Lake 26
AIS Point Intercept Survey

June 21st, 2023

BURNETT COUNTY LAND SERVICES DEPARTMENT

LAKE 26 AIS POINT INTERCEPT REPORT

Water Body Identification Code (WBIC): 2672500
Previous AIS Findings: Chinese Mystery Snail
New AIS Findings: None
Field Crew: Brad Morris, Aquatic Invasive Species Consultant & AJ Flatten and Grace Wondra, Aquatic Invasive Species Interns
Field Date: June 21st, 2023
Report By: Olivia Hansing

Lake 26 is a 218 acre drainage lake located in Burnett County, WI. It has one public boat landing off of Eliot Johnson Road in Webb Lake, and is known to contain panfish, largemouth bass, northern pike, and musky. The Wisconsin Department of Natural Resources (WDNR) classifies Lake 26 as mesotrophic, meaning that the water has a moderate amount of both oxygen and nutrients The substrate is composed of 80% sand, 10% gravel, and 10% muck.

On June 21st, 2023, a point intercept survey was conducted for early detection of aquatic invasive species. The sampling grid was developed for Lake 26 by Michelle Nault of the WDNR. This type of sampling grid is generally utilized for aquatic plant management plans, however, these grids can provide a thorough and systematic approach when used for AIS monitoring. Each point is sampled with a throw rake, and the contents are examined. Examples of invasive plants that could be found during a sampling grid include starry stonewort (*Nitellopsis obtusa*), Eurasian water-milfoil (*Myriophyllum spicatum*), and curly leaf pondweed (*Potamogeton crispus*). The sampling grid can be seen below (*Map 1*).

Beyond the aforementioned sampling grid, the field crew visually scans shoreline areas for riparian and invertebrate invasive species such as purple loosestrife (*Lythrum salicaria*), yellow flag iris (*Iris pseudacorus*), non-native Phragmites (*Phragmites australis subsp. australis*), zebra mussels (*Dreissena polymorpha*), Chinese mystery snails (*Cipangopaludina chinensis*), banded mystery snails (*Viviparus georgianus*), and rusty crayfish (*Orconectes rusticus*).

