Vascular flora of 3 inshore islands, south-east coast Great Barrier Island

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On 20 November 2002 a party of 7 people set off from Tryphena wharf at 0820 hrs in the local coast guard boat to survey vascular plants and insects of three islands off the SE coast of Great Barrier Island. There was a moderate SW swell and wind that freshened from the SW during the day. The group comprised of: Ewen Cameron, John Early, Rosemary Gilbert (Auckland Museum); Hillary McGregor, Zara Ngawaka Walker (Ngati Rehua); and Kevin Reynolds and Dave 'Red' Geck (coast guard skipper and crew member). Note – this article only covers the vascular flora.

The three islands landed on appear to have no official names but are known locally as: **Rosalie Bay islet** (time on the islet: 0855-1040 hrs), **Te Pani** (Waterfall Bay Island, Goat, later nicknamed Dope Island) (1055-1300 hrs), and **Motu Tohora** (Rabbit Island) (1325-1545 hrs), returning to Tryphena wharf 1615 hrs (see Fig. 1). No previous information on the natural history of the islands could be sourced except for 47 vascular plant specimens in Auckland Museum herbarium (AK) collected from Motu Tohora by Ian McFadden on 15 October 1984 and a list of 19 vascular native and naturalised plants from the same island noted by Bec Stanley (*pers. comm.*) and Keri Neilson on 12 March 1998. Ownership appears to be Maori Customary Land. See Table 1 for some statistics of the islands and Figure 1 for their location.

Table 1. Location, size, height, and distance from Great Barrier Island for 3 islands off its SE coast.

	Rosalie Bay islet	Te Pani	Motu Tohora
Map ref (260 T09)	392392	387377	354363
Size (ha) (from Taylor 1989)	0.85	10.0	13.8
Est. height asl (m)	40	110	90
Est. distance from GBI (m)	130	120	180

Rosalie Bay islet (no name could be traced) (Fig. 2A-D)

Geology: andesite, likely to be a volcanic flow (steep columnar jointing), part of Kuaotuna Subgroup of the Coromandel Group, of mid Miocene age (Bruce Hayward *pers. comm.*). Near vertical and bare on NE side, steep, many lose rocks, but accessible and supporting scrub and short forest on SW side. There was no free water, except for small ephemeral rock pools in the splash zone (it had recently rained before our visit). An intertidal reef exposed at low tide partially exists between the islet and Great Barrier Island (see Fig. 2A). See Table 2 for statistics of the vascular flora for each island, and Appendix 1 for the full vascular plant list.

Table. 2. Divisions of the vascular flora of 3 islands off the SE coast of Great Barrier Island (3 hybrid dicot records excluded)

	Rosalie Bay islet	Te Pani	Motu Tohora	Totals
Native ferns & fern allies	4	9	15	18
Native dicots	32	30	46	63
Native monocots	14	15	19	26
Naturalised dicots	8	14	17	24
Naturalised monocots	2	7	6	11
Totals	**60**	**75**	**103**	**142**
% native	83	72	78	75
Est. total flora recorded (%)	90	70	70	

Vascular flora

Shrubby vegetation on steep SW slope; summit ridge crowned with small forest with trees to 8-10m tall. The dominant species were milk tree (*Streblus banksii*) with pale, smooth, straight trunks to 0.3m dbh, tawapou (*Pouteria costata*), and multi-trunked pohutukawa (*Metrosideros excelsa*) with branches up to 0.5m diameter; karaka (*Corynocarpus laevigatus*) was local. The main understorey throughout was shrubby coastal mahoe (*Melicytus novae-zelandiae*) c.1 (-2) m tall. Karo (*Pittosporum crassifolium*) 2-4m tall was locally common along the lower margin of the woody vegetation. At the NW end there was a pohutukawa canopy 8-9m tall, with a shrubby understorey c.1m tall, with oddly nothing in-between. Coastal mahoe was the main understorey shrub but locally houpara (*Pseudopanax lessonii*), coastal toetoe (*Cortaderia splendens*), hangehange (*Geniostoma ligustrifolium*) and kawakawa (*Macropiper excelsum*) were also present. The latter two species had rather thick, glossy leaves and the kawakawa (AK 280624) was intermediate between subsp. *excelsum* and subsp. *peltatum* (Rhys Gardner *pers. comm.*). The splash zone on the SW side was dominated by herbaceous species: *Samolus repens*, NZ ice plant (*Disphyma australe*), glasswort (*Sarcocornia quinqueflora*), *Isolepis cernua*; backed by clumps of harakeke or flax (*Phormium tenax*), *Astelia banksii*, and taupata (*Coprosma repens*); with shrubs of coastal mahoe and karo further back. Annuals were common amongst

the lower open vegetation: *Lachnagrostis littoralis*, shore groundsel (*Senecio lautus*), *Cotula australis*, *Parietaria debilis, Cardamine debilis, Sagina procumbens* and occasional *Senecio repangae*.

