

The sea lamprey (*Petromyzon marinus*) is a parasitic fish native to the northern and western Atlantic Ocean that made its way into the Great Lakes in the 1830s via the Welland Canal, which connects Lakes Ontario and Erie to the St. Lawrence Seaway.

Sea lampreys are among the most primitive of all vertebrate species. Unlike "bony" fishes like trout, cod, and herring, lampreys lack scales, fins, and gill covers. Like sharks, their skeletons are made of cartilage. They breathe through a distinctive row of seven pairs of tiny gill openings located behind their mouths and eyes. What makes the sea lamprey an efficient killer of lake trout and other bony fishes is its disc-shaped, suction-cup mouth, ringed with sharp, horny teeth, with which it latches on to an unfortunate fish. The lamprey then uses its rough tongue to rasp away the fish's flesh so it can feed on its host's blood and body fluids. Sea lampreys prey on all types of large fish, such as lake trout, salmon, rainbow trout (steelhead), brown trout, whitefish, yellow perch, burbot, walleye, and catfish.

Each lamprey kills about 40 pounds of fish every year. Before sea lampreys entered the Great Lakes, Canada and the United States harvested about 15 million lbs. (6.8 million kgs.) of lake trout in Lakes Huron and Superior annually. By the early 1960's the catch was only about 300,000 lbs. (136,077 kgs).

Zebra mussels (*Dreissena polymorpha*) are small freshwater mollusks originating in the Black and Caspian seas region of Russia - is one of the most economically damaging aquatic organisms to invade the United States.

Zebra mussels are believed to have been picked up in a freshwater European port in the ballast water of a ship and discharged into the Great Lakes. The species rapid dispersal throughout the Great Lakes and major river systems was due to its abilities to attach to boats and to stay alive out of water for several days. Zebra mussels are now found in over 600 lakes and reservoirs from the Eastern Seaboard and throughout the Mississippi River Basin – and in California.

Zebra mussels affect the food webs of rivers and lakes. A single zebra mussel can filter over one quart of water per day, consuming food other species need and completely changing the ecology of infested waters. Its destructive power lies in its sheer numbers and its ability to attach itself to solid objects like water intake pipes, propellers, boat hulls, dock pilings, submerged rocks and even other aquatic animals.

Water hyacinth (*Eichhornia crassipes*) is native to the Amazon River basin, water hyacinth has spread to all tropical and subtropical countries and is universally regarded as one of the most serious of the world's invasive weeds. It was introduced into the United States in 1884 as an ornamental plant for water gardens.

Water hyacinth can quickly dominate an aquatic system due to its rapid growth and ability to reproduce from plant fragments and copious seed production and germination.

Water hyacinth increases water losses from lakes and rivers because of the plants high transpiration rate. It changes water quality beneath the mats by lowering pH, dissolved oxygen, and light levels. This degrades habitat for waterfowl by reducing areas of open water used for resting and displacing native aquatic plants used for food or shelter by other fish and other wildlife species.

The decaying plants also make water unfit for drinking by humans; however, water hyacinth is attracting attention in the United States for use in sewage and industrial waste treatment. A 0.5 ha lagoon of hyacinth can purify the daily sewage waste of 1,000 people.