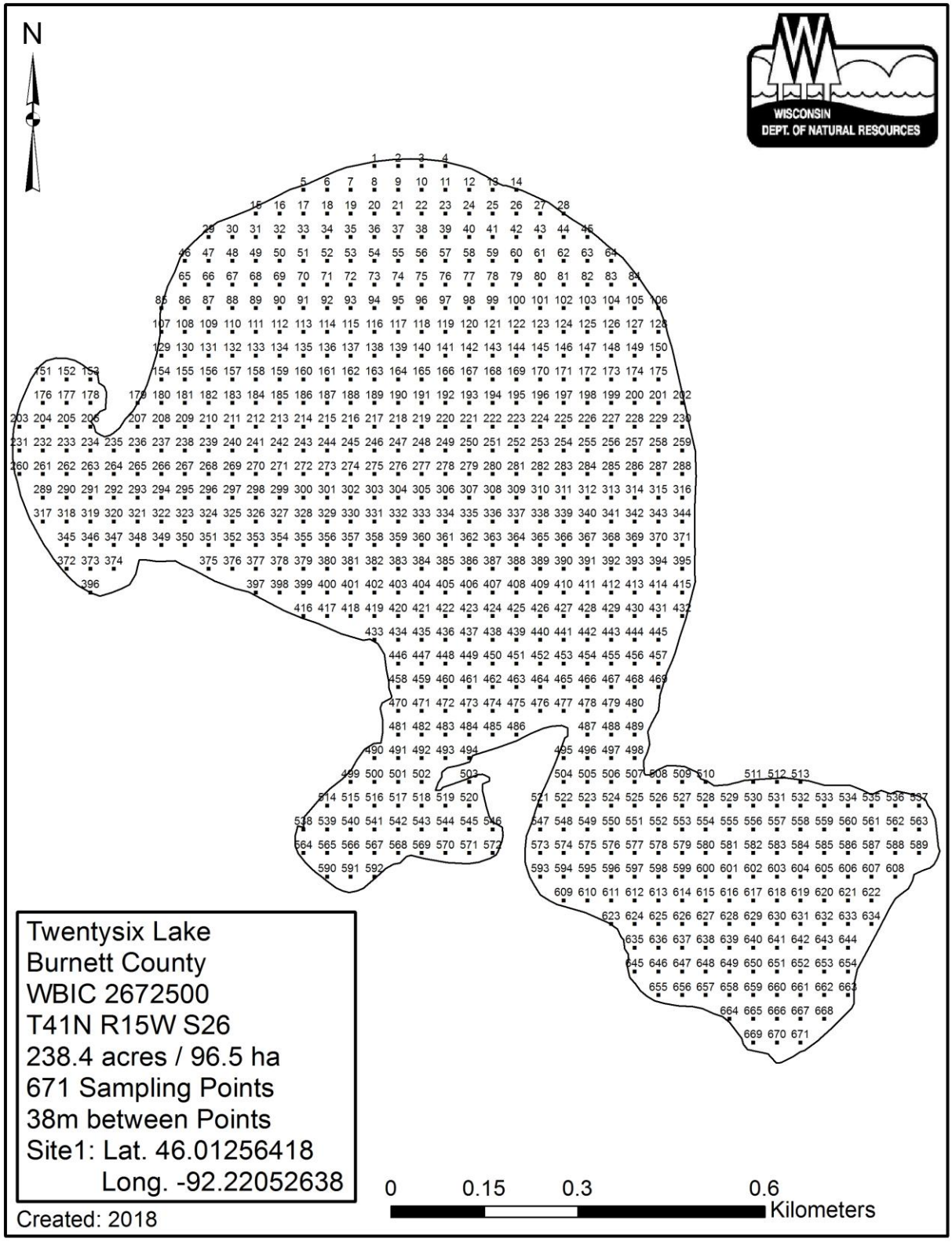
During the survey, common native plants found included fern pondweed (*Potamogeton robbinsii*), slender naiad (*Najas flexilis*), northern water milfoil (*Myriophyllum sibiricum*), Illinois pondweed (*Potamogeton illinoensis*), coontail (*Ceratophyllum demersum*), flat-stem pondweed (*Potamogeton zosteriformis*), eelgrass (*Vallisneria americana*), common waterweed (*Elodea canadensis*), clasping-leaf pondweed (*Potamogeton richardsonii*), and muskgrass (*Chara sp.*).

The only invasive species found were Chinese mystery snails (*Cipangopaludina chinensis*), which have been previously observed on Lake 26 and reported to the WDNR. No new aquatic invasive species were detected at this time.

There were no areas on Lake 26 that were non-navigable by boat. During the survey, the conditions were sunny with a temperature around 80 degrees Fahrenheit and a south wind around 7.5 mph. Overall, Lake 26 appeared to be healthy despite sightings of Chinese mystery snails.

Burnett County Land Services Department also conducted a zebra mussel veliger and spiny waterflea tow at 3 locations on the lake. One location was at the deep hole and the other two were located in heavily used bays along the downwind side of the waterbody and near the public access. After receiving the results, Lake 26 received a negative result for both zebra mussel veligers and spiny waterfleas.

Aquatic Invasive Species:
Chinese mystery snail (*Cipangopaludina chinensis*)


N
WISCONSIN
DEPT. OF NATURAL RESOURCES
Twentysix Lake
Burnett County
WBIC 2672500
T41N R15W S26
238.4 acres / 96.5 ha
671 Sampling Points
38m between Points
Site1: Lat. 46.01256418
Long. -92.22052638
Created: 2018
0
0.15
0.3
0.6
Kilometers

Invasive Species to Watch For

Aquatic Invasive Species Quick Guide

Yellow Iris (*Iris pseudacorus* L.)

Golden Sands Resource Conservation & Development Council, Inc.

Description: Yellow Iris is a non-native, perennial aquatic plant in the family Iridaceae that grows from rhizomes. Large, sword-like leaves are light-dark green, and sheath each other at the base. Several large, yellow flowers are held on a round or slightly flattened stalk. Each flower has three large, drooping sepals and three shorter petals. Plants grow in wet soil or emerge from shallow water, and reach 2-6 feet tall.

North American Distribution: Yellow Iris has been reported across most of the northern United States and Canada.

Yellow Iris produces many large, yellow flowers on a rigid stalk.

