

First occurrence of the Asian Clam *Corbicula fluminea* (Bivalvia: Corbiculidae) in the Paranoá Lake, Brasília, Brazil

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(With 2 figures)

The introduction of exotic species into an ecosystem is the second cause of biodiversity decrease (Silva and Souza, 2004). Recently, three species of Asian freshwater bivalve have been introduced into South American inland waters (Darrinran, 2002): *Limnoperna fortunei* (Dunker, 1857); *Corbicula largillierti* (Philippi, 1844) and *C. fluminea* (Muller, 1774). Since their first report of new occurrences in South American, especially Brazil, there has been an increase. (Mansur et al., 2004).

Corbicula fluminea is native to the waters of Asia. Nowadays, this species is found in South and North America, Africa and Europe. According to McMahon (1983) and Morton (1979) this clam can cause economic and ecological impacts and it is considered as a pest species. These impacts are due to freshwater macrofouling caused by the high reproductive potential and a thrive in a wide variety of environments (Darrinran, 2002).

It was believed that this species was introduced into the Rio de la Plata at the end of 1960s and beginning of the 1970s (Ituarte, 1981). Veitenheimer-Mendes (1981) recorded this species in Brazil for the first time and estimated its introduction at the beginning of the 1970s.

Paranoá Lake is an artificial reservoir that was constructed in 1959 to provide recreation activities and enhance the microclimate in Brazil's Federal Capital, Brasilia (Figure 1). The Paranoá Lake has an area of 37.5 km² and four main creeks that provide water sources: the Bananal, Torto, Riacho Fundo and Gama (Fonseca, 2001).

Empty *C. fluminea* shells were discovered casually under Brageto's bridge (15° 43' 49" S and 47° 53' 38" W) in October/2004 during observations of the Paranoá Lake's water in the Bananal branch. In this place, there were many empty shells covering the edges of the lake. Local fishermen reported that these mollusks appeared around 4-5 years ago. In this same place, empty shells of another molluscan *Diplodon fontainianus* (Orbigny, 1835) were found, which is a native bivalve found in the southwest of Brazil and is endangered of becoming extinct.

To observe the occupation of *C. fluminea*, the whole lake was covered and shells were collected by hand inside an area of 1 m². In contrast to the Bananal branch

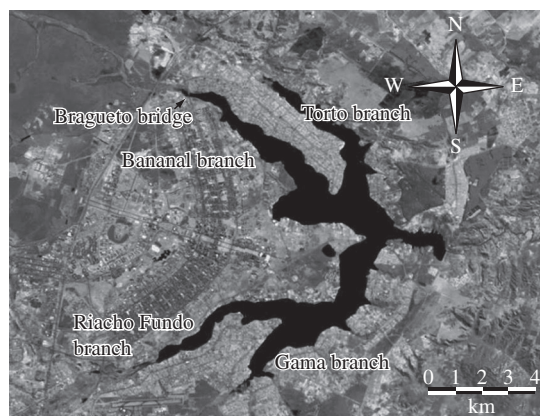
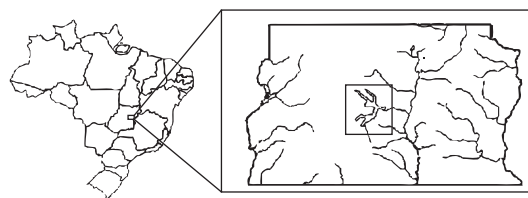


Figure 1. Paranoá Lake localization in Brazil. Assigned area means the local of *Corbicula fluminea* first observation.

(300 individuals/m²), density was very low (3-5 individuals/m²) in the Torto branch (residential area QL 7/9) and absent in other southern branches. In quick depth sampling, this bivalve was found up to 2 m deep.

The sampled bivalves were counted and measured with an electronic digital caliper with a precision of 0.05 mm. An approximate age of the *C. fluminea* found was calculated according to Cataldo and Boltovskoy (1998). The biggest shell found was 39.63 mm, which could represent an animal of 4-5 years, supporting fishermen's observations. Almost all the collected shells belong to the class length (20.0-25.0 mm) (Figure 2).

The early sexual maturity, high reproductive potential and a remarkable ability to occupy different environments makes this species an aggressive invisor. These characteristics can cause a drastic decline of native bivalve populations. In the Paraná and Paranapanema Rivers, Takeda et al. (2000) predicted that some native

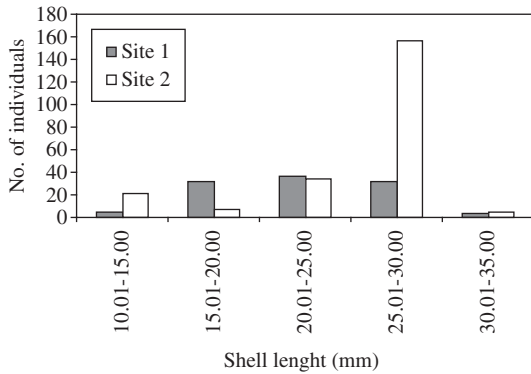


Figure 2. Relation between shell length and number of individuals of *Corbicula fluminea*. Site 1, Bragueto Bridge; Site 2, Residential Area QL 7/9.

mollusc populations are decreasing due to the presence of this Asian clam.

A study may be carried to analyze the real impact of this animal in communities. *Corbicula*'s predators, such as fish and birds must be identified. Garcia and Protogino (2005) showed that seven fish species, from the Rio de la Plata, altered their diets to predate large amounts of invasive bivalves *C. fluminea* and *L. fortunei*.

There is no conclusive information concerning the origin or arrived point in Paranoá Lake, but we believe this species probably arrived at the lake from human activities as the number of pleasure boats has increased over the 5 last years.

As the Paranoá Lake is located in a planate area, a monitoring program to assess the population structure, density, distribution and control is being designed to prevent it spreading into lower river basins.

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