

USFWS Coastal Program funded Lake Sturgeon Projects

Below are a list of lake sturgeon projects that have been partially funded by grants from the U.S. Fish and Wildlife Service's Coastal Program from 2000 to 2007. For program information and other projects funded, visit the Coastal Program web site at <http://greatlakes.fws.gov/glcoastal.htm>.

Detroit River Lake Sturgeon Telemetry Project (FY 2000)

This project allowed the US Fish and Wildlife Service, Alpena Fishery Resources Office to gather current information on lake sturgeon abundance, distribution, movement, habitat utilization, and genetic diversity in the Detroit River. The work is also allowing determination of the presence of spawning lake sturgeon in the river. The tracking data identified habitat types and areas of the river that are critical for lake sturgeon survival. The set lining protocol developed on the Detroit River to sample sturgeon has been shared with other Service Fisheries Stations and with universities and has resulted in increased lake sturgeon catch rates for them. The information generated from this project is being shared with a number of state, federal and NGO groups. Monthly activity reports produced by the Alpena FRO have highlighted the Detroit River Project. These reports were distributed to all fisheries field offices and to Regional Office staff and Ecosystem team coordinators. In addition to this reporting, the sonic tracking information has been shared with the Michigan Department of Natural Resources, Mt. Clemens Fisheries Research Station. That station is conducting a similar lake sturgeon telemetry study on Lake St. Clair. Information on fish location and habitat characteristics of the sites where the fish were relocated has been exchanged. Information will be compared between the two studies to characterize habitat utilized by lake sturgeon. This information will enable resource agencies to protect and restore habitats needed by lake sturgeon in the Great Lakes.

A total of 30 lake sturgeon were captured during this project. Ten of the fish were implanted with sonic transmitters. All fish were tagged with monel tags and biological data was collected from each fish. The sonic tags allowed movement patterns of the fish to be monitored and revealed habitats in the Detroit River that are critical for lake sturgeon survival.

The project benefited from a diverse group of partners. Partner contribution enabled the work to be accomplished. The following is a listing of the partners that participated in the project and how they assisted.

Central Michigan University Biology Department provided graduate student and telemetry equipment. The student supervised field operations and conducted all lake sturgeon surgeries. Sampling for lake sturgeon and tracking was conducted each week of the study.

Michigan Department of Natural Resources Mt. Clemens Fisheries Research Station tracked lake sturgeon that had moved out of the Detroit River and into Lake

St. Clair. Information provided from this tracking helped to identify critical habitats in Lake St. Clair and document movement of the lake sturgeon.

Ohio Division of Wildlife Fairport Fisheries Station provided bait for set lines that were used to capture the lake sturgeon. Their trawling efforts in Lake Erie provided an adequate supply of round goby for set lining. Approximately 8,000-10,000 dead gobies were used for set lining in FY 2000.

US Geological Survey Great Lakes Science Center provided staff to assist with lake sturgeon sampling and tracking.

Down River Walleye Federation provided staff to assist with lake sturgeon sampling and tracking. Members of this group also assisted with bait collection and shared their extensive knowledge about lake sturgeon population in the Detroit River.

Wyandotte Municipal Boat Launch allowed free parking and access to the river.

The following US Fish and Wildlife Service Offices provided assistance for lake sturgeon sampling and telemetry: Alpena FRO, East Lansing FO, and Ann Arbor LE.

Financial assistance was provided by the following organizations in addition to the Coastal Program: EPA Great Lakes National Program Office, Ohio Division of Wildlife, US Fish and Wildlife Service Cost Share Challenge Grant, and Detroit Edison

The funds provided by the Coastal Program were critical in helping the project become a reality. Without the support of the Coastal Program the project would not have been possible due to inadequate funding.

Results of this study will be presented at professional conferences and to sports groups. Efforts will be made to inform agencies with regulatory authority about the habitats that are critical to lake sturgeon survival. The information gathered during this study will be posted on the Internet on the Great Lakes Lake Sturgeon Web Page (www.fws.gov/midwest/sturgeon).

