

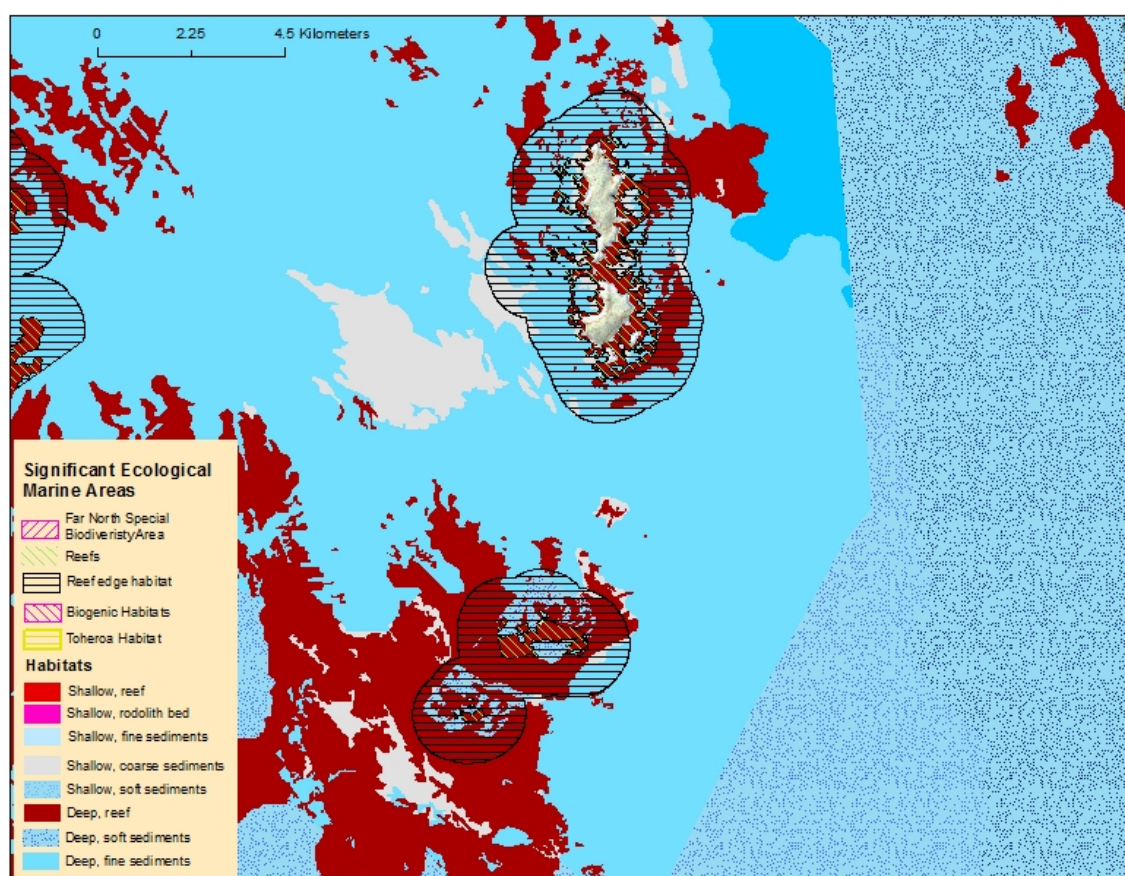
Significant Ecological Marine Area Assessment Sheet

Name: Poor Knights Islands

Summary:

The reef systems of Poor Knights Islands and adjoining reef edges of soft bottom habitat score as a high ranking ecological area. This reef system is extensive and with large areas of shallow reefs connected to a large and complex deep reef system extending offshore - more than 4 km in places. These complex reefs, coastline and small islands create a significant sequence of high quality marine habitats. In addition the Poor Knights Islands creates an ecological sequence and connectivity with important terrestrial conservation areas on these islands. The Poor Knights Islands is an established Marine Reserve and is known internationally as an outstanding marine biodiversity site.

Habitat map and mapped significant ecological areas of the Poor Knights Islands



Description:

The Poor Knights is a group of two large islands (Tawhiti Rahi and Aorangi) and several small islets and rock stacks (including High Peak and Sugarloaf rocks south-east of the main islands). The group is a sequence of volcanic remnants forming a chain about 10 km long. The islands total about 217 ha and are located 24 km off the mainland coast, north-east of Whangarei Heads. The marine area around the islands to 800m offshore is a 1890 ha Marine Reserve (Poor Knights Islands Marine Reserve). Landscapes and seascapes are steep and rugged. There are few shallow rocky reefs, with most places fringed by steeply sloping subtidal rocky reefs, which drop to depths of almost 100 m

close inshore. There are numerous submerged pinnacles and many caves, tunnels and archways providing a profoundly diverse range of habitats.

