THE SENATE
OF CANADA

LE SÉNAT
DU CANADA

FISH HABITAT:

Interim Report of the Standing Senate Committee on Fisheries and Oceans

Chair
The Honourable Gerald Comeau

Deputy Chair
The Honourable Joan Cook

November 2003

MEMBERSHIP

The Honourable Gerald Comeau, *Chair*

The Honourable Joan Cook, *Deputy Chair*

and

The Honourable Senators:

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Research Staff:
Claude Emery, Library of Parliament

Till Heyde
Clerk of the Committee

ORDER OF REFERENCE

Extract from the *Journals of the Senate* of 6 November 2002:

The Honourable Senator Comeau moved, seconded by the Honourable Senator Beaudoin:

That the Standing Senate Committee on Fisheries be authorized to examine and report upon the matters relating to oceans and fisheries;

That the documents and evidence received by the Committee during its consideration of these same matters in the First Session of the Thirty-seventh Parliament be referred to the Committee;

That the Committee table its final report no later than June 30, 2003; and

That, notwithstanding usual practice, the Committee be permitted to deposit its final report with the Clerk of the Senate if the Senate is not then sitting, and that the report be deemed to have been tabled in the Chamber.

After debate, with leave of the Senate and pursuant to Rule 30 the motion was modified to read as follows:

That the Senate Standing Committee on Fisheries be authorized to examine and report from time to time upon the matters relating to straddling stocks and to fish habitat;

That the documents and evidence received by the Committee during its consideration of these same matters in the First Session of the Thirty-seventh Parliament be referred to the Committee; and

That the Committee table its final report no later than December 31, 2003.

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

Paul Bélisle

Clerk of the Senate

TABLE OF CONTENTS

Page

FOREWORD

> *Aboriginal peoples say that our actions must honour the seven previous generations and enrich the next seven generations to come.*
>
> – *Johanne Gélinas, Commissioner of the Environment and Sustainable Development, Proceedings of the Standing Senate Committee on Fisheries and Oceans* [hereafter referred to as "Committee Proceedings"]*, 19 February 2002*

> *There is a new environmental awareness in the country about what is happening in our landscapes, our water and our air.*
>
> – *Barry Turner, Director of Government Relations, Ducks Unlimited Canada, Committee Proceedings, 26 March 2002*

> *I have worked for seven fisheries ministers, not just the current minister. [T]he urgent matter always takes priority over the longer-term goals.*
>
> – *Dr. Jon Lien, Chair of the Minister's Advisory Council on Oceans, Committee Proceedings, 23 September 2003*

Fisheries management involves more than setting Total Allowable Catches, licensing fishers, and allocating fish. It also applies to a more basic resource: fish habitat, the natural environments on which fish depend.

From the start, the Standing Senate Committee knew there were many challenges in undertaking this review. Canada is a huge country, and issues vary from one region to the next. Fish habitats are vulnerable to a variety of threats, both big and small. A number of economic activities, such forestry, mining, energy and agriculture, make legitimate demands on aquatic resources. Often no one person may be directly responsible for causing damage to fish habitats, such as by allowing contaminants to enter waters inhabited by fish. Too often, science cannot provide decision makers with the information they need.

This interim report is based on evidence spanning two sessions of the 37th Parliament. The Committee's interest in fish habitat grew out of its February 2002 report entitled *Selected Themes on Canada's Freshwater and Northern Fisheries*. After the release of that report, preliminary hearings on fish habitat were held until June 2002, at which point the first session of Parliament ended. In the second session, the Committee received an order of reference on "matters relating to straddling stocks and to fish habitat." A report on *Straddling Fish Stocks in the Northwest Atlantic* was tabled in the Senate in June 2003.

Committee members believe this to be an opportune time to sketch out what we have heard so far, for two reasons. First, we are at the mid-point of our study. Second, the Department of Fisheries and Oceans (DFO) recently initiated a Departmental Assessment and Alignment Project to bring funding into line with departmental priorities, and identify possible options for improving the efficiency and effectiveness of programs and services.

Our objectives with regard to fish habitat include:

- providing an overview of the jurisdictional framework for managing fish habitat in Canada;
- outlining the types of government programs under way across the country;
- assessing the effectiveness of federal programs, particularly those that involve partnerships and joint stewardship with industry, non-governmental organizations, Aboriginal peoples, local communities, and the public;
- reporting on any new or innovative strategies in support of stewardship;
- travelling to various parts of the country where successful fish habitat stewardship initiatives have been established, and reporting on the important work that volunteer citizens and public groups undertake in protecting, restoring and developing fish habitat; and
- helping to raise the level of awareness and understanding about fish habitat issues in Canada.

This document is an interim report – an account of work in progress. Many witnesses have yet to appear and share their views. On 1-2 October 2003, a Committee working group embarked on an informal fact-finding trip to southeast New Brunswick to learn about Environment Canada's Atlantic Coastal Action Program (ACAP), and the role played by communities in fish habitat stewardship. In the coming weeks, Committee members hope to learn more about stewardship activities in other parts of the country. Our findings will be conveyed more fully in our final report.

Fish habitats are vital public assets. They are our common inheritance, our responsibility, and also our legacy.

A heartfelt thanks to everyone who so generously made time available to participate in our inquiry.

GERALD COMEAU

Chair

FISH HABITAT:
INTERIM REPORT OF THE STANDING SENATE COMMITTEE ON FISHERIES AND OCEANS

WHY A STUDY ON FISH HABITAT?

> *Our polling across the country indicates that public concern is focussed on the decline and loss of fish habitat.*
>
> – *Paul Cuillerier, Director General, Habitat Management and Environmental Science, Department of Fisheries and Oceans, Committee Proceedings, 16 October 2001*

> *In terms of polling, the environment always ranks very high in the minds of Canadians.*
>
> – *Richard Wex, Director General, Habitat Management Directorate, Department of Fisheries and Oceans, Committee Proceedings, 16 September 2003*

> *Canadians are becoming more aware of oceans ... They see healthy, sustainable oceans as an important feature of Canada, and of Canadian culture and character.*
>
> – *Dr. Jon Lien, Chair of the Minister's Advisory Council on Oceans, Brief submitted to the Committee, 23 September 2003*

Fishing is managed and regulated to ensure that fishers do not catch more fish than the stocks can sustain, and to allocate the catch among competing users of the resource. However, modern fisheries management recognizes that conservation also applies to a more basic resource: fish habitat, the natural life support systems or environments in which fish breed, feed, migrate and grow.

Fish habitat is an important area of public policy, given that fish are a major contributor to Canada's economic prosperity. In 2002, exports in the commercial fisheries were worth a record $4.7 billion. About 3.6 million anglers in the recreational fishery spend nearly $7 billion annually. Other important benefits also flow from the resource, such as supporting traditional lifestyles of Aboriginal people and residents of remote rural communities, and contributing to the quality of life of all Canadians. In addition to sustaining economic, social and cultural benefits, healthy, productive freshwater, estuarine and marine aquatic environments are indicators of healthy and safe environments.

Fish habitats are damaged or lost by human encroachment, and by changes both big and small. In fact, damage to fish habitat can threaten fish more than overfishing. There are many types of pressures – physical, biological, and chemical – that are not always obvious and that may become apparent only once fish have disappeared. Large hydroelectric dams and diversions may take their toll, but so can poorly installed culverts that block migrating fish. Effluent discharges into water can damage water quality and therefore fish habitat. Industrial

and other uses of aquatic environments must therefore be managed to avoid or minimize damage, or to make habitats better places for fish to live and reproduce in. Some of the more common threats are those associated with:

- removal of sand or gravel from beaches, riverbanks or streambeds;
- industrial and municipal waste discharges;
- stream diversion;
- dredging or filling of tidal flats or marshland;
- dredging for deep-sea port construction;
- accidents during the development of offshore oil and gas reserves;
- seabed mining;
- introduction of silt, contaminants and other pollutants;
- land clearing to provide for agricultural or urban development;
- improper use of pesticides;
- construction of electric power installations;
- diking and stream channelization;
- building causeways, wharves, marinas and reservoirs;
- logging and log storage; and
- pipelines, transmission lines, road and rail construction.(1)

Public opinion polls have clearly and consistently shown that the great majority of Canadians care about how the fishery and fish habitats are managed. Contamination of aquatic environments is at the forefront of public consciousness. Very few Canadians (6%) strongly believe their oceans and waterways to be "relatively healthy and clean."(2) Pollution is perceived to be the greatest threat, with most Canadians (75%) wanting government's emphasis to be on environmental protection. More than three-quarters of the population supports the mandatory

(1) DFO, *Canada's Fish Habitat Law*, 1991. Seabed mining is not yet an issue.

(2) Pollara Strategic Public Opinion and Market Research, *A Benchmark Survey of Public Opinion prepared for Fisheries and Oceans Canada*, June 2000.

protection of the habitat of endangered plants and animals (as well as protection of the plants and animals themselves), while only 11% support the view that politicians should be allowed to choose which species' habitats will receive protection.(3)

Canada is a biological tapestry of unique ecological regions. Fish habitat issues therefore vary from one region to the next. In 2001, for example, this Committee reported that Lake Winnipeg – the largest and most economically important body of water west of the Great Lakes – needed a remediation program.(4) Across the country, in inland areas, wetlands that filter and remove impurities from water have been commercially developed or converted to agriculture or other uses. In southern Ontario, more than 70% have disappeared. Damage to fish habitat is said to be a major reason for declines in fish populations in the Great Lakes and St. Lawrence River basin.(5) The basin is home to 16 million Canadians, and environmental pressures are expected to become more acute because of population growth and increased urbanization, industrial and agricultural activity, and recreational demands. In the St. Lawrence River, toxic pollution has devastated the beluga whale population. Experts also warn that some species of fish are on the brink of disappearing because of contaminated water. Across the country, biological pollutants – invasive alien aquatic species – continue to threaten freshwater and marine ecosystems and cause billions of dollars of damage to the economy each year. Approximately 10% of Canada's freshwater fishes are alien species.

On both the East and West Coasts, healthy and productive freshwater habitats are essential to the survival of salmon – fish that are particularly susceptible to habitat disturbances. In British Columbia, where wild Pacific stocks range over two-thirds of the province's territory, there are many traditional threats to habitat: pollution and disruption from urban and industrial development, forestry, mining and agriculture. Also looming on the horizon are new ones: offshore oil and gas development and climate change. In both Pacific and Atlantic coastal areas, there is a continuing controversy over net pen salmon farming and its possible adverse effects on wild fish and the environment. On the eastern seaboard of North America, stocks of wild Atlantic salmon are continuing their 20-year decline. In Canadian waters, many stocks are low or at risk; others have been lost altogether. In the Bay of Fundy region, Atlantic salmon in

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(3) Environics Research Group, *Benchmark Survey*, November 2001 and March 2002.

(4) Standing Senate Committee on Fisheries, *Selected Themes on Canada's Freshwater and Northern Fisheries*, February 2002, http://www.parl.gc.ca/common/Committee_SenRep.asp?Language=E&Parl=37&Ses=1&comm_id=7.

(5) Commissioner of the Environment and Sustainable Development, *Great Lakes and St. Lawrence River Basin: A Legacy Worth Protecting, Charting a Sustainable Course in the Great Lakes and St. Lawrence River Basin*, 2001.

33 rivers were reported to Committee members as being in imminent danger of extinction. Acid rain remains a deadly menace to salmon-bearing streams and rivers in Nova Scotia.

Along Pacific and Atlantic coastlines, where about a quarter of Canada's population lives, fish habitats have been degraded or lost with the development of cities, ports, road networks, pipelines, recreational use and untreated municipal sewage. Land-based activities are believed to generate 80% of marine pollution in coastal waters. Such pollution is caused by municipal, industrial and agricultural wastes and runoff, as well as atmospheric deposition.(6)

Because climate has a strong impact on the abundance and distribution of fish populations, global warming will profoundly affect fish habitats and fisheries. The long-term consequences will be greatest in Canada's Arctic, where climate change is well under way. Considering its very sparse population and comparative lack of development, the North is disproportionately affected by this global phenomenon. Contaminants in the region's ecosystem are another matter of considerable concern both nationally and internationally. With respect to natural resource development, northern ecosystems are fragile and especially vulnerable to pollution or alteration because the cold climate slows chemical and biological processes that are essential to recovery.

Setting a figure on fish habitat losses is difficult, however. Very little information exists on the quantity and quality of fish habitat in Canada. It is widely accepted that in North American freshwaters, most extinctions of native aquatic species have been due to habitat destruction or alteration. According to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), 80 species of fish and 18 species of molluscs are now extinct, extirpated, endangered, threatened, or of special concern.(7)

In Canada, the *Fisheries Act* is the main tool for protecting the physical attributes of fish habitat and preventing pollution. The federal Minister of Fisheries and Oceans is responsible for the Act's enforcement.(8) In over 60 offices across the country, staff of the DFO's National Fish Habitat Management Program are primarily involved in reviewing activities and projects (known as fish habitat referrals) in or near water for potential threats to

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(6) Government of Canada, *Implementing Canada's National Programme of Action for the Protection of the Marine Environment From Land-Based Activities: National Report to the 2001 Intergovernmental Review on Implementation of the Global Programme of Action*, November 2001.

(7) Committee on the Status of Endangered Wildlife in Canada, Summary Table of Species Assessed by COSEWIC, Risk Status According to Taxonomic Group, May 2003.

(8) In 1979, the Department of Fisheries and Oceans was created under the *Government Organization Act*. The new department was made up of elements that had functioned as the Fisheries and Marine Service in the previously titled Department of Fisheries and the Environment.

fish habitat, and outlining measures to avoid or mitigate them – everything from the installation of a culvert for a road crossing to the development of a diamond mine project in the North.

