

ANNUAL REPORT 2006

From the Chair

Peter Wallace



As 2006 draws to a close, it is with pleasure that I present this annual report, highlighting many successes in conserving the fisheries of the Great Lakes. The commission is proud to partner with the federal, provincial, state, and tribal agencies in this endeavor.

I am pleased to see the continuing evolution of the Council of Lake Committees. The council has played a key role in many critical efforts this year including their work on the U.S. Geological Survey's deep water assessment program, efforts to restore lake trout production at the Allegheny National Fish Hatchery, and the creation of a subcommittee to develop a restoration plan for the American eel. The committee also worked closely with the lake committees to revise the format of the annual Lake Committee meetings. The new format, where all committees meet during the course of a single week, improves basin-wide interactions and facilitates effective science exchange.

Sea lamprey control is, of course, the commission's crucial mission. In 2006, in response to higher than average lamprey abundances, the commission significantly enhanced the control effort by treating more streams than last year with lampricide. In an effort to find new control methods, we enhanced the sea lamprey research program. This year, the National Institute of Health completed the mapping of the sea lamprey genome. This advancement allowed the commission to fund research to investigate weaknesses in the sea lamprey's genetic code and how these weaknesses can be exploited for control purposes. The commission and its

Strengthening the Partnership Approach to Great Lakes Fishery Management



GLFC Executive Secretary, Chris Goddard (L), welcomes new Commissioner, David Ullrich, at the commission's 51st annual meeting in Traverse City, Michigan. PHOTO: T. LAWRENCE, GLFC

partners continue to work to determine how to best use pheromones in the control of sea lamprey, to develop methods to synthesize and manufacture sea lamprey pheromones, and to ascertain the chemical structure of the migratory pheromones with Pfizer and Michigan State University.

Finally, I would like to take this opportunity to welcome two people to the commission family. David Ullrich, Director of the Great Lakes and St. Lawrence Cities Initiative, was appointed as a Commissioner by President Bush in April of this year. In addition, the commission partnered with the Illinois Natural History Survey to bring Dr. John Dettmers to the secretariat as a Senior Fishery Biologist. The commission thanks its partners for their commitment to the Great Lakes and for their hard work in 2006. ≈

PHOTO: T. LAWRENCE, GLFC



Sea Lamprey Control

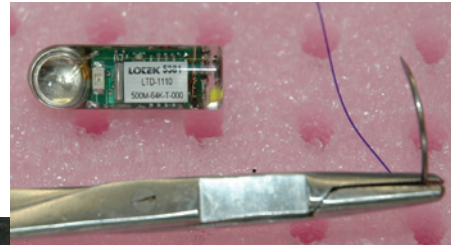
The Department of Fisheries and Oceans Canada and the U.S. Fish and Wildlife Service jointly conduct sea lamprey control operations on the Great Lakes. For each of the lakes, sea lamprey populations are evaluated relative to fish community objectives and the commission, in turn, bases its sea lamprey management decisions on these crucial reports.

During 2006, the Department of Fisheries and Oceans Canada and the U.S. Fish and Wildlife Service:

- conducted lampricide treatments on 70 tributaries;
- surveyed 331 Great Lakes tributaries and 45 lentic areas to assess control effectiveness and plan future TFM treatments; and,
- operated assessment traps at 69 sites in 66 tributaries to estimate spawning-phase populations.

All known and potential sources of sea lampreys have been surveyed in the last two years. Treatments have been increased on known sources, with treatments on Lake Superior at the highest level in 20 years. Despite an overall decrease in observed lamprey populations between 2004 and 2005, Lake Michigan observed a significant increase in 2006. Marking rates have trended upward over the past 10 years; however, marking rates may be affected by the decreased abundance of lake trout, as well as the increased abundance of sea lamprey. Lake Huron also saw a rise in the sea lamprey population, though wounding rates on lake trout have declined during the same period. Successful efforts continue on the St. Marys River and population and marking rates have declined overall since 2001. Precision of the 2006 population estimates was greatly improved on Lake Erie due to successful operation of the Big Creek barrier and trap. Lamprey abundance, however, was observed to be significantly higher than the 2006 target, and marking rates have increased significantly since 2005. In Lake Ontario, recent increases in lamprey abundance suggest that more sea lampreys are surviving treatments, though Lake Ontario remains within target levels.

While the effects of lamprey have been known for more than half a century, the characteristics and behavior of adult lamprey largely remain a mystery. The commission is sponsoring research that records the depth and temperature of tagged adult lamprey to gain a better understanding of lampreys' role in the lake during their adult phase, the specific effects they have on fish behavior, and the extent of the damage they cause to the fish community.



