

Biology

Clams are bivalve molluscs. They obtain food by filtering small plants (phytoplankton) from the surrounding water. The clams are also able to obtain nutrients passed on by small algae (zooxanthellae) that live on the lip of the clam. The zooxanthellae produce food by photosynthesis (using sunlight).

Clams are the largest bivalves in the world. *Tridacna gigas* species may weigh up to 250 kg and grow as long as one and a half meters. Some species can probably live for over 100 years.

Giant clams begin their adolescence as males. At about eight years of age some will mature as females. A few become sequential hermaphrodites, that is they may function as both males, then females, each spawning season. Hundreds of millions of eggs may be produced by large clams. After the eggs hatch, the larvae develop through several stages while drifting in the water column until they settle on the substrate, normally within ten days of being released.

They attach to the sea floor by sticky strings called byssal threads. Larger species lose this attachment as they grow to adults but remain in place by virtue of the weight of their massive shells and their surroundings. The native Rugose clam grows into the coral reef and retains its byssal attachment.

MINISTRY OF MARINE RESOURCES
Tel.: +682 28721 / 28722 / 28730
Fax: +682 29721
E-mail: rar@mmr.gov.ck

GOVERNMENT OF THE COOK ISLANDS
P.O. Box 85, Avarua, Rarotonga
Cook Islands



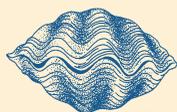
Giant Clams In the Cook Islands 2000



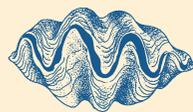
Two native species of Giant clam (*Paua*)

are found in the Cook Islands. The smaller Rugose clam (*Tridacna maxima*) (see cover image) is the most common and typically seen inside the lagoons. The other is the Fluted clam (*Tridacna squamosa*), a larger animal that is rarely seen and generally found outside the reef.

A larger species of Giant clam, *Tridacna derasa* (below left), was introduced into Aitutaki from Palau in 1986. The largest Giant clam, *Tridacna gigas* (middle) and the Horse's hoof clam *Hippopus hippopus* (right) were introduced into Aitutaki from Australia in 1990. Clams are relatively slow growing and the species introduced from Australia are only now coming into maturity at about ten years of age.



T. derasa



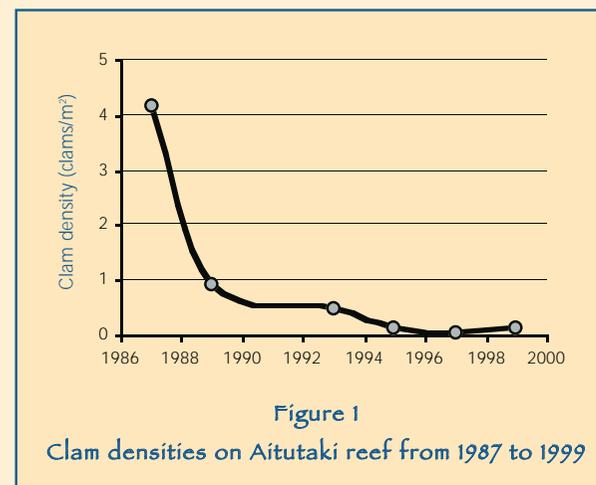
T. gigas



H. hippopus

In some of the more heavily populated islands, especially Rarotonga and Aitutaki (see Figure 1) the native clams have experienced large declines in population due to subsistence harvesting. Healthy populations still remain on other islands such as Manihiki, Palmerston and Penrhyn.

The *Paua* are susceptible to over harvesting because they are easily collected (they remain embedded in rock and quickly found by their colourful appearance), because they take a long time to mature and produce offspring, and because their reproduction is sporadic.



Probably the most effective way to increase the number of clams in the lagoons is to manage existing stocks and their habitat and allow them to repopulate the lagoon naturally. For instance establishing long-term marine reserves is one effective tool, provided the reserve can be adequately policed.

At the Marine Resources hatchery in Aitutaki thousands of native clams have been reared. These animals have been transferred into the lagoon.

Currently there is a small overseas market for clams. Because it is small and brightly coloured, the Rugose clam is valued for the aquarium trade. The clam meat is a delicacy in the Southern Cook Islands and an important food component in the Northern Group of islands. In some overseas countries, such as Japan, the meat can fetch high prices.

