

FLORA AND FAUNA OF PLATE (MOTUNAU) ISLAND, BAY OF PLENTY

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INTRODUCTION

Plate (Motunau) Island ($37^{\circ} 40'S$, $176^{\circ} 34'E$) lies about 13km north-east of Maketu in the Bay of Plenty. The island is split in two by a narrow (2m minimum width) channel running east-west in a V shape. The northern island is about 0.8 ha (Grid Reference V14 243873) and the southern island is about 2.8 ha (Grid Reference V14 242871). Six outlying rock stacks occur < 100m from the main islands as well as a scattering of small rocks (Fig. 1). There is no permanent fresh water and landing sites are restricted to the north-west corner of the southern island and the eastern bay of the northern island. The

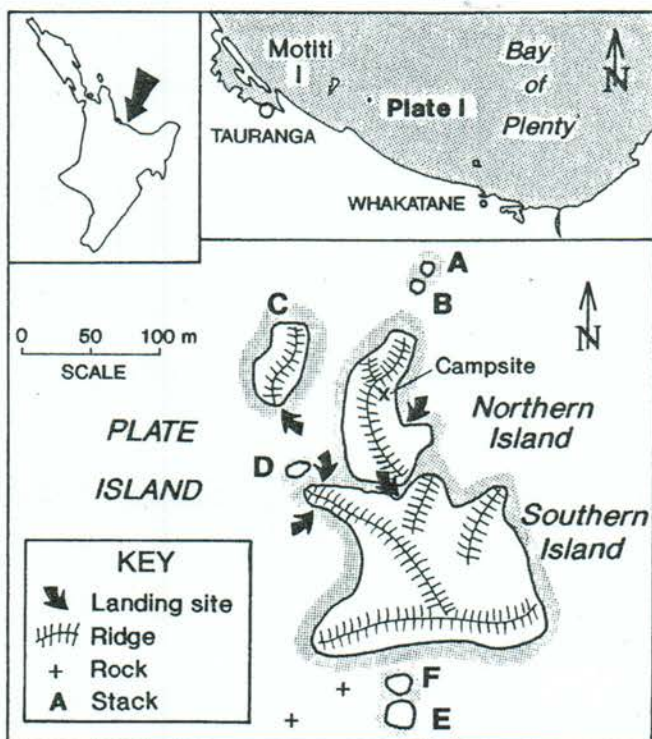


Fig. 1. Sketch map of Plate (Motunau) Island



Fig. 2. A view across the eastern and central region of Plate Island from the northern end. Note campsite in lower foreground. March 1988.

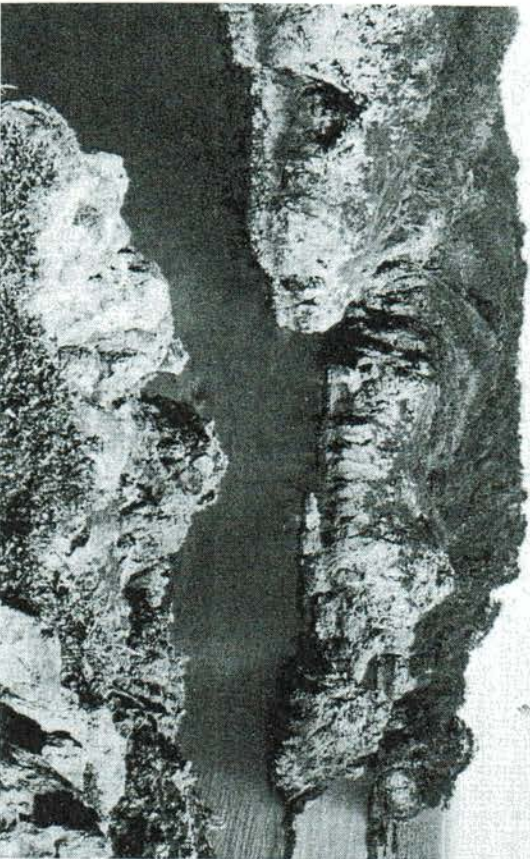


Fig. 3 The western shore of Plate Island. The inlet separating the northern and southern islands is in the centre of the photo. March 1988.

remaining shoreline is backed by cliffs. A campsite was located on a rock ledge above the eastern bay on the northern island. Camping would also be possible under forest on the southern island. The island is apparently of volcanic origin and a coarse breccia rock is widely exposed around the shoreline. The central ridges form a flat plateau about 30m ASL (Fig. 2 and 3).

Plate Island is a Wildlife Sanctuary administered by the Department of Conservation (Bay of Plenty Conservancy). An entry permit is required to land on the island. I was invited to join Department of Conservation staff in a survey of the tuatara (*Sphenodon punctatus*) population. We landed on 17 March 1981 at 1730 hours and departed 20 March 1981 at 1000 hours. The party of three consisted of Paul Jansen, Georgie Murman and myself.