THE FRAMEWORK

A. The National Fish Habitat Management Program

> *Traditionally, the program had been focused on the two coasts, and with the strengthening initiative, it became a truly national program.*
>
> – *Richard Wex, Director General, Habitat Management Directorate, DFO, Committee Proceedings, 16 September 2003*

> *[I]n the 1990s, a series of federal funding cuts, provincial funding cuts and attempts at delegation worsened what was a muddy situation to begin with.*
>
> – *John Reed, Principal, Office of the Commissioner of the Environment and Sustainable Development, Committee Proceedings, 19 February 2002*

> *It came down to the point in the past few years where [some provincial departments] told us openly that they have their areas of responsibility and we have ours. They said that we should each do our jobs.*
>
> – *Richard Nadeau, Director, Habitat Operations, Habitat Management and Environmental Science, DFO, Committee Proceedings, 16 October 2001*

Until fairly recently, the delivery of the DFO's Fish Habitat Management Program had focused on the Atlantic and Pacific coasts of Canada. In inland areas, matters relating to fish habitat were left mostly to the provinces, because the federal government had also delegated much of its fisheries management administration to them[(9)] – even though the federal government retained responsibility for fish habitat.[(10)] In 1995, the federal government undertook a cost-recovery and deficit reduction program called Program Review. Programs were examined to determine the most effective methods of delivery, and significant cutbacks were made in spending across all government departments, including the DFO. With regard to

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(9) Following Confederation, there was uncertainty surrounding the extent to which federal authority superseded provincial property rights in non-tidal fisheries. In 1898, the Judicial Committee of the Privy Council concluded essentially that the provincial governments had the sole responsibility to lease and license inland fisheries, enforce provincial licensing or otherwise determine how property rights were to be managed. Formal agreements were negotiated during 1899-1930 between the federal government and a number of provinces. There were special arrangements concerning day-to-day management for the inland fisheries of Ontario, Manitoba, Saskatchewan and Alberta, and for some fisheries in Quebec (where the province manages all freshwater, anadromous and catadromous fisheries) and in British Columbia (where the province manages all freshwater species, except anadromous salmon).

(10) There were unofficial agreements with various provincial departments on implementing the DFO's programs, exchanging information, and conducting environmental assessments. In the late 1980s and early 1990s, the Courts criticized the way in which the federal government was discharging its environmental assessment responsibilities in the inland provinces.

fish habitat, it was decided that in areas where the provinces administered fisheries, they were in a position to manage fish habitat. During this tumultuous period, discussions began on the formal transfer of responsibilities for freshwater fish habitat management to the provinces.

In October 1996, amendments to the *Fisheries Act* (Bill C-26) were introduced that would have given the force of law to various policy statements, directives and bilateral agreements between the provinces and the federal government. The exception was projects having potentially significant effects on fish habitat, which would have remained the responsibility of the federal Minister of Fisheries and Oceans.(11) The provinces, however, were unwilling to take on more responsibilities permanently without a corresponding increase in federal funds to carry them out. Bill C-26 died on the *Order Paper* when the federal election was called in April 1997. Later that year, in September, Ontario formally withdrew from administering fish habitat management activities on the federal government's behalf (under a federal-provincial agreement on matters relating to section 35 of the *Fisheries Act*). Alberta similarly withdrew in early 1999, while Quebec, which had never had a formal agreement with the DFO, argued that its legislation and programs already protected fish habitat.

By the late 1990s, the DFO's Fish Habitat Management Program faced a number of major challenges, including: public concern over the decline and loss of marine and freshwater environments; increased demands to respond to court actions; audits by the Auditor General of Canada; citizens' submissions made under the North American Agreement on Environmental Cooperation; and industry concerns about delays in reviewing development proposals and inconsistencies in the application of the *Fisheries Act*, the Habitat Policy and the *Canadian Environmental Assessment Act*.(12) In response, two major initiatives were launched in 1999-2000. First, in September 1999, the federal Cabinet provided the DFO with an additional $28 million annually to meet its legal responsibilities in the Prairie provinces and bolster its administrative capacity in Ontario, Quebec and the Atlantic provinces. Second, the

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(11) This was announced in the 1995 federal budget and 1996 Speech from the Throne. At the time, concerns were voiced by environmental organizations and others. In their opinion, the proposed legislation would have weakened environmental and fish habitat protection, especially in areas of the country where the federal government was the enforcing power.

(12) DFO, *Administration and Enforcement of the Fish Habitat Protection and Pollution Prevention Provisions of the Fisheries Act, Annual Report to Parliament for the Period of April 1, 2000 to March 31, 2001*, 2002.

Department embarked on the "National Blueprint Initiative,"[13] which had as its major objectives:

- to streamline the regulatory referral review and approval process for proposed development projects in or near fisheries waters, in order to reduce delays and allow staff to focus on projects that pose a greater risk to fish habitat;

- to establish greater national consistency in the development and implementation of program policies, procedures, practices and services; and

- to achieve a more balanced approach between regulatory and proactive activities in implementing the Habitat Policy.

There was also a shift in the way policies, procedures, practices and services were to be developed and delivered – a change that recognized that "fish habitat management is everyone's business." To that end, a fourth objective was set:

- to enhance collaboration and accountability in developing and implementing Habitat Management Program policies, procedures, practices and services through partnerships with other government departments, the provinces, industry, Aboriginal communities, educators and non-governmental and voluntary organizations.[14]

To date, there are formal agreements between the DFO and only three provinces: British Columbia, Prince Edward Island, and Manitoba. However, DFO officials mentioned strong working relationships between the Department and the other provinces.[15]

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(13) The Blueprint was based on the recommendations of an independent 1999 National Referral Study that identified the need to increase the consistency, efficiency and effectiveness of the National Fish Habitat Management Program.

(14) DFO, *Administration and Enforcement of the Fish Habitat Protection and Pollution Prevention Provisions of the Fisheries Act, Annual Report to Parliament for the Period of April 1, 2000 to March 31, 2001*, 2002.

(15) In September 1999, the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) endorsed an "Agreement on Interjurisdictional Cooperation with Respect to Fisheries and Aquaculture" that outlines several principles of cooperation, such as flexibility in the application of policies and programs, including those relating to fish habitat. In August 2000, the CCFAM supported a framework for the development of a Freshwater Fisheries Strategy – championed by Manitoba – to better coordinate freshwater fisheries management, fish habitat protection and science between the two orders of government. In September 2001, Ministers (with the exception of Quebec) agreed on a draft National Freshwater Fisheries Strategy to strengthen fish habitat and aquatic ecosystems through improved interjurisdictional cooperation. In September 2002, they gave the National Freshwater Fisheries Strategy approval-in-principle; and in September 2003, they were presented with the results of a review of the 1999 Agreement on Interjurisdictional Co-operation that showed an overall improvement in intergovernmental relations. See the Canadian Intergovernmental Conference Secretariat, various news releases.

In the Arctic, land claims settlements in place in Nunavut, the Northwest Territories, the Yukon and northern Quebec guarantee Aboriginal participation in decision-making and provide specific roles and responsibilities for public management boards in the management of freshwater fish resources, including their supporting habitats.

B. The *Fisheries Act*

> *The final decision on questions of fish habitat is with the Department of Fisheries and Oceans. It rests with us.*
>
> – *Paul Cuillerier, Director General, Habitat Management and Environmental Science, DFO, Committee Proceedings, 16 October 2001*

> *My experience with industry over the years is they have no problems complying with the laws; they just want to know what they have to do, and the timelines.*
>
> – *Richard Wex, Director General, Habitat Management Directorate, DFO, Committee Proceedings, 16 September 2003*

> *Development is not all bad – some of it is very necessary, but it encroaches constantly on ... habitat.*
>
> – *The Hon. John Fraser, Chair of the Pacific Fisheries Resource Conservation Council, Committee Proceedings, 18 March 2003*

Under the Constitution of Canada, law-making powers are distributed between the federal government and the provinces, with each order of government being given exclusive legislative authority in regard to certain subjects. While the Constitution makes no specific reference to fish habitat, the *British North America Act, 1867* (now the *Constitution Act, 1982*) assigns jurisdiction over "sea coast and inland fisheries" to the Parliament of Canada. Because provincial and territorial governments have powers that can affect fishery resources and fish habitat through their authority to deal with land and water use activities (e.g., forestry, mining, agriculture, hydroelectric power developments), a great deal cooperation and collaboration between orders of government is required. However, if there is a conflict between a provincial and a federal law on environmental or related matters, federal law prevails.(16)

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(16) The inland fisheries are one of the most complex cases of divided jurisdiction in Canada. Soon after 1868, a number of court cases challenged the validity of the *British North America Act*'s provisions on constitutional grounds; as a result, a significant body of case law defines the meaning and scope of federal legislative authority over "sea coast and inland fisheries." For instance, in tidal waters, the federal government has exclusive jurisdiction over fisheries, while in non-tidal (or inland) waters, there is shared federal and provincial jurisdiction because of provincial ownership rights. However, legislative responsibility over the conservation aspects of fisheries, including fish habitat, is exclusively federal.

The federal Minister of Fisheries and Oceans is responsible for the administration and enforcement of the federal *Fisheries Act*. By all accounts, the Act is one of the most powerful tools available to ensure the sound management of the aquatic environment. The statute: deals with both freshwater and saltwater and makes no distinction between them; applies throughout Canada on public and privately owned land; and applies to all activities carried on by private individuals and companies, and by all levels of government. Proclaimed in 1868, the *Fisheries Act* may also have been the first environmental statute in Canada; for instance, the Act contained provisions on substances "prejudicial and deleterious" to fish (in a section on "Injuries to Fishing Grounds and Pollution of Rivers") and on the construction of fishways and the passage of fish (including one provision that required nets and other fishing apparatus in freshwater and tidal waters to be raised in order to allow fish "free passage" on Sundays).

The *Fisheries Act* broadly defines the term "fish habitat" as "spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes." Section 35 of the Act contains provisions that protect the *physical attributes* of fish habitat, while section 36 is the main provision on *pollution prevention*. The Minister of Fisheries and Oceans is required to report annually to Parliament on administration and enforcement.

Since 1978, the Act's provisions on pollution prevention in fish-bearing water (sections 36 to 42) have been administered by the Department of the Environment (hereafter referred to as Environment Canada) through Prime Ministerial instruction. In 1985, the DFO and Environment Canada signed a Memorandum of Understanding (MoU) on their respective administrative responsibilities,[17] under which the two departments agreed to cooperate and communicate openly and regularly on all matters related to the administration of section 36, and to make joint decisions on enforcement actions. However, the DFO reserves the right to act directly when Environment Canada is unable or unwilling to do so.

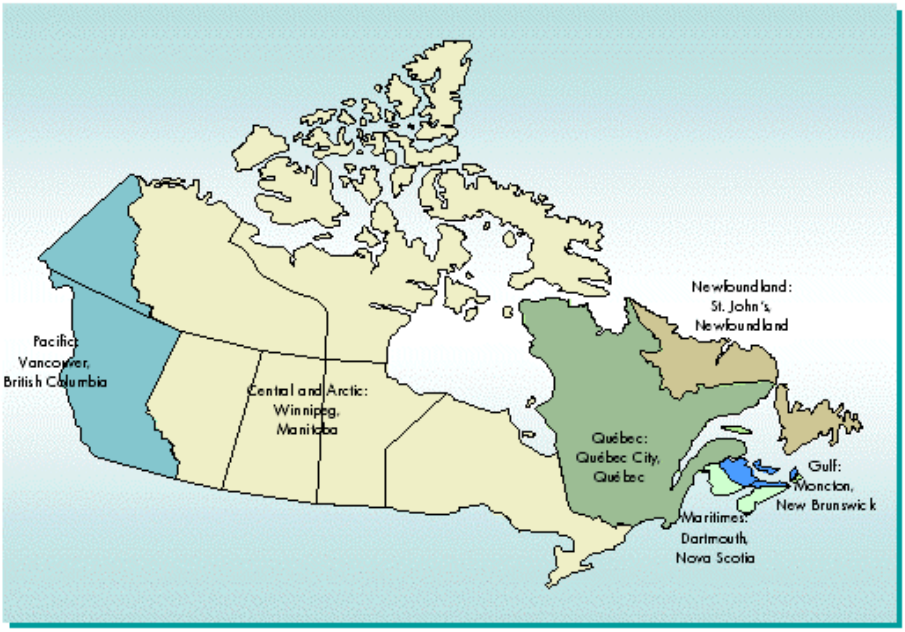
1. Sections 35 and 36

The DFO administers section 35(1) of the *Fisheries Act*, which states that "No person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat." Section 35(2) qualifies the prohibition: "No person contravenes subsection (1) by causing the alteration, disruption or destruction of fish habitat by any means or under any conditions authorized by the Minister or under regulations made by the Governor in

(17) Memorandum of Understanding between the Department of Fisheries and Oceans and the Department of the Environment on the Subject of the Administration of Section 33 of the *Fisheries Act* signed at Ottawa, Ontario, 6 May 1985.

Council under this Act." Operationally speaking, decisions on whether to issue authorizations are made by regional management staff in the DFO's six administrative regions (Map 1).

Map 1: Administrative Regions of the Department of Fisheries and Oceans



Source: DFO, *2003-04 Report on Plans and Priorities*.

