

Vascular flora of two high-tide islets on Medlands Beach, eastern Great Barrier Island

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Fig. 1. Stone Jetty from Medlands Beach showing the connecting rocky tombolo and flat top of the islet crowned by a rim of pohutukawa; looking NW, c. 2 hours after high tide. Unless otherwise stated, all photos by the author on 31 Oct--1Nov 2015.



Fig. 2. Stone Jetty looking NE, approaching low tide.



Fig. 3. Oblique aerial view of Stone Jetty and its associated intertidal reef near low tide, SE end of Medlands Beach.

Introduction

In January 2015 I surveyed the flora of an islet in the middle of Medlands Beach, a surf beach, in Oruawhoro Bay on eastern Great Barrier Island: Oruawhoro (Memory Island) (c. 0.17 ha, 15 m asl), recording 78 vascular species, of which 53% were indigenous (Cameron 2015). On 31 October 2015 I had the opportunity to briefly revisit Oruawhoro and also survey another nearby, high-tide islet at the SE end of Medlands Beach, locally known as "Stone Jetty" or Boatshed Island (Figs. 1, 2).

Stone Jetty (Boatshed Island)

The islet is situated on the SE end of Medlands Beach, joined to Great Barrier Island by a rocky tombolo c. 35 m long, and can be accessed with dry feet except at high tide (Lat. 36° 16' 9" S, Long. 175° 30' 23" E). The islet is c. 60 m long by 35 m across, c. 0.14 ha, with a flat-summit c. 8 m asl. It is surrounded by a wider intertidal storm platform c.115 m long by 85 m across (Figs. 3, 4) that Taylor (1989) included in his 0.4 ha area for the islet.

Geology: "The whole Medlands area is part of the Coromandel Group of late Miocene andesite rocks and photos of the islet and causeway show it to be composed mostly of laharcic andesite breccia" (B.W. Hayward pers. comm., after viewing my photographs).

Archaeological evidence: "The rocky islet has five pits cut into the top of the islet on artificial terracing; the midden is located around the base of the islet, especially prominent in the vicinity of the boatshed.....overgrown with tussock, flax, lupins,



Fig. 4. Stone Jetty from the east. Photo taken by John Medland, in the 1910s--1930s; supplied by Lynda Macalpine (nee Medland).



Fig. 5. Stone Jetty with the Medland boatshed. Photo taken by John Medland, and supplied by Lynda Macalpine (nee Medland).

cactus [*Aloe maculata*], and pohutukawa trees; in this state the pits are difficult to distinguish" (Butts et al. 1978). Other evidence of past Maori occupation in the general area is shown by the prominent pa on the ridge just southeast of Stone Jetty, and midden material eroding out of the adjacent sand dunes.

Part of the remaining concrete foundation of the Medland's boatshed is still visible on the low landward side of the islet on a small rocky flat (artificial?). The boatshed (Figs. 4, 5) was built c. 1912 for the Medland's kauri launch, *Ngarita*, which was built by John Medland (a carpenter like his father) with the help of his brothers, and launched from Great Barrier Island on 17 December 1912 (Lynda Macalpine pers. comm.). Apparently the boatshed was still present during the archaeological survey in 1978 (Butts et al. 1978).

The Vegetation

As with Oruawharo the tallest vegetation of Stone Jetty is scattered pohutukawa (*Metrosideros excelsa*) on the upper slopes where about 12 trees, c. 8 m tall, ring the flat-topped islet summit on the cliff-tops. Smaller pohutukawa occur lower down on the steep rocky slopes. Scattered tussocks of flax (*Phormium tenax*) are present throughout, and in places they are associated with shrubs of *Coprosma rhamnoides*. The main vegetation is grassland, quite lush, mainly exotic species (e.g. *Aira caryophyllea*, *Anthoxanthum odoratum*, *Bromus hordeaceus*, *Sporobolus africanus*) on the landward slopes and more sparsely on the exposed summit. Soap aloes (*Aloe maculata*) dominates part of the lower eastern slopes of the grassland, forming swards (Fig. 6), and is also doing particularly well along the cliff edges.