Although Plate Island has long been known to support a good tuatara population (Crock 1973), no general account has been published of the flora and fauna of the island. Falla (1934) listed some of the petrel species which breed on the island. During this visit, I made detailed notes on the flora and fauna of the island.

VEGETATION

The zone above the intertidal was dominated by glasswort (*Sarcocornia quinqueflora*), particularly on the northern island and stacks. New Zealand ice plant (*Disphyma australe*) covered the rock faces and shallow soils in the saltwater spray zone. Exposed ridges and rocky ground were covered by a mixture of New Zealand ice plant and stunted taupata (*Coprosma repens*). The northern island also had a small low forest of karo (*Pitiosporum crassifolium*). On the larger southern island, karo was the dominant forest species. On shallow soils there were abundant 3-4m tall karo trees and a dense growth of regenerating karo saplings of different sizes occurred underneath (Fig. 4). On the deeper soils on the main ridges, large karo over 5m tall occurred amongst similarly sized taupata and coastal mahoe (*Meliccytus novae-zelandiae*). Thickets of wire vine (*Muehlenbeckia complexa*) were common over the central forest areas and frequently sprawled into the canopy. Many of these plants had large leaves but no *M. australis* was identified from the voucher samples I collected (E.K. Cameron pers. comm.). In localised clearings were dense patches of *Poa aneups*, a grass. Pohutukawa (*Metrosideros excelsa*) was locally common on the southern cliffs of the large island. Probably fewer than 20 large pohutukawa were present and all except one were restricted to coastal cliffs.

The flora of Plate Island has a low diversity for an island of about 3.5 hectares. Only 17 vascular plant species were found (Table 1) after a thorough search which covered most of the island. There was a surprising absence of many plant species typical of small island floras, e.g. *Spergularia media*,

houpara (*Pseudopanax lessonii*), *Dichondra repens*. The low plant diversity is probably attributable to past disturbance on the islands (possibly burning by muttonbirding parties), and to their isolation. Past burning may have destroyed most plants except those species able to survive close to the shoreline or on small rock stacks.

Plate Island is exceptionally isolated and apart from the barren Schooner Rocks nearby, the nearest seed source is the mainland 13km distant. Only Gannet Island (19km off Kawhia Harbour) is more isolated than Plate Island amongst islands less than 10 ha in size in northern New Zealand. This distance offshore limits the chances of wind dispersed seeds reaching the island. Only occasional visits by small land birds seem likely and larger fruit eating land birds probably never visit the island. There were very few adventive plant species in the flora. The prairie grass (*Bromus willdenowii*) was only found near some camp litter left by an earlier visiting group and thus was probably brought to the island accidentally by people.

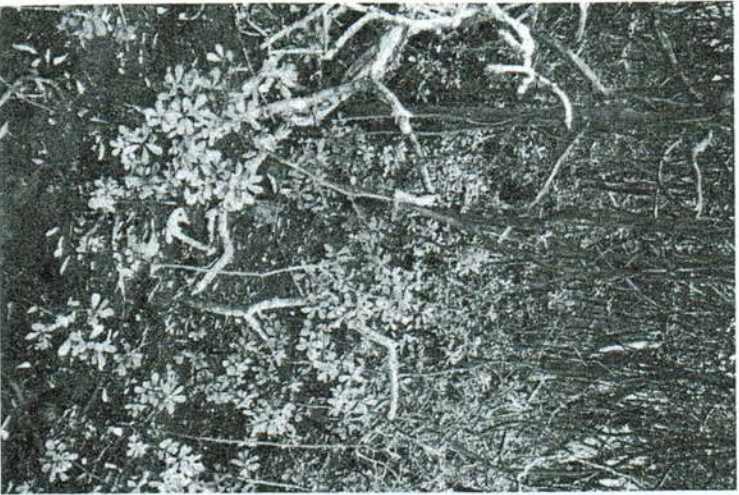


Fig. 4. Dense karo regeneration on the southern island.

Karewa Island is another small (5.0 ha) island in the Motiti Ecological District (which includes Plate Island). Karewa lies 5.75km off Matakana Island and northwest of Mt Maunganui. The flora and fauna of this island was described by Sladden (1924). Both Karewa and Plate Islands have a large population of tuatara and breeding petrels. Sladden (1924) listed 25 vascular plant species, ten of which are shared with Plate Island. It appears that the flora of Karewa is comparatively unmodified. It included remnant coastal forest species such as houpara, karaka (*Corynocarpus laewigatus*), large-leaved milk tree (*Steblius banksii*), tawapou (*Planchonella costata*), parapara

(*Pisonia brunoniana*), ngaio (*Myoporum laetum*), cabbage tree (*Cordyline australis*) and coastal spleenwort (*Asplenium haurakiense*). Whether these species are absent from Plate Island because of past disturbance or lack of suitable habitat is uncertain. But interestingly, the species that are shared between these islands are those that are typically salt tolerant and grow close to the shore. One omission that seems well suited to Plate Island and occurred on Karewa Island, was Cook's scurvey grass (*Lepidium oleraceum*). This plant thrives on well fertilised sites that are common on Plate Island, thus its absence is somewhat surprising.

