

Annual Report

of the
Great Lakes
Fishery
Commission



From the Chair
Charles C. Krueger

1997

In 1997, agencies on the Great Lakes signed a revised Joint Strategic Plan for Management of Great Lakes Fisheries. James Schlender (center left) and Neil Kmiecik (center right) of the Great Lakes Indian Fish and Wildlife Commission sign the revised plan on behalf of their agency. Commission Chairman Chuck Krueger (far right) and Commission Vice-Chairman Bill Beamish (far left) observe.

Photo: Great Lakes Fishery Commission



Major Initiatives of 1997 Help the Commission Realize its Strategic Vision

The Great Lakes Fishery Commission's *Strategic Vision for the Decade of the 1990s* is the guiding document by which the commission formulates and implements its program. The Vision itself is organized around three strategies that promote: healthy Great Lakes ecosystems; the delivery of a cost-effective sea lamprey control program that complements Fish Community Objectives for each lake; and partnerships with and among institutions and stakeholders in the Great Lakes.

In 1997 we saw three major initiatives that support each of the three Vision statements:

THE INITIATION OF SEA LAMPREY CONTROL ON THE ST. MARYS RIVER: After years of research and careful planning, the commission initiated sea lamprey control on the St. Marys River in 1997 that champions integrated sea lamprey management, partnerships, and sound science in support of a healthy fishery. A generous donation from the State of Michigan ultimately helped make this control possible.

THE ESTABLISHMENT OF A PARTNERSHIP IN ECOSYSTEM RESEARCH AND MANAGEMENT (PERM) PROGRAM: In 1997, the commission became a partner in the PERM program, a true partnership among the commission, Michigan State University, the Michigan DNR, and the USGS Great Lakes Science Center. Through PERM, the commission and its partners have elevated science in the Great Lakes in support of sea lamprey control, partnerships, and the achievement of Fish Community Objectives.

THE SIGNING OF A REVISED JOINT STRATEGIC PLAN FOR MANAGEMENT OF GREAT LAKES FISHERIES: After a two-year review process, all state, tribal, provincial, and federal fishery management agencies on the Great Lakes signed a revised *Joint Strategic Plan for Management of Great Lakes Fisheries* in 1997. The plan strengthens partnerships and our ability to practice ecosystem management on the Great Lakes.

These three initiatives, described in the following annual report, are milestones in Great Lakes fishery management. They are also instrumental in fulfilling the commission's vision of science-based management of healthy ecosystems, integrated sea lamprey control, and partnership-building.

The work of the commission and the management agencies on the Great Lakes exemplifies the deeply important values we hold towards our natural resources—resources that have shaped the cultures of all people who live in the Great Lakes basin. It is about a way of life and a quality of life important to many and it is about healing problems of the past to ensure healthy Great Lakes for tomorrow. The initiatives of 1997 are more than just projects or plans; they are the enduring mechanisms that will take us closer to realizing our shared commitment to a healthy Great Lakes fishery for today and for the future. 

Sea Lamprey Control



Photo: NYSDEC

Sea lamprey control, as delivered by the commission and its agents, has kept lamprey abundance to about 10% of its historical high in the Great Lakes and has allowed agencies to achieve their Fish Community Objectives. Great Lakes sea lamprey control uses several techniques in combination—including lampricides, barriers, traps, and release of sterile males—to suppress lamprey populations. Federal, tribal, provincial, and state agencies contribute resources and expertise to this integrated sea lamprey management program.

The year 1997 saw an exciting milestone in the coordinated delivery of sea lamprey control on the Great Lakes: for the first time in decades sea lamprey control crews from Canada and the United States worked side-by-side on the same stream. Michigan's Rifle River—a large tributary to Lake Huron—was the site of this historic sea lamprey treatment. By working as one crew, U.S. and Canadian agents were able to treat the Rifle River in one application instead of two or three applications usually needed for a river the size of the Rifle. All told, the Rifle River sea lamprey control effort was a tremendous success: the treatment crew killed tens of thousands of lamprey larvae, saved nearly \$100,000 in lampricide costs, and significantly reduced the time to treat the river from 30 days to just eight days. With the success of the Rifle River treatment, sea lamprey control managers will identify other rivers where such large-scale, joint treatments can occur.

