ANNUAL REPORT 2007

From the Chair

Peter Wallace

Coordinated Conservation Efforts Lead to Healthy Great Lakes Fisheries

In its *Strategic Vision for the First Decade of the New Millennium,* the commission encourages the conservation of healthy aquatic ecosystems in the Great Lakes and promotes the conservation of native biodiversity. One tenet of the vision is that no native Great Lakes fish species should be lost from the system. Unfortunately, one such native species, the American eel, is in danger of extirpation. The commission and its partners have embarked on an effort to prevent that from happening.

The American eel is a valuable, native member of the upper St. Lawrence River and the Lake Ontario ecosystem, contributing to the biological diversity of these waters. Until the late 1990s, the American eel provided an important commercial fishery in Ontario, but because of impingement, fishing pressure, lost access to habitat, and other problems, the population of American eel in the Great Lakes has declined dramatically. Without careful and dedicated management and intervention, this unique and valuable species may be lost.

To protect the American eel, the commission and its partners have forged a coalition to address the decline in North America, seeking ways to protect eels at all life stages and encouraging the safe upstream and downstream migration of this species. The commission is confident that this unified approach will be successful in preventing further collapse of the eel population.

The Council of Lake Committees developed the American Eel Task Group, which includes Lake Ontario jurisdictions and the Province of Quebec. The task group is drafting a recovery framework for American eel that can serve as a basis for rehabilitation plans in both Canada and the United States. In addition, representatives of Ontario, Quebec, Canada, and the secretariat met with representatives of the Atlantic States Marine Fisheries Commission to create a vision for management of American eel along the entire North American continent.

The efforts to conserve the American eel highlight the cooperative, bi-national nature of fishery management on the Great Lakes, and complement the commission's continued efforts to protect and improve the Great Lakes fishery.

This annual report highlights some of the commission's most important activities during 2007 in its effort to help keep our Great Lakes great. ≈

Eel ladders allow American eels to pass safely around dams and hydroelectric facilities which normally impede their upstream progress. Research is being conducted on downstream passage around hydroelectric facilities which are currently a major source of eel mortality.
PHOTO: NEW YORK POWER AUTHORITY

American eels are naturally found throughout the Atlantic coastal regions of Canada and the U.S. and as far inland as the St. Lawrence River, Lake Ontario, and the Mississippi river. Eels feed on a variety of small fish, frogs, crayfish and other invertebrates; can grow to a meter in length; and spawn in the ocean.
PHOTO: JOHN CASSELMAN, QUEEN'S UNIVERSITY

Sea Lamprey Control

The Great Lakes Fishery Commission bases its sea lamprey control decisions on lake committees' Fish Community Objectives, sea lamprey population assessments, and the objectives presented in the commission's *Strategic Vision for the First Decade of the New Millennium.* Through continued cooperation, the Department of Fisheries and Oceans Canada and the U.S. Fish and Wildlife Service work with the commission to carry out sea lamprey control. In 2007, the commission and its partners:

- conducted lampricide treatments on 101 tributaries;
- surveyed 328 Great Lakes tributaries and 36 lentic areas to assess control effectiveness and plan future lampricide treatments; and
- operated assessment traps at 75 tributaries to estimate spawning-phase sea lamprey populations.

In 2007, sea lamprey control managers began a "treating more, treating better" program in which lamprey control teams implemented techniques designed to more effectively control the numbers of spawning and juvenile sea lamprey. First, crews administered the lampricide TFM for longer time periods in the streams – this increased the exposure of lamprey to TFM, resulting in higher sea lamprey mortality. Second, treatments were scheduled earlier in the year, before transformers migrated to the lake and when water levels were more conducive to sea lamprey control. Third, the number of secondary rivers and streams treated was increased, thus effectively addressing backwater areas and small tributaries in sea lamprey producing streams. These backwater areas often contain large numbers of sea lampreys that escape the primary treatment. Finally, control agents increased concentrations of TFM. This provided more lethal exposure to sea lampreys.

