

Illustrative sites for the New Zealand Tentative List

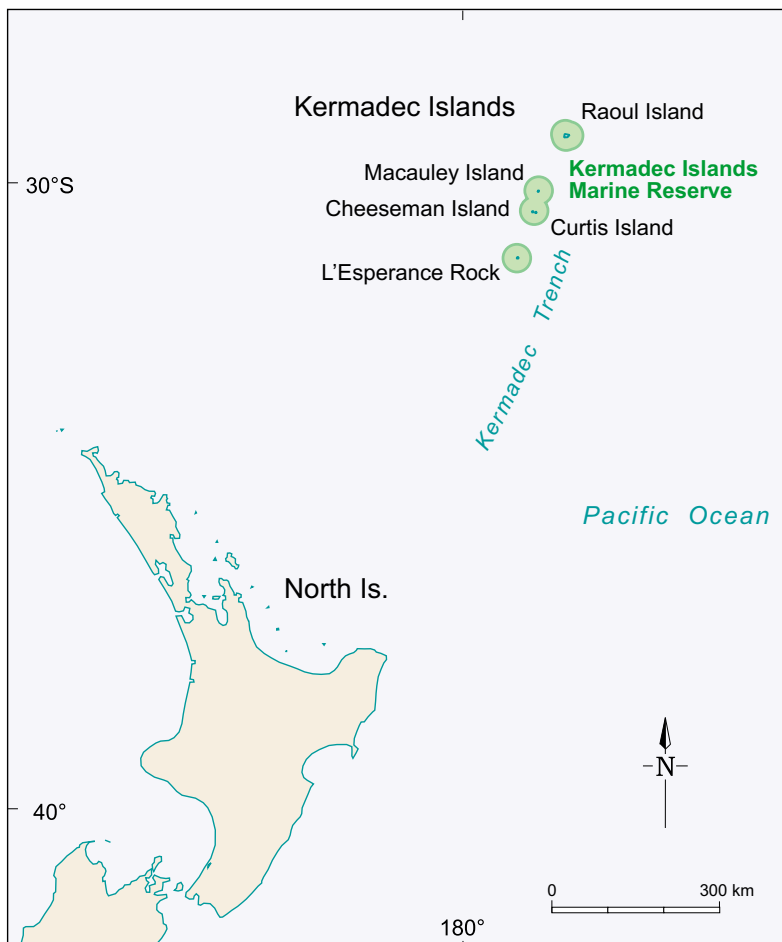
Kermadec Islands and Marine Reserve

SITE LOCATION

The Kermadec archipelago contains the northernmost land and territorial seas in New Zealand. Raoul Island (Rangitahua) is by far the largest (2900 ha) of the 15 islands, which are spread as four clusters in a line over 250 km of the Pacific Ocean (Latitude 29° - 32° S and Longitude 177° - 179° W), about 1100 km north-east of the Northland coast.

SITE DESCRIPTION

Raoul and the other islands (the main ones being Macauley, Curtis, Cheeseman and the Meyer Islands) are all strictly protected as the Kermadec Islands Nature Reserve (total area, 3280 ha). The marine component of the site is vastly larger, consisting of the 748,000 ha Kermadec Islands Marine Reserve surrounding the islands. Both the nature and marine reserve are administered by the Department of Conservation.



The islands are the tips of a chain of enormous deep-sea volcanoes (known as the Kermadec Ridge) rising to a height of 8000 to 10000 metres from the depths of the Kermadec Trench. This chain of volcanic islands (and submarine volcanoes) has been formed as a result of the Pacific Plate being subducted under the Indo-Australian Plate. The Kermadec Islands lie roughly midway between the volcanically-active White Island and the Tongan Islands and are part of the great 'Pacific Ring of Fire'. Two of the islands, Raoul and Curtis, are still active - Raoul last erupting in 1964. Earthquakes are a regular occurrence on Raoul Island.

The climate of the Kermadec Islands is mild and subtropical; they are occasionally battered by cyclones. Raoul Island experiences about 1500 mm rainfall each year. The water temperatures (20-24° C) are about four degrees warmer than the waters of the east coast of Northland. Like many of the volcanic islands of the Pacific, the warm temperate forest of Raoul Island is dominated by a species of the genus *Metrosideros*, here the Kermadec pohutukawa (*M. kermadecensis*). Nikau palms are widespread, conferring a distinctly subtropical look to the landscape; ngaio, karaka, mahoe, mapou, and wharangi are common trees.

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Left: A large spotted black grouper, a subtropical fish which can live to over 100 years. The Kermadec Islands Marine Reserve now protects one of the largest remaining natural populations of subtropical grouper in the world.

