

ANNUAL REPORT 2005

From the Chair

Gerry Barnhart



1955–2005: Celebrating 50 Years of Great Lakes Stewardship

The Great Lakes Fishery Commission emerged fifty years ago out of crisis. Sea lampreys had invaded the Great Lakes, decimated the fishery, and convinced the Canadian and U.S. governments to establish a permanent working relationship. Determination, leadership, and innovative approaches in science and management have shaped the commission into what it is today.

The commission, during its annual meeting this year, celebrated its 50th anniversary. Far from where we were a half-century ago, the Great Lakes currently support some of the most successfully managed freshwater fisheries in the world.

Since the commission's founding, sea lamprey populations have been reduced by 90% from their historic highs in many areas through tested and refined control techniques. Moreover, the commission has invested in cutting-edge research to develop and use new control methods. In 2005, the development of migratory and mating pheromones as a control technique entered the field-trial-stage; their use could change the way sea lampreys are managed.

The commission has sought to create new partnerships wherever possible. The lake committees, for instance, which were established in 1964, were improved in 1981 with the signing of *A Joint Strategic Plan for Management of Great Lakes Fisheries*, and continue to lead multi-jurisdictional cooperation. The commission views the lake committee process as one of the crowning achievements in the basin and congratulates the jurisdictions for their continued commitment to the Joint Strategic Plan.



The Great Lakes Regional Collaboration: A Strategy to Protect and Restore the Great Lakes is the product of a year-long intensive effort by hundreds of Great Lakes partners. The collaboration was established through presidential executive order and aided in advancing the ongoing efforts of Great Lakes entities already conducting research and management to enhance Great Lakes health.

Today, a new basin-wide restoration effort is underway. The Great Lakes Regional Collaboration was

convened to develop an action plan for Great Lakes restoration. Based on top environmental priorities, eight issue-area strategy teams were established, including the Aquatic Invasive Species Strategy Team, which the commission co-chaired. The effort has produced true collaboration and a plan for restoration; the commission hopes this initiative will continue.

The commission and the Lake Champlain Fish and Wildlife Cooperative strengthened their relationship in 2005 by signing a Memorandum of Understanding. Through this memorandum, both organizations pledge to share expertise and research, which will improve sea lamprey control in both basins.

I was honored to be chair during the commission's 50th Anniversary celebration. I used the occasion to recognize and thank all those who have been a part of the commission family. Through collaboration and commitment to cutting edge research, we will continue to address old threats and be ready to take on the challenges of the 21st Century. ≈



Lake Champlain is a long, narrow lake that lies between New York and Vermont, extending northward into Quebec. The signing of the memorandum between the GLFC and the Lake Champlain Cooperative marks a new era in management on Lake Champlain. Biologists and managers from both regions work closely together to increase the application of current control methods, as well as to promote new research for future control efforts.

PHOTO: GLFC

Sea Lamprey Control

In 2005, following the objectives of the *Strategic Vision for the First Decade of the New Millennium*, lake committees developed Fish Community Objectives that establish acceptable levels of sea lamprey induced mortality for lake trout and other salmonids. In 2005, the Department of Fisheries and Oceans Canada and the U.S. Fish and Wildlife Service jointly:

- conducted lampricide treatments on 67 streams;
- surveyed 337 Great Lakes tributaries and 33 lentic areas to assess control effectiveness and plan future TFM treatments; and,
- operated assessment traps on 68 tributaries to estimate spawning-phase populations.

Alternative control programs are a vital component of the sea lamprey control effort. In the St. Marys River, one of the largest contributors of parasitic lamprey, more than 30,000 sterile males were released and more than 8,000 spawning-phase lampreys were trapped. Due to a lack of funding this year, the barrier program, carried out in cooperation with the Army Corps of Engineers, had to put all current construction projects on hold. The 69 barriers already in the network restricted access to more than 14% of prime larval habitat.

Due to increasing lamprey abundance and wounding rates in Lake Superior, streams received more treatments in 2005 than in any of the previous 20 years. Abundance decreased by 50% in Lake Michigan and the fish community objectives were met, despite increased wounding

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. The average lamprey will destroy up to 40 pounds of Great Lakes fish. Biologists classify wounds based upon the initial severity of the attack and the degree of healing that has occurred.

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



This year, the commission celebrated the remarkable recovery of a fishery once destroyed by this invasive pest. The use of TFM and barriers has always been crucial in the fight against sea lamprey. During the past 50 years, the commission and its partners have increased the efficacy of both control mechanisms, while adding new and innovative techniques and research to battle these damaging invaders.