The creeping low shrub *Leucopogon fraseri* dominates the open summit area (Fig. 7) in association with *Aira caryophyllea*, *Carex inversa*, *Lotus suaveolens*, *Ornithopus pinnatus*, *Plantago lanceolata*. More locally, *Geranium retrorsum*

(flowering) and *Freesia refracta* occur. Many of these small plants were starting to dry up from their exposed locality on thin soil.

The vegetation adjacent to Stone Jetty, on what appeared to be a consolidated dune, is dominated by a low cover of pohuehue (*Muehlenbeckia complexa*) along with scattered plants of *Calystegia soldanella*, buffalo grass (*Stenotaphrum secundatum*), *Bromus diandrus*, *Ficinia nodosa*, *Meliolotus indicus*,



Fig. 6. The succulent, soap aloes (*Aloe maculata*), dominated the grassland on the east side of the islet.



Fig. 7. Summit of Stone Jetty, low vegetation on NW side dominated by *Leucopogon fraseri*.

Table. Vascular flora totals for the two high-tide islets on Medlands Beach.

Plant group	Oruawharo	Stone Jetty	Totals
Native ferns	6	5	7
Native dicots	21	15	25
Native monocots	16	10	19
Naturalised dicots	16	23	30
Naturalised monocots	23	15	28
Totals	82	68	102
% native	52%	48%	50%

Hypochaeris radicata and fleabane (*Conyza sumatrensis*). The first three of these species were not observed on Stone Jetty.

The early photos (Figs. 4, 5) indicate that little has changed in the woody vegetation of the islet in over 100 years.

The Vascular Flora

The combined flora of the two islets totals 102 species, 50% native, with 40 species in common (see Table and Appendix). The islets are of similar area but Oruawharo is nearly twice as tall as Stone Jetty. Both islets contained several species that would have been planted there.

Stone Jetty

The vascular flora totals 30 native and 38 exotic species (44% native) (see Table, Appendix). All were wild plants except for three exotic species that were most likely planted on the island and have now naturalised – similar to the situation on Oruawharo. They were probably planted by the same person(s) (see Cameron 2015). One of the suspected-planted species, soap aloe, is widespread on both islets, and must have been originally planted there many decades ago. The freesia (*Freesia refracta*) covered a few square metres in the low grassland / *Leucopogon fraseri* near the summit; and a lily (*Lilium ?regale*) 75 cm tall was in bud in the same area restricted to two clumps – possibly it hasn't spread since being planted?



Fig. 8. Oblique aerial view of Oruawharo (Memory Island) and its associated intertidal reef near low tide, middle of Medlands Beach.

Oruawharo (Memory Island) (Fig. 8)

During the second visit to Oruawharo I added four new records to the island's flora: *Geranium retrorsum* (patch over 2 x 1m) (Fig. 9); *Microtis unifolia* (a single plant); *Nerine* sp. (a bulb with coriaceous basal leaves); and *Oxalis purpurea* (both sides of the upper track for >5 m, and lining one of the old storage pits) (see Appendix). I can only presume that I previously overlooked the *O. purpurea* in January because it had died down.

Tetragonia implexicoma was able to be confirmed by the fruit; and I observed that all the *Watsonia meriana* had cream-coloured flowers (Fig. 10). I was unable to confirm the earlier records by others of Scarborough lily (*Cyrtanthus elatus*) and *Salvia officinalis*.

Bryophytes

I previously overlooked the collection of eight mosses deposited in the Auckland Museum herbarium (AK) from Oruawharo by Peter de Lange and one of his sons in 2010: *Bryum argenteum*, *Fissidens asplenioides*, *F. megalotis*, *Macromitrium brevicaulis*, *Microbryum davallianum*, *Thuidium furfursum*, *?Trichostomum sciaphila*, *Weissia controversa*, and one liverwort, *Chiloscyphus subporosus*. On Stone Jetty the moss *Racopilum robustum* (AK 359513) occurred c.1 m asl on shallow soil over exposed rock, with lichens and the leafy liverwort, *Frullania squarrosula*.



Fig. 9. The threatened native herb *Geranium retrorsum*, amongst native and exotic grasses on Oruawharo.

Lichens

Lichens were common on both islets but not collected by me. I previously reported the 2004 lichen collections by Bruce Hayward on Oruawharo (Cameron 2015).

