole canadienne veut demeurer concurrentielle dans le marché mondial et continuer d'obtenir l'acceptation sociale.

5.1 Recherche sur l'aquaculture à l'échelon fédéral

Le MPO gère deux programmes de recherche voués à l'aquaculture. Dans le cadre du Programme sur la recherche sur la réglementation de l'aquaculture (PRRA), l'accent est mis sur les interactions entre les espèces d'élevage et sauvages; les effets cumulatifs sur l'environnement des activités aquacoles, les effets à distance et les interactions avec les écosystèmes. Financés et menés par le MPO, ces travaux servent principalement à faciliter la gestion de l'industrie, les décisions et l'élaboration de politiques et de règlements. Par ailleurs, le Programme coopératif de recherche et développement en aquaculture (PCRDA) sert à appuyer la recherche dans le but de favoriser des résultats optimaux en ce qui a trait à la santé des poissons et d'améliorer le rendement environnemental de l'industrie[33]. Le PCRDA est un programme coopératif, ce qui veut dire que l'industrie fournit une partie du financement, mais que les travaux sont réalisés par des chercheurs du MPO.

33 MPO, ***Programme d'aquaculture durable du Canada – Approfondir nos connaissances scientifiques***, fiche d'information, 14 février 2014.

Le Comité a aussi appris que d'autres ministères et organismes fédéraux financent des projets de recherche sur l'aquaculture. Par exemple, le Conseil de recherches en sciences naturelles et en génie (CRSNG) accorde des fonds aux universités et à la communauté scientifique au Canada. Certains programmes du CRSNG servent à octroyer des fonds à des chercheurs universitaires qui mènent des études liées à l'aquaculture. D'autres encore encouragent la collaboration entre l'industrie et les chercheurs universitaires ainsi que l'établissement de réseaux de recherche. De même, le Conseil national de recherches du Canada (CNRC) administre le Programme d'aide à la recherche industrielle (PARI), qui sert à financer des projets industriels novateurs et techniques. De plus, les agences de développement régional, comme l'Agence de promotion économique du Canada atlantique (APECA), financent aussi des projets de développement dans différentes régions du pays.

Les représentants de l'industrie ont indiqué au Comité qu'ils comprennent l'importance de la recherche sur la réglementation et l'accent mis par le MPO sur la science de la réglementation, mais ils estiment que le gouvernement fédéral devrait accorder plus de fonds pour la recherche sur des aspects opérationnels de l'aquaculture, ce qui profiterait à l'ensemble de l'industrie. Dans le secteur piscicole, il pourrait s'agir, par exemple, de recherche sur le développement des stocks, la croissance des poissons, les vaccins et la santé des poissons, de même que la recherche génomique sur le développement des géniteurs élites, l'optimisation des aliments et les stratégies efficaces de gestion des maladies et des parasites. En ce qui concerne l'aquaculture de mollusques et de crustacés, la priorité devrait être accordée à la recherche sur les EAE et les effets possibles de l'acidification des océans sur la conchyliculture. De plus, on a rappelé au Comité que plusieurs secteurs de l'industrie aquacole sont formés presque entièrement de petites et moyennes entreprises (PME), ce qui comprend plusieurs éleveurs de certaines espèces de mollusques et la plupart des installations d'aquaculture en recirculation qui répondent aux besoins de marchés à créneaux, ainsi que de producteurs du secteur aquacole en eau douce. Ces PME ont une capacité de recherche très limitée. Il est donc important d'investir dans des projets de recherche qui peuvent les aider à devenir ou à demeurer concurrentielles sur le marché mondial, par exemple des recherches sur l'efficacité de la production; l'efficacité des processus et l'automatisation; la santé des espèces; la gestion intégrée des parasites; les répercussions environnementales de l'aquaculture; la génétique des géniteurs et l'utilisation des sous-produits.

Plusieurs témoins ont signalé que le gouvernement fédéral avait réduit ses investissements dans les programmes de recherche sur l'aquaculture au cours des dernières années. Ils ont également insisté sur le fait que l'industrie, en particulier les PME, éprouve de la difficulté à obtenir du financement et de l'expertise pour mener des recherches collaboratives en raison des réductions budgétaires entreprises par le gouvernement fédéral et les gouvernements provinciaux.

Le Comité estime que le PRRA apporte des renseignements précieux qui aident à améliorer le cadre réglementaire régissant l'aquaculture au Canada. L'accent mis dans le cadre de ce programme sur les interactions entre les espèces d'élevage et sauvages, les effets cumulatifs des activités aquacoles sur l'environnement, les effets environnementaux à distance et les interactions avec les écosystèmes correspondent aux priorités en matière de recherche observées durant notre étude. Nous croyons aussi que le PCRDA a beaucoup à offrir, car il encourage l'industrie et les chercheurs du MPO à collaborer à des projets de recherche dans le but d'améliorer la compétitivité

de l'industrie aquacole canadienne. Les travaux de R-D entrepris dans le cadre de ces deux programmes sont importants. Puisque les ressources sont limitées, il est essentiel d'accorder la priorité aux recherches visant à améliorer la gestion et le rendement environnemental de l'industrie. Dans ce contexte, le financement devrait en priorité être accordé aux travaux menés en collaboration.

5.2 Recherche collaborative

> *Lorsque je pense aux façons de favoriser l'aquaculture [au Canada], il m'apparaît évident que l'industrie doit être fondée sur la science et faire l'objet d'un partenariat entre les gestionnaires de l'industrie et des écosystèmes. Il coûte moins cher d'investir dans la recherche scientifique en amont du développement de l'industrie que de laisser les problèmes s'installer pour ensuite faire appel à la science afin de trouver une façon d'en atténuer les conséquences. Sarah Stewart-Clark, professeure adjointe, aquaculture des fruits de mer, Faculté d'aquaculture, Université Dalhousie (10:70)*

Pendant ses visites d'installations au Canada et à l'étranger, le Comité a souvent entendu qu'il fallait favoriser la collaboration en matière de recherche sur l'aquaculture entre les scientifiques et les chercheurs des ministères, des universités et de l'industrie.

Nous avons appris qu'en Norvège, il y a une tradition de collaboration étroite entre l'industrie, les organismes de réglementation et les universités en matière de recherche sur l'aquaculture. Le Comité a été informé que grâce à la coopération et à l'échange d'information entre le gouvernement, les institutions de recherche et l'industrie, l'aquaculture norvégienne se démarque par son innovation et ses méthodes perfectionnées. Les résultats des travaux de recherche coopératifs servent à réformer le cadre réglementaire et à améliorer les pratiques de production. Tout comme la Norvège, l'Écosse cherche aussi à faciliter la collaboration entre les universités, les entreprises et d'autres intervenants dans le contexte de la recherche sur l'aquaculture. Ce pays a d'ailleurs récemment créé le Scottish Aquaculture Innovation Centre, lequel réunit des représentants de l'industrie et des chercheurs dans le but de trouver des solutions novatrices qui créeront des conditions assurant à l'industrie une croissance économique et durable.

À T.-N.-L., un Comité consultatif a été formé dans le cadre de la stratégie provinciale d'aquaculture de 2014 pour examiner les activités de recherche en cours dans la province et recommander des moyens de resserrer la collaboration parmi les chercheurs. Le resserrement de la collaboration dans le domaine de la recherche est considéré comme essentiel à la croissance de l'industrie aquacole dans la province.

Le Comité a aussi appris que, de 1999 à 2006, le gouvernement fédéral a soutenu financièrement AquaNet, un réseau de centres d'excellence ayant pour mandat de promouvoir le développement durable de l'aquaculture au Canada grâce à des recherches concertées. Le Comité croit que pour favoriser la croissance durable d'une industrie aquacole au cours des 10 prochaines années, il faut que soit mis en place un mécanisme officiel favorisant la recherche collaborative parmi les ministères fédéraux et provinciaux, les différents secteurs de l'industrie et le milieu de la recherche. Par conséquent, le Comité recommande :

8. **Que Pêches et Océans Canada établisse dans les plus brefs délais un mécanisme officiel avec les provinces, le milieu de la recherche et l'industrie afin d'appuyer la recherche-développement collaborative sur l'aquaculture.**

5.3 Synthétiser et communiquer les résultats de la recherche

Les témoins ont signalé à plusieurs reprises durant les audiences qu'il faut faire une synthèse des résultats de la recherche. Ils ont expliqué que de nombreuses études sont réalisées sur les effets possibles de l'aquaculture sur l'environnement au Canada et à l'étranger, mais que les résultats n'ont jamais été compilés, synthétisés et interprétés pour donner une « vue d'ensemble » de l'industrie, le tout en des termes faciles à comprendre pour le public. Les projets entrepris par différents spécialistes et groupes, des fondations de recherche, des scientifiques du MPO, des universités canadiennes et des experts internationaux sont décousus et ont besoin d'être rassemblés. Bien que complexe, un tel exercice servirait : 1) à informer les Canadiens au sujet des études réalisées et des principaux constats; 2) mettre en lumière les recherches en cours pour cerner les lacunes en matière de R-D, les questions pour lesquelles les résultats ne sont pas concluants, les sources de préoccupation et les questions qui doivent être approfondies; et 3) à continuer de faire du Canada un chef de file de la recherche sur l'aquaculture.