Long fruit capsules produce dozens of tan-brown, circular seeds.

Dispersal Vectors: Yellow Iris was introduced from Eurasia as an ornamental plant for water gardens and other wet sites. It spreads locally by rhizomes and by large, round seeds. Dislodged fragments of the rhizome can also produce new plants. Muskrats may transport yellow Iris short distances to build their huts, and waterfowl hunters may contribute to spread by using it in construction of hunting blinds. Yellow Iris is still sold in some nurseries and internet stores.

Ecological Impacts: Populations can spread quickly by rhizomes and seeds, crowding out valuable native plant species and decreasing plant and animal diversity. A study by Raven and Thomas in 1990 noted a large population of yellow Iris that had excluded all other vegetation, even cattails. Yellow Iris is unpalatable to wildlife and livestock due to high levels of glycosides.

Control Options: Manual removal of yellow Iris is difficult, because of its strong rhizome network. Removal of small clumps is easier in areas of soft, water-logged substrates, and these clumps should be grasped as far down the stem as possible and pulled straight up to have the best chance of removing the entire rhizome. Digging is also an option—care should be taken to get underneath the entire rhizome without breaking it, and removal of native species must be minimized. All plant material must be removed from the site and disposed of away from water bodies. Yellow Iris can cause skin irritation, so gloves should be worn when working with this species.

Yellow Iris can be controlled by glyphosate-based herbicides. Plants growing near standing water should be treated with an herbicide approved for aquatic use to minimize harm to amphibians.

Large stands of yellow Iris in shallow water of a lake.

No effective biological control agent is known at this time.

Additional Information:

Jacobs, J. et al. 2010. Ecology and management of yellowflag Iris (*Iris pseudacorus* L.). Invasive Species Technical Note No. MT-28. United States Department of Agriculture, Natural Resources Conservation Service. 6pp.

Raven, P.H. and J.H. Thomas.. 1970. *Iris pseudacorus* in western North America. Madrono. 20:390-391

Photo credit: Paul Skawinski

Developed by Golden Sands Resource Conservation & Development (RC&D) Council, Inc. as part of an aquatic invasive species (AIS) education program, supported by an AIS grant from the Wisconsin Department of Natural Resources. YI-1-14

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Aquatic Invasive Species Quick Guide

Curly-leaf Pondweed (*Potamogeton crispus* L.)

Description: Curly-leaf pondweed is a non-native, perennial aquatic plant in the Potamogetonaceae family, can grow in very shallow water or down to at least 15 feet deep. Its leaves are alternate with serrated margins, a blunt tip, and 3-5 veins running from the base to the tip. Late in its seasonal life cycle, the leaves become very wavy, but young plants have flat leaves. Curly-leaf pondweed typically dies back in June/July, but may grow year-round if a source of cool water exists nearby. Small, cloning buds (turions) are produced at the tip of the plant and in the leaf axils, which lie dormant through the summer and sprout by the following spring.

Curly-leaf pondweed has alternate, wavy leaves with blunt tips.

North American Distribution: Curly-leaf pondweed has been found across at least 47 U.S. states and most of southern Canada.

Leaves have small teeth on the edges and 3-5 veins running the length of the leaf.

Dispersal Vectors: Curly-leaf pondweed was introduced to North America from Europe in the late 1800s as an aquarium plant. It may also have been introduced during common carp stocking programs. Local spread is by rhizomes and turions. Seed viability in natural systems is typically very low (~0.001%) (Catling and Dobson, 1985). Boats have the potential to move curly-leaf pondweed between water bodies by transporting plants fragments with developed turions attached.

Ecological Impacts: Curly-leaf pondweed can form large, dense beds that sprawl across the surface, often seen in shallow lakes with soft sediments. These beds inhibit recreational activities and can reduce water flow. Die-off of curly-leaf pondweed in summer often leads to algae blooms. Seeds of curly-leaf pondweed are readily consumed by many species of ducks.

Control Options: Manual removal of curly-leaf pondweed is difficult; it involves pulling the plant and rhizome in as few pieces as possible. Rhizome fragments will sprout new plants. Turions also must be removed, so removal before turions are produced is recommended.