Lake Sturgeon/Walleye Spawning Habitat Restoration (Phase 1) (FY 2004)

Wing dams on the Lower St. Louis River (Minnesota/Wisconsin) are recognized detriments to spawning habitat for Lake Sturgeon (R3 priority species) and walleye. An engineering assessment (Phase 1) to address modification and redistribution of wing dam material is necessary before construction implementation (Phase 2). Coastal funding assisted with the engineering assessment (Phase 1) of the project to restore lake sturgeon and walleye spawning habitat on the Lower St. Louis River. The Citizens Action

Committee (CAC) provided oversight in the assessment and development of engineering models to modify wing dams on the Lower St. Louis River at a cost of \$8K Coastal and \$1.5K CAC in-kind service.

Green Bay-Northern Lake Michigan Lake Sturgeon Habitat Evaluation (FY 2004)

This project developed a decision tool to aid the enhancement and rehabilitation of lake sturgeon habitats in Green Bay tributaries of Lake Michigan. Staging, spawning, and nursery habitats, both currently available and potentially available above and below existing barriers, were assessed, mapped, and quantified in tributaries of Green Bay and the Manistique River of Lake Michigan that historically supported lake sturgeon populations. This information is critical for the future implementation of lake sturgeon habitat restoration efforts in the Lake Michigan basin.

Great Lakes Lake Sturgeon Web Site (FY 2005)

The Great Lakes Lake Sturgeon Web Site (<http://www.fws.gov/midwest/sturgeon>) provides one consolidated reference for lake sturgeon information in the Great Lakes area and consists of contributions from over 28 federal, state, provincial, tribal and university partners conducting lake sturgeon research in the Great Lakes. The site is a source of information for lake sturgeon researchers and the public, linking them with important data sources, documents, and contact information. In early 2005, a tributary and GIS database was added to the site to provide researchers access to specific information on tributaries where lake sturgeon research is being conducted within the Great Lakes. The site posts lake sturgeon research and information collected from many areas around the Great Lakes, including Areas of Concern such as St. Marys River, Saginaw Bay, St. Clair River and Detroit River. Sturgeon information is also available on the site from many Great Lakes Basin Ecosystem Team focus areas including Green Bay, Thunder Bay, Saginaw Bay, the Lower Detroit River, and western Lake Erie. The site has been popular and received up to 16,182 hits in a month from over 2,550 users. The site is dynamic, and in order to maintain current information, it requires frequent changes. Upgrading and maintaining the Great Lakes Lake Sturgeon site will allow improved inter-agency cooperation and lowers the cost of communication during this time of reduced funds available for travel. Coastal Program funds allowed for the maintenance of the site and the purchase of updated software and equipment.

Fighting Island Sturgeon Habitat Restoration (FY 2007)

The International Wildlife Refuge Alliance (IWRA) will construct a sturgeon spawning reef in a known historical sturgeon spawning area off the northeast corner of Fighting Island, Detroit River. IRWA will perform pre- and post-project assessments to document conditions and quantify effectiveness. IRWA will explore the possibility of constructing a

coastal wetland downstream of the sturgeon spawning reef to serve as nursery habitat, if feasible.

IMAX filming of Lake Sturgeon Research at Port Huron, MI (FY 2007)



Coastal Program Coordinator Bob Kavetsky and Alpena FRO Biologist Jim Boase hold a lake sturgeon captured from the upper St. Clair River during the IMAX filming project in 2007.

Producer David Lickley from Science North approached Alpena FRO to participate in the production of an IMAX documentary film about the Great Lakes. One of the central themes of the documentary is the life history of lake sturgeon and some of the associated research that has taken place in the Great Lakes. Mr. Lickley has identified Port Huron as one of the few locations on the Great Lakes that has an abundant annual congregation of lake sturgeon, deep water, very clear water conditions, and a history of lake sturgeon research. Some of the lake sturgeon research at Port Huron includes the mapping and geo-referencing of a naturally occurring lake sturgeon spawning reef (a Coastal Funded Project in 2003) and telemetry research used to identify lake sturgeon movement patterns associated with the Port Huron spawning reef (funded by the NFWF in 2002 - 2005). This film production was identified by Alpena FRO as a great opportunity to reach an international mass audience and highlight the long history of lake sturgeon research that has been taking place in the Great Lakes by the Service and its partners. In an effort to tell the lake sturgeon story from the Service's perspective, funding was sought and acquired

from the Coastal Program to conduct additional lake sturgeon research in the Port Huron area to allow filming of this documentary. Additional funds were also requested from Science North for the purchase of ultrasonic transmitters and receivers.

