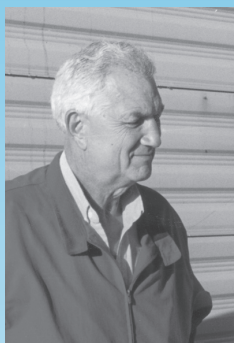


# Annual Report

of the  
**Great Lakes  
Fishery  
Commission**



## Partnerships and Collaboration Are the Keys to a Successful Ecosystem



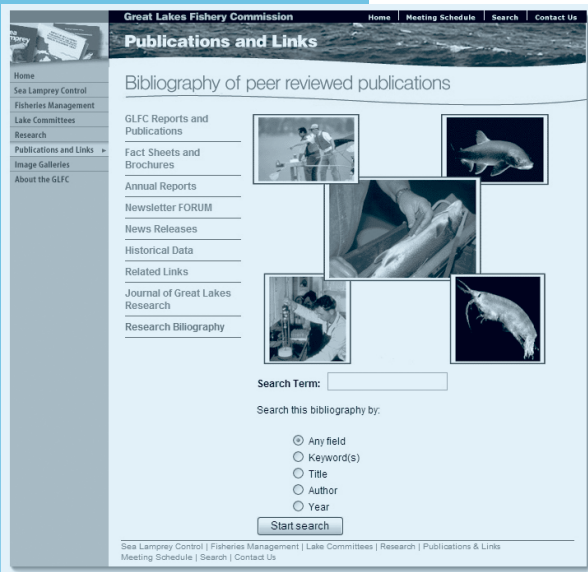
*From the Chair*  
**Bill Beamish**

**ONE OF THE BIGGEST CHALLENGES** of effective ecosystem management is building and maintaining collaborative partnerships. The benefits are significant. The commission strives to gain new knowledge from experts in the field, work with diverse interests, and analyze alternative approaches to managing the fishery. This ecosystem-based approach to resource management transcends geographical, political, and organizational boundaries.

This past year, a number of efforts were made to deliver the commission's sea lamprey control program more effectively. The commission carried out an external strategic review of the larval assessment program. This annual assessment effort determines the abundance of sea lamprey larvae and thus prescribes the amount of treatment needed on Great Lakes streams. The review provided the commission with extremely useful and candid recommendations about how this element of the program can be improved. Additionally, the commission signed a ground-breaking memorandum with the State of Michigan and the U.S. Fish and Wildlife Service for cooperative construction, operation and maintenance of sea lamprey barriers in Michigan streams. Further, the commission continued its successful partnership with the U.S. Army Corps of Engineers for barrier design and construction. Through these partnerships, the combination of expertise and resources will allow a more effective delivery of sea lamprey control.

Our success in working toward a healthy ecosystem, developing solid partnerships, and providing sea lamprey control would not be possible without adequate funding, an ongoing challenge. This past year, the commission continued to receive strong support from both the U.S. and Canada. The Canadian Standing Committee on Fisheries and Oceans recently released a report that called for Canada to guarantee stable, long-term funding for the commission's sea lamprey control program. On the U.S. side, the commission has received funding increases over the past several years. This year, the Administration maintained those increases in the federal budget; \$10.8 million was allocated for the commission's program. We are also pleased that the U.S. Fish and Wildlife Service re-structured its operations to apply more resources to the sea lamprey program.





Great Lakes Fishery Commission's Research Bibliography, available on the GLFC website, [www.glf.org](http://www.glf.org), is a compilation of peer-reviewed research publications supported by the commission. The commission has a long history of publication of its sponsored research and supporting scientific symposia to improve understanding of the Great Lakes and the fisheries they support. Image: GLFC

I would like to take a moment to highlight a number of notable achievements that the commission secretariat and its partners accomplished this year. The first is the compilation of a research bibliography that documents peer-reviewed research publications that the Great Lakes Fishery Commission has funded since its formation in 1955. The bibliography currently has more than 700 citations and is available on the commission's website ([www.glf.org/pubs\\_out/bibliography.php](http://www.glf.org/pubs_out/bibliography.php)) as a living, searchable resource. Secondly, the commission joined with the jurisdictions within the Great Lakes basin in an effort to prevent the invasion of the Asian carp. The commission has been working extensively with the states and the province to develop and promulgate legislation to ban the importation, possession, transportation, purchase, sale, release and exportation of live Asian carp. Thirdly, the commission proudly acknowledges the publication of the Sea Lamprey International

Symposium II (SLIS II) in the *Journal of Great Lakes Research*. SLIS II is an invaluable compilation of research on sea lamprey history, biology, and control techniques. Lastly, the commissioners and secretariat were delighted to congratulate Dr. Chris Goddard, the commission's executive secretary, on receiving Michigan State University's Distinguished Service Award, an extremely high honor presented by the president of the university.