Mechanical removal can be done with aquatic plant harvesters, and should be done just before turion development. Removal of the top several feet of the plant at this time will reduce the number of seeds and turions produced that year. This type of removal could possibly stimulate rhizome development.

Chemical control typically uses contact herbicides like endothall. It can be effective on curly-leaf pondweed when applied at the proper dose and time of year, but multiple years of treatments are necessary to deplete the reserve of turions in the sediment. Unintended damage to the native aquatic plant community is likely with these herbicides. Most states require chemical use permits for any herbicide treatments in standing water or wetland situations.

Turion of curly-leaf pondweed.

No effective biological control agents are currently known.

Additional Information:

Catling, P. M. and Dobson, I. 1985. The biology of Canadian weeds. 69. *Potamogeton crispus* L. Can. J. Plant Sci. 65: 655-668.

Photo Credit: Paul Skawinski

Developed by Golden Sands Resource Conservation & Development (RC&D) Council, Inc. as part of an aquatic invasive species (AIS) education program, supported by an AIS grant from the Wisconsin Department of Natural Resources. CLP-1-14

Aquatic Invasive Species Quick Guide

Eurasian Watermilfoil (*Myriophyllum spicatum* L.)

Golden Sands Resource Conservation & Development Council, Inc.

Description: Eurasian watermilfoil is a non-native, perennial, submersed aquatic plant in the family Haloragaceae. Feather-shaped leaves are divided into 12 or more pairs of slender leaflets. Leaves are arranged in whorls of 4-6 around the stem. Stems and leaves tend to be limp, often with some pinkish color. 2-4" flower spikes are pink and yellow, held above the water, with many whorls of pink flowers (female) on the lower half, and whorls of yellow flowers (male) on the upper half. Eurasian watermilfoil can survive on wet shorelines during the growing season if water levels recede.

Eurasian watermilfoil has whorls of feather-shaped leaves with 12 or more pairs of leaflets.

North American Distribution: Eurasian watermilfoil occurs in British Columbia, Ontario, Quebec, and at least 47 U.S. states.

Fragments of Eurasian watermilfoil can produce roots and continue growing.

Dispersal Vectors: Eurasian watermilfoil was introduced from Europe and Asia in ballast water of trans-oceanic ships, and probably also as a result of aquarium dumping. Stem fragments disperse the plant short distances, but they can easily catch on boat trailers and other equipment and be moved between water bodies. Seeds are thought to have very low viability.

Ecological Impacts: Populations can spread quickly by fragmentation, and can create dense stands that exclude native vegetation. These stands also create floating mats of tangled vegetation, which increase water temperatures, reduce water movement, and impede recreational activities.

Control Options: Small patches of Eurasian watermilfoil can be removed manually. The base of the plant and roots must be removed, and all parts of the plant should be disposed of away from any water body. Use of large rakes is not recommended because of the risk of fragmentation. A free, helpful tutorial on manual removal of Eurasian watermilfoil is available on YouTube at http://www.youtube.com/watch?v=CfsEDyAwQP4

Chemical herbicides can be used to control large stands of Eurasian watermilfoil. These herbicides must be applied by a licensed applicator, and when water temperatures are 50-60°F. These herbicides may have negative impacts on native aquatic plant species, so proper timing and dosage is crucial. Most states require chemical use permits for any herbicide treatments in standing water or wetland situations.

An aquatic insect native to much of North America, *Euhrychiopsis lecontei*, has been associated with declines of Eurasian watermilfoil. The weevil damages Eurasian watermilfoil through its feeding activity. In order to be effective, these weevils require abundant natural shoreline vegetation for overwintering.

Eurasian watermilfoil (left) has 12+ pairs of leaflets per leaf, while native watermilfoils (right) tend to have <12 pairs.

Additional Information:

Aiken, S. G., Newroth, P. R. and I. Wile. 1979. The biology of Canadian weeds. 34. *Myriophyllum spicatum* L. Can. J. Plant Sci. 59: 201-215.

Photo credit: Paul Skawinski

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Aquatic Invasive Species Quick Guide

Purple Loosestrife (*Lythrum salicaria* L.)

Description: Purple loosestrife is a perennial wetland plant in the Lythraceae family, growing to about 8 feet tall. Stems are woody, and 4-sided (rarely 6-sided in very large plants). Leaves are opposite or occasionally in whorls of 3, with smooth margins and no leaf stalk. Each flower has six petals, and many whorls of these flowers bloom at the same time. Large plants may have many pink-purple flower spikes. Fruit capsules contain thousands of seeds each.

