

Vascular flora of an islet, Oruawharo, Medlands Beach, eastern Great Barrier Island

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Introduction

The islet is situated in the middle of Medlands Beach (Lat. 36° 16' S, Long. 175° 29' 38" E), in Oruawharo Bay, on the eastern side of Great Barrier Island, exposed to the full force of the Pacific Ocean. Medlands Beach is one of the most popular swimming and surfing beaches on Great Barrier Island. The flat-topped islet covers 0.17 ha (islet mistakenly omitted by Taylor 1989 in his island register), it is nearly circular in outline with a diameter of c.47 m, reaches perhaps 15 m asl, and is partly protected by an intertidal rocky reef c.60 m wide on the ocean side (Fig. 1). This reef contains a popular natural pool, 'Mermaid Pool', where evidently at times you can have a dip protected from the surf. The islet 'sits' on the white sandy beach and it would only be an island near high tide. Some 25 m of beach separate the islet from the low-vegetated sand dunes running along the back of the beach.

The Maori name for the island is Oruawharo – named after a visit there by Ruawharo of the Takitimu canoe (Graeme Murdoch, pers. comm.). The islet is part of an application by Hillary McGregor (trustee of the Ngāti Rehua-Ngātiwai ki Aotea Trust Board) to bring the outer rocks and islands of Great Barrier into Customary ownership (<http://www.ngatirehuangatiwaikiaotea.co.nz/who-we-are/>).

Geology: the whole Medlands area is part of the Coromandel Group of late Miocene andesite rocks and the jointing suggests that the islet is an andesite lava flow or intrusion (B.W. Hayward pers. comm., after viewing my photographs).

Archaeological evidence: the steep-sided, terraced rock outcrop (the islet) has 15 pits dug into the rocky

terraces (Butts et al. 1978, Dodd 2008). Other evidence of past Maori occupation in the general area is shown by the pa sites at either end of Oruawharo Bay and midden material eroding out of the adjacent sand dunes.

The Medland family: the Medlands were one of the pioneering European families on Great Barrier, settling in the Medland area in the 1860s. Over 110 years ago, while as a local school girl, Grace M. Medland (1887-1983) and her sister planted: "...some of its [the islet's] defensive pits with flowers, some were already covered with a luxuriant growth of maiden hair fern [*Adiantum aethiopicum*]; we called this retreat: 'Memory Park'" (Medland 1971: p.37). Some of the exotic species present on the islet most likely date back to those early plantings and have since naturalised widely over the islet (see Appendix). In 1963, Grace, with the assistance of a young man, took it upon herself to turn the islet into a memorial to the Medland family by erecting a stone cairn on the summit (Medland 1971: p.111). Presumably at the same time (using the natural rocky contours and concreting the gaps) she created the steps up to the summit from the beach. The islet is known locally as "Memory Park", after a sign to this effect was erected there by Grace part way up the stone steps. The steep sides of the islet would make accessing the summit difficult without the present-day steps. The stone and concreted cairn c.1.2 m tall upon the summit (Fig. 2) which has been partly broken, used to have a marble plaque saying (Medland 1971: p.119):

"The pioneer Medland family loved this district, where they, finding waste, produced worth. Thomas Medland, first east coast settler 1864, died 1920, aged 78. Elizabeth Medland, died 1953, aged 100 years."



Fig. 1. Islet in middle of Medlands Beach, looking east, at about half tide. All images by the author, 29 Jan 2015.



Fig. 2. Cairn on the islet summit area with the vegetation kept open by visitor trampling. Looking WNW.



Fig. 3. Low ground cover on this steep SE side is nearly pure pitted crassula with small clumps of rengarenga, occasional flax and overtopped by pohutukawa trees.



Fig. 4. Margin of open summit area, looking NW. Plants include erect *Crassula tetragona*, bracken, watsonia and *Ficinia nodosa*.



Fig. 5. An erect stand of *Crassula tetragona* to 55 cm tall, with pohutukawa, on NW side.

Wonderful views of the ocean are attained from the top of the islet and this area is well-visited judging from the worn steps and summit area with open, rather trampled vegetation (Fig. 2), and informal tracks radiating to the cliff-tops in three directions. Railings associated with the steps were considered unsafe by the Council and were removed in 2003 or a little earlier (Linda McAlpine and Gary Wilton pers. comm.).

Botanical visits: when staying at Medlands on 29 January 2015 I had some spare time and was drawn to have a look at this very accessible islet. It turned out to be botanically so interesting that I spent some three hours recording its vascular flora.

Later, when searching the Auckland Museum herbarium (AK) records, I discovered that Bruce Hayward had collected lichens there in 1984 and Peter de Lange had collected two vascular plants there in 1989. Apart from a brief mention of the vegetation in an Archaeological Site Record in 1978 I'm unaware of any previous publications on the botany of the islet.

The Vegetation

The woody vegetation is dominated by native species, so it was a surprise on close inspection to discover that the ground cover is dominated by exotic species. The only trees are pohutukawa (*Metrosideros excelsa*) which form a broken canopy to c. 7 m tall (Figs. 1, 3). Shrubs of mingimingi (*Leucopogon fasciculatus*) to 2 m tall are the next most frequent woody plants, followed by rangiora (*Brachyglottis repanda*) and youthful karo (*Pittosporum crassifolium*) both species to c. 2 m tall; koromiko (*Hebe stricta*) to 80 cm tall was locally common and there was a single mahoe (*Meliccytus ramiflorus*) <1 m tall. These native shrubs are more pre-dominant on the landward side of the island. Cotoneaster (*Cotoneaster glaucophyllus*) to 1.2 m tall was the commonest woody exotic plant, and occurred mostly in the open summit area.