À St. John's, le Comité a visité l'Ocean Sciences Centre (OSC) de Memorial University, un établissement de recherche marine et d'enseignement de renommée mondiale qui offre, en tout temps de l'année, une formation directement sur l'océan et compte l'un des plus grands laboratoires de recherche marine du Canada. Le Comité a pu visiter deux installations de l'OSC : le Dr. Joe Brown Aquatic Research Building, qui est consacré à la recherche, à la formation et à la production précommerciale et où l'on effectue des essais d'aquaculture commerciale sur une petite échelle, et la Cold-Ocean Deep-Sea Research Facility, qui abrite divers réservoirs et équipements permettant d'étudier la vie des grands fonds, les maladies infectieuses aquatiques et les organismes envahissants.

Photo utilisée avec l'autorisation de : Ocean Sciences Centre, Memorial University.

Par ailleurs, les résultats d'un tel exercice devraient être communiqués au grand public d'une manière facilement assimilable. Le Comité estime que ces renseignements pourraient éclairer les discussions et les débats sur l'aquaculture et aider tout un chacun à mieux comprendre comment l'industrie peut poursuivre ses activités et continuer de croître de manière viable dans les années à venir. Pour ces raisons, le Comité recommande :

9. **Que Pêches et Océans Canada complète dans les deux prochaines années une évaluation approfondie des recherches sur l'aquaculture pour informer le public des principaux constats et cerner les lacunes en matière de recherche-développement qui doivent faire l'objet de recherches futures.**

CHAPITRE 6 : acceptation sociale et rapports publics

> *Une des raisons pour lesquelles nous pensons que les gens ont des craintes à l'égard de notre industrie, c'est que la salmoniculture est en constant changement […] Nous sommes enclins, de façon naturelle, à craindre ce que nous ne connaissons pas […] Pamela Parker, directrice exécutive, Atlantic Canada Fish Farmers Association (10:9-10)*

L'industrie aquacole canadienne a des retombées annuelles positives de 1 milliard de dollars, ce qui comprend les emplois directs et indirects et la production de protéines saines et nutritives. Malgré tout, dans certaines régions du pays, le public demeure très inquiet des effets de l'aquaculture sur l'environnement, de sorte que l'industrie n'est pas bien acceptée.

Comme nous l'avons indiqué dans d'autres chapitres, ces préoccupations sont parfois fondées et découlent de pratiques irresponsables ou d'une gestion inadéquate. Le fait de corriger ces erreurs du passé contribuera certes à accroître l'acceptation sociale. Pour sa part, l'industrie doit se montrer socialement responsable et être en mesure de prouver que ses pratiques sont durables, sur les plans économique, social et environnemental.

Le gouvernement peut aider à accroître l'acceptation sociale en adoptant et en appliquant un cadre de gouvernance rigoureux fondé sur la science pour protéger les ressources précieuses – comme les stocks de saumons sauvages, les autres espèces de poissons sauvages et les habitats fragiles – et les préserver dans les années à venir. Le gouvernement peut également gagner la confiance du public en donnant ouvertement des informations sur l'industrie aquacole et en divulguant des données sur le rendement environnemental des entreprises.

Toutefois, il est difficile pour l'industrie de gagner et de garder la confiance du public en raison des fausses informations qui circulent au sujet de l'aquaculture. Il faut commencer par corriger la situation.

6.1 Corriger les fausses informations

Au cours de notre étude, nous avons été frappés par le nombre de témoignages contradictoires au sujet des répercussions environnementales de l'aquaculture. Certains témoins affirmaient une chose avec certitude, et d'autres disaient tout le contraire... avec tout autant de conviction! Plus d'une fois, nous avons débattu de la question et envisagé la possibilité que des renseignements erronés nous étaient présentés, bien que de façon non intentionnelle, nous en sommes convaincus.

D'après nous, les témoignages contradictoires venaient souvent d'une généralisation de certains faits, les témoins ne s'appuyant pas sur des conclusions solides issues de recherches scientifiques. Nous estimons qu'il faut éviter à tout prix la désinformation, la généralisation et les fausses interprétations. Se fondant sur l'expérience acquise pendant les 18 mois qu'a duré l'étude, le Comité aimerait apporter des précisions sur des questions qui, à première vue, semblent très épineuses, mais qui, avec le temps et plus de données, se sont révélées la perpétuation de fausses perceptions et informations. Nous espérons que ces explications seront utiles et contribueront à faire progresser le débat sur l'aquaculture au Canada.

6.1.1 Environnement benthique

Parmi les fausses perceptions, les gens pensent que les déchets provenant des opérations piscicoles s'accumulent tout simplement avec le temps dans les sédiments des fonds des lacs et des

océans et dépassent la capacité de charge de l'environnement. En fait, comme nous l'avons déjà dit, les conditions dont sont assortis les permis d'aquaculture exigent que les sites soient mis en jachère pendant une certaine période après la récolte pour donner à l'environnement le temps de retrouver son état naturel avant un nouvel ensemencement. Elles requièrent également des analyses périodiques des sédiments dans le but de surveiller la santé de l'environnement benthique. Par ailleurs, des critères sur le choix du site sont en place pour s'assurer que les éventuels sites aquacoles se prêtent sur le plan biophysique à ce type d'activités. Enfin, dans le cadre du projet de règlement du MPO sur les activités piscicoles, de nouvelles exigences de surveillance des dépôts

À Gaspé, le Comité a rencontré des représentants du Centre d'innovation de l'aquaculture et des pêches du Québec (Merinov) pour en savoir plus sur les activités aquacoles qui s'y déroulent. Créé en 2010, Merinov est un organisme sans but lucratif qui mène à bien des projets de recherche et de développement, de transfert technologique, d'aide technique et de surveillance. Il a pour objectif de « contribuer au développement durable et à la compétitivité de l'industrie québécoise de l'aquaculture ».

de matières organiques seront mises en place pour s'assurer que les seuils établis sont respectés par les exploitants et appliqués par les inspecteurs.

Les données scientifiques présentées au Comité démontrent clairement qu'à long terme, les activités aquacoles n'ont pas de répercussions négatives sur l'environnement benthique lorsque les conditions et les lois applicables sont respectées et qu'une surveillance est exercée pour réduire ces conséquences au minimum ou les renverser dans les rares cas où il y en a. Malheureusement, certains milieux benthiques ne se sont pas pleinement remis d'activités aquacoles (voir à ce sujet le chapitre 4), mais c'est l'exception. Ces sites ne servent plus à l'aquaculture, et les incidents survenus ont permis de mettre à jour le cadre réglementaire pour éviter que ces situations ne se reproduisent. Il ne faut pas généraliser à partir de ces quelques exemples, car ils portent atteinte injustement à la réputation de l'industrie dans son ensemble.

6.1.2 Anémie infectieuse du saumon

Un débat est en cours au sujet de la présence de l'AIS sur la côte ouest du Canada. Le MPO et l'ACIA ainsi que d'autres chercheurs soutiennent catégoriquement que la maladie n'est pas présente dans les eaux de la C.-B. Toutefois, quelques chercheurs indépendants affirment le contraire, soutenant que l'AIS menace les populations de poissons sauvages. Le Comité a appris qu'un laboratoire avait eu un résultat positif dans l'océan Pacifique, mais on lui a aussi dit qu'il arrive parfois que l'on obtienne des résultats faussement positifs. Il a également appris que le laboratoire en question avait perdu certaines accréditations en raison de ses mauvaises pratiques.