Table 1. List of vascular plant species found on Plate Island. Location of stacks are shown on Figure 1.

	Northern Island		Southern Island		Stacks					
					A	B	C	D	E	F
<i>Asplenium oblongifolium</i>	-	O	-	-	-	-	-	-	-	-
<i>Bromus willdenowii</i> *	-	R	-	-	-	-	-	-	-	-
<i>Coprosma repens</i>	A	A	R	R	O	R	C	-	-	-
<i>Cyperus usitatus</i>	-	R	A	A	C	A	A	C	-	-
<i>Disphyma australe</i>	A	A	-	-	-	-	-	-	-	-
<i>Eriodia trigonos</i>	C	C	A	A	O	-	-	-	-	-
<i>Isolepis nodosa</i>	O	O	-	-	-	-	-	-	-	-
<i>Meliclytus novae-zelandiae</i>	O	C	-	-	R	-	-	-	-	-
<i>Metrosideros excelsa</i>	-	O	-	-	-	-	-	-	-	-
<i>Muehlenbeckia complexa</i>	O	C	-	-	-	-	-	-	-	-
<i>Pitiosporum crassifolium</i>	A	A	-	-	-	R	-	R	-	-
<i>Poa anceps</i>	C	C	O-C	-	-	-	-	-	-	-
<i>Pyrrhosia elegansifolia</i>	-	R	-	-	-	-	-	-	-	-
<i>Sarcocornia quinqueflora</i>	A	C	A	A	A	A	A	C	C	C
<i>Senecio laetius</i>	R	O	-	-	-	-	-	-	-	-
<i>Solanum americanum</i>	R	C	-	-	-	-	-	-	-	-
<i>Sonchus oleraceus</i> *	R	R	-	-	-	-	-	-	-	-

Abundance Scale:

A = Abundant
C = Common
O = Occasional
R = Rare

* = adventive species

FAUNA

Birds

Grey-faced petrel (*Pterodroma macroptera gouldi*)

- A large breeding colony was present, perhaps as many as 5000 pairs. Burrows

were abundant on the main southern island, at densities of 1 burrow/1-2m² over the southwest corner and southern slopes, and 1 burrow/5-10m² elsewhere. There were only a few scattered burrows on the more rocky northern island. Calls were first heard at 1905 h NZST. Numerous birds were heard in flight but only three were noted on the ground at night. Some birds had commenced burrow cleaning. Grey-faced petrels return to their colonies from mid-March and these observations of birds ashore on 18 March is one of the earliest recorded returns for this subspecies.

Fluttering shearwater (*Puffinus gavia*)

- Probable fluttering shearwater burrows were locally common in shallow soil under ice plant and scattered above coastal cliffs. These were mostly on the northern island and a few also occurred at the northern end of the southern island. Several birds were calling late at night over the island but none were found on the ground.

Diving petrel (*Pelecanoides urinatrix*)

- Two birds were heard calling from burrows on the northern island. However, very few diving petrel-sized burrows were located.

White-faced storm petrel (*Pelagodroma marina*)

- None were seen nor did I find any skeletal remains. They were reported to breed on this island by Falla (1934). I located up to 20 small burrows which probably belonged to this species. These burrows were mostly on the northern island. This species usually deserts the breeding grounds in early March. A visit to the island between September and January would be useful to determine the status of this population.

Pied shag (*Phalacrocorax varius*)

- One seen.

Little black shag (*P. sulcirostris*)

- One seen.

Reef heron (*Egretta sacra*)

- One pair seen.

Australasian gannet (*Morus serrator*)

- Numerous around island.

Australasian harrier (*Circus approximans*)

- One seen.

Southern black-backed gull (*Larus dominicanus*)

- One seen.

Red-billed gull (*L. novaehollandiae*)

- Thirty plus were seen around the island. There were c.50-100 nest sites at the north end of the northern island and several hundred nest sites on Stack C.

New Zealand kingfisher (*Halcyon sancta*)

- One seen.

Welcome swallow (*Hirundo neoxena*)

- Three seen.

Silvereye (*Zosterops lateralis*)

- Flock of 20 seen.

Blackbird (*Turdus merula*)

- Two seen.

Chaffinch (*Fringilla coelebs*)

- One heard.

House sparrow (*Passer domesticus*)

- One pair seen.

Starling (*Sturnus vulgaris*)

- At least four seen.

Reptiles

Tuatara were abundant on the two main islands. A mark-recapture index was established by locating tuatara at night and marking those caught with "Twink". Measurements were also taken of snout-vent length. The population was estimated at 500 animals. Other results of the tuatara survey will be reported elsewhere.

Two species of lizards were located. *Hoplodactylus maculatus* was common on both main islands. *Leiopisma smithi* was fairly common on the northern island

but only one was found on the southern island, and a few were seen on Stack C.

Mammals

No sign was found of any mammals on this island. The continuing presence of an abundant reptile and petrel fauna is confirmation that no commensal rats have reached the island.

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