GLFC executive secretary Chris Goddard was presented with MSU's Distinguished Service Award. His wife, Kathy, joins him at the ceremony.

I look at this year's accomplishments and I am greatly encouraged by the successes we share with the province, states, tribes and stakeholders. The commission's mission was re-mapped in 2000 in the *Strategic Vision for the First Decade of the New Millennium*, and we are well on our way to reaching the milestones set forth in the vision. The commission and its partners are not afraid of change nor challenge, and meet both with innovative and alternative approaches, always with the health of the ecosystem as a whole in mind.

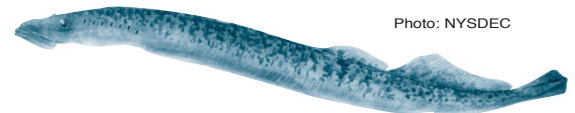


Photo: NYSDEC

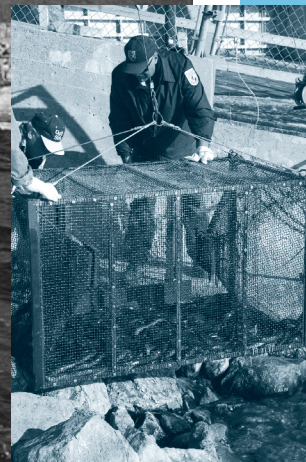
## SEA LAMPREY CONTROL

Sea lamprey control in the Great Lakes is a crucial component of fishery management. Consistent with the *Convention on Great Lakes Fisheries* and the *Strategic Vision for the First Decade of the New Millennium*, the commission collaborates with the Department of Fisheries and Oceans Canada and the U.S. Fish and Wildlife Service to control sea lamprey populations. The commission strives to strengthen existing relationships and forge new partnerships to broaden the wealth of expertise, understanding, and resources to reduce sea lamprey populations.

In 2003, an innovative partnership for the design and construction of sea lamprey barriers, between the Great Lakes Fishery Commission and the Army Corps of Engineers, continued. By combining proven methods of control with new, alternative techniques, the commission is ushering in a new era of sea lamprey control to protect and improve the Great Lakes ecosystem and fishery.

The two agencies charged with implementing the sea lamprey program—DFO and USFWS—in 2003 jointly:

- treated 62 tributaries with lampricide;
- surveyed 361 Great Lakes tributaries, inland lakes and lentic areas to assess control effectiveness, estimate production capacity of streams and plan future TFM treatments; and
- operated assessment traps in 83 tributaries to estimate the population of spawning-phase lampreys in each Great Lake.



Sea lamprey traps, Cheboygan, MI. Trapping is an integral part of the sea lamprey control program. Using the number of lampreys captured, agents are able to estimate the number of spawning lamprey each year. Photos: M. Gaden

Sea lamprey population assessment in relation to fish community objectives continued for each of the Great Lakes. Sea lamprey management decisions made by the commission are based upon these crucial reports. In 2003, the fish community objective of fewer than 5 marks per 100 fish was met in Lakes Erie and Ontario. Lake Michigan objectives were generally met despite the continued increase in lamprey wounding rates in the northern waters. In Lake Huron, populations of parasitic lampreys were higher than the target set forth in the fish community objectives, while in the St. Marys River, lake trout wounding rates and sea lamprey induced mortality continued to decline since the commencement of the treatment strategy in 1998. In Lake Superior, sea lamprey abundance accounted for less than 5% of annual lake trout mortality.

**THE BARRIER TASK FORCE** continued coordination among the Department of Fisheries and Oceans, U.S. Fish and Wildlife Service, and the Army Corps of Engineers to plan and construct 21 new barriers. In addition, the task force worked with its partners to operate and maintain 66 existing sea lamprey barriers and ensure blockage of sea lamprey migration at 6 other barriers. The task force also established the Barrier Policy Team to address policy issues related to the barrier program.

