

Great Lakes Fish and Wildlife Restoration Act

Accomplishments 1990-2006



U.S. Fish and Wildlife Service
May 2007

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Introduction

Since 1990, the Great Lakes Fish and Wildlife Restoration Act (Act) has been extremely successful in building partnerships among state, tribal, federal and provincial management agencies for the cooperative conservation, enhancement and restoration of Great Lakes fish, wildlife and habitats. Activities funded under the Act through the Great Lakes Fish and Wildlife Restoration Act Grants Program and through Fish and Wildlife Service (Service) Operations have made important contributions toward understanding the complexity of restoration needs in the Great Lakes and developing tools to address those needs.

This report provides information on: 1) The enactment of the Great Lakes Fish and Wildlife Restoration Act of 1990, its amendments in 1998 and 2006, and appropriations under the Act during Fiscal Years 1992-2006; 2) Service implementation of the Act for the period 1998-2006- both through the Grants Program and through Service Operations; and 3) Progress toward the Service's Great Lakes goals.

From 1998-2006, 72 projects have been funded through the Grants Program with more than \$3.9 million in federal dollars and \$2.7 million in non-federal matching funds. These projects were implemented in collaboration with 62 partner organizations that brought funding, in-kind contributions and expertise. These and other outstanding accomplishments highlighted in this report would not have been possible without the tremendous partnerships that have evolved from or have been strengthened through the Act. The Service looks forward to an exciting future of working together with our partners to implement the recently reauthorized Act.

Questions concerning this report may be addressed to Mr. Gerry Jackson, U.S. Fish and Wildlife Service, Assistant Regional Director, Fisheries, Bishop Henry Whipple Federal Building, One Federal Drive, Fort Snelling, MN, 55111 (612-713-5102). This document and other information on Service programs and accomplishments can be found on the Service's Region 3 website: <http://www.fws.gov/midwest>. Additionally, the Great Lakes Fish and Wildlife Restoration Act Report to Congress for the period 1998-2002 is available at: http://www.fws.gov/midwest/Fisheries/REPORT2002_improved1-23-07.pdf.

The Great Lakes Fish and Wildlife Restoration Act

Recognizing the national significance of the Great Lakes, Congress passed the Great Lakes Fish and Wildlife Restoration Act of 1990 to begin addressing basin-wide challenges through cooperative efforts.¹ The Great Lakes are the largest, single source of surface freshwater on earth, containing nearly 18 percent of the world supply. With 9,000 miles of shoreline, 5,000 tributaries and 30,000 islands, this makes the Great Lakes one of the unique places in our country and a National treasure. The Great Lakes basin is home for 35 million people who work and play in or around the Great Lakes. Service survey data show that fishing, hunting and wildlife watching generate nearly \$18 billion in annual revenue in the Great Lakes region. Eleven million people bought fishing licenses, accounting for 25 million angler days. One third of the boats in the United States are registered in the Great Lakes. Fish and wildlife resources depend on the Great Lakes and so do the people who live there.

Enactment-1990

There are many challenges to managing fish and wildlife resources in the Great Lakes Basin due to a number of factors, including the complexity of the ecosystem and the number of institutional frameworks in place. Management authority for fish and wildlife involves two countries, eight States, two provinces, and 33 Native American tribes and treaty authorities. Many others such as municipalities, county boards, universities, research institutes, industry, and conservation and recreation organizations all have an interest in how fish and wildlife in the Great Lakes are managed. Our citizens value the Great Lakes as a place to live and enjoy, and it is within this context that Congress expects the Service to work with others, to conserve, protect and enhance the basin's fish and wildlife resources and associated habitats for future generations.

The purposes of the Act were "to carry out a comprehensive study of the status, and the assessment, management, and restoration needs of fishery resources of the Great Lakes Basin; to develop proposals to implement recommendations resulting from that study; and to provide assistance to the Great Lakes Fishery Commission, states, Indian tribes, and other interested entities to encourage cooperative conservation, restoration and management of fish and wildlife resources and their habitat."

The Act established the following six Great Lakes goals for all programs of the Service:

¹ Enacted under Public Law 101-646 on November 29, 1990.

1. Restoring and maintaining self-sustaining fish and wildlife resources²
2. Minimizing the impacts of contaminants on fishery and wildlife resources
3. Protecting, maintaining, and, where degraded and destroyed, restoring fish and wildlife habitat, including the enhancement and creation of wetlands that result in a net gain in the amount of those habitats
4. Stopping illegal activities adversely impacting fishery and wildlife resources
5. Restoring threatened and endangered species to viable, self-sustaining levels
6. Protecting, managing, and conserving migratory birds.

The 1990 Act also established the Great Lakes Coordination office, the Lower Great Lakes Fishery Resources Office, and the Upper Great Lakes Fishery Resources Offices. The Act authorized the appropriation of not more than \$10,000,000 annually to the Director of the Service, and not more than \$1,500,000 annually to the Secretary of the Army, beginning in Fiscal Year 1991. With passage of the 1990 Act, the Service undertook a comprehensive study of the fishery resources in the Great Lakes and the 1995 Great Lakes Fishery Resources Restoration Study provided 32 recommendations on how fishery resources could be restored.

Amendment- 1998

In 1998, Congress reauthorized the Act and changed the Service's focus from study to action.³ The Service's recommendations in the 1995 Great Lakes Fishery Resources Restoration Study and the Act's original goals for the Service became the basis for a focused effort to fund projects and activities critical to resource management in the Great Lakes. The 1998 Act authorized the Service's capability to fund state and tribal-sponsored restoration projects through the Great Lakes Fish and Wildlife Restoration Act Grants Program.

The 1998 Act also established an interagency Great Lakes Fish and Wildlife Restoration Proposal Review Committee, under the guidance of the Council of Lake Committees. This Committee is responsible for reviewing and recommending the highest priority projects to the Director of the Service for funding. This interagency review process has ensured that the funds addressed the 32 recommendations of the 1995 Study, the priorities of the Lake Committees, and the goals for the Joint Strategic Plan for the Management of Great Lakes Fisheries. This process has helped bring management authorities together as a combined force.

The amended Act authorized the appropriation of \$8,000,000 annually to the Director of the Service beginning in Fiscal year 1998, including \$4,500,000 for the Grants Program and \$3,500,000 for activities of the Great Lakes Coordination Office and the Upper and Lower Great Lakes Fishery Resources Offices.

² Changed in the 2006 amendment from "Restore and maintain self-sustaining fishery resource populations".

³ Amended on October 19, 1998 under Public Law 105-265.

Amendment- 2006

The Act was reauthorized again in 2006.⁴ The revised Act changed the membership of the Proposal Review Committee to include up to two individuals from each State and Indian Tribe in the Great Lakes basin. One representative can be the individual appointed to the Council of Lake Committees and the second can have expertise in wildlife management. The amendments also shifted coordination of the Proposal Review Committee to the Service.

The amended Act authorized the appropriation of \$16,000,000 annually to the Director of the Service beginning in Fiscal Year 2007, including \$14,000,000 for the Grants Program, as well as Service activities of “regional” importance, and \$2,000,000 for activities of the Great Lakes Coordination Office and the Upper and Lower Great Lakes Fishery Resources Offices. A copy of the amended Act can be downloaded at:

http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_public_laws&docid=f:publ326.109.pdf

Appropriations History- 1992-2006

The initial appropriation of \$1,000,000 to the Director of the Service occurred in Fiscal Year 1992. During Fiscal Years 1992-2006, Congress appropriated (before rescissions) approximately \$16,302,000 for Service operations and \$3,276,000 for fish and wildlife restoration proposals. Table 1 shows appropriations by year to the Director of the Service.

Table 1. Appropriations to the Director of the Service, Fiscal Years 1992-2006.⁵

Fiscal Year	Service Operations \$	Fish and Wildlife Restoration Proposals ⁶ \$	Total Service Appropriation \$
1992	1,000,000	-	1,000,000
1993	1,000,000	-	1,000,000
1994	700,000 ⁷	-	700,000
1995	700,000	-	700,000
1996	700,000	-	700,000
1997	700,000	-	700,000
1998	1,278,000	-	1,278,000
1999	1,278,000	-	1,278,000
2000	1,278,000	400,000	1,678,000
2001	1,152,498	397,124	1,549,622
2002	1,147,437	500,000	1,647,437
2003	1,211,637	496,750	1,708,387
2004	1,166,495	493,839	1,660,334
2005	1,211,279	493,054	1,704,333
2006	1,139,022	492,644	1,631,666

⁴ Amended on October 11, 2006 under Public Law 109-326.

⁵ These numbers are approximate and do not reflect all rescissions and Director’s deferred costs.

⁶ Fish and wildlife proposal funds represent annual add-ons by Congress.

⁷ \$300,000 in appropriations were transferred to the National Biological Service in Fiscal Year 1994.

The remainder of this report describes activities related to the Service's implementation of the Act through the Grants Program and through Service Operations for the period 1998-2006. The report also describes progress made toward the Service's Great Lakes goals.

Implementation of the Act – Great Lakes Fish and Wildlife Restoration Act Grants Program

The authority to fund fish and wildlife restoration projects gave the Service a new tool to tackle the challenges of restoring fish and wildlife resources in the Great Lakes. This successful grants program has facilitated partnerships with others and has provided a process for achieving on-the-ground restoration activities to benefit fish and wildlife in the Great Lakes. These activities also make important contributions toward addressing the Service's six Great Lakes goals, which were established under the 1990 Act.