Commonly referred to as "the general prohibition," section 36(3) stipulates that "no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water." This covers a wide range of substances. A "deposit" is defined as any discharging, spraying, releasing, spilling, leaking, seeping, pouring, emitting, emptying, throwing, dumping or placing, whether intentional or not. A "deleterious substance" is a substance that, if added to water, causes the water to become harmful to fish. Under sections 36(4) and 36(5), the federal government can adopt regulations prescribing when, where, under what circumstances and in what concentrations the deposit of specified deleterious substances, waste or pollutants is authorized. There are six regulated sectors (metal mining, pulp and paper, meat/poultry processing, potato processing, chlor-alkali mercury plants, and petroleum refineries), and two site-specific regulations in British Columbia.[18]

(18) The first governs the effluent from a pulp and paper mill at Port Alberni; the other concerns tailings deposits from a mine into a body of water known as Alice Arm.

Compliance with sections 35 and 36 is monitored by various means (e.g., periodic inspections, reporting of information by regulatees, sampling for deleterious substances by enforcement officials). There are many potential responses to violations of section 35 or section 36 of the Act, for example orders from the Minister of Fisheries and Oceans, court orders upon conviction and injunctions, civil suits to recover remediation costs, and prosecutions. Failures to comply with sections 35 and 36 are offences punishable either on summary conviction (carrying fines of up to $300,000 for a first offence, with the possibility of a $300,000 fine and/or imprisonment for up to six months for repeat offenders) or on indictment (with fines of up to $1 million for a first offence, and fines of up to $1 million and/or prison terms of up to three years for repeat offenders).(19)

2. The 1986 Fish Habitat Policy

Because other natural resource interests may make legitimate demands on water resources (e.g., the forestry, mining, energy and agricultural sectors), the provisions of the *Fisheries Act* are administered in accordance with the *Policy for the Management of Fish Habitat* (more commonly known as the "Fish Habitat Policy"), tabled in Parliament by the Minister of Fisheries and Oceans in 1986.

The 1986 Fish Habitat Policy covers both fish habitat protection by the DFO and pollution prevention by Environment Canada, and states that the "No Net Loss" (NNL) guiding principle is fundamental to habitat conservation. Under NNL, the Department strives "to balance unavoidable habitat losses with habitat replacement on a project-by-project basis so that further reductions to Canada's fisheries resources due to habitat loss or damage may be prevented." The long-term objective is an overall "net gain" in productive capacity. Underpinning this objective are three goals: fish habitat conservation, fish habitat restoration, and fish habitat development. The policy defines major and minor projects, and sets out the respective roles of the DFO and project proponents. Also listed are eight implementation strategies, both regulatory and non-regulatory in nature:

- protection and compliance;
- integrated resource planning;
- scientific research;
- public consultation;
- public information and education;

(19) Citizens can also initiate private prosecutions.

- cooperative action;
- habitat improvement; and
- monitoring.[20]

In applying the NNL principle, other statements have been developed since the Fish Habitat Policy was released in 1986. For instance, the 1998 *Habitat Conservation and Protection Guidelines* (or "1998 Guidelines") focus on the application of NNL and apply to habitat that: produces fish in subsistence, commercial or recreational fisheries; provides nutrients or food supply to adjacent or downstream habitat, or contributes to water quality for fish (although not directly supporting fish); could sustain a new fishery in the future; or has been identified by the DFO or a provincial fisheries agency as a candidate for enhancement.[21] When productive capacity of fish habitat cannot be maintained, a hierarchy of management options is provided, the order of preference being: relocation, redesign, and mitigation (finding ways to reduce damage if there is no threat to critically important habitat). Where these options are not viable and where the habitat requires only moderate protection, compensation of fish habitat (habitat replacement) and artificial propagation (enhancement) may be used to achieve NNL.

The 1998 *Decision Framework for the Determination and Authorization of Harmful Alteration, Disruption or Destruction of Fish Habitat*, or "HADD Decision Framework," was also developed to provide policy direction.[22] A "HADD of fish habitat" is defined as "any change in fish habitat that reduces its capacity to support one or more life processes of fish." The decision framework: differentiates between harmful alteration, disruption and destruction according to the severity of impacts and their duration;[23] states that in reviewing a project proposal, habitat managers often address several decision steps simultaneously or iteratively before a decision is rendered; and lists examples of factors that may be taken into consideration when determining the potential for HADD of fish habitat (e.g., the fish species involved, the timing of project construction or operation).

In its hearings, the Committee was made aware that:

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(20) DFO, *Policy for the Management of Fish Habitat*, 1986.

(21) DFO, *Habitat Conservation and Protection Guidelines*, 1998.

(22) DFO, *Decision Framework for the Determination and Authorization of Harmful Alteration, Disruption or Destruction of Fish Habitat*, 1998.

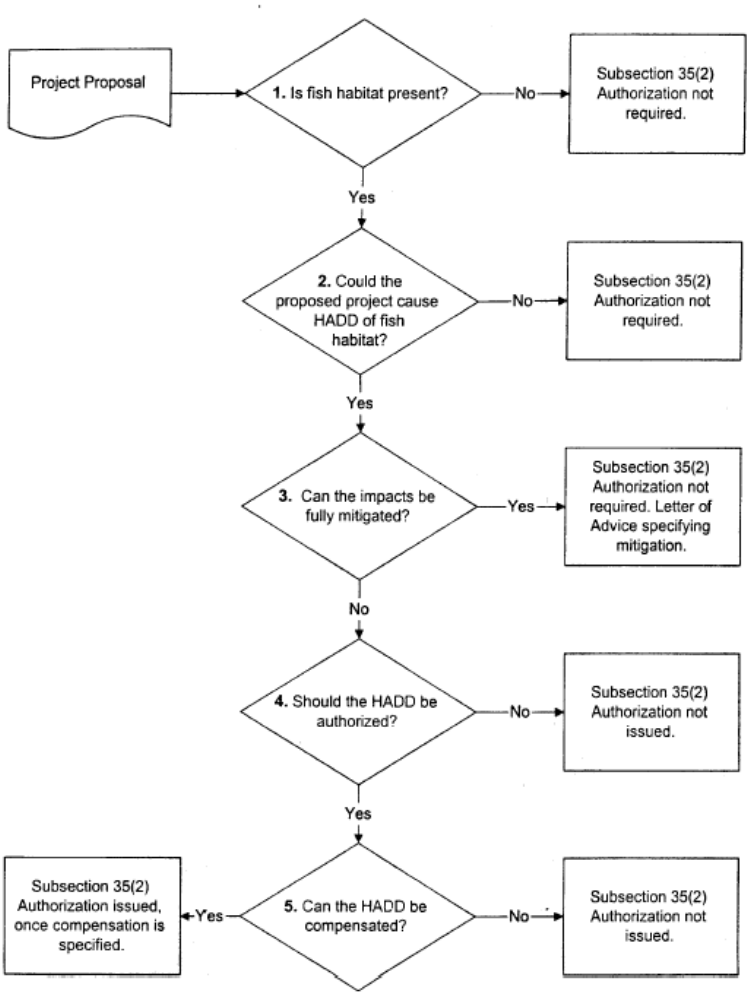
(23) While the *Fisheries Act* defines "fish habitat," the Act does not provide a definition of what constitutes a HADD of fish habitat.

- A project proponent is not obligated to submit a project for review by the DFO. However, should a project result in a HADD of fish habitat, the proponent ultimately risks prosecution under the *Fisheries Act*;

- The *Canadian Environmental Assessment Act* stipulates that before the Department can authorize a HADD of fish habitat, it must complete an environmental assessment; and

- The DFO's standard practice is to work with project proponents and other interested parties to develop methods, operating regimes and mitigation measures, instead of authorizing HADDs.(24)

Figure 1: The Decision Framework for the Determination and Authorization of HADD



Source: DFO, *Decision Framework for the Determination and Authorization of HADD,* 1998, Figure 1.

(24) The Hon. Herb Dhaliwal, Minister of Fisheries and Oceans, Letter to the Chair of the Standing Senate Committee on Fisheries, 15 August 2001; *Committee Proceedings*, 16 September 2003.

In 2001, the *Habitat Protection and Pollution Prevention Provisions Compliance and Enforcement Policy* (the "Compliance and Enforcement Policy") was released. Jointly developed by the DFO and Environment Canada, the policy sets out the following general principles on compliance and enforcement:

- Compliance with the habitat protection and pollution prevention provisions and their accompanying regulations is mandatory;
- Compliance will be encouraged through communication with parties affected by the habitat protection and pollution prevention provisions;
- Enforcement personnel will administer the provisions and regulations in a manner that is fair, predictable, and consistent. Rules, sanctions and processes securely founded in law will be used;
- Enforcement personnel will administer the provisions and accompanying regulations with an emphasis on preventing harm to fish, fish habitat or human use of fish caused by physical alteration of fish habitat or pollution of waters frequented by fish ...;
- Enforcement personnel will take action consistent with this Compliance and Enforcement Policy; and
- The public will be encouraged to report suspected violations of the habitat protection and pollution prevention provisions of the *Fisheries Act*.(25)

Lastly, the DFO and Environment Canada publish brochures, fact sheets, handbooks, pamphlets and other similar materials to promote compliance. The goal is to summarize the legal requirements of the *Fisheries Act* in non-technical language and suggest ways of fulfilling them.(26)

3. Environmental Assessments under the *Canadian Environmental Assessment Act*

With the proclamation of the *Canadian Environmental Assessment Act* (CEAA) in 1995, the DFO's Fish Habitat Management Program assumed new responsibilities. Among other things, the Department must complete an environmental assessment before it can authorize a HADD of fish habitat. Below is a brief outline of the CEAA's features. In the next phase of the

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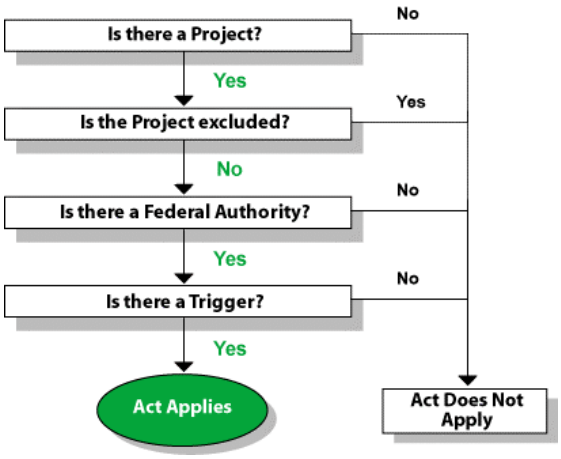
(25) Government of Canada, *Habitat Protection and Pollution Prevention Provisions Compliance and Enforcement Policy*, July 2001.

(26) For example: *The Dock Primer* provides information on building residential docks; *The Shore Primer* shows cottagers and other landowners how to protect shorelines; and *The Drain Primer* provides information on how to maintain and conserve drains and fish habitat. See also the Directive on the Issuance of Subsection 35(2) Authorizations: DFO, *Fish Habitat Conservation and Protection: What the Law Requires*, 1995.

Committee's study on fish habitat, officials of the Canadian Environmental Assessment Agency have agreed to appear before the Committee to discuss the CEAA.

Under the CEAA, projects are subject to assessments if they come within the definition of "projects" under the Act (Figure 2). Projects can be "physical works" (e.g., construction of a bridge or hydroelectric facilities, the expansion of a pulp and paper mill) or "physical activities" (e.g., dredging for navigation, exploratory work to identify oil and gas resources on Indian lands) listed in the *Inclusion List Regulations.* The CEAA does not apply to projects listed in the *Exclusion List Regulations* (e.g., repair and maintenance of a building). In addition, the CEAA applies only if there is a federal authority that has specific decision-making responsibility associated with the project.(27) Projects trigger the Act if they: are receiving financial assistance from a federal authority; involve the acquisition of federal lands, including the sale, lease or transfer of land from a federal authority for the purpose of allowing the project to proceed; or require a federal permit, approval or licence under a piece of legislation included on the *Law List Regulations* – known as the "regulatory trigger." The two more common regulatory triggers are said to be: approvals issued under the *Navigable Waters Protection Act* (for structures that interfere with navigation, such as bridges, dams and causeways); and HADD of fish habitat authorizations made by the Minister of Fisheries and Oceans under section 35(2) of the *Fisheries Act*.

Figure 2: The Framework for Applying the *Canadian Environmental Assessment Act*



Source: Canadian Environmental Assessment Agency, *A Primer for Industry,* http://www.ceaa-acee.gc.ca/0012/0009/3_e.htm.

(27) In the context of the Act, the term "federal authority" means a federal department or agency that may have expertise or a mandate relevant to a project.

Environmental assessments may be conducted by way of screening reports, class screening reports, comprehensive study reports, or referrals to mediation or panel reviews. Each level of assessment has a different requirement for public involvement: screening-level assessments do not require public participation, while review panels must hold public hearings. Committee members were informed that: about 10% of the total number of fish habitat referrals the DFO receives each year trigger an assessment under the CEAA; the Fish Habitat Management Program has been involved in virtually all panel reviews and most comprehensive studies;[28] and the CEAA was amended in June 2003 to provide "for more meaningful public participation and higher quality assessments in a more certain, predictable and timely manner."[29]

C. The *Oceans Act*

> *I have a little sticker that I put on public toilets which says, "You are sitting on the edge of the ocean," because we do not connect our activities on land with what we are putting into the oceans.*
>
> – *Dr. Jon Lien, Chair of the Minister's Advisory Council on Oceans, Committee Proceedings, 23 September 2003*

> *Despite efforts to improve environmental quality of coasts and seas both in Canada and abroad, degradation of ocean environments has continued.*
>
> – *Government of Canada,* Canada's Oceans Strategy: Our Oceans, Our Future*, July 2002*

> *The ocean is a global commons, but action to manage it and to use the habitats wisely, always comes back to the grass roots level – the activities that people do on the ground.*
>
> – *Dr. Arthur Hanson, Oceans Ambassador, International Institute for Sustainable Development, Committee Proceedings, 20 November 2001*

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(28) *Committee Proceedings,* 16 September 2003. Projects that require a comprehensive study are defined in the *Comprehensive Study List Regulations*.