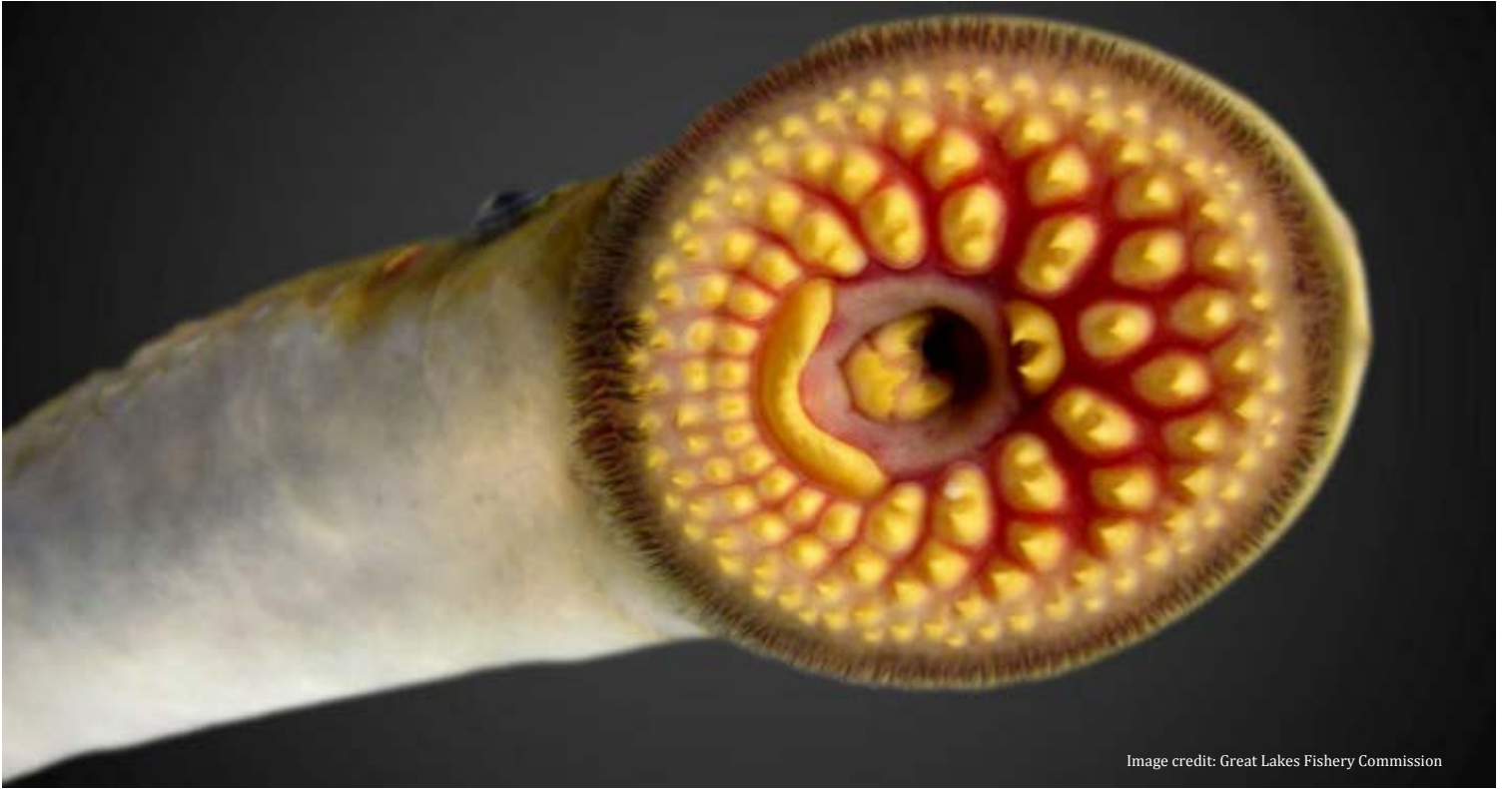


Image credit: Great Lakes Fishery Commission

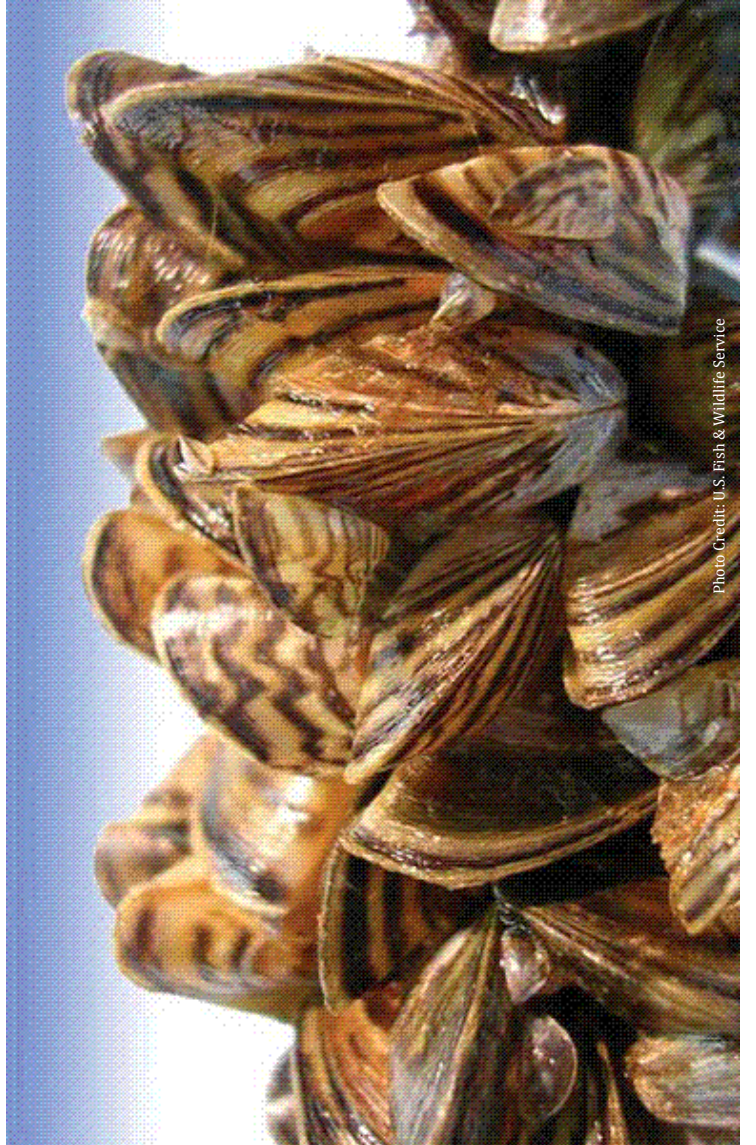