There was no indication that the islet had ever been burnt – manuka (*Leptospermum scoparium*) and kanuka (*Kunzea ericoides*) appeared to be absent and the vegetation in 1895 looked a similar stature to present day cover (cf. Figs. 2A,B,C).

Vertebrate fauna

Ship rats were common, identified from abundant droppings and the abundance of beetle fragments. Occupied grey-faced petrel burrows (identified from feathers & an egg shell) numbered >40; and at least 2 occupied little blue penguin burrows were present. One copper skink (*Cyclodina aenea*) was seen. Many of the *Disphyma* and *Lobelia* plants were chewed, presumably by rats. This phenomenon has been reported before on rat islets lacking free water (see Cameron & Taylor 1991).

Te Pani (Waterfall Bay Island, Goat, later nicknamed Dope Island) (Fig. 3A, B)

The unofficial European names relate to: the steep bay to the SW of the island containing a waterfall visible from the sea; goats that had once been put on the island as a source of dog tucker by the Osborne's (G. Mason *pers. comm.*, Dec 2002); and cannabis cultivation. George Mason (*pers. comm.*) confirmed that goats were present in 1937 or 1938, and one or two were seen as recently as the early 1970s (Bob Whitmore *pers. comm.*, Dec 2002). But they can't have been obvious because Ivan McManaway, an adjacent farmer, and Bill Gibbs, a local fisherman (*pers. comm.*, Dec 2002), have no memory of seeing goats on this island in the 1960s and early 1970s. A cannabis drug bust on 2 April 1985 terminated large-scale cannabis cultivation on the adjacent mainland at Waterfall Bay and also on Te Pani. Presumably the illegal cultivators would have eliminated any surviving goats. On the back of an 1894 Henry Winkleman photograph (see Fig. 3A) this island was referred as 'Pittar Is', after the Pittar family (originally from France) that lived at Rosalie Bay, and the bay is named after one of the Pittar girls (Michael Pittar *pers. comm.*, Apr 2003).

The lower part of the island is steep and is mainly bare andesitic rock, but the upper third has more gentle contours and is well clothed in kanuka forest. We landed on the NE side (away from the swell), which is mainly steep rock with low vegetation in cracks or ledges. Access to the top was difficult and only one member (EC) reached the summit area. Evidently, there is an easier access route via a crack in the rock from the southern side (K. Parsons *pers. comm.*, Nov 2002), but the SW swell prohibited us from landing on that side. Deep water separates the island from Great Barrier.

The summit forest canopy, covering >50m diameter, was pure open kanuka c.8m tall, and with a dominant ground cover of sward sedge (*Lepidosperma laterale*) c.1m tall. The shrub layer was sparse in most places, but mapou (*Myrsine australis*) was locally common, with occasional plants of hangehange, mahoe (*Melicytus ramiflorus*), akeake (*Dodonaea viscosa*), rangiora (*Brachyglottis repanda)*, and single individuals of akepiro (*Olearia furfuracea*) and a *Pseudopanax* hybrid. A few seedlings of kohekohe (*Dysoxylum spectabile*) and puriri (*Vitex lucens*) were present, but no adults were seen. Along the northern boundary of the plateau kanuka forest, pohutukawa 8-10m tall were common and occasional coastal maire (*Nestegis apetala*) were present amongst the kanuka. Below this zone were scattered low shrubs of kanuka, akeake, koromiko (*Hebe pubescens* subsp. *rehuarum*), and bracken (*Pteridium esculentum*), exotic grasses and bare rock. The bare rock increased in amount and steepness from about half way down and woody plants were absent or much reduced below this level.

Vertebrate fauna

Neither petrel burrows nor evidence of goats were seen. The close proximity to Great Barrier and the apparent lack of karo suggests that rats are probably present.

Motu Tohora (Rabbit Island) (Fig. 4)

The name 'Rabbit Island' relates to a few pet rabbits, belonging to the Blackwell children, being released by their parents on the island in the 1920s because the children were neglecting them (Alice Borich *pers. comm.*, Nov 2002), and from then on the island being known for its feral rabbits (present at least until the late 1930s) (George Mason *pers. comm.*, Dec 2002). There was no evidence of rabbits being present during our visit, but evidently there was old rabbit sign (scratchings and old droppings) around 1970 (Bill Gibbs *pers. comm.*, Dec 2002). John Frieswijk (*pers. comm.*, Nov 2002) caught a 220lb pig on the island when he was a boy (c.1975); evidently fishermen had liberated 2 young pigs there several years previously. Apparently at low tide the pigs used to feed in the inter-tidal zone, especially on kina (sea-eggs). The fate of the second pig is unknown. Gordon Osborne roughly farmed the island up until 1956 with at least 20 head of sheep and harvested half a bale of hay/year from the island (Bill Frieswijk *pers. comm.*, Nov 2002) and in 1956 the island was roughly half cleared and half tea tree which had been kept open by annual burning. There is a spring-fed stream on the island that maintained the stock (John Frieswijk *pers. comm.*). Motu Tohora has not been burnt since 1956 (B. Frieswijk *pers. comm.*, Nov 2002).