D'après ce que nous avons compris, en l'absence de mesures d'atténuation immédiate, le virus pourrait se propager très rapidement en cas d'éclosion d'AIS. Corollairement, si l'AIS était présente dans les eaux de la C.-B., il y aurait eu probablement au moins une éclosion de la maladie, ce qui aurait été signalé à l'ACIA. Or, ce n'est tout simplement pas le cas. Cette situation peut s'expliquer de deux façons : 1) le virus n'est pas présent dans les eaux de la province, ou 2) le virus est présent, mais il s'agit d'une souche qui ne cause pas la maladie. Dans les deux cas, nous ne croyons pas que l'AIS menace la santé des poissons d'élevage ou sauvages en C.-B. Il s'agit toutefois d'un sujet très épineux qui continue de salir la réputation des opérations salmonicoles dans cette province.

6.1.3 Réovirus pisciaire

Durant les audiences tenues à Nanaimo, un témoin a avancé qu'un nouveau virus – le réovirus pisciaire (RVP) – avait été introduit dans les eaux de la C.-B. par des entreprises salmonicoles important des saumoneaux de la Norvège. Ce virus causerait l'inflammation des muscles squelettiques et cardiaques (HSMI). Or, selon une étude récente, la présence du RVP dans l'océan Pacifique a été détectée pour la première fois en 1977 dans des saumons arc-en-ciel sauvages de la C.-B., soit avant le début de la salmoniculture dans la province. L'étude a aussi permis de confirmer que le poisson porteur du virus ne montre aucun signe de maladie, comme le HSMI[34]. Malheureusement, les fausses informations qui sont perpétuées à ce sujet nuisent à l'industrie aquacole en C.-B. et ailleurs au Canada et ne font qu'alimenter la peur que l'aquaculture introduise un jour, si ce n'est pas

34 Gary Marty et coll., « **Piscine Reovirus in Wild and Farmed Salmonids in British Columbia, Canada: 1974–2013** », *Journal of Fish Diseases*, 22 juillet 2014.

déjà fait, des pathogènes étrangers dans les eaux de la C.-B. Or, ce n'est tout simplement pas le cas.

Dans une décision rendue récemment par la Cour fédérale, *Morton c. Canada (Pêches et Océans)*[35], on a brièvement indiqué que le RVP pourrait être un précurseur viral du HSMI. La Cour n'a pas tranché cette question puisqu'il ne s'agissait pas de l'affaire dont elle était saisie, mais il est important de noter qu'elle est devenue le point d'intérêt principal des médias. Cependant, la décision souligne que le lien causal entre le RVP et le HSMI n'a pas été établi de manière concluante.

6.1.4 Traitements contre le pou du poisson

Pendant les audiences publiques qui ont eu lieu en N.-É., des témoins de la province ont exprimé à maintes reprises des inquiétudes au sujet des produits utilisés pour lutter contre le pou du poisson. Ils ont dit que ces produits nuisent aux milieux marins locaux et aux autres espèces. Or, les représentants de l'industrie ont informé le Comité qu'aucun traitement contre le pou du poisson n'a été administré dans les sites salmonicoles de la N.-É. au cours des dix dernières années. Ils ont expliqué que les taux de pou du poisson sont inférieurs au seuil à partir duquel un traitement est nécessaire. Nous avons appris que la faible prévalence du pou du poisson s'explique en partie par le fait que la salmoniculture est pratiquée sur une petite échelle en N.-É. et que les installations ne sont pas concentrées. Le Comité comprend pourquoi des témoins d'autres provinces ont fait part de leurs inquiétudes au sujet des répercussions environnementales des produits employés pour enrayer le pou du poisson, mais il ne sait pas pourquoi des témoins de la N.-É. ont soulevé la question. Le Comité estime qu'il s'agit d'un bon exemple de généralisation, certains étant portés à penser que les installations salmonicoles administrent régulièrement un traitement contre le pou du poisson en N.-É. ce qui est faux.

6.1.5 Règlement sur les activités d'aquaculture

À plusieurs occasions durant l'étude, des témoins se sont opposés au projet de RAA du MPO. Ils croyaient que le règlement proposé permettrait à l'industrie d'utiliser plus librement et intensivement des substances nocives, tels que les médicaments vétérinaires et produits antiparasitaires. Or, le RAA a justement le but contraire. Il vise à resserrer les règles touchant l'utilisation de substances nocives en mettant en place des mécanismes de surveillance et de production de rapports pour chaque traitement et en encourageant le recours à des solutions non chimiques.

Il est essentiel de mettre en place des mesures régissant l'utilisation de médicaments vétérinaires et de produits antiparasitaires comme celles proposées dans le RAA pour corriger une grave incohérence du cadre fédéral actuel de réglementation de l'aquaculture. Pendant plusieurs années, l'industrie aquacole s'est servie, dans le cadre de ses activités, de produits considérés comme des « substances nocives » au sens de la *Loi sur les pêches*. Les aquaculteurs contreviennent donc à cette loi, même si l'utilisation de ces produits est autorisée dans la *Loi sur les aliments et drogues* (LAD) et la *Loi sur les produits antiparasitaires* (LPA), ce qui place l'industrie dans une situation délicate. Le RAA proposé éliminera le problème, en établissant des exceptions aux articles 35 et 36 de la *Loi sur les pêches* tout en prévoyant que l'utilisation, par l'industrie,

35 Cour fédérale du Canada, ***Decision 2015 FC 575***, 6 mai 2015.

de substances continuera d'être régie par la LAD et la LPA, comme c'est le cas actuellement.

Malheureusement, lorsqu'il a été question du projet de règlement, les préoccupations soulevées par l'emploi de substances nocives ont monopolisé les discussions, ce qui a pour effet non seulement de mal informer les gens, mais aussi de brosser un portrait très négatif du règlement qui, pourtant, une fois mis en œuvre, permettra de renforcer (et non d'affaiblir) le cadre législatif régissant l'aquaculture au Canada.

6.2 Faire participer les collectivités

> *L'acceptation sociale se mérite et doit ensuite être conservée par les entreprises à l'échelle des communautés. L'acceptation sociale n'est pas synonyme de consensus. Murray Hill, directeur régional, Atlantic Canada Fish Farmers Association (14:39)*

Le Comité a appris que le meilleur moyen pour l'industrie aquacole de gagner l'acceptation sociale est de consulter ou de mobiliser le public dès le début du processus de choix du site et de demande de permis. L'industrie peut ainsi expliquer ses opérations, faire valoir les retombées économiques possibles pour la communauté, répondre à des questions, apaiser les inquiétudes et discuter des problèmes possibles soulevés par les résidents. Plus ces problèmes sont cernés rapidement, mieux ils peuvent être résolus. Comme l'indique le chapitre 1, les Premières Nations connaissent très bien les régions où elles habitent, et les entreprises aquacoles pourraient grandement profiter de leurs connaissances traditionnelles dans la recherche de sites adéquats.

De nos jours, plusieurs Premières Nations au Canada participent au développement de l'aquaculture pour générer des emplois et faire prospérer leur collectivité. Le Comité a eu l'occasion de rencontrer plusieurs de ces Premières Nations et il a aussi entendu parler de leur participation à l'aquaculture dans le cadre de ses audiences et visites sur place. C'est le cas notamment des Premières Nations suivantes : Ahousaht, Kitasoo, Kyuquot, Quatsino et K'omoks en C.-B.; Eel River Bar et Listuguj au N.-B.; Miawpukek à T.-N.-L.; Potlotek et Waycobah en N.-É.; et Mi' kmaq à l'Î.-P.-É. Par contre, d'autres Premières Nations sont plus hésitantes à pratiquer l'aquaculture, car elles en redoutent les répercussions environnementales. D'autres encore s'opposent au développement de l'aquaculture sur leur territoire traditionnel. En sensibilisant les gens aux débouchés qu'offre l'aquaculture et en corrigeant les fausses informations qui circulent au sujet de ses effets sur l'environnement, il est certes possible de faire participer davantage les Premières Nations et d'autres communautés autochtones à l'aquaculture.

Le Comité s'est également fait dire qu'il faut continuer de communiquer avec le public une fois les opérations aquacoles en place. Par exemple, certaines entreprises ont établi un comité de liaison communautaire dans chaque région où elles sont établies. Présidés par un animateur indépendant, ces comités sont formés de gens d'affaires, de pêcheurs, de représentants des autorités portuaires, de groupes autochtones, de dirigeants communautaires et de simples citoyens, certains étant favorables à l'aquaculture, et d'autres non. Ils offrent un forum où les gens peuvent tenir une discussion ouverte et franche (et non un débat) sur la présence de l'industrie dans leur collectivité.