From 1998 through 2006, 62 partners collaborated on species and habitat related projects. In total, 72 projects have been funded with more than \$3.9 million in federal dollars and \$2.7 million in non-federal matching funds. The Act has primarily supported projects addressing fishery restoration needs identified in the 1995 Great Lakes Fishery Resources Restoration Study and the fish community objectives established by the lake committees. Many of these projects have focused on issues related to the status of fish and wildlife populations –with an emphasis on fish –and their habitats, conditions impeding restoration, and establishment of a framework, including geographic information systems and interagency databases, to help bring management authorities together as a combined force.

The interagency review process coordinated under the Proposal Review Committee has ensured that funds address the 32 recommendations of the 1995 Study, the priorities of the Lake Committees, and the goals for the Joint Strategic Plan for the Management of Great Lakes Fisheries. This process has also helped bring management authorities together to work as a unified force. This section of the report describes in further detail the proposals received for fish and wildlife restoration projects, which projects were funded, and the partners that have been involved with the program from 1998-2006.

Proposals

From 1998-2006, 157 fish and wildlife restoration proposals have been submitted for funding via the process which is implemented through a partnership among the Great Lakes Fisheries Commission, the Council of Lake Committees, and the Service. These project proposals represent a total of \$15.1 million in requested federal funds (Table 2).

Table 2. Great Lakes Fish and Wildlife Restoration Act Proposals received 1998-2006.

Year	Number of Proposals	Federal Funds Requested \$	Matching Funds Offered \$	Total Project Costs \$
1998	5	89,000	58,000	147,000
1999	7	150,000	50,000	200,000
2000	20	3,027,000	2,230,000	5,257,000
2001	19	1,742,000	1,892,000	3,634,000
2002	22	1,892,000	912,000	2,804,000
2003	24	2,271,269	775,000	3,046,269
2004	23	2,185,367	815,000	3,000,367
2005	24	2,397,710	999,021	3,396,731
2006	13	1,433,831	417,326	1,851,157
Totals	157	\$15,188,177	\$8,148,347	\$23,336,524

Funded Projects

Through fiscal year 2006, the Service has entered into 72 agreements to fund a total of 58 projects (some projects funded in more than one year) (Table 3).

Table 3. Great Lakes Fish and Wildlife Restoration Act Funded Projects 1998-2006.

Year	Number of Cooperative Agreements	Federal Funds \$	Matching Funds \$	Total Project Costs \$
1998	3	62,000	52,000	114,000
1999	3	63,000	26,000	89,000
2000	9	487,000	597,000	1,084,000
2001	12	486,000	347,000	833,000
2002	12	575,000	769,000	1,344,000
2003	10	571,750	272,793	844,543
2004	9	566,256	201,034	767,290
2005	7	567,008	261,830	828,838
2006	7	563,915	207,766	771,681
Totals	72	\$3,941,929	\$2,734,423	\$6,676,352

These agreements represent over \$3.9 million in federal funds and \$2.7 million dollars in non-federal match funds directed toward Great Lakes fish and wildlife restoration. See Table 4 for a list of restoration projects supported through the Act.

Geographic Distribution and Activity Focus

To date, projects funded under the Act have been geographically distributed among the Great Lakes as follows: Superior- 14, Michigan- 14, Huron- 11, Erie- 18, Ontario- 9; while several projects address multiple basins and 13 projects are focused basin-wide (Figure 1).

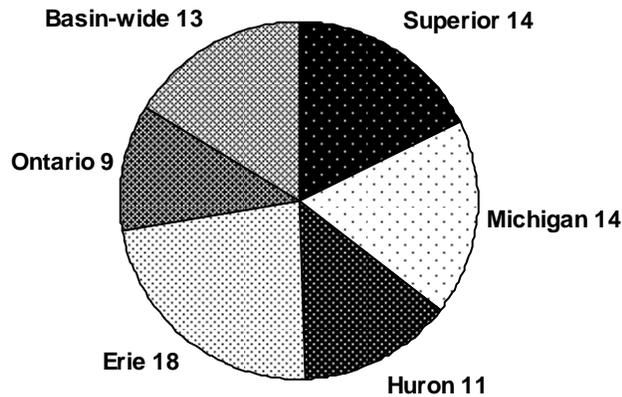


Figure 1. Great Lakes Fish and Wildlife Restoration Act Project Distribution by Lake Basin 1998-2006 (total exceeds total number of projects due to multiple lake focus of some projects).

Most funded proposals have addressed the following basic focus areas: biology and ecology of target species, geographic information systems and habitat assessment, and fish community modeling. Restoration of habitat and species, fish health and genetics, aquatic community dynamics and monitoring, as well as preventing impacts from non-native species have also been addressed (Figure 2). While not all projects have directly implemented restoration actions, all of them have provided important information to support on-going and future restoration actions.

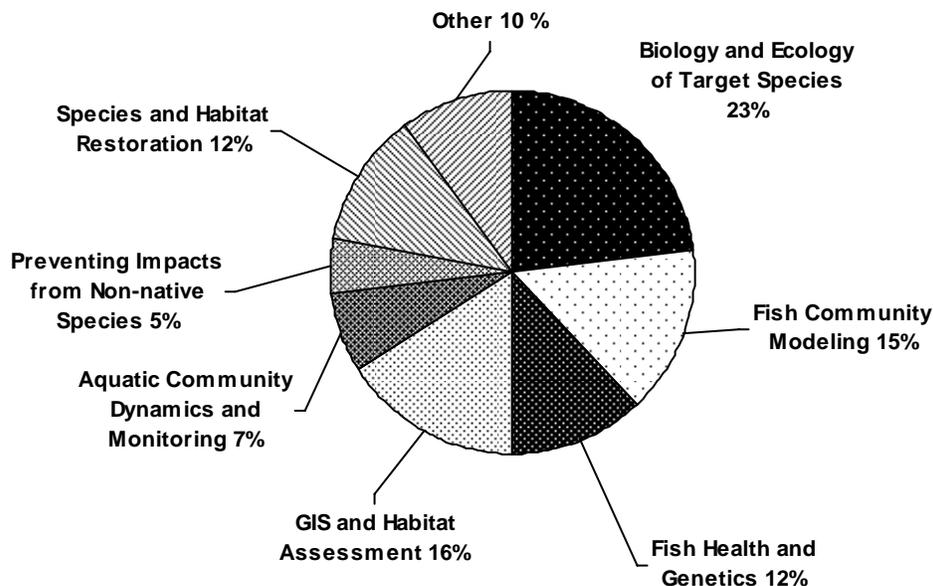


Figure 2. Great Lakes Fish and Wildlife Restoration Act Project Focus Areas 1998-2006.

Partners

The Act has been extremely successful in building partnerships among state, tribal, federal and provincial management agencies for cooperative conservation, enhancement and restoration of Great Lakes fish and wildlife resources and their habitat. These interagency partnerships continue to grow and become more effective each year as additional stakeholders join in Act programs. From 1998-2006, restoration projects were implemented in collaboration with 62 partner organizations who brought funding, in-kind contributions and expertise. These organizations are listed on the next page.

Great Lakes Fish and Wildlife Restoration Act Partner Organizations 1998-2006

State and Local Agencies

Baraga County Road Commission
Illinois Department of Natural Resources
Illinois Natural History Survey
Indiana Department of Natural Resources
Michigan Department of Natural Resources
Michigan Natural Features Inventory
Minnesota Department of Natural Resources
New York State Department of Environmental
Conservation
Ohio Department of Natural Resources
Pennsylvania Fish and Boat Commission
Wisconsin Department of Natural Resources

U.S. Federal Agencies

US Environmental Protection Agency
USGS - Great Lakes Science Center
USGS - Patuxent Wildlife Research Center
NOAA - Great Lakes Environmental Research
Laboratory
NOAA - National Marine Fisheries Service
NOAA - National Undersea Research Program
Smithsonian Institution- Environmental Research
Center
USDA - Natural Resources Conservation Service

Canadian Institutions

Canadian Heritage
Environment Canada
Fisheries and Oceans Canada
Natural Sciences and Engineering Research
Council
Ontario Ministry of Natural Resources
Trent-Severn Waterway

Commissions

Great Lakes Fishery Commission

NGOs, Foundations and Public Interest Groups

Ducks Unlimited
Grand River Conservation Authority
Great Lakes Fishery Trust
The Nature Conservancy- Michigan Chapter
Walpole Island Heritage Center
Riveredge Nature Center

Native American Governments

Bad River Band of Lake Superior Chippewa
Indians
Keweenaw Bay Indian Community Natural
Resources Department
Little Traverse Bay Band of Odawa Indians
Little River Band of Ottawa Indians
Walpole Island First Nation

Native American Treaty Authorities

Chippewa-Ottawa Resource Authority
Great Lakes Indian Fish and Wildlife
Commission

Schools, Colleges and Universities

Central Michigan University
Cleveland State University
Cornell University
Michigan State University
Michigan State University - Sea Grant
North Carolina State University
Northern Illinois University
State University of New York - Fredonia
Sweet Briar College
Trent University
University of California - Davis
University of Guelph
University of Illinois
University of Maryland
University of Michigan- Ann Arbor
University of Minnesota
University of Wisconsin- Stevens Point
University of Wisconsin - Milwaukee
University of Toronto
University of Waterloo
University of Windsor

Others

Detroit Edison Company
Ontario Power Generation

Table 4. Great Lakes Fish & Wildlife Restoration Act Projects- Fiscal Years 1998-2006. Completed projects are highlighted. Final reports for completed projects are available at: <http://www.fws.gov/midwest/fisheries/glfwra-grants.html>.