**THE ASSESSMENT TASK FORCE** conducted a review of key life history parameters, conducted a stream habitat inventory, developed estimates of the efficacy of chemical and non-chemical treatment options, and evaluated the role of trapping as a control strategy.

**THE LAMPRICIDE CONTROL TASK FORCE** continued revisions on the Standard Operating Procedure Manual. Federal regulations and guidelines on pesticide use including TFM and Bayluscide will be more accurate in the revised manual. The task force also included a section on the use and application of the sea lamprey sterilant Bisazir.

**THE CONNECTING CHANNEL AND LENTIC AREA TASK FORCE** was established in 2003. The task force compiled an inventory of known lentic areas and discussed rapid habitat evaluation processes in lentic areas and connecting channels to determine the extent of control needed. The task force also reported on the updated assessment and control operations used on the St. Marys River and formulated plans for 2004 activities on the St. Marys River.

**THE REPRODUCTION REDUCTION TASK FORCE** was established in 2003 to optimize the pheromone, sterile-male-release, and trapping strategies into an integrated sea lamprey control program. The task force identified trapping as an integral element of the integrated control strategy in the St. Marys River and reported that the sterile male release technique is effectively reducing recruitment of sea lamprey in the St. Marys River.



Application of lampricide, Manistique River stream treatment, 2003. Photo: D. Burkett

## FISHERY MANAGEMENT, RESEARCH, AND ENVIRONMENT

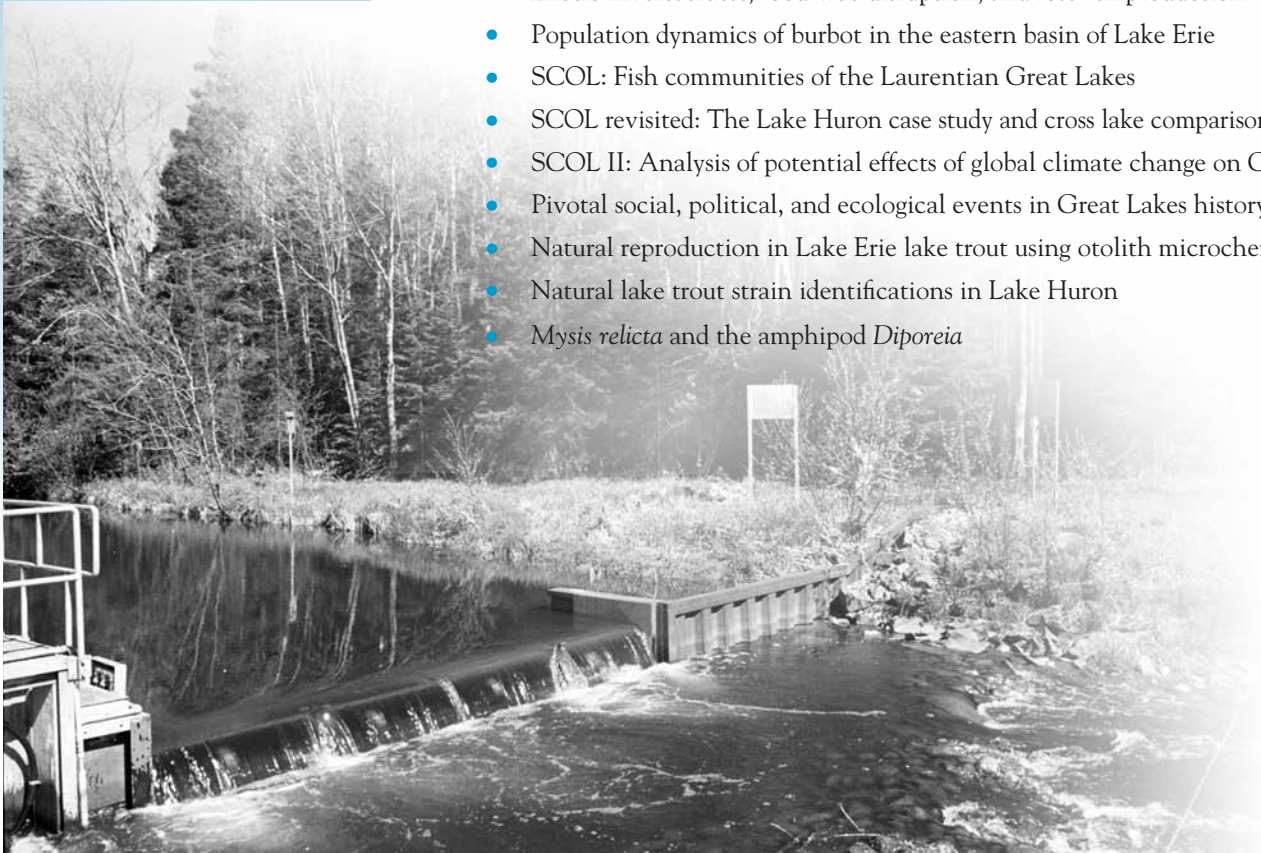
Bridging sound science and policy allows the commission to fulfill the conservation and restoration goals of the *Convention on Great Lakes Fisheries*. The commission uses a strong advisory body, consisting of the Great Lakes Fishery Commission's Board of Technical Experts, Sea Lamprey Integration Committee, Lake Committees and their technical committees, Law Enforcement Committee, and the Great Lakes Fish Health Committee to accomplish its duty.

