Great Lakes Fishery Commission
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Sea Lamprey Control and Research

Under the Convention on Great Lakes Fisheries, the Commission is responsible for developing and implementing sea lamprey control, which began in 1957, to drive down populations of the noxious, invasive pest that would kill more than 100 million pounds of valuable fish annually if left uncontrolled. Sea lamprey control has been a phenomenal success. In most areas of the Great Lakes, populations have been reduced by 90%. Without sea lamprey control, the $7.5 billion fishery as we know it would not exist.

The proposed 2024/2025 sea lamprey control budget will allow the Commission to:

- **Aggressively treat approximately 110 tributaries annually with lampricides.**
- **Allow the Commission to implement the 2024/2025 portion of its infrastructure plan; design new barriers to ensure the blockage of sea lampreys.**
- **Address targets for sea lamprey suppression that support fishery objectives developed in cooperation with fishery managers through the fishery management and coordination program area.**
- **Maintain the required registration of lampricides.**
- **Conduct the assessments needed to determine which streams to treat.**

Fishery Research and Science Transfer

Science underpins Great Lakes fishery management and sea lamprey control. Without science, fishery restoration and protection would be impossible. The convention directs the Commission to lead a binational fishery and sea lamprey research program; to conduct, fund, and publish research; to convert the research to management practice; and to make recommendations to government.

The proposed 2024/2025 science budget will allow the Commission to:

- **Implement effective, targeted, peer-reviewed fishery and sea lamprey research and add new areas of research to proactively confront emerging threats to the Great Lakes fishery.**
- **Transfer research results and new technologies to managers to protect the $7.5 billion fishery.**
- **Adapt the Commission's science programs to better understand fish behavioral changes and ecosystemic effects of the climate crisis.**
- **Maintain lasting scientific partnerships with universities, agencies, and other entities to ensure fishery management and sea lamprey control are guided by coordinated research and meaningful technical assistants.**

Fishery Management & Coordination, Communications, Policy & Legislative Affairs, and Administration

Collaboration among two nations, eight states, the Province of Ontario, and several First Nations is required for effective Great Lakes fishery management. The convention directs the Commission to "establish working arrangements" among agencies, which it does by facilitating *A Joint Strategic Plan for Management of Great Lakes Fisheries*. This essential function ensures agencies share information, identify common goals, and work together to achieve restoration and management objectives. The plan is viewed as one of the world's best examples of a cooperative, consensus-based arrangement among independent governments.

The Commission strategically partners with other government agencies, stakeholders, industry, non-governmental organizations, and elected officials. The communications, policy and legislative affairs, and administration functions integrate internal program areas, keep the public and media informed, coordinate Commission activities with sister organizations, liaise with elected officials and agency staff, and ensure key stakeholders are part of the Commission's process.

The proposed 2024/2025 fishery management & coordination, communications, policy & legislative affairs, and administration budget will allow the Commission to:

- **Maintain international cooperation among fishery management agencies of the Great Lakes basin.**
- **Enhance consistency of strategies and actions among jurisdictions.**
- **Work with Congress and Parliament to advance Great Lakes restoration and achieve economic benefits.**
- **Make recommendations to governments.**
- **Administer the secretariat.**

Infrastructure

The Commission relies on physical infrastructure including: 1) sea lamprey barriers/traps, 2) laboratories and stations, and 3) fish habitat protection and improvement. Much of this infrastructure—constructed by the Commission and others for non-related functions—is deteriorating.

The Commission's 2018-2026 infrastructure plan will:

- **Save at least $256 million in lampricide treatment costs and $3.1 billion worth of Great Lakes fish.**
- **Provide technical assistance support for research projects focused on fishery restoration, ecosystem health, and effectiveness of sea lamprey control.**
- **Protect and improve fish habitat in the face of climate change.**

While Great Lakes infrastructure is not funded, the Commission looks forward to partnering on a plan for Great Lakes infrastructure renewal.

12/24/2023
cover photo: MI DNR

Program Requirements and Cost Estimates

Fiscal Year 2024/2025

Submission to the Canadian Government

Canada and the United States share a vibrant and lucrative Great Lakes fishery, today valued at more than $7.5 billion annually to the people of the region. Fish are the very fabric of the Great Lakes, and a healthy fishery means a healthy Great Lakes environment.