(29) The government committed $51 million over five years to implement the changes. The CEEA was amended by: adding a federal coordinator to facilitate interdepartmental, inter-agency and interjurisdictional collaboration; eliminating the possibility of referring the project to a review panel following a comprehensive study assessment; extending environmental assessment obligations to Crown corporations (beginning in 2006); providing the public with improved and up-to-date information on federal environmental assessments by creating an Internet registry; increasing the follow-up of assessments to ensure that sound mitigation measures are in place; and focusing resources on projects with adverse environmental effects and reducing the need to assess many smaller ones. Canadian Environmental Assessment Agency, "Changes to the *Canadian Environmental Assessment Act* Receive Royal Assent," Backgrounder, June 2003.

With the coming into force of Canada's *Oceans Act* (on 31 January 1997) and the *Species at Risk Act*[30] (in force since June 2003), the DFO's responsibilities in fish habitat were greatly enlarged. The *Oceans Act*, in particular, significantly expanded its mandate. As a result of the Act, Canada became the only country in the world to have comprehensive legislation dealing with oceans, and the Department was charged with the formidable task of assuming a leadership role in coordinating 27 federal departments and agencies having responsibilities affecting some aspect of oceans. It should be mentioned that eight of the 10 provinces and all three territories also directly border on marine waterways and have interests in and responsibilities for oceans. Regulatory activities under provincial legislation on water discharges and pollution control can have a significant impact on fish habitat.

Part I of the *Oceans Act* deals with matters of jurisdiction and defines Canada's Territorial Sea, the Contiguous Zone, the Exclusive Economic Zone (EEZ), and the Continental Shelf.[31] Part II, on "Oceans Management Strategy," obliges the Minister of Fisheries and Oceans to lead the development and implementation of a national strategy for estuarine, coastal and marine ecosystems (section 29). The national strategy is to be based on three key principles (sustainable development, integrated management of oceans activities, and the precautionary approach),[32] and its implementation depends on two main programs. First, Marine Protected Areas (MPAs) are to protect and conserve the marine environment in areas considered to require special attention. The Act gives the Minister of Fisheries and Oceans the authority to designate MPAs for the conservation and protection of: commercial and non-commercial fisheries resources; endangered or threatened marine species and their habitat; unique marine habitats; and marine areas of high biodiversity or biological productivity.[33] The second main program is

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(30) Under the Act, the Minister of Fisheries and Oceans is responsible for implementing the necessary conservation and protection measures for aquatic species on the legal protection list.

(31) The *Oceans Act* was intended to be a significant step toward Canada's ratification of the United Nations Convention on the Law of the Sea (LOS), which has yet to take place. See the Standing Senate Committee on Fisheries and Oceans, *Straddling Fish Stocks in the Northwest Atlantic,* June 2003, http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/fish-e/rep-e/rep05jun03-e.htm.

(32) "Sustainable development" is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The "precautionary approach" is defined as "erring on the side of caution," while "integrated management" considers impacts from a variety of activities at an ecosystem level.

(33) While each has different objectives, two other federal agencies have programs designed to establish protected areas in Canadian waters: the National Marine Conservation Areas program under Parks Canada (the *Canada National Parks Act*); and (under Environment Canada) the Canadian Wildlife Service's migratory bird sanctuaries and national wildlife areas established under the *Canada Wildlife Act* and the *Migratory Birds Convention Act*. Provincial departments have also established special areas called marine parks, reserves, sanctuaries, wildlife areas, protected areas, and so on.

integrated management, which involves ongoing and collaborative planning by all interested parties, stakeholders and regulators (section 31).

In response to section 29 of the Act, the Minister of Fisheries and Oceans released *Canada's Oceans Strategy: Our Oceans, Our Future* (the "Oceans Strategy") in July 2002. Its overarching goal is that of "ensuring healthy, safe and prosperous oceans for the benefit of current and future generations of Canadians." In support of the Oceans Strategy, the Government of Canada intends to pursue a number of initiatives (for those concerning "Understanding and Protecting the Marine Environment," see the Appendix). Some key activities are to include:(34)

- integrating science and traditional ecological knowledge to increase our understanding of marine ecosystems;
- reducing marine pollution;
- developing a strategy for a national network of MPAs;
- using integrated management to resolve conflicts and manage human activities in ocean areas where multiple interests are involved;
- promoting stewardship and public awareness; and
- promoting international collaboration to protect globally shared fisheries and ocean resources.(35)

WHAT COMMITTEE MEMBERS HEARD SO FAR: MAJOR TOPICS

A. Enforcement of the *Fisheries Act*

> *You need to do an environmental assessment to put in a kilometre of highway, but you do not need one to drag a net a kilometre along the bottom of the sea.*
>
> – *Dr. Derek Davis, Chair of the Marine Invertebrate Diversity Initiative, Committee Proceedings, 16 April 2002*

> *People call us a "watchdog." Our role is to bring the three countries together to deal with problems of mutual concern.*
>
> – *Victor Shantora, Acting Executive Director, Commission for Environmental Cooperation of North America, Committee Proceedings, 10 June 2003*

> *[T]he failure to respond clearly and publicly to previous reports related to salmon aquaculture issues ... has only worsened the atmosphere of a festering public debate.*

(34) Government of Canada, *Canada's Oceans Strategy: Our Oceans, Our Future*, July 2002.

(35) DFO, "Thibault Announces Canada's Oceans Strategy," News Release, 12 July 2002; DFO, "Canada's Oceans Strategy," Backgrounder, July 2002.

> – *The Hon. John Fraser, Chair of the Pacific Fisheries Resource Conservation Council, Advisory covering letter to Ministers, January 2003*

Industry is concerned about delays and inconsistencies in reviews or development proposals. We hear that all the time, and sometimes rightly so. Sometimes, unfortunately, I think that concern is unfounded.

> – *Paul Cuillerier, Director General, Habitat Management and Environmental Science, DFO, Committee Proceedings, 16 October 2001*

The effects on the environment and the toll on human health and the marine life will only be measured in the days and years that follow disturbance of these chemical weapons.

> – *Myles Kehoe, Partner, Myles & Associates, Committee Proceedings, 30 September 2003*

On paper, the *Fisheries Act* provides broad powers to conserve and protect fish habitat. The Act is widely regarded to be one of the strongest tools available to ensure the sound management of the aquatic environment. However, laws and regulations are not sufficient in themselves; they must be enforced. Across Canada, approximately 650 enforcement officers are responsible for initiating warnings and prosecutions under the *Fisheries Act*. In 2000-2001, there were 73 convictions under the Act's habitat provisions.(36) For members of the public who believe the federal government is not enforcing the Act, there are mechanisms available that enable them to play what may be described as a whistle-blower role.

For example, representatives of the Commission for Environmental Cooperation (CEC) of North America briefed Committee members on its citizen submissions process. The CEC was created in 1994 under the North American Agreement on Environmental Cooperation (NAAEC)(37) to: address regional environmental concerns; help prevent potential trade and environmental conflicts; and promote the effective enforcement of environmental law. The CEC is governed by the Environment ministers of Canada, the United States and Mexico, and does its work in the context of trade. Members of the public who believe their governments are failing to enforce environmental laws effectively may trigger the "Citizen Submissions on Enforcement Matters" process by submitting a complaint to the CEC, which may decide to investigate and publish a "factual record" of findings. In its submission, the CEC drew the Committee's attention to the fact that of the 39 submissions received by the CEC as at 6 June 2003, 13 files

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(36) DFO, *Administration and Enforcement of the Fish Habitat Protection and Pollution Prevention Provisions of the Fisheries Act, Annual Report to Parliament for the Period of April 1, 2000 to March 31, 2001*, 2002.

(37) The Agreement is a side accord to the North American Free Trade Agreement (NAFTA).

were relevant to Canada – eight of which were on the subject of enforcing sections 35 and 36 of the *Fisheries Act*.[38]

Environmental and fish habitat concerns can also be brought to the fore by making use of the Auditor General's environmental petitions process, which the Commissioner of the Environment and Sustainable Development oversees on behalf of the Auditor.[39] Unlike the CEC's citizen submissions process, federal ministers who receive environmental petitions (within the context of sustainable development) are compelled to explain their policies or examine their enforcement of environmental legislation, and are expected to respond within 120 days. Any individual or organization residing in Canada may submit a petition. The full text of the petitions and the departmental responses to them are made public in a petitions catalogue available on the Commissioner's Web site.[40] Significantly, the Commissioner's 2002 *Annual Report* noted that:

- protecting fish and fish habitat had been the most dominant concern of petitioners during the first five and a half years of the petitions process;
- nearly one half of environmental petitions had touched on fish and fish habitat or related issues; and
- in 2002, the DFO continued to be one of the most petitioned federal departments.[41]

The issues raised in petitions filed with the Commissioner have also been diverse. For example, one petition (dated 2 April 2002) dealt with the disposal of mustard gas and other chemical agents in the Atlantic Ocean by the Canadian military following World War II. The petitioner, Mr. Myles Kehoe, is a resident of Cape Breton who, over some 13 years, has researched the presence of military dump sites containing chemical weapons and unexploded ordnances off the coasts of Nova Scotia and Newfoundland and Labrador. In his petition,

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(38) The CEC Secretariat determines whether the submission meets requirements and whether to request a response. The Council votes on the Secretariat's recommendation to prepare a factual record and to release it. See *Committee Proceedings,* 10 June 2003.

(39) The position of Commissioner and the petitions process were both established in 1996, following amendments to the *Auditor General of Canada Act* in 1995.

(40) Commissioner of the Environment and Sustainable Development, Petitions Catalogue, http://www.oag-bvg.gc.ca/domino/petitions.nsf/english.

(41) Commissioner of the Environment and Sustainable Development, *2002 Annual Report*, ch. 6, "Exercising Your Right to Know: the Environmental Petitions Process," 2002.

14 specific questions were directed to six federal departments.(42) In September 2003, Mr. Kehoe and his partner Mr. Michael Ojolek made known their very strong concerns to the Committee about the impact that the commercial groundfish fishery (i.e., draggers) and oil and natural gas exploration could have on the marine ecosystem, the safety of fishers and human health.(43) Among their many suggestions, they called for immediate action to: chart dump sites on civilian navigation charts (as is the practice adopted elsewhere, such as in Europe, Japan and Australia); and establish exclusion zones for dragging and oil and gas exploration in the vicinity of suspected charted sites, which they believed to represent only a tiny percentage of the total number of sites. Additionally, Committee members were informed that:

- A follow-up petition would be submitted because of the petitioners' dissatisfaction with the responses received;
- The Department of National Defence (the lead department on the issue) had initiated a five-year, $10.5-million project to identify past disposal sites, ascertain health and human risks, review scientific research, and prioritize sites for the development and implementation of site-specific action plans; and
- An Interdepartmental Working Group had been established to provide technical and scientific support.(44)

Another petition in the process of being formally submitted to the Commissioner deals with the environmental effects of draggers, so-called because these vessels catch groundfish – bottom-dwelling fish, such as cod and haddock – by towing large nets, rollers and weights across the sea floor.(45) The petitioner is the Halifax-based Ecology Action Centre (EAC), an environmental non-governmental organization (NGO) that has focused in recent years on marine, wilderness, transportation, and environment and development issues. In April 2002, the EAC's Marine Coordinator, Mr. Mark Butler, appeared before the Committee. Mr. Butler expressed his firm belief that vast areas of the marine environment were being disrupted and

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(42) These were the departments of: Fisheries and Oceans, the Environment, Foreign Affairs and International Trade, Health, National Defence, and Natural Resources. See *Committee Proceedings,* 30 September 2003.

(43) *Committee Proceedings,* 30 September 2003. Oil and gas exploration involves seismic testing – towing airguns below the water and sending off sound charges to gather images of potential hydrocarbon deposits beneath the sea floor and determine their amount.

(44) The Working Group comprises representatives from the departments of National Defence, Foreign Affairs and International Trade, the Environment, Health, Fisheries and Oceans, and Natural Resources.

(45) "Green Group Asks Ottawa to Review Dragger Licences," *The Chronicle Herald* [Halifax], 30 July 2003, p. A5.

damaged by bottom dragging (contrary to section 35 of the *Fisheries Act*). He urged that this method of catching fish be restricted to prevent further habitat loss, and indicated that the ecosystem impacts of such fishing had never been independently or scientifically studied in Canada. In addition, Committee members were made aware that the U.S. National Academy of Sciences had concluded in March 2002 that the lack of area-specific data on the effect of trawling was insufficient justification to postpone management action in U.S. waters.(46)

Aquaculture is another activity that has generated environmental petitions. Not everyone in Canada supports the DFO's vision of improving and enhancing the sector so that it "reaches its full potential in a sustainable way." The DFO's dual mandate, both to promote aquaculture development and to protect wild fish stocks and habitat, obviously has put the Department in a difficult situation. Many observers see an inherent and fundamental conflict of interest between the two, a "lack of balance," with the DFO having assumed an advocacy role in support of fish farming at the expense of its responsibility for wild fish and their habitat.

