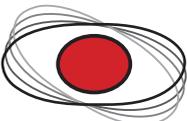


# STOP



the **INVA**

..... *By Mary Hoff*  
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**Preventing** invasive species from spreading to Minnesota lakes is a top priority for the DNR and **every** Minnesotan.

**One of** Ann Latham's fondest memories is going out fishing with her dad on Green Lake, a bustling 5,400-acre gem near Willmar. Her grandchildren are the family's fifth generation to enjoy fishing, swimming, and hunting for turtles and pebbles along shore.

But now she's not so sure their lake traditions will continue for future generations. About 12 years ago, Eurasian watermilfoil appeared in these waters, perhaps carried on a boat trailer by an unsuspecting boater. And that changed everything. Growing like, well, a weed, the non-native plant has infested the big, windswept lake. Property owners now volunteer long hours and thousands of

# Invasives



DNR PHOTOS

**EURASIAN WATERMILFOIL** (top) can crowd out native aquatic vegetation and interfere with water recreation. A single stem and leaf segment of this invasive plant can take root and form a colony in an uninfested lake. **ZEBRA MUSSELS** (middle) cling to the shell of a native mussel. A female zebra mussel can produce as many as 500,000 eggs a year. The eggs develop into microscopic larvae called veligers, which can be inadvertently transported in bilge water and bait buckets. **SPINY WATER FLEAS** (bottom) are a nuisance to anglers and can cause a decline in native zooplankton, upsetting the food chain. These invasive zooplankton can hitch a ride in bilge water or bait containers.

dollars each year trying to keep it in check.

Still, Latham says after days when there's a lot of boat traffic on the lake, shorelines end up littered with bits and pieces of milfoil torn up by the motors. Latham and her family use pitchforks to move tangles of cut milfoil above the high-water mark where it can compost rather than wash back into the lake and take root in new places.

Unfortunately, this could be only the beginning of Green Lake's aquatic invasive species troubles. Just 50 miles away, the Alexandria chain of lakes has been invaded by another nonnative pest—zebra mussels. Latham knows that zebra mussels could enter Green Lake any day, perhaps stuck to a boat hull. Once introduced, zebra mussels not only spread across the lake bottom and crowd out native species, but they also compete for food with young fish. What's more, zebra mussels could improve conditions for growth of aquatic plants—including invasive Eurasian watermilfoil.

Latham is distressed about the thought of more invasive species in Green Lake. "This is heartbreaking, is what it is, to watch a lake in Minnesota become degraded through human use," she says. "I don't know that I can personally take another hit. It would be kind of like a death in the family."

Within the past three decades, at least 20 nonnative invasive aquatic plant and animal species have found their way into Minnesota—mainly as hitchhikers catching a free ride in ballast or bilge water, on boats and motors, or in bait buckets. These unwelcome guests outcompete native species, disrupt food webs, and impinge on fishing and other recreational activities.

"It's mighty big on many levels," says Lois

Sinn Lindquist, executive director of the nonprofit Minnesota Waters. "On just a recreational level, it's a pretty big issue. It's already a huge economic issue."

The Department of Natural Resources considers aquatic invasive species to be one of the top conservation challenges facing Minnesota today.

"This is a major concern for the DNR, and it should be for all Minnesotans," says Luke Skinner, DNR invasive species unit supervisor. "The success or failure of our efforts to prevent the spread and minimize impacts from aquatic invasive species lies in the hands of every individual who uses our lakes. We're all part of the problem. And we all need to be part of the solution too, if we're going to succeed in keeping aquatic invasives from degrading some of Minnesota's most treasured resources."

**Rogues Gallery.** Asian carp, Eurasian watermilfoil, zebra mussels, quagga mussels, curly-leaf pondweed, spiny waterflea, and round gobies are the Most Wanted in the DNR's rogues gallery of aquatic invasive species today. While these species are part of balanced ecosystems in their native lands, they proliferate in Minnesota because our ecosystems lack natural controls for them.

Take the granddaddy of Minnesota aquatic invasives, the common carp. Deliberately introduced in the 1800s as a source of food and sport fishing, the fish soon wore out their welcome as they rooted around on lake bottoms, killing aquatic plants and disrupting healthy habitat for native fish.

