



Great Lakes Fishery Commission

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

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THE CALL OF THE CHILD

Sea lamprey spawning behavior follows larval odor

ANN ARBOR, MI—Because a migrating sea lamprey dies after spawning, it makes one final crucial decision: where should I deposit my offspring? According to new research supported by the Great Lakes Fishery Commission, pheromones emitted by larval lamprey living in stream sediment reach into the lakes where adult sea lamprey feed and announce the presence of good habitat. Sea lamprey, an invasive species from the Atlantic Ocean which have become a noxious predator on the Great Lakes, spend much of their lives as tiny, blind larvae buried in a streambed. By chemically broadcasting their location to spawning adults, future generations are assured they too will be dropped off in a good neighborhood.

“Sea lamprey use public information to help improve their chances to spawn successfully,” said Dr. Michael Wagner, researcher in the Department of Fisheries and Wildlife at Michigan State University, and the lead author of this study. “Sea lamprey can detect even minute quantities of larval lamprey pheromones in water, and take advantage of that information to direct their spawning migration.”

Wagner and his research partners conducted a series of field experiments, manipulating the quantity of larval pheromones to learn if sea lamprey choose streams based on how “loud” the call is. Results showed that sea lamprey strongly avoided swimming in waters that lacked larval odor, and showed a preference only when odor intensity was starkly different. “Sea lampreys most likely prefer streams with larval pheromone odors for two reasons,” Wagner explained. “The presence of larvae indicates the presence of good spawning habitat, and because other lampreys are making the same assessment, the odor also ensures there will be mates to choose from when you arrive.” Female sea lampreys also respond to a sex pheromone released by males to locate potential mates. Larval pheromones are released earlier than adult lamprey sex pheromones.

“It’s kind of like using the cars in a parking lot to choose a restaurant,” Wagner reflected. “A lot of cars tells you it’s probably a good place to eat, very few cars means you should consider going somewhere else. But once you’re inside, you need additional information to choose the best place to sit.” Understanding how sea lampreys use pheromones to locate spawning grounds may help researchers to reduce the use of lampricides to control populations of the destructive predator in non-native habitat in the future. “Hopefully, we can use this knowledge to manipulate sea lamprey migrations,” Wagner explains. “If we can trick them into spawning in poor habitat, their offspring won’t survive, and we don’t have to come in with lampricides to kill them before they metamorphose into the destructive parasitic phase.”

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. Visit online at www.glfc.org

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