

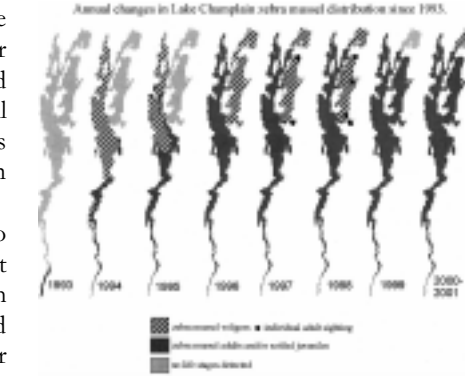


Zebra Mussels

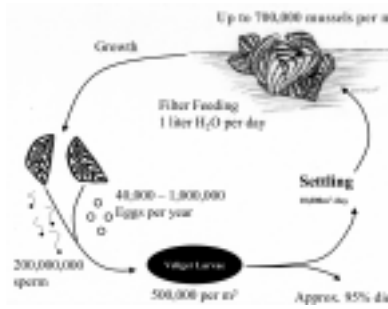
Help prevent Lake Champlain's nuisance from spreading to other lakes

Zebra mussels (*Dreissena polymorpha*) are D-shaped mollusks with a brown zebra-like pattern. Since their arrival in Lake Champlain during the early 1990's, zebra mussels have colonized the entire lake. (For reasons yet unknown, the closely related Quagga mussel (*D. bugensis*) which has surpassed the zebra mussel in the Great Lakes, has yet to be detected in Lake Champlain). The larval or veliger form can be found throughout, and settled juveniles and adults are found in all but a few areas of the lake. Zebra mussels are still absent from many other lakes in the region, but for how long?

This species is well adapted to spread rapidly into new areas. Adult mussels release millions of eggs and sperm throughout the summer. Newly hatched larvae (or veligers) are tiny and drift near the surface of the water. As the larvae grow into juveniles they settle to the bottom and attach to anything hard: rocks, native mussels, plants and man-made objects. Under certain conditions, juvenile zebra mussels will also



colonize soft sediments. This mollusk clings tightly to various objects by spinning a mass of tiny fibers called byssal threads. These fibers attach at the mussel's hinge and adhere to nearby hard objects. Zebra mussels usually settle in depths less than 25 feet, but have been found in up to 225 feet of water. Quagga mussels have been found to depths of 400 feet. Once established, both mussels often form dense mats consisting of thousands of individuals.



Zebra mussel invaders are often adults brought to new lakes mostly attached to boats or to vegetation caught on boat trailers. Sometimes the microscopic larvae can be carried in the water of engine cooling systems, boat bilges, live wells, bait buckets, scuba equipment, and possibly kayak flotation compartments.

There are many ways in which zebra mussels can affect us all. Every organism in the lake suffers from competition with zebra mussels, either directly or indirectly. As filter feeders, they strain huge volumes of water collecting phytoplankton, zooplankton, algae and detritus for food. Juvenile fish and native mussels depend on these same food items, so dense zebra mussel colonies reduce the food available to the juveniles of many other lake species. They also filter out and consume the planktonic larvae of other important lake species. Zebra mussels grow on any hard surface, occupying vital gravel and rock cobble habitat, important spawning areas for lake trout, smelt and other fish species. Zebra mussels settle on and choke off native bottom-dwelling mussels, part of the unique wildlife found in our lakes.

The zebra mussel also has the potential to further threaten the region's outdoor recreation, tourism, property value and water supply. Zebra mussels foul boat hulls, props and engines. When they attach to boat hulls, they increase drag and fuel consumption, while reducing speed. This creates time and monetary losses for both recreational and commercial boats. These mussels also foul and clog raw water intakes at domestic and municipal water intakes. Beach goers are impacted because the zebra mussel's sharp shells can cut feet and hands. Dense colonies of mussels can also destroy important historical shipwrecks in our lakes.

Though it is too late to prevent zebra colonization of Lake Champlain, scientists continue to monitor the lake's tributaries and many of the surrounding waters in Vermont and northern New York for signs of this pest. No zebra mussels were found in a recent survey of several New York tributaries to Lake Champlain. However, zebra mussels are now colonizing Lake Bomoseen in Vermont, along with Glen Lake, and Saratoga Lake, in New York. Although low calcium levels in Lake George may limit zebra mussel growth, adult zebra mussels did become temporarily established in a small area of the lake in 1999.