To investigate sea lamprey behavior, researchers at the Hammond Bay Biological Station are implanting technologically advanced tags that record data in real-time. This data will be used by scientists and managers to refine current tactics to effectively control lamprey populations. PHOTO: T. LAWRENCE, GLFC



PHOTO: NYSDEC

The complete report, *Integrated Management of Sea Lampreys in the Great Lakes 2006*, 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 bi-national research program in support of healthy Great Lakes ecosystems. The commission's research programs and themes are shaped and defined by the *Strategic Vision of the Great Lakes Fishery Commission for the First Decade of the New Millennium*, fish community objectives, and *A Joint Strategic Plan for Management of Great Lakes Fisheries*.

To achieve its research objectives, the commission uses a comprehensive advisory body made up of the Board of Technical Experts, the Sea Lamprey Integration Committee, the Sea Lamprey Research Board, the Council of Lake Committees, lake committees and their technical committees, the Law Enforcement Committee, and the Great Lakes Fish Health Committee.

Fishery Management, Research, and Environment

Based on recommendations from these committees, the commission approved the following research projects in 2006:

Fishery Research Program

- Bioaccumulation of Microcystin in the Bay of Quinte food web
- Lake herring recruitment dynamics in Lake Superior
- River discharge as a predictor of Lake Erie yellow perch recruitment
- Test of pheromone traps to capture the invasive round goby
- Assessment of the population genetic structure of lake sturgeon
- How pelagic and benthic food-web shifts affect availability of polyunsaturated fatty acids to lake trout; implications for early life stages survival

Round goby predation on smallmouth bass nests has caused great concern among Great Lakes fishery biologists.

New research, focused on using pheromones to control round goby populations, hopefully will provide insight for the development of a new control strategy.

PHOTO: D. JUDE,
UNIVERSITY OF MICHIGAN

Sea Lamprey Research Program

- Sea lamprey population dynamics: Updating demographic models and application to a novel control strategy
- Using sea lamprey genome information to identify new research priorities and control opportunities
- Phase I development of an improved sea lamprey barrier
- Identifying the movement rules sea lamprey use to navigate complex flows
- Do static and flow-through toxicity tests yield the same toxicity information?
- Effect of groundwater inflow on distribution of lampricide and on survival of sea lamprey larvae during a stream treatment

Barriers continue to be an effective alternative to lampricide treatments. Barriers allow for reduced TFM costs and serve as trapping locations.

PHOTO: T. LAWRENCE, GLFC

Science Transfer Program

- Contract expertise for the development of a mass fish marking implementation plan for the Great Lakes
- Funding for the Center of Excellence for the Quantitative Fisheries Science

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

Partnerships



Through the Deepwater Science Program, the USGS conducts trawl surveys in each lake. Fishery biologists use the survey data in their management decisions. PHOTO: USGS

The Council of Lake Committees, comprising senior representatives from provincial, state, and tribal agencies addressed an array of topics this year. For instance, the council:

- Continued to support the **United States Geological Survey (USGS) Large Vessel Research Program**, which provides crucial data on fish species and ecosystem health.
- Worked with Congress to reauthorize the **Great Lakes Fish and Wildlife Restoration Act**. This Act provides money for regional ecosystem rehabilitation projects throughout the Great Lakes.
- Set basin-wide priorities for the **Quantitative Fisheries Center** to provide the Great Lakes with quantitative technical support in fisheries management.
- Established the **American Eel Task Group** to develop a conservation strategy for this species.

The lake committees had an equally productive year. For example:

- The **Lake Ontario Committee** initiated the development of a deepwater cisco restoration plan, discussed the need for coordinated management of cormorants, and began efforts to develop an Atlantic salmon management plan.
- The **Lake Erie Committee** held a workshop with the Quantitative Fisheries Center to address gaps in population estimation models.
- The **Lake Huron Committee** solicited final comments on Lake Huron Environmental Objectives. The

committee also discussed the development of fish community objectives for the St. Mary's River and accepted terms of reference for the Sturgeon Task Group.

- The **Lake Superior Committee** prepared for the upcoming State of the Lake Conference in 2007 and discussed opportunities to partner with other agencies that focus on research and restoration in Lake Superior.
- The **Lake Michigan Committee** made the development of Lake Michigan Environmental Objectives a priority and discussed the development of an implementation plan for its Lake Trout Rehabilitation Plan.

The **Law Enforcement Committee** formed an Intelligence Sharing Subcommittee to explore options for facilitating the exchange of information and intelligence among Great Lakes jurisdictions.