In addition to the above changes, sea lamprey control efforts were increased on the Manistique River; because of its large size, it is one of the most difficult tributaries to treat in the Great Lakes. The Manistique barrier – constructed decades ago – failed to block sea lampreys in recent years, making the river the largest producer of sea lamprey in the Great Lakes. Because of this, the Manistique has been treated three times during the previous 5 years with successful results in reducing sea lamprey populations.

Lampricide is a crucial weapon in the fight against sea lamprey. U.S. Fish and Wildlife personnel (left) monitor a TFM application for the appropriate lampricide concentration.

Sea lampreys attach to fish with a suction cup mouth ringed with sharp teeth; they bore a hole through the fish and feed on the fish's blood and body fluids. A sea lamprey may destroy up to 40 pounds of Great Lakes fish.

A variety of methods are used to control sea lamprey populations. Low-head barrier dams, like this one, prevent sea lampreys from migrating upstream to spawning habitat. These barriers remove about 14% of sea lamprey spawning habitat from the Great Lakes basin.

PHOTOS: T. LAWRENCE, GLFC

The complete report, *Integrated Management of Sea Lampreys in the Great Lakes 2007,* is available on the GLFC Annual Report home page, www.glfc.org/pubs_out/annualreports.php

The Great Lakes Fishery Commission directs and supports a binational science program based upon two broad priorities: research in support of healthy Great Lakes fisheries and research in support of sea lamprey control. Additionally, the commission directs and supports projects designed to transfer science to managers.

PHOTO: T. LAWRENCE, GLFC

Science

The commission, based on recommendations from its scientific and expert advisory bodies, approved the following research projects in 2007:

Fishery Research

- Evolution of trophic linkages in an invaded food web
- The reproductive cycle of Lake Superior siscowet lake trout
- Life history differentiation between deep-water and shallow-water forms of lake trout in large lakes of North America
- Food web dynamics and Thiamine Deficiency Complex: Identifying trophic pathways
- Aquatic protected areas in the Great Lakes: Inventory, evaluation, and gap analysis
- Understanding life history and ecology to support the management and conservation of migratory brook trout in Lake Superior
- Chinook salmon stock composition in Lake Huron: Using otolith microchemistry as a natural marker of stream origin
- Evaluation of *Mysis relicta* as a keystone species in native fish communities of the Great Lakes
- Experimental and spatial modeling of environmental factors affecting foraging success of age-0 yellow perch
- Assessment of otolith chemistry as an indicator of fish movement or transfer between the Illinois River system and Lake Michigan

Sea Lamprey Research

- Estimating the relationship between sea lamprey-induced mortality on lake trout and observed marking rates
- Mode(s) of lampricide toxicity in larval lampreys and non-target fishes
- Identifying the most effective mixtures for use of the sea lamprey migratory pheromone in trapping and redistribution management scenarios
- Sex pheromone communication in sea lamprey
- Effectiveness of sterile-female release in reducing sea lamprey reproduction in a Great Lakes tributary
- Determining the concentration of transformers from lentic areas to sea lamprey populations in lakes Huron and Michigan
- An investigation of a potential morphotype trigger in two *Ichthyomyzon* species
- Improving the effectiveness of portable sea lamprey traps

Science Transfer

- FishMAP online: A web application supporting science-based decisions concerning fish movement and passage
- GIS database, synopsis and atlas of the parasites of Great Lakes fishes

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

Partnerships

In 2007, fishery management agencies from around the Great Lakes basin continued to work closely together through the highly cooperative *A Joint Strategic Plan for Management of Great Lakes Fisheries.* Under this plan, agency personnel met frequently to come to consensus on fishery goals and to decide on ways to implement shared objectives.