Seaweeds

The AK herbarium records show that the reef around Oruawharo has been a popular collecting site for seaweeds by: Peter de Lange and son (41 collections in 2010); Mike Wilcox (5 collections in 2013); and Bruce Hayward (16 collections in 2004) which were either from the Oruawharo reef or the rocks at the SE end of Medlands Beach [Stone Jetty]).

In October 2015 on the Stone Jetty reef the most obvious seaweed was the red alga which feels like cellophane when fresh, *Pyropia plicata* (AK 359483), which locally covered the exposed upper intertidal rocks (Fig. 11). It occurred with *Hormosira banksii* and a bright green *Ulva* sp. (AK 359487). Based on herbarium specimens in April 2010 and January 2013, *Pyropia plicata* was also common on the Oruawharo reef (AK 313097, 337358).

Fauna

Birds seen during my visit to Stone Jetty: welcome swallow, fantail, tui (visiting the flax flowers), pied shag (x3 roosting on reef), variable oystercatcher (on reef), and kingfisher holes in cliffs. Small burrows were present – rabbits? Ship rats would presumably visit the islet.

Discussion

In terms of conservation the presence on both islets of the Nationally Vulnerable *Geranium retrorsum* (de Lange et al. 2013) was the most interesting plant recorded. Its habitat of open stony ground on Stone Jetty (Fig. 7) is unlikely to change quickly unless the kikuyu grass (*Cenchrus clandestinus*) present by the boatshed foundations reaches that summit area. The lush grassy habitat on Oruawharo, with taller exotic grasses present, is likely to eventually shade out the geranium (Fig. 9).

The aggressive veldt grass (*Ehrharta erecta*) is likely to soon establish on Oruawharo because it is already present in the adjacent *Muehlenbeckia complexa* sand dunes to Oruawharo (AK 359488). It would be good to remove the aggressive environmental weeds from both of these high-tide islets before they spread any further. This would

include: soap aloe (*Aloe maculata*), *Banksia integrifolia*, pitted crassula (*Crassula multicava*), *Crassula tetragona*, *Oxalis purpurea*, *Cotoneaster glaucophyllus*, *Agapanthus praecox*, bushy asparagus (*Asparagus aethiopicus*) and *Watsonia meriana*.

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Fig. 10. *Watsonia meriana* starting to flower. It dominates much of the upper area of Oruawharo (Memory Island). All flowers were cream-coloured.



Fig. 11. The red seaweed, *Pyropia plicata*, dominated upper parts of the Stone Jetty reef.

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Appendix. Vascular plant list for two high-tide islets on Medlands Beach: Oruawharo (Memory Island) and Stone Jetty.

Key:

a = abundant
c = common
l = local
o = occasional

s = scarce (<5 plants seen)
x = recorded as present (but not seen by me)
V = herbarium voucher (AK)

* = naturalised species
** = suspected to be originally planted but most now well naturalised