The increase in sea lamprey populations was a major concern expressed by the **Committee of Advisors** and the committee urged the commission to continue their aggressive sea lamprey control efforts. In addition, advisors passed a resolution urging the commission to establish a collaborative approach to address



Addressing increasing sea lamprey populations is the top priority of the commission. Through increased treatments, dedication to alternative control techniques, and a strengthened commitment to innovative, control-focused research, the commission is confident that sea lamprey populations will be reduced.

PHOTO: M. GADEN, GLFC AND R. BERGSTEDT, USGS

Detailed executive summaries for each committee can be accessed on the commission's website:
www.glfc.org/lakecom.php and
www.glfc.org/aboutus/brief.php#usadvisors

Budget

The commission received the following contributions from the governments of the United States and Canada (shown in U.S. dollars) for 2006:

	U.S.	CANADA	TOTAL
Sea Lamprey Management and Research	\$12,883,900*	\$ 5,473,100	\$ 18,357,000
General Research, Committee and Scientific Support, and Administration	\$ 1,793,100	\$ 1,654,100	\$ 3,447,200
TOTAL	\$14,677,000	\$ 7,127,200	\$ 21,804,200

* Includes \$491,300 for Lake Champlain

The commission's U.S. and Canadian trust funds received donations from Dick and Mary Reuss, 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.

COMMISSIONERS, 2006

Gerry Barnhart, Chair (U.S.)
John Davis (Can.)
Bernie Hansen (U.S.)
Michael Hansen (U.S.)
Robert Hecky (Can.)
Craig Manson (U.S.)
Bill Taylor (U.S.)
Peter Wallace,
Vice-Chair (Can.)
Wendy Watson-Wright (Can.)

SECRETARIAT, 2006

Dale Burkett
Gavin Christie
Matt Engel
Randy Eshenroder
Jill Finster
Marc Gaden
Chris Goddard
Charles Krueger
Ted Lawrence
Nancy Leonard
Pat Lewis
Heather Lutz
Allison Niggemyer
Barb Staples
Sean Wofford
Hao Zhuang

ANNUAL REPORT CONTRIBUTING EDITORS

Robert Adair
Jill Finster
Ted Lawrence
Rob Young



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

In 2006, the Great Lakes Fishery Commission recognized six people whose contributions to protecting the Great Lakes were particularly noteworthy.



Mr. Phil Ryan, Ontario Ministry of Natural Resources (ret.), received the Jack Christie/Ken Loftus Award for Distinguished Contributions to Healthy Great Lakes Ecosystems. The award was presented to Phil for his scientific leadership in strengthening the ecosystem approach to science and fishery management, and for innovative contributions to Great Lakes fishery research and assessment.

Mr. Richard Gurnoe (deceased) and **Mr. Henry Buffalo Sr.** (deceased), Great Lakes Indian Fish and Wildlife Commission, were presented the Buzz Besadny Award for Fostering Great Lakes Partnerships. Richard and Henry were honored for developing a lasting, positive relationship between the tribes and Great Lakes state fishery managers and for leadership in fostering tribal participation in *A Joint Strategic Plan for Management of Great Lakes Fisheries*. The families of Richard and Henry attended the ceremonies, accepted the awards, and participated in the commission's annual meeting on behalf of these leaders.



David Haight (R) and **Jerome Keen**, Dept. of Fisheries and Oceans Canada, and **Joe Genovese (L)**, U.S. Fish and Wildlife Service, received the Vern Applegate Award for Outstanding Contributions to Sea Lamprey Control. David, Jerome, and Joe were presented this award for enhancing the profile of the sea lamprey control program and for tireless efforts in performing effective outreach. David, Jerome, and Joe were also commended for their innovation in developing, constructing, and promoting the sea lamprey exhibit. Also pictured is commissioner Wendy Watson-Wright.



The commission honored past commissioners **Bernie Hansen (L)** and **Craig Manson (R)**. Bernie, on Wednesday, November 15, 2006, was recognized in the United States Congressional Record by U.S. Representative Mark Kirk of Illinois for his outstanding service as a member of the commission and his tireless efforts to protect



the Great Lakes fishery. Craig, who served as Assistant Secretary for Fish, Wildlife, and Parks in the Department of Interior, was recognized for his extensive experience in policy development and implementation, and working knowledge of the U.S. government, all of which greatly benefited the resource and the sea lamprey control program during his tenure.

Great Lakes Fishery Commission

2100 Commonwealth Blvd., Suite 100
Ann Arbor, MI 48105
www.glfc.org