Year	Project Title	Recipient	Sponsor	Award	Match
2006					
	Boggy bottoms wetland restoration	Ducks Unlimited	OH DNR	\$54,263	\$18,136
	Linking yellow perch movements to nearshore bottom substrate	University of Illinois	IL DNR	\$71,612	\$23,872
	Habitat and biological community characterization, mapping, and modeling in eastern Lake Michigan nearshore zones	Michigan State University	MI DNR	\$79,822	\$26,720
	Modeling historic and temporal variation of Great Lakes walleye maturation schedules	University of Michigan	MI DNR	\$75,170	\$30,186
	Estimating spawning date, hatch date, and strain contribution for lake trout at Lake Michigan's Mid Lake Reef complex	University of Wisconsin-Milwaukee	WI DNR	\$84,220	\$31,511
	Development of a GIS for Great Lakes aquatic habitat	University of Michigan	MI DNR	\$142,360	\$54,090
	Lake St. Clair coastal wetland enhancement	Ducks Unlimited	MI DNR	\$56,468	\$23,251
2005					
	Responses of lake trout and chinook salmon to unprecedented declines in major prey fish abundance in Lake Huron	Michigan State University	MI DNR	\$142,000	\$93,575
	Lake sturgeon rehabilitation using stream-side rearing facilities*	Wisconsin Department of Natural Resources	WI DNR	\$40,000	\$13,333
	Developing and testing models of lake herring (<i>Coregonus artedii</i>) population dynamics in Lake Superior: Implications for restoration in the Lower Great Lakes	Michigan State University	GLIFWC	\$95,996	\$31,999
	Lake Erie watersnake recovery plan implementation: Demographic responses to invasive round gobies	Northern Illinois University	OH DNR	\$40,912	\$31,362
	Development of a GIS for Great Lakes aquatic habitat: Lakes Superior and Ontario	University of Michigan	MI DNR	\$132,124	\$51,831
	Identification of putative pheromones in lake trout	Michigan State University	MI DNR	\$103,976	\$34,660
	Quality assurance of proposal development and review process	Great Lakes Fishery Commission	MN DNR	\$12,000	\$5,070
2004					
	Dynamics and biology of siscowet lake trout in Lake Superior	Michigan State University	GLIFWC	\$81,498	\$27,166
	Use of unmanned submersibles to study lake trout spawning on the Lake Michigan mid-lake reef	University of Wisconsin - Milwaukee	Wisconsin DNR	\$45,995	\$17,648

	A biophysical model of Lake Erie walleye recruitment: explaining historical recruitment and anticipating consequences of future climate change	Michigan State University	Michigan DNR	\$97,272	\$32,424
	Quality control of proposals	Great Lakes Fishery Commission	Minnesota DNR	\$8,000	\$5,460
	Development of genetic management guidelines for lake sturgeon	University of California-Davis	Wisconsin DNR	\$84,600	\$28,200
	Huron-Erie corridor system habitat assessment- changing water levels and effects of global climate change	Ohio State University	Michigan DNR	\$34,107	\$14,455
	Food habits of Lake Ontario offshore prey fish: a reassessment of the magnitude and dynamics of planktivory	Great Lakes Fishery Commission	New York DEC	\$34,000	\$12,000
	Evaluations of pilot-scale venturi oxygen stripping to prevent ballast water invasions	University of Maryland Center for Environmental Science	Illinois DNR	\$75,784	\$25,261
	Assessment of pit tags for estimating exploitation of walleyes in Lake Erie and Saginaw Bay	Ohio Department of Natural Resources	Ohio DNR	\$105,000	\$38,420
2003					
	Analysis of tagging data to quantify lake trout migration in Lake Huron	University of Michigan-Ann Arbor	Michigan DNR	\$30,000	\$10,000
	In situ determination of the depth and thermal habitat used by chinook salmon	U.S. Geological Survey Great Lakes Science Center	Michigan DNR	\$40,000	\$25,927
	An analysis of the diet of steelhead trout in Lake Erie to provide resource managers with a basic understanding of their role in lake-wide predator/prey dynamics	State University of New York- Fredonia	New York DEC	\$18,000	\$7,861
	Potential impact of steel-hulled barges on movement of fish across an electric barrier to prevent the entry of invasive carp into Lake Michigan	University of Illinois	Illinois DNR	\$59,500	\$10,096
	Lake Huron lake whitefish distribution study	Chippewa / Ottawa Resources Authority (CORA)	CORA	\$174,334	\$114,000
	Use of unmanned submersibles to study lake trout spawning on the Lake Michigan mid-lake reef	University of Wisconsin - Milwaukee	Wisconsin DNR	\$42,732	\$14,556
	Quality control of proposals	Great Lakes Fishery Commission	Michigan DNR	\$16,000	\$5,333
	Comparison of techniques for stock discrimination of Lake Erie walleye	Great Lakes Fishery Commission	Ohio DNR	\$3,191	\$1,063
	Otolith microchemistry for percid production in Lake Erie	Great Lakes Fishery Commission	Ohio DNR	\$23,000	\$26,520
	A geographic information system (GIS) for Great Lakes aquatic habitat	University of Michigan-Ann Arbor	Michigan DNR	\$164,993	\$57,437
2002					
	In situ determination of the depth and thermal habitat used by chinook salmon	U.S. Geological Survey Great Lakes Science Center	Michigan DNR	\$34,500	\$25,000

	Evaluating current reproductive success of lake trout at the Port of Indiana breakwater*	University of Illinois-Urbana-Champaign	Illinois DNR	\$115,800	\$38,600
	A modeling approach to understanding potential effects of Double-crested cormorants on simulated Great Lakes fish populations	Central Michigan University	Michigan DNR	\$16,144	\$5,381
	Lake Erie aquatic habitat geographic information system (GIS)*	Michigan Department of Natural Resources	Michigan DNR	\$114,000	\$38,000
	Mapping of habitat in tributary and nearshore waters of Lake Superior to facilitate development of quantifiable fish community objectives and lake sturgeon rehabilitation	Bad River Band of Lake Superior Tribe of Chippewa Indians (BRB)	BRB	\$20,000	\$21,976
	Use of unmanned submersibles to study lake trout spawning on the Lake Michigan mid-lake reef	University of Wisconsin-Milwaukee	Wisconsin DNR	\$27,986	\$12,602
	Comparison of techniques for stock discrimination of Lake Erie walleye	Great Lakes Fishery Commission	Ohio DNR	\$62,770	\$65,790
	Comparative bioenergetic modeling of lake whitefish populations in Lake Erie and Lake Ontario	Great Lakes Fishery Commission	New York DEC	\$66,000	\$76,000
	A comparative study of growth rates, lipid dynamics and nutritional stress in Great Lakes chinook salmon populations	Michigan State University	New York DEC	\$34,000	\$305,000
	Botulism type E in Lake Erie: ecology and lower food web transfer	State University of New York- Fredonia	New York DEC	\$37,000	\$43,851
	Effects of barriers and fragmentation on riverine fish population ecology and genetics	Great Lakes Fishery Commission	Michigan DNR	\$24,000	\$119,100
	Status of a refuge for native freshwater mussels from impacts of the exotic zebra mussel in the delta area of Lake St. Clair	Great Lakes Fishery Commission	Michigan DNR	\$22,800	\$18,120
2001					
	Restoration of deepwater cisco in Lake Ontario	Ontario Ministry of Natural Resources	New York DEC	\$8,000	\$2,700
	Effect of a thiamine deficiency on spawning migration of salmonids in the Great Lakes Basin and development of thiamine treatment protocols for eggs and adults	Department of Fisheries and Oceans-Canada New York State DEC	New York DEC	\$43,500	\$92,000
	Cesium 137 based estimates of gross energy conversion by siscowet, humper and lean lake trout in Lake Superior	Ontario Ministry of Natural Resources Minnesota DNR Wisconsin DNR	Minnesota DNR	\$11,000	\$8,000
	Analysis and modeling of the spatial and temporal dynamics of the Lake Erie walleye fishery	Cornell University Ontario Ministry of Natural Resources	New York DEC	\$64,000	\$25,594
	Thermal and depth distribution of lake trout in MI-4	Great Lakes Indian Fish and Wildlife Commission (GLIFWC)	GLIFWC	\$55,800	\$44,800
	Little Silver Creek habitat proposal	Keweenaw Bay Indian Community Natural Resources Department (KBNR)	KBNR	\$20,000	\$7,500