Consider what fish mean to the region:

- **The fishery supports 75,000 jobs directly and hundreds of thousands more related to tourism and navigation.**
- **Fish attract more than 5 million anglers each year—anglers who buy tackle, boats, fuel, food, and lodging.**
- **Commercial and charter fishing are pillars of many communities and are a part of the region's rich history.**
- **Indigenous fishing is a right and is integral to the culture and community of First Nations.**
- **Federal, provincial, and state agencies and First Nations communities invest hundreds of millions of dollars annually in fisheries (hatcheries, boat ramps, etc.).**

The Great Lakes Fishery Commission was established in 1955 under the Canadian/U.S. Convention on the Great Lakes Fisheries (convention). For nearly 70 years, the Commission has been central to sustaining the fishery's economic value, supporting jobs, and allowing agencies to implement their programs.

The Commission's budget request is described in four functions (summarized in table 1):

1. **Sea lamprey control and research**
2. **Fishery research and science transfer**
3. **Binational fishery management & coordination, communications, policy & legislative affairs, and administration**
4. **Infrastructure**

Table 2 of this budget request provides details about the allocation of the fiscal 2024/2025 funding. The details are described in terms of major risks the Commission faces during the next two decades and actions needed to avoid erosion of the $7.5 billion Great Lakes fishery. Crumbling infrastructure, climate change, habitat loss, and aquatic invasive species (AIS) all threaten to undermine substantial gains in fishery health and promise to cost Canadians millions of extra dollars if they are not proactively addressed.

Table 1: Summary of the Commission's program requirements and cost estimates for FY 2024/2025. All figures in millions of Canadian dollars.

FUNCTION	FY 2023/2024 PROGRAM	FY 2024/2025 BUDGET REQUEST
Sea Lamprey Control and Research	$13.15	$13.15
Fishery Research and Science Transfer	$4.77	$4.77
Fishery Mgmt & Coord., Communications, Policy & Leg. Affairs, and Admin.	$1.68	$1.68
Infrastructure	$0	$0
CANADIAN TOTAL	$19.60	$19.60

FUNCTION	RISK	CONSEQUENCES
Sea Lamprey Control and Research	• Insufficient capacity to treat high-priority infested tributaries and new sea lamprey producing rivers.	• Millions of kilograms of fish lost per year to sea lamprey predation in existing, exposed habitat that cannot be protected with new barriers. • Loss of fishery restoration progress.
	• Insufficient science to implement a cost-effective sea lamprey control program.	• No new supplemental sea lamprey control techniques will be developed, causing increased reliance on lampricide. • Sea lamprey abundance grows due to lampricide resistance/loss of social license. • Continued reliance on dams and chemicals.
Fishery Research and Science Transfer	• Insufficient science to inform native fish conservation and rehabilitation initiatives in areas of life history, ecology, behavior, movement, and habitat use; science not applied. • Inability to fully incorporate Indigenous and Traditional knowledge in the course of conducting science.	• Inability to sustain healthy populations of native and desirable species. • Limited conservation and restoration planning. • Lost opportunity to include important knowledge sources.
	• Fishery management and sea lamprey control not guided by coordinated research (e.g. Great Lakes Acoustic Telemetry Observation System, GLATOS), appropriate technical assistance, or special research structures (e.g. Partnership in Ecosystem Research and Management Program, PERM) already in place.	• Lost opportunity for international capacity to advance sea lamprey control and fishery management. • Inability to leverage tens of millions of dollars of U.S. government and other external funds for science. • Lost ability for quality assurance/registration in the sea lamprey control program. • Loss of the funds for projects such as PERM and GLATOS. • Lost funding for partnerships with Canadian institutions.
Fishery Management and Coordination, Communications, Policy and Legislative Affairs, and Administration	• Failure to support U.S. government's existing efforts to prevent grass carp establishment. • Poorly informed and uncoordinated fish passage and barrier removal efforts as improved aquatic connectivity is sought. • Increasing lack of awareness of the decimation of the Great Lakes fishery prior to sea lamprey control and integrated fishery management from fishery managers and the public. • Inability to implement integrated invasive species and overall fishery management in an increasingly complex Great Lakes environment.	• Grass carp, a type of invasive carp, will become established. • Diminished ability to restore desirable fish species. • Loss of social license to build and maintain barriers. • Compromise of the $7.5 billion fishery if sea lamprey cannot be controlled after dams are removed to improve connectivity. • Misplaced confidence that the Great Lakes fishery can be protected without invasive species control and strategic, binational fishery management informed by sound science. • Inability to communicate with stakeholders (anglers, commercial fishers, cottage owners, urban dwellers along tributaries, etc.), elected officials, and policy makers.
Infrastructure	• Deterioration or removal of sea lamprey barriers and traps. • Infrastructure failure due to increasing storm intensity/climate change. • Loss of fish habitat due to climate variability and uncoordinated development. • Loss of research capacity due to inadequate resources and lab space constraints.	• Thousands of kilometers of new sea lamprey habitat become available, the population grows, millions of kilograms of fish are lost, and restoration is impaired. • As an alternative to infrastructure repair or replacement, tens of millions of dollars in additional lampricide costs accrue annually in an attempt to keep sea lamprey population levels within fish community objectives. • Loss of beneficial uses at areas where habitat has been impaired or destroyed. • Inability to implement fish habitat restoration projects.

