



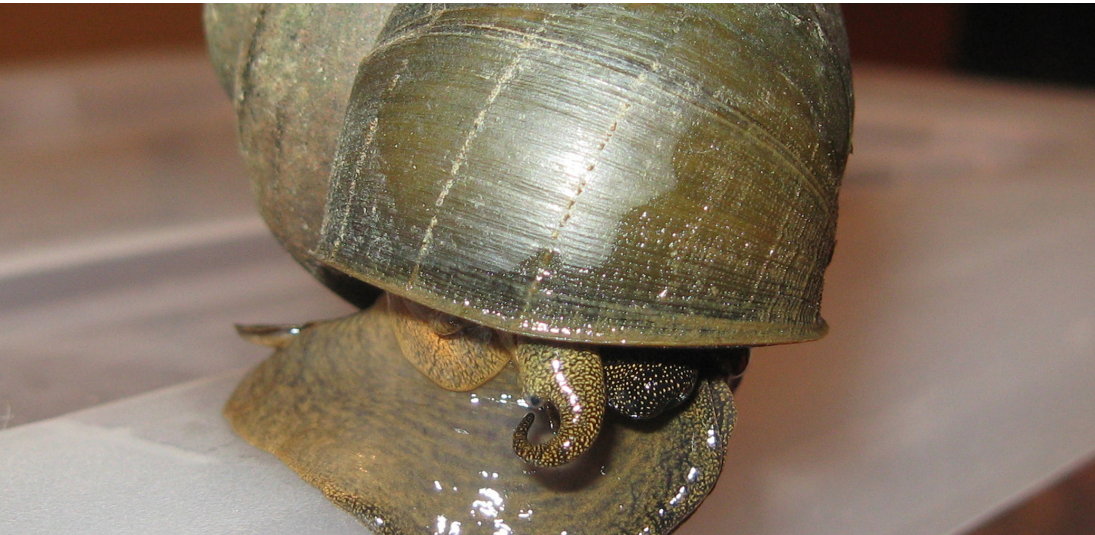
Chinese Mystery Snail

Ipangopaludina Chinensis (Reeve, 1863)

syn. *Cipangopludina malleata*, *C. chinensis malleata*, *Viviaprus malleata*, *V. japonicus*, *Paludina malleata*, *Bellamyia chinensis*

ALBERTA REGULATION:
FISHERIES ACT

Last Updated: February 2018



Oregon Department of Fish and Wildlife



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Overview:

The Chinese mystery snail is a freshwater gastropod native to Southeast Asia, Japan, China, Korea, and Eastern Russia.¹ Asian markets in California were the first introductions of this snail to the U.S. in the late 19th century. Since that time introductions have occurred due to water gardening, culinary purposes, aquarium dumping and dispersal via boating and fishing equipment.⁴ Today *C. chinensis* is present in much of the Great Lakes tributary rivers, Quebec, British Columbia and most recently the Maritimes.⁴

C. chinensis is a filter feeder of detritus, diatoms and some algae species - it does not feed on vegetation. It has separate sexes, fertilization is internal, and the offspring are born alive and fully formed.¹ The uterine sacs of females can contain

all stages of offspring simultaneously, from fertilized eggs to 5 mm long, fully shelled juveniles.¹

Experimental studies have observed environmental impacts of *C. chinensis* but field studies are lacking.¹

The taxonomy of introduced mystery snails is confusing and some sources consider the genus *Cipangopaludina* to be a synonym of *Bellamyia*. *Bellamyia japonica* is the non-native Japanese mystery snail and some sources have considered *C. chinensis* and *B. japonica* to simply be different phenotypes of the same species in North America.²

The Chinese mystery snail is edible and sold in Asian food markets but in Korea this snail is a known host of a human intestinal parasite.²

As of January 1, 2016, the possession, sale, or transport of this species in Alberta is illegal under the Fisheries Act.

