



Orange roughy are mainly found at depths of 700 metres to 1500 metres. They congregate in huge numbers around seamounts to spawn or feed. These fish are very slow-growing, taking about 20 years to reach a mature size of 30 centimetres. Scientists argue about the age of orange roughy but the evidence shows they start to reproduce when aged between 20 and 30 years, reproducing at a low rate, and live to between 80 and 150 years.

Most importantly, seamounts provide a rare opportunity for deep-sea creatures: to find a hard, bare, rocky surface to cling to. They are home to a distinctive community of benthic (bottom-living) sea creatures. These hard-ground invertebrate communities are almost entirely different from the species that live on the surrounding soft ooze.

Seamounts vary greatly in size, depth and topography. There appear to be many creatures unique to certain seamounts. It may be that the isolation of the seamounts, and strong, circular currents, keep some creatures within each seamount area.

Corals form the basis of seamount communities. Six species of true corals characterise New Zealand seamounts. The most common reef-building coral *Goniocorella dumosa*, can grow colonies up to 20 metres tall, at a rate of up to three millimetres per year. They form a bushy, interlocking network of branches and numerous species of attached creatures find a niche in the hollow spaces.

Forty-two species of black coral have been growing slowly for centuries in cold, dark New Zealand waters, particularly around the northwest Chatham Rise and southwards towards the Auckland and Bounty islands. They have diverse forms. Some are like a large Japanese fan, with foot-long combs. Others are stick-thin with feather-like 'branches' attached to a long 'stem'.

Further north — off the Bay of Plenty and Lord Howe Island — sea fans or gorgonians, including the striking bamboo corals, often dominate. Very little is known about the 37 species so far found. Some look like small branching and tangled shrubs, others like fans, or whips. A BBC photographer in a submersible found that bamboo corals produce bioluminescence

when touched, with light spiralling from the colony base to the most distant branch tips. They appear to grow about 50 centimetres in 70 years.

When first brought up from the seabed, corals are often brilliant oranges, reds, or golds. One fragment, about 1.5 metres long, is a large spiral one centimetre in diameter, with a metallic-golden sheen. It has small holes along its side, where tiny fluorescent fans were attached.

At least 200 invertebrate species live amongst the coral, as well as many uncounted sponges, hydroids, bryozoans and stylasterids. They include sea cucumbers, brittle starfish, sea lilies, sea-stars and sea-eggs. The stalked barnacle *Smilium zancleanum*, as long as a human hand, is one of nine seamount-dwelling barnacle species, most of which have been found in only one location. There are 13 species of hermit, stone and true crab recorded from seamounts — more than half not yet named. Seven squid and seven octopus species have been collected.

About 140 fish species and 29 shark species spend parts of their life cycles around seamounts. Orange roughy is the most common fish, with black and smooth oreo more numerous in some areas. Baxter's dogfish is the most common shark. Alfonsino, black cardinal fish, rattails and black javelin fish are also often found.

A huge sea-fan coral, or gorgonian, trawled up from a seamount by a fishing vessel. This species *Paragorgia arborea* is found worldwide but is everywhere rare. This is the second largest piece ever found but was thrown overboard after this photograph was taken. The National Institute of Water and Atmosphere has the largest piece in its Wellington collection. (The fisherman asked for his face to be obscured.)

What's happening to protect seamounts?

The Ministry of Fisheries has a responsibility to ensure that fishing is ecologically sustainable.

Forest and Bird's Barry Weeber says there should be a moratorium on deep-sea fisheries and a stocktake of what creatures live there. 'Otherwise we're paying lip service to biodiversity — we don't even know what we've got and it's being destroyed.'

Forest and Bird has lobbied the Ministry of Fisheries to stop the industry moving onto unfished seamounts, and has called for at least half of the most intensively fished area — the Chatham Rise — to be set aside, to enable some of the 'bottom-dwelling' communities to survive.

The Ministry is now considering setting aside a small number of seamounts 'to manage the impacts of fishing on a representative sample.'

'The Ministry's approach is too little, too late,' says Barry Weeber. 'By the time it gets round to enacting any policy, the fishing industry will have substantially wrecked many more seamount habitats. There should be an immediate ban on trawling in all unfished areas.'