6.3 Rapports à l'intention du public

Le Comité a entendu qu'il ne revient pas au gouvernement de conférer l'acceptation sociale; celle-ci doit venir des collectivités. Le gouvernement peut néanmoins aider l'industrie aquacole à se faire accepter de la société en établissant un cadre réglementaire solide, fondé sur la science, comme celui que nous recommandons dans le présent rapport. Il peut aussi contribuer à accroître l'acceptation sociale en reconnaissant publiquement les pratiques exemplaires et en établissant le caractère légitime de l'industrie. Certains représentants de l'industrie ont proposé au gouvernement de produire des certificats de conformité que les entreprises aquacoles pourraient afficher. Ces certificats montreraient aux intervenants et au public que l'entreprise mène ses activités de manière durable et responsable. D'autres ont proposé que le gouvernement produise des rapports annuels sur la conformité. De même, si on lui communiquait les résultats des recherches, comme on l'a mentionné au chapitre 5, et si l'on démystifiait le cadre réglementaire applicable à l'industrie, le public serait encouragé à accepter l'aquaculture et verrait que le développement de l'aquaculture est géré dans le respect des valeurs de la société canadienne.

En Norvège et en Écosse, des renseignements sont communiqués au public sur un vaste éventail de sujets liés à l'aquaculture pour favoriser l'acceptation sociale. Comme on l'indique dans le Volume Deux, l'Institut vétérinaire de la Norvège recueille constamment des données sur les maladies et les parasites affectant les poissons d'élevage et sauvages et les présente au public tous les ans. Pour sa part, l'Institut de santé publique de la Norvège publie tous les ans des données sur l'utilisation de produits pharmaceutiques. De même, le ministère des Pêches et de l'Aquaculture présente régulièrement des données sur les poissons qui s'évadent d'installations aquacoles.

De même, le gouvernement de l'Écosse donne accès à des renseignements réglementaires par l'entremise d'un outil de recherche et d'une carte interactive affichés sur le site Web voué à l'aquaculture lancé en 2013. On trouve sur ce site tout un éventail de données, par exemple l'emplacement des installations, des rapports sur les activités contrôlées, les mesures mensuelles des biomasses, les évasions, les résidus de traitements du pou du poisson dans les aliments, etc. De plus, le service d'inspection de la santé du poisson de la direction générale Marine Scotland publie tous les trimestres, de manière proactive, des données au sujet de ses inspections et de ses activités opérationnelles. De même, la Scottish Salmon Producers Organisation publie volontairement tous les trimestres des renseignements sur les taux de pou du poisson pour chaque région.

Au Canada, en raison du partage des compétences en matière d'aquaculture entre le gouvernement fédéral et les provinces, il n'y a pas en place un seul organisme chargé de communiquer des renseignements sur l'industrie au public. L'étendue des données mises à la disposition du public et la façon d'y accéder varient d'une province à l'autre. De façon générale, on s'inquiète au Canada du peu de renseignements communiqués sur l'industrie aquacole, en particulier sur l'éclosion de maladies, l'utilisation de produits chimiques, les évasions et les répercussions sur l'environnement benthiques. On prétend également que les informations ne sont pas communiquées en temps opportun. Le MPO s'efforce dans une certaine mesure de corriger la situation. En vertu du RAA proposé, les aquaculteurs devront faire rapport chaque année de leur utilisation de médicaments et produits antiparasitaires, des fins visées, des quantités utilisées et des dates connexes. Ils devront aussi indiquer s'ils ont envisagé d'autres solutions de traitement, les résultats de la surveillance de l'environnement benthique, etc. Ces données

devront être communiquées annuellement au MPO, qui les rendra publics. Elles s'ajouteront aux renseignements déjà affichés sur les sites Web des organismes provinciaux de réglementation et sur le site Web du MPO dans le l cas de la C.-B.

Le Comité était heureux d'apprendre que les renseignements qui seront recueillis par le MPO en vertu du RAA seront accessibles au Canada afin de montrer les mesures prises par le MPO pour gérer l'aquaculture, et plus important encore, de présenter le rendement environnemental de l'industrie dans l'ensemble du pays. Par contre, ces données seront agrégées et, par conséquent, ne seront pas associées à chaque opérateur.

En outre, d'autres renseignements et données signalés aux provinces seront éparpillés. Pour que les Canadiens cherchant à obtenir de l'information sur les opérations aquacoles puissent les trouver à un seul endroit pratique, le Comité recommande :

10. **Que Pêches et Océans Canada, avec la participation des provinces par l'entremise du Conseil canadien des ministres des Pêches et de l'Aquaculture, établisse dans un délai de deux ans une base de données centrale publique contenant toutes les informations disponibles au sujet des permis et du respect des règles pour chaque aquaculteur.**

CONCLUSION

Le Comité a examiné attentivement la vaste quantité d'information reçue et est convaincu que l'industrie aquacole canadienne continuera d'innover et de croître de manière durable, sur les plans environnemental, économique et social. Le Canada a tout ce qu'il faut pour devenir un joueur important dans la production aquacole mondiale : ressources d'eau salée et d'eau douce inexploitées, industrie diversifiée, entrepreneurs innovateurs se spécialisant en SAR, recherche en aquaculture de calibre mondial, cadre réglementaire rigoureux fondé sur la science et simplifié, communication transparente et information sur l'industrie.

Nous croyons que le moment est propice pour mettre en œuvre les recommandations proposées dans le Volume Trois. Les représentants de l'industrie, des collectivités rurales, côtières et autochtones, des instituts de recherche, des universités et du gouvernement, et d'autres encore, ont recommandé de modifier le cadre réglementaire d'une manière ou d'une autre. Un courant se dessine, au Canada (surtout à T.-N.-L. et en N.-É.) et à l'étranger – plus particulièrement en Norvège et en Écosse – en faveur de l'examen et de la modernisation des lois et des politiques sur l'aquaculture dans le but de favoriser la croissance durable de l'industrie. Il ne faut pas rater cette occasion d'agir, car le capital aquacole est mobile : les entreprises prêtes à investir pourraient décider de prendre de l'expansion ailleurs. Le Canada se retrouverait donc à faire du surplace alors qu'il a un océan de possibilités à offrir!

ANNEXE A : Glossaire

Acidification de l'océan	Processus dans le cadre duquel le gaz carbonique atmosphérique se dissout dans l'océan, réagit avec les molécules d'eau et produit de l'acide carbonique. L'acidification a des répercussions sur la vie marine.
Agent pathogène	S'entend des bactéries et des virus infectieux et des parasites qui causent des maladies (pathologies) chez l'hôte. Ce ne sont pas toutes les bactéries, tous les virus et tous les parasites qui sont considérés comme des agents pathogènes. Dans de nombreux cas, les agents pathogènes sont courants et présents naturellement dans l'écosystème.
Aquaculture	L'élevage et la récolte d'organismes aquatiques, c'est-à-dire des poissons à nageoires, des mollusques et des crustacés et des plantes aquatiques, dans l'océan, en eau douce (dans un lac ou un étang) ou dans des réservoirs terrestres. « Monoculture » fait référence à l'élevage d'une seule plante ou espèce, alors que l'élevage de deux ou de plusieurs espèces complémentaires dans un même site est nommé « polyculture » ou « aquaculture multitrophique intégrée » (AMTI).
Assainissement	Technique consistant à placer des organismes aquatiques, habituellement des crustacés et des mollusques, dans de l'eau propre pour qu'ils puissent éliminer les substances indésirables (sable, polluants, etc.) pouvant être nocives pour l'humain.
Bâche	Système de bâches utilisé dans les sites de grossissement pour favoriser l'administration de bains thérapeutiques contre le pou du poisson. La bâche recouvre la cage en filet et retient le produit antiparasitaire dans la cage, ce qui permet de s'assurer que les poissons reçoivent le traitement.
Bateau-vivier	Navires spécialisés utilisés pour administrer des bains thérapeutiques contre le pou du poisson. Cette méthode nécessite moins de main-d'œuvre que les bains thérapeutiques administrés à l'aide de bâches.
Biomasse	Le poids total du stock d'organismes aquatiques vivant dans un site de croissance à un moment donné.
Biosécurité	S'entend des mesures de prévention prises afin d'atténuer les risques d'introduction et de transmission d'agents pathogènes dans un site aquacole.
Cage en filet	Structure dans laquelle on fait l'élevage des produits aquacoles, dans des environnements marins ou d'eau douce. Le dessous et les côtés des cages sont fermés, en général par des filets permettant la circulation naturelle de l'eau. Souvent, on place également un filet sur les cages pour réduire les risques de prédation.
Capacité d'auto-épuration et capacité de charge	La capacité d'auto-épuration et la capacité de charge font référence à la capacité d'une masse d'eau de soutenir la croissance d'animaux aquatiques en santé sur une longue période sans qu'il y ait d'effets néfastes sur la productivité, l'adaptabilité et la capacité de rétablissement.
Charge organique et charge en éléments nutritifs	L'accumulation de matières organiques ou d'éléments nutritifs dans un secteur donné ou sur une surface définie.

