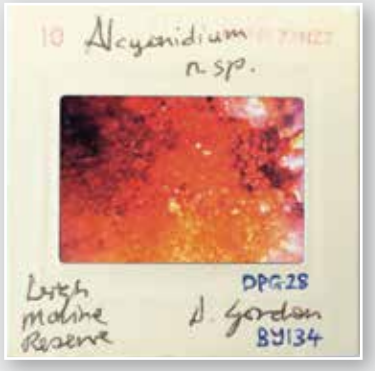
Threatened species

A number of threatened species are found in the marine reserve, including black petrel (Nationally Vulnerable) and little penguin (Declining). Nationally Endangered bottlenose dolphins visit the marine reserve, and Bryde's whales and killer whales (Nationally Critical) are also seen here.

A scarlet mystery

In 1976 a cluster of tiny red animals (bryozoans) was spotted in the marine reserve by Dr Dennis Gordon, a young postdoctoral researcher. He had never noticed them before, so he took a photograph and made a record under the name scarlet alcyonidium (*al-see-oh-nid-eum*) '*Alcyonidium n. sp. 1 Leigh Reserve*'.



Dennis, now an international expert in marine biodiversity, has never seen the alcyonidium again. "It's the only time I've ever come across it, but I refuse to believe it's the only place it exists." No one else has reported seeing it either, so the scarlet alcyonidium is listed as a threatened species because of its rarity and restricted range. "It's just one of so many things out there which we know almost nothing about."

Bill Ballantine

Marine biologist Bill Ballantine campaigned for many years to create this marine reserve – one of the first of its kind in the world. He was the first and longest-serving director of the University of Auckland's Leigh Marine Laboratory.

Before his death in 2015 he said, "To many people, out of sight is out of mind and most marine biodiversity is out of sight, so they don't think about it. But this is changing...now hundreds of thousands of people come to Goat Island every year to look at fish."

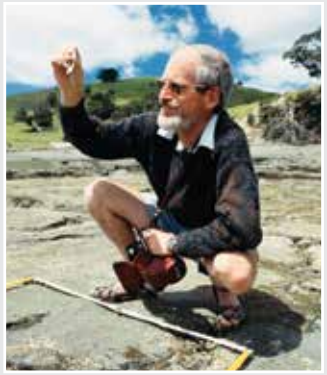


Photo: Kennedy Warne

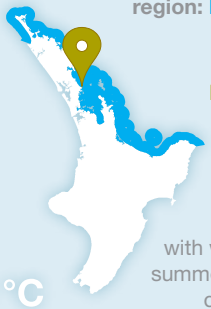
Year established: 1975

Area: 547 hectares
approx. 5.5 km²

Visitors: 300,000 per year

Nearest town: Leigh

Mean sea-surface temperature at Leigh: 17.2 °C



Coastal biogeographic region: Northeastern

Location: Hauraki Gulf, Auckland region

Climate: subtropical, with warm, humid summers and mild, damp winters

More information is online

If you'd like to know more about the health of this marine reserve and how we created this report card, please go to www.doc.govt.nz/report-card.

You will find:

- report card rationale
- Māori history, iwi guardians and archaeological sites
- water quality data and links to monitoring information
- key published research from this marine reserve
- more information about marine pests
- a map of land use in the catchment area
- monitoring reports and summaries.

Protected area

The marine reserve extends 800 m from the shoreline. You may not take any fish or shellfish, or disturb the marine life in this area.

Find out more about what you can and can't do in a marine reserve on our website: www.doc.govt.nz.

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Cover image: DOC marine scientist Dr Debbie Freeman measuring the size of a rock lobster.

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How healthy is the marine reserve?

Cape Rodney-Okakari Point Marine Reserve (Goat Island)

Marine reserve report card

New Zealand Government

Department of Conservation
Te Papa Atawhai

Marine reserve health

A marine reserve is an area of sea and shore protected from fishing, shellfish gathering, mining and other kinds of disturbance. Once a marine reserve is created, the ecosystems within it change and become closer to how they were before human influences. Marine reserves may become important nursery grounds for fished species and are valuable as places where scientists can study the environment in a more natural state.

The ecosystems within Cape Rodney-Okakari Point Marine Reserve are healthier and in a more natural state than those outside its boundaries. The reserve is, however, influenced by the health of the marine environment outside its boundaries – it has no walls. Larger-scale factors in the Hauraki Gulf such as changing climate patterns, urban development and intensive fishing affect the health of this marine reserve.