	Lake Huron aquatic habitat geographic information system (GIS)	Michigan Department of Natural Resources	Michigan DNR	\$92,800	\$86,000
	Genetic assessment of wild and hatchery contributions to steelhead recruitment and to harvests in open water Lake Michigan fisheries.	Michigan State University	Illinois DNR	\$88,070	\$31,930
	Estimating survival rates of Lake Superior lake trout	North Carolina State University	Minnesota DNR	\$35,900	\$13,615
	Development of a lake-wide acoustic monitoring program for Lake Superior pelagic fishes	U.S. Geological Survey Great Lakes Science Center	Minnesota DNR	\$16,033	\$5,400
	In situ determination of the depth and thermal habitat used by chinook salmon	U.S. Geological Survey Great Lakes Science Center	Michigan DNR	\$37,898	\$25,000
	Development of a lake-wide lake trout model for Lake Superior	University of Wisconsin-Stevens Point	CORA/Minnesota DNR	\$13,000	\$4,400
2000					
	Restoration of deepwater cisco in Lake Ontario	Ontario Ministry of Natural Resources	New York DEC	\$37,590	\$12,550
	Development of a lake-wide lake trout model for Lake Superior	University of Wisconsin-Stevens Point	CORA/Minnesota DNR	\$4,500	\$5,500
	Development of an age-structured yellow-perch population model for Lake Michigan	Michigan Department of Natural Resources	Illinois DNR	\$58,499	\$20,000
	Environmental issues and the restoration of river and near shore habitats and dependant fish stocks in Eastern Lake Erie	Ontario Ministry of Natural Resources	New York DEC	\$97,500	\$368,000
	Lake Huron aquatic habitat geographic information system (GIS)	Michigan Department of Natural Resources	Michigan DNR	\$114,500	\$121,000
	Development of a management plan for lake sturgeon within the Great Lakes basin based on population genetic structure	University of California-Davis	Michigan DNR	\$83,000	\$28,000
	Evaluation and population-based modeling of steelhead smolt production in the lower Cattaraugus Creek, New York	State University of New York- Fredonia	New York DEC	\$15,430	\$17,191
	Development of a management plan for lake sturgeon within the Great Lakes basin based on population genetic structure	Michigan State University	Michigan DNR	\$30,000	\$10,250
	Development of a lake-wide acoustic monitoring program for Lake Superior pelagic fishes	U.S. Geological Survey Great Lakes Science Center	Minnesota DNR	\$45,868	\$15,300
1999					
	Development of a lake-wide lake trout model for Lake Superior	University of Wisconsin-Stevens Point	CORA/Minnesota DNR	\$31,000	\$10,400
	Questionnaire regarding fish community objectives for St. Lawrence River	New York State DEC Ontario Ministry of Natural Resources Cornell University	New York DEC	\$2,300	\$5,500

	Assessment of genetic population structure in yellow perch	University of Minnesota-Twin Cities	Illinois DNR	\$30,000	\$10,000
1998					
	Development of a lake-wide lake trout model for Lake Superior – Coordination phase	Chippewa / Ottawa Resources Authority (CORA)	CORA/ Minnesota DNR	\$4,500	\$18,000
	Assessment of genetic population structure in yellow perch	University of Minnesota-Twin Cities	Illinois DNR	\$30,000	\$25,000
	Eastern Lake Ontario food web studies	Ontario Ministry of Natural Resources	New York DEC	\$27,300	\$9,100

* The final reports for these projects have been submitted and are currently being reviewed.

Implementation of the Act – Service Operations

The 1990 Act authorized the establishment and operation of the Great Lakes Coordination Office, the Lower Great Lakes Fishery Resources Office, and the Upper Great Lakes Fishery Resources Offices. Working closely with state, tribal, and NGO partners these offices engage in restoration activities aimed at addressing the Great Lakes' most pressing fish and aquatic resource needs. In conjunction with other Service programs, these offices also make important contributions toward addressing the Service's six Great Lakes goals, which were established under the 1990 Act.

The following five offices were established after the initial appropriation of funds in Fiscal Year 1992:

Great Lakes Coordination Office

The Great Lakes Coordination Office was established in East Lansing, Michigan, in the spring of 1993 and remained in operation until late in 1995. Functions of the office were transferred to the Regional Office in Fort Snelling, Minnesota, in Fiscal Year 1996. The purpose of the Great Lakes Coordination Office, according to the Act, was to include *"intra- and interagency coordination, information distribution, and public awareness outreach."*

Lower Great Lakes Fishery Resources Office

The Lower Great Lakes Fishery Resources Office, located in Amherst, New York, was established in 1992. This station pursues a broad scope of objectives and activities, with coverage including the eastern basin of Lake Erie, Lake Ontario, and connecting waters including the Niagara River and St. Lawrence River. The purpose of the Lower Great Lakes Fishery Resources Office, according to the Act, was to establish *"administrative and technical support services to carry out all United States Fish and Wildlife Service operational activities related to fishery resource protection, restoration, maintenance, and enhancement in the Lower Great Lakes."* More information on the Lower Great Lakes Fishery Resources Office is available at: <http://www.fws.gov/northeast/lowergreatlakes>.

Upper Great Lakes Fishery Resources Offices

The Service established three upper Great Lakes Fishery Resources Offices, located in Ashland, Wisconsin, Green Bay, Wisconsin and Alpena, Michigan, following appropriation of funds under the Act beginning in 1992. These field stations pursue a broad scope of objectives and activities in the Great Lakes with geographic focus extending from western Lake Superior to Lake Erie's central basin. Focus areas, objectives

and activities of these offices are outlined in the Service's Region 3 Fisheries Program Operational Plan. These offices are diverse in focus, serving the objectives of numerous programs and authorities in addition to those of the Act. The purposes of the Upper Great Lakes Fishery Resources Offices, according to the Act, were to establish "*administrative and technical support services to carry out United States Fish and Wildlife Service operational activities related to fishery resource protection, restoration, maintenance, and enhancement in the upper Great Lakes.*" More information on the Upper Great Lakes Fishery Resources Offices is available at: <http://www.fws.gov/midwest/Fisheries/fisheryoffices.htm>.

The Act provides Great Lakes-specific authority for each of these offices and was the initial source of base funding to secure office space, pay salaries, and begin operations. The Act also provided funds for administration of the Service's responsibilities under the Act through our central office in Washington, D.C., and through two regional offices in Fort Snelling, Minnesota and Hadley, Massachusetts. Examples of Service operations conducted by these offices under the Act are included in Appendix A of this report.

Progress Toward the Service's Great Lakes Goals

The Service has made important progress toward achieving its Great Lakes goals through: 1) the Great Lakes Fish and Wildlife Act Grants Program; 2) Service Operations Funded Under the Act; and 3) Service Operations implemented with funds appropriated under authorities other than the Act or through the contributions of partners. This section of the report provides a summary of operational authorities and guidance, Service programs, and partners which have made important contributions toward achieving the Service's Great Lakes goals.⁸

The Service's six Great Lakes goals tie activities authorized under the Act together with Service resource management operations authorized and funded through many other laws, treaties, agreements, codes and guiding documents. Examples of separately authorized and funded programs of the Service which make contributions toward these goals include: operation of the National Wildlife Refuge system; operation of the National Fish Hatchery system; Fisheries and Habitat Conservation programs; Ecological Services programs; Law Enforcement programs; Migratory Bird conservation programs; recovery of federally listed threatened and endangered species under the Endangered Species Act of 1973; and the Federal Aid in Sport Fish and Wildlife Restoration programs.⁹

Although significant accomplishments have been made under each goal, the amount of restoration work that remains is enormous due to the scale and complexity of current restoration issues and new challenges which continually arise. The Service looks forward to working together with our partners to address these challenges and continue making progress toward these Great Lakes goals.

Goal I: Restore and maintain self-sustaining fishery resource populations¹⁰

Primary Operational Authority and Guidance

- Great Lakes Fish and Wildlife Restoration Act of 1998
- Nonindigenous Aquatic Nuisance Species Prevention and Control Act of 1990
- U. S. District Court Consent Decree of 2000, 1836 Treaty waters

⁸ The Great Lakes Fish and Wildlife Restoration Act of 1998 Report to Congress for the Period 1998-2002 contains additional examples of accomplishments toward these goals. This report can be downloaded at: http://www.fws.gov/midwest/Fisheries/REPORT2002_improved1-23-07.pdf

⁹ Additional information on Service programs and accomplishments can be found on the Service's Region 3 website: <http://www.fws.gov/midwest>

¹⁰ New goal as amended in 2006 is: "Restoring and maintaining self-sustaining fish and wildlife resources."

- Convention on Great Lakes Fisheries, 1954
- Great Lakes Fishery Act of 1956
- Joint Strategic Plan for Management of Great Lakes Fisheries
- Federal Power Act
- Fish and Wildlife Act of 1956
- Fish and Wildlife Coordination Act
- Endangered Species Act of 1973

Service Programs

- Fish & wildlife management technical assistance to federal agencies, state agencies, tribal governments and non-governmental organizations
- Conservation of natives fishes to avoid Endangered Species Act listing
- National Fish Hatchery propagation to support native fish rehabilitation
- Aquatic Nuisance Species surveillance and control
- Sea lamprey control
- Fish passage restoration to improve migration and access to habitat
- Coordination and consultation with federal and state regulatory agencies
- Wild and hatchery fish health monitoring and evaluation
- Partners for Fish and Wildlife and Coastal program restoration activities
- Law enforcement

Working closely with our partners, the Service has made substantial progress toward improving the status and management of native species using a variety of tools and expertise. Improving the management of Great Lakes fisheries depends on better understanding the dynamics of a large and complex ecosystem and how native species react to habitat changes and other pressures to their populations. The Service continues to lead or assist efforts to develop fish community goals and objectives, assess, monitor and research fishery resources to characterize how to best manage and restore native fish species. Lake trout, brook trout, lake sturgeon and Atlantic salmon are prime examples of species whose populations have progressively increased within the Great Lakes fish community.