Table 2: Proposed allocation of the FY 2024/2025 program. Canadian contribution only. An amount consistent with a funding formula for each program area has been requested from the United States Congress.

REMEDIES	OUTCOMES	REQUEST	
• Deploy all the necessary crews, products, and equipment to deliver a full sea lamprey control program.	• Sea lamprey control to protect at least 12.4 million kilograms of fish annually worth a conservative annual value of $372 million CDN.	**$11,073,871**	**$13,148,613**
• Fund competitive sea lamprey research based on priority theme areas. • Direct research toward techniques such as alarm cues, pheromones, "greener" lampricides, and cutting edge genetic methods.	• Viable control alternatives that: (1) reduce dependence on expensive infrastructure; (2) reduce impacts on aquatic species; (3) diversify control techniques; and (4) enhance use of "greener" control tactics.	**$2,074,742**	
• Fund competitive fishery research based on priority themes. • Support the coregonine science initiative. • Better develop relationships with Indigenous communities.	• Healthy Great Lakes ecosystem with balanced predator-prey and sufficient habitat to support sustainable fisheries. • Coordinated science will be incorporated into fishery management, conservation, and restoration initiatives.	**$1,042,476**	**$4,765,904**
• Establish and maintain support for key partnerships: - Univ of Guelph Centre for Ecosystem Management (CEM); - Hammond Bay Biological Station (HBBS); - Quantitative Fisheries Center (QFC) at Michigan State University (MSU); - PERM at Univ of Guelph and MSU; - GLATOS, and FishPass. • Work broadly with Canadian and U.S. institutions and governments to foster shared scientific objectives and knowledge transfer.	• HBBS will remain at the forefront of fishery and sea lamprey research; UMESC will maintain the safety of lampricides. • PERM, QFC, and CEM will bring together academia, stakeholders, rightsholders, managers, and governments to advance cross-border ecosystem management. • Tens of millions of dollars will be leveraged. • GLATOS will revolutionize fishery management. • FishPass restores connectivity while maintaining invasive species control. • Coordinated science will be incorporated into fishery management, conservation, and restoration initiatives.	**$3,723,428**	
• Engage in existing U.S. program to aggressively monitor and remove grass carp populations. • Develop an adaptive approach to balance invasive species control with enhanced aquatic connectivity using selective fish passage. • Integrate fishery and sea lamprey control objectives with improved aquatic connectivity. • Share history of the Great Lakes fishery, with an emphasis on conditions before and after the convention, to better understand AIS threats. • Increase capacity to engage binational stakeholders, elected officials, policy makers, and others.	• A Great Lakes system free of invasive grass carp that would have dramatically harmed the ecosystem and economy. • Restored aquatic connectivity with enhanced invasive species management (control/eradication) due in large part to advancement of novel approaches to selective fish passage—initiative has global implications. • Better protection of "social license" to use lampricides and barriers for sea lamprey control and integrated pest management. • Better advice to governments (elected officials and policy makers) regarding the prevention and management of AIS and integrated Great Lakes fishery management.	**$1,681,156**	**$1,681,156**
• Rehabilitate existing infrastructure (barriers) or construct new barriers depending on the condition of dilapidated structures. • Refurbish/replace physical structures used to control AIS. Infrastructure funds would match U.S. investments for similar structures in U.S. • Collaborate to develop and implement high-priority habitat projects. • Modernize and construct new laboratory space.	• For every 10 sea lamprey barriers, the GLFC saves $8.8 million CDN per year in lampricide treatment costs and 7.2 million kilograms of fish, worth $216 million CDN conservatively. • Healthy Great Lakes ecosystems with functional habitat to support fish production and sustainable fisheries. • Ability to do cutting-edge science and research. • Be in a better position to respond to impacts of climate change, including storm intensity and flooding.	**$0**	**$0**
		TOTAL (in CDN dollars)	**$19,595,673**