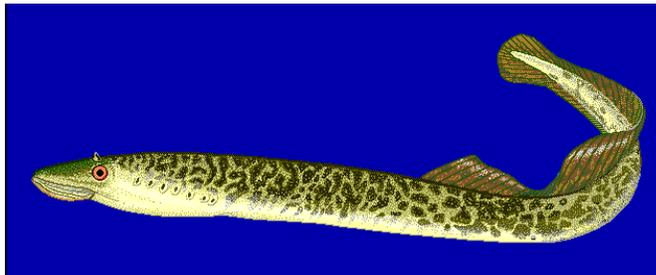


# AIS

## Aquatic Invasive Species

### SEA LAMPREY



Drawing by Robbie Cada

**COMMON NAME:** Sea Lamprey

Other names that are sometimes used to describe the sea lamprey are eel sucker, green lamprey, lamper, lamprey eel, nine eyes, shad lamprey, spotted lamprey as well as sucker.

**SCIENTIFIC NAME:** *Petromyzon marinus* L.

The sea lamprey is in the family Petromyzontidae, the lamprey family. It's genus *Petromyzon* is made up of the Latin word "petra" meaning "stone" and the Greek word "myzon" meaning "to suckle".

**DISTRIBUTION:** Natively the sea lamprey inhabits the Atlantic coast from Labrador to the Gulf of Mexico, as well as the Atlantic coast of Europe and the Mediterranean Sea. Currently they have expanded their range to include the Great Lakes. Tributaries to the Atlantic Ocean and the Great Lakes provide spawning and nursery areas for sea lamprey.

**Indiana:** The sea lamprey is found in Indiana's portion of Lake Michigan and the tributaries that feed the lake. The only Indiana report of a sea lamprey outside of the Great Lakes watershed is a single specimen reported in 1950 from the outlet stream of Lake Maxinkuckee near the Tippecanoe River.



*Petromyzon marinus*



**DESCRIPTION:** The sea lamprey's body is shaped like an eel, which can cause confusion during identification. Unlike an eel however, the sea lamprey has a dorsal fin that has a notch in it and it has no pectoral or pelvic fins. The distinguishing characteristic to look for is its inferior, sucker type mouth with teeth in concentric circles. Their gill openings are 7 small lateral clefts. The sea lamprey's body has black or brown mottling on its back and the belly is whitish gray.

**LIFE CYCLE BIOLOGY:** As larvae, the sea lamprey lives in freshwater rivers and feed on microorganisms and detritus. Larval sea lampreys will remain in the streams for usually 4 to 6 years. As adults they move out into a marine environment, or in the case of the landlocked form, they move into the open water of the Great Lakes. The adult sea lamprey is parasitic, feeding off of other fish. They use their teeth to scrape away the skin of their host and suck out its blood and body fluids. The sea lamprey produces an anticoagulant in its saliva, which prevents the prey's blood from clotting. After spending 12 to 20 months in the open water of the Great Lakes, the sea lamprey will return to a tributary stream to spawn. There will be a large congregation of lampreys all intertwined in a large ball during spawning. Adult sea lampreys die following spawning.

**PATHWAYS/HISTORY:** Lampreys were first discovered in Lake Ontario in 1835, Lake Erie in 1921, Lake Michigan in 1936, Lake Huron in 1937, and Lake Superior in 1946. There is controversy over whether or not the lamprey is native to Lake Ontario. Those who do believe that it is native say that the current sea lampreys are descendants of populations from the Pleistocene. Those who oppose this view say that lampreys were allowed to enter Lake Ontario through manmade locks and shipping canals. The Welland Canal, which joins Lake Ontario to Lake Erie bypassing Niagara Falls, was in place for nearly nine decades before sea lampreys invaded Lake Erie. Upgrades to the Welland Canal in 1919 appear to have provided an improved avenue for lampreys to invade Lake Erie as they were found just two years after improvements were made. Once in Lake Erie, it took just 25 years to spread to the remaining Great Lakes.

**DISPERSAL/SPREAD:** Now landlocked in the Great Lakes, the sea lamprey has distributed itself into the tributaries of those lakes. Manmade canals appear to be the pathway sea lampreys invaded at least four of the five Great Lakes. The species is now common in Lake Michigan, Lake Huron, and the eastern portion of Lake Superior. It has yet to become as abundant in the other two great lakes, Lake Ontario and Lake Erie. Other than a single report more than a half century ago in Indiana, the non-native distribution has not spread beyond the Great Lakes drainage.

**RISKS/IMPACTS:** Adult sea lampreys often kill their prey due to their parasitic feeding, either by direct loss of blood and tissue or because of an infection in the open wound caused by the lamprey. There was a decline of several large native fishes in the Great Lakes due in part to the introduction of the sea lamprey. Lampreys appeared to have the most devastating effect on a variety of cisco species, lake



trout, and walleye. Within ten years following the discovery of sea lamprey in Lake Huron, the commercial lake trout fishery fell from 3.4 million pounds to a fishery not worth targeting. The extinction of three species of cisco in the Great Lakes is partly blamed on the arrival of sea lamprey.

Another negative impact of the establishment of sea lamprey in the Great Lakes is economic. At the height of the sea lamprey population, various sport fish populations were suppressed which resulted in reduced recreational and commercial fishing activities. Methods used to lessen the lamprey population are also an economic drain. And finally, a large amount of money continues to be spent in restoring the sport fish populations that have been damaged by sea lampreys.

**MANAGEMENT/PREVENTION:** In order to control the sea lamprey population, different management techniques have been tried. Early methods included mechanical weirs and electrical barriers. The application of selective lampricides is the primary method used at this time to kill larval sea lamprey in the nursery streams. While lampricide treatments have been successful at reducing lamprey populations, this method is costly to implement throughout the Great Lakes. Therefore other management strategies are being investigated.

Lamprey barriers have been installed in a number of locations to block the migration of spawning sea lampreys while allowing other fish to pass. In some streams, these barriers have been so successful that lampricide treatments are no longer necessary upstream of the barriers.

Another technique being used to reduce the sea lamprey population is the sterilization of males. During spawning runs, male sea lampreys are collected, sterilized, and released back into the tributary. These sterile males compete with fertile males for spawning females. This results in reduced fertilization of the eggs.

Due to the success of the various tools being used, the sea lamprey population has been reduced by 90% in most areas. This has led to improved populations of sport fish. While sea lampreys will never be extirpated from the Great Lakes even with the most aggressive combination of management approaches, the lamprey population can be suppressed to a low level which will lessen the impact to the sport fishery.

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Updated 7/05