



Great Lakes Fishery Commission

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

For Immediate Release
August 23, 2010

Contacts:
Dr. Nick Johnson 989-734-4768
Dr. Marc Gaden (GLFC) 734 662-3209 x 14

SYNTHESIZED SEX PHEROMONES LURE LAMPREYS INTO TRAPS

Pheromones could be new weapon in sea lamprey control arsenal

ANN ARBOR, MI—New research supported by the Great Lakes Fishery Commission suggests sea lamprey pheromones could be a new weapon in the battle to control the destructive sea lamprey in the Great Lakes. Scientists at the U.S. Geological Survey's Hammond Bay Biological Station believe that sea lampreys emit pheromones to attract mates and to indicate suitable spawning areas. The general attributes of pheromones--naturally occurring, species-specific, effective at low concentrations, and environmental benign--make them ideal candidates for use in sea lamprey control. By applying synthetically produced pheromones to streams, sea lamprey control specialists have enhanced the effectiveness of lamprey traps and may one day be able to disrupt sea lamprey spawning patterns. Recently approved funding from the Great Lakes Restoration Initiative will support further advances in this research.

Sea lampreys invaded the Great Lakes through shipping canals in the early 20th century and have had an extremely destructive impact on the Great Lakes fishery. Lampreys are a parasitic fish that latch onto their prey with a suction cup mouth and a drill-like tongue, and feed on their host's blood and bodily fluids, usually resulting in death. Sea lampreys were largely responsible for the collapse of the Great Lakes fishery before the commission commenced a control program in 1956. Development of improved lamprey management techniques is an ongoing part of the commission's activities, and new research indicates that pheromones may become a key component in the suite of control methods used to control this noxious pest. Synthetically-produced pheromones have been developed by researchers from the U.S. Geological Survey, led by research ecologist Dr. Nick Johnson, and successfully used in field trials to attract female sea lampreys into traps.

Results of Dr. Johnson's research have formed the basis of a three-year management-scale field experiment that began in 2009, looking at the effects of a synthetically produced component of the male sea lamprey pheromone as trap bait in twenty Great Lakes streams. Currently, managers capture migrating sea lampreys using traps integrated into barriers used for blocking migrating sea lampreys. This conventional barrier-integrated trapping technique captures only about 40% of the migrating sea lampreys within a stream. Consequently, sea lamprey populations are not as affected as they could be within a stream because each female sea lamprey can produce up to 60,000 eggs. Enhancing trapping efficiency through the use of pheromones as trap bait has the potential to greatly increase the efficiency of trapping as a sea lamprey control

2100 Commonwealth Blvd. • Suite 100 • Ann Arbor, MI 48105-1563

Phone (734) 662-3209 • FTS (734) 741-2077 • FAX (734) 741-2010 • www.glfc.org

tactic. The field trials have shown promising results by substantially increasing the capture of sea lampreys in pheromone-baited traps compared to non-baited traps.

“Pheromones may be the newest technique in controlling the invasive sea lamprey in the Great Lakes,” said Dr. Johnson. “Enhancing trapping efficiency through the use of synthetic pheromones as trap bait has the potential to reduce sea lamprey populations in streams and turn trapping into a more effective sea lamprey control tactic. Synthetic pheromones have been shown to function over a wide-range of habitat conditions indicating that they would be effective at capturing female sea lampreys in many Great Lakes tributaries. We hope to identify other components of the male sea lamprey pheromone that will make synthetically produced pheromones more closely resemble natural pheromones, thereby increasing their effectiveness as a sea lamprey control method.”

Sea lamprey pheromone research represents an example of successful collaborative research between multiple agencies. Partners include researchers from the U.S. Geological Survey, Michigan State University, the U.S. Fish and Wildlife Service, the Department of Fisheries and Oceans Canada, and the Great Lakes Fishery Commission. Protocols are being developed that will make it easy to translate pheromone-trapping strategies to managers, who will apply synthetic pheromones to streams across the entire Great Lakes basin once the study is complete.

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