

STUDY PERFORMANCE REPORT

State: Michigan

Project No.: F-35-R-23

Study No.: 661

Title: Evaluation of lake sturgeon *Acipenser fulvescens* populations in northern Michigan

Period Covered: April 1, 1997 to March 31, 1998

Cooperators: Michigan Technological University; United States Fish and Wildlife Service (USFWS) Green Bay Office; USFWS Sea Lamprey Control Office, Marquette

Study Objective: (1) To verify presence of larval lake sturgeon in selected rivers in Upper Peninsula watersheds that are suspected of supporting spawning runs to determine if lake sturgeon are successfully reproducing in those rivers; (2) to determine early (larval and juvenile) life history of lake sturgeon from Sturgeon River/Portage Lake, Indian Lake, and Green Bay/bays de Noc stocks and identify habitat requirements of young lake sturgeon; (3) to tag adult lake sturgeon spawning in Sturgeon River (Houghton and Baraga Counties) and tributaries of Green Bay to monitor lake sturgeon movement, composition of the spawning stock, and degree of spawning stream fidelity.

Summary: Lake sturgeon sampling efforts were carried out in several Upper Peninsula rivers during spring and summer, 1997. We tagged 58 lake sturgeon in Menominee River, six lake sturgeon in Manistee River, and 192 lake sturgeon in Black Lake (Cheboygan Co.). No adult or juvenile lake sturgeon were observed or captured in other locations sampled. Larval lake sturgeon were captured in Sturgeon River, Houghton Co. in June but were not captured in any other river sampled.

Job 1. Title: Sample larval lake sturgeon in selected rivers to verify reproduction.

Findings: Marquette Fisheries Station personnel sampled drift in several selected rivers during May and June, 1997. Rivers selected and dates sampled were: Sturgeon River (Houghton Co.), 11 June to 24 June; Sturgeon River (Delta Co.), 12 May, 2, 5, and 8 June; Whitefish River (Delta Co.), 7 May, 3 and 10 June; Indian River (Schoolcraft Co.), 3 and 9 June, Carp River (Mackinaw Co.) 4 and 8 June; Menominee River (Menominee Co.), 12 May, 2 and 5 June; Manistique River (Schoolcraft Co.), 4 June; Ontonagon Co. (Ontonagon Co.), 11 June; and Millecoquins River (Schoolcraft Co.), 6 June. Drift nets were fished between 21:00 and 00:00 hours. Larval lake sturgeon (N=303) were captured only in Sturgeon River (Houghton Co.). Larval lake sturgeon lengths (N=253) ranged from 17 to 32 mm total length. We did not sample other locations either because spawning adults were not encountered or because personnel were not available to carry out sampling.

Job 2. Title: Determine habitat availability in Sturgeon River/Portage Lake, Indian Lake, and bays de Noc.

Findings: Because there was no evidence of successful reproduction in any bays de Noc tributaries or in Indian River/Indian Lake, work on this job was not pursued for these locations. If either spawning fish or larval lake sturgeon are captured in bays de Noc tributaries or in Indian River in future sampling efforts, this work will be completed at that time. However, without evidence of lake sturgeon reproduction, there is no justification for carrying out this job for bays de Noc or Indian Lake. Marquette Fisheries Station personnel are quantifying habitat availability (depth, substrate, vegetative cover) in Sturgeon River/Portage Lake using geographic information systems technology (GIS).

Job 3. Title: Sample juvenile lake sturgeon in Sturgeon River/Portage Lake, Indian Lake, and bays de Noc.

Findings: MTU personnel captured eight juvenile lake sturgeon in Portage Lake using graded mesh gillnets during 4 August to 2 October. Lake sturgeon captured were from 21.8 to 37.2 cm total length and weighed between 28.6 to 230 g. Juvenile lake sturgeon were captured at depths between 7 and 14 m. One juvenile lake sturgeon was radio tagged on 18 August and released on 21 August. This fish was tracked until 13 October when the radio transmitter battery apparently weakened and failed. The radio tagged fish stayed in the northern section of Portage Lake and was usually located in water greater than 12 m deep. Because there was no evidence of successful reproduction in any bays de Noc tributaries or in Indian River/Indian Lake, work on this job was also not completed for these locations. If either spawning fish or larval lake sturgeon are captured in bays de Noc tributaries or in Indian River in future sampling efforts, this work will be completed at that time.

Job 4. Title: Compare habitat availability to juvenile habitat use.

Findings: Marquette Fisheries Station personnel are currently completing data analysis for Portage Lake habitat availability and use but analysis is incomplete at this time.

Job 5. Title: Tag adult spawning lake sturgeon in Sturgeon River and Green Bay tributaries.

Findings: Marquette Fisheries Station personnel used a boat mounted electrofishing unit or visual surveys to sample selected rivers for spawning lake sturgeon during May and June. Rivers sampled included the lower Menominee River (Menominee Co.), the lower Escanaba River (Delta Co.), the lower Whitefish River (Delta Co.), the lower Manistique River (Schoolcraft Co.), Millecoquins River (Mackinaw Co.), Ontonagon River (Ontonagon Co), Manistee River (Manistee Co.), and Tahquamenon River (Chippewa Co.). Adult lake sturgeon were captured and tagged in the lower Menominee River and in Manistee River. We captured and tagged 57 lake sturgeon in Menominee River between 10 and 23 June. We captured and tagged six lake sturgeon in Manistee River on 12 and 13 June. We also worked with District 5 Fisheries personnel on a multiple mark-multiple recapture estimate of the population size (Schnabel 1938) in Black Lake (Cheboygan Co.) during May-July. We used gillnets (10.2 and 12.7 cm bar measure mesh) to capture lake sturgeon. All lake sturgeon

were measured, tagged and released at the capture site. We tagged 192 lake sturgeon from 75 to 193 cm total length and also recaptured 14 lake sturgeon during the sampling period. The estimated size of the lake sturgeon population (fish larger than 76 cm) in Black Lake was 1,241 fish (95% confidence interval 792-2,418).

Job 6. Title: Analyze data and write reports

Findings: Data analysis is ongoing but incomplete at this time.

References

Schnabel, Z. E. 1938. The estimation of the total fish population of a lake. American Mathematical Monographs 45:348-368.

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