

**Scientific Name:** *Cipangopaludina japonica* von Martens, 1861

**Common Name:** Japanese/Oriental mystery snail, Japanese black snail, Japanese trapdoor snail

**Taxonomy:** Available through ITIS

**Identification:** The genus *Cipangopaludina* can be identified by its relatively large globose shells and concentrically marked opercula (Burch 1980). *C. japonica* exhibits a shell with 7–8 whorls, a very narrow umbilicus, and a spire that is produced at an angle of 50–55° (Jokinen 1992). Adult shells display fine carinae, while those of juveniles are covered in hairs on the periostracum where the carinae are located as well as around 8 striae/mm between the carinae in the middle of each whorl (Smith 2000). Individuals are light colored as juveniles and dark brown as adults (Wolfert and Hiltunen 1968).

The shell of *C. japonica* grows allometrically, the height increasing faster than the width, and does so at an increased rate in comparison with *C. chinensis*, so the adult shell is more elongate than that of the latter species (Jokinen 1982). The radula also may differ between *C. japonica* and *C. chinensis*, but there is so much variation even within one species that it is not a good diagnostic characteristic (Smith 2000). However, in one North American population, *C. japonica* adults had five small cusps on either side of the large central cusp and nine cusps on the marginal tooth (Jokinen 1982).

**Size:** In Lake Erie, adults range from 30–65 mm high and 22–46 mm wide; females are slightly larger than males when mature (Wolfert and Hiltunen 1968).

**Native Range:** *C. japonica* is native to mesotrophic and eutrophic lakes in Japan (Jokinen 1992).

**Nonindigenous Occurrences:** The Japanese mystery snails was found for the first time in Lake Erie in the 1940s (Mills et al. 1993; Wolfert and Hiltunen 1968). There are also some specimens of this species from Green Bay, Lake Michigan from some time before 1968 (Wolfert and Hiltunen 1968).

**Means of Introduction:** The Japanese mystery snail was intentionally stocked as food for the channel catfish, *Ictalurus punctatus* in Lake Erie in the 1940s (Mills et al. 1993; Wolfert and Hiltunen 1968).

**Status:** This species is considered established in Lake Erie and reported from Lake Michigan.

**Ecology:** The Japanese mystery snail is known to feed on detritus and sludge, both of which contain a myriad of different types of bacteria (Kurihara and Kadowaki 1988). In Japan, this species is commonly found in rice paddy fields on soil amongst higher plants (Kurihara and Kadowaki 1988).

The Japanese mystery snail in Sandusky Bay, Lake Erie, survives in conditions where surface water temperatures may reach 30°C, bottom water temperatures can reach 16–24°C, water is 4 m deep or less, there is high turbidity, the substrate is mud, and aquatic vegetation is sparse (Wolfert and Hiltunen 1968). It sometimes undergoes mortality events in marshes around Sandusky Bay in hot periods when waters dry up (Wolfert and Hiltunen 1968). In general in North America, the Japanese mystery snail has been found inhabiting waters of pH 6.3–7.3, calcium concentration of 11 ppm, sodium concentration of 16 ppm and conductivity of 62–194 µmhos/cm (Jokinen 1992).

This species is viviparous (Wolfert and Hiltunen 1968). Females live up to 8 years and are able to carry 10–120 young (Jokinen 1992). Young are generally born after water temperature rises to 15°C or more (Jokinen 1992).

The Japanese mystery snail is a host to *Angiostrongylus cantonensis* larvae in Taiwan, a species associated with eosinophilic meningitis (Lin and Chen 1980). It is also host to many other parasites in Asia, some of which may infect humans.

### **Impact of Introduction**

**A) Realized:** This species has been caught in very large numbers by fishermen in Sandusky Bay, Lake Erie; in fact, two tons have sometimes been caught in one seine haul (Wolfert and Hiltunen 1968). Fishermen in this region often consider it a nuisance (Wolfert and Hiltunen 1968).

**B) Potential:** In the Boston area, the Japanese mystery snail has been found to be a regular host to the common native parasite *Aspidogaster conchicola*, which is a first time record in North America for a gastropod acting as host to this species (Michelson 1970). Negative interactions with native gastropods are also possible.

**Remarks:** Taxonomy of the introduced populations of Oriental mystery snails is confusing and there are many different scientific names in use. There has also been debate regarding whether or not *C. chinensis malleata* and *C. japonica* in North America are synonymous and simply different phenotypes of the same species. This database considers the two as separate species. Smith (2000) argues that *Cipangopaludina* is a subgenus of *Bellamya*; however, because most North American literature does not use the genus *Bellamya* to refer to these introduced snails, oriental mystery snails discussed here are referred to by *Cipangopaludina*. Literature cited in this database regarding the Japanese mystery snail may employ the following names: *C. japonica*, *C. japonicus*, *C. chinensis japonica*, *C. chinensis japonicus*, *B. japonica*, *B. chinensis japonica*, *Viviparus japonica*, *V. japonicus* and *V. chinensis japonica*.

### **Voucher Specimens:**

### **References:**

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**Other Resources:**

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**Group:** Mollusks – Gastropods (Snails)

**Lake(s):** Lake Erie, Lake Michigan

**Genus:** *Cipangopaludina* (also synonymous with *Viviparus* and *Bellamya*)

**Species:** *japonica* (also synonymous with *japonicus*, *chinensis japonica*, and *chinensis japonicus*)

**Common Name:** Japanese/Oriental mystery snail, Japanese black snail, Japanese trapdoor snail

**Status:** Established in Lake Erie and Reported from Lake Michigan

**Freshwater/Marine:** Freshwater

**Pathway:** Stocked

**Exotic/Transplant:** Exotic