Goal II: Minimize the impacts of contaminants on fishery and wildlife resources

Primary Operational Authority and Guidance

- Clean Water Act
- Fish and Wildlife Coordination Act
- Comprehensive Environmental Response, Compensation and Liability Act
- Oil Pollution Act
- Endangered Species Act

Service Programs

- Technical Assistance to federal, state, and tribal partners on ecotoxicology and

- ecological risk assessment
- Realty Preacquisition Surveys to prevent contaminant impacts to National Wildlife Refuge System lands
- Pesticide Use Proposal Program to minimize use of pesticides on lands of the National Wildlife Refuge System and to apply Integrated Pest Management practices wherever possible
- Participation on U.S. EPA-sponsored Biological Technical Assistance Teams for design and selection of cleanups at National Priority List (“Superfund”) sites
- Oil and hazardous substances spill prevention planning and response
- Clean Water Act coordination through technical assistance to U.S. EPA and states
- Natural Resource Damage Assessment (NRDA) and restoration
- Scientific investigations and surveillance
- Endangered Species Act consultation

Working closely with our partners, the Service prevents contaminant and pollution impacts to fish, wildlife, plants and their habitats, and restores those resources which have been impacted. Using its unique expertise in wildlife and aquatic toxicology, the Service develops resource management actions which would prevent adverse effects of contamination. Where contamination already occurs, the Service performs scientific investigations to identify the effects and then develops management actions to eliminate contaminant-related injuries.

Goal III: Protect, maintain, and, where degraded and destroyed, restore fish and wildlife habitat, including the enhancement and creation of wetlands that result in a net gain in the amount of those habitats

Primary Operational Authority and Guidance

- National Wildlife Refuge System Improvement Act of 1997
- Fish and Wildlife Coordination Act
- National Wildlife Refuge System Administration Act
- Executive Order 12996
- Refuge Recreation Act
- Endangered Species Act of 1973
- Clean Water Act
- Federal Power Act

Program Areas

- National Wildlife Refuges and Wetland Management Districts
- Restoration assistance on private lands
- Partners for Fish and Wildlife, Coastal Program and Fish Passage Program restoration activities
- Coordination and Consultation with Federal and State regulatory agencies
- Wetland and grassland restorations on Service lands
- Migratory bird banding

- Invasive species control
- Natural resource research
- Law enforcement
- Prescribed burning
- Hunting and fishing
- Environmental education and interpretation
- Wildlife observation and photography

Working closely with our partners, the Service implemented fish and wildlife protection and restoration projects on federal, state, tribal and private lands. Each Service office in the basin serves as a cornerstone in researching, evaluating, scoping, and implementing habitat improvement projects. The Service is often a leader of projects and initiatives; lending expertise, staffing, and resources to high-priority basin-wide habitat projects such as the Great Lakes Coastal Program, which has restored or protected more than 1,000 miles of coastal habitat. The protection and restoration of thousands of acres have benefited dozens of fish and wildlife species throughout the Basin –game and non-game, migratory and resident, endangered and non-endangered. Many of these same projects have yielded increased educational and recreational opportunities for Great Lakes area residents.

Goal IV: Stop illegal activities adversely impacting fishery and wildlife resources

Primary Operational Authority and Guidance

- Lacey Act
- Endangered Species Act
- Convention on International Trade in Endangered and Threatened Species (CITES)
- Migratory Bird Treaty Act
- Bald and Golden Eagle Protection Act
- National Wildlife Refuge System Administration Act

Service Programs

- Special Agent Program
- Wildlife Inspection Program
- National Wildlife Forensics Laboratory

Working closely with our partners, the Service strives to stop illegal activities adversely impacting fish and wildlife resources. Efforts include: detecting and deterring crimes involving the illegal take, trade, and trafficking of protected species; investigating activities involving habitat destruction and environmental contaminants; and preventing the introduction of invasive species via international trade and travelers. The Service's Great Lakes Region Office of Law Enforcement takes primary responsibility for the protection and conservation of fish and wildlife through the enforcement of federal wildlife laws and treaties and, as such, is an integral part of the overall management effort

of all Service programs within the Great Lakes basin. The Office is comprised of special agents, wildlife inspectors, regional and field support, and supervisory personnel.

Goal V: Restore threatened and endangered species to viable, self-sustaining levels

Primary Operational Authority and Guidance

- Endangered Species Act of 1973

Service Programs

- Listing and candidate recovery - Identify species that are or could become endangered and protect them under the Endangered Species Act; work with government and private partners to find ways to preclude the need to list species
- Consultation - provide expertise to other Federal agencies to adapt projects so they can be carried out successfully without harming listed species or their habitat
- Recovery - Develop plans to recover listed species and work with partners to implement needed recovery actions
- Grants to states and Private Stewardship - provide grants to states to work on federally listed species; assist private landowners to implement conservation actions

In close coordination with a multitude of partners, including the basin's sportsmen and women, private landowners, local, state, and tribal governments, industry, and nongovernmental organizations, the Service identifies threats to listed species and those in decline but not yet listed, implements conservation actions to address these threats and needs, and assists other Federal agencies in their consultation and species recovery responsibilities. As the lead agency for federally listed threatened and endangered species, the Service has made tremendous progress in recovering listed species and preventing future listings through flexible and innovative programs and techniques to restore the more than 30 species listed under the Endangered Species Act (ESA) that occur within the basin.

Goal VI: Protect, manage, and conserve migratory birds

Primary Operational Authority and Guidance

- Migratory Bird Treaty Act
- Fish and Wildlife Conservation Act
- North American Waterfowl Management Plan (Upper Mississippi River and Great Lakes Joint Venture)
- Partners in Flight landbird conservation plans (Great Lakes Physiographic Areas)
- U. S. Shorebird Conservation Plan (Upper Mississippi Valley/Great Lakes regional plan)

- North American Waterbird Conservation Plan (Upper Mississippi Valley/Great Lakes regional plan)

Program Areas

- Migratory Bird Program
- National Wildlife Refuge System
- Ecological Services Program
- Private Lands Program
- Law Enforcement Program
- Fisheries Program

One of the Service's major trust responsibilities is to maintain and enhance healthy bird populations and habitats for the continued use and enjoyment of the American people. The wide-ranging nature of migratory birds necessitates a collaborative approach to their management, and in the Great Lakes our Migratory Bird Program works Federal, state, provincial, and tribal agencies, nongovernmental organizations, universities, industry, and private citizens to conserve the region's avifauna. Most of our conservation efforts in the Great Lakes focus on about 70 bird species that are of special concern in the Great Lakes because of declining numbers, recreational importance, or "nuisance" problems.

Partners

The Service acknowledges the following partners both within and outside of the Great Lakes basin, who have made valued contributions toward pursuing the Service goals under the Great Lakes Fish and Wildlife Restoration Act:

State Agencies and Institutions

Alabama Department of Conservation
and Natural Resources
Alaska Department of Fish and Game
Arkansas Game and Fish Commission
Connecticut Department of Environmental
Protection
Delaware Division of Fish and Wildlife
Florida Game and Fresh Water Fish
Commission
Georgia Department of Natural Resources
Hawaii Division of Forestry and Wildlife
Illinois Department of Natural Resources
Illinois Natural History Survey
Illinois Nature Preserve Commission
Indiana Department of Environmental
Management
Indiana Department of Natural Resources
Iowa Department of Natural Resources
Kentucky Department of Fish and Wildlife
Resources
Maine Department of Inland Fisheries
and Wildlife
Maine Department of Marine Resources
Maryland Department of Natural Resources
Massachusetts Division of Fisheries and
Wildlife
Michigan Department of Attorney General
Michigan Department of Environmental
Quality
Michigan Department of Natural Resources
Minnesota Department of Natural Resources
Mississippi Department of Wildlife,
Fisheries and Parks
Nebraska Game and Parks Commission
Nevada Division of Wildlife
New Hampshire Fish and Game Department
New Jersey Division of Fish, Game and
Wildlife
New York Sea Grant
New York State Canal Corporation
New York State Department of
Environmental Conservation
New York State Office of Parks, Recreation
and Historic Preservation
North Carolina Wildlife Resources Commission
Northeastern Illinois Planning Commission
Ohio Biological Survey

Ohio Department of Natural Resources
Division of Natural Areas & Preserves
Ohio Department of Natural Resources,
Division of Parks
Ohio Department of Natural Resources
Division of Soil & Water
Ohio Department of Natural Resources
Division of Water
Ohio Department of Natural Resources
Division of Wildlife
Ohio Department of Transportation
Ohio Environmental Protection Agency
Ohio Office of Administrative Services
Ohio Sea Grant
Pennsylvania Fish and Boat Commission
Pennsylvania Game Commission
Pennsylvania Sea Grant
Tennessee Wildlife Resources Agency
Texas Parks & Wildlife Department
Vermont Department of Fish and Wildlife
West Virginia Division of Natural Resources
Wisconsin Department of Agriculture,
Trade and Consumer Protection
Wisconsin Department of Justice
Wisconsin Department of Natural Resources
Wisconsin Department of Transportation

Native American Governments

Bad River Band of Chippewa Indians
Bay Mills Indian Community
Fond du Lac Band of Chippewa Indians
Grand Portage Band of Chippewa Indians
Grand Traverse Band of Ottawa and Chippewa
Indians
Keweenaw Bay Indian Community
Little River Band of Ottawa Indians
Little Traverse Bay Band of Odawa Indians
Menominee Indian Tribe of Wisconsin
Oneida Tribe of Indians of Wisconsin
Red Cliff Band of Chippewa Indians
Red Lake Band of Chippewa Indians
Saginaw Chippewa Tribe
Sokaogon Chippewa Community
St. Regis Mohawk Tribe