Reefs are bounded seawards by soft sediment areas that reach depths of 80–130m. There are also several large stretches of continuous reefs composed of large boulders, which slope gently from the intertidal zone to depths exceeding 50 m. Sediments at the Poor Knights comprise shelly medium-to-coarse sand, with fine-to-medium sand in shallow sites with very little mud.

The area mapped as a significant ecological area extends out from the islands to approximately the 100m depth contour which lies between approximately 100m from shore to 1.5 kms offshore. A further reef edge habitat extending another 1km off shore is included in the significant ecological area: this is for the purpose of recognising the important ecological sequences between the shallow reef systems and the deep reefs beyond 100m depth, and the surrounding soft sediment habitats that edge these reef systems. As a result, the boundary of the ecologically significant area varies from 1-2.5km offshore.

Poor Knights Islands area has attracted considerable scientific investigation. A regional scale marine habitat mapping project including the Poor Knights Islands was completed in 2010.¹

A typical view of the highly eroded volcanic rock that makes up the steep shoreline and shallow reefs, caves and arches of these islands.



¹ Kerr, V. 2009: Marine habitat map of Northland: Mangawhai to Ahipara vers. 1. Northland Conservancy, Department of Conservation, Whangarei. 33 p.

A view of the tremendously lush algal growth seen in spring and summer months in shallow zone of the steep dropping shallow fringing reefs.



Another view of the shallow reef kelp forest showing an example of the diversity of the red algae in this habitat zone. A snapper cruises the shallows.



Snapper are now seen in the marine reserve in large numbers, this image was taken on a typical 'wall' of lush kelp forest not far below the surface. Photo credit: Vince Kerr.



At deeper levels beyond about 30 m or in the shade of overhangs, caves and arches, there are brilliantly coloured diverse encrusting invertebrate communities covering every available space. Photo credit: Vince Kerr.



The steep complex terrain of the Islands fringing reefs create significant up wellings of ocean currents bringing food resources to great numbers of plankton feeding fish species. Photo credit: Vince Kerr.



Oceanography

The islands have a strong subtropical influence. They lie in the path of the East Auckland Current, which flows offshore of the Northland coast before turning seaward just past the Poor Knights Islands. This brings waters that are consistently 2°C warmer than at the mainland. Summer seawater temperatures can exceed 25°C, and in winter the temperature rarely dips below 15°C. The sub-tropical current provides a major source of larvae for tropical and subtropical fish and invertebrate larvae drifting from Lord Howe and Norfolk islands; these are rarely found elsewhere in New Zealand.

Ecological Values

The Poor Knights Islands' special and unique characteristics have been the subject of many scientific explorations. A comprehensive review of literature pertaining to the ecology of the Poor Knights Islands was produced in 2009, listing over 250 scientific reports.² The ecology of the Poor Knights Islands area is described in detail in this publication. The unique mixture of complex topography, the mixing of water masses and offshore location together supports the highest level of marine diversity of subtropical species known in New Zealand.

The Poor Knights Islands are known for its dramatic vertical wall habitats that plunge downwards to depths of 50m in some places. These special habitats have an amazing

² Carina Sim-Smith, C., Kelly, M., 2009. A literature review on the Poor Knights Islands Marine Reserve. A report for the Dept. of Conservation, Northland Conservancy.

diversity of flora and fauna including sponges, bryozoans, anemones, and encrusting algae. There have been 140 species of sponges, 131 molluscs, 58 cnidarians, 43 echinoderms and 36 bryozoans recorded from the Poor Knights Islands.²

A study of Northeast New Zealand reef fish biogeography by Brook³ presents the results of a comprehensive survey effort and review of past survey efforts. The reef fish diversity of Poor Knights Islands tops the list of Northland coastal sites, with 98 species recorded. There are approximately 120 species of fish known to occur at these islands. The Poor Knights Island showed highest numbers of subtropical species found anywhere in New Zealand.