We landed on the NE side, walked a short distance of the foreshore, then to the summit and returned via a small gully back to the NE coast. This island was the largest (Table 1) and had the more gentle contours than the other two islands visited. The upper two-

thirds was covered in continuous kanuka canopy 5-8m tall on the lower slopes, reaching 10-12m tall near the summit. The lower third on the NE side possessed large swards of harakeke, patches of bracken, kanuka and manuka, grassland, the occasional pohutukawa and low eroding coastal cliffs.

The understorey of the (>46 year-old) kanuka forest was: abundant mapou, locally common rangiora 1-6m tall and *Coprosma rhamnoides*. Near the summit the canopy was a little open with hound's tongue fern (*Microsorum pustulatum*) on the ground, ponga (*Cyathea dealbata*) (2 alive and 6 dead standing trunks). Mid-slope were six taraire (*Beilschmiedia tarairi*) and one pigeonwood (*Hedycarya arborea*) seedlings (no adults seen of either spp.); and a single wharangi (*Melicope ternata*) sapling (4m tall).

Near the coast in a small gully with a trickle of water were whau (*Entelea arborescens*), mamaku (*Cyathea medullaris*), and a dense sward of harakeke with clumps of *Pteris comans* and kiokio (*Blechnum novae-zelandiae*). At the head of the harakeke sward were large clumps of pampas grass (*Cortaderia selloana*) occupying c.5m x 10m and locally dense patches of Mexican devil (*Ageratina adenophora*) (only scattered individuals seen elsewhere on the island).

The herbarium voucher specimens collected by Ian McFadden in October 1984 add one native fern and 14 native dicots to the flora. Two-thirds of these additions were seen on at least one of the other two islands surveyed (see Appendix 1). The records of Bec Stanley and Keri Neilson add a further two native dicots, one native monocot and one naturalised dicot.

Vertebrate fauna

No petrel burrows were seen, but by the summit there were depressions - perhaps old collapsed petrel burrows? Also in this area were small depressions in the litter c.2cm diameter and 3-4cm deep, possibly made by rats (kiore or ship rats) or mice (Graeme Taylor *pers. comm.*). Two moko skinks (*Oligosoma moco*) and possibly one copper skink were observed on the island by Bec Stanley (*pers. comm.*) in March 1998. Because of its close proximity to Great Barrier Island, its past farming history and its apparent lack of karo it is likely that rodents (especially ship rats) are present. In fact the remains of a dead rat (*Rattus* sp.) were observed on the island (Bec Stanley *pers. comm.*) in March 1998.

Threatened and local species

Although no new species were found for the Great Barrier Ecological District (cf. Cameron *et al.* 2002), six native species with a relatively limited distribution on Great Barrier Island were present on the Rosalie Bay islet, and another three on Te Pani. Based on the specimens in AK herbarium and *pers. ob.* the distribution within the Great Barrier Ecological District of these nine species with limited distribution is listed below. National and regional conservation status follows de Lange *et al.* (1999) (see below), and the koromiko status follows that recommended by Bayly *et al.* (2003).

Distribution of the threatened and local species throughout Great Barrier

Asplenium haurakiense – islands and islets of Great Barrier, and one collection from a headland by Whangapoua Beach (AK 199922); occasional on Rosalie Bay islet;

coastal mahoe (*Melicytus novae-zelandiae*) – absent from Great Barrier, confined to its islands and islets, apart from 2 recent records from Rosalie Bay (AK 246493) and Harataonga (AK 280517) which the seed presumably was bird-dispersed from adjacent islets; abundant on Rosalie Bay islet;

coastal maire (*Nestegis apetala*) – confined to the islands/islets and northern Great Barrier (northern Te Paparahi); occasional as small trees north edge of plateau forest on Te Pani;

koromiko (*Hebe pubescens* subsp. *rehuarum*) – a recently described endemic subspecies to Great Barrier (see Bayly *et al.* 2003); common on island off northern tip of Great Barrier (goat free - see Wright & Cameron 1985), present on Broken Is, central Great Barrier and near Tryphena; locally common in cracks on steep N-facing cliffs of Te Pani (difficult for goats to reach); National conservation status: Naturally Uncommon (Range Restricted);

large-leaved milk tree (*Streblus banksii*) – absent from Great Barrier, confined to its islands and islets; locally common 1-8m tall on Rosalie Bay islet; National conservation status: Declining;