In 1997, Fisheries and Oceans Canada and the U.S. Fish and Wildlife Service—the two agencies contracted to conduct the field work for the sea lamprey control program—together:

- treated 52 tributaries with lampricides;
- surveyed 196 Great Lakes tributaries and lentic areas to assess TFM treatment or barrier effectiveness, to plan future TFM treatments, and to establish production capacity of streams;
- released 17,181 sterilized male sea lampreys into the St. Marys River, creating a 5:1 sterile:normal male ratio there;
- constructed 2 sea lamprey barriers and modified 7 existing barriers; and
- operated assessment traps in 63 tributaries to estimate spawning population.

The lamprey management program met Fish Community Objectives in Lakes Michigan and Ontario in 1997; in Lake Superior, lamprey populations were slightly higher than called for in Fish Community Objectives. Populations of parasitic lamprey remained significantly higher than the Fish Community Objectives in Lake Huron because of continued high sea lamprey production from the St. Marys River. The assessment program will be enhanced in Lake Erie in 1998 to identify sources of untreated transformers because fish wounding rates and spawning phase abundance increased slightly above Fish Community Objectives during 1997.

The Rifle River treatment, combined with refinements in application techniques and the use of alternative control techniques, has moved the commission closer to its goal to reduce lampricide use by 50% by the year 2001 (compared to average use in the 1980s). The commission continues to devote approximately 15% of its budget to research and implementation of alternative control techniques. Further reductions in lampricide use—a major target for the commission—will depend on river volume treated, availability of alternatives, and ability to further refine application techniques.

The St. Marys River Control Task Force recommended to the commission an integrated control strategy for the St. Marys River. This strategy includes an enhanced trapping and sterile male release program (which started in 1997) and a granular Bayluscide treatment program, to commence in 1998 and continue in 1999.

The Sterile Male Release Technique Task Force focused on the second year of the long-term assessment project in Lake Superior streams and enhanced release of sterile males as part of the integrated control program in the St. Marys River. The Barrier Task Force continued to work on the long-range barrier strategy.



Sea lamprey traps remove spawning lampreys from the system and serve as a source of lampreys for the sterile-male-release-technique.

Photo: Department of Fisheries and Oceans

Commission Launches Sea Lamprey Control on the St. Marys River in 1997

Program a triumph for alternative sea lamprey controls, partnerships, and a healthy fishery

Today, the St. Marys River produces more parasitic sea lampreys than all Great Lakes tributaries combined. Prior to the mid-1970s, the St. Marys River had been an inhospitable place for sea lampreys to live and reproduce. Water quality and habitat improvements during the previous couple of decades have turned the river into a producer of hundreds of thousands of sea lampreys annually.

Sea lampreys produced in the St. Marys River migrate into Lake Huron and northern Lake Michigan and prey heavily on many fish species. More fish are destroyed by sea lampreys than all other sources of mortality combined—including natural causes, sport, tribal, and commercial harvest. The river's tremendous size and flow volume prohibit effective sea lamprey control using conventional methods.

Fortunately, after years of research and development, the commission and its agents were able to develop alternatives to TFM; in 1997 this research provided the commission with the knowledge to commence sea lamprey control on the St. Marys River. A \$3 million donation (over 3 years) from Michigan, along with federal contributions, allowed the commission to move forward with control. The program relies on three techniques working together to significantly reduce sea lampreys produced in the river:

1. GRANULAR BAYLUSCIDE: CONTROLLING SEA LAMPREY LARVAE. Scientists learned that sea lamprey larvae are not dispersed evenly throughout the St. Marys River but rather, are concentrated in a few areas of relatively high abundance. Using helicopters and global positioning technology, a specially formulated lampricide—granular Bayluscide—will be applied to the “hot spots” to kill sea lamprey larvae on the bottom of the river. Granular Bayluscide applications will take place in 1998 and 1999.

