

SEA LAMPREY ASSESSMENT

Improving Control Through Better Understanding



Agents use fyke nets to collect larval lamprey during lampricide treatments.



Biologists wear backpack electro-fishing gear to stimulate larval sea lampreys out of their burrows. The data are used to measure larval sea lamprey abundance in Great Lakes streams and tributaries.

PHOTO: GREAT LAKES FISHERY COMMISSION

THE GREAT LAKES FISHERY COMMISSION and its agents implement a comprehensive assessment program to understand the ecology and population dynamics of sea lampreys. The information collected allows the commission to track long term trends in lamprey populations, to monitor the effectiveness of the lampricide control program, and to identify alternative ways to control sea lampreys. Data from the assessment program are used to help the commission decide which streams (or sections of streams) to treat for sea lampreys, which control methods to use, and how and where to apply the control measures.

Assessment information, coupled with high-tech computer-based tools, allows the commission to develop models that accurately forecast larval and adult sea lamprey abundance and to evaluate strategies for sea lamprey control in each lake.

The ultimate purpose for collecting and analyzing the data is to develop and implement the most efficient and effective control program at the lowest cost and with the least possible negative effect on the environment. Without assessment, the commission and its agents would be managing in the dark.

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PHOTO: DEPARTMENT OF FISHERIES AND OCEANS CANADA

Assessment crews use state-of-the-art technology aboard assessment vessels to map larval sea lamprey densities in lakes and rivers.



Great Lakes Fishery Commission

2100 Commonwealth Blvd., Ste. 209, Ann Arbor, MI 48105-1563 • Tel: 734-662-3209 • www.glfc.org



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During What Stages of the Sea Lamprey's Life Cycle Does Assessment Take Place?

Assessment efforts focus on all stages of the sea lamprey's life cycle, from their larval phase in streams, through their parasitic phase in the lakes, to their spawning phase in the streams again.

LARVAL ASSESSMENT

The assessment program monitors abundance of larval sea lampreys in tributary streams and in some offshore areas of the Great Lakes to determine where lampricide treatments should occur, when treatments are required, and how effective past treatments were. Biologists estimate the number of larvae that will metamorphose and migrate from each stream to the open waters of the Great Lakes. The streams selected for treatment are those from which these larvae can be most cost-effectively eliminated.



PHOTO: GREAT LAKES FISHERY COMMISSION

Biologists collect larval sea lampreys for further analysis in the laboratory.

Biologists use the backpack electro-fisher to assess larval sea lampreys in shallow waters. This equipment delivers electricity to the stream water and stimulates the larvae out of their burrows. Where the larvae live in deep, hard-to-reach waters, biologists stimulate larvae to the surface with a deep-water electro-fisher or with a granular formulation of

the lampricide Bayer 73.

Measuring the size and age of the larvae collected provides biologists with information about how well the populations grow and survive in each stream or offshore area. New technologies, such as geographic positioning systems (GPS) and geographic

information systems (GIS), are being used to measure and map the exact distribution of larvae and to target control efforts, especially in large rivers such as the St. Marys River.

PARASITIC-PHASE ASSESSMENT

Through a cooperative program, charterboats and commercial fishermen provide state, federal, tribal, and provincial agencies with data on the occurrence of parasitic-phase sea lampreys in the open waters of the Great Lakes. Along with spawning-phase assessments, the commission and fishery management agencies use these data to better understand and predict the extent of damage caused to the fish communities by these parasitic-phase sea lampreys.

SPAWNING-PHASE ASSESSMENT

Biologists monitor adult sea lamprey spawning migrations in spring and early summer to estimate the number of spawning sea lampreys in selected Great Lakes streams. These data provide an accurate measure of lakewide sea lamprey populations and are used to assess the overall success of the sea lamprey control program.

To monitor spawning sea lamprey migrations, mechanical traps are used to catch the sea lampreys and to measure their abundance from year to year. The sex, weight, and length of the trapped sea lampreys are recorded to understand population characteristics.

Sea lamprey traps are operated at various locations throughout the Great Lakes basin. Data from traps help scientists understand sea lamprey spawning migrations



PHOTO: DEPARTMENT OF FISHERIES AND OCEANS CANADA

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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