Eurasian watermilfoil and curly-leaf pondweed elbow out native vegetation. Spiny wa-

ter fleas rob game-fish larvae of the food they need to grow into lunkers. Gobies eat eggs of native fish species.

Zebra mussels were introduced into Lake Superior in ballast water from transcontinental ships. These fingernail-size mollusks coat every hard surface they find underwater—rocks, docks, boats, lifts, even other mussels. In recent years, zebra mussels have shown up in some of the state's busiest waterways: the Mississippi River, Lake Minnetonka, Mille Lacs, and Gull, Prior, and Pelican lakes.

"In places [in Mille Lacs], they're covering the bottom of the lake. At Three Mile Reef, there are no rocks showing anymore," says DNR large lake specialist Tom Jones. In 2005, the year Jones found the first zebra mussel in Mille Lacs, a series of about 60 dives turned up only three other zebra mussels. On a survey last summer, a diver counted 3,720 mussels in a single, heavily infested square foot.

**Act Now.** After an invasive species is found in a water body, it's critically important to stop it from moving to other lakes and streams.

"Some people think ducks or other animals move aquatic invasive species," Skinner says. "That's just not the case. It's pretty clear that almost all new infestations are the result of people unknowingly carrying plant fragments or microscopic larvae of invasives as they move boats, trailers, bait, and docks."



DNR PHOTOS

*Zebra mussels (top) can attach to any hard surface, including boat lifts and docks. One recent introduction of zebra mussels to an infested lake is thought to have occurred via the movement of a boat lift from an infested lake. Curly-leaf pondweed (above), a nonnative aquatic plant, grows excessively and displaces native vegetation.*



DNR PHOTO



JEFF GUNDERSON, MINNESOTA SEA GRANT

*State law requires removing all visible aquatic plants and animals from boats and trailers (top) before leaving any water access. Anglers should also remove aquatic plants and animals such as spiny water flea (above) from fishing gear.*

In 2011, 98 inspectors worked April through October educating boaters and inspecting 76,000 watercraft. Additional inspections occurred at 66 fishing tournaments. And 35 lake associations and other groups funded their own inspections.

The DNR has long worked to publicize the need for vigilance against invasives, from billboards to signs at public accesses. But boaters are seeing dramatic changes in laws and enforcement as a more intensive effort to contain invasive species begins.

In 2011, laws aimed at preventing the spread of aquatic invasive species got tougher. Pretty much anything that holds water needs to be drained—including live wells, bilge areas, and bait buckets—when removing equipment from a lake. Drain plugs must be left open when boats are being transported. Bait harvesters and people who install docks and other water equipment must go through special invasive species training.

Starting this spring, the DNR will operate watercraft check stations. The DNR plans to hire an additional 150 employees to handle inspections. Motorists pulling watercraft will be directed to a staging area where their boats and other water-related equipment will be inspected for aquatic invasive species.

If inspectors believe the boat may be carrying aquatic invasive species, motorists will drive up to a decontamination station where watercraft,

trailer, and other water-related equipment will be cleaned with high-pressure, hot water.

The DNR purchased three decontamination units last summer and plans to add 20 during the 2012 season. These units will be used at check points and at accesses on busy, zebra mussel infested lakes, such as Mille Lacs and Minnetonka.

DNR uses enforcement—laws and consequences—to discourage people from careless acts that spread invasives. Failure to clean visible aquatic vegetation and draining all water from water-related equipment is a misdemeanor, punishable by up to a \$1,000 fine and 90 days in jail.

“We’ve been educating water recreation users for the last 20 years,” says Maj. Phil Meier, DNR enforcement division operations manager. “Now the time has come to take stricter enforcement action.”

In 2011, state conservation officers issued 838 citations and warnings for failure to drain water or for the transport of aquatic invasive species—up significantly from 293 citations and warnings in 2010.

**Ongoing Battle.** The Minnesota Legislature first passed a law requiring the DNR to set up a statewide program to prevent the spread of harmful nonnative species in the state in 1990. Today the DNR is focusing its efforts on three goals: Prevent invasives not yet here from breaching the state’s borders. Prevent the spread of species already here. Control species already established to minimize ecological and economic harm.