Much of the discussion centred on salmon aquaculture when members of the Pacific Fisheries Resource Conservation Council (PFRCC) appeared before the Committee in March 2003. The PFRCC is an independent body created by government in 1998 to report on the status of British Columbia's salmon stocks and their habitat,(47) and advise governments on salmon conservation issues. The PFRCC informed Committee members that the public debate in British Columbia over "wild *versus* farmed salmon" had intensified since 2002, because of the province's decision to lift a provincial moratorium on salmon farming, together with an unprecedented decline in returning pink salmon to the Broughton Archipelago, an area dominated by net pen salmon farming. According to the Council's Chair, the Hon. John Fraser:

> The drive to develop aquaculture with some of the best intentions in the world – that is, jobs and its activity – has resulted in a situation where when people turn to DFO for action to protect the salmon, they do not know whether they are dealing with a department that is more interested in aquaculture development than it is in protecting the wild salmon. ... I think this needs attention because it is a question of confidence in a great federal institution. ... When we have a lack of confidence in any great federal or provincial institution, it does a lot of damage to democracy.

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(46) *Committee Proceedings*, 16 April 2002. The EAC and the Sierra Legal Defence Fund have been involved in a court challenge with the DFO since July 2001 on the subject of dragging in the Canadian portion of Georges Bank.

(47) The PFRCC is a component of the Canada-B.C. Agreement on the Management of Pacific Salmon Fishery Issues, signed in April 1997.

> It does a lot of damage to our political system. It does something else: it does a lot of damage to the fish.
>
> – The Hon. John Fraser, *Committee Proceedings,* 18 March 2002[48]

In the next phase of the present study, the Commissioner of the Environment and Sustainable Development has agreed to appear before the Committee to speak on the effectiveness of the petitions process, as well as other topics covered in the Commissioner's 2003 *Annual Report*.

B. The 1986 Fish Habitat Policy

> *Had [the 1986] policy been implemented, we would not be here today discussing the shortcomings in the area of fish habitat management.*
>
> – *Johanne Gélinas, Commissioner of the Environment and Sustainable Development, Committee Proceedings, 19 February 2002*

> *We recognize that a balanced approach with all eight of these strategies is the way to proceed. Our blueprint called for that but we are not there yet.*
>
> – *Richard Wex, Director General, Habitat Management Directorate, DFO, Committee Proceedings, 16 September 2003*

> *We can say quite openly that the only strategy that has been fully implemented has to do with regulations and compliance. That is reactive.*
>
> – *Paul Cuillerier, Director General, Habitat Management and Environmental Science, DFO, Committee Proceedings, 16 October 2001*

> *The best strategy is in proactive management of habitat versus the more expensive restoration of habitat that is damaged or destroyed by lack of prior action.*
>
> – *Pacific Fisheries Resource Conservation Council, Brief submitted to the Committee, 18 March 2003*

> *The Habitat Policy sets out several implementation strategies ... Basically, that covers everything we need.*
>
> – *Stephen Chase, Vice President, Government Affairs, Atlantic Salmon Federation, Committee Proceedings, 23 April 2002*

> *There is not a good understanding of habitat loss or gain by the federal government, despite the fact that they have an explicit policy around habitat protection.*
>
> – *John Reed, Principal, Office of the Commissioner of the Environment and Sustainable Development, Committee Proceedings, 19 February 2002*

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(48) In its 2001 report on aquaculture, this Committee suggested that, if salmon aquaculture were to expand with the support of the public and other stakeholders in the marine environment, more research would be needed. Without scientific knowledge, distrust of the industry would continue. See Standing Senate Committee on Fisheries, *Aquaculture in Canada's Atlantic and Pacific Regions*, June 2001, http://www.parl.gc.ca/37/1/parlbus/commbus/senate/com-e/fish-e/rep-e/rep03jun01-e.htm.

The 1986 Fish Habitat Policy seeks an overall "net gain" in the productive capacity of fish habitat in Canada. This long-term objective is to be achieved through conservation, habitat restoration, fish habitat development, and the following eight implementation strategies: protection and compliance; integrated resource planning; scientific research; public consultation; public information and education; cooperative action; habitat improvement; and monitoring. In 1999, the DFO's National Blueprint Initiative identified the need to achieve more balance between the DFO's regulatory and proactive activities in implementing the 1986 policy.

Several witnesses mentioned that the Fish Habitat Policy had never been fully applied over its 17-year existence. Officials acknowledged this, but also explained that most of the Department's activities and resources had emphasized regulatory-type activities (having to do with "compliance and protection") because of the increase in the volume of project referrals (requests for reviews) handled by the Department. They also indicated that a better balance would be sought in future by implementing proactive strategies that involve other levels of government, the public, and Aboriginal people.(49)

Committee members heard that the number of project referrals from the public, industry, and other government agencies had increased substantially in recent years, from an average of about 10,000 a year to about 13,000 annually. The reasons given for the increase were two-fold: Canada's growing population and economy; and the expansion of the DFO's presence in the inland provinces. The result was said to have been heavier staff workloads, delays in reviewing projects (and complaints from the public), and staff not being able to focus on higher-risk projects. In response, operational policies are being developed to streamline the referral process. For instance, DFO officials hoped that "one-window" on-line review capability would provide more efficient and effective service. Some 80% to 90% of project referrals were categorized as being "low to medium risk."(50)

As noted earlier, Ontario withdrew from a federal-provincial fish habitat agreement in 1997.(51) As part of re-establishing its presence in that province, the DFO developed work-sharing agreements with Conservation Authorities (CAs), local environmental agencies that manage natural resources in areas defined by watersheds. These authorities provide the first contact with the public for such undertakings as building culverts over streams

(49) *Committee Proceedings*, 16 September 2003 and 16 October 2001.

(50) *Committee Proceedings*, 16 September 2003.

(51) The arrangement outlined measures for Ontario Ministry of Natural Resources staff to review plans, permits and proposals and provide guidance in mitigating damage to fish habitat.

or docks on waterfront properties. While working relationships with the CAs were described as successful, not all areas of the province have a CA.[52] "Class authorizations" were also implemented; about 90% of proposed maintenance works are now proceeding without DFO conducting site reviews. Because class authorizations had "significantly renewed" relations with the province and stakeholders, DFO officials hoped to expand them to other low-risk activities elsewhere in the country. In addition, the DFO has been developing "a risk management framework" (and guidelines) to prioritize risk and enable the Department to focus its efforts on major projects and higher-risk activities, and also looking at the possibility of putting low-risk activities on the CEAA's Exclusion List for projects that do not require environmental assessments.[53]

In its submission to the Committee, the PFRCC suggested that the workload of federal fisheries staff in British Columbia could further increase because of the province's withdrawal from its referral system for projects involving work in and around streams.[54]

C. The *Oceans Act*

> *The Act is leading to some fundamental changes in how our oceans are managed.*
>
> – *The Hon. Robert G. Thibault, Minister of Fisheries and Oceans, Committee Proceedings, 4 June 2002*

> *The Oceans Act was passed in 1997, yet we have seen very little – much internal study and discussion, but not much action.*
>
> – *Ecology Action Centre, Brief submitted to the Committee, 16 April 2002*

> *Although witnesses generally supported the Act itself, a number complained of a lack of tangible evidence of its implementation.*
>
> – *House of Commons Standing Committee on Fisheries and Oceans, Report on the Oceans Act, October 2001*

> *Are we being used enough? No, I do not think we are.*
>
> – *Geoffrey L. Holland, Oceans Ambassador, 2WE Associates Consulting Ltd., Committee Proceedings, 20 November 2001*

> *[R]esponsible agencies dealing with oceans have tended to work as silos pretty much within the controllable limits of their mandate, not necessarily developing horizontal relationships with other responsible ocean managers.*
>
> – *Dr. Jon Lien, Chair of the Minister's Advisory Council on Oceans, Brief submitted to the Committee, 23 September 2003*

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(52) *Committee Proceedings*, 19 February 2002.

(53) *Committee Proceedings*, 16 September 2003.

(54) *Committee Proceedings*, 18 March 2003.

> *There is only one landscape or one seascape in which we all live. We all expect it to be managed to sustain livelihoods, maintain ecological health, and provide for our cultural and social needs.*
>
> – *Robert McLean, Director, Wildlife Conservation, Environment Canada, Committee Proceedings, 11 June 2002*

As noted previously, the coming into force of the *Oceans Act* in January 1997 considerably broadened the DFO's mandate. The Department assumed the role of leader and coordinator of 27 federal departments and agencies having responsibilities in marine waters.(55) In June 2000, the Minister of Fisheries and Oceans announced the creation of the Minister's Advisory Council on Oceans (MACO) to provide the Minister with independent expert advice. He also announced the appointment of two Oceans Ambassadors, Dr. Art Hanson and Mr. Geoff Holland, who both testified before the Committee in November 2001.

In September 2003, Dr. Jon Lien, Chair of the MACO, testified before the Committee and spoke about the dramatic growth in the scale and diversity of oceans-related activities. He emphasized the fact that fishing, as the prime economic benefit of oceans, had been displaced in all Canadian provinces by other industries (e.g., offshore oil and gas, transportation, military uses, marine tourism, and high-tech industrial uses such as communication and exploration technologies). The challenge, then, is to take advantage of emerging new economic opportunities, while at the same time maintaining healthy ocean ecosystems and environments. In Dr. Lien's opinion, the fish habitat provisions of the *Fisheries Act,* the regulations made pursuant to the Act, and the "No Net Loss" principle of the 1986 Fish Habitat Policy, while applicable to marine waters, are limited and reactive remedies to ensure the sustainable use of oceans. The *Oceans Act,* on the other hand, emphasizes a proactive approach.

For instance, Marine Protected Areas are a potentially important management tool; having specific areas clearly defined as "protected" makes it easier to regulate or restrict the activities of competing users of ocean space and ocean resources. In Canada and elsewhere in the world, interest in MPAs has increased as people realize that aquatic ecosystems and environments are less healthy than they once were because of overfishing, pollution, and habitat destruction. It is increasingly recognized that the situation will only worsen unless human activities are somehow limited, or their impacts mitigated. In his testimony, Dr. Lien pointed out that MPAs are especially important because natural sanctuaries that once provided places for fish to spawn and juvenile fish to mature have virtually disappeared now that technology has made it

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(55) In 2001, more than 90 federal initiatives contributed to the goals and objectives of Canada's National Programme of Action for the Protection of the Marine Environment from Land-based Activities (NPA).

possible to exploit every part of the ocean, any time of the year. It was also brought to the Committee's attention that less than 0.01% of Canada's territorial waters are currently protected,(56) and that Australia had established a comprehensive network of MPAs generating important economic returns.

Canada's first MPA (the Endeavour Hydrothermal Vents Marine Protected Area, southwest of Vancouver Island) was announced in March 2003, at which time 13 other areas were being considered for designation. With respect to the integrated management processes called for in the *Oceans Act*, several pilot initiatives are reportedly under way in all three of Canada's ocean regions.

Budgetary constraints were said to be a major obstacle to the implementation of the *Oceans Act*: funds have never been set aside to put it into effect. Instead, resources have come from other DFO programs. In fact, only 1% of DFO's annual budget of $l.4 billion was said to have gone towards implementation.(57) The lack of adequate resources was thought to have contributed to a perception in the public sector, and in some government circles, that implementation has been without substantial accomplishments, and is a failure. Institutional barriers to cooperation were also mentioned as an impediment to implementation. Dr. Lien spoke of difficulties encountered in developing working relationships between federal departments and agencies, between federal agencies and the provinces, and even between administrative branches of the DFO:

> Bureaucracies appear to be more comfortable working within the traditional boundaries of specific agency responsibility than in dealing with the realities and complexities of holistic ocean management. Full endorsement of [Canada's Oceans Strategy] within the Department of Fisheries and Oceans itself has been a problem, with Branches within the Department preferring to maintain historical responsibilities, and on occasion reallocating funds originally allocated to Oceans Branch activities.(58)

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(56) On the West Coast, most areas are provincial and relatively small, while on the East Coast they are mostly federal migratory bird sanctuaries.

(57) Dr. Lien also pointed out that the Prime Minister's Round Table on the Environment and the Economy had estimated that about $500 million would be needed to begin implementing the Oceans Strategy. See *Committee Proceedings*, 23 September 2003.

(58) Dr. Jon Lien, Chair of the Minister's Advisory Council on Oceans, Brief submitted to the Committee, 23 September 2003.

D. Collaboration and Cooperative Action

We try to harmonize our efforts and work together.
– *Richard Wex, Director General, Habitat Management Directorate, DFO, Committee Proceedings, 16 September 2003*

The Department of Fisheries and Oceans cannot and does not operate alone in achieving the objectives for which it is responsible. Indeed, habitat management is everyone's business.
– *Paul Cuillerier, Director General, Habitat Management and Environmental Science, DFO, Committee Proceedings, 16 October 2001*

We are asking the federal government to put its money where its mouth is.
– *Barry Turner, Director of Government Relations, Ducks Unlimited Canada, Committee Proceedings, 26 March 2002*

[The ASF] is fully prepared to share-contribute significantly to the design and delivery of a comprehensive habitat conservation, restoration and development program.
– *Atlantic Salmon Federation, Brief submitted to the Committee, 23 April 2003*

I said in my opening statement that this was everybody's responsibility. However, having said that, it seems that it is nobody's responsibility at the same time.
– *Johanne Gélinas, Commissioner of the Environment and Sustainable Development, Committee Proceedings, 19 February 2002*

Does DFO need help in implementing [the Oceans Act]? There is no question about that. This will only work as a cooperative program between all responsible agencies ...
– *Dr. Jon Lien, Chair of the Minister's Advisory Council on Oceans, Committee Proceedings, 23 September 2003*

In 1999, the DFO's National Blueprint called for a shift in how policies and practices were to be developed and delivered, and for greater collaboration with the provinces through formal partnership agreements that spell out objectives, roles and responsibilities in delivering habitat management programs and services.(59) There are currently formal cooperative agreements (federal-provincial MoUs) on fish habitat with three provinces – British Columbia (signed in July 1997), Prince Edward Island (September 2002) and Manitoba (September 2003). The DFO is also looking at similar agreements or protocols for specific collaborative initiatives with other provincial jurisdictions.

