ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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Asian Clams in New Hampshire

What are Asian clams and where do they come from?
Asian clams, also called "golden clams," are round, yellow-green to dark brown colored shellfish with thick, concentric rings on their shells. The clams are typically small, averaging less than 1.5 inches in size, and have a life span of one to seven years. A single clam can release 2,000-8,000 offspring in a year, depending on conditions, and some can self-fertilize.

Asian Clam (*Corbicula fluminea*)
Photos courtesy of Lake George Association, N.Y.

Asian clams are native to the freshwater of southern and eastern Asia. It is believed that immigrants to North America brought the clams as a food source and subsequently released them into the wild. The first documented discovery of Asian clams in the US was sometime between 1924 (Indiana report) and 1938 (Washington State report). Today, the Asian clam is found in over 40 states and is expected to continue spreading. An infestation was recorded in the Northeast in Marlborough, Mass. at Fort Meadow Reservoir in 2005, and in Lake George, N.Y. in 2010. Two populations of the Asian clam have been documented in New Hampshire, one in the Merrimack River (from Bow, south) and the other in Cobbetts Pond in Windham. There are likely more populations that have yet to be documented.

Why are Asian clams a concern in North America?
Asian clams are not native to the United States. Larval and juvenile clams are easily transported by water currents, or when humans move water from one waterbody to another. They can form dense clusters of over 5,000 clams per square meter, dominating the benthic community and altering the benthic substrate. Native birds, mammals, fish and other animals feed on Asian clams. However, these invasive clams reproduce rapidly, making it difficult for native predators to keep Asian clam populations in check.

What problems do Asian clams cause?
The Asian clam's ability to rapidly propagate and physically attach to objects as juveniles creates several problems, including:

- Large populations of Asian clams may severely alter lake or riverine food webs by directly competing with existing native fish and shellfish species for food and space.
- Raw water intakes such as those at drinking water, electric generation, and industrial facilities become impaired or clogged by clam shells or by juveniles that are sucked into the intake and that grow in the system.

The clams release phosphorus into the water through burrowing, feeding from the sediment and their excreta. Phosphorus feeds plant and algal growth, and makes potentially hazardous cyanobacteria blooms more likely to occur.

Impacts on boating and navigation include:

- Larval clams drawn into boat engine cooling water intakes may occlude the cooling system, leading to overheating and damaging the engine.
- If shells are drawn into the engine, abrasion of cooling system parts, especially impellers, could result.

What kind of habitat do Asian clams prefer?

Asian clams can tolerate a fairly wide range of environmental conditions. Asian clams live in lakes, ponds, rivers and streams with sand or gravel bottoms, in sun-lit, warm, shallow water. They live just below the surface of the sediment or with a third of their shell just above the sediment's surface. Generally, it was thought that these clams only tolerated water temperatures of 2°C to 36°C; however, in Lake George these clams successfully overwinter, surviving temperatures below 1°C for months. These clams are found in clear water with good water quality and are intolerant of high nutrient levels.

How can Asian clams be controlled?

An effective way to permanently eliminate infestations has not been found, therefore, emphasis must be placed on controlling impacts on ecosystems and water users. Methods that have been tested for removing adult Asian clams include: removal of infested sediment, water level drawdown, and asphyxiating with plastic mats. Controls for water intakes include: increasing flows, removing clams by hand and using chemicals or high temperatures to kill the clams. However, many of these methods will likely affect other aquatic organisms and may require state and/or federal permits/approvals.

Asian clams are regulated in New Hampshire, and it is illegal to import, possess or release Asian clams in this state. (Administrative Rules NHFG FIS 803.04, NHFG FIS 804.03 and NHFG FIS 805.01 respectively.)

What can citizens do to help?

Tell your local watershed association, marina, municipal officials, or anyone interested in protecting New Hampshire's waters about the Asian clam. If you are in the power generation industry, plan now for the clam's invasion of your facility. Do not purchase Asian clams for use in aquariums, in ponds or as bait. When boating in infested waters, perform the following activities AWAY FROM ANY SURFACE WATER:

- Inspect for and remove mud, plants and organisms from your boat hull, trim plates, anchors and trailer.
- Remove all water from your boat and equipment: drain your boat's bilge, live wells and engine cooling system; dump bait buckets.
- Dry anything that comes into contact with the water for five to seven days in the sun

before traveling to another waterbody
- If you find clams, wash down the boat with hot water (140^{o} F) and allow the boat and trailer to sit for two to seven days to dry and/or spray down gear with a 10 percent bleach solution and let the solution stand for a few minutes before rinsing clean

The best defense against Asian clams is to prevent them from entering New Hampshire's waters. However, when they arrive, we all need to take part in ensuring that this invasive species does not continue to spread. DES and the Fish and Game Department are collaborating to identify occurrences of this species in New Hampshire.

For More Information
For more information on Asian clams or if you have found Asian clams in New Hampshire, please contact either the DES Exotic Species Program at (603) 271-2248 or the NH Fish and Game Department at (603) 271-3421.