A range of measures is used to decide how healthy a New Zealand marine reserve is. These measures have been carefully chosen so that together they provide an indication of the health of any marine reserve. The status and trend (in the previous five years) is reported for each measure.

Measure	Status	Trend
Habitat	Good ○○●○	Stable →
Rock lobster (crayfish/kōura)	Undetermined* ○○○○	Declining ↘
Marine pests	Good ○○●○	Stable →
Water quality	Superior ○○○●	Stable →
Surrounding land	Good ○○●○	Stable →

Monitoring the marine reserve

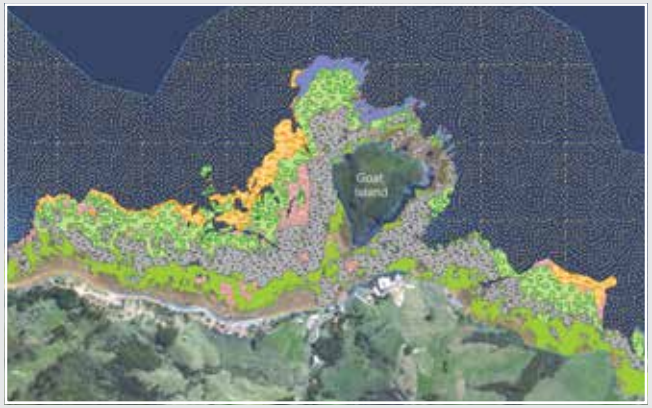
Cape Rodney-Okakari Point Marine Reserve has been studied by many marine scientists and students from the University of Auckland since 1975. DOC also carries out standardised surveys (every 2–3 years) of snapper, rock lobster and other fish inside and at nearby places outside the marine reserve.

* Natural levels of rock lobster in the marine reserve are uncertain, so their status cannot be assessed at this time.

Habitat

Before the marine reserve was created, most of the kelp forests were grazed to bare rock by sea urchins, or kina (to areas called urchin barrens). Rock lobster and snapper eat sea urchins – once fishing stopped and their numbers and size increased, they began eating the sea urchins, which in turn allowed the kelp forests to grow back. These maps show the changes in habitat over 30 years, especially the increase in kelp forest and reduction in urchin barrens.

1977



2006

Key

Marine reserve boundary

Marine habitats

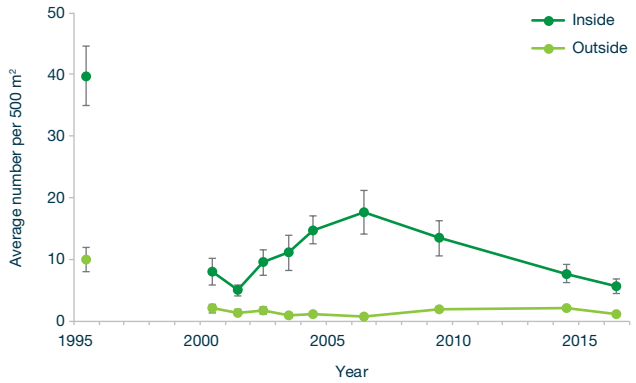
- Crustose algae
- Kelp
- Sponge garden
- Deep-reef
- Mixed alga and carpophyllum
- Urchin barren
- Intertidal
- Sediment

Rock lobster

In 1995 the number of rock lobster inside the marine reserve was four times higher than outside the marine reserve. In 2016 the number of lobster inside the marine reserve was five times higher than outside the marine reserve.

Average numbers of rock lobster have declined in the last 10 years. The monitoring survey in 2016 recorded one third of the rock lobster recorded in the 2006 survey. Since 2014, the average number of rock lobster per 500 m² inside the marine reserve has been similar to, or lower than, the number recorded **outside** the reserve in 1995.

Number of rock lobster inside and outside the marine reserve



Marine pests

Marine pests are unwanted species that have been introduced to New Zealand. Two particular pests, a seaweed (*Undaria pinnatifida*, pictured) and a sea squirt (*Styela clava*), are growing less than 50 km away. There is a high chance they will arrive in the marine reserve one day, probably by hitchhiking on a boat hull.

Water quality

Auckland Council monitors the water quality in the marine reserve and rates it 'good to excellent'. The underwater visibility can be reduced after a storm, as sediment from the land is washed into the sea and sediment on the sea-floor is stirred up.

Surrounding land

Vegetation around the coast reduces the amount of sediment and nutrients entering the marine reserve via streams. The land surrounding the marine reserve (10 km north and south) is almost half grassland and half forest. Urban and barren land make up less than 5% each.