

## Native vs Invasive Aquatic Snails

Here is a guide to aquatic snails that may be found in the Kezar Lake Watershed with a focus on the cone-shaped whorled snails that includes the invasive Chinese Mystery Snail (CMS). Aquatic snails can have number of different shapes. Two examples are the Trumpet Snail and the Common Periwinkle.



Trumpet Snail



Common Periwinkle

All native aquatic snails in Maine lakes are small - less than about 1/2 inch - and do not resemble the invasive CMS. The exceptions are the Painted Campeloma (*Campeloma decisum*) and Banded Mystery Snail (*Viviparus georgianus*) each of which can grow to 1-1/2 inches in length. The Painted Campeloma is a clear lookalike to the invasive CMS. The Banded Mystery Snail is easily distinguished by its colored bands.



Adult Painted Campeloma



Adult Chinese Mystery Snail

Fortunately there are some distinguishing characteristics on close inspection to assist in distinguishing the two:

1. The CMS adult is larger than the Campeloma; golf ball size and larger
2. The CMS adult is as wide as it is tall while the Campeloma taller than wide
3. The CMS adult shell is plainer than the Campeloma which has striations
4. The CMS adult in general has more whorls (6-7) than the Campeloma (2-4)

## Native vs Invasive Aquatic Snails

A small Painted Campeloma can appear very similar to a juvenile CMS, but there are significant differences at close inspection. Juvenile CMS have distinct ridges of tiny hooked hairs on their shell.



Juvenile Chinese Mystery Snail

What follows are more detailed descriptions of the native Pointed Campeloma, the native Banded Mystery Snail, the invasive Chinese Mystery Snail, and a comparison sheet for all three.

## Native vs Invasive Aquatic Snails

### Pointed Campeloma (*Campeloma decisum*)

*Native*



**Description:** Cone-shaped spire with rounded whorls, length greater than width. Yellowish olive to olive colored shell but with deposits of tan, brown or rust. Adults have striations on their shells running perpendicular to the whorls. Calcareous plate (operculum) attached to the foot for closure of the aperture. Operculum has concentric rings. The soft body is grey with orange spots on the underside of the foot. Inside of the shell is pearl colored.

**Size:** Adult 3/4 to 1-1/2 inches

**Habitat:** Lakes, ponds, rivers. Prefers sandy bottoms. Feeds primarily on particulates in soft sediments. Hides from predators by burrowing in the sediment. Can form large aggregations peaking in summer.

**Ecosystem role:** Freshwater snails in general are a link in aquatic ecosystems, cycling nutrients through feeding on algae and other detritus. They are a food source for fish, diving ducks, turtles and crayfish. Intermediate host for flukes that can infect yellow perch and water fowl. No known adverse effect on humans.

## Native vs Invasive Aquatic Snails

### Banded Mystery Snail (*Viviparus georgianus*)

*Native*



Description: Cone-shaped spire, generally longer than wide, with 3-5 rounded whorls and a smooth yellow-green color, often with four distinctive brown bands on each whorl. Operculum has concentric rings. The soft body is grey. Inside of the shell is pearl colored.

Size: Adult up to 1-1/2 inches

Habitat: Lakes, ponds, rivers. Prefers water in pH range 6.3 to 8.5, silty bottoms, and is often found in eutrophic environments. Feeds primarily on diatoms in soft sediments. Hides from predators by burrowing in the sediment. Can form large aggregations peaking in summer. Can reduce survival of largemouth bass eggs.

Ecosystem role: A food source for fish, diving ducks, turtles and crayfish. Intermediate host for many parasites that can infect fish and water fowl.

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### The Chinese Mystery Snail (“Trapdoor Snail”)

*Invasive*



#### Description:

A particular distinguishing feature of the Chinese Mystery Snail (CMS) is its large size. Adults can be well over 2-1/2 inches long, larger than a golf ball. Most native snails are not larger than 1/2 inch. Shell color varies from olive green to brown to reddish brown. The adult shell has 6-7 whorls with no banding and very fine growth rings. The inner coloration is white to pale blue. They have a concentrically marked trapdoor, operculum, which can seal the snail inside its shell for protection and to survive outside water. The outer lip is round to oval and black.

#### Lake habitat:

CMS are found in the quieter areas of lakes, selecting soft, muddy or sandy bottoms in depths up to 15ft and are frequently attached to rocks. Though they spend a good portion of their lives under the water surface, half buried in the bottom sediments, CMS may also be encountered with their trap doors sealed up tight, floating along at the water's surface. They are intermediate hosts for parasitic worms and nematodes that kill fish and waterfowl, and have been found to infect humans in Asia. They prey on fish embryos and outcompete the smaller native snails for food, adversely affecting aquatic food webs.

#### Reproduction:

The Chinese mystery snail grazes on lake and river bottom material. They are called “mystery” snails because females give birth to young, fully developed snails that suddenly and “mysteriously” appear. Their lifespan is about four years. These snails can die off in large numbers and wash up on shore creating a foul smell. They form dense populations and are very difficult to eradicate, but the spread can be controlled.

#### Transmission:

CMS were actually grown in ponds for food by the Chinese, and were popular in aquariums. People should never release aquarium species or aquarium water into natural aquatic habitats. CMS are likely now transmitted by bait buckets and in boat water storage tanks and bilges.

#### Infestations in Maine:

Chinese Mystery Snail Sightings - [https://www.google.com/maps/d/viewer?mid=1\\_M075EIneUw0ypnljS\\_lckuMmQ4&usp=sharing](https://www.google.com/maps/d/viewer?mid=1_M075EIneUw0ypnljS_lckuMmQ4&usp=sharing)

## Native vs Invasive Aquatic Snails

Comparison Images for the invasive Chinese Mystery Snail (*Cipangopaludina chinensis*) and the native lookalikes Painted Campeloma (*Campeloma decisum*) and Banded Mystery Snail (*Viviparus georgianus*)



*Campeloma decisum*

Shell aperture oval - operculum with a concentric (central) nucleus. Outer shell surface greenish in color with no banding, shell interior white to light blue. Shoulders of whorls rounded and distinct from previous whorl - sutures that separate whorls are indented. Smooth with no sculpturing other than fine striae. 25mm.



*Viviparus georgianus*

The shell aperture and operculum nearly circular - operculum with a concentric (central) nucleus. Outer shell surface brown to tan with 4 bands. Shell interior usually white or with a purplish hue. Shoulders between shell whorls weak, sutures are indented. 38mm.



*Cipangopaludina chinensis and japonica*

Shell aperture round to oval with a reflected, black pigmented lip. Operculum with a submarginal (located nearer the outer lip) nucleus. Outer shell surface light to dark olive-green, without any color bands. Whorls are strongly convex, with a very slight shoulder, and the suture is deeply indented. Shell sculpture consists of fine growth lines, spiral lines and fine to moderate malleations over the entire surface.

*C. chinensis* - shell with more rounded shoulders and broader shape

*C. japonica* - narrower and more turreted shell - sculpted (carinate). to 65mm.

Source: Great Lakes Sea Grant Extension