Choix de site	Processus dans le cadre duquel une demande d'établissement de site aquacole est étudiée par les ministères et organismes de réglementation. De nombreux critères sont utilisés pour déterminer si un site peut accueillir des activités aquacoles. Des conditions peuvent être définies à cette étape et ensuite imposées au moment de l'octroi du permis.
Classe d'âge unique	S'entend du regroupement de poissons en fonction du temps qu'ils ont passé dans l'environnement marin.
Concentration en sulfures	La concentration en sulfures permet de déterminer la santé de l'environnement benthique dans les écosystèmes des substrats meubles.
Écloserie	Site de reproduction artificielle, d'éclosion et d'élevage d'organismes aquatiques au cours de leur première phase de leur cycle de vie. De manière générale, dans le secteur piscicole, les écloseries et les nourriceries sont étroitement liées. Inversement, dans le secteur conchylicole, les nourriceries spécifiques à une espèce sont communes. On y fait la croissance de larves produites dans une écloserie jusqu'à ce que les organismes soient prêts à être placés dans un site de grossissement.
Environnement benthique ou benthos	S'entend du fond situé sous un plan d'eau. Le terme « benthos » fait référence aux organismes qui vivent sur le fond.
Eutrophisation	Enrichissement naturel ou artificiel de l'eau par des éléments nutritifs associé à la prolifération excessive de plantes aquatiques et à la réduction subséquente de la concentration d'oxygène dissous.
Génome	Ensemble des gènes d'un organisme, la structure de son ADN.
Intégration (horizontale ou verticale) et consolidation	L'intégration horizontale, ou consolidation, fait référence au processus par lequel les entreprises prennent de l'expansion horizontalement en faisant l'acquisition d'autres sociétés qui effectuent des activités similaires aux leurs et qui se trouvent au même niveau dans la chaîne de production. Par intégration verticale, on entend le processus par lequel une entreprise prend le contrôle de deux ou plusieurs étapes successives de la production ou de la distribution d'un produit. Par exemple, les écloseries aquacoles, les opérations de grossissement, la production d'aliments, la transformation et la mise en marché du produit.
Mise en jachère	Processus au cours duquel un site de grossissement normalement utilisé pour la production est laissé au repos pendant un certain temps pour favoriser le rétablissement.
Naissain	S'entend des larves de mollusques fertilisées que l'on retrouve dans la colonne d'eau. Un collecteur de naissain est un appareil sous-marin utilisé pour recueillir les larves de mollusques, qui seront utilisés ultérieurement dans des installations aquacoles.
Niveau trophique	La position qu'occupe un organisme dans le réseau alimentaire (p. ex. producteur primaire, consommateur primaire, prédateur).
Organisme salissant ou biosalissure	Organisme qui croît sur l'équipement aquacole sous-marin (p. ex. des algues), souvent au détriment de l'équipement et de la santé des organismes d'élevage.

Poisson-nettoyeur	Espèce de poisson qui utilise sa bouche spécialement adaptée pour détacher le pou du poisson et d'autres parasites des poissons infectés.
Pou du poisson	Comprend plusieurs espèces de petits crustacés parasites que l'on retrouve couramment chez les poissons à nageoires en mer, mais qui ne se trouvent pas dans les environnements d'eau douce.
Produit chimiothérapeutique	Vaccins, médicaments vétérinaires et produits antiparasitaires utilisés pour lutter contre les maladies et les parasites des organismes aquatiques.
Répercussion économique	Comprend les répercussions directes, indirectes et secondaires de l'industrie.
Salmonidé	Famille de poissons qui inclut le saumon, la truite et l'omble.
Saumoneaux (ou poisson juvénile)	Un saumoneau est un jeune saumon qui a terminé sa période de croissance en eau douce et qui migre vers l'environnement marin. Les saumoneaux varient en taille selon leur espèce.
Site de grossissement	S'entend d'un site dans lequel les poissons, les crustacés ou les mollusques sont élevés jusqu'à maturité.
Stock de géniteurs	Population d'animaux matures sélectionnés aux fins de reproduction. Ils produisent la prochaine génération de poissons d'élevage.
Substrat meuble et substrat de fond marin dur	On entend par « substrat meuble » les fonds marins pour lesquels il est possible de prendre des échantillons à l'aide d'appareils de saisie (p. ex. gravier, sable ou boue). On entend par « substrats durs » les fonds marins pour lesquels il est impossible de prendre des échantillons à l'aide d'appareils de saisie (p. ex. roche ou coquilles). On fait habituellement la surveillance de ces substrats au moyen de transects vidéo produits par une caméra sous-marine.
Valeur à la ferme	Représente la valeur du produit au moment de la vente par le producteur.
Zone de gestion des baies	Le gouvernement, de concert avec l'industrie, délimite des zones dans lesquelles les opérations aquacoles sont synchronisées. Ces zones sont assorties de pratiques exemplaires et de procédures de biosécurité strictes. L'utilisation de ZGB est considérée comme une méthode saine et fondée sur des données scientifiques permettant de réduire les agents pathogènes.

Source : Renseignements adaptés de l'Organisation des Nations Unies pour l'alimentation et l'agriculture, ***Glossaire d'aquaculture***, ainsi que de renseignements tirés du site Web du MPO.

ANNEXE B : Témoins

31 mars 2015

Alliance de l'industrie canadienne de l'aquaculture
Ruth Salmon, directrice générale

Terry Ennis, président, Conseil d'administration

Pamela Parker, membre, Conseil d'administration et Comité des relations gouvernementales

Pêches et Océans Canada
Kevin Stringer, sous-ministre adjoint principal, Gestion des écosystèmes et des pêches

Eric Gilbert, directeur général, Gestion de l'aquaculture, Gestion des écosystèmes et des pêches

Jay Parsons, directeur, Sciences de l'aquaculture, Gestion des écosystèmes et des pêches

24 mars 2015

Pêches et Océans Canada
Susan Farlinger, directrice générale régionale, Région – Pacifique

Stewart Johnson, chef de section des sciences, Santé des animaux aquatiques, Région – Pacifique

Première nation 'Namgis
Debra Hanuse, chef

Ministère de l'Agriculture de la Colombie-Britannique
Gary Marty, pathologiste des poissons, Centre de santé animale

À titre personnel
Alexandra Morton

Watershed Watch Salmon Society
Stan Proboszcz, conseiller scientifique

Marine Harvest Canada
Ian Roberts, directeur des communications

10 mars 2015

Pêches et Océans Canada
Trevor Swerdfager, sous-ministre adjoint, Sciences des écosystèmes et des océans

Michael Alexander, sous-ministre adjoint par intérim, Gestion des écosystèmes et des pêches

Eric Gilbert, directeur général, Gestion de l'aquaculture, Gestion des écosystèmes et des pêches

À titre personnel
William Ernst

Michael van den Heuvel, titulaire de la Chaire de recherche du Canada sur l'intégrité écologique des bassins hydrographiques, l'Institut canadien des rivières, Département de biologie, Université de l'Île-du-Prince-Édouard

Centre d'action écologique
Robert Johnson, gestionnaire du Programme des produits de la mer durables

17 février 2015

Dalhousie University, Schulich School of Law
William Lahey, professeur de droit agrégé

27 janvier 2015

Northern Ontario Aquaculture Association
Mike Meeker, président

2 décembre 2014

Pêches et Océans Canada
Kevin Stringer, sous-ministre adjoint principal, Gestion des écosystèmes et des pêches

