

STERILE-MALE-RELEASE-TECHNIQUE

An Innovative Sea Lamprey Control Method

What Is the Sterile-Male-Release-Technique?

FOLLOWING TWENTY YEARS of research and development, the Great Lakes Fishery Commission began a large-scale experimental program in 1991 to determine whether sea lamprey sterilization could be an effective, non-lampicide technique to control sea lampreys in the Great Lakes. Biologists hypothesize that sterilized male sea lampreys, released into Great Lakes streams, would compete successfully with normal males

during the spawning season, thus reducing the number of eggs fertilized. Scientists view this technique as very promising. This technique has been used successfully to reduce insect populations throughout the world.

How Are Sea Lampreys Caught and Sterilized?

The Great Lakes Fishery Commission, through the U.S. Fish and Wildlife Service and the Canadian Department of Fisheries and Oceans, maintains several sea lamprey traps which have been placed

in strategic locations on Great Lakes tributaries. Most traps are part of existing sea lamprey barriers; other traps are portable or are associated with power plants or private facilities. Collectively, the traps supply the program with approximately 25,000 male sea lampreys annually.

Once trapped, the male sea lampreys are transported to the U.S. Geological Survey's Hammond Bay Biological Station. The sea lampreys receive a carefully measured dose of bisazir, a sterilant. They are then marked with a fin clip and are kept for 48 hours, which allows the bisazir to completely clear from their system. The sterilized male sea lampreys are then released, primarily in the St. Marys River and in Lake Superior tributaries.

All sea lampreys used in the sterilization program are spawners. They are past their parasitic phase, and thus, will not prey on Great Lakes fish.

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PHOTO: U.S. FISH AND WILDLIFE SERVICE

Biologists at the U.S. Geological Survey's Hammond Bay Biological Station near Rogers City, Michigan, use a machine to sterilize sea lampreys.

Sea lamprey traps are operated at various locations throughout the Great Lakes basin and serve as sources of male sea lampreys for the sterile-male-release program.

Great Lakes Fishery Commission

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Why Release Live Sea Lampreys into the Great Lakes?

Many people ask: If we are trying so hard to reduce sea lamprey populations, why are sterilized sea lampreys released back into the Great Lakes? Why not just destroy all sea lampreys caught in traps?

Scientists believe that releasing sterilized male sea lampreys back into the Great Lakes may actually reduce the number of sea lampreys produced in Great Lakes tributaries. A significant number of the sterilized males out-compete the normal males to mate with females, and, thus, will produce nests of infertile eggs. Without the sterilized male sea lampreys competing during the spawning run, all spawning would be done by normal males.

A goal of the sterile-male-release-technique is to increase the ratio of sterile to normal males. Over time, the technique should result in an increasing rate of suppression with each successive release of sterile males.

Is the Sterile-Male-Release-Technique Effective in Controlling Sea Lampreys?

Currently, the sterile-male-release-technique is being tested in Lake Superior. A whole-lake approach is being used to implement and evaluate the sterile-male-release field-trial program as a supplement to lampricides. The technique is also a major part of the sea lamprey control effort on the St. Marys River. Scientists are assessing the data to determine how effective the technique may be over the long term.

Preliminary scientific assessment shows success so far. Sterilized male sea lampreys effectively move into the spawning grounds with the rest of the sea lamprey population and compete as strongly as normal males. The sterilization process does not diminish a male sea lamprey's drive to spawn. The preliminary assessment also indicates that in streams where sterile males have been released, the number of viable nests and fertilized eggs has been reduced at the expected rates.

The next stage in assessing the effectiveness of this technique is to determine whether fewer viable nests actually reduce the number of larval sea lampreys in streams where sterile males are released. If the technique proves to reduce the number of larval sea lampreys, the sterile-male-release-technique could become an effective and integral part of the sea lamprey control strategy.

PHOTO: U.S. FISH AND WILDLIFE SERVICE



Sea lampreys build nests in streams in which they lay their eggs. A goal of the sterile-male-release-technique is to have sea lampreys produce nests of infertile eggs.

The Great Lakes Fishery Commission was established by Convention between Canada and the United States in 1955 to improve and perpetuate fishery resources.

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