Picris burbidgei – confined to islands and islets of Great Barrier (especially on the western side), except for a single collection from Mt Heale (AK 253965); scarce on forest edge on Te Pani; National conservation status: Threatened (Endangered);

Senecio repangae – only 3 other Great Barrier collections known: Rangiwhakaea Bay (E.K.C. 1990 AKU 13982), Rosalie Bay (AK 199924) (seed presumably from Rosalie Bay islet), and central Great Barrier (AK 253976); occasional on Rosalie Bay islet; National conservation status: Naturally Uncommon (Range Restricted);

tawapou (*Pouteria costata*) – scarce on Great Barrier coast, mainly on islands and islets; locally common as small trees and saplings on Rosalie Bay islet, and also collected on Motu Tohora by Ian McFadden in 1984;

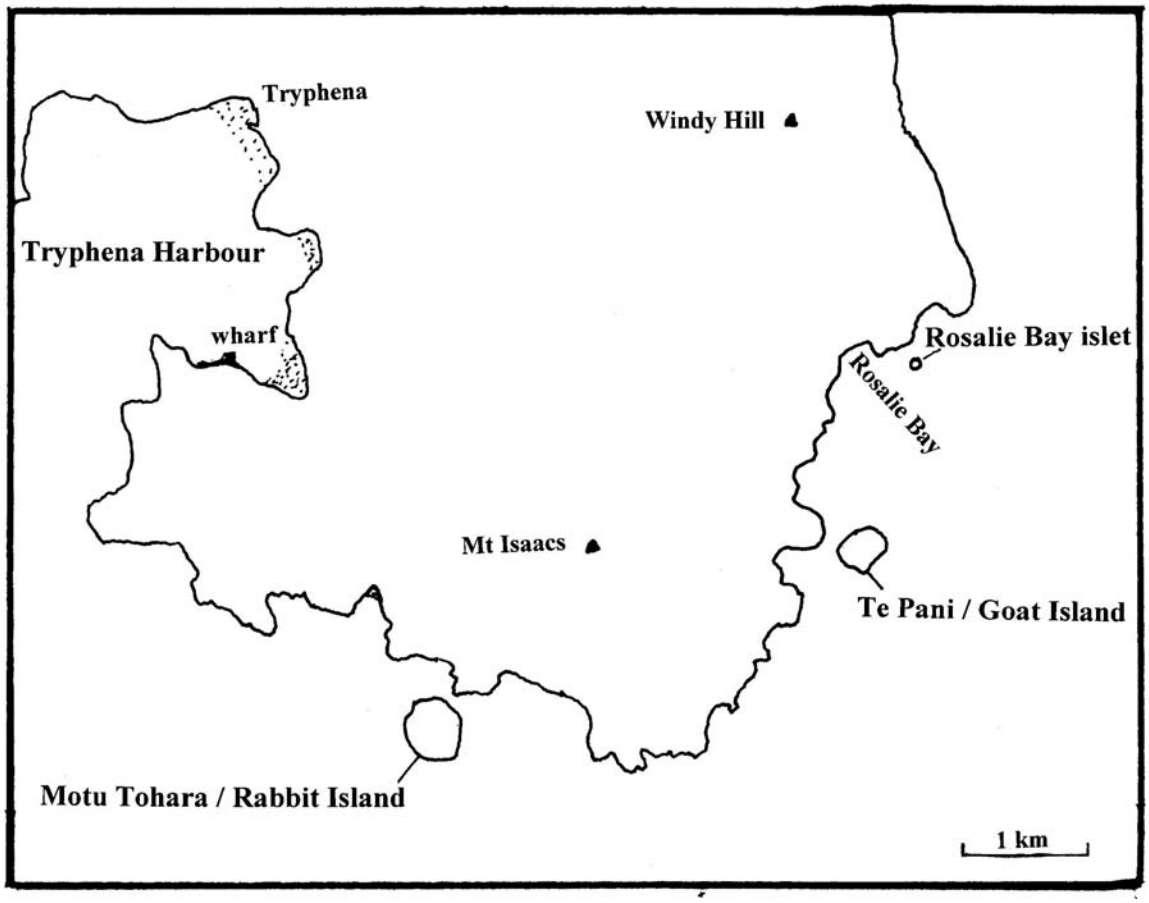

Fig. 1. Location of three islands visited off SE coast of Great Barrier Island.

