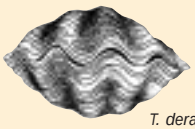
Giant Clams
in the Cook Islands
2000

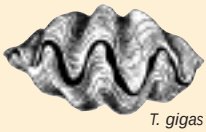
Giant clams (*paua*)

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 commonly found species inside the lagoons. The larger fluted clam (*Tridacna squamosa*) is rarely seen and is generally found outside the reef.

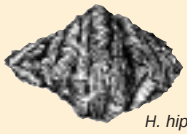
A larger species of giant clam, *Tridacna derasa* (below left), was introduced into Aitutaki from Palau in 1986. The largest giant clam, *Tridacna gigas* (middle) and the horse's hoof clam *Hippopus hippopus* (right) were introduced into Aitutaki from Australia in 1990. Clams are relatively slow growing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



T. derasa



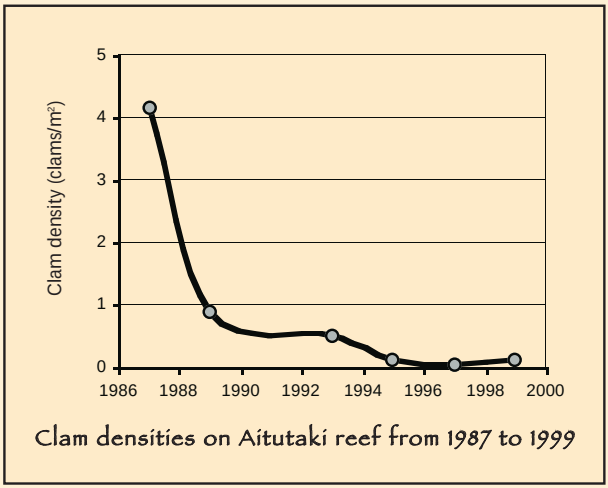
T. gigas



H. hippopus

In some of the more heavily populated islands, especially Rarotonga and Aitutaki (see graph), 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 do not move about and are easily spotted by their colourful appearance); they take a long time to mature and produce offspring; and their reproduction is sporadic.



Clam densities on Aitutaki reef from 1987 to 1999

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 onto reefs in 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. Clam meat is a delicacy in the southern Cook Islands and an important food source in the northern group. In some overseas countries, such as Japan, giant clam meat can fetch high prices.

Biology

Clams are bivalve molluscs. They obtain food by filtering microscopic plants (phytoplankton) from the surrounding water. The clams are also able to obtain nutrients from small algae (zooxanthellae) that live in their mantle. The zooxanthellae produce food by photosynthesis (using sunlight).

Clams are the largest bivalves in the world. The species *Tridacna gigas* can weigh up to 250 kilograms and grow as long as one and a half metres. Some species are thought to live for over 100 years.

In the juvenile stage, giant clams start out as males. At about eight years of age some will mature into females. A few become sequential hermaphrodites, that is they may function as both males and 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. The clams attach themselves 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
Web site: http://www.mmr.gov.ck

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