Based on recommendations from these committees, the commission approved the following research projects in 2003:

### Fishery Research Program

- Legal/policy rules and frameworks for fisheries management in the Great Lakes basin
- Assessing gains and losses of aquatic habitats
- Ecological fitness of fish communities of the world's large water bodies
- Effects of egg and fry predators on lake trout recruitment in Lake Michigan
- Ecosystem impacts of exotic invertebrates and productivity changes, Bay of Quinte and Oneida Lake
- Fisheries acoustics
- Fish habitat in coastal wetlands of the Great Lakes
- *Heterosporis* in yellow perch from the Bay of Quinte and inland lakes of Minnesota and Wisconsin
- Great Lakes lake herring stocks
- Disruption of alewife recruitment by *Cercopagis pengoi* and *Bythotrephes longimanus*
- Exotic invertebrates, food-web disruption, and lost fish production
- Population dynamics of burbot in the eastern basin of Lake Erie
- SCOL: Fish communities of the Laurentian Great Lakes
- SCOL revisited: The Lake Huron case study and cross lake comparisons of top predators
- SCOL II: Analysis of potential effects of global climate change on Great Lakes fishes
- Pivotal social, political, and ecological events in Great Lakes history
- Natural reproduction in Lake Erie lake trout using otolith microchemistry
- Natural lake trout strain identifications in Lake Huron
- *Mysis relicta* and the amphipod *Diporeia*

Inflatable sea lamprey barrier and trap,  
Big Carp River, ON. Photo: M. Gaden



### Sea Lamprey Research Program

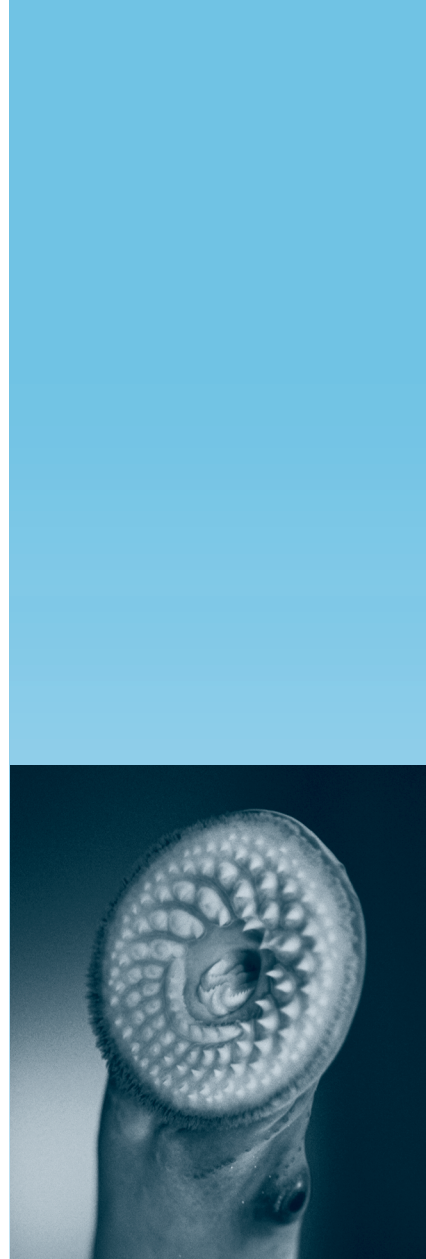
- Using stable isotopes to assess potential sea lamprey damage to Lake Superior fishes
- Effects of mortality sources on lake sturgeon
- Analysis of pheromone identification by sea lamprey through functional imaging of olfactory glomeruli
- Molecular cloning of petromyzonol sulfotransferase [lamprey enzyme] and enzymatic synthesis of petromyzonol sulfate [lamprey pheromone]
- Improving fishways at sea lamprey barriers
- Bathothermal habitat use and overlap of sea lampreys and lake trout
- Using DNA microarray to discover new targets for sea lamprey control
- Development of genetic markers and a morphological key for native lampreys
- Sex pheromone communication in sea lamprey
- Fertility assessment in male and female lamprey
- Identifying and producing the sea lamprey migratory pheromone
- Sea lamprey in Lake Champlain and its tributaries

