Ministry *of* Marine Resources
TU'ANGA O TE PAE MOANA
COOK ISLANDS

Trochus of the Cook Islands

Introduction of trochus: a shining example in the region

The harvesting of trochus, or *torōkati,* has become an important part of our Cook Islands culture, and Aitutaki is often recognised for its successful fishery management.

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A large sea snail

Trochus (*Rochia nilotica*), locally known as *torōkati*, is an important species of commercial interest in the Cook Islands. It is a large sea snail that can reach up to 150 mm across its shell base and has a thick inner layer of pearl-like shell, or nacre. Its outer colour is white with red banded stripes that rotate from the top to the bottom of the base of its shell. In its natural environment it is often covered with green macroalgae or fouling, concealing its white and red banded stripes.

Fast growing and highly reproductive

Trochus are known to live up to fifteen years and begin reproducing when they reach approximately two years of age, or a shell base diameter of 50–70 mm. A single female can release over a million eggs during spawning events. Fertilised eggs will drift in the ocean for up to five days before settling on a rocky surface.

Feeding and habitat

Like other sea snails, such as ariri (the turban snail), trochus feed by grazing on different types of algae on the surface of rocks and dead coral.

Distribution and history in the Cook Islands

The natural distribution of trochus is from the eastern Indian Ocean to the Pacific Ocean as far east as Fiji. Trochus was introduced to the Cook Islands in the 1950s due to its fishery potential and to provide a source of income for island communities.


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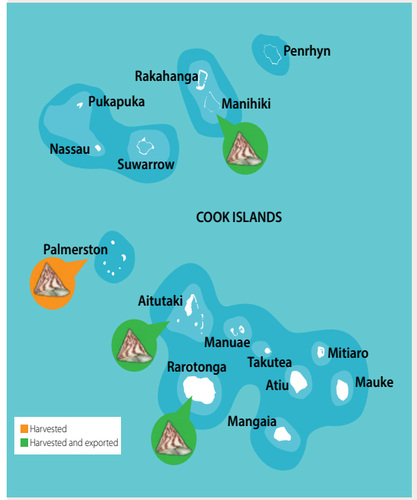
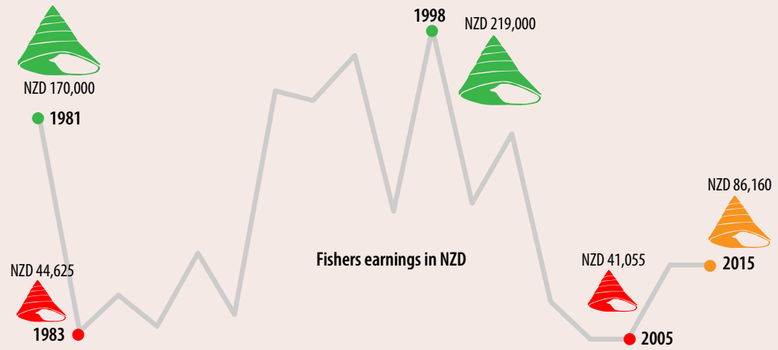


Shell uses and contribution to the economy

During commercial export harvests, the processing involves boiling the trochus to extract the flesh, and scraping off the encrusting algae or fouling. Shells are then graded, packed as raw clean shell, and weighed. In this raw unprocessed form shells are turned into buttons, jewellery or ornaments. There is no trochus manufacturing of any kind in the Cook Islands, with all exports of trochus shell going to either the United Kingdom, Italy and more recently Japan.

Since 1981 trochus exports have been an important source of income for Aitutaki, contributing to export earnings for the country. There have also been trochus harvests in Rarotonga (2001–2003 and 2005) and Manihiki (2005). A small amount of trochus was harvested in Palmerston in 1997, however, due to the low quality and quantity, these shells were not exported.



Trochus fishery: General rules and guidelines

Minimum and maximum size limits. A basal diameter of 80–110 mm is used as a guideline for harvesting. Leaving juveniles or undersized shells enables the trochus to reach maturity and contribute to the population. Likewise, larger shells are left to continue to reproduce; they also generally have lower shell quality.

Total allowable catch (TAC). This system is used for commercial harvests and is designed to limit the overall catch of trochus to a sustainable level. It also ensures local communities have access to this resource for sustenance and income generation.

Short harvest season. The trochus season is approximately two to four weeks. As trochus are sedentary in nature and easy to harvest, short seasons ensure quotas are managed and the population is not overfished.

Embracing a non-traditional shellfish meat

Trochus flesh has become an important substitute for other native shellfish, such as *pā'ua* (giant clams) and *ariri* (the turban snail), in traditional dishes, such as *mitiore*.

Trochus gleaning is a local subsistent activity that is commonly practiced across islands. While out on the reef flat, trochus flesh is removed by making a hole in the middle row of the shell using the tip of another trochus shell or a blunt object, and then blowing into it forcing the meat out of the bottom. This method provides quick and easy extraction for local consumption.

A Trochus shell with macro-algae and fouling and B after cleaning

1 Introduction into the Cook Islands:

1956
The first 100 trochus individuals were introduced to Aitutaki from Fiji, however high mortality occurred during translocation.

1957
Another 220 individuals were reintroduced from Fiji to Aitutaki with greater success.

1960
Trochus started naturally reproducing in Aitutaki.

2 Trochus adapt to their new environment:

1965
Trochus reported as abundant on Aitutaki's reef.

3 Trochus harvesting:

1981
The Aitutaki Island Council declared the first trochus harvest season. The potential value of the industry at that time steered the Ministry of Marine Resources (MMR) to further introduce trochus to other outer islands.

4 Trochus reserve:

1983
In order to preserve viable stocks following the first harvest in Aitutaki, the Akaiami trochus reserve was established, protecting three kilometres of reef along the windward side of the island.

5 Trochus introductions to other islands

1981–1986
From Aitutaki, trochus was introduced to Palmerston, Manuae, Atiu, Mitiaro, Mauke, Rarotonga, Mangaia, Penrhyn, Manihiki, Rakahanga, Suwarrow and Pukapuka.

1989–2001
From Rarotonga, trochus was reintroduced to Atiu, Takutea, Mauke, Mitiaro, and Mangaia.

Considerations on export potential

- Low market prices reduce the commercial viability of trochus harvests.
- Most outer islands have less labour-intensive income streams available.
- The increase in trochus gleaning for local consumption limits trochus populations for commercial harvests.

Ministry of Marine Resources

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