

## STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-81-R-4

Study No.: 491

Title: Evaluation of lake sturgeon *Acipenser fulvescens* populations in the St. Clair River and Lake St. Clair

Period Covered: October 1, 2002 to September 30, 2003

**Study Objective:** The objectives of this study are (1) to determine spawning period, areal distribution of spawning activity, and spawning habitat for lake sturgeon in the St. Clair River, (2) to determine early (juvenile) life history of lake sturgeon in the St. Clair River and Lake St. Clair, and identify habitat requirements of lake sturgeon, (3) to document lake sturgeon population parameters for Lake St. Clair and the St. Clair River, including estimated abundance, exploitation rate, age composition, growth rate, age structure, and sex composition of the spawning stock..

**Summary:** Data entry and analysis for all 2002 field collections has been completed. A research report summarizing the results of this study from 1996 through 2002 has been prepared. Work continued on Jobs 1, 2, 3, and 4 in 2003 under the most recent amendment to the study. Vessel repair scheduling during spring 2003 prevented setline sampling in the St. Clair River, but trawling was conducted on schedule during June, July and August. Data entry and analysis for 2003 sampling is underway.

**Findings:** Jobs 1 through 4 were scheduled for 2002-03, and progress is reported below.

**Job 1. Title: Collect biological data, and tag juvenile and adult sturgeon with monel tags in the St. Clair River and Lake St. Clair.**—A complete summary of the biological data collected between 1996 and 2002 was provided in the research report manuscript prepared in September 2003. No setline sampling was conducted in 2003 due to scheduling of research vessel electrical upgrades. However, sturgeon were captured in Lake St. Clair with trawls, as scheduled. A few sturgeon were also incidentally caught in survey trap nets in Anchor Bay during May and June. The trap netting is conducted under Study 488. Data entry for field collections during summer 2003 is underway.

**Job 2. Title: Characterize adult spawning habitat and juvenile habitat: based on catch distribution and using underwater video, sidescan sonar, doppler flow meter, temperature and oxygen profiles.**—Efforts to identify habitat requirements of juvenile lake sturgeon continued to be impeded by our inability to consistently collect young lake sturgeon. Less than 1% of the sturgeon captured through 2002 were younger than age 3 (smaller than about 500 mm total length). Efforts to capture Age 0 lake sturgeon in littoral areas with a 4.8 m headrope trawl have been unsuccessful. Use of smaller scale setlines in the St. Clair River in spring 2002 failed to capture any age 0 or age 1 lake sturgeon. In 2003, we used snorkel surveys in the shallow waters of the St. Clair delta to search for young lake sturgeon. Snorkel surveys of 13 different areas in the Michigan waters of the St. Clair delta did not produce any observations of juvenile lake sturgeon. Numerous other fish were observed, as well as native unionids. We plan to continue snorkel surveys in other areas of the delta and along the delta channels during summer 2004.

Potentially, age 0 lake sturgeon in the St. Clair system may inhabit deep channel areas of the St. Clair delta. However, sampling in these areas is extremely difficult. Alternative methods of

collecting juveniles will be further explored in 2004. Small-mesh gill nets will be evaluated in deep, depositional areas of the St. Clair River channels in fall 2004. Additional catch data from setline and trawl collections over the next few years may also help identify juvenile habitat based on the geographical distribution of juveniles in the catch.

No additional progress was made in identifying additional spawning sites. Setline surveys in 2001 and 2002 did not produce catches of ripe males or females at any new locations. The use of hydroacoustics gear to help identify potential spawning substrates will be investigated in 2004.

**Job 3. Title: Collect and analyze tag recovery data.**—A total of 56 tag recoveries had been recorded through 2002. A complete analysis of those recoveries is presented in our research report. Only two additional sturgeon tag recoveries had been recorded through October 2003 (one assessment gear, one commercial fishery). Overall, the tag recovery data have documented that St. Clair system lake sturgeon move into Lake Huron and Lake Erie. Furthermore, it suggests that sturgeon spawning in the Michigan waters of the St. Clair River experience considerable fishing exploitation in the Ontario waters of southern Lake Huron. These factors should be recognized in future sturgeon management strategies on these waters.

Lake sturgeon movements are unrestricted by human or natural barriers in the St. Clair system. This potential for free immigration and emmigration makes it difficult to estimate abundance based on mark-recapture techniques. Other factors such as fishing mortality, tag loss, and individual fish behavior also make it difficult to use the mark-recapture techniques for estimating abundance and survival rates. We will continue to explore the use of more appropriate mark-recapture programs/models as they become available in the future.

**Job 4. Title: Analyze data and prepare annual performance report, final report, and other reports.**—A summary of all Mt. Clemens sturgeon assessment activities was prepared for inclusion in the annual Interbasin Sturgeon Working Group Report, compiled by the US Fish and Wildlife Service Alpena Fisheries Resource Office, and distributed at the Great Lakes Fisheries Commission lake meetings. A brief oral report on the assessment methods used in this study was prepared and presented at the Great Lakes Sturgeon Coordination Meeting sponsored by the Great Lake Fisheries Trust in Sault Ste. Marie, Michigan during December 2002. The results of some portions of the work conducted under this study were reported in Thomas and Haas (2003), and Nichols et al (2003). In addition, a draft research report summarizing the results of all work conducted under this study from 1996 to 2002 has been prepared and is now in review.

Nichols, S. J., G. Kennedy, E. Crawford, J. Allen, J. French III, G. Black, M. Blouin, J. Hickey, S. Chernyák, R. Haas, and M. Thomas. 2003. Assessment of lake sturgeon (*Acipenser fulvescens*) spawning efforts in the lower St. Clair River, Michigan. *Journal of Great Lakes Research* 29:383-391.

Thomas, M. V., and R. C. Haas. 2002. Abundance, age structure, and spatial distribution of lake sturgeon, *Acipenser fulvescens*, in the St. Clair system. *Journal of Applied Ichthyology* 18:495-501.

Thomas, M. V., and R. C. Haas. In press. Status of the Lake St. Clair fish community and sport fishery, 1996-2001. Michigan Department of Natural Resources, Fisheries Research Report, Ann Arbor.

**Prepared by: Michael V. Thomas and Robert C. Haas**

**Date: September 30, 2003**