It soon became apparent during the course of this review that collaborative relationships involving the DFO and other agencies are essential in many spheres of activity. For instance, the management of the Great Lakes and St. Lawrence River basin's environment involves two federal, two provincial and eight state governments, as well as hundreds of regional and municipal governments, each having a different role. In 2001, the Commissioner of the

(59) That year, the CCFAM also endorsed the use of bilateral MoUs and protocols for fish habitat protection under the "Agreement on Interjurisdictional Cooperation with Respect to Fisheries and Aquaculture."

Environment and Sustainable Development concluded that the federal government lacked a clear, coordinated and consistent voice on many key issues in the region.[60] In February 2002, the Commissioner delivered the following message to the Committee:

> [I]mportant issues and problems are not being dealt with and international commitments are not being met, partly because of reduced funding to departments. For example, in 1994 the Minister of the Environment announced $125 million in new funding to support the Great Lakes action plan; however, Departments have received less than 12% of that [amount]. The commitments the government has made with the resources it has allocated to meet them are out of sync.
>
> [T]here are no long-term, basin-wide strategies for key environmental threats. There is no co-ordinated, consistent federal voice on key issues in the Great Lakes and the St Lawrence regions.
>
> [T]he federal role is changing and waning. The government is not using the authorities and tools it has at its disposal to tackle the tough issues. It relies, increasingly, on partnerships to meet its objectives. Our audit raised fundamental questions about the government's role in overseeing its partners' actions and in providing assurance that federal and national objectives are being met.[61]

The Commissioner's submission noted that, while the audit focused on the Great Lakes basin, many of the programs and issues examined were national in scope, and therefore had potentially national implications. On aquatic invasive species, a growing and imminent threat to the sustainability of freshwater fisheries, the Commissioner observed that:

- The federal government had made a strong commitment on paper to prevent and control invasive species, but had not translated that commitment into results; and
- With the exception of the sea lamprey control program, the federal government had no policy, framework or organized approach to control invasive aquatic species or prevent new species from entering the basin.[62]

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(60) On 2 October 2001, the Commissioner submitted a seven-chapter report to the House of Commons. Chapter 1, entitled *Great Lakes and St. Lawrence River Basin: A Legacy Worth Protecting, Charting a Sustainable Course in the Great Lakes and St. Lawrence River Basin*, was by far the largest section. The issue of inadequate and unstable funds is prevalent throughout the document.

(61) Commissioner of the Environment and Sustainable Development, Brief submitted to the Committee, 19 February 2002.

(62) *Ibid*.

Close to 160 aquatic species are said to have invaded the Great Lakes basin since the 19th century, most arriving in the ballast water of commercial ships. While Environment Canada is the lead department for the Canadian Biodiversity Strategy,(63) the regulation and control of ballast water on ships entering Canadian waters is the responsibility of Transport Canada. The DFO, for its part, is responsible for providing scientific advice in connection with ballast water regulations and standards. Committee members learned that guidelines for ballast water exchange under the *Canada Shipping Act* are only voluntary, and that Canada relies on ships' compliance with U.S. regulations.(64) Building on the invasive species component of the 2001 report on the Great Lakes and St. Lawrence River basin, the Commissioner of the Environment and Sustainable Development concluded in her October 2002 *Annual Report* that:

- Despite longstanding commitments, agreements and accords, there had been a lack of practical action in responding to the problem;
- The human and financial resources to deal with invasive species were uncoordinated and spread across several federal departments and agencies;
- There was no consensus on priorities and no clear understanding among federal departments or between the federal government and other jurisdictions on respective roles;
- No federal department "sees the big picture or has overarching authority to ensure that federal priorities are established and action is taken"; and
- There was "a bias toward continuing dialogue and consensus building and a lack of practical action to prevent invasive species from harming Canada's ecosystems, habitats, or native species."(65)

DFO officials subsequently informed the Committee that the matter of alien invasive species had become "an increasing priority" within the Department, and that Ontario had taken the lead in establishing a task group to look into the matter and report back to the CCFAM.

On another front – munitions dumped at sea off the East Coast – a panel of witnesses appeared before the Committee urgently requesting greater federal involvement on the

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(63) In 1992, Canada signed the United Nations Convention on Biological Diversity, which entered into force in December 1993, 90 days after the 30th ratification.

(64) *Committee Proceedings*, 28 May 2002.

(65) Commissioner for the Environment and Sustainable Development, *2002 Annual Report,* ch. 4, "Invasive Species," http://www.oag-bvg.gc.ca/domino/reports.nsf/html/c20021004ce.html.

part of departments and agencies other than the Department of National Defence, as well as a substantial, long-term, financial and scientific commitment on the part of the federal government to fully address the issue. Because the problem is shared by several other coastal countries, the panel urged the Government of Canada to call on the United Nations to organize a conference on this serious issue.(66)

In 1999, the National Blueprint called for increased collaboration through partnerships with industry and other NGOs. DFO officials stated that the Department had been working closely with industry, a good example of this being a MoU signed with the Canadian Electricity Association in July 2002.(67) The MoU's objective is to facilitate regular national and regional consultation with the industry, and collaboration in developing a National *Fisheries Act* Compliance Strategy and Action Plan for Electricity Generation. The Association and DFO also agreed to undertake joint stewardship initiatives, develop joint education and training materials, and establish joint research programs. Committee members were made aware that discussions had taken place on the possibility of drawing up similar agreements with other industry sectors.

On the partnership theme, spokespersons for Ducks Unlimited (DU) Canada appeared before the Committee to discuss DU's proposal for a national Conservation Cover Incentive Program (CCIP). Founded in 1938, DU is a private, non-profit organization dedicated to the conservation of wetlands for the benefit of North America's waterfowl, wildlife and people; together with Ducks Unlimited Inc. in the United States, it is the second-largest conservation organization in the world.(68) Modelled after the well-established and successful Conservation Reserve Program in the United States, the CCIP's focus is mainly agricultural, but its impact on fisheries could nonetheless be significant, particularly in freshwater areas. When riparian buffer zones (areas where land meets water) are lost, sediments and nutrients enter into adjacent watercourses. This adversely affects not only water quality, biodiversity and wildlife habitat generally, but also fish habitat specifically. Under the proposed CCIP, landowners would receive one-time government financial incentives for protecting or restoring degraded riparian

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(66) *Committee Proceedings*, 3 June 2003.

(67) DFO, "Thibault and Konow Announce Memorandum of Understanding on Fish Habitat Management," News Release, 5 July 2002.

(68) The Nature Conservancy is the largest organization. DU's headquarters are in Stonewall, Manitoba; its operations are carried out by some 450 employees in 38 locations across the country. The organization has some 7,400 volunteers and 150,000 supporters across Canada, and holds about 700 events every year to raise money for conservation, research and education programs. It has completed approximately 6,500 habitat projects across Canada, and has agreements with some 19,000 landowners.

zones on their land, and for converting cultivated marginal land to permanent vegetative cover, such as grassland, for non-agricultural use in perpetuity. According to DU, approximately 2.3 million hectares of land have the potential to be voluntarily enrolled by landowners; the CCIP's benefits across the country (estimated at $196 million per year) would outweigh program costs ($103 million per year); and the organization is prepared to contribute significant financial resources to the CCIP or another similar program.(69)

The Atlantic Salmon Federation (ASF) – a well-established, international, non-profit organization that promotes the conservation of wild Atlantic salmon on the East Coast – also appeared before the Committee. The ASF has called on the DFO to take the lead in restoring the wild Atlantic salmon to their former abundance by establishing a new habitat program involving federal departments and agencies, provincial governments, First Nations and conservation organizations. The Federation envisions the habitat initiative as including all eight of the DFO's 1986 Fish Habitat Policy implementation strategies. The ASF asserted that it was "ready to partner"; stressed its long history of successful partnerships with the DFO in many areas (e.g., joint scientific research, public education and Aboriginal capacity building); and has asked for a Memorandum of Understanding with the DFO to develop the program.(70)

E. Scientific Research and Habitat Monitoring

We do not have, from my perspective, the level of funds we require for our research.

– *Paul Cuillerier, Director General, Habitat Management and Environmental Science, DFO, Committee Proceedings, 16 October 2001*

As to the question of whether DFO has an adequate science program, a blunt answer would be no. There is not enough knowledge. ... It is like driving in the fog.

– *Paul LeBlond, Member of the Pacific Fisheries Resource Conservation Council, Committee Proceedings, 18 March 2003*

There is a need to strengthen the science and habitat programs in DFO to support wild salmon in both its freshwater and marine environments.

– *Stephen Chase, Vice President Government Affairs, Atlantic Salmon Federation, Committee Proceedings, 23 April 2002*

Often we make decisions and determine the results afterwards. If we could begin to be a little more predictive, I think we could anticipate problems and avoid them.

– *Robert McLean, Director, Wildlife Conservation, Environment Canada, Committee Proceedings, 11 June 2002*

(69) *Committee Proceedings*, 26 March 2002.

(70) *Committee Proceedings*, 23 April 2002.

> *All departments will say internally that they could always use more funding and that they are doing the best they can with what they have. I guess that holds true for our department as well.*
>
> – *Richard Wex, Director General, Habitat Management Directorate, DFO, Committee Proceedings, 16 September 2003*

> *Fred Aldrich, a marine scientist at Memorial University, made this observation: "We know more about the moon's behind than the ocean's bottom."*
>
> – *Ecology Action Centre, Brief submitted to the Committee, 16 April 2002*

Obviously, relevant, timely science is a fundamental requirement in protecting fish habitat and preventing pollution. As a science-based department, the DFO requires strong scientific research. Science generates the knowledge, data and information needed to: assess the relative importance of specific habitats; determine the effects of human activity; and develop ways to restore degraded habitats, mitigate damage or create new habitats.

In our hearings on fish habitat, but also in other discussions in recent months, witnesses suggested that while Canada had once been a world leader in fisheries and ocean science, this is no longer the case today. The strong consensus among witnesses who spoke on the subject was that the DFO does not have sufficient information on fish stocks and their habitats to carry out its mandate effectively. Nor does it have the financial resources necessary to conduct proper science. In fact, some witnesses spoke of a scientific crisis within the Department, a crisis with which managers have been struggling for some time.(71) For instance, with regard to the Great Lakes and St. Lawrence River basin, the Commissioner for the Environment and Sustainable Development concluded in October 2001 that:

- Funding levels for the DFO's scientific research in Ontario had deteriorated since the early 1990s;
- Federal cuts coincided with provincial cutbacks, widening the existing gaps in knowledge and research and creating new ones;
- The scientific programs and expertise of the DFO in the Great Lakes basin were in trouble due to lack of funding;
- The Department had conducted almost no freshwater science in Quebec;
- While gaps in science had been identified by the DFO, the Department had no plan to resolve them; and

(71) According to the DFO's *2003-04 Report on Plans and Priorities*, spending on "Habitat Management and Environmental Science" was cut from $96 million in 2002-2003, to $84.8 million in 2003-2004. Planned spending in 2004-2005 is $84.8 million; in 2005-2006, the amount will be $84.1 million.

- To make matters worse, the Department was expected to lose more than half of its science staff for the Great Lakes due to retirements within the next four years.(72)

In the North, where the environment is fragile and where industrial development activities are increasing, the DFO's scientific presence was described as inadequate. There, the DFO faces huge challenges in meeting its considerable sustainable development responsibilities, not the least of which are program costs. Industrial development in the region is expected to put increasing pressures on wildlife, including fish and fish habitat, while Aboriginal people strongly wish to maintain their traditional way of life.(73)

In managing marine waters, scientific information on ecosystems is essential for informed decision-making, and is a major aspect of Canada's Oceans Strategy. However, Committee members were told that whatever information does exist is "pocketed in various responsible agencies, covering various numbers of years, stored in various formats, collected by various methods."(74) As well, no research has been conducted in Canada on the possible effects of seismic testing on military dump sites on the East Coast; nor have there been studies on the toxicity or behaviour of chemical weapons in water, or on whether chemical agents are finding their way into the food chain. Science and habitat programs need to be strengthened in light of the serious situation facing wild Atlantic salmon on the East Coast. As for the Pacific region, the following quotations illustrate the comments made on the DFO's scientific capability there:

> If you ask privately almost any of the better fisheries scientists on the West Coast whether they have adequate information and data for their needs and in meeting new challenges, they will tell you the same thing. The answer is that they do not. ... This situation has exploded on us and we do not have any local science on the potential of the transfer of sea lice from farmed fish to wild fish on the West Coast of British Columbia. There is a good deal of informed opinion and scientific work from other parts of the world on this, but not in our own backyard where right now it is needed.
>
> – The Hon. John Fraser, Chair of the Pacific Fisheries Resource Conservation Council, *Committee Proceedings,* 18 March 2003
>
> Scientists do not have a good understanding of the role of habitat in the success of salmon spawning. ... [A] lot of basic information is missing. The Department of Fisheries is under-staffed ... As in the cod crisis, the science is too weak to

(72) Commissioner of the Environment and Sustainable Development, *Great Lakes and St. Lawrence River Basin: A Legacy Worth Protecting, Charting a Sustainable Course in the Great Lakes and St. Lawrence River Basin*, 2001.

(73) Standing Senate Committee on Fisheries, *Selected Themes on Canada's Freshwater and Northern Fisheries*, February 2002.

(74) *Committee Proceedings*, 23 September 2003.