### Coordination Activities Program

- Environmental Objectives to Achieve Fish Community Objectives in Lake Michigan

The commission, in 2003, undertook several initiatives in support of healthy Great Lakes ecosystems. For instance, in conjunction with the U.S. Environmental Protection Agency, International Joint Commission, State of Illinois, and the Army Corps of Engineers, the commission acquired funding and resources to bolster defenses on the Chicago Sanitary and Ship Canal to stop the invasion of the Asian Carp from entering the Great Lakes.

In addition, the commission produced, with the U.S. Coast Guard and provincial, state, and tribal law enforcement agencies, a special edition of the commission's newsletter *Forum*. The Great Lakes Law Enforcement newsletter included articles that highlighted the benefits, challenges and successes of bi-national, multi-organizational law enforcement efforts.



Sea lamprey feed indiscriminately on all large fish species and pose a serious threat to the Great Lakes ecosystem and the economy it supports. A single adult lamprey will destroy up to forty pounds of fish during its lifetime.

## PARTNERSHIPS

### Lake Committee Action Highlights of 2003

The commission recognizes the value of cultivating new relationships and fostering current alliances so it can be a more effective Great Lakes steward. In protecting our fishery and ecosystem, partnerships between federal, state, provincial and tribal managers allow for better use of resources and a greater understanding of environmental problems. Through the *Joint Strategic Plan for Management of Great Lakes Fisheries*, these management agencies meet annually as lake committees to discuss the state of the fishery and to strategize on ways to achieve their joint objectives. The following are highlights of 2003 lake committee actions.

**THE LAKE SUPERIOR COMMITTEE** announced that lake trout in Michigan waters are at historic abundance. However, preyfish population abundance continued to decrease and is now approaching the historically low levels of the 1980s. The Lake Superior Technical Committee is currently in the process of documenting its assessment protocols and received approval from the committee to update the lake herring status report. Additionally, the committee completed revisions to the Lake Superior Fish Community Objectives, which are now published as the GLFC Special Publication 03-1.

**THE LAKE MICHIGAN COMMITTEE** approved the formation of a Lake Sturgeon Task Group, which will focus on rehabilitation efforts in Lake Michigan. The Lake Trout Task Force continued to revise the rehabilitation plan by readdressing the terms, goals, design, and priorities set forth in the plan. The committee reported that proportions of female yellow perch are up in the lake, although overall abundance remains low. Sea lamprey wounding rates are increasing and the committee is currently working with the Sea Lamprey Integration Committee to increase treatment on Lake Michigan streams and tributaries.

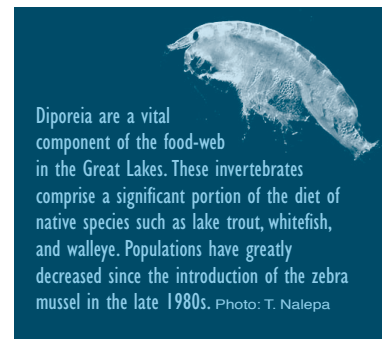
**THE LAKE HURON COMMITTEE** is in the process of reviewing the Lake Trout Task Group's stocking recommendations. The committee formed an Environmental Objectives Task Group and is currently exploring the feasibility of developing Fish Community Objectives for the St. Marys River. The St. Marys River Fisheries Task Group is pursuing the development of a common policy between the MI Dept. of Natural Resources and ON Ministry of Natural Resources. The Lake Huron Committee's GIS database is complete and has been distributed.