Eric Gilbert, directeur général, Gestion de l'aquaculture

Wayne Moore, directeur général, Stratégies et régulations des sciences

20 novembre 2014

Ministère de l'Agriculture, Aquaculture et Pêches du Nouveau-Brunswick
Kimberly Watson, directrice régionale, St. George développement régional (Unité)

Joseph LaBelle, directeur, Direction des politiques, de la promotion et des projets stratégiques

Katherine Brewer-Dalton, conseillère principale, Développement régional (Unité)

Gouvernement de l'Île-du-Prince-Édouard
L'honorable Ron W. MacKinley, MAL, ministre des Pêches, de l'Aquaculture et du

Développement rural

Richard Gallant, sous-ministre, Ministère des Pêches, de l'Aquaculture et du Développement rural

Neil MacNair, directeur, Division de l'aquaculture, Ministère des Pêches, Aquaculture et Développement rural

Mi'kmaq Confederacy of Prince Edward Island
Randy Angus, directeur, Gestion intégrée des ressources

Skretting
Steven Backman, vétérinaire en aquaculture

Conseil de la recherche et de la productivité du Nouveau-Brunswick
Benjamin Forward, chef, Direction de l'alimentation, des pêches et de l'aquaculture

Atlantic Canada Fish Farmers Association
Betty House, coordinnatrice de la recherche et du développement

Center for Aquaculture Technologies Canada
Debbie Plouffe, vice-présidente, Recherche

Cooke Aquaculture Inc.
Michael Szemerda, vice-président, Opérations de l'eau salée

La Fédération du saumon atlantique
Jonathan Carr, directeur exécutif, Environnement de recherche

Réseau canadien d'aquaculture multitrophique intégrée du CRSNG
Thierry Chopin, professeur de biologie marine, Université du Nouveau-Brunswick

Town of St. Andrews
Stan Choptiany, maire

À titre personnel
William Ernst

Village de Blacks Harbour
Teresa James, mairesse

Conseil de conservation du Nouveau-Brunswick
Inka Milewski, conseillère scientifique

Huntsman Marine Science Centre
Jamey Smith, directeur exécutif

Ministère de l'Agriculture, Aquaculture et Pêches du Nouveau-Brunswick

Table maricole du Québec

Sophie Fortier, coordonnatrice

Atlantic Canada Fish Farmers Association
Larry Ingalls, président et président de Northern Harvest Sea Farms

Murray Hill, chef régional

PEI Aquaculture Alliance
Dawn Runighan, présidente (PEIAA), et gestionniare de l'installation, Aqua Bounty

David Lewis, Membre du conseil, Island Oyster Growers Group et conchyliculteur-propriétaire,

Ann Worth, directrice exécutive

Association des Conchyliculteurs Professionnels du Nouveau Brunswick
Martin Mallet, président

Aqua Bounty Canada & PEI Aquaculture Alliance
Dawn Runighan, gestionniare de l'installation et présidente

Confederation Cove Mussel Co. Ltd
Stephen Stewart, président

Ministère de l'Agriculture, Aquaculture et Pêches du Nouveau-Brunswick
Kimberly Watson, directrice régionale, St. George développement régional (Unité)

7 octobre 2014

The Georgian Bay Association
Claudette Chabot, présidente, Comité de l'aquaculture

Bob Duncanson, directeur général

12 juin 2014

Marine Scotland
Willie Cowan, chef de la performance et de l'aquaculture

Paul Haddon, gestionnaire responsable de politiques sur l'aquaculture

5 juin 2014

Ambassade Royale de Norvège
Inger Elisabeth Meyer, premier secrétaire

29 mai 2014

Potlotek First Nation
Charles Doucette, directeur des pêches

Genome Atlantic
Steve Armstrong, président et chef des opérations

Eel Lake Oyster
Nolan d'Eon, propriétaire et président

À titre personnel
James Duston, professeur, Aquaculture, Département de phytologie et de zoologie, Université Dalhousie

Jon Grant, chaire de recherche industrielle CRSNG-Cooke en aquaculture durable, Département d'océanographie, Université Dalhousie

Sarah Stewart-Clark, professeur adjoint, aquaculture des fruits de mer, Faculté d'agriculture, Université Dalhousie

The Ecology Action Centre
Susanna Fuller, coordonnatrice de la conservation marine

Conseil canadien du homard
Stewart Lamont, directeur principal de Tangier Lobster Company Limited

St. Mary's Bay Coastal Alliance
Brenda Patterson, membre

Nova Scotia Salmon Association
Carl Purcell, président sortant

Aquaculture Association of Nova Scotia
Peter Corey, président

Dr Vicki Swan, coordonatrice de la recherche et du développement

Robin Stuart, membre

Brian Blanchard, membre

Bryan Bosien, membre

Cooke Aquaculture
Nell Halse, vice-présidente, Communications

Atlantic Canada Fish Farmers Association
Pamela Parker, directrice exécutive

Northeast Nutrition Inc.
Tom Taylor, directeur des ventes et du support technique

27 mai 2014

Collier Aqua Service Ltd.
Clyde Collier, conseiller en gestion de l'Aquaculture

Première nation Miawpukek
Shayne McDonald, avocat et directeur de Justice

Chambre d'assemblée de Terre-Neuve-et-Labrador
Jim Bennett, député à la Chambre d'assemblée pour St. Barbe

À titre personnel
Danny Boyce, directeur administratif des installations, Université Memorial de Terre-Neuve

Cyr Couturier, chercheur scientifique et chaire, Programmes d'aquaculture, Institut de la mer,

Université Memorial

Dre Jillian Westcott, instructrice et chercheuse en aquaculture, École de pêches, Institut des pêches et de la mer de l'Université Memorial

Municipalité de Harbour Breton
Roy Drake, maire

Newfoundland Aquaculture Industry Association
Cyr Couturier, président

Miranda Pryor, directrice exécutive

Darrell Green, coordonnateur de la recherche et du développement

Sunrise Fish Farms Inc.
Dre Laura Halfyard, directrice générale

Salmonid Council Newfoundland and Labrador (SCNL)
Donald L. Hutchens, président

Village de Saint-Alban, Terre-Neuve-et-Labrador
Jamie LeRoux, maire

Newfoundland and Labrador Outfitter's Association
Tony Tuck, président du comité des pêches

Badger Bay Mussel Farms Ltd.
Rebecca White, gestionnaire de projet

Northern Harvest Sea Farms NL Ltd.
Jennifer Caines, chef de projet

Gouvernement de Terre-Neuve-et-Labrador
L'honorable Keith Hutchings, député de Ferryland à la Chambre d'assemblée, ministre des Pêches et de l'Aquaculture

Ministère des Pêches et de l'Aquaculture de Terre-Neuve-et-Labrador
Brian Meaney, sous-ministre adjoint

Dr Daryl Whelan, directeur, Section de la santé aquatique/chef vétérinaire aquatique

Newfoundland Aqua Service Ltd.
Boyd Pack, propriétaire et président

Sweeney International Marine Corp. and SIMCorp. Marine Environmental Inc.
Robert Sweeney, gestionnaire principal de projet, Bureau principal

6 mai 2014

Agence canadienne d'inspection des aliments
Dre Debbie J. Barr, directrice intérimaire, Divison de la santé, du bien-être et de la biosécurité des animaux, Direction générale des politiques et des programmes

Dr Harpreet S. Kochhar, Ph.D., directeur exécutif, Direction santé des animaux, Direction générale des politiques et des programmes

Santé Canada
Anatole Papadopoulos, directeur, Bureau des politiques, Affaires réglementaires et gouvernementales, Direction des aliments, Direction générale des produits de santé et des aliments

29 avril 2014

Alliance de l'industrie canadienne de l'aquaculture
Clare Backman, président

Ruth Salmon, directrice générale

8 avril 2014

Tides Canada
Catherine Emrick, associée principale, Innovation en aquaculture

SOS Marine Conservation Foundation
Eric Hobson, président

1 avril 2014

Santé Canada
Dr Daniel Chaput, directeur général, Direction des médicaments vétérinaires, Direction générale des produits de santé et des aliments

Jason Flint, directeur, Division des politiques et des affaires réglementaires, Agence de réglementation de la lutte antiparasitaire

John Worgan, directeur, Bureau de l'évaluation et du contrôle des substances nouvelles, Direction générale de la santé environnementale et de la sécurité des consommateurs