Northland Marine Mammals

Information on the presence and conservation status of marine mammals in relation to Northland's coasts and estuaries has been reviewed by Baker.^{4 5} Thirty-five species of marine mammals are known from Northland waters (within the 12 n ml limit). Some marine mammal species are resident or semi-resident and breed along the Northland coast, and others are transients. Three threatened species are amongst the species most often encountered in inshore waters and at the Poor Knights Islands: Bryde's whales *Balaenoptera edni*, bottlenose dolphins *Tursiops truncatus*, and Orca *Orcinus orca*. The common dolphin *Delphinus delphis*, which is not threatened, is also commonly seen in the Poor Knights Islands. Less common, but occasionally encountered at the Poor Knights Islands are pilot whales *Globicephala spp.*, false killer whales *Pseudorca crassidens*, and some of the large baleen whales. New Zealand fur seals are present in small numbers in the Poor Knights Islands area as transient visitors.

Seabirds

Seabirds are abundant and these islands are the principal breeding site for the endemic Buller's shearwater (*Puffinus bulleri*). Others include blue penguin (*Eudyptula minor*), fairy prion (*Pachyptila turtur*) and common diving petrel (*Pelecanoides urinatrix*) and gannet (*Morus serrator*). The Poor Knights Islands are also recognised as internationally important for bird conservation and known to support key bird species and other biodiversity through the Important Bird Area programme⁶.

Assessment of Ecological Significance

Table 1 Ranking score of ecological significance of Poor Knights Islands Reefs⁷

Poor Knights Islands Reefs: Assessment of Ecological Significance		Rank
Overall Ranking	Notes	High

³ Brook, F.J. (2002). Biogeography of near-shore reef fishes in northern New Zealand. Journal of the Royal Society of New Zealand 32: 243-274

⁴ Baker, A. N., 2005. Sensitivity of marine mammals found in northland waters to aquaculture activities. Report to the Department of Conservation, Northland Conservancy. A. N. Baker Cetacean Biology Consultant, Kerikeri.

⁵ Baker, C.S, Chilvers, B.L., Constantine, R., DuFresne, S., Mattlin, R.H., van Helden, A. & Hitchmough, R., 2010. Conservation status of New Zealand marine mammals. New Zealand Journal of Marine and Freshwater Research, 44:2, 101-115.

⁶ Gaskin, C, 2013. Important areas for New Zealand seabirds, Part 1 – North Island. Compilation for Forest & Bird / BirdLife International.

⁷ Table 1 details the ranking criteria and scoring that was used to determine the overall high ranking given to the ecological significance of this area. The criteria used have been adopted from Appendix 5 of the Northland Regional Council Proposed Policy Statement. See reference to Methodology report or other council documents to call up

Representation	supports most taxa expected for habitat type	High diversity of marine species	H
	large example of its type	Good size example of complex sequence of habitats.	H
Rarity and Distinctiveness	supports indigenous species threatened, at risk, or uncommon, nationally or within the relevant ecological scale	Important area for threatened marine mammals species and rare subtropical species	H
	supports species endemic to the Northland-Auckland region or at distributional limits within the Northland region	Not assessed	NA
	distinctive of a naturally restricted occurrence	Diversity of habitats is exceptional and unique	H
	developed as a result of unusual environmental factor(s) or is part of an ecological unit that occurs within an originally rare ecosystem	Diversity of habitats is exceptional and unique	H
	identified as nationally or regionally rare habitat(s) in MPA Plan	Diversity and quality of habitats is recognised as regionally significant	H
Diversity and Pattern	high diversity of indigenous ecosystem or habitat types	Diversity of habitats is exceptional	H
	high diversity of indigenous taxa	The best east coast sites for high diversity	H
	its composition reflects the existence of diverse natural features or ecological gradients	Very complex ecological gradients	H
	contains intact ecological sequences	Excellent examples	H
Ecological Context	provides or contributes to ecological linkages, networks, buffering functions	Has complete marine habitat sequences and connects to important terrestrial conservation area with diverse habitats	H
	supports the natural functioning of freshwater or coastal ecosystems	Not assessed	NA
	supports life stages of indigenous fauna	High diversity well supported by habitats	H
Assessed by: Vince Kerr		Date: September 2015	
Information Source(s) <i>see below</i>			1-7
Reliability of Information <i>see below</i>			+++
Rank (overall score) H = high, M = moderate, L = low, DD = data deficient, R = recommended for further investigation			
Information Source(s) 1 = quantitative report, 2 = qualitative report, 3 = habitat map or classification, 4 = expert opinion, 5 = personal communication, 6 = anecdotal information, 7 = visit and observation			
Reliability of Information expressed as a scale of confidence ranging from high (+++) to low confidence (---)			
Criteria Rank - score for each individual criteria) H = high ranking, M = moderate ranking, L = low ranking, DD = data deficient, R = recommended for further investigation, NA = not assessed for this criteria			