Vascular plants	Oruawharo	Stone Jetty		
Ferns (7 + 0)				
<i>Adiantum aethiopicum</i>	c			
<i>Asplenium oblongifolium</i>	lc	o-lc		
<i>Doodia australis</i>	o	o		
<i>Doodia mollis</i>		l, V		
<i>Microsorium pustulatum</i>	o	o		
<i>Pteridium esculentum</i>	o			
<i>Pyrrosia eleagnifolia</i>	lc	o		
Dicotyledons (25 + 30)				
<i>Anagallis arvensis</i> var. <i>arvensis</i> *	o	lc		
<i>Apium prostratum</i>		s, V		
<i>Banksia integrifolia</i> *		s, V		
<i>Brachyglottis repanda</i>	o			
<i>Cakile maritima</i> *	s			
<i>Calystegia soldanella</i>	s			
<i>Centaurium erythraea</i> *	o			
<i>Cerastium fontanum</i> *		l, V		
<i>Cerastium glomeratum</i> *		l, V		
<i>Cirsium vulgare</i> *	l	o		
<i>Conyza sumatrensis</i> *		o		
<i>Coprosma rhamnoides</i>	lc	lc		
<i>Cotoneaster glaucophyllus</i> *	lc, V			
<i>Crassula multicava</i> **	la, V			
<i>Crassula tetragona</i> **	la, V			
<i>Crepis capillaris</i> *		o		
<i>Dichondra repens</i>	o	o		
<i>Disphyma australe</i>		s		
<i>Euchiton audax</i>	lc, V	l		
<i>Euchiton japonicus</i>		lc		
<i>Euphorbia peplus</i> *		l		
<i>Galium aparine</i> *		lc, V		
<i>Gamochaeta coarctata</i> *	o, V	s		
<i>Gamochaeta simplicicaule</i> *		?s, V		
<i>Geranium retrorsum</i>	l, V	lc		
<i>Haloragis erecta</i>	o			
<i>Hebe stricta</i> var. <i>stricta</i>	l, V			
<i>Hypochaeris radicata</i> *	o	o		
<i>Leontodon saxatilis</i> *		o		
<i>Leucopogon fasciculatus</i>	c	s		
<i>Leucopogon fraseri</i>	lc	la		
<i>Lobelia anceps</i>	l			
<i>Lotus suaveolens</i> *	o	lc		
<i>Lupinus arboreus</i> *		lc, V		
<i>Medicago nigra</i> *				o
<i>Melicytus ramiflorus</i>		s		
<i>Meliolotus indicus</i> *				l
<i>Metrosideros excelsa</i>		c		lc
<i>Muehlenbeckia complexa</i>		o		o
<i>Ornithopus pinnatus</i> *		l		o
<i>Oxalis purpurea</i> **		lc, V		
<i>Oxalis rubens</i>		s		
<i>Pimelea urvilleana</i>		l, V		
<i>Pittosporum crassifolium</i>		o		o
<i>Plantago lanceolata</i> *		o		lc
<i>Pseudopanax lessonii</i>				l
<i>Ranunculus parviflorus</i> *				l, V
<i>Salvia officinalis</i> **		x, V		
<i>Senecio hispidulus</i>		c		lc
<i>Senecio lautus</i>		l		lc
<i>Sonchus oleraceus</i> *		o		o-lc
<i>Tetragonia implexicoma</i>		s		
<i>Trifolium dubium</i> *		lc		o
<i>Trifolium repens</i> *				l
<i>Wahlenbergia vernicosa</i>		l		
Monocotyledons (19 + 27)				
<i>Agapanthus praecox</i> **		o		
<i>Aira caryophylla</i> *		lc		lc
<i>Aloe maculata</i> **		lc, V		la, V
<i>Anthosachne kingiana</i>		c, V		
<i>Anthoxanthum odoratum</i> *		lc		la
<i>Arthropodium cirratum</i>		lc		o
<i>Asparagus aethiopicus</i> 'Sprengeri' **		lc, V		
<i>Astelia banksii</i>				o
<i>Austroderia splendens</i>		o		
<i>Avena barbata</i> *		l		
<i>Axonopis fissifolius</i> *		l, V		
<i>Briza maxima</i> *		o		
<i>Briza minor</i> *		l		
<i>Bromus hordeaceus</i> *		o		lc
<i>Bromus willdenowii</i> *				o
<i>Carex breviculmis</i>		o		
<i>Carex inversa</i>				l
<i>Cenchrus clandestinus</i> *				lc
<i>Cordyline australis</i>		s		s
<i>Cortaderia selloana</i> *		s		o
<i>Cyperus albostriatus</i> *		lc, V		
<i>Cyrtanthus elatus</i> **		x		

<i>Dactylis glomerata</i> *	lc	o	<i>Oplismenus hirtellus</i>	l	
<i>Dianella latissima</i>	o	o	<i>Paspalum dilatatum</i> *	o	
<i>Dichelachne crinita</i>	o		<i>Phormium tenax</i>	o	lc
<i>Ficinia nodosa</i>	lc	o	<i>Poa anceps</i>	o	lc
<i>Freesia refracta</i> **		l, V	<i>Rytidosperma pilosum</i> *	o	o
<i>Lachnagrostis littoralis</i>	l, V		<i>Rytidosperma racemosum</i> *	o	
<i>Lachnagrostis billardiarei</i>	lc		<i>Rytidosperma unarede</i>	o	
<i>Lagurus ovatus</i> *	lc	l	<i>Sporobolus africanus</i> *	lc	lc
<i>Lilium ?regale</i> **		s, V	<i>Trisetum arduanum</i>	o, V	
<i>Lolium perenne</i> *		o, V	<i>Vulpia bromoides</i> *	lc	o
<i>Microlaena stipoides</i>		l	<i>Watsonia meriana</i> **	la, V	
<i>Microtis uniflora</i>	s	o	<i>Zantedeschia aethiopica</i> **	s, V	
<i>Nerine</i> sp. **	s				