26 mars 2014

Union of British Columbia Indian Chiefs
Chef Bob Chamberlin, vice-président (Première nation de Kwicksutaineuk Ah-kwa-mish)

Aboriginal Aquaculture Association
Chef Richard Harry, président

Sable Fish Canada Ltd. (Kyuquot Sound)
Linda Hiemstra, gestionnaire de projets

First Nations Fisheries Council of British Columbia
Jordan Point, directeur exécutif

Génome Colombie-Britannique
Anthony Brooks, chef de la direction financière et secrétaire général

North Island College
Stephen Cross, titulaire de la chaire de recherche industrielle du CRSNG pour les collèges spécialisés en aquaculture durable

K'omoks First Nation
Richard Hardy, membre

Taplow Feeds
Brad Hicks, vice-président exécutif

Ville de Campbell River
Walter Jakeway, maire

Grieg Seafood BC Ltd.
Barry Milligan, directeur de production et vétérinaire

À titre personnel
Alexandra Morton

Pêches et Océans Canada
Laura Richards, directrice régionale des Sciences

Andrew Thomson, directeur de secteur, Côte Sud

Marine Harvest Canada
Clare Backman, directeur des affaires publiques

BC Salmon Farmers Association
Jeremy Dunn, directeur exécutif

Grieg Seafood British Columbia Ltd.

Stewart Hawthorn, directeur régional

Association pour l'Élevage responsable des coquillages
Dr Brian Hayden, président

Shelley McKeachie, membre

Dianne Sanford, membre

Island Scallops Ltd.
Robert Saunders, directeur général

British Columbia Shellfish Growers Association
Roberta Stevenson, directrice exécutive

Kuterra Limited Partnership
Garry Ullstrom, PDG

AgriMarine Holdings Inc.
Sean James Wilton, président-directeur général

25 février 2014

Pêches et Océans Canada
L'honorable Gail Shea, C.P., députée, ministre

David Bevan, sous-ministre par délégué

Dave Gillis, sous-ministre adjoint par intérim, Sciences des écosystèmes et des océans

Trevor Swerdfager, sous-ministre adjoint, Écosystèmes et gestion des pêches

4 février 2014

Environnement Canada
Louise Métivier, directrice générale, Direction des secteurs industriels, Direction générale de l'intendance environnementale

ANNEXE C : Missions d'étude

COLOMBIE-BRITANNIQUE – 24-25 MARS 2014

Creative Salmon, détroit de Clayquot (site d'élevage)	Tim Rundle, directeur général Lisa Stewart, gérante des ressources humaines et des communications Ian Francis, gérant des opérations Barb Cannon, gérante de biologie
Cermaq, détroit de Clayquot (site d'élevage)	Fernando Villarroel, PDG Laurie Jensen, gérante de permis et des communications James Costello, agent de liaison communautaire Don McIntyre, gérant de production régional Eric Jensen, gérant de la région German Campos, gérant des opérations en eau marine Ron Carson, gérant de site
Cermaq, Tofino (usine de transformation)	Fernando Villarroel, PDG Terry Prosnia, gérant de l'usine James Costello, agent de liaison communautaire
Shelter, Tofino	Moses Martin, conseiller-chef, Première nation Tla-o-qui-aht Wally Samuel, membre du comité de protocole, Première nation Ahouset Fernando Villarroel, PDG, Cermaq Tim Rundle, directeur général, Creative Salmon Lisa Stewart, gérante des ressources humaines et des communications, Creative Salmon Laurie Jensen, gérante de permis et des communications, Cermaq James Costello, agent de liaison communautaire, Cermaq
BC Centre for Aquatic Health Science, Campbell River	Dre Sonja Saksida, PDG Dr Ahmed Siah, scientifique-chercheur Sandra Milligan, membre du conseil d'administration

Marine Harvest Canada, Sayward (écloserie de saumon)	Clare Backman, directeur des programmes de durabilité Ian Roberts, gérant des communications Dean Guest, gérant de production en eau douce
Deep Bay Marine Field Station et Centre for Shellfish Research, Vancouver Island University, Bowser	Brian Kingzett, gérant Dr Greg Crawford, doyen, Faculté de science et technologie Dre Helen Gurney-Smith, scientifique-chercheur Stephanie Richards, coordonnatrice d'installation William Litchfield, directeur, développement et anciens Claire Vine, adjointe en éducation communautaire
Fanny Bay Oysters, Union Bay	Bill Taylor, président, Taylor Shellfish (propriétaire de FBO) Brian Yip, gérant Roberta Stevenson, directrice générale, BC Shellfish Growers Association
Taste of BC Aquafarm, Nanaimo (installation d'aquaculture terrestre en parcs clos)	Steve Atkinson, propriétaire Janet Atkinson, propriétaire

TERRE-NEUVE-ET-LABRADOR ET NOUVELLE-ÉCOSSE –26, 28 ET 30 MAI 2014

Mike's Place, St. Alban's	Cyr Couturier, président, Newfoundland Aquaculture Industry Association (NAIA) Miranda Pryor, directrice générale, NAIA Jamie Leroux, maire de St. Alban's Jerry Kearley, maire de Milltown Elizabeth Barlow, directrice, Développement de l'aquaculture, Ministère des pêches et de l'aquaculture TL (MPA) Sheldon George, gérant de production, Cold Ocean Salmon Julia Jensen, gérante de conformité environnementale, Cold Ocean Salmon Jamie Kendall, gérant de production, Newfoundland Aqua Services Trenton Johansen, gérant des opérations, Sunrise Fish Farms Jennifer Caines, gérante de projet, Northern Harvest Sea Farms
Centre for Aquaculture Health and Development, NL DFA, St. Alban's	Dr Daryl Whelan, vétérinaire aquacole provincial, Santé des animaux aquatiques Dre Amanda Borchart, vétérinaire aquacole Elizabeth Barlow, directrice, Développement de l'aquaculture
Cold Ocean, Swanger Cove (écloserie de saumon)	Brian Hull, gérant principal Jim Murphy, gérant d'installation Melissa Burke, agente, Développement de l'aquaculture, MPA

Northern Harvest Sea Farms Ltd, Fortune Bay (site d'élevage)	Jennifer Caines, gérante projet Doug Caines, directeur général Tanya Savory, gérant de site Jason Smith, capitaine Lee Fizzard, travailleur de site Melissa Burke, agente, Développement de l'aquaculture, MPA
Southern Port Hotel, Harbour Breton	Cyr Couturier, président, Newfoundland Aquaculture Industry Association (NAIA) Miranda Pryor, directrice générale, NAIA Melissa Burke, agente, Développement de l'aquaculture, MPA
Installations et quai aquacoles, Harbour Breton	Cyr Couturier, président, Newfoundland Aquaculture Industry Association (NAIA) Miranda Pryor, directrice générale, NAIA Melissa Burke, agente, Développement de l'aquaculture, MPA
Norlantic, Pleasantview (ferme de moules et usine)	Terry Mills, président, Norlantic Miranda Pryor, directrice générale, NAIA
Aquatron, Dalhousie University, Halifax	Kevin Dunn, directeur, Liaison avec l'industrie et innovation Jim Eddington, biologiste marin
Acadian Seaplants, Dartmouth	Louis Deveau, PDG
Cooke Aquaculture, Saddle Islands (site d'élevage)	Nell Halse, v-p communications Jeff Nickerson, gérant de production Nouvelle-Écosse John Garland, gérant, sud-ouest de la Nouvelle-Écosse Scott Leslie, gérant de site Tim Fraser, commis de ferme principal
Trellis, Hubbards	Jeff Nickerson, gérant de production Nouvelle-Écosse Scott Leslie, gérant de site