Native American Treaty Authorities

1854 Authority
Chippewa-Ottawa Resource Authority
Great Lakes Indian Fish and Wildlife
Commission

U.S. Federal Agencies

U.S. Air Force, Niagara Falls Air Reserve
Station
U.S. Air Force, Peterson Air Force Base
U.S. Army Corps of Engineers
U.S. Army Corps of Engineers, Marine
Design Center
U.S. Bureau of Indian Affairs
U.S. Coast Guard
U.S. Customs
U.S. Department of Agriculture,
Conservation Reserve Program
U.S. Department of Agriculture, Natural
Resources Conservation Service,
Timberland RC&D
U.S. Department of Agriculture,
Forest Service
U.S. Department of Agriculture, Animal
and Plant Health Inspection Service
U.S. Department of Commerce, National
Oceanic and Atmospheric Administration
U.S. Department of Defense, U.S. Army 10th
Mountain Division and Fort Drum Division
of Natural Resources
U.S. Department of Justice, Assistant
United States Attorney, Timothy O'Shea
U.S. Environmental Protection Agency
U.S. Federal Aviation Administration, Baltimore
U.S. Federal Communications Commission
U.S. Geological Survey, Great Lakes
Science Center
U.S. Geological Survey, Midcontinent
Ecological Science Center
U.S. Geological Survey, Patuxent Wildlife
Research Laboratory
U.S. Geological Survey, Upper Midwest
Science Center
U.S. National Park Service

Canadian Institutions

Canadian Wildlife Service
Department of Fisheries and Oceans
Environment Canada
Ontario Ministry of Natural Resources
Province of Quebec

Schools, Colleges and Universities

Ascension Lutheran School
Central Michigan University
Clemson University
Concordia Lutheran School
Cornell University
Lake Superior State University
McGill University
McMasters University
Michigan State University
Michigan Technical University
Northern Illinois University
Northland College
Notre Dame University
Ohio State University
Otterbein College
Purdue University
State University of New York at Buffalo
State University of New York at Oswego
State University of New York College
of Environmental Science and Forestry
University of Michigan
University of Minnesota
University of Wisconsin

Local Institutions and Organizations

Black Swamp Bird Observatory
Chicago Park District
City of Buffalo Parks Department
City of Chicago
City of Cuyahoga Falls
City of Toledo
Cleveland Metroparks
Columbus Zoo and Aquarium
Coshocton Soil and Water Conservation
District
Crystal Lake Park District
Elkhart Environmental Center
Erie County Department of Environment
and Planning
Erie County Soil and Water Conservation
District
Field Museum of Natural History
Holden Arboretum
Ionia County Drain Commission
Jimtown Historical Museum
John G. Shedd Aquarium
Lagrange County Parks Department
Lake Metroparks
Lenawee County Soil and Water
Conservation District
Lenawee and Hillsdale County Soil and
Water Districts

Monroe County Health Department
Niagara County Soil and Water
Conservation District
O'Hare International Airport
Orleans County Soil and Water
Conservation District
Put-in-Bay Port Authority
Rosamond Gifford Zoo
Seneca Park Zoo
St. Charles Park District
Summit County Metroparks
Toledo Metropolitan Park District
Toledo Port Authority
Toledo Zoo
Whitefish Point Bird Observatory

NGOs, Foundations and Public Interest Groups

American Fisheries Society
American Fisheries Society, Ohio Chapter
Atlantic Flyway Council
Audubon Society
Bird Conservation Network
Central Flyway Council
Chicago Audubon
Defenders of Wildlife
Ducks Unlimited
Fox Valley Land Foundation
Fish Creek Natural Resource Damage
Assessment Trustee Council
Green Tree Garden Club
International Crane Foundation
Izaak Walton League of America,
Ohio Division
McGraw Wildlife Foundation
Michigan United Conservation Clubs
Mississippi Flyway Council
Mussel Mitigation Trust
National Audubon Society
National Fish and Wildlife Foundation
National Wildlife Federation
Natural Resources Foundation of Wisconsin
Ohio Environmental Education Fund
Ohio Farm Bureau Federation
Ohio Federation of Soil and Water
Conservation
Ohio Lepidopteran Society
Ohio Wetlands Foundation
Operation Migration
Pacific Flyway Council
Pheasants Forever
Pheasants Forever, Lenawee County Chapter
Pheasants Forever, Erie-Ottawa-Sandusky
Chapter

Shirley Heinze Environmental Fund
Sturgeon of Tomorrow
The Conservation Fund
The Nature Conservancy
The Nature Conservancy, Ohio Chapter
Trout Unlimited
Water Management Association of Ohio
Wisconsin Society for Ornithology

Commissions

Great Lakes Fishery Commission
International Joint Commission

Others

A&E Television
Grand River Partners Inc.
Great Lakes Carrier Association
Great Lakes Power LTD
Hull and Associates
Information Design Group
Sault-Edison Electric Company
United States Steel Corporation
The Mead Corporation Paper Division,
Woodlands Department

Appendix A – Examples of Service Operations Conducted under the Act

Great Lakes Coordination Office and Regional Offices

From 1993 through 1995, the **Great Lakes Coordination Office** conducted the following activities: established and facilitated the Great Lakes Basin Ecosystem Team; published the EcoNet newsletter; negotiated the development of a Memorandum of Understanding with State and Native American Tribal partners; facilitated meetings with partners to discuss the implementation of the Act and to discover any needed modifications to the Act; produced annual Act progress reports to Congress; coordinated completion of the Great Lakes Fishery Resources Restoration Study Report to Congress (1995); and, at the request of Congressional staff, assisted in developing modifications to the Act and in supporting reauthorization of the Act. Functions of the office were transferred to the Regional Office in Fort Snelling, Minnesota, in Fiscal Year 1996.

Since taking responsibility for the duties of the Great Lakes Coordination Office in 1996, the Assistant Regional Directors for Fisheries and staff in Regions 3 (Fort Snelling, MN) and 5 (Hadley, MA) have undertaken these activities:

- Administer budget, personnel, office space, work priorities, coordination, reporting and public outreach in support of the Upper and Lower Great Lakes Fishery Resources Offices
- Coordinate implementation of the Act among all programs within the Service and between Region 3 and Region 5
- Coordinate implementation of the Act with Great Lakes partners
- Provide information to Congress on the status of the Act and the restoration of Great Lakes fish and wildlife resources
- Completed the Great Lakes Fish and Wildlife Restoration Act report to Congress, 1998-2002 (Available at: http://www.fws.gov/midwest/Fisheries/REPORT2002_improved1-23-07.pdf)
- Serve as Observer/alternate on the Great Lakes Fish and Wildlife Restoration Proposal Review Committee
- Administer Great Lakes fish and wildlife restoration project cooperative agreements including funds transfer and information transfer
- Serve as Member/alternate on the Council of Great Lakes Fishery Agencies
- Serve as Observer/alternate to the Council of Lake Committees

Lower Great Lakes Fishery Resources Office

The **Lower Great Lakes Fishery Resources Office, Amherst, New York**, is currently staffed by seven employees involved with native lake trout, lake sturgeon and Atlantic salmon restoration, American eel conservation, estuary and tributary studies, environmental monitoring, aquatic habitat restoration and public outreach.

What the **Lower Great Lakes Fishery Resources Office** has accomplished with funding provided through the Act:

- Lake trout restoration activities for Lake Erie and Lake Ontario
 - Participate in Lower Great Lakes Interagency Lake Trout Group
 - Participate in Lake Erie Coldwater Task Group
 - Coauthored *A Management Strategy for Lake Ontario Lake Trout*
 - Assist with lake trout tagging and assessment and conduct studies of survival of hatchery fish
- Lake sturgeon restoration
 - Held workshop *Conservation and Management of Lake Sturgeon in the Great Lakes: Problems and Perspectives, issues and concerns* and published proceedings
 - Held two workshops, *Great Lakes Lake Sturgeon Coordination Meeting*, and published proceedings in 2002
 - Collected sturgeon samples from several Lower Great Lakes sites for genetic analysis and additional data on those populations
 - Tracked movement and habitat use of lake sturgeon in the Niagara River
 - Evaluated survival and movement of stocked lake sturgeon in the Oswegatchie River
 - Evaluated habitat use by sturgeon on the Genesee River
 - Evaluated contaminant levels in Genesee River lake sturgeon
 - Work cooperatively with Canadian commercial fishers and natural resource offices to collect data on incidentally caught sturgeon
 - Provide technical expertise and support to partner agencies
- Lake Ontario and St. Lawrence River Atlantic Salmon Restoration
 - Established and maintained two strains of Atlantic salmon broodstock and provided fish from Allegheny NFH for stocking at Lake Ontario sites
 - Conducted studies of habitat and other conditions necessary for Atlantic salmon restoration
 - Coordinated the transfer of Atlantic salmon eggs and fry to the St Regis Mohawk Tribes for restoration activities in the St Lawrence River
- Lake Ontario and St. Lawrence River American Eel conservation
 - Assisted the Tunison Lab with collection of American eel from the Niagara River
 - Assisted USGS with mark and recapture study of American eel in the Niagara River and St Lawrence River
 - Evaluation of obstructed fish passage for tributaries within the Great Lakes and Atlantic coast watersheds to determine habitat loss

