ANNUAL REPORT 2004

From the Chair

Bill Beamish

A holistic approach to Great Lakes fisheries management

2004 was a productive and successful year for the Great Lakes Fishery Commission and its partners. This year, the commission secretariat, Council of Lake Committee member agencies, and other Joint Strategic Plan signatories became involved in the Great Lakes Regional Collaboration, an initiative started by President Bush that calls for a massive regional effort to produce a strategic action plan for Great Lakes restoration.

The commission has continued to be relentless in its efforts to implement a scientifically sound and aggressive sea lamprey control program. Treatments in streams on Lakes Huron, Superior, and Michigan were increased, and evidence that trapping and releasing sterilized males reduces sea lamprey reproduction in the St. Marys River was first published. In addition, we have this year a new resource: the SLIS II volume presenting the previous 20 years of sea lamprey science.

As the facilitator of fisheries management within the Great Lakes basin, the commission, together with our partners, works to undertake research and implement techniques which promote natural ecosystem processes. Notably, during the past year, rehabilitation plans in Lake Superior for three native species – walleye, brook trout and lake sturgeon – have been developed. In addition, the commission has been involved in the initial efforts to restore populations of the American eel in Lake Ontario.

In 2004, the commission continued its efforts to prevent the invasion of Asian carp. The Asian carp threaten to invade the lakes through two primary pathways: migration through the Chicago Sanitary and Ship Canal and via the trade of live organisms for food or baitfish. In partnership with the U.S. Army Corps of Engineers, the International Joint Commission, the State of Illinois and many others, we have worked hard to secure funding for an electric barrier that will prevent Asian carp from entering Lake Michigan. To address the trade pathway, the Great Lakes Law Enforcement Committee has worked with the states, the province, the tribes, and the federal governments to increase enforcement presence in areas where commerce and live markets are prevalent.

Each year, more than 900,000 pounds of live, voracious Asian carp are imported into Canada. Many of these fish originate from aquaculture facilities in the southern United States and are transported through Great Lakes states. Collectively the states and province have increased efforts to prohibit the sale and transportation of live Asian carp.

As the commission approaches a half-century of dedicated, effective management, we reaffirm our commitment to the ecosystem and health of the Great Lakes for the benefit of everyone in the region. We are devoted to addressing new and challenging issues, forming new partnerships, and most of all, continuing to meet our charge with a world class collaborative approach to protect our fisheries. ■

The second Sea Lamprey International Symposium (SLIS II), convened in 2000, presented research on lamprey biology, ecology and assessment, alternative control, and lampricide control. The symposium provided direction on how to improve sea lamprey control and Great Lakes fishery management, and to reflect on the recommendations presented during SLIS I, held 21 years ago. SLIS II participants, pictured below, gathered outside of Lake Superior State University in Sault Ste Marie, to commemorate the event. The second Sea Lamprey International Symposium was published as a special edition of the Journal of Great Lakes Research and is available electronically from the commission.

Sea Lamprey Control

The battle against the voracious sea lamprey continues to be a crucial component of fisheries management. Pursuant to the *Convention on Great Lakes Fisheries* and the *Strategic Vision for the First Decade of the New Millennium,* the commission partners with Fisheries and Oceans Canada and the U.S. Fish and Wildlife Service to control sea lamprey populations. This dynamic partnership leverages the resources, expertise, and understanding that are vitally important in the effort to reduce sea lamprey populations.

The Great Lakes Fishery Commission and the Army Corps of Engineers worked together in 2004 on the design and construction of new sea lamprey barriers. This partnership marries science and engineering to produce innovative and effective alternative techniques for sea lamprey control.