The **Great Lakes Fish Health Committee** (FHC) and the **Council of Lake Committees** (CLC) continued to address viral hemorrhagic septicemia, a fish disease that first emerged last year and has been implicated in large fish kills in lakes Ontario, Erie, and St. Clair. The FHC provided a list of recommendations designed to contain and slow the spread of the pathogen to provide time to protect key broodstocks, prepare for the pathogen's spread, and allow additional research on susceptibility and transmission. The CLC directed the FHC to develop a basin-wide protocol for disinfecting cool-water fish eggs.

The CLC expressed concern that the Ontario Ministry of Natural Resources' (OMNR) aging fleet of research vessels may impede the ability to monitor ecosystem and fish community changes in the Great Lakes. The ministry's eight large vessels are crucial to the delivery of fisheries assessment and research. The purchase of viable vessels will help eliminate inefficiencies in data collection and will decrease maintenance costs for the OMNR.

The CLC nominated Steve LaPan to represent the committee in an expert workshop on developing a regional double-crested cormorant management plan. The proposed approach will be proactive, have geographic linkages, and include both wildlife and fisheries. The approach includes rationale, goal and objective development, guidance for assessment and monitoring, best management practices, and coordination strategies. Attendees will include the Mississippi and Atlantic Flyway Councils and an Ontario wildlife representative, in addition to the CLC.

Viral hemorrhagic septicemia (VHS) is an exotic infectious viral disease originally found in the Atlantic and Pacific Oceans. Numerous fish kills have been attributed to VHS on the Great Lakes since 2005, appearing to be an invasive freshwater strain of the once salt water disease. PHOTO: USGS

The **Task Group to Evaluate Benefits and Risks of Fish Transfers** proposed to develop a process aimed at examining the ecosystem costs (including costs to agencies) and risks, and weigh them against expected benefits associated with transfers of fish within the Great Lakes basin. The group of experts will operationalize a decision framework that will guide the development of dependable recommendations to the CLC regarding fish transfers. The core task group will include an epidemiologist, a fish pathologist, a CLC member, a Task Force of Technical Committee Chairpersons member, a decision analyst, a population dynamics specialist, a population geneticist, a fisheries economist, and commission support. Additional experts will be included when considering a specific transfer.

Detailed executive summaries of Lake Committee meetings are provided online under each Lake Committee's "publications and products" section. (www.glfc.org/lakecom.php)

Budget

The commission received the following contributions from the governments of the United States and Canada (shown in U.S. dollars) for 2007:

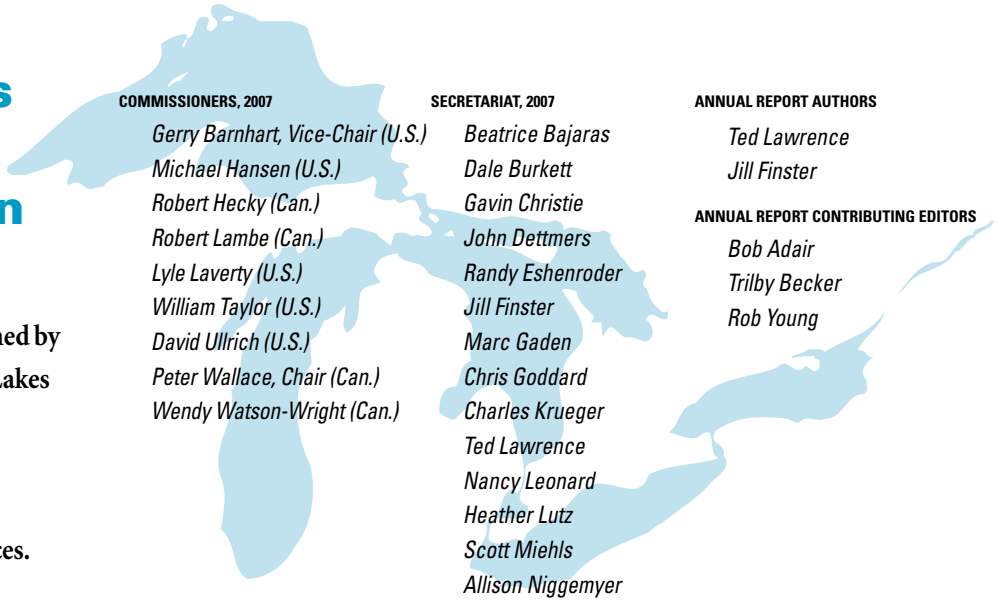
	U.S.	CANADA	TOTAL
Sea Lamprey Control and Research	$12,447,550*	$ 5,533,550	$ 17,981,100
Research, Committee and Scientific Support, and Administration	$ 1,938,150	$ 1,796,150	$ 3,734,300
TOTAL	**$14,385,700**	**$ 7,329,700**	**$ 21,715,400**