Centre: Tropical lionfish are common in the northern Kermadec Islands. Flamboyant but slow moving, the fish is armed with poisonous dorsal fin spines to protect it from predators.

Right: The giant endemic Kermadec limpet is one of the largest limpets in the world. The shell grows to fit the rock shape on the limpets home patch, to which it always returns after feeding.

Photos: Roger Grace

Red coral (*Errina* sp.) and blue maomao, Kermadec Islands Marine Reserve.
Roger Grace



VALUES THAT MAY JUSTIFY NATURAL WORLD HERITAGE LISTING

Because of its historic lack of exploitation, the Kermadec marine environment is probably the most pristine in the country, matching that of New Zealand's Subantarctic Islands World Heritage Site. In terms of their marine ecology, the Kermadecs occupy a position intermediate between the tropical islands of the Pacific (ie, they lack coral reefs) and the temperate New Zealand mainland (ie, they lack our typical brown seaweeds). The marine reserve protects marine habitats lying over a huge range - from mean low water mark to over 2000 metres in depth. The marine environment contains a number of outstanding marine fauna:

- sea snakes and turtles
- few tropical herbivorous fish
- giant limpets
- the southern limits of a number of marine organisms, such as the Crown of Thorns starfish, and
- huge spotted black grouper, one of the last surviving populations in the world of this fish which can grow up to a metre in length and possibly live for 100 years.

Together with the marine communities at Lord Howe and Norfolk Islands, the marine ecosystems at the Kermadecs are possibly unique in the world. Although Australia's Great Barrier Reef World Heritage site is much larger, the Kermadec Marine Reserve is probably the largest strictly protected marine area in the world.

The land fauna and flora of the islands are also very interesting. Like the Hawaiian Islands (as well as New Zealand's Campbell Island and Auckland Islands), the Kermadecs are true 'oceanic islands'. Such islands have never been joined to continents by land-bridges and consequently they usually lack indigenous reptiles and mammals. Twenty one indigenous bird species breed on Raoul Island, four of which are endemic. Curtis and Macauley Islands contain the world's largest populations of Kermadec allied shearwater and black-winged petrel. Macauley Island is the only breeding site of the endemic

white-naped petrel and the regionally-threatened white-bellied storm petrel.



Interior of nikau forest,
Raoul Island.
Roger Grace

(Insets) Left: The Kermadec
nikau palm (*Rhopalostylis
baueri* var. *cbeesemani*) is
endemic to the islands.
DOC

Right: Fruits of the Kermadec
nikau palm.
Don Merton, DOC



The flora of the Kermadec Islands is quite restricted in extent, most plants having arrived because their seeds were carried on the wind, floated across the ocean, or attached to the feathers of migrating birds. Outstanding features of the terrestrial vegetation are:

- its youthfulness, because of the isolation of the islands and the insufficient time elapsed for the evolution of a large number of truly indigenous plants
- the high level of endemism (21 out of a total of about 115 indigenous plants)
- a flora considered to be of international importance because of the many examples of adaptive evolution of distinctive Kermadec species from mainland New Zealand genera which have made their way to the islands.

Key rare plant species are *Hebe breviracemosa*, *Pittosporum* aff. *crassifolium* and *Senecio kermadecenis*, with *Lepidium oleraceum* on Macauley Island.

The Kermadec Islands played a significant role in early Polynesian and Maori voyaging across the Pacific and contain a significant archaeological history. Further exploration of this history may well enable a substantial case for consideration for listing on cultural grounds to be made.

RELEVANT INTEGRITY ISSUES FOR DISCUSSION

There are no known integrity shortcomings for the marine component of the site. The marine reserve is sufficiently large to encompass a very wide range of underwater landforms and marine ecosystems. The marine reserve is far enough away from the New Zealand mainland to escape the threat of commercial fishing.

Past human occupation has severely modified the indigenous flora and fauna of the islands. The introduction of a number of pest animals (such as kiore, goats, cats and Norway rat) had a very detrimental effect, especially on the ecology of Raoul and Macauley Islands. Fire and goats reduced most of the vegetation of Macauley Island to a turf of grasses and cushion plants. In addition, the young volcanic soils induced European settlers to attempt to farm sheep and cattle on Raoul Island. Likewise, the mild climate favoured the establishment of a variety of subtropical plants (such as Mysore thorn, Brazilian buttercup, and guava) which have become weeds threatening the indigenous flora.

In the past 15 years, steady progress has been made in the removal of weeds and pests from the islands in the group. All domestic stock were removed when the islands became a reserve in 1934. Goats were eventually eradicated from Raoul Island in 1986 (after a difficult 12-year hunting campaign). A major conservation landmark was achieved in 2004 with the eradication of Norway rats and cats from both Raoul and Macauley Islands.