ÉCOSSE ET NORVÈGE – 22-26 SEPTEMBRE 2014

Marine Scotland, quai Victoria, Édinbourg, Écosse	Willie Cowan, chef, Résultats et aquaculture Paul Haddon, gérant de politique aquacole Alastair Mitchell, agent de politique aquacole Douglas Sinclair, spécialiste en aquaculture, Scottish Environmental Protection Agency Charles Allan, chef de groupe, Fish Health Inspectorate
Scottish Salmon Producers Organisation, Perth, Scotland	Phil Thomas, président du conseil d'administration Scott Landsburgh, PDG Jamie Smith, directeur technique Alan Balfour, directeur général adjoint, Loch Duart Ltd, et président, Snow Island
Marine Harvest Scotland, Lochailort, Écosse (écloserie de saumon)	Steve Bracken, gérant de soutien aux affaires Allan MacDonald, gérant d'écloserie
Marine Harvest Scotland, Loch Shiel, Écosse (site d'élevage en eau douce)	Steve Bracken, gérant de soutien aux affaires Sandy MacKinnon, gérant de site
Glenfinnan House, Glenfinnan, Scotland	Steve Bracken, gérant de soutien aux affaires
Marine Harvest Scotland, Fort William, Écosse (usine de transformation)	Steve Bracken, gérant de soutien aux affaires Donald MacIsaac, gérant d'usine
Marine Harvest Scotland, Corran, Loch Leven, Scotland (site d'élevage en eau marine)	Steve Bracken, gérant de soutien aux affaires Chris Ryan, gérant de site
Loch Fyne Oysters Ltd and Scottish Salmon Co., Ardcastle, Loch Fyne, Écosse (site aquacole multitrophique intégré)	Richard Hunt-Smith, directeur du marketing
Loch Fyne Oysters Ltd, Clachan, Cairndow, Écosse	Richard Hunt-Smith, directeur du marketing
Ambassade du Canada, Oslo, Norvège	David Sproule, ambassadeur Alanna Zulkifli, déléguée commerciale Renato Caldart, conseiller et délégué commercial principal
Norwegian Ministère du commerce, industrie et pêches, Oslo, Norvège	Martin Bryde, directeur, Pêches et aquaculture Marie Bjørland, Pêches et aquaculture

Fédération norvégienne des fruits de mer, Oslo, Norvège	Trond Davidsen, directeur de l'auaculture Dr Ketil, Rykhus, vétérinaire Morten Vike, PDG, Grieg Seafood Geir Molvik, v-p des opérations, Cermaq
Direction des pêches, Bergen, Norvège	Liv Holmefjord, directrice générale Jens Holm, directeur, Aquaculture and gestion côtière Lise Torkildsen, chef de section, Fruits de mer, Autorité norvégienne de sécurité des aliments Martin Binde, conseiller principal, Animaux aquatiques, Autorité norvégienne de sécurité des aliments
Institut de recherche marine, Bergen, Norvège	Harald Loeng, directeur de la recherche Terje Svåsand, Chercheur Kari Østervold Toft, directrice, communications
Lerøy Seafood Group, Bergen & Bjørnafjorden, Norvège (siege social et site d'élevage)	Henning Beltestad, PDG

NOUVEAU-BRUNSWICK, ÎLE-DU-PRINCE-EDOUARD ET QUÉBEC – 17-19 NOVEMBRE, 2014

Breviro Caviar, Pennfield, NB	Jonathan Barry, PDG Bill Wentworth, technicien principal
Cooke Aquaculture, Back Bay, NB	Nell Halse, v-p communications Michael Szemerda, v-p des operation en eau marine Dr Thierry Chopin, professeur en biologie marine, Université du Nouveau- Brunswick
Atlantic Canada Fish Farmers Association	Larry Ingalls, president du conseil d'administration Bev Bacon, member du conseil Nell Halse, membre du conseil Trevor Stanley, membre du conseil Pamela Parker, directrice générale Betty House, coordonnatrice de la recherché et du développement
Station biologique de St. Andrews, Pêches et Océans Canada, St. Andrews, NB	Dre Shannon McGladdery, directrice de la station Alain Vézina, directeur de la science, Bureau d'Halifax Dr Shawn Robinson, chercheur principal, Aquaculture Lara Cooper, chef, Aquaculture & interactions biologiques Blythe Chang, biologiste, Recherches océanique côtière Steven Leadbeater, agent de bio-sécurité
Little Shemogue Oyster Company, Botsford, NB	Mitchell Feigenbaum, propriétaire Paul Firminger, directeur général Amy Firminger, gérante de bureau
Halibut PEI, Victoria, ÎPÉ (siège social et installations terrestres en parcs clos)	Jim Dunphy, président Bob Johnston, v-p relations gouvernementales Dr. Gerry Johnson, vétérinaire corporatif

Atlantic Veterinary College, Charlottetown, ÎPÉ	Dr Dan Hurnik, doyen par intérim Dr Robert Gilmour, Vice-President, Research, UPEI Dre Sophie St-Hilaire, Canada Research Chair in Integrated Health Research for Sustainable Aquaculture Dr Ian Gardner, Canada Excellence Research Chair in Aquatic Epidemiology Dr Mark Fast, Novartis Research Chair in Fish Health Dr Dave Groman, Aquatics Diagnostic Services Anna MacDonald, External Relations Officer
Atlantic Aqua Farms, Orwell Cove, ÎPÉ (siège social et usine de transformation)	Terrry Ennis, PDG Bobby MacMillan, v-p des ventes
Fermes marines de Gaspé, Newport, QC (siège social et usine)	Jean-Philippe Hébert, président
Centre d'innovation de l'aquaculture et des pêches (Merinov), Gaspé, QC	Julie Boyer, membre du conseil d'administration Laurent Girault, directeur de la valorisation de la biomasse Laurent Millot, directeur de la production de la biomasse Quatre personnes du comité sénatorial Michel Cotton, directeur général par intérim Luc Leclerc, chargé de projet Noëlla Coulombe, technicienne de laboratoire Nadine Renaud, technicienne spécialiste en procédés Piotr Bryl, technologiste alimentaire, responsable du centre de fractionnement Julie Rousseau, communications

ST-JEAN, TERRE-NEUVE-ET-LABRADOR –20 FÉVRIER 2015

Ministère des pêches et de l'aquaculture TL, St-Jean	Dave Lewis, sous-ministre intérimaire Brian Meaney, sous-ministre adjoint, Aquaculture et marketing des fruits de mer Dre Nicole O'Brien, vétérinaire aquacole, Santé aquatique Steve Moyse, spécialiste en développement de programme et politique
Centre des sciences de l'Océan, Université Memorial, baie Logy	Dr Gary Kachanoski, président et chancellier Dr Mark Abrahams, doyen, Science Dr Garth Fletcher, directeur de l'OSC Danny Boyce, gérant d'affaires et des installations Danielle Nichols, gérante en marketing de la recherche Steven Hill, recherché eau froide et mer profonde
Institut marin, Université Memorial, St-Jean	Dr Gary Kachanoski, président et chancellier Dr Glen Blackwood, v-p, Institut marin Dr Mark Abrahams, doyen, Science Dre Jillian Westcott, scientifique en poissons à nageoires Cyr Couturier, scientifique-chercheur Heather Manuel, directrice, Aquaculture et développement des fruits de mer Keith Rideout, chercheur en salmonidés Kim Thornhill, agente de communications
Centre des pêches de l'Atlantique nord-ouest, Pêches océans Canada, St-Jean	Lillian Abbas, directrice générale intérimaire, Région TL Dounia Hamoudene, directrice intérimaire et scientifique-chercheure Dr Ben Davis, gérant, Ressources aquatiques Geoff Perry, coordonnateur régional de l'aquaculture Kevin Anderson, Gestion des pêches Jackie Perry, Services stratégiques

SÉNAT SENATE

CANADA

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WITNESSES

Tuesday, May 31, 2016

Canadian Coast Guard Auxiliary:

Randy Strandt, National Chair.

Royal Canadian Marine Search and Rescue:

Pat Quealey, Chief Executive Officer.

Cougar Helicopters Inc.:

Hank Williams, Chief Operating Officer;

Rick Banks, Search & Rescue Program Manager;

Steve Reid, Search & Rescue Capability Advisor.

Tuesday, June 7, 2016

National Defence:

Rear-Admiral John Newton, Commander Joint Task Force Atlantic and Commander Maritime Forces Atlantic.

TÉMOINS

Le mardi 31 mai 2016

Garde côtière auxiliaire canadienne :

Randy Strandt, président national.

Royal Canadian Marine Search and Rescue :

Pat Quealey, chef de la direction.

Cougar Helicopters Inc. :

Hank Williams, chef des opérations;

Rick Banks, gestionnaire, Programme de recherche et sauvetage;

Steve Reid, conseiller consultatif, Recherche et sauvetage.

Le mardi 7 juin 2016

Défense nationale :

Contre-amiral John Newton, commandant de la Force opérationnelle interarmées (Atlantique) et des Forces maritimes de l'Atlantique.

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