2. TRAPPING: REMOVING SPAWNERS. The Great Lakes Fishery Commission entered into partnerships with Great Lakes Power and the U.S. Army Corps of Engineers to construct sea lamprey traps on the St. Marys River. Traps remove thousands of spawning sea lampreys and supply males for the sterilization program.

3. THE STERILE-MALE-RELEASE-TECHNIQUE: SUPPRESSING LONG-TERM SPAWNING SUCCESS. Male sea lampreys are trapped, sterilized, and released into the St. Marys River. The sterilized males compete with normal males for females and thereby reduce the reproductive potential over the long-term. In 1997, the commission—with the support of the Lake Committees—redirected most of the sterile males to the St. Marys River.

Sea lamprey control on the St. Marys River is consistent with the commission's Strategic Vision for an integrated sea lamprey control program that relies on partnerships and that promotes a healthy Great Lakes ecosystem. This control effort is cost-effective, it relies heavily on alternative controls, and it will reduce parasitic sea lampreys in Lake Huron and northern Lake Michigan by 85%, a level consistent with Fish Community Objectives. Spawning potential of lake trout and other species is expected to rise dramatically.

In formulating the St. Marys River program, the commission worked closely with state, federal, and tribal partners, and received input from scientists, its committees and boards, and the public.



Great Lakes Fishery Commission



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of Natural
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Chippewa-Ottawa
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U.S. Army
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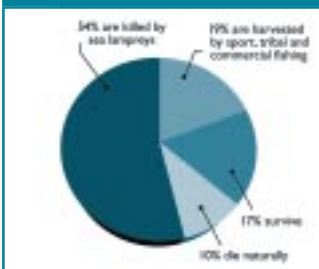


Great Lakes
Power

Sea Lamprey Hot Zone



Fate of Lake Trout in Lake Huron

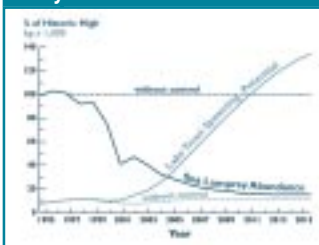


Granular Bayluscide applied by helicopter



Release of sterile males

Ecosystem Benefits to Lake Huron



Photos and diagrams: GLFC, USGS and USFWS

Fishery Management, Research, and Environment

Sound science is paramount to fishery management. Achieving our goals for a healthy, sustained fishery relies on a continued commitment to science. The Great Lakes Fishery Commission depends on advice from its Board of Technical Experts, its Habitat Advisory Board, its Sea Lamprey Integration Committee, the Lake Committees and their Technical Committees, and the Great Lakes Fishery Health Committee to guide its decisions on the direction of research.

In 1997, the commission approved research projects under the following categories:

Alternative Control

- Pheromones as sea lamprey attractants
- Fish community impacts of low head barriers
- Reproductive functions of male sea lampreys
- Ability of sea lamprey populations to compensate for the affects of control

Internal Research

- Raised electrical barrier for the Ocqueoc River
- Seasonal temperature selection by lake trout
- Efficacy of Bayluscide
- Evaluation of the sterile-male-release-technique
- Evaluation of sterilants used in the sterile-male-release-technique
- Individual-based model of seasonal growth of sea lamprey
- Survival of chinook salmon attacked by sea lampreys
- Survival to spawning phase of metamorphosed sea lampreys
- Interpreting data on St. Marys River larval index
- Improving ability to classify lamprey larval habitat
- Registration of lampricides and lampricide safety
- Effects of lampricides on lake sturgeon and other non-target organisms

Board of Technical Experts

- Linking habitat supply to fish community objectives
- The role of biodiversity in managing the Great Lakes fishery resources



Sturgeon

Integrated Management of Sea Lamprey Protocol

- Lake trout mortality caused by sea lamprey

Other partnerships

- Estimating forage fish consumption by predators in Lake Huron
- Model management program for private aquaculture
- Lampricide transport on the St. Marys River (Army Corps of Engineers)



In 1997, the GLFC approved research to estimate forage fish consumption by predators in Lake Huron. Forage fish pictured: alewife (top), bloater (middle), and smelt (bottom).