* Includes $200,000 for Lake Champlain

The commission's U.S. and Canadian trust funds received donations from the Reuss and Makauskas families, and members of the commission secretariat.

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 | DEPARTMENT OF FISHERIES & OCEANS CANADA | U.S. FISH AND WILDLIFE SERVICE | U.S. GEOLOGICAL SURVEY | U.S. ARMY CORPS OF ENGINEERS

Awards and Honors

The commission is honored to recognize people whose contributions have made a difference in protecting and improving the Great Lakes' resources. This year the Great Lakes Fishery Commission was proud to present awards to:

Ms. Jean Adams, United States Geological Survey, with the Vern Applegate Award for Outstanding Contributions to Sea Lamprey Control. Adams was presented this award by Commissioner Mike Hansen in recognition of her exemplary dedication to the control program through her essential and unprecedented evaluation of the effectiveness and efficiency of sea lamprey control.

Dr. John Cooley, Department of Fisheries and Oceans Canada (ret.), with the Buzz Besadny Award for Fostering Great Lakes Partnerships. Cooley was presented this award by Commissioner Wendy Watson-Wright for his embodiment of, and commitment to, creating and nurturing partnerships in fisheries management. His promotion and leadership of sound management through partnerships throughout his 30-year career has advanced the protection of the Great Lakes ecosystem and beyond.

Mr. Gary Isbell, State of Ohio, Chief of Fisheries Division (ret.), with the Jack Christie/ Ken Loftus Award for Distinguished Scientific Contributions Toward Understanding Healthy Great Lakes Ecosystems. Commissioner Gerry Barnhart presented the award to Isbell for his extraordinary leadership in creating cooperative processes related to the commission and the Joint Strategic Plan. Isbell has promoted inter-jurisdictional fisheries management and has worked tirelessly to halt introductions of aquatic invasive species into the Great Lakes.

The commission recognized former commissioner **Dr. John Davis** for his important contributions to Great Lakes research and management during his appointment to the commission since 2000. Davis brought extensive experience in policy development and policy implementation. While with the commission, Davis concurrently served as Assistant Deputy Minister for Science and as Regional Director General of the Pacific Region, Department of Fisheries and Oceans.

PHOTO: T. LAWRENCE, GLFC

Seated, l-r: award recipients John Cooley, Jean Adams, Gary Isbell; Standing, l-r: Commissioners Wendy Watson-Wright, Mike Hansen, Gerry Barnhart. PHOTO: D. ARCURI

Secretariat News

Dr. Marc Gaden, Communications Director and Legislative Liaison, completed his PhD from the University of Michigan; his dissertation is entitled "Bridging Jurisdictional Divides: Collective Action through *A Joint Strategic Plan for Management of Great Lakes Fisheries.*"

Jill Finster, Communications and Policy Associate, completed her Master's degree from Michigan State University; her thesis is entitled "Investigating the Introduction of Injurious Species as an Environmental Crime."

Gavin Christie began a two-year assignment with the Ontario Ministry of Natural Resources as the Assessment Supervisor for the Lake Ontario Management Unit.

Great Lakes Fishery Commission

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