

Have you seen this creature in your lake?

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2015

Chinese Mystery Snail: Secrets Revealed

Species Description

The Chinese mystery snail is the largest snail invading New Hampshire waters, growing up to two inches in diameter (the size of a golf ball). The uniformly colored shell has 6 or 7 whorls, where juveniles can be light to dark olive green and adults range in color from brown to reddish-brown. Chinese mystery snails live a maximum of 5 years, and are able to produce young within their first year. One female produces between 25 to over 100 young for a single brood through ovovivipary, meaning the eggs hatch inside her shell (July) and are released when mature and able to survive on their own (September). As she grows, the number of embryos available for fertilization increases. The Chinese mystery snail primarily feeds on microalgae and other bacteria, avoiding macrophytes such as milfoil, lilies, pondweeds, etc. The operculum, a hard ‘door’ into the shell, is used to protect the snail from predation, poor water quality and desiccation (drying out). Other names for the Chinese mystery snail are: oriental mystery snail, Asian applesnail and Chinese applesnail.



**Chinese mystery snail
(*Bellamyia chinensis* or
Cipangopaludina chinensis)**

Species Range and Distribution

The Chinese mystery snail is native to Southeast Asia. In 1911, a population was found in San Francisco Bay, shortly after its appearance in local food markets, and by 1915 a population was established in Boston. The snail can be found in approximately 27 states in the U.S. and southern parts of Canada. In New Hampshire, the snail can be found in dozens of waterbodies.

Typical distribution within an infested waterbody is potentially harmful to the native ecosystem due to high population density. According to a community-level study on Chinese mystery snails, they do not pose a threat to native snail populations.

How was the Chinese Mystery Snail Introduced?

The Chinese mystery snail was sold in 1890’s San Francisco food markets, and further introduced to establish a local population for the food market, aquarium trade and water gardens. Unlawful aquarium releases and uneducated decisions further establish and nurture populations, believing that the snail will cause insignificant change to the ecosystem or will consume invasive aquatic plants such as milfoil and fanwort.

Where does Chinese Mystery Snail Invade?

The Chinese mystery snail prefers mud or silt bottoms and slow moving currents in streams, lakes or ponds. The entire U.S. is susceptible to impending establishment due to the snail's high tolerance for temperature and water quality.

What makes Chinese Mystery Snail a Good Invader?

Desiccation tolerance allows the female to brood young when she is unable to relocate to a water body, or even after death. Young are small and easily carried by water discharge into water bodies. Merely tossing snails onshore does not ensure snail removal or population reduction. Humid air slows desiccation, as do rain events. Overland transport also becomes more feasible with desiccation resistance – they can wait out days or weeks on boats and in holding tanks until eventual release. The Chinese mystery snail can also overwinter in most water bodies, allowing unnatural longevity and 3-4 brood years. Reproducing at a young age and producing a high volume of young guarantees population multiplication and distribution.



How Does Chinese Mystery Snail Spread?

Once established in a waterbody, the snails can spread to other waterbodies by contaminated boats or recreation equipment, or plants attached to equipment. People continue to create infestations by dumping aquariums containing snails that they no longer want. The Chinese mystery snail can also transport itself between water bodies, if they are in close proximity, due to the snail's desiccation tolerance.

Why is Chinese Mystery Snail a Problem?

Competition for algae can result in extirpation of native snail species, though initial studies suggest that most known native snail population densities are unaffected by the presence of the Chinese mystery snail. During a desiccation resistance study by Havel et al. in 2014, 100% mortality was never reached, especially with post-desiccation brood releases. Since the Chinese mystery snail consumes algae, not macrophytes, the water body moves to a phytoplankton-driven system. The water becomes darker and more susceptible to algal blooms due to snail ordure and decay.

What are Some Solutions to the Chinese Mystery Snail Problem?

Physical Chinese mystery snails can survive up to 104 F, and drying alone is insufficient for the high tolerance of desiccation. Using a combination of hot water (140 F), high pressure chlorinated or Quat spray for 10 minutes will remove and damage the snails. Further drying or composting the snails away from shore precipitation will ensure mortality. Leaving the snails close to shore or a water input can create a mode of reentry for the snails or their young. Vigorous hand removal with proper disposal and suction dredging can reduce the Chinese mystery snail population as well (case study from Lake George).