- Prepared paper on American eel in Lake Ontario covering distribution, abundance, life history and requirements for restoration
- Lake Ontario and Lake Erie fish community and environmental objectives
 - Participate on the Lake Ontario Technical Committee
 - Participate on Lake Ontario and Lake Erie LaMP executive committees and working groups
 - Participated in development of fish community goals and environmental goals for Lake Erie and Lake Ontario, preparing species life histories for burbot, lake herring and lake sturgeon
 - Participated in the Lake Erie lower trophic level assessment program and coauthored annual reports
- Lower Great Lakes estuary and tributary activities
 - Participate in wetland restoration activities
 - Conducted sampling activities to assess fish habitat, fish production and trophic conditions for several tributaries
 - Participated in activities of the Times Beach Nature Preserve Working Group, developing public access and assessing potential for environmental restoration
 - Participated in aquatic habitat and community monitoring for restoration on Ellicott Creek, Buffalo Creek and Cazenovia Creek, NY
 - Prepared Fishery Enhancement Plans for four Lake Ontario tributaries and one St Lawrence River tributary for the New York DEC
 - Assist with coordination and planning for GIS development and data
- Outreach and Education Activities
 - Participated in several outreach activities and annual events including:
 - Hosted LGLFRO Open House and Fish and Wildlife Festival
 - Participated in NYSDEC Fall Festival at Reinstein Woods
 - Participated in Great Lakes Fisheries Leadership Institute
 - Participated in Western New York Earth Day celebrations
 - Participated in Erie County Fair and won awards in the Conservation Department four years in a row
 - Participated in Fleet Waterfront Festival
 - Worked with Scout Troops and Town of Amherst on the Dann Lake Restoration Program; the Scouts were given a Presidential Award for this program
 - Participated in the Orleans County Conservation Field days
 - Participated in the Erie Canal Fest
 - Participated in the Erie County Envirothon
 - Participated in International Migratory Bird Day

Upper Great Lakes Fishery Resources Offices

Ashland Fishery Resources Office

The **Ashland, Wisconsin, Fishery Resources Office** has been in operation since 1978. Activities were refocused toward the Service's Great Lakes Restoration Act goals,

including restoration of Great Lakes fisheries, beginning in 1992. Work of the Ashland FRO is geographically focused within the Lake Superior Basin, however it is our lead station for managing aquatic invasive species activities in the Great Lakes and co-manages the Great Lakes Coastal Program along with the East Lansing Ecological Services Field office.

Ashland FRO is currently staffed by 7 employees involved with native lake sturgeon and brook trout restoration, management of lake trout, whitefish and walleye fisheries, coordinating ruffe surveillance and control activities Great Lakes-wide, conducting ruffe and round goby monitoring activities, restoration of wetlands, coastal areas and stream habitat including fish passage, addressing trust responsibilities to 14 tribes and three tribal treaty authorities, providing technical assistance to National Wildlife Refuges, National Forests, and National Parks in the Lake Superior basin, fulfilling the Service's commitments under the Joint Strategic Plan for Managing Great Lakes Fisheries, representing the Service in the Lake Superior Bi-national Program, providing public education and public use opportunities, and assisting the Division of Ecological Services in the review of federal projects in the Lake Superior basin.

What the **Ashland, Wisconsin, Fishery Resources Office** has accomplished with funding provided through the Act:

- Lake Superior Technical Committee (LSTC) activities
 - Participate as LSTC member and cooperate in interagency activities coordinated through the Lake Superior Committee
 - Co-authored 2003 Fish Community Objectives for Lake Superior
 - Chair the LSTC Lake Sturgeon Work Group, whose objective is to coordinate and monitor lake sturgeon rehabilitation efforts
 - Assist with lake-wide spring gill nets surveys of siscowet lake trout
 - Fulfill data requests from universities and fishery agencies researching lake trout diet and demographic characteristics, coaster brook trout and lake sturgeon biological and genetic information, and nearshore fish community composition
 - Participate and contribute to Lake Superior Committee functions at Great Lakes Fishery Commission meetings
 - Author lake sturgeon and nuisance species sections of State of Lake Superior 2000 report
 - Participate on Lake Superior Binational Program Task Force and work committees to develop and implement the Lake Superior LaMP
 - Contribute to development of environmental objectives
- Brook trout restoration activities in Lake Superior
 - Developed and implementing management and/or rehabilitation plans with Wisconsin and Michigan DNR, Grand Portage Indian Reservation, Isle Royale National Park, Pictured Rocks National Lake Shore, and Whittlesey Creek National Wildlife Refuge
 - Developed and maintaining two strains of coaster brook trout brood stocks from Lake Superior for rehabilitation stocking efforts (IRNFH)

- Developed coaster brood stock management plan for Service hatcheries and coordinated genetic evaluation of brood stocks
- Collect samples and coordinate grants and submission of samples to geneticists for basin-wide genetic studies associated with wild and hatchery stocks
- Authoring and co-authoring papers and contributing data for the Lake Superior Brook Trout Initiative to advance scientific knowledge of coasters
- Exploring incidence and impact of splake producing backcrosses with brook trout
- Conduct tributary and nearshore surveys at Isle Royale National Park to assess the status of coasters and evaluate restoration stocking efforts
- Lake sturgeon restoration activities in Lake Superior
 - Organizes basin-wide coordination meetings to facilitate coordination of efforts to assess and rehabilitate lake sturgeon
 - Implementing lakewide rehabilitation plan by providing technical expertise, consultation, and field assistance on sturgeon projects
 - Work cooperatively with tribal commercial fishers and natural resource offices to collect data on incidentally caught sturgeon
 - Co-organizing and hosting a series of 3 Great Lakes basin Lake Sturgeon Coordination Meetings to foster communication and disseminate information
 - Assess and evaluate remnant population in Bad and White rivers on Bad River Indian Reservation
 - Co-investigator on development of stocking guidelines for the genetic management of lake sturgeon in the Great Lakes basin
 - Contributed as co-investigator on development of a management plan for lake sturgeon within the Great Lakes basin based on population genetics structure
 - Contributed to development of a basin-wide database on lake sturgeon tributary assessment and research activities
 - Coordinate collection and submission of lake sturgeon tissue samples and work with geneticists, to evaluate population genetic structure and diversity
 - Contributed to development of a lake sturgeon tag identification database to facilitate coordination among researchers and biologists
 - As opportunities arise provide lake sturgeon samples for contaminant analysis
 - Conducted pilot projects to evaluate the feasibility of data recording tags for use with lake sturgeon and acoustic mapping of juvenile habitat
- Shortjaw cisco status review
 - Providing peer review of range-wide status review, and technical assistance to identify data and information gaps
- Technical Assistance
 - Provide assistance to tribal and university staff rearing walleye and brook trout

- Consult with tribal biologists to evaluate a plan to re-establish a river resident lake sturgeon population
- Assist with registration and collection of biological and tag data during lake sturgeon spearing on Lake Winnebago, Wisconsin
- Outreach
 - Reports, web sites, aquatic education, participation in public events, professional presentations, and interviews
- Conserving fish and wildlife habitat
 - Working with partners to provide fish passage in new construction, and improve fish passage in Bad River basin
 - Fish habitat description and inventory
 - Developed plan and contribute to study to describe and quantify nearshore habitat for coasters at Isle Royale National Park
 - Developed plan and contribute to study to describe and quantify tributary habitat for riverine and migratory species with focus on lake sturgeon

Green Bay Fishery Resources Office

Work of the **Green Bay, Wisconsin, Fishery Resources Office** is geographically focused within the Lake Michigan Basin, however this station maintains the Great Lakes Fish Stocking Database, and provides technical assistance in collecting, analyzing and reporting fisheries data to Service stations Great Lakes-wide.

The station is staffed by 7 employees involved with native lake trout and lake sturgeon restoration, management of lake trout, whitefish, walleye and yellow perch fisheries, conducting ruffe monitoring activities, restoration of stream habitat including fish passage, addressing trust responsibilities to 7 tribal governments and one tribal treaty authority, fulfilling the Service's commitments under the Joint Strategic Plan for Managing Great Lakes Fisheries, providing technical assistance in our Natural Resource Damage Assessment program, representing the Service on the Scientific Advisory Team to the Great Lakes Fishery Trust, and providing public education and public use opportunities.