Photos: Great Lakes Fishery Commission, USFWS, Sea Grant, USGS

Based on this and other research, the commission, in 1997, undertook several initiatives in support of a healthy Great Lakes ecosystem. For instance, the commission

- endorsed the 1997 revision of *A Joint Strategic Plan for Management of Great Lakes Fisheries* and agreed to support agencies in its implementation;
- began support of the new Council of Great Lakes Fishery Agencies (created by the revised Joint Strategic Plan) and assisted the council in organizing meetings, agendas, terms of reference, and letters;
- provided funds for a study entitled Model Management Program for Private Aquaculture;
- supported a project to study Lake Erie habitat and started a process for developing a habitat reporting system for use in lake conferences;
- assisted the Great Lakes Fish Health Committee in providing Ontario with feedback about disease risk of an import of coho salmon; and
- supported the Council of Lake Committee's request that funding agencies support research on Early Mortality Syndrome.

Commission Joins Partnership in Ecosystem Research and Management (PERM) Program in 1997

PERM to elevate science in the Great Lakes

In 1997, the commission entered into a partnership with Michigan State University, the U.S. Geological Survey/Biological Resources Division, and the State of Michigan that forges a truly collaborative arrangement between academic and governmental research institutions for the purpose of conducting sea lamprey research. The new arrangement—within the Partnership in Ecosystem Research and Management, or PERM, program at Michigan State University—places governmental and university researchers in a framework where the administrative boundaries between them disappear and a bonafide, permanent team approach emerges. This new approach to research by the commission elevates Great Lakes science basinwide.

The new PERM arrangement combines commission resources with those of the other PERM partners to fund two tenured-track research-scientist positions at Michigan State University. The PERM partners share facility, equipment, and overhead costs, and have formed a committee to identify key resource issues and to provide direction for scientific research. Like all research scientists, the PERM scientists compete for grants to carry out the research.

The commission is very pleased to have Dr. Michael Jones (a systems ecologist with expertise in fish population dynamics, formerly of the Ontario Ministry of Natural Resources) and Dr. Weiming Li (a fish physiologist with expertise in chemical ecology, formerly of Monell Chemical Senses Center) as the PERM sea lamprey scientists.

The commission, the U.S. Geological Survey, the State of Michigan, other fishery agencies, and the resource itself benefit from a more cohesive science program—ultimately better information for improved fishery management. Through this collaboration, we not only direct research dollars to where they are most needed, but we also stretch those dollars further.

The PERM partnership, as initiated in 1997, is a major step towards the commission's vision to enhance partnerships, to elevate science for a healthy ecosystem, and to foster an integrated sea lamprey control program.



PERM scientists work with colleagues at the Lake Huron Biological Station (top), Michigan State University, the State of Michigan and the commission to formulate and implement sea lamprey research.

The internal research team L-R (above) includes: Roger Bergstedt (USGS); Ron Scholefield (USGS); Mike Jones (MSU-PERM); Bill Swink (USGS); and Weiming Li (MSU-PERM).

Photos: Great Lakes Fishery Commission

Partnerships

Highlights of 1997 Lake Committee Actions

Under *A Joint Strategic Plan for Management of Great Lakes Fisheries* the management agencies identified the commission's Lake Committees as their major action arms for achieving joint objectives. The following are highlights of Lake Committee actions in 1997.

THE COUNCIL OF LAKE COMMITTEES suggested that a combination of enhanced trapping, the sterile-male-release-technique, and the use of granular Bayluscide was the appropriate strategy for a long-term sea lamprey control program on the St. Marys River, assuming the availability of funds and that other program elements would not be affected. The Council approved the redirection of sterile males into the St. Marys River from Lake Superior beginning in 1997. The Council supported a preliminary commission position that a commercial fishery for sea lamprey—as being investigated by Minnesota Sea Grant—would not be sustainable and would be inconsistent with sea lamprey control, stocking programs, and other management actions taken in support of Fish Community Objectives.