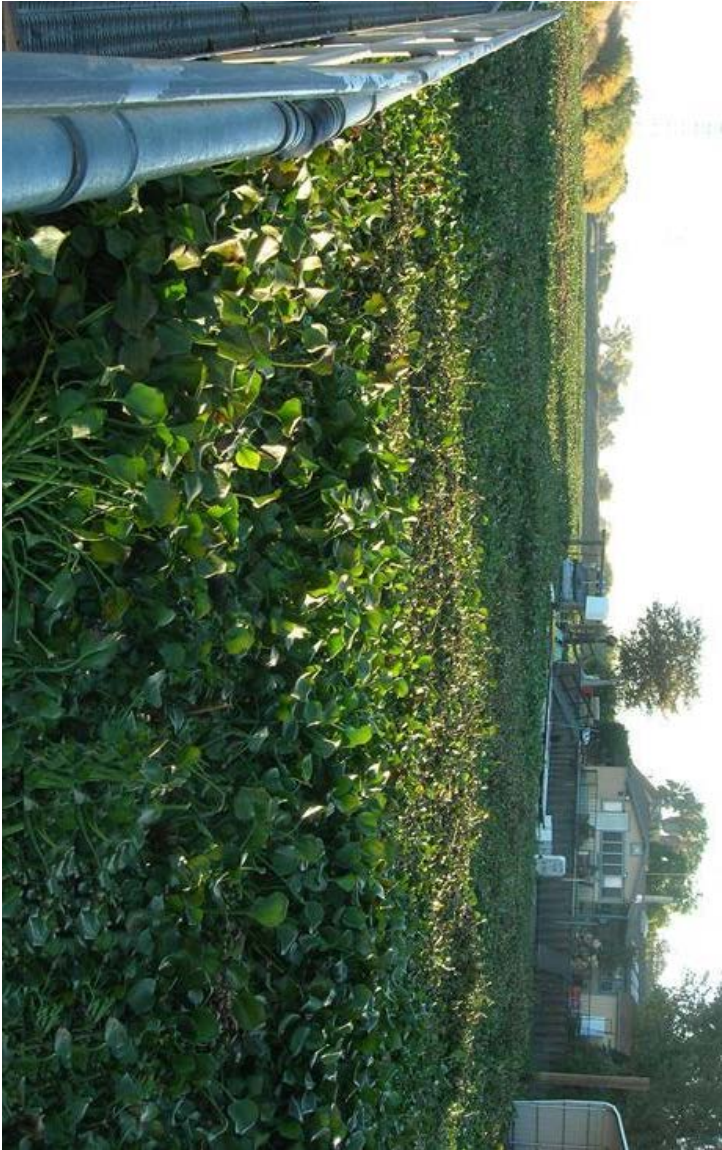


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