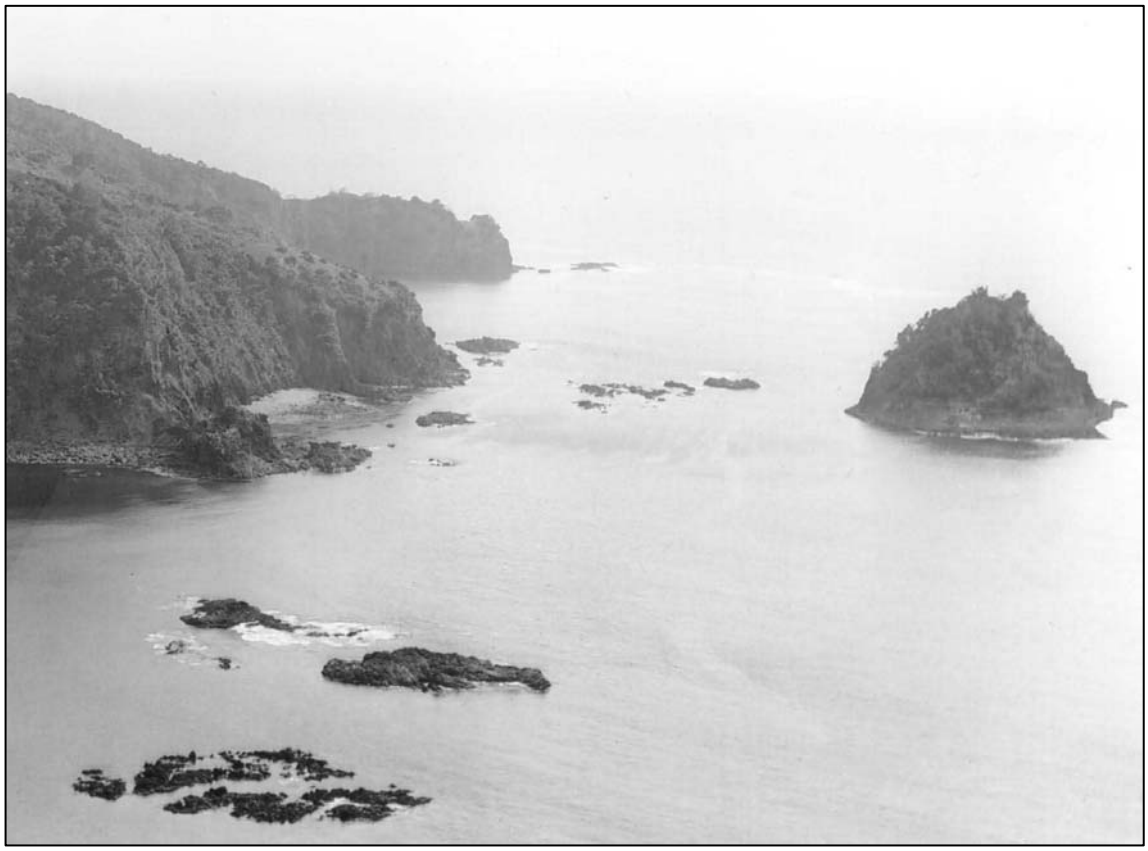

Fig. 2. Rosalie Bay islet 2A: Looking NE from south of Rosalie Bay near low tide, note the reefs. By Henry Winkleman ?1895. Auckland Museum Pictorial collection neg 1063.

Fig 2B: Looking E, Rosalie Bay orchard with islet behind, note how extensively farmed this area was at that time. By Henry Winkleman 1895. Auckland Museum Pictorial collection neg

Fig 2C: Rosalie Bay islet; looking E from Rosalie Bay beach. Photo: 11 Apr 2000.

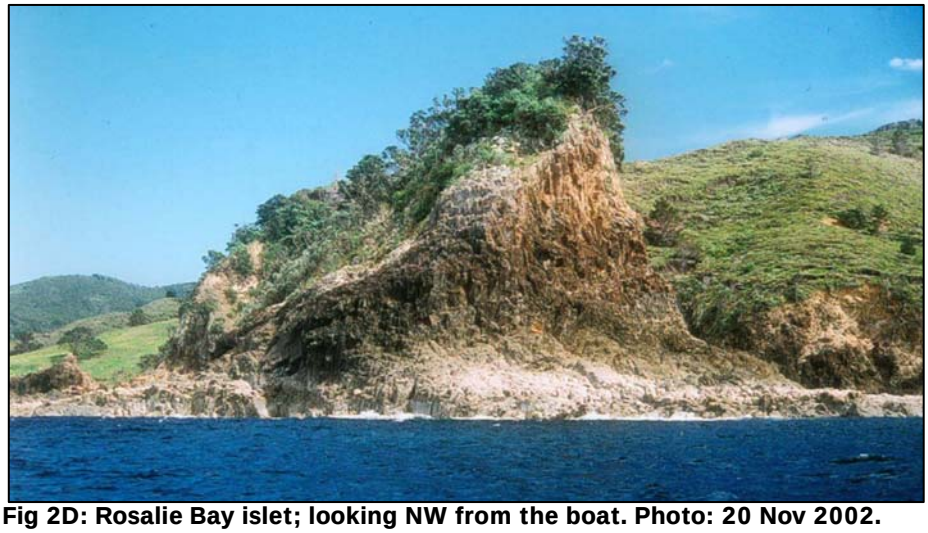

Fig 2D: Rosalie Bay islet; looking NW from the boat. Photo: 20 Nov 2002.