Monitoring of Belle Isle/Detroit River Lake Sturgeon Spawning Habitat (FY 2007)

A remnant population of native lake sturgeon (*Acipenser fulvescens*) exists in the highly urbanized Detroit River between Michigan and Ontario. This species is listed as threatened in the state of Michigan, a federal species of interest in the U. S., and is currently under review in Canada to be listed as threatened in the entire Great Lakes region. Since 1999 (US) and 2005 (Canada) respectively, the waters of the Detroit River have been closed to possession of lake sturgeon to conserve and enhance this remnant population. Research by the US Fish and Wildlife Service, Alpena Fishery Resources Office and the US Geological Survey, Great Lakes Science Center demonstrated that reproduction of the Detroit River sturgeon population is limited by available spawning habitat (McClain and Manny 2000).

To enhance sturgeon reproduction in the Detroit River three spawning reefs were constructed near Belle Isle in June 2004, composed of broken limestone, cobble-gravel, and coal cinders respectively (Manny et al. 2005). The reefs were monitored with egg mats and baited set-lines during the sturgeon spawning season in May-June 2005 and 2006. In May 2006, a 5-foot, spermiating lake sturgeon was captured on a set-line near the bed of coal cinders, and in June 2006, an immature 4-foot lake sturgeon was caught near the limestone bed (Manny 2006). These results demonstrate that a spawning-ready lake sturgeon was attracted to the reefs at spawning time. However, no funds are currently available to continue monitoring and demonstrate lake sturgeon reproduction (egg deposition) on the reefs.

The USGS-Great Lakes Science Center, requests funds from the FWS Coastal Program to continue monitoring the Belle Isle reefs for lake sturgeon use in 2007. USGS and USFWS biologists will monitor for evidence of sturgeon reproduction – presence of spawning-ready adults and/or deposition of fertilized lake sturgeon eggs on the reefs during the sturgeon spawning season. Adult sturgeon will be captured with set-lines baited with round goby. Deposition of lake sturgeon eggs will be monitored with furnace-filter egg mats. Both of these monitoring methods have been used successfully by USGS and Service biologists to capture adult lake sturgeon and collect fertilized sturgeon eggs elsewhere in the Detroit River (Caswell et. al. 2004). All fish eggs collected on the reefs will be hatched under laboratory conditions at the Great Lakes Science Center for positive identification of larval fish. Interpretation of scientific results will include which spawning substrate was most preferred by spawning lake sturgeon.

Presence of spawning-ready lake sturgeon, ripe and running with gametes on set-lines, and/or fertilized lake sturgeon eggs on egg mats will constitute measurable results of spawning by lake sturgeon on the Belle Isle spawning reefs. Identification of lake sturgeon larvae hatched from eggs collected on egg mats will constitute measurable proof that

sturgeon reproduced on the reefs. If used by lake sturgeon for reproduction, the Belle Isle reefs represent about 1 acre of fish spawning habitat restored in the Detroit River. In 2005 and 2006, fourteen species of fish, including lake sturgeon, lake whitefish, walleye, and yellow perch were captured as spawning-ready adults or hatched from eggs collected on the spawning reefs at Belle Isle (Manny 2006). These results indicate that the Belle Isle reefs increased natural coastal ecosystem diversity and productivity by fish in the river, partly offsetting Beneficial Use Impairment #14 (Loss of fish and wildlife habitat) in the Detroit River, a requirement for delisting this river as an Area of Concern by the International Joint Commission.

Demonstrated lake sturgeon spawning success and determination of substrate preference at the Belle Isle reefs would prove that construction of spawning reefs is a viable management option for enhancing lake sturgeon reproduction in the Detroit River. Using results of this project, the project consortium of federal, state and local agencies and organizations intends to add to the existing 1 acre of spawning reef to further enhance spawning opportunities for lake sturgeon and other native fishes. This effort will help sustain ecosystem diversity and potentially aid in restoration of the remnant sturgeon population to a robust level in the Detroit River. Outreach materials – DVD, display and website – developed for an earlier phase of this project offer additional opportunity for outreach to the people of south-east Michigan and north-west Ohio through project partners, Michigan Sea Grant and the Detroit/Wayne County Port Authority.