What the **Green Bay, Wisconsin, Fishery Resources Office** has accomplished with funding provided through the Act:

Lake Michigan Committee Activities

- Co-authored the Fish-community Goals for Lake Michigan
- Served as chair of the Lake Michigan Technical Committee (LMTC) from 1992 – 2002. Organized the first State-of-the-Lake Report at the 2000 Lake Committee meeting, was editor on the written report, and co-author of the planktivore and the benthivore chapters of the report
- Participated in the lake-wide stocking conference in Benton Harbor, MI and the yellow perch conference in Kenosha, WI to provide information to the public
- Lead the development of the protocol for conducting diet studies of Lake Michigan piscivores

- Assisted with the development of the Lake Wide Assessment Plan for Lake Michigan fish communities
- Serves as chair of the Lake Trout and Lake Sturgeon Task Groups and leading the development of lake-wide restoration plans for both species
- Conducts or assists in spring gill net surveys at five locations following the Lakewide Assessment Plan (LWAP) protocol
- Authored a scientific paper on the contributing factors and management implications of the Chinook salmon epizootics in Lake Michigan and co-authored a paper on the seasonal, spatial, ontogenetic, and long-term trends in lipid concentrations in Lake Michigan fishes

Lake Trout Restoration Activities in Lake Michigan

- Evaluate lake trout propagation by the National Fish Hatchery System
- Developed broodstock management plan for Service lake trout hatcheries
- Lead the collection of eggs and development of the Klondike strain broodstock
- Lead the completion of a document on possible impediments to lake trout restoration in Lake Michigan
- Coordinated a multi-agency project to evaluate the success of lake trout stocking strategies to reestablish spawning stocks on offshore vs. onshore and stocked vs. non-stocked reefs
- Process lake trout coded wire tags lake-wide from all agencies on Lake Michigan and maintains database
- Contracted a commercial fisher to fish a pound net to tag lake trout in northwestern Lake Michigan to assess movement and mortality
- Conduct gill net surveys during spawning at Clay Banks and Norheim reefs.
- Collects lake trout eggs from northwestern Lake Michigan to assess trends in Early Mortality Syndrome
- Analyzed interagency data from fall spawning surveys and spring LWAP surveys to assess the relative performance of lake trout strains in Lake Michigan
- Completed a report on the evaluation of the relative survival of large high quality and smaller low quality lake trout stocked at Clay Banks
- Completed a report describing the diet of Lake Michigan lake trout from 1985-1995
- Completed a report on the recruitment of hatchery-reared lake trout into sport and commercial fisheries in Lake Michigan
- Evaluated changes in fish health indices for high and low quality lake trout used during the evaluation study and fish stocked before and after the change in quality of fish stocked by Service hatcheries
- Authored or co-authored four scientific papers published in the proceedings of the 1994 RESTORE Conference including the case history paper on the "Progress Toward lake Trout Restoration in Lake Michigan"
- Co-authored six scientific papers on lake trout in Lake Michigan on mortality, movement, lipid concentrations, strain evaluation, effects on rewards on tag returns, and historic spawning aggregations
- Co-authored a scientific paper on the "Genetic Evaluation of a Great Lakes Trout Hatchery Program"

Lake Sturgeon Restoration Activities in Lake Michigan

- Coordinates activities of a team of researchers and biologists from 5 universities and 5 agencies to assess the status of lake sturgeon populations in Lake Michigan
- Collects, coordinates and contributes genetic samples, and works with geneticists, to evaluate genetic diversity of lake sturgeon basin-wide
- Work with state and tribal commercial fishers and natural resource offices to collect data on incidentally caught lake sturgeon
- Participating in studies to assess movement in Green Bay, historic abundance in Lake Michigan, juvenile habitat use in the Peshtigo River, stock structure in Green Bay, and habitat analysis of Green Bay tributaries
- Provided consultation and representation on fish passage and FERC relicensing issues related to lake sturgeon in Lake Michigan
- Organizes basin-wide coordination meetings on lake sturgeon assessment and restoration activities
- Participated in the development of a basin-wide database on sturgeon assessment activities
- Organizing and hosting a series of three Great Lakes basin Lake Sturgeon Coordination Meetings to foster communication and disseminate information
- Assisted in the drafting of guidelines for the genetic conservation, stocking and Propagation of lake sturgeon in Lake Michigan
- Produced a report on the status of spawning populations in tributaries to Southern Green Bay 2001-2003
- Co-authored 4 scientific papers on the movement patterns, habitat preferences, sampling techniques and biological attributes of juvenile lake sturgeon in a Lake Michigan tributary, and on the genetic population structure of remnant lake sturgeon populations in the Upper Great Lakes

Maintenance of the Great Lakes Fish Stocking Database

- Coordinates with the 8 Great Lakes states, Indian tribes, and the Ontario Ministry of Natural Resources to compile stocking data into a single database that is served on the GLFC website

Provides Technical Assistance

- Assists Tribal biologists with assessment study designs and activities
- Provides statistical catch at age modeling expertise for management agencies
- Completed the Lake Superior case history paper for the SCOL II symposium
- Provides expertise on fish habitat restoration projects
- Provides technical assistance on the status review of shortjaw cisco in Lake Superior
- Provides expert advice on the development of assessment capabilities on the new Service stocking and assessment vessel the M/V Spencer F. Baird

Alpena Fishery Resources Office

Work of the **Alpena, Michigan, Fishery Resources Office** is geographically focused within the Lake Huron Basin, the western and central basins of Lake Erie, and the Huron-Erie corridor. This station also chairs the Technical Fisheries Committee and the Modeling Sub-Committee of the U. S. District Court Consent Decree covering 1836 Treaty waters in Lakes Superior, Huron and Michigan.

The station is staffed by 8 employees involved with native lake trout and lake sturgeon restoration, management of lake trout and whitefish fisheries, conducting ruffe and round goby monitoring activities, restoration of wetlands and stream habitat including fish passage, addressing trust responsibilities to 6 tribes and one tribal treaty authority, providing technical assistance to National Wildlife Refuges in Michigan and Ohio, fulfilling the Service's commitments under the Joint Strategic Plan for Managing Great Lakes Fisheries, and providing public education and public use opportunities.

What the **Alpena, Michigan, Fishery Resources Office** has accomplished with funding provided through the Act:

- Lake trout restoration activities for Lake Huron
 - Evaluate lake trout propagation by National Fish Hatchery System
 - Conduct annual fall spawning surveys at Six Fathom Bank Refuge and Yankee Reef complex in central Lake Huron and collect lake trout eggs from these sites to assess trends in Early Mortality Syndrome
 - Led planning with Ontario Ministry of Natural Resources for the development of a Parry Sound strain broodstock for use in rehabilitation efforts in U.S. waters of Lake Huron
 - Led a project to evaluate the success of a program change at the Jordan River NFH to enhance the quality of yearling lake trout stocked in U.S. waters of Lake Huron
 - Led a project to evaluate and quantify movement patterns of stocked lake trout in nearshore and offshore waters of Lake Huron
 - Annually process tags recovered from Service, state and tribal assessment fisheries, state recreational and tribal commercial fisheries in Lake Huron
 - Co-author annual summary of coded-wire tag studies for Lake Huron Committee meeting

- Lake sturgeon restoration activities for Lake Huron and the St. Clair Corridor
 - Coordinate interagency collaboration for lake sturgeon restoration in Lake Huron, the St. Clair River corridor and western Lake Erie through the Central Great Lakes Binational Lake Sturgeon Group
 - Collaborate with Ontario MNR and Michigan DNR for lake sturgeon tagging in main basin of Lake Huron and the St. Clair River Corridor
 - Collects, coordinates and contributes genetic samples, and works with geneticists, to evaluate genetic diversity of lake sturgeon basin-wide
 - Work with state and tribal commercial fishers and natural resource offices to collect data on incidentally caught lake sturgeon

- Leads studies to assess habitat use and movement in the southern Main Basin of Lake Huron and the upper St. Clair River through the use of ultra-sonic tagging
- Led the development of and provides oversight for a Great Lakes-wide lake sturgeon tagging database
- Developed and manages the Great Lakes Lake Sturgeon Web-Site
- Co-investigator on project to develop a management plan for lake sturgeon within the Great Lakes Basin based on population genetics structure
- Lake Huron Technical Committee (LHTC) activities
 - Participate as member and cooperate in interagency activities coordinated through the LHTC
 - Serve as member of LHTC - Lake Trout Task Group to coordinate activities associated with rehabilitation efforts in Lake Huron
 - Serves as chair of the LHTC - Lake Sturgeon Task Group to coordinate activities associated with charges received from the LHC relating to lake sturgeon restoration efforts
 - Served as lead author for the *Status of Species Diversity, Genetic Diversity, and Habitat*, and co-author of the *Status of Cool-Water Fishes* sections of the 1992 State of Lake Huron Report
 - Served as lead author for the *Recent Invasive Species* and co-author of *The Nearshore Fish Community* sections of the 1999 State of Lake Huron Report
 - Led the development of a standardized Lake Huron coded-wire tagging database that houses all agency tag returns and enhances interagency collaboration and data analysis
- Provides Technical Assistance
 - Provides statistical catch at age modeling expertise for management agencies
 - Provides expertise on wetland and fish habitat restoration projects
 - Provides technical assistance to agencies for burbot ageing studies
 - Provides assistance to tribal agencies for the development of management plans
 - Provides leadership and technical assistance for fish passage improvement programs in northern Michigan
- Outreach
 - Deliver outreach program highlighting agency, station and Great Lakes activities to various public forums (school groups, conservation groups, public festivals)
 - Develop and update internet web sites for the station, Region 3 Fisheries Program and Great Lakes Lake Sturgeon
 - Lead efforts for Invasive Species education in northern Michigan and works jointly with the Michigan DNR for an annual Invasive Species Awareness Week at the state capitol

National Fish Hatchery Operations

National Fish Hatcheries in Saratoga, WY, Iron River, WI, Genoa, WI, Jordan River, MI, Pendills Creek, MI, Sullivan Creek, MI and Allegheny, PA, develop and maintain broodstock and propagate lake trout for interagency restoration programs in Lake Huron, Lake Michigan, Lake Erie and Lake Ontario. A portion of the Fiscal Year 1998 increase in funding appropriated to the Service under the Act was provided to help offset the increasing cost of producing these fish.

National Fish Hatcheries serving the Great Lakes are involved in partnerships with the Minnesota DNR, Wisconsin DNR, Michigan DNR, Red Cliff Band, Keweenaw Bay Indian Community and Ontario MNR, in the collection and isolation of future lake trout broodstock from wild donor populations and the management of broodstock strains for interagency restoration programs. Funds appropriated through the Act help to pay a portion of the costs of these activities.

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