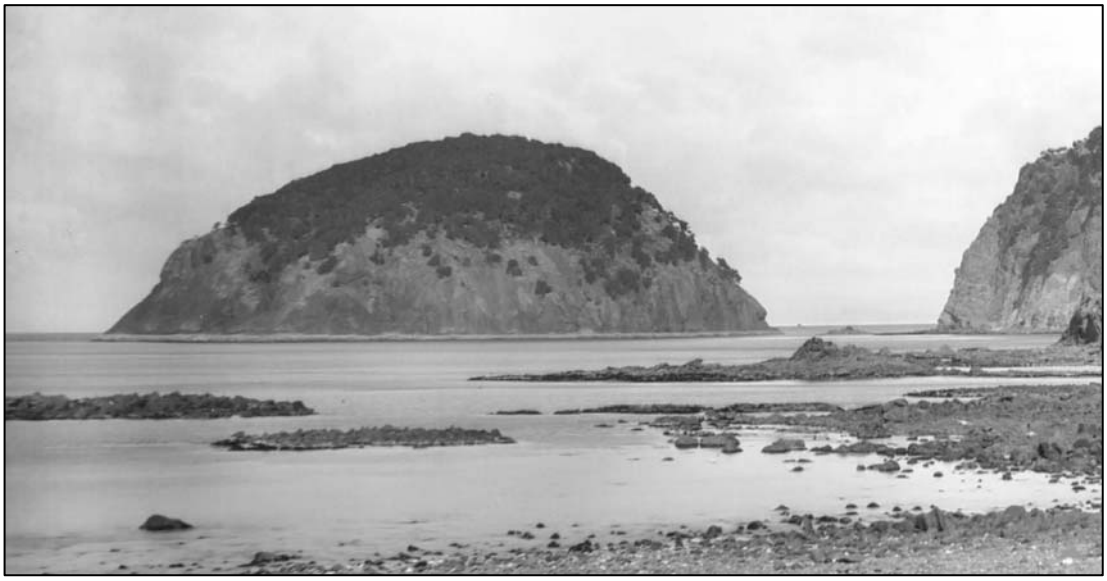

Fig. 3A. Te Pani or Goat Island (island left, headland on right): Looking S from Rosalie Bay. By Henry Winkleman 1894. Auckland Museum Pictorial collection neg. 1202.

Fig 3B: Te Pani; looking SW from the boat. Photo: 20 Nov 2002.

Fig. 4. Motu Tohora or Rabbit Island at speed. From N side. Photo: 20 Nov 2002.

Trisetum arduanum – appears to be the regional stronghold of the species; locally common throughout the rocky coastline of Great Barrier and associated islands, and one inland collection from Mt Heale (AK 280950); local on Rosalie Bay islet; Regional conservation status: Declining.

Discussion

Two of the islands (Te Pani & Motu Tohora) were dominated by kanuka, indicating that they have been burnt in the past. The last fire on Motu Tohora was in 1956 and judging from the slightly shorter kanuka stature but increased exposure of the summit plateau forest on Te Pani, the last fire there was probably around a similar time. Comparing the vegetation of Te Pani in the 1894 photograph (Fig. 3A) with the present day situation (Fig. 3B) shows that in 1894 the vegetation was of slightly less stature and cover than present day, reflecting that it has had a history of being burnt. Past fires, goats, and cannabis cultivation on Te Pani, and fires, rabbits and sheep on Motu Tohora have severely reduced the diversity of canopy and understorey species and has induced the dominant sward sedge forest ground cover on Te Pani, and the low diversity of woody understorey species (especially large-leaved species) on both Te Pani and Motu Tohora. The presence of seedlings of otherwise apparently absent large-fruited canopy trees (kohekohe, pigeonwood, taraire & puriri) suggests that kereru (native pigeon) are visiting these two islands. Although McFadden's 1984 taraire voucher (AK167013) appears to come from an adult tree, the taraire seedlings we saw were not associated with any adults.

Only a small part of Te Pani and Motu Tohora was surveyed (from one part of the coast, up to the summit and returning via a similar route), and including the 20 additions from Ian McFadden and Bec Stanley, I estimate that only some 70% of the flora is recorded for these two islands (Appendix 1). However, a larger percentage of the area of the much smaller Rosalie Bay islet was covered and probably 90% of its flora was recorded.