> counter the economic arguments. Therefore, one ends up with the problem that political will is also weak and cannot be reinforced enough by the science. ... There is a need for better understanding of what happens to salmon in B.C. waters.
>
> – Dr. Paul LeBlond, Member of the Pacific Fisheries Resource Conservation Council, *Committee Proceedings,* 18 March 2003

> I can warn you that we are in serious trouble because the databases do not exist to evaluate many of the species-at-risk on our Pacific coast.
>
> – Dr. Jeffrey Marliave, Member, Pacific Fisheries Resource Conservation Council, *Committee Proceedings,* 18 March 2003

In future, more demands will be made for more specialized knowledge in emerging areas, such as species at risk, invasive aquatic species, aquaculture, and the effects of climate change on ocean ecosystems. The Hon. John Fraser, Chair of the PFRCC, put it this way: without adequate science "we will be faced with what we are looking at in the aquaculture issue: areas in which work that should have been done just was not done because someone did not think it was necessary or someone did not have the budget to do it."(75) The *Oceans Act* will also place more demands (if ever fully implemented): the Act and the accompanying Strategy make it very clear that successful oceans management depends on understanding the marine environment and on scientific support to identify ecosystems, develop predictive models and assess risks and the health of ecosystems, to name a few areas.(76) While solid scientific knowledge is the basis of the Act's guiding principles, at present very little is known about marine environments.

For instance, there are considerable uncertainties surrounding climate change and its implications for fish habitats and fisheries. Committee members heard that while oceans play a significant role in influencing climate, we are only beginning to understand their role in sequestering gases such as carbon dioxide. On the function of deep-sea corals in marine ecosystems, Committee members learned that: the Ecology Action Centre had helped organize the very first international symposium on them in 2001; there is growing scientific interest in the importance of the sea floor as fish habitat; and studies have shown that the survival rate of

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(75) *Committee Proceedings*, 18 March 2003. In 2001, this Committee recommended that the federal government invest more research resources, on a priority basis, to ensure that the aquaculture industry remains within ecological limits and that fish habitat and the sustainability of the wild fishery are not compromised. See Standing Senate Committee on Fisheries, *Aquaculture in Canada's Atlantic and Pacific Regions,* June 2001.

(76) Government of Canada, *Canada's Oceans Strategy, Policy Framework*, July 2002.

juvenile fish increases with the increasing complexity of fish habitat.(77) Media reports have since recounted scientists' concern about the future of deep-sea corals. In some areas of the world, much of the supply of deep-sea corals is believed to be damaged.

Fisheries and fish habitats are sometimes shared internationally.(78) For instance, when CEC representatives appeared before the Committee, they spoke about the Marine Species of Common Conservation Concern (MSCCC) project. In this wide-ranging initiative, the governments of Mexico, the United States and Canada, NGOs, marine scientists, the private sector and other parties are working together to develop a long-term cooperative agenda to help conserve migratory or transboundary marine species that are at risk. To date, the three governments have agreed upon 16 MSCCCs. As well, the CEC has developed a common classification and mapping system for marine ecosystems that are shared.(79)

Pressures on fish habitat are many and diverse, and they must be monitored. The 1986 Fish Habitat Policy's "No Net Loss" principle and its objective of "net gain" in fish habitat imply an accounting of "gains" and "losses" against common reference points. In 2001, with regard to the Great Lakes basin region, the Commissioner of the Environment and Sustainable Development concluded that: there were major gaps in the information needed to make sound decisions in areas such as wetlands, soils and fish habitat; the DFO had limited information on the state of fish habitat; monitoring and measurement systems were deficient; and the Department did not know whether it was progressing toward its objective of a "net gain" in fish habitat. The Atlantic Salmon Federation stressed the need to establish an up-to-date database to determine the extent of salmon habitat degradation, and a monitoring system to assess the effectiveness of remedial measures taken. On the subject of ocean munitions disposal sites, witnesses called on the federal government to immediately begin monitoring the waters surrounding known sites. The Pacific Fisheries Resource Conservation Council stressed the importance of expanding monitoring activity in freshwater and marine environments to assess the effects of climate change, which it described as a chief threat to the survival of Pacific salmon.

It is the Committee's understanding that the DFO plans to use a "results-based management and accountability framework" to assess progress in conserving and protecting fish habitat, and in implementing Canada's Oceans Strategy. Essentially, such frameworks report on

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(77) *Committee Proceedings*, 16 April 2002.

(78) *Committee Proceedings*, 10 June 2003.

(79) The classification system is based on geographically distinct natural communities that share a large majority of species and function together as a conservational unit on a continental scale. This is considered the first step towards developing complementary conservation and management approaches

accomplishments achieved as measured against performance expectations and commitments. This makes monitoring all the more important.

F. Stewardship and Public Education

> *With a good stewardship program, more people will be involved, and habitat will be at the forefront of people's minds.*
>
> – *Paul Cuillerier, Director General, Habitat Management and Environmental Science, DFO, Committee Proceedings, 16 October 2001*

> *We are not talking about tens of millions of dollars or hundreds of millions or billions of dollars. We are talking about millions of dollars.*
>
> – *The Hon. John Fraser, Chair of the Pacific Fisheries Resource Conservation Council, Committee Proceedings, 18 March 2003*

> *Our approach is that you have to, in many ways, embarrass the government into doing its job.*
>
> – *Dr. Derek Davis, Chair of the Marine Invertebrate Diversity Initiative, Committee Proceedings, 16 April 2002*

> *We have a "fish-first" approach, whereby we focus upon sustainability for the long term. We have created a "living plan," in the sense that it is not to be a report collecting dust on the shelf. Rather, it is an ongoing process.*
>
> – *Richard Erhardt, Biologist, Taku River Tlingit First Nation, Committee Proceedings, 28 May 2003*

> *We are doing something, but it is equally fair to say that more needs to be done at the school level.*
>
> – *Robert McLean, Director, Wildlife Conservation, Environment Canada, Committee Proceedings, 11 June 2002*

> *Undoubtedly the most vital piece of knowledge you can give children ... is a knowledge of how species relate to each other, to human beings and their habitat – ecology, not biology.*
>
> – *Ken Harris, Chief, Habitat Conservation Division, Environment Canada, Committee Proceedings, 11 June 2002*

Stewardship involves making conscious decisions every day to act responsibly in conserving, protecting and enhancing Canada's fish habitats and oceans.(80) It also involves much more. Across Canada, for many years, a great many dedicated individual citizens, voluntary groups, organizations and communities, have been directly involved in stewardship activities to protect and restore fisheries and fish habitat. Their varied actions have included

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in the three countries. – William V. Kennedy, Executive Director, CEC, Letter to the Chair, 17 September 2003.

(80) DFO, *Stewardship – Working With Canadians to Safeguard Our Marine and Freshwater Legacy*, http://www.dfo-mpo.gc.ca/canwaters-eauxcan/getinvolved-prendrepart/brochure/brochure_e.asp.

stabilizing stream banks, enhancing fish stocks, planting riparian vegetation, improving water flows, mapping resources, and other similar activities.

In the course of the Committee's hearings, it became apparent that activities performed by some organizations involve roles that have traditionally been undertaken directly by government. For example, in April 2002, the Chair of the Marine Invertebrate Diversity Initiative (MIDI) appeared before the Committee and described the history and activities of this non-profit society, which has many governmental and non-governmental partners. The MIDI was set up to develop a comprehensive, current and standard reference on marine invertebrates(81) on the Scotian Shelf and in the Bay of Fundy and the Gulf of Maine, in the form of a Web-accessible database.

Another group involved in mapping habitat is the Taku River Tlingit First Nation (TRTFN), which is developing its stewardship capacity in the Taku River drainage system – an area that encompasses about 18,800 km^2 in northwestern British Columbia near the Yukon border, and one of the most pristine wilderness areas in Canada. In May 2003, a panel of witnesses appeared before the Committee to outline the varied activities conducted by the TRTFN along the 75 km-long Taku River, a watercourse that flows into southeast Alaska and supports approximately 27 species of fish. In sum, the TRTFN has initiated and is managing a cooperative, ongoing, strategic Watershed-based Fish Sustainability Planning (WFSP) process to ensure that fish and fish habitat are conserved in the long term. The success of the WFSP was attributed to its community-driven approach and its emphasis on transparent decision-making. The habitat mapping exercise predates the WFSP but is a priority in the overall plan because it contributes to a database that is essential for long-term planning.(82)

By all accounts, communities' involvement in stewardship helps to instil positive attitudes and local pride, and to increase awareness of the importance of fish habitat. Employment and economic benefits may also be generated. Stewardship is an important aspect of Canada's Oceans Strategy, and can also be an effective means of restoring or improving previously damaged fish habitat and achieving an overall "net gain" in the productive capacity of fish habitat, as set out in the DFO's 1986 Fish Habitat Policy. It should also be noted, however, that – as various witnesses pointed out – habitat rehabilitation can be inherently more costly than protecting habitat in the first place.

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(81) Invertebrates are animals without a backbone (e.g., clams, sea slugs, squid, crabs, barnacles, worms, jellyfish, sea cucumbers, sea urchins, sponges and corals). See *Committee Proceedings*, 16 April 2002.

(82) *Committee Proceedings*, 28 May 2003.

In our hearings, DFO officials stated that the Department participates and supports stewardship initiatives "as much as its resources will permit."[83] The testimony suggested that the best examples were in British Columbia, a province where the Department has a long history of community involvement through initiatives such as the Salmonid Enhancement Program (SEP). Launched in 1977 to reverse the decline in Pacific salmon and steelhead, the SEP set a precedent by making many citizens of that province hands-on partners in the effort. Much of the work focused on large projects (e.g., salmon hatcheries, spawning channels and lake fertilization), but a considerable amount of work was also performed in smaller community projects, such as refurbishing damaged streams. Enthusiasm and support for such activities were said to be as strong today as two decades ago.

In March 2003, the Pacific Fisheries Resource Conservation Council expressed deep concern about the drastic reduction in government spending on stewardship in British Columbia, which the Council feared would compromise the ability of stewardship groups to continue to perform their valuable work. To highlight the need for continued government support, the Council commissioned a study paper in 2001 to describe the upsurge in public involvement in protecting and rehabilitating salmon habitat in the province.[84] The PFRCC also acknowledged, in its 2001-2002 *Annual Report*, the leadership roles played by government-paid staff[85] in guiding community groups and funding community stewardship efforts. However, Committee members learned that, since then:

- Unprecedented provincial government cuts had been made to stream and watershed restoration programs; and
- Annual federal funding of $8.1 million to the Habitat Conservation and Stewardship Program (established under the federal Pacific Fisheries Adjustment and Restructuring program, or PFAR) was about to run out.[86]

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(83) *Committee Proceedings*, 16 September 2003.

(84) Dr. Marvin L. Rosenau and Mark Angelo, *The Role of Public Groups in Protecting and Restoring Freshwater Habitats in British Columbia, with a Special Emphasis on Urban Streams,* Paper prepared for consideration by the PFRCC, http://www.fish.bc.ca/html/fish2320.htm.

(85) These are community advisors, habitat stewards, habitat fisheries officers, stewardship coordinators and habitat auxiliaries. See PFRCC, *Annual Report 2001-2002*, http://www.fish.bc.ca/reports/PFRCC_2001-2002_Annual_Report.pdf.

(86) *Committee Proceedings*, 18 March 2003. The PFAR has since ended. The Habitat Conservation and Stewardship Program (HCSP) was a major component of the Resource Rebuilding Strategy announced in June 1998 as part of the five-year PFAR. Of the PFAR's $400-million budget, the HCSP received $35 million (over five years) to form partnerships to enhance habitat protection and expand community stewardship capability. Other programs funded over the five-year period included: the Habitat

Besides enumerating adult and juvenile salmon, tagging and releasing fish, and making public presentations to over 4,400 landowners, the PFAR's achievements included: over 34,000 m of fencing to protect riparian (streamside) vegetation from damage; approximately 109,000 trees planted in riparian zones; the restoration of 638,000 m^2 of in-channel fish habitat; and the restoration and creation of 180,000 m^2 of off-channel habitat, 6,200 m^2 of estuarine habitat, and 238,000 m^2 of lake habitat.(87)

In British Columbia, large salmon hatcheries and spawning channels have been used to enhance Pacific salmon, as have a greater number of smaller-scale activities. The Committee heard, however, that increased hatchery production of juveniles did not necessarily result in a greater number of adult fish, because the ocean has a finite carrying capacity. The Committee was also told of concerns about the long-term effects on wild stocks of hatcheries, including possible genetic effects. It was advised that priority should be given to smaller-scale habitat rehabilitation projects that promote more natural enhancement techniques and lend themselves more readily to public involvement. It was suggested that bureaucratic inertia may have been behind the tendency to close smaller hatcheries, particularly community-based ones, some of which were described as very conservation-based.(88)

In the next phase of its fish habitat study, the Committee hopes to learn more about stewardship issues in that province.

As mentioned in a previous section, the Atlantic Salmon Federation called on the DFO to undertake a wild Atlantic salmon habitat restoration program involving river-specific remedial projects based on the active involvement of community stewardship organizations. According to the ASF, which described itself as a ready and able partner in this endeavour, the decline in Atlantic salmon and the closure of some rivers in recent years had resulted in fewer volunteers at a time when they were needed most. The ASF felt that the DFO had done very little to rally local volunteers, and that, while governments supported the notion of community-based watershed management, their efforts to stimulate the formation of community-based

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Restoration and Salmon Enhancement Program ($23 million) to fund habitat restoration, stewardship and stock-rebuilding projects operated and administered by community groups and agencies; and the Strategic Stock Enhancement Program ($12 million) to save stocks in imminent danger of extinction. A $30-million Pacific Salmon Endowment Fund (PSEF) was also created. The PSEF, which is held in trust by a Pacific Salmon Endowment Society, earns interest that helps fund stewardship and restoration programs. The Pacific Salmon Foundation was selected as program manager in February 2001.