Vascular flora of Grants Island (Motu Kauri), Mahurangi Estuary

Maureen Young

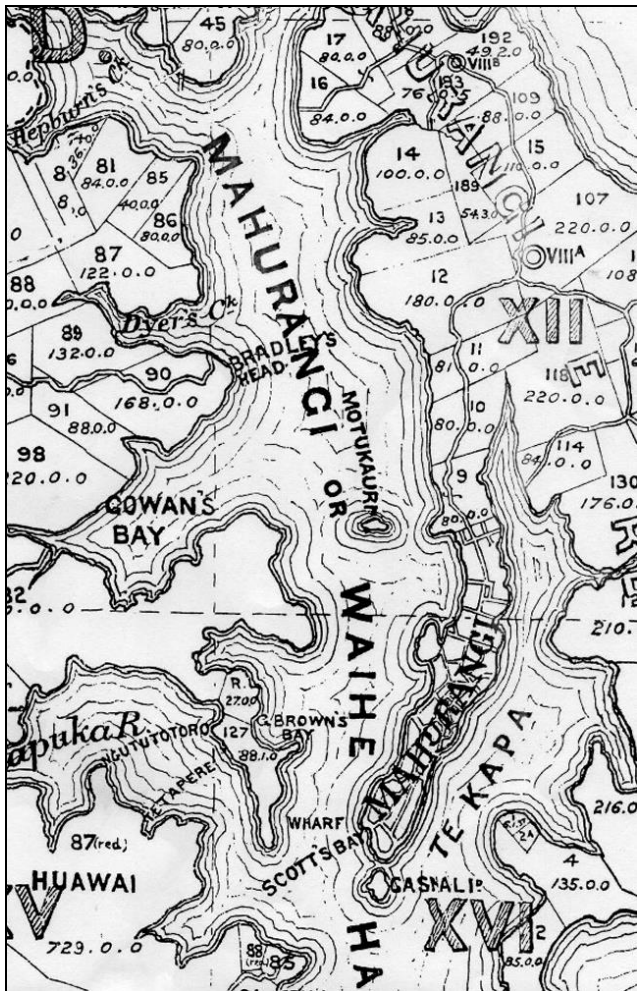


Fig. 1. Mahurangi Harbour and Motukauri (Grants Island), scanned from a photocopy of an old unidentified map in the Archives of the Warkworth & Districts Museum.

Introduction

While working as a volunteer at the Warkworth and Districts Museum I came across an old map of the Mahurangi River mouth showing a small islet named Cowdie Island. I have since seen maps where it is named Motu Cowdie or Motu Kauri (Fig. 1). I was intrigued that kauri (*Agathis australis*) would once have grown on what is now known as Grants Island (Fig. 2), a steep little islet topped by tall, rangy old pines (*Pinus radiata*). It made me wonder if there would now be a single native plant left on such an unpromising-looking site, so I twisted the arm of my friend, John Millett, and on 3 December 2015 he skippered me in his little red plastic dinghy the 2.5 km north from Scotts Landing.

The islet lies in the sheltered confines of the Mahurangi Harbour (Lat. 36° 28'S, Long. 174° 43' E), 500 m from the nearest point on the mainland, is <0.1 ha in area and reaches a height of c. 17 m asl. It has no government land title, so by default is probably open to an indigenous claim by Ngati Manuhiri.

Geology

Like the surrounding area this island was part of the Waitemata Basin, and the stratified layers of sandstone and mudstone have tilted to the east. Erosion of the soft stone is ongoing, aided by the falling of several large pines, and the crumbly litter so produced lies close to the land. The flat rock then extends to a wide wave platform that is exposed at low tide.