Corbicula fluminea 正體中文

System: Freshwater

Kingdom	Phylum	Class	Order	Family
Animalia	Mollusca	Bivalvia	Veneroida	Corbiculidae

Common name Asian clam (English), prosperity clam (English), Asiatic clam (English)

Synonym *Corbicula manilensis* , (Philippi, 1884)
Corbicula leana , (Prime)
Corbicula fluminalis , (Muller, 1774)

Similar species *Sphaeriidae*

Summary *Corbicula fluminea* is a freshwater clam that has caused millions of dollars worth of damage to intake pipes used by power, water, and other industries. Many native clams are declining as *C. fluminea* outcompetes them for food and space. *C. fluminea* requires well-oxygenated waters and prefers fine, clean sand, clay, and coarse sand substrates. *C. fluminea* spreads when it is attached to boats or carried in ballast water, used as bait, sold through the aquarium trade, and carried with water currents.

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Species Description
Corbicula fluminea has a yellowish brown to black shell with concentric, evenly spaced ridges on the shell surface (INHS 1996). They are usually less than 25mm but can grow up to 50 to 65mm in length (Aguirre and Poss 1999).

Lifecycle Stages
Larvae spawned late in spring and early summer can reach sexual maturity by the next fall (Aguirre and Poss 1999). *C. fluminea* maximum lifespan is 7 years, but it varies according to habitat (Aguirre and Poss 1999), with an average lifespan of 2 to 4 years (PNNL 2003).

Uses
In *Corbicula fluminea*'s native range, it is marketed for human consumption and as feed for domestic fowl (Aguirre and Poss 1999). In the United States, it is sold as fish bait (Aguirre and Poss 1999), and it is sold through the aquarium trade where they are known as \"pygmy\" or \"gold\" clams.

Habitat Description
Corbicula fluminea is found in lakes and streams of all sizes with silt, mud, sand, and gravel substrate (INHS 1996). They can tolerate salinities of up to 13 ppt for short periods (Aguirre and Poss 1999) and temperatures between 2 and 30 degrees Celsius, or 86 degrees Fahrenheit, (Balcom 1994). It prefers fine, clean sand, clay, and coarse sand substrates (Aguirre and Poss 1999). It is usually found in moving water because it requires high levels of dissolved oxygen. *C. fluminea* is generally intolerant of pollution.

Reproduction
Corbicula fluminea is a hermaphrodite (both sexes are found on one organism) and is capable of self-fertilisation. Sperm is released into the water, caught by another clam, and brooded in the gills. The larvae are released through the excurrent siphon and sent out into the water column. Spawning can continue year around in water temperatures higher than 16 degrees Celsius. The water temperature must be above 16 degrees Celsius for the clams to release their larvae. In North America, spawning occurs from spring to fall (Aguirre and Poss 1999). Maximum densities of *C. fluminea* can range from 10,000 to 20,000 per square metre, and a single clam can release an average of 400 of juveniles a day (PNNL 2003) and up to 70,000 per year. Reproductive rates are highest in fall (Aguirre and Poss 1999).

Nutrition
Corbicula fluminea feeds on plankton.

General Impacts
Ecologically, *C. fluminea* can outcompete many native clam species for food and space (PNNL 2003). The introduction of *C. fluminea* into the United States has resulted in the clogging of water intake pipes, affecting power, water, and other industries. Nuclear service water systems (for fire protection) are very vulnerable, jeopardising fire protection. In 1980, the costs of correcting this problem were estimated at 1 billion dollars annually. *C. fluminea* causes these problems because juveniles are weak-swimmers, and consequently they are pushed to the bottom of the water column where intake pipes are usually placed. They are pulled inside the intakes, where they attach, breed, and die. The intake pipe become clogged with live clams, empty shells, and dead body tissues. Buoyant, dead clams can also clog intake screens.

Management Info
Corbicula fluminea populations are controlled by a variety of methods. Where intakes pipes are fouled, thermal regulation is employed, whereby water in the pipes is heated to temperatures exceeding 37 degrees Celsius. But this method is not possible in most existing water systems. Mechanical measures, such as using screens and traps, can effectively eliminate older clams and remove body tissue and shells from the system. Chemicals, such as small concentrations of chlorine or bromine, are used to kill juveniles and sometimes adults. This method is very effective, but because of increasing restrictions on the amounts of these chemicals that may be released from a facility, facility managers have been moving away from this method. Some states have legislation prohibiting the introduction of *C. fluminea* into their waters.

Pathway
Used as live bait throughout the United States. The clams sometimes escape into the water alive.Juvenile clams can be carried in ballast water all over the world.

Principal source: Balcom, N. C. 1994. *Aquatic Immigrants of the Northeast, No. 4: Asian Clam, Corbicula fluminea.* Connecticut Sea Grant College Program.

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

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[45] UNITED STATES

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Centre for Environment, Fisheries & Aquaculture Science (CEFAS)., 2008. Decision support tools-Identifying potentially invasive non-native marine and freshwater species: fish, invertebrates, amphibians.
Summary: The electronic tool kits made available on the Cefas page for free download are Crown Copyright (2007-2008). As such, these are freeware and may be freely distributed provided this notice is retained. No warranty, expressed or implied, is made and users should satisfy themselves as to the applicability of the results in any given circumstance. Toolkits available include 1) FISK- Freshwater Fish Invasiveness Scoring Kit (English and Spanish language version); 2) MFISK- Marine Fish Invasiveness Scoring Kit; 3) MI-ISK- Marine invertebrate Invasiveness Scoring Kit; 4) FI-ISK- Freshwater Invertebrate Invasiveness Scoring Kit and AmphISK- Amphibian Invasiveness Scoring Kit. These tool kits were developed by Cefas, with new VisualBasic and computational programming by Lorenzo Vilizzi, David Cooper, Andy South and Gordon H. Copp, based on VisualBasic code in the original Weed Risk Assessment (WRA) tool kit of P.C. Pheloung, P.A. Williams & S.R. Halloy (1999).
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