Biological Speculation indicates that common carp species will eat Chinese mystery snails. While this is a potential control, current research is insufficient for confirmation and could also introduce a new, potentially invasive, exotic into our waterbodies. Carp species are illegal in New Hampshire. There are no confidently known organisms that consume Chinese mystery snail.

Chemical Chinese mystery snail control with chemicals is not advised due to simultaneous mortality for all mollusks and organisms



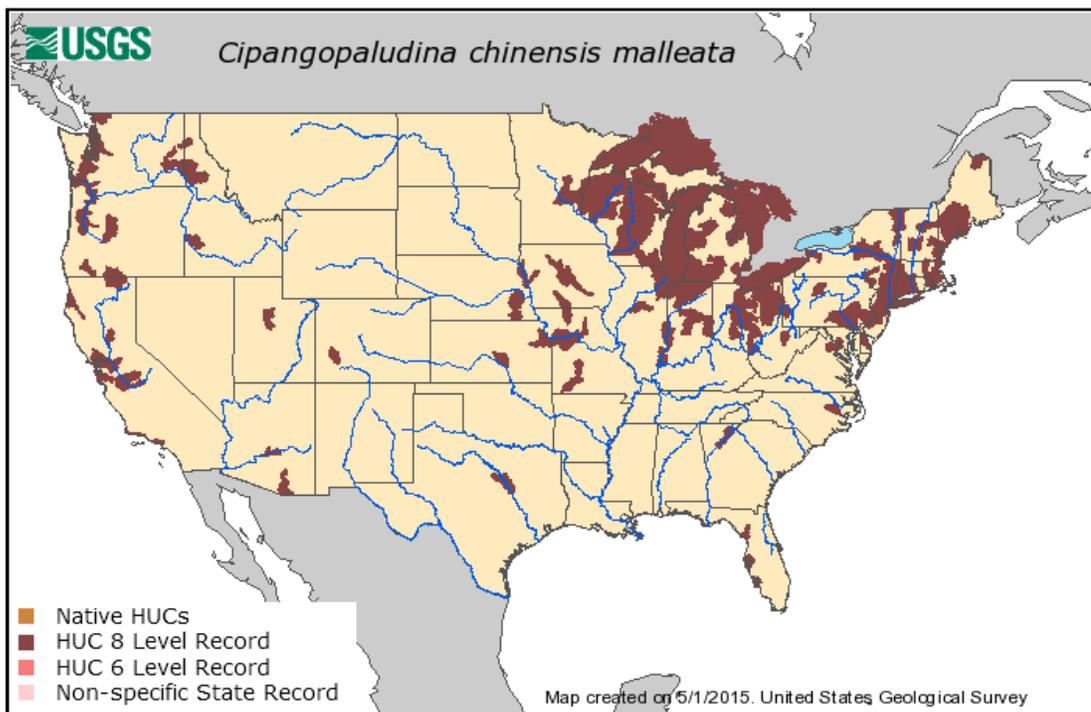
with a mucous membrane in the relative water body. Chlorine and Quat (BZK, Formula 409[®], Fantastik[®]) compounds are effective for disinfecting holding tanks and equipment surfaces with a contact time of 10 minutes.

What Can I Do To Help?

Most importantly, **recognize it**. The Chinese mystery snail is best identified by its large form and dull, uniform coloring. Then, **report it** to authorities for official identification by the departments of Agriculture, Transportation or Environmental Services. Other look-alike snails can be mistaken for juvenile Chinese mystery snails. Finally, **remove it** per the authorities that confirmed the identification. Permits may be required in order for eradication, depending on control methods. Prevention is key, so follow Clean, Drain, Dry protocols for decontamination of transient recreational gear.

For more information about exotic aquatic plants, please contact the Exotic Species Program at (603) 271-2248, or go to www.des.nh.gov and search “Exotic Species.”

Map of Current Distribution



References

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