In 2004, Fisheries and Oceans Canada and the U.S. Fish and Wildlife Service:

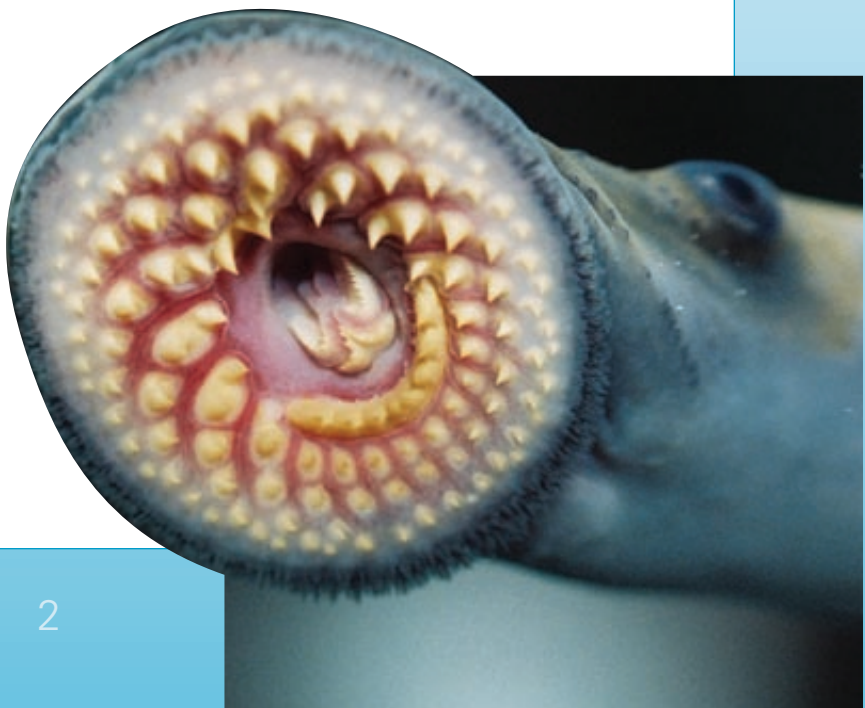
- conducted 77 stream treatments with lampricide;
- surveyed 333 tributaries and 36 lentic areas within the Great Lakes to assess larval sea lamprey populations, to plan future TFM treatments, and to establish production capacity of these areas; and
- estimated the population of spawning-phase lamprey abundance in 83 tributaries using assessment traps.

For each of the Great Lakes, sea lamprey populations are evaluated relative to fish community objectives and the commission, in turn, bases its sea lamprey management decisions on these reports. In Lake Superior, the sea lamprey management objective is to reduce the population such that lamprey account for less than 5% of the annual lake trout mortality; in 2004, lake trout mortality resulting from sea lamprey attacks was estimated at 12%. Parasitic sea lamprey populations remain higher than the fish community objective targets in both Lake Huron and Lake Michigan. Since the St. Marys River Treatment Strategy, initiated in 1998, populations of larvae in the St. Marys River, lake trout wounding rates, and sea lamprey induced mortality in Lake Huron, have all declined. The fish community objective of fewer than 5 marks per 100 lake trout was met in both Lake Erie and Lake Ontario.

The complete report, *Integrated Management of Sea Lampreys in the Great Lakes 2004*, is available on the GLFC Annual Report home page: www.glfc.org/pubs_out/annualreports.php.

Adult males are removed from traps and taken to the Hammond Bay facility on Lake Huron to be sterilized. Sterile males are then released back into streams to spawn. Because the males have been sterilized, the spawning effort is ineffective, thereby wasting the reproductive capacity of the female. PHOTO BY: J. FINSTER, GLFC

Sea lamprey control is an important component of fisheries management in the Great Lakes. Multiple techniques are used to effectively control lamprey populations, including the use of lampricides, barriers, and sterile male. New research is leading to innovative methods to increase the efficacy of current control efforts.
PHOTO BY: T. LAWRENCE, GLFC



Fishery Management, Research, and Environment

The commission seeks to achieve the goals set forth in the *Convention on Great Lakes Fisheries* by relying on recommendations from the Board of Technical Experts, the Sea Lamprey Integration Committee, Lake Committees and their technical committees, the Law Enforcement Committee, and the Great Lakes Fish Health Committee. These committees jointly form a strong advisory body that provides the commission with policy and science counsel concerning the conservation of biological diversity and the protection of the fishery.