Although 25% of the combined flora of the three islands is comprised of naturalised species (Table 2), only two of these are considered to be environmental weeds. All the others are fairly insignificant herbaceous species. The 2 weed species are: Mexican devil which was scattered under the kanuka on Motu Tohora, and locally common at the top of a small harakeke-filled gully; and pampas grass which was occasional in open areas on northern side and locally common by small harakeke-filled gully on Motu Tohora. Control of these species, especially the latter, is desirable.

The presence of regenerating large-leaved milk tree, coastal mahoe and nesting grey-faced petrels would usually suggest that an island is rat-free or rats have not been present for a long time. It is unlikely that ship rats have recently arrived on Rosalie Bay islet because ship rats have probably been on the main Great Barrier Island since the 1860s (Ian Atkinson *pers. comm.*) and kiore (*Rattus exulans*) would have most likely been present in pre-European times. Both these rat species are still present on Great Barrier and Rosalie Bay islet is well within the swimming range of both species. Therefore on such a small islet, perhaps it is a 'boom and bust' cycle with the rats on the islet, with the surviving biota having a chance to reproduce during the 'bust' periods.

In terms of its vascular flora and undisturbed nature, the Rosalie Bay islet is the most important of the three islands. Also it was the only islet of the three where petrels were seen nesting. But the other two islands are regenerating well and they are all adjacent to a good native seed source (main Great Barrier Island) and therefore their plant diversity should increase with time. However, all three islands would benefit from rodent management, which would assist the regeneration (including the unusual woody species), nesting petrels, forest birds (very few seen during our visit), lizards, insects and other invertebrates.

Acknowledgements

Ngati Rehua Ngati Wai ki Aotea Trust Board for supporting this survey; Ian McFadden and Graeme Taylor for identifying the rat droppings, petrel feathers and egg shell from Rosalie Bay islet; Bec Stanley for her observations from a brief visit to Motu Tohara with Keri Neilson in 1998; Simon Chrisp (NZ Herald) tracing the press releases of the 1985 cannabis bust; Gordon Maitland (Auckland Museum) for locating historical photographs; Rhys Gardner and Peter de Lange for confirming the identity of the some of the herbarium specimens collected; Don Armitage for local contacts on Great Barrier and helpful local information; the following Great Barrier residents for historical information – the late Alice Borich (nee Blackwell), Bill Gibbs, Bill and John Frieswijk, Ivan McManaway, George Mason and Bob Whitmore; Michael Pittar of Te Puke for information on the Pittar family; Kevin Reynolds and Dave 'Red' Geck of the coast guard for safe transportation; John Early, Rosemary Gilbert, Hillary McGregor and Zara Ngawaka Walker for field assistance; and Little Windy Hill Company for excellent accommodation.

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Appendix 1. Vascular flora for the 3 islands off the SE coast of Great Barrier Island.

[1] = voucher specimen in Auckland Museum herbarium (AK)
* = naturalised species
a = abundant
c = common
o = occasional
l = local
s = scarce (<5 specimens seen)
McF = collected by Ian McFadden on 15 Oct 1984, not seen during 2002 survey
S&N = recorded by Bec Stanley & Kei Neilson on 12 Mar 1998 (W side of island only), not seen during 2002 survey

Species number (= native taxa + naturalised taxa)	Rosalie	Te Pani	Motu Tohora	Herbarium voucher[1]
Ferns & Fern allies (18 + 0)				
Adiantum cunninghamii			McF	167006
A. hispidulum		o	lc	167008
Asplenium flaccidum			s	
A. haurakiense	o			280612
A. oblongifolium	o	o	o	167007
A. polyodon			s	167010
Blechnum novae-zelandiae			l	
Cheilanthes sieberi		lc		
Cyathea dealbata			l	
C. medullaris			l	
Doodia australis		o	o	167005
Huperzia varia		s		
Microsorum pustulatum	o	o	lc	
Polystichum richardii		o	o	167009
Pteridium esculentum		lc	lc	167003
Pteris comans			s	
P. tremula			o	167004
Pyrrosia eleagnifolia	l	o	o	167011
Dicots (63 + 24)				
Acaena anserinifolia			McF	167039
*Ageratina adenophora**			lc	
Anagallis arvensis s.s.*	lc	o	o	
Apium prostratum subsp. *prostratum* var. *filiforme*	o		McF	167045
Beilschmiedia tarairi			l	167013
Beilschmiedia tawa			McF	167012
Brachyglottis repanda		o	la	167014
Cardamine debilis	o			280627
*Centaurium erythraea**		o		
*Cerastium glomeratum**	c			280613
*Cirsium vulgare**		s	?S&N	
Clematis paniculata		s	S&N	
*Conyza albida**	c	o	o	167040
Coprosma arborea			o	
C. lucida			McF	167028
C. aff. *macrocarpa*	o	o	o	167026-27
C. repens	c	lc	o	167025

