



Eurasian water-milfoil

Myriophyllum spicatum

Native to Europe, Asia, and Africa, this aquatic plant was first detected in Lake Huron in 1952. Forming dense mats on the water surface, it shades out native vegetation, affects fish spawning habitat and interferes with many types of water recreation. Its main form of reproduction is through fragmentation; a small piece can multiply into hundreds of plants in one year. Eurasian water-milfoil can live in a variety of habitats and has spread rapidly throughout the United States. It is now considered a serious problem in at least 34 states and has also spread to Canada. Eurasian water-milfoil can be spread by people when it becomes entangled in boat propellers or attaches to the keels and rudder of sailboats.

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Hydrilla

Hydrilla verticillata

Not yet found in Michigan waters, this aquatic plant is found primarily in the southern United States but has infested waters in Indiana and Wisconsin as well. Hydrilla has many adaptive characteristics that allow it to overpower and diminish or eradicate native species. It can grow in areas with low light and can grow up to one inch per day. Also, it thrives in both standing and flowing water. Hydrilla has diverse reproductive abilities; reproducing by seed, vegetative cutting and the turions and tubers on its roots are viable for many years. After becoming established in a body of fresh water, Hydrilla quickly forms thick mats near the water's surface, suffocating native plants below, degrading water quality and impeding recreation, creating severe economic impacts.

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Fishhook and Spiny Water Flea

Cercopagis pengoi and *Bythotrephes longimanus*

The fishhook and spiny water flea are both native to Eurasia. The fishhook water flea was first discovered in Lake Ontario in 1998 and has since spread to Lake Michigan and Lake Erie. The spiny water flea arrived much earlier in 1982 and has now infested all of the Great Lakes. It is likely these species came to the Great Lakes in the ballast water of oceanic freighters. Water fleas are a type of zooplankton, tiny animals suspended in the water column which normally are an important food source for many fish. These invasive species can be identified by their unique shapes, which include a hard outer shell and a long spine that discourages fish from feeding on them. Furthermore, both the fishhook and spiny water fleas compete with fish by preying on native zooplankton. Adult water fleas cannot survive out of the water, but their eggs can resist drying and remain viable, allowing them to establish new populations in nearby waterways.

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Round Goby

Neogobius melanostromus

The round goby is native to eastern Europe and was first found in the Great Lakes in 1990. The goby was accidentally transported to the Great Lakes in the ballast water of large, oceanic freighters. Round gobies are bottom-dwelling fish that are extremely aggressive. They compete for habitat with native fish species such as mottled sculpin, log perch, and darters. Round gobies also have very large appetites and outcompete native fish for food. They possess a well developed sensory system and are able to feed in total darkness. This species can be transported accidentally in live wells, bilge water, bait buckets, and the ballast water of vessels.

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Rusty Crayfish

Orconectes rusticus

Rusty crayfish are native to the Ohio River Basin. Spread by anglers who use them as bait, rusty crayfish are prolific and can severely reduce lake and stream vegetation and native crayfish populations where they have been introduced. Rusty crayfish are considered a nuisance species because they deprive native fish and their prey of cover and food.

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Ruffe

Gymnocephalus cernuus

The ruffe (pronounced “rough”) is a small and aggressive fish native to Eurasia. It was first introduced into Lake Superior in the 1980s, through the ballast water of oceanic vessels. The ruffe has a rapid reproductive rate, with females producing up to 200,000 eggs in one season. It is considered a nuisance species because it matures quickly and is well adapted to a wide variety of environments. Ruffe have the ability to detect extremely small vibrations given off by both predators and prey and therefore can feed in complete darkness. This gives them a competitive advantage over native fishes. Ruffe can be transported by humans through boats, live wells, and bait.

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Zebra Mussel

Dreissena polymorpha

Zebra mussels are native to the Caspian Sea region of Asia. They were first discovered in Lake St. Clair in 1986 and have since spread rapidly throughout the Midwest. Most watersheds in the United States are currently threatened by this invasive species. The key to the zebra mussel's success is its reproductive cycle. One female can produce up to one million eggs a year. Once the egg develops larvae can swim freely in the water column for up to four weeks. Because zebra mussels colonize at high densities, they outcompete native organisms and clog water intake systems of power plants. Costs associated with controlling this mussel have exceeded \$5 billion annually. Microscopic larvae may be carried in live wells or bilge water, and adults may spread by attaching to boating equipment that has been in infested water.

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Purple loosestrife

Lythrum salicaria

First detected in the mid-1800s, this perennial wetland plant is native to parts of Europe and Asia. Sometimes known as the “purple plague”, it invades marshes and lakeshores, forming dense single-species stands. Purple loosestrife replaces native vegetation, thereby reducing the availability of food and shelter for native wildlife. Over 190,000 hectares in North America are affected by purple loosestrife. Options for controlling the spread of this plant include cutting, herbicides, flooding, and digging. Management of purple loosestrife has begun with the introduction of beetles, which in their native habitat feed on purple loosestrife. This biological control is beginning to reduce the invasive plant in some areas of Michigan.

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