North American Distribution: Nearly all U.S. states and the southern Canadian provinces. Reported as far north as 65°N latitude.

Purple loosestrife flowers have six wrinkled, pink-purple petals.

Purple loosestrife produces tall flower spikes and stands up to 8 feet tall.

Dispersal Vectors: Purple loosestrife seeds probably arrived in North America from Europe, in heaps of soil used for ship ballast. It also may have been intentionally imported for ornamental use, medicinal use, or use by beekeepers. Large purple loosestrife plants can produce over two million wind-dispersed seeds per year.

Ecological Impacts: Purple loosestrife can rapidly colonize new areas, displacing native vegetative communities. In many wetlands, purple loosestrife has become the dominant species. Nesting habitat quality can decrease as the result of purple loosestrife introduction, reducing the waterfowl and shorebird communities. Some cultivars of purple loosestrife can also hybridize with our native winged loosestrife (*Lythrum alatum*), reducing the native's genetic integrity.

Control Options: Manual removal of small stands of purple loosestrife can be very effective. Plants in moist, soft substrate can often be pulled out by hand, including the roots. Very large plants may require some digging to remove the entire plant. Cutting flowerheads or seedheads can prevent seed dispersal in the short term, but plants will re-sprout from the roots and may produce new flower spikes.

Glyphosate or 2,4-D-based herbicides can be used; they should be approved for aquatic use to avoid unnecessary harm to the ecosystem. For scattered plants, herbicide is best applied with a small bottle and a wicking tip that can be used to "paint" herbicide onto the plants.
Cutting the stem near the base and "painting" the cut stem is often effective. Most states require chemical use permits for any herbicide treatments in standing water or wetland situations.

Purple loosestrife stems are woody and nearly square.

Biological control of purple loosestrife is a widely used, effective method of control. *Galerucella* beetles feed on purple loosestrife without negatively affecting native wetland plants. Many states and organizations offer free assistance to volunteers looking to raise *Galerucella* beetles for local release into infested wetlands.

Additional Information:

Mai, T.K., Lovett-Doust, J., Lovett-Doust, L., and Mulligan, G. A. 1992. The biology of Canadian weeds. 100. *Lythrum salicaria*. Can. J. Plant Sci. 72: 1305-1330

Wisconsin Department of Natural Resources. Purple loosestrife biocontrol. http://dnr.wi.gov/topic/invasives/loosestrife.html

Photo credit: Paul Skawinski

Developed by Golden Sands Resource Conservation & Development (RC&D) Council, Inc. as part of an aquatic invasive species (AIS) education program, supported by an AIS grant from the Wisconsin Department of Natural Resources. PL-1-14

Aquatic Invasive Species Quick Guide

Starry Stonewort (*Nitellopsis obtusa* L.)

Golden Sands Resource Conservation & Development Council, Inc.

Description: Starry stonewort is a non-native species of large algae in the Characeae family. It has whorls of 4-6 long branchlets. It is more robust than most members of its family, and can grow to over two meters tall. Anchored by colorless filaments (rhizoids) that contain up to several dozen 4-5mm, star-shaped bulbils, starry stonewort typically grows in marl sediments of alkaline lakes, up to 9 meters deep. Orange reproductive structures are located in the axils of the upper branchlets. Starry stonewort is typically an annual, but can behave as a perennial during mild winters. Interestingly, starry stonewort is listed as an endangered species in the United Kingdom.

Starry stonewort has many whorls of long branchlets. Some branchlets may appear forked due to short bracts where reproductive structures are forming.

North American Distribution: Michigan, northern Indiana, and the northeastern United States. Recently found in southeastern Wisconsin.

Star-shaped bulbils are produced in the sediments, and give starry stonewort its name.

Dispersal Vectors: Starry stonewort is native to Europe and western Asia. It was probably introduced to the Great Lakes via ballast water carried in trans-oceanic ships. Fragments of starry stonewort can easily be spread between lakes by boats, trailers, and anchors holding sediments. Local dispersal occurs by bulbils or fragments being transported by water currents or boats within the lake. Since only male starry stonewort exists in the U.S., no viable "seeds" are produced.