THE LAKE ERIE COMMITTEE reported that rainbow smelt, an exotic species that flourished in Lake Erie when productivity was higher and when predator populations were low, are declining in the East Basin of the lake. The committee noted that expectations for a large, stable supply of smelt in the East Basin is not high.

THE LAKE HURON COMMITTEE recommended a St. Marys River sea lamprey control program that uses a combination of granular Bayluscide, the sterile-male-release-technique, and enhanced trapping. In anticipation of sea lamprey control on the St. Marys River, the committee agreed that lake trout stocking would resume in the areas of northern Lake Huron where stocking ceased in 1994. The committee agreed to send a letter to private fish culture groups encouraging them to adopt disease screening procedures used by management agencies on the lake. The committee began the process to develop environmental objectives for Lake Huron, to be incorporated into the Fish Community Objectives.

THE LAKE MICHIGAN COMMITTEE supported the use of granular Bayluscide, enhanced trapping, and the release of sterile males for sea lamprey control on the St. Marys River. The committee requested the development of a strategy for research and monitoring of Bacterial Kidney Disease and Early Mortality Syndrome. The committee requested that the U.S. Fish and Wildlife Service seek a lean deepwater strain of lake trout for use on the Midlake Refuge.

The commission's Committee of Advisors held a special workshop in conjunction with the Lake Michigan Committee meeting to discuss whether Lake Michigan management agencies should have a joint fisheries management plan to help them implement their Fish Community Objectives. Participants concluded that any joint management plan should meet Fish Community Objectives, be uniform, build partnerships and involve stakeholder input.

THE LAKE ONTARIO COMMITTEE stressed to the Great Lakes Fishery Commission that sea lamprey control on the St. Marys River, while important to the fishery, should not be done at the expense of sea lamprey control gains in the other Great Lakes, unless it could be demonstrated that the benefits of St. Marys River control outweigh losses in other areas.

THE LAKE SUPERIOR COMMITTEE approved the redirection of most of the sterile males used in Lake Superior to the St. Marys River. The eight experimental streams in Lake Superior and the Bad River would continue to receive sterile males. The committee started the process for drafting its Fish Community Objectives.

In 1997, the commission's **COMMITTEE OF ADVISORS** completed a review of their *Terms of Reference*. The Terms were published in June, 1997. Advisors presented four resolutions to the commission that addressed: the impact of submerged log harvest on fish habitat; sea lamprey control on the St. Marys River; the need for adequate sea lamprey control funding; and ruffe in ballast water.



The Lake Michigan Advisory Committee held a workshop to discuss the benefits of a joint fisheries management plan for Lake Michigan.

Photo: Great Lakes Fishery Commission

During the commission's interim meeting in December, 1997, Ed Makauskas and Dick Reuss (on behalf of the U.S. Committee of Advisors) and Terry Quinney (on behalf of the Canadian Advisors) provided input about sea lamprey control methods on the St. Marys River. Advisors stressed the urgency of protecting the Lake Huron fishery from St. Marys River lampreys and implored the commission to attack the lamprey problem using an integrated program of granular Bayluscide, trapping, and the sterile-male-release-technique. Advisors also urged adequate funding for this effort.



U.S. and Canadian advisors made presentations to the commission during the interim meeting in December 1997. U.S. Advisors Dick Reuss (left), Ed Makauskas (right) and Canadian Advisor Terry Quinney (not pictured) urged immediate sea lamprey control on the St. Marys River.

Photo: Great Lakes Fishery Commission

Agencies Reaffirm Cooperative Fishery Management with the Signing of a Revised Joint Strategic Plan for Management of Great Lakes Fisheries



Fishery agencies on the Great Lakes gathered in Ottawa, Ontario in June, 1997, to officially endorse an updated version of *A Joint Strategic Plan for Management of Great Lakes Fisheries*, the landmark plan under which the Great Lakes fishery is collectively managed as an ecosystem.

With the help of the Great Lakes Fishery Commission, agencies first developed the Joint Strategic Plan in 1980. Since that time, it has been the blueprint by which agencies in both Canada and the U.S. work cooperatively to achieve common objectives. The Joint Strategic Plan identifies the commission's lake committees as the major action arms for the agencies to achieve their joint objectives for sustaining and enhancing the fisheries.