PHOTOS: GLFC



rates on lake trout. A revised sturgeon protocol, to reduce the risk of larvae lamprey surviving treatments, was agreed upon by the states of Michigan and Wisconsin for Lake Michigan stream treatments. Both abundance and wounding rates are declining in Lake Huron due, in part, to the implementation of the aggressive St. Marys River Treatment Strategy. While the fish community objective of fewer than 5 marks per 100 fish was met in both Lakes Erie and Ontario, spawning abundance and wounding rates in Lake Erie are currently above target. In contrast, Lake Ontario spawning populations remain near target. Overall, lake trout mortality attributable to sea lamprey is estimated at 12%.

The complete report, *Integrated Management of Sea Lampreys in the Great Lakes 2005*, is available on the GLFC Annual Report home page [www.glfrc.org/pubs_out/annualreports.php]

Fishery Management, Research, and Environment

The Convention on Great Lakes Fisheries directs the commission to formulate and implement a comprehensive research program designed to determine the measures necessary to facilitate the maximum sustained productivity of any stock of fish in the Great Lakes region. To achieve this objective, the commission uses a comprehensive advisory body made-up of the Great Lakes Fishery Commission's Board of Technical Experts, the Sea Lamprey Research Board, the Sea Lamprey Integration Committee, the Council of Lake Committees, Lake Committees and their technical committees, the Law Enforcement Committee, and the Great Lakes Fish Health Committee.

Based on recommendations from these committees, the commission approved the following research projects in 2005:

Fishery Research Program

- Effects of exotic species on the potential for Lake Ontario to support a re-introduced bloater population
- Comparative genetic and phenotypic analysis of lake trout morphotypes in representative North American lakes: Great Bear Lake, Great Slave Lake, Lake Nipigon, and Lake Superior
- Conservation genetics of deepwater sculpin in the Great Lakes
- Collecting angler behavior data from Great Lakes creel surveys
- Impacts of multiple stressors on Lake Huron fish communities, 1970-2004
- Genetic stock structure of lake whitefish in northern Lake Michigan and Green Bay
- Development of an improved medium for primary isolation of *Flavobacterium psychrophilum*, cause of Bacterial Coldwater Disease

Sea Lamprey Research Program

- Sex steroid control reproduction in the sea lamprey
- Inter-stream movements of sea lampreys and selected non-target fisheries in response to sea lamprey barriers
- Evaluation of modification to improve fishway performance
- Host-size selection and lethality of sea lamprey on lake sturgeon
- Quantitative tools to predict sea lamprey production based on habitat: prioritizing dam removal and control decisions
- Tracking transformation of low-density populations of larval sea lamprey in tributary streams to Lake Huron and Michigan following treatment with lampricides
- The regulation of pheromonally activated movement in sea lampreys and in native lamprey species

Coordination Activities Program

- White paper on managing proposals for physically altering lakebed habitat



Lake trout are top predators native to all five of the Great Lakes. With the exception of Lake Superior, deep-water lake trout are now extirpated in the Laurentian Great Lakes. Three Canadian lakes—Great Slave Lake, Great Bear Lake, and Lake Mistassini—are comparable in many respects to the Laurentian Great Lakes and, due to their less disturbed nature, provide a basis for understanding the characteristics of healthy lake trout communities.

PHOTO: C. KRUEGER, GLFC

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

Partnerships

**Kurt Newman,
Council of Lake Committees Chair**

The Council of Lake Committees – collaborating with partner agencies and lake committees – is the principal institutional vehicle for cooperative fisheries management within the Great Lakes basin. A pressing topic of concern for the council this year was the Allegheny National Fish Hatchery. A power outage resulted in the loss of 45% of the lake trout at the hatchery and Infectious Pancreatic Necrosis virus (IPN) was discovered at a facility that provides fish to Allegheny. The council, with its partners, mobilized immediately to replace the lost fish and ensure that IPN had not spread to the hatchery. In addition, the mass marking initiative continues to gain momentum as options for funding and implementation are developed.

Lake committees continued to urge for a proactive response to the looming threat of Asian carp; development of economic loss estimates, should Asian carp enter the Great Lakes, are underway. Further, given the upward trend in lamprey wounding rates in the upper lakes, the Lake Huron, Superior and Michigan Committees approved a proposal to sterilize Lake Ontario lamprey for release into the St. Marys River.