**THE LAKE ERIE COMMITTEE** agreed to maintain the walleye total allowable catch (TAC) for 2003 of 3.4 million fish, consistent with the Coordinated Percid Management Strategy. However, the committee advised that significant reductions must and will be made in 2004. The projected 40–60% reduction in walleye TAC in 2004 will require substantial changes in regulations governing both the sport and commercial fisheries. The committee also expressed concerns about yellow perch recruitment failures in 2000 and 2002; the committee advised that reductions in 2004 are likely. The committee finalized the Fish Community Objectives for Lake Erie, which are now published as the GLFC Special Publication 03-2.

**THE LAKE ONTARIO COMMITTEE** is finalizing Fish Community Objectives for the St. Lawrence River and plans to revise the Fish Community Objectives for Lake Ontario and begin work on the development of environmental objectives. The committee requested that the technical committee develop research priorities for LOC endorsement. Diporeia have been found in deeper waters and in lower densities relative to previous years. The committee reported that in the eastern basin, walleye populations have stabilized following a 10-year decline.



Yellow perch in anglers net. Photo: GLFC



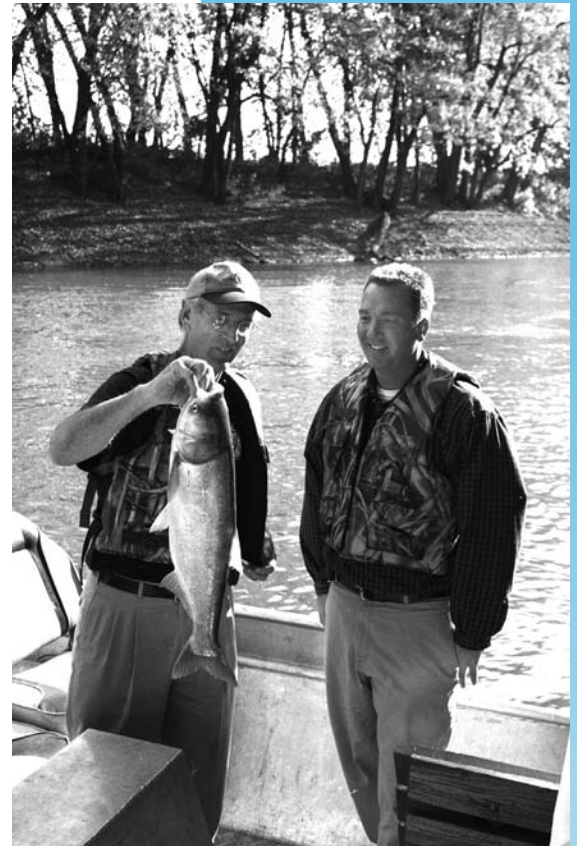
Diporeia are a vital component of the food-web in the Great Lakes. These invertebrates comprise a significant portion of the diet of native species such as lake trout, whitefish, and walleye. Populations have greatly decreased since the introduction of the zebra mussel in the late 1980s. Photo: T. Nalepa

**THE COUNCIL OF LAKE COMMITTEE** urged lake committee members to attend workshops to develop environmental objectives for each lake and to identify and address common informational needs. The CLC also continued to work with the U.S. Geological Survey and the Great Lakes Science Center to address concerns about the survey's deep water fishery science program. CLC was advised of the potential for Asian carp to circumvent the electric barrier on the Chicago Sanitary and Shipping Canal via old canal systems.

**THE LAW ENFORCEMENT COMMITTEE** continued to implement Operation Kingfisher, the cooperative fisheries enforcement initiative between Canada and United States agencies. The committee also supported the proposed listing of black, silver, and bighead carp to the list of injurious species under the Lacey Act. The committee urged state and provincial agencies to prohibit the importation, possession, transportation, purchase, sale, release, and exportation of live Asian carp. Further, the Law Enforcement Committee contracted with the Environmental Law and Policy Center to document the legal, legislative, and regulatory gaps relating to the importation, rearing, and trade of exotic live fish – particularly Asian carp species – into the Great Lakes basin. The committee urged CLC to provide rationale for the disparate harvest regulations for lake sturgeon in the Great Lakes. The committee successfully petitioned CLC to add fish habitat protection and conservation to the terms of reference.

**THE GREAT LAKES FISH HEALTH COMMITTEE** updated the *Guide to Integrated Fish Health Management*, adding disease risk analysis procedures and guidelines addressing diseases of concern in cool and warm-water fish. The committee is pursuing research on: early mortality syndrome in salmonids, the range of spring viremia of carp, methods of preventing introduction of infectious salmon anemia virus, and understanding the etiology of botulism in Lake Erie.