Currently the commission is sponsoring 51 projects dedicated to providing management agencies with the best available science to respond to the needs of, and demands upon, the Great Lakes. The advancements made in studies examining the use of pheromones as a means to control sea lamprey populations provides a prime example of the value and necessity of the commission's research program.

In 2004, the commission approved the following research projects:

Fishery Research Program

- Effect of exotic cercopagids on fish: food web disruption through density- and trait-mediated effects
- Research coordination for the theme of 'exotic invertebrates and food web disruption in the Great Lakes'
- Preserved fish as a restoration tool: use of stable isotopes to reconstruct historical Great Lakes food webs
- Identification of a genetically diverse and compatible source of bloater (*Coregonus hoyi*) for reintroduction in Lake Ontario
- The applicability of life history invariants in the Great Lakes
- Integration of acoustic technologies: sonars and telemetry
- EMS research and information coordination meetings
- Effect of thiamine deficiency on disease resistance in lake trout
- Round goby and dreissenid effects on young-of-year smallmouth bass
- Epizootic Epitheliotrophic Disease (EED) of lake trout: detection and identification of the causative virus (EEDV)

Sea Lamprey Research Program

- Healing times for sea lamprey marks on lake trout in Lake Huron
- Genetic markers to distinguish and quantify the level of gene flow between northern brook and silver lampreys
- Evaluation of an alternative model of stream selection for lampricide treatment
- Field trials to evaluate the potential use of pheromones in sea lamprey control
- Micro-elemental analysis of statoliths as a tool for tracking stream origins of sea lamprey
- Migratory behavior and swim performance of sea lamprey and non-target fish species at sea lamprey barriers and in laboratory flumes
- Attachment behavior of sea lampreys in relation to substrate characteristics
- Structure determination of the primary component of the sea lamprey migratory pheromone and elucidation of their biological importance

Coordination Activities Program

- Funding for the publication of *The International Eel Symposium 2003*, American Fisheries Society
- Whitefish natural mortality coordination workshops
- Preparation of materials for agencies' use in briefing anglers, baitfish operators, and fish farmers on *Heterosporis* and containment measures
- Review of assessment programs for Great Lakes lake whitefish
- Decision analysis implementation for percid management on Lake Erie

For more information about the commission's research program, including research completion reports, visit: www.glfc.org/research.php

Partnerships

Partner agencies—functioning through the Council of Lake Committees—are dedicated to strengthening and enhancing efforts to improve fisheries management throughout the basin. To this end, the council has worked closely with the U.S. Geological Survey (USGS) to improve the delivery of deepwater fisheries research. As a result of these efforts, members of the council and representatives from USGS signed a Memorandum of Agreement this year that will promote delivery of an effective program in full partnership with the federal, state, and tribal fishery agencies on the Great Lakes. The council also provided a demonstration of technology to rapidly mark stocked fish.

2003 was the best spawning year for Lake Erie walleye populations in more than 20 years. Weak year classes in previoius years, however, resulted in decreased allowable catch rates since 2002. Through non-binding mediation, the Lake Erie Committee agreed to maintain reduced harvest in 2004 to provide walleye populations with a needed recovery period. Agencies continue to closely monitor the status of walleye spawning, and remain committed to implementing a walleye harvest policy that promotes sustainable harvest.

PHOTOS BY: C. KRUEGER, GLFC AND M. GADEN, GLFC

Population status reports for the many valued species of fish throughout the basin are submitted annually to the council as part of the fishery management process. Highlights from the 2004 reports include increased natural reproduction of lake trout in Lakes Huron, Ontario, and Superior and Chinook salmon in Lake Huron. Survival of lake trout populations is improving in Lake Huron, but declining in Lake Ontario. In addition, alewife abundance remains low throughout the lakes. While yellow perch populations remain low in Lake Michigan, percid and smelt year classes were high in Lake Erie. The Lake Huron Committee expressed concern for the future of the whitefish fishery, particularly in the upper lakes, while the Lake Ontario Committee called for action on the alarming decline of American eel in Lake Ontario.