C. rhamnoides	o	o	lc	167029
C. X*cunninghamii*			McF	167030
Corynocarpus laevigatus	l		McF	167024
Cotula australis	lc			280630
Crassula sieberiana	lc	o		
*Crepis capillaris**			o	
Cyathodes juniperina			lc	
Dichondra repens	lc	o	o	167044
Disphyma australe	lc	o	McF, S&N	167046
Dodonaea viscosa		lc		280378
Dysoxylum spectabile		s	McF	167016
Einadia trigonos	l			
Entelea arborea			l	
*Euphorbia peplus**			l	
*Gamochaeta spicata**		o		
Geniostoma rupestre	l	o	McF	167022 & 280621
Haloragis erecta			l	
Hebe pubescens subsp*. rehuarum*		lc		280623
H. stricta			S&N	
Hedycarya arborea			s	
*Hypochoeris radicata**	o	o		
Kunzea ericoides s.lat.		la	a	
*Leontodon taraxacoides**		o	o	
Leptospermum scoparium			o	167018
Leucopogon fasciculatus		o	o	167017
Lobelia anceps	o			
*Lotus angustissimus**		o		280631
*L. suaveolens**			lc	
Macropiper excelsum s.s.			McF	167015
M. excelsum subsp*. excelsum* x *M. excelsum* subsp*. peltatum*	l			280624
Melicope ternata			s	
Melicytus ramiflorus	o	o	o	
M. novae-zelandiae	a			280615
Metrosideros excelsa	c	o	lc	167019
*Modiola caroliniana**		o		
Muehlenbeckia australis			S&N	
M. complexa		l		
Myrsine australis	lc	lc	la	167021
Nestegis apetala		o		280633
Olearia furfuracea		s		
*Orobanche minor**		s		
Oxalis exilis	o		o	
O. rubens		o		
Parietaria debilis	lc			280616
Pelargonium inodorum			McF	167041
Peperomia urvilleana	lc	o	McF, S&N	167043
*Phytolacca octandra**	o		o	
Picris burbidgei		s		
Pimelea aff*. urvilleana*		o	McF	167042
Pittosporum crassifolium	lc			
*Polycarpon tetraphyllum**		o	o	
Pouteria costata	lc		McF	167020
Pseudognaphalium luteoalbum	o			
Pseudopanax lessonii	l	l	l	
P. crassifolius x *P. lessonii*		s		

*Sagina apetala**		o	o	
*S. procumbens**	lc		o	
Samolus repens	lc	lc	lc	167048
Sarcocornia quinqueflora	lc		o	
Scandia rosifolia		l		280618
*Senecio bipinnatisectus**			s	
S. hispidulus		o	o	
S. lautus	c	o		167049
S. repangae subsp*. repangae*	o			280625
*Silene gallica**		lc		
Solanum americanum	o		o	
*Sonchus oleraceus**	o	o	o	
Spergularia media	l			
*Stellaria media**	lc			280628
Streblus banksii	lc			280614
Tetragonia implexicoma	lc			
*Trifolium dubium**			o	
Vitex lucens		s	McF	167023
Monocots (26 + 11)				
*Aira caryophyllea**		o		
Arthropodium cirratum	l	l	o	167037
Astelia banksii	o		o	167034
*Briza maxima**		s		
*B. minor**	l			
Carex breviculmis		o	o	
C. flagellifera	lc	o	o	
C. spinirostris			o	167036
C. testacea	lc			
Cordyline australis		s	s	
*Cortaderia selloana**			lc	
C. splendens	l		o	
Cyperus ustulatus			l	167031
*Dactylis glomerata**		o	o	
Dianella nigra		o	o	167035
Gahnia lacera	o	o	o	167033
Ficinia nodosa	o	o	o	167032
Freycinetia banksii			S&N	
Isolepis cernua	lc		o	167047
Lachnagrostis billardierei			o	
L. littoralis subsp*. littoralis*	la	lc		280634 & 280636
Lepidosperma laterale		la		
Microlaena stipoides			o	
Morelotia affinis		o		
Oplismenus hirtellus subsp. *imbecillis*	o	lc	lc	167038
*Paspalum dilatatum**		o	o	
Phormium tenax	c	c	la	
Poa anceps	o	o	o	
*P. annua**	o			280632
*P. pratensis**			o	
Rytidosperma biannulare	o	o		280626
*R. racemosum**		lc	lc	
*Sporobolus africanus**		lc	o	
Thelymitra ? longifolia		s		
Trisetum arduanum	l			280629
Uncinia uncinata			lc	
*Vulpia bromoides**		o		