Ecological Impacts: By forming dense mats of vegetation, starry stonewort can greatly reduce the diversity of aquatic plants in a lake. It can also impede movement of fish and other animals, and can decrease successful spawning activity. Mats growing to the surface can reduce water flow and make recreational activities difficult.

Control Options: Manual removal of starry stonewort is difficult and may be impractical on a large scale. Abundant bulbils on the rhizoids can dislodge if disturbed, and will sprout new individuals. Manual removal efforts must emphasize careful removal of these bulbils.

Some chemical herbicides and algaecides have been effective at suppressing starry stonewort. Herbicide applications may be less effective on tall stands of starry stonewort, as the chemical is quickly absorbed into the upper parts of the algae, leaving the lower parts unharmed. Most states require chemical use permits for any herbicide/algaecide treatments in standing water or wetland situations.

An effective biological control agent is not known at this time.

Starry stonewort (front, center), much more robust than the surrounding native muskgrasses (*Chara* spp.).

Additional Information:

Pullman, G. Douglas and Gary Crawford. 2010. A decade of starry stonewort in Michigan. Lakeline. 36-42.

Photo credit: Paul Skawinski

Developed by Golden Sands Resource Conservation & Development Council, Inc. as part of an aquatic invasive species education program, supported by a grant from the Wisconsin Department of Natural Resources. Maintained by the Wisconsin Citizen Lake Monitoring Network.

SS-3-15

Aquatic Invasive Species Quick Guide

Zebra Mussel (*Dreissena polymorpha* Pallas)

Golden Sands Resource Conservation & Development Council, Inc.

Description: The zebra mussel is a small mollusk in the family Dreissenidae. It grows up to about 1.25 inches long. The shells are flat on the hinged side (D-shaped). Zebra mussels have tiny threads that anchor themselves to various firm surfaces like rocks, logs, plants, trash—even other animals. Shells are typically light brown to white, with brown-black stripes. These colors may be faint if the shells have been exposed to prolonged direct sunlight.
The related quagga mussel looks similar, but their shells are not flat on the hinged side.

Zebra mussels have D-shaped shells with brown-black stripes. 4X typical size.

North American Distribution: Zebra mussels are abundant in the Great Lakes, and are scattered in inland waters in the eastern and central United States. They have recently been introduced to the western U.S.

Zebra mussels will colonize any firm surface, even this old tennis ball.

Dispersal Vectors: Zebra mussels were first documented in Michigan's Lake St. Clair in 1988, probably arriving from the Black or Caspian Sea via ballast water of ocean-going ships. Each female can produce up to a million eggs each year, which hatch into free-floating larvae. These microscopic larvae can be transported between water bodies in live wells, bait buckets, or motors. Adult zebra mussels can also attach to plants, and can be transported by boats that aren't cleaned properly after use. Female zebra mussels can reproduce at two years old.

Ecological Impacts: Zebra mussels are filter-feeders, consuming tiny food particles that are the base of the aquatic food web. This removal of food particles results in less food available for other animals like zooplankton, native mussels, and fishes. In many cases, the clearer water caused by the zebra mussels has resulted in severe blooms of filamentous algae. These blooms washing up on shore provide ideal conditions for Clostridium botulinum, the bacteria responsible for killing birds through avian botulism. The sharp shells can cut the feet of people enjoying beaches, and can result in various infections.

Control options: Manual removal of zebra mussels is easy, but impractical due to their sheer abundance. Zebra mussels are occasionally removed from inside water intake pipes with chisels or high-pressure water jets.

No chemical control agent is known to kill zebra mussels without seriously harming other aquatic life or water quality. A 2% chlorine bleach solution is effective at killing zebra mussels when cleaning boating equipment or other gear away from waterbodies.

A bacterial formulation is currently being researched, which uses a native soil bacterium to kill zebra mussels without causing other damage to the ecosystem. This formulation is not approved for widespread use at this time.

These zebra mussels are attached to a fragment of Eurasian watermilfoil.

Additional information:
United States Geological Survey. *Dreissena polymorpha*. http://nas.er.usgs.gov//queries/FactSheet.aspx?speciesID=5

Photo credit: Paul Skawinski

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