Habitat:

C. chinensis inhabits still to slow moving freshwater bodies with soft, muddy or silty bottoms and lush grass.¹ Tolerates water temperatures 0 to 30°C, pH 6.5-8.4, calcium 5-97 ppm and oxygen concentrations of 7-11 ppm. They can be found at depths of 0.2 to 3 m.¹ Can tolerate stagnant or polluted waters.²

Identification:

The Chinese mystery snail shell can reach lengths up to 70 mm, is globose in shape, has 6 to 7 convex whorls, very fine growth lines, and the sutures between the whorls are distinct.¹ Adults shells are olive-green, greenish-brown



Chinese Mystery Snail (continued)

or reddish-brown, while juveniles are lighter coloured. The inner shell is white to pale blue and the lip is black.¹ The operculum is hard and can close tightly to protect the snail from predators and environmental hazards.¹

The shell growth pattern is allometric - shell height increases more rapidly than width. Shell variation exists between individuals and different environmental regimes.¹

The last shell whorl in juveniles bears a distinct ridge of cartilage and the shell is grooved with 20 striations per mm between the grooves.¹ As well, the outer covering of juvenile shells bears a detailed pattern of rows of hairs with long and short hooks on the ends.¹

Ecology:

Adults can be found on surfaces or partially buried in mud or silt, while the juveniles hide in crevices or under rocks.¹ Females may contain embryos from May to August and offspring born June to October.² Females continuously releases small numbers of offspring. Males can be identified by the modified right tentacle, which serves as a penis.¹

Variation in the environment, including the presence of predators, may produce biochemical, physiological or morphological changes in developing embryos.¹ Females usually produce more than 169 young in a life time and fecundity is greatest in their 4th and 5th years of age.² In fall, the adults move to deeper water to overwinter.²

Females live up to 5 years and males 3-4 years.²

Economic Impacts:

Chinese mystery snails would cause costs to municipal water systems by clogging intake pipes and other submerged equipment.² Accumulation of dead and decaying shells¹ could have impacts on recreation and tourism.

Environmental Impacts:

Chinese mystery snails may compete directly with native gastropods and molluscs for food and habitat resources.¹ Grazing by *C. chinensis* in experiments was found to reduce algal biomass and species composition.¹ This could impact the trophic structure of native aquatic communities.

Sociological Impacts:

The transformation of native aquatic communities results in the intrinsic loss of natural capital and enjoyment of natural areas. *C. chinensis* is a potential vector for the transmission of multiple parasites and diseases.²

Prevention:

Learn how to identify Chinese mystery snails and how to prevent spread. Do not purchase or keep this snail. Never empty your aquarium into natural water bodies. Snails can attach to boat hulls and other water equipment or be passively transported via aquatic ornamental plants.¹

Lake surveys have identified that *C. chinensis* is more likely to occur at boat launches.¹ All aquatic recreational and fishing equipment should be inspected after use and cleaned, drained and dried of all mud and plant material.¹ Snails can attach to boat hulls, trailers, bait buckets, etc. and be transported to other water bodies. Motors should be drained and live well and bait well plugs pulled. Waterfowl hunting equipment (decoys, waders, etc.) should be thoroughly washed and left in the sun to dry for several days.

Control:

Control or eradication of Chinese mystery snails once established is impossible. No physical, chemical or biological control methods exist to date.



Chinese Mystery Snail *(continued)*



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REFERENCES:

1. Global Invasive Species Database (2017) Species profile: *Cipangopaludina chinensis* Downloaded from <http://www.iucngisd.org/gisd/species.php?sc=1812> Accessed: March 22, 2017.
2. *Cipangopaludina chinensis malleata* (Chinese mysterysnail). U.S. Geological Survey. [2017]. Nonindigenous Aquatic Species Database. Gainesville, Florida. Accessed [3/26/2017].
3. Chinese mystery snail. Aquatic Invasive Species. http://www.in.gov/dnr/files/CHINESE_MYSTERY_SNAIL.pdf Accessed: March 22, 2017.
4. Mc Alpine et. al. Occurrence of the Chinese mystery snail, *Cipangopaludina chinensis* (Gray, 1834) (Mollusca: Viviparidae) in the Saint John River system, New Brunswick, with review of status in Atlantic Canada. *BioInvasions Records* (2016) Volume 5, Issue 3: 149–154. Accessed: March 22, 2017.