



Great Lakes Fishery Commission

ESTABLISHED BY CONVENTION BETWEEN CANADA AND THE UNITED STATES TO IMPROVE AND PERPETUATE FISHERY RESOURCES

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GREAT LAKES STURGEON FOUND VULNERABLE TO SEA LAMPREY PREDATION

ANN ARBOR, MI—Researchers from Purdue University have completed a study that concludes sea lampreys kill smaller lake sturgeon in the Great Lakes, stressing the importance of protecting larger lake sturgeon during recovery efforts. The study, supported by the Great Lakes Fishery Commission, provides vital information to fishery managers who must take into account all sources of mortality as they formulate and implement sturgeon recovery plans.

“Lake sturgeon are freshwater goliaths, growing over six feet in length and 200 pounds in the Great Lakes,” said Dr. Trent Sutton of Purdue University (now at University of Alaska—Fairbanks), the lead researcher on this project. “They are a bottom-dwelling species, and feed on insects and clams that they locate with their sensory whiskers. Lake sturgeon are pokey creatures – they move conservatively, mature and reproduce at an older age than most fish, and live for up to 150 years. The lake sturgeon is one of the oldest vertebrate species living on the planet, and looks today much the same as they did 200 million years ago. For this very reason, lake sturgeon are ‘living fossils’.”

Humans have had a very “love-hate” relationship with lake sturgeon. This species was routinely discarded by commercial fishers who grew tired of them ripping holes in their nets. In the late 19th century, the demand for caviar, flesh, oil, fertilizer, and other delicacies caused an increase in value of lake sturgeon. The destruction of lake sturgeon habitats from pollution, sedimentation, and man-made obstructions such as hydroelectric dams further increased population declines. As a result, restoration of lake sturgeon in the Great Lakes is now a focus of federal, provincial, state, and tribal management agencies.

One potential limitation of current lake sturgeon restoration is the sea lamprey. Sea lampreys are eel-like creatures that attach to fish with suction-like mouths filled with rows of sharp teeth. Since their introduction into the Great Lakes in the mid-20th century, sea lampreys have had a devastating impact on many fishes. Although control efforts have been effective, eradication is not possible. Sea lampreys are known to attack lake sturgeon, but it is not clear what impact they might have on survival of this species.

To examine the effects of sea lamprey parasitism on lake sturgeon, laboratory studies were conducted at Purdue University. The study was conducted by Dr. Trent Sutton of Purdue

University (now at the University of Alaska, Fairbanks; Dr. Marisol Sepulveda of Purdue University; Ms. Holly Patrick, now with the Great Lakes Fishery Commission; and Mr. William Swink of the U.S. Geological Survey, Hammond Bay Biological Station.

In a series of observation tanks, one lake sturgeon and one sea lamprey were paired together. The observation tanks were checked three times each day for sea lamprey attachments to lake sturgeon. Once a sea lamprey detached from its host or the lamprey or sturgeon died, that trial was complete and a new sturgeon was put in the tank with a sea lamprey. After each trial, the lake sturgeon was assessed for short- and long-term growth and survival.

“The results from our study showed that sea lampreys can kill lake sturgeon,” Sutton added. “Although the scute-covered bodies of lake sturgeon provides some armor, sea lampreys cleverly managed to attach and feed on the fleshy areas of the fish, such as the underside of the snout, at the base of the fins, and near the vent. Smaller fish were more likely to die due to blood loss following a sea lamprey attack than larger individuals. Further, smaller lake sturgeon that survived a sea lamprey attack were more likely to die from a secondary infection than larger fish. Because a larger body size provides a survival advantage for lake sturgeon following a sea lamprey attack, it is important to protect older, larger fish in the population in order to aid ongoing restoration efforts.”

A complete copy of the research completion report is available from the Great Lakes Fishery Commission by email (slrp@glfc.org) or by phone (734-662-3209).

The Great Lakes Fishery Commission is an international organization established by the United States and Canada through the 1954 Convention on Great Lakes Fisheries. The commission has the responsibility to support fisheries research, control the invasive sea lamprey in the Great Lakes, and facilitate implementation of A Joint Strategic Plan for Management of Great Lakes Fisheries, a provincial, state, and tribal fisheries management agreement.