**THE COMMITTEE OF ADVISORS** expressed concern about the inadequacy of state-by-state approaches to managing ballast water and urged the commission to request that the Environmental Protection Agency apply water discharge standards to ballast water. The committee discussed the significant operation and maintenance costs of the invasive species barrier system on the Chicago Sanitary and Ship Canal and urged the commission to remain at the forefront of efforts to prevent these fish from migrating into Lake Michigan.



Dave Ullrich (L) of the Great Lakes Cities Initiative, and Joe Deal, Chicago Mayor Daley's Special Assistant for Water, display a silver carp captured from the Illinois River. Representatives of the Great Lakes Fishery Commission, International Joint Commission, Illinois Natural History Survey, Wisconsin Sea Grant, Lake Michigan Federation, Great Lakes Sportfishing Council, the media, and others participated in a field trip to Havana, IL to witness first-hand the impact of Asian carp.  
Photo: M. Gaden

## Budget

The commission received the following contributions from the governments of Canada and the United States (shown in U.S. dollars) for 2003:

	U.S.	CANADA	TOTAL
Sea Lamprey Management and Research	\$ 9,390,500	\$ 3,842,709	\$ 13,233,209
General Research, Committee and Scientific Support, and Administration	\$ 1,449,500	\$ - 0 -	\$ 1,449,500
<b>TOTAL</b>	<b>\$ 10,840,000</b>	<b>\$ 3,842,709</b>	<b>\$ 14,682,709</b>

The commission's U.S. and Canadian trust funds received donations from Dick and Mary Reuss, Pam and Ed Makauskas, Donna and Burt Atkinson, and Janet and Mike Ryan.



## 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, 2003

- Gerry Barnhart (U.S.)
- Bill Beamish, Chair (Can.)
- John Davis (Can.)
- Bernie Hansen (U.S.)
- Craig Manson (U.S.)
- Ray Pierce (Can.)
- Roy Stein, Vice-Chair (U.S.)
- Bill Taylor (U.S.)
- Peter Wallace (Can.)

### SECRETARIAT, 2003

- Stacy Alguire
- Dale Burkett
- Gavin Christie
- Marg Dochoda
- Randy Eshenroder
- Jill Finster
- Marc Gaden
- Chris Goddard
- Ann Krause
- Charles Krueger
- Nancy Leonard
- Pat Lewis
- Sean Martineau
- Barb Staples
- Hao Zhuang

### FELLOWS

- Bill Alguire
- Ted Lawrence

### ANNUAL REPORT CONTRIBUTING EDITORS

- Jill Finster, Marc Gaden, Gary Klar,
- Ted Lawrence, Rob Young

## Awards and Honors

This year, the commission recognized and honored the efforts of three individuals who made outstanding contributions to the Great Lakes.

The commission presented the **Jack Christie/Ken Loftus Award for Distinguished Contributions to Healthy Great Lakes Ecosystems** to Randy Eshenroder (right). Eshenroder was honored for his strong commitment to understanding the Great Lakes fisheries resource and his leadership in restoring native fish species. Also pictured: Roy Stein, Commissioner



The recipients of the **Buzz Besadny Award for Fostering Great Lakes Partnerships** were (L-R) Jim Weakley (accepting the award on behalf) of the U.S. Ninth Coast Guard District Office of Law Enforcement, Bill Lafferty of the Ontario Ministry of Natural Resources, and Kevin Ramsey of the Ohio Department of Natural Resources. Also pictured: Ray Pierce, Commissioner, at podium.



The commission presented the **Vern Applegate Award for Outstanding Contributions to Sea Lamprey Control** to (L-R) Roger Bergstedt of the U.S. Geological Survey, Mike Fodale of the U.S. Fish and

Wildlife Service, and Doug Cuddy of Fisheries and Oceans Canada, for their work to formulate and execute sea lamprey control on the St. Marys River. Also pictured: Bill Beamish, Commissioner (far left).

The commission also honored Joe Day for his service to the commission. Joe retired from the commission in February, 2002 after five years of dedicated involvement, hard work, and commitment.

Additionally, Larry Schleen and David Haight were recognized for their contributions to the health of the fish communities and ecosystems of the Great Lakes during their 65 years of combined service at the Department of Fisheries and Oceans.