The Joint Strategic Plan's implementation remains rooted in a series of strategic procedures that call for lake committees to define Fish Community Objectives, to identify environmental issues that impede achievement of Fish Community Objectives, and to develop plans for achieving Fish Community and Environmental Objectives. Strategic procedures also call for fishery agencies to submit changes in practice to lake committees and to provide annual reports on agencies' progress in reaching their fishery management objectives. The Joint Strategic Plan is based on consensus, but if consensus is not achieved, parties may request independent third party mediation.

The Joint Strategic Plan, which is widely viewed as one of the world's best examples of cooperative fishery management, was the subject of an intensive two-year review process (begun in 1995) in an effort to identify ways in which cooperative Great Lakes fishery management could be enhanced. The revised plan was signed in June, 1997. Major changes to the Plan include an expanded commitment by fish managers to work together to influence all management activities which affect fish; stronger links with environmental management agencies; the establishment of a Council of Great Lakes Fisheries Agencies; and a revised mechanism to resolve interjurisdictional disputes.

The Great Lakes Fishery Commission endorsed the Joint Strategic Plan and lauded the 1997 revision as an example of partnerships at their best. The plan makes cooperative fishery management on the Great Lakes possible and complements the commission's Strategic Vision to nurture partnerships that work collectively for a healthy fishery.

Representatives of the fifteen fishery management agencies on the Great Lakes gathered in Ottawa in June to sign an updated Joint Strategic Plan for Management of Great Lakes Fisheries.

Photo: Great Lakes Fishery Commission



Commission Chair Chuck Kruger (right) and Vice-Chair Bill Beamish sign a resolution affirming the commission's commitment to the Joint Strategic Plan.

Photos: Great Lakes Fishery Commission



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 1956 to improve and perpetuate fishery resources.

COMMISSIONERS, 1997

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David Balsillie (Can.)
Don Barry (U.S.)
Bill Beamish (Can.)
Joseph Day (U.S.)
David Dempsey, alternate (U.S.)
Bernie Hansen (U.S.)
Charles Krueger, Chair (U.S.)
Marie Tobin (Can.)

SECRETARIAT, 1997

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Sean McFadden
Barb Staples
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Canada



U.S.
Department of
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Budget

The commission received the following contributions from the governments of the United States and Canada (shown in U.S. dollars) for 1997:

	U.S.	CANADA	TOTAL
Sea Lamprey Management and Research	\$7,649,350	\$3,594,549	\$11,243,899
Administration and General Research	\$703,650	\$693,125	\$1,396,775
TOTAL	\$8,353,000	\$4,287,674	\$12,640,674

The commission's U.S. trust fund received donations from Kinetic Industries, Smith-Root Incorporated, and Praxair Incorporated in 1997.

Awards and Honors

During its annual meeting in Milwaukee, the commission honored former commissioners Gail Beggs, Bob Davison, and Cheryl Fraser for their service to the commission. The commission presented former U.S. Advisor Dick Kubiak with a special Certificate of Recognition for his many years of service as advisor to the commission, and the commission presented awards to Jim Francis (IN DNR), Mike Ryan (NW Indiana Steelheaders), Ellie Koon (USFWS), Greg Martin (Praxair, Inc.), and Tom McAuley (DFO) for working to build a partnership for the construction of a sea lamprey barrier on Indiana's Little Calumet River.



Commissioner Charles Krueger honored former commissioners Gail Beggs (above left), Bob Davison (not pictured) and Cheryl Fraser (above right) for their service to the commission.

Photo: Great Lakes Fishery Commission

Commissioner Burton Ayles (far right) presented an award to the people involved in the Little Calumet River barrier project. Award recipients (L-R): Jim Francis (IN DNR), Mike Ryan (NW IN Steelheaders), Ellie Koon (USFWS), and Tom McAuley (DFO). Not pictured: Greg Martin of Praxair

Photo: Great Lakes Fishery Commission