To prevent the arrival of new invasives, state laws restrict which aquatic plants and animals people can bring into the state for



DNR PHOTO

## do = it's the law

- **Clean** all visible aquatic plants, zebra mussels, and other prohibited invasive species off of watercraft, trailers, and equipment before leaving any water access
- **Drain** all water from the boat's bilge, live well, motor, ballast tanks, and portable bait containers before transport from any water access site or shoreline property
- **Keep** drain plug out and draining devices open while transporting watercraft.

## do **not** =

- Transport aquatic plants, water, or prohibited invasive species
- Dump live bait into state waters, on the shore, or on the ground
- Launch or attempt to place watercraft or trailers with aquatic plants, zebra mussels, or prohibited invasive species into any waters of the state.

## Recommended actions

- Rinse boat and live wells with hot water or dry at least five days to kill zebra mussels
- Pressure wash boat, trailers, and water-related equipment to remove invasive species
- Leave boat lift or dock above water over winter to kill any organisms before moving to another body of water
- Use rubber-soled waders in water bodies
- Never release aquarium plants or animals into the environment (never down toilet).



DNR PHOTO



CHRIS YOUNG, THE STATE JOURNAL REGISTER

*Nonnative bighead carp (top) and silver carp (above) have been making their way up the Mississippi River since escaping from aquaculture ponds in southern states in the 1980s. Neither of these Asian carp is established in Minnesota waters. Their voracious feeding on plankton poses a serious threat to native fish communities.*

use in aquariums or water gardens or as fish bait. But with direct connections to two of the world's biggest and hardest-working freshwater highways—the Great Lakes and the Mississippi River—there are myriad opportunities every day for invasives to find their way into Minnesota. Efforts to discourage accidental introduction via Lake Superior include restrictions on the release of ballast water by oceangoing vessels. When viral hemorrhagic septicemia, a deadly fish disease, showed up in the Duluth harbor in 2010, DNR instituted mandatory testing of all fish before stocking in Minnesota waters to prevent inland movement.

As Asian carp work their way up the Mississippi, the DNR is working with multiple federal and state partners to protect the river's upper reaches, possibly with a bubble barrier or by closing the locks in the Twin Cities. In 2011 the Legislature provided \$16 million in funding to restore and improve the Coon Rapids dam as an Asian carp barrier.

Once invasive species appear, the DNR and citizens can still do a lot to prevent the spread and control damage. Harvesting or applying herbicides to invasive plants, such as Eurasian watermilfoil, curly-leaf pondweed, and flowering rush, can help reduce the impacts on the lake's ecology and recreation such as boating, fishing, and swimming.

Invasive purple loosestrife has been subdued through biological

control. After rigorous testing to make sure the approach wouldn't do more harm than good, biologists introduced beetles that keep loose-stripe under control by eating it.

Other possible biological controls for aquatic invasives could include bacteria that selectively kill certain species. Poisons that target zebra mussels, quagga mussels, or Asian carp are potential controls.

**Buy Time.** In 2011 seven new water bodies were listed as containing zebra mussels. Another seven were added to the confirmed Eurasian watermilfoil tally. Two more had faucet snails. And two acquired spiny waterflea.

Skinner shudders when he thinks of other potential invaders: hydrilla, an invasive aquarium plant; northern snakehead, a fish that can crawl overland; and Asian carp, which can weigh more than 100 pounds.

Yet Skinner isn't discouraged. He believes enhanced efforts by the DNR, local government, organizations, and individual boaters and anglers can prevent new introductions of invasive species. Just as important, he says, preventive measures buy valuable time for developing better ways to fight back.

"If you can prevent the spread of invasive species, you have more time to think, to plan," Skinner says. "It allows you to look for options down the road." 



DNR PHOTO



BERNARD SIETMAN, DNR

*About 250 Minnesota lakes are currently infested with Eurasian watermilfoil (top). Rusty crayfish (above) harm native fish communities by feeding on their eggs and driving out or hybridizing with native crayfish. Native to the Ohio River basin, rusty crayfish were first discovered in Minnesota around 1960.*