Using the information presented by the technical committees and task forces, the Lake Erie Committee established the annual catch limits for walleye and yellow perch in Lake Erie. This is a consensus-based process, but in the rare instance when the committee cannot reach consensus, the Joint Strategic Plan allows for non-binding mediation. In 2004, the conflict resolution process was employed to help the Lake Erie Committee establish the 2004 total allowable catch (TAC) for walleye. While it was a challenging year for the committee, the mediation did result in consensus on the TAC.

Under the Joint Strategic Plan, each lake committee was directed to identify environmental factors, such as the biological, chemical, and physical needs of desired fish communities, which affect ecosystem structure and function. In 2004, the Lake Huron Committee accepted draft environmental objectives, while the Lake Superior Committee continued the process of identifying indicators and long-term monitoring needs. A workshop entitled "Research Priorities for Environmental Objectives" was held to guide lake committee and council members devise a strategy for developing common theme areas.

The Great Lakes Law Enforcement Committee proposed the development of an Officer Exchange Program to build upon the existing Memorandum of Agreement between the Ontario Ministry of Natural Resources and the U.S. Coast Guard. The program will serve to enhance coordination between law enforcement agencies while also providing educational opportunities for officers throughout the region.

The Committee of Advisors passed resolutions in support of increased funding for the Allegheny National Fish Hatchery and the electrical barrier system on the Chicago Sanitary and Ship Canal. Additional advisor resolutions discouraged yellow perch stocking in Lake Michigan and urged for basin-wide collaboration to address the organisms-in-trade and ballast water pathways.

Executive summaries are provided on-line: www.glfc.org/lakecom.php (under the "publications and products" section of each committee) and www.glfc.org/advisors.

Budget

The commission received the following contributions from the governments of Canada and the United States (shown in U.S. dollars) for 2004:

	U.S.	CANADA	TOTAL
Sea Lamprey Management and Research	$10,538,850	$ 3,168,550	$ 13,707,400
General Research, Committee and Scientific Support, and Administration	$ 1,580,150	$ 1,449,150	$ 3,029,300
TOTAL	**$12,119,000**	**$ 4,617,700**	**$ 16,736,700**

The commission received a donation of more than ten years worth of journals from Dr. Reeve Bailey.

Great Lakes Fishery Commission

The Great Lakes Fishery Commission was established by the Convention on Great Lakes Fisheries (between Canada and the United States) in 1955 to improve and perpetuate fishery resources.

U.S. DEPARTMENT OF STATE

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U.S. FISH AND WILDLIFE SERVICE

U.S. GEOLOGICAL SURVEY

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Awards and Honors

Each year, the Great Lakes Fishery Commission recognizes individuals who have made outstanding contributions to the Great Lakes. In 2004, the commission was honored to recognize:

Dr. Phil Moy, Wisconsin Sea Grant, recipient of the Jack Christie/Ken Loftus Award for Distinguished Contributions to Healthy Great Lakes Ecosystems. Moy (R) was presented the award by the commission's Executive Secretary Chris Goddard, for leading the effort to prevent the trans-migration of invasive species between the Mississippi River and Great Lakes watersheds.

Dick Reuss, Illinois' Lake Michigan Public-at-Large Advisor, with the Buzz Besadny Award for Fostering Great Lakes Partnerships. Commissioner Roy Stein presented Reuss (R) with this award in recognition of his leadership as U.S. Advisor, for his successful efforts to energize the Committee of Advisors, and for his committed support for the commission and its vision.

Dr. Mike Jones, Michigan State University, recipient of the Vern Applegate Award for Outstanding Contributions to Sea Lamprey Control. Jones (L) was presented this award by Commissioner Bill Beamish, for his tremendous effort in organizing and publishing the Sea Lamprey International Symposium II and for advancing science to support sea lamprey management in the Great Lakes.

Great Lakes Fishery Commission

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