(87) PFRCC, Brief submitted to the Committee, 18 March 2003.

(88) *Committee Proceedings*, 18 March 2003.

management groups in the Atlantic region had been limited. In addition, the ASF considered the participation of Aboriginal people in such groups to be essential.(89)

Officials of Environment Canada and its Canadian Wildlife Service (CWS) appeared before the Committee to describe Environment Canada's approach to conserving habitat, and outline the activities that the Department carries out, supports and funds across the country.(90) The Department works with a very broad spectrum of partners in fish habitat-related areas, and is engaged in a number of ecosystem initiatives. Of particular interest to Committee members was the Atlantic Coastal Action Program (ACAP), one of the Department's larger community-based programs, and said to rely heavily on local involvement and support at 14 regional sites. Each ACAP site has formed an incorporated, non-profit organization that has its own board of directors and maintains a full-time paid coordinator and an office. Community stakeholders contribute most of the resources through volunteer labour, in-kind contributions and financial support. Communities define common objectives for environmentally appropriate uses of resources, and develop plans and strategies to achieve them.(91) To learn more about the program, a Committee working group undertook a two-day, informal fact-finding trip in early October to three ACAP sites located in southeast New Brunswick (ACAP Saint John Inc.; the St. Croix Estuary Project Inc.; and the Eastern Charlotte Waterways Inc.). The Committee will convey its findings in its forthcoming final report.

It was often suggested to Committee members that strong public sentiment in support of fish habitat reduces the likelihood that habitats will be abused. In this regard, the promotion of compliance through information, education and other means can be just as important as enforcing and applying the law. Several of the 1986 Fish Habitat Policy's eight strategies are supportive of an informed and active citizenry (e.g., integrated resource planning, habitat improvement, public awareness and education). Both the DFO and Environment Canada use a variety of communication techniques and activities to help promote public awareness of the importance of fish habitat. These include making presentations to various community groups and schools, preparing and distributing habitat guidelines and codes of practice, developing educational and training materials, and providing information on the Internet.

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(89) *Committee Proceedings* and Brief submitted to the Committee, 23 April 2002.

(90) The CWS handles wildlife matters that are the responsibility of the federal government. These include the protection and management of migratory birds, nationally significant habitat and endangered species, and work on other wildlife issues of national and international importance. In addition, the CWS does research in many fields of wildlife biology.

(91) *Committee Proceedings*, 11 June 2002. There are two ACAP sites located in Newfoundland, two in Prince Edward Island, five in Nova Scotia, and five in New Brunswick.

The education community can also be powerful partner in raising awareness and understanding of the importance of fish habitat. On this point, the ASF reminded the Committee of its long history in increasing public awareness through school-based education programs. Committee members also heard of an initiative in Manitoba where teachers and students were developing a variety of activities around local wetlands. Students would be expected to investigate the role that healthy wetlands play in contributing to clean water; they would be encouraged to visit a wetland site in their community to conduct research, and be able to discuss their findings with experts in the field. They would also be asked to become "wetlands winners" and do something positive to make their local wetland healthier. A program called Project WILD was also praised. Based on the premise that "young Canadians have a vital interest in learning about their natural world, how their actions affect the sustainability of life on our planet, and how they can become responsible inhabitants of the Earth," Project WILD is designed to infuse ecological themes into the regular curriculum subjects, such as art, health, language arts, math, music, physical education, science, and social studies.(92)

Another program mentioned was Salmonids in the Classroom – a partnership between the DFO, the B.C. Teachers Federation and school boards that involves about 40,000 students who raise salmon in their classrooms, from eggs to fry. Interested teachers receive aquariums, materials and educational resources to assist in teaching and learning about the life cycle of salmon. One DFO official remarked that the program had done more to raise public awareness of fish and fish habitat in British Columbia than any other DFO activity.(93)

CONCLUDING REMARKS

> *The bottom line is that without habitat, there are no fish and no related benefits to Canadians.*
>
> – *Paul Cuillerier, Director General, Habitat Management and Environmental Science, DFO, Committee Proceedings, 16 October 2001*
>
> *Your point is well taken that ... polling data support our efforts to try to secure resources for the program.*
>
> – *Richard Wex, Director General, Habitat Management Directorate, DFO, Committee Proceedings, 16 September 2003*
>
> *[W]hen bean counters are setting policy on complicated things that involve science, history, culture, wild things and the great outdoors, it is a prescription for folly. I think we could make some terrible mistakes unless someone does not get on top of this.*
>
> – *The Hon. John Fraser, Chair of the Pacific Fisheries Resource Conservation Council, Committee Proceedings, 18 March 2003*

(92) *Committee Proceedings*, 11 June 2002.

(93) *Committee Proceedings*, 16 September 2003.

I could not believe how lucky we were to get the Oceans Act. I weep salt tears when I realize what we have been able to do with it in the intervening years.

– *Dr. Jon Lien, Chair of the Minister's Advisory Council on Oceans, Committee Proceedings, 23 September 2003*

My most fervent wish is that over time, instead of making many more commitments, departments will concentrate more on meeting the ones they have made.

– *Johanne Gélinas, Commissioner of the Environment and Sustainable Development, Committee Proceedings, 19 February 2002*

There is little doubt that years of budgetary restraint have had a pervasive effect on the DFO. Among other things, a shift has taken place in the way the fish habitat program is being delivered: fish habitat management has now become "everyone's business."

Committee members were made aware that the DFO recently initiated a Departmental Assessment and Alignment Project to align funding with departmental priorities, and identify possible options for improving the efficiency and effectiveness of programs and services. **It would be a serious mistake if the Department's fish habitat program were to be adversely affected by an internal reallocation. Moreover, the Committee strongly believes that the DFO needs additional new funding.** From what we heard, the Department does not have adequate resources to meet current challenges in fish habitat, let alone future ones. Among other things, the Department needs more resources to:

- deliver the national Fish Habitat Management Program in all areas of the country;
- fully apply the 1986 federal Fish Habitat Management Policy;
- conduct research and monitoring on invasive aquatic species, which are a significant threat to Canada's aquatic ecosystems;
- meet its legislative responsibilities under the *Canadian Environmental Assessment Act* and the new *Species at Risk Act*;
- implement the *Oceans Act*, which is long overdue;
- fulfil Canada's regional and international commitments, such as those in the Great Lakes and St. Lawrence River basin;
- respond to industrial development activity in the North, particularly in the western Arctic;
- encourage fish habitat stewardship and fund fish habitat restoration;
- educate the public; and
- undertake the scientific research the Department needs to make informed decisions.

The one message that emerged loud and clear in virtually all of our discussions was that the DFO lacks the scientific information that it needs to carry out its mandate effectively. The Department needs additional and sustained funding for scientific research.

APPENDIX A

Strategic Directions for Implementing *Canada's Oceans Strategy*, Policy Objective on "Understanding and Protecting the Marine Environment," July 2002

Improved scientific knowledge base for estuarine, coastal and marine ecosystems:

- Improve co-operation in the collection, monitoring and disseminating of information, including the integration of traditional ecological knowledge;
- Better understand ecosystem dynamics including climate, variability and the impact of change on living marine resources, as well as a new orientation towards operational oceanography;
- Promote the development of a State of the Oceans Reporting system;
- Promote academic liaison on oceans research for and among natural and social sciences, especially through the Oceans Management Research Network; and
- Strengthen the co-ordination of ocean science in support of ocean management.

Policies and programs aimed at marine pollution prevention:

- Improve existing legislation and guidelines on marine environmental protection and maintain an on-going review and assessment of the adequacy of marine pollution prevention standards;
- Support the implementation of the National Programme of Action for the Protection of the Marine Environment from Land-based Activities, in particular the identified priority areas of sewage and physical alteration/destruction of habitat;
- Develop a more proactive implementation of the fish habitat protection policy;
- Develop a framework for a National Programme of Action for the Protection of the Marine Environment from Sea-based Activities to address priority areas such as ballast water discharges and the introduction of exotic species; and
- Promote the implementation of the green infrastructure program in coastal communities to improve sewage treatment.

Conservation and protection of the marine environment:

- Develop a strategy for a national network of Marine Protected Areas;
- Support and promote efforts to protect underwater cultural heritage;
- Establish and implement a Marine Environmental Quality policy and operational framework under the *Oceans Act*; and
- Support new legislation, regulations and policies and programs aimed at protecting marine species at risk.

Source: Government of Canada, *Canada's Oceans Strategy,* http://www.cos-soc.gc.ca/doc/cos-soc/directions_e.asp.

APPENDIX B

Witnesses

The following list includes witnesses who appeared during the First or Second Sessions of the Thirty-seventh Parliament on those aspects of the Committee's orders of reference relating to fish habitat. Additional witnesses appeared on other aspects of these orders of reference, such as straddling stocks.

First Session, Thirty-seventh Parliament

April 3, 2001
From the Coalition of Concerned Citizens of Caledon:
Charles Birchall, Legal Counsel;
Rodney Northey, Legal Counsel;
Andrew Dumyn, Member.

May 30, 2001
From the Aggregate Producers' Association of Ontario:
Jonathan Kahn, Partner, Toronto Office, Blake, Cassels & Graydon LLP;
Jackie Fraser, Environment and Resources Manager.

From the James Dick Construction Limited:
Donald C. Hindson, Q.C., Cattanach Hindson Sutton Van Veldhuizen;
David Wayne Fairbrother, Partner, Belleville Office;
Greg Sweetman, Resources Manager;
James Parkin, Partner, MacNaughton Hermsen Britton Clarkson Planning Limited.

16 October 2001
From the Department of Fisheries and Oceans:
Paul Cuillerier, Director General, Habitat Management and Environmental Science;
Richard Nadeau, Director, Habitat Operations, Habitat Management and Environmental Science;
Patrice LeBlanc, Director, Habitat Program, Habitat Management and Environmental Science.

20 November 2001
From the International Institute for Sustainable Development:
Arthur J. Hanson.

From 2WE Associates Consulting Ltd.:
Geoffrey L. Holland, Consultant.

19 February 2002
From the Office of the Auditor General of Canada:
Johanne Gélinas, Commissioner of the Environment and Sustainable Development;
John Reed, Principal;
Gordon Stock, Director;
Neil Maxwell, Principal.

26 March 2002
From Ducks Unlimited Canada:
J. Barry Turner, Director of Government Relations;
Ian Campbell, Senior Agricultural Policy Analyst.

16 April 2002
From the Ecology Action Centre:
Mark Butler, Marine Coordinator.

From the Marine Invertebrate Diversity Initiative Society:
Derek Davis, Chair.

23 April 2002
From the Atlantic Salmon Federation:
Stephen Chase, Vice-President, Governmental Affairs.

28 May 2002
From Transport Canada:
Tom Morris, Manager, Environmental Protection.

11 June 2002
From Environment Canada:
Robert McLean, Director, Wildlife Conservation;
Ken Harris, Chief, Habitat Conservation Division.

Second Session, Thirty-seventh Parliament

18 March 2003
From the Pacific Fisheries Resource Conservation Council:
The Honourable John Fraser, Chair;
Jeffrey Marliave, Member;
Paul LeBlond, Member.

28 May 2003
From the Taku River Tlingit First Nation:
John Ward, Spokesperson;
Richard Erhardt, Biologist;
Peter Kirby, Chief Executive Officer of Taku Wild Products, TRTFN Capital Projects Manager and Economic Development Officer.

3 June 2003
As an individual:
Terrance Long, Consultant for Hazardous Management Disposal.

From the Waycobah First Nation:
Morley Googoo, Chief;
Wanda Arnold, Director of Operations.

From Human Factors Applications, Inc.:
Rick Hanoski, Division Manager.

From Alion Science and Technology:
Jennifer Mokos, Division Manager, Chemical Technology, and Vice-President.

10 June 2003
From the Commission for Environmental Cooperation of North America:
Victor Shantora, Acting Executive Director;
Geoffrey Garver, Director, Submissions on Enforcement Matters Unit.

16 September 2003
From the Department of Fisheries and Oceans:
Richard Wex, Director General;
Richard Nadeau, Director, Habitat Operations, Habitat Management Directorate;
Patrice LeBlanc, Director, Habitat Programs, Habitat Management Directorate;
Christine Stoneman, Acting Director, Habitat Policy and Regulatory Affairs, Habitat Management Directorate.

23 September 2003
From the Minister's Advisory Council on Oceans:
Jon Lien, Chair.

30 September 2003
From Myles and Associates:
Myles Kehoe, Partner;
Michael Ojolek, Partner.

7 October 2003
From the Artificial Reef Society of British Columbia:
Jay Straith, Past President.

21 October 2003
From the Office of the Auditor General of Canada:
Johanne Gélinas, Commissioner of the Environment and Sustainable Development;
John Reed, Principal;
Neil Maxwell, Principal.

Persons Met During Fact-Finding Work in New Brunswick (1 and 2 October 2003)
Larry Hildebrand, Manager, Sustainable Communities and Ecosystems Division, Environment Canada;
Roy Parker, Environmental Effects Officer, Environment Canada;
Tim Vickers, Executive Director, ACAP Saint John, Inc.;
Gay Wittrien, Administrative Assistant, ACAP Saint John, Inc.;
Art MacKay, Executive Director, Saint Croix Estuary Project, Inc.;
Bill McAlister, Chair, Saint Croix Estuary Project, Inc.;
Mary Gilmore, Administrative Assistant, Saint Croix Estuary Project, Inc.;
Mark McGarrigle, Programme Co-ordinator, Ganong Nature Park;
Susan Farquharson, Executive Director, Eastern Charlotte Waterways, Inc.