Lake trout rehabilitation efforts in Lake Huron continue despite the cessation of lake trout pulse stocking. Further, the Lake Huron Technical Committee proposed a Lake Herring Recovery Plan. Efforts by the Lake Erie Committee are ongoing to develop the Walleye Management Plan. In addition, increased streamside



ASIAN CARP

Should Asian carp enter the basin, scientists believe they could cause irreversible damage to fish communities, due to their explosive population and voracious eating habits. Asian carp are particularly troubling in that they quickly grow to very large sizes. An Asian carp is capable of eating 40% of its body weight each day. Bighead and silver carp consume large amounts of plankton, stripping the food web of the key source of food for small and big fish.

PHOTOS: T. LAWRENCE, GLFC



SILVER CARP

The commission is currently exploring a new technology to mark hatchery-reared trout and salmon stocked into the Great Lakes. The mass-marking device is capable of coded-wire tagging and adipose clipping between 3,000 and 5,000 hatchery fish per hour. This technology has the potential to significantly advance fishery management and hatchery operations in the future.

PHOTO: M. GADEN, GLFC



stocking of lake sturgeon under the Wisconsin Sturgeon Restoration Plan was endorsed by the Lake Michigan Committee.

The Law Enforcement Committee received the council's approval for the Officer Exchange Program Terms of Reference and was encouraged to continue to direct their efforts at resolving the issue of firearm use by U.S. officers in Canada and vice-versa. The Great Lakes Fish Health Committee discussed the need to develop a policy for egg collection that would permit moving ciscoes and lake chubs between lakes and hatcheries.

The Committee of Advisors urged the commission to continue its aggressive sea lamprey control efforts. In addition, advisors passed a resolution requesting that the commission collaborate with the International Association of Fish and Wildlife Agencies to address cormorant impacts on Great Lakes' fisheries.

Detailed executive summaries are provided online [www.glfc.org/lakecom.php] under the "publications and products" section of each committee.



The Great Lakes Law Enforcement Committee sponsored a workshop to provide training to enforcement personnel and fishery biologists on identification of Asian carp and snakeheads. Black, silver, bighead and grass carp, as well as a number of native species that bear similar characteristics to the Asian carp, were available for officers to examine.

PHOTO: J. FINSTER, GLFC

Budget

The commission received the following contributions from the governments of Canada and the United States (shown in U.S. dollars) for 2005:

	U.S.	CANADA	TOTAL
Sea Lamprey Management and Research	\$11,057,350*	\$ 4,234,250	\$ 15,291,600
General Research, Committee and Scientific Support, and Administration	\$ 1,733,450	\$ 1,598,450	\$ 3,331,900
TOTAL	\$12,790,800	\$ 5,832,700	\$ 18,623,500

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.



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Awards and Honors

Each year, the commission recognizes the efforts of, and honors, individuals who have made outstanding contributions to the Great Lakes. This year the commission was pleased to honor:



Dr. Ed Mills, Cornell University, with the Jack Christie/Ken Loftus Award for Distinguished Contributions to Healthy Great Lakes Ecosystems. The award was presented to Ed (R) by Commissioner Mike Hansen, for his outstanding scientific leadership and for strengthening the ecosystem approach to science and fisheries management.



John Heinrich, U.S. Fish and Wildlife Service (ret.), recipient of the Vern Applegate Award for Outstanding Contributions to Sea Lamprey Control. John (R) was presented this award, by Commissioner John Davis, for his outstanding leadership in the sea lamprey control program and for providing original contributions to the adult and larval assessment programs and the sterile-male-release-technique.



Allegra Cangelosi, Northeast-Midwest Institute, and **Joy Mulinex**, Great Lakes Task Force Director, with the Buzz Besadny Award for Fostering Great Lakes Partnerships. Allegra (L) and Joy (not pictured) were honored for their tireless and innovative efforts to build Congressional partnerships and for inspiring ongoing agency and congressional interest to protect and improve the Great Lakes. Also pictured, Marc Gaden, GLFC.

The commission, in 2005, also honored past Commissioners (L-R) **Bill Beamish**, **Ray Pierce** and **Roy Stein**. Beamish, a commissioner for 15 years, was commended for his pivotal role in the development of sea lamprey science and in the transfer of that science into action. Pierce, Regional Director General of Fisheries and Oceans Canada, was applauded for being a champion of the commission within the Canadian federal government. Stein was praised for being a strong, statesman-like force in facilitating agency collaboration during his six years as a commissioner.



Great Lakes Fishery Commission

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