- A Joint Program of:**
- Plattsburgh State University
 - University of Vermont
 - NOAA, Dept. of Commerce



Lake Champlain Sea Grant Aquatic Resources Program
101 Broad Street
Plattsburgh State University
Plattsburgh, NY 12901-2681
Phone
518-564-3038
800-745-5520
Fax
518-564-3036
e-mail
seagrantic@plattsburgh.edu

Lake Champlain Sea Grant is a cooperative program of the University of Vermont Extension, Plattsburgh State University of New York, and the National Sea Grant College Program with administrative offices at:

317 Aiken Center
University of Vermont
Burlington, VT 05405-0088
Phone: 802-656-682
FAX: 802-656-8683
<http://snr.uvm.edu/seagrtrvt/>

Aquatic Nuisance Species

Lake Champlain



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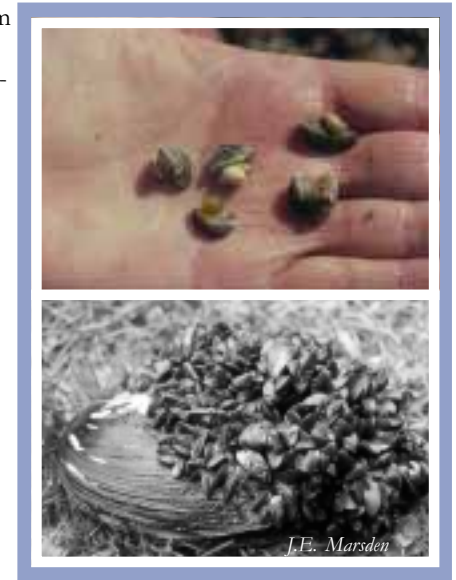
Water chemistry analysis indicates that several Clinton and Essex County, New York lakes would provide suitable zebra mussel habitat. Many Vermont lakes are highly suitable as well. This suggests that these animals could easily colonize a large number of lakes in the eastern Adirondacks and west of the Green Mountains. Stopping their spread depends on boaters, anglers and other outdoor enthusiasts.

Here's what you can do:

- Drain all bilge water, live wells, bait buckets and any other water from boat, engine and equipment before leaving water-body site.
- Inspect boat hull, drive unit, trim and trolling plates, prop, transducers, anchor, anchor rope and trailer thoroughly. Scrape off and dispose of any suspected mussels regardless of size.
- Wash boat hull, drive unit, live wells, bilge area, trailer, bait buckets, engine cooling systems and other boat parts before moving your boat to different waters. A high pressure/hot water wash is more effective in killing all life stages of zebra mussels and is essential for killing off adults.
- Dry your boat and trailer thoroughly in the sun for five days when moving between bodies of water.

How to Identify

- Zebra mussels look like small clams with a yellowish or brownish "D" shaped shell, usually with dark and light colored stripes (hence the name "zebra").
- They can grow up to two inches in length; however, most are less than one inch. Zebra mussels usually grow in clusters and are generally found in shallow (6-30 feet), algae-rich water.
- Zebra mussels are the ONLY freshwater mollusk that can firmly attach itself to solid objects such as submerged rocks, dock pilings, boat hulls, water intake pipes, etc.



More information on zebra mussels and how to prevent their spread is available at the following web sites:
<http://www.sgnis.org/> http://www.cce.cornell.edu/programs/nansc/nan_ld.cfm

Public assistance in reporting zebra mussel sightings at new locations is essential to help slow its further spread in Lake Champlain and neighboring water-bodies. If you see what appear to be zebra mussels in Vermont or northern New York (outside of Lake Champlain), please report them to one of the contacts below.

Vermont Department of Environmental Conservation

Water Quality Division
 103 South Main Street
 Building 10 North
 Waterbury, Vermont 05671-0408
 Phone: 802-241-3777
<http://www.anr.state.vt.us/dec/waterq/ans/ans-index.htm>

Lake Champlain Sea Grant Program

101 Hudson Hall
 Plattsburgh State University
 101 Broad Street
 Plattsburgh, NY 12901-2681
 Phone: 800-745-5520 or 518-564-3038
<http://research.plattsburgh.edu/LakeChamplainSeaGrantAquatics>



Lake Champlain Basin Program

PO Box 204
 54 West Shore Road
 Grand Isle, Vermont 05458
 Phone: (802) 372-3213 or 1-800-468-LCBP (NY and VT)
<http://www.lcbp.org>



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