On the margin of the open summit vegetation occurs low *Leucopogon fraseri* with grasses; taller bracken (*Pteridium esculentum*), *Watsonia meriana* (not the bulbiferous cultivar), *Ficinia nodosa*, cotoneaster with *Crassula tetragona* (Fig. 4); and taller mingimingi and occasional flax (*Phormium tenax*) behind that, all partially over-topped by pohutukawa. The exotic succulents in places dominated the ground cover: *Crassula tetragona* (Fig. 5) being the tallest; pitted crassula (*Crassula multicava*) (Fig. 6) was abundant and on the shaded SE side of the islet where it formed a dense sward on the steep face covering over 8 x 8 m (Fig. 3); and soap aloe (*Aloe maculata*) in rocky outcrops was locally dense (Fig. 7). Grasses were common and present throughout.

The Vascular Flora

Some nine of the exotic species are suspected to be part of the early plantings by Grace and her sister (see Appendix). Apart from the arum lily, Scarborough lily (*Cyrtanthus elatus*) and *Salvia officinalis*, all the other suspected plantings were well established over most of the islet including on steep slopes where they were unlikely to have been planted. Consequently they have been treated in this account as naturalised species.

The total vascular flora numbers 78 species, of which 53% are native. They are an unusual mix of native and exotic species (for full list see the Appendix). Grasses thrive here with 24 species being recorded, 38% of which were native. An exotic sedge, *Cyperus albostratus* (Fig. 8), has flourished in the damper bottoms of a couple of the former Maori storage pits. This is a species usually confined to old well established suburban gardens.

Native species on the islet of note include: *Trisetum arduanum* and *Wahlenbergia vernicosa* which are both Regionally Threatened species (Stanley et al. 2005) and *Anthosachne kingiana* subsp. *multiflora* which is nationally ranked as Data Deficient (de Lange et al. 2013). The coastal plant *Pimelea urvilleana* occurred on the coastal cliffs in full flower on the SE side of the islet (Fig. 9) – regionally it is now mainly restricted to the islands of the Auckland region and along the Tasman coast.

Lichens

Fourteen lichens were all collected from the islet's maritime rocks in January 1984 by Bruce Hayward and deposited in the Auckland Museum herbarium (AK): *Amandinea decedens*, *Caloplaca holocarpa*, *Heterodermia* cf. *obscurata*, *Lecidella* sp., *Lichina confinis*, *Opegrapha diaphoriza*, *Pannaria elixii*,



Fig. 6. Pitted crassula flowering, with *Blechnum parrisiae* and grasses by the steps on S side of the islet.

Parmotrema reticulatum, *Pertusaria* cf. *lavata*, *Poeltiaria turgescens*, *Ramalina celsa*, *R. meridionalis*, *Tephromela atra* and *Xanthoparmelia verrucella*. During my visit I only recorded the vascular flora.

Fauna

Birds seen during my visit: welcome swallows were commonly flying around and may have been nesting on the western cliffs; a pair of NZ dotterel and a few red-billed gulls were present on the adjacent beach; and a pair of variable oystercatchers rested on the islet's intertidal reef. No forest birds were seen or heard. Two obvious insects on the islet were Asian paper wasps on a nest, and tiger beetles. Ship rats presumably would visit the island but no obvious sign of them was seen.

Discussion

Several of the exotic species on the islet appear to be limited in their wild distribution on Great Barrier Island itself (cf. Auckland Museum herbarium database; Jeremy Warden pers. comm.; pers. obs.). These include soap aloe, bushy asparagus (*Asparagus aethiopicus*), *Crassula tetragona*, *Cyperus albostratus*, *Salvia officinalis* and *Watsonia meriana*. The *Salvia officinalis* may have died out on the islet because I didn't see this previous 25 year-old record. Several of these weeds would be good to remove before they spread more widely on Great Barrier, perhaps beginning with the bushy asparagus (*Asparagus aethiopicus*) (Fig. 10) because of its potential to be spread easily by frugivorous birds and the impact it could have suppressing native flora. Auckland Council has already spent time removing this weed from fixed sand dunes <4 km distant on the Claris side of the airfield (Jeremy Warden pers. comm.).



Fig. 7. Above the steps: soap aloe (*Aloe maculata*) in the centre, flanked by *Crassula tetragona*; overhung by pohutukawa.

Several of the exotic species that have done well on the islet have succulent leaves or have fleshy storage organs, which enable them to tolerate droughts. Such species would include: soap aloe, bushy asparagus, *Crassula multicaeva*, *C. tetragona* and *Watsonia meriana*. Drought tolerance would be a great advantage on such a small islet with no free freshwater, minimum shade and dry summers. It was surprising to see how salt tolerant and hardy the two *Crassula* species were, growing down the cliff face to 3 m asl. The presence of abundant succulents reminded me of what used to grow around many of the Rangitoto Island baches on bare scoria (cf. Sykes 1992, Wilcox 2007) before the major weeding occurred on that island. An insight into what this islet's vascular flora is lacking due to human impact (including rat introductions) is indicated by the flora of the larger 0.85 ha islet, 6 km to the south, 130 m off Rosalie Bay. This islet's flora contained: abundant coastal mahoe (*Melicactus novae-zelandiae*); locally common large-leaved milk tree (*Streblus banksii*), tawapou (*Planchonella costata*) and *Peperomia urvilleana*; occasional coastal karamu (*Coprosma macrocarpa*) and *Senecio repangae*; and locally hangehange (*Geniostoma ligustrifolia*), houpara (*Pseudopanax lessonii*) and kawakawa (*Piper excelsum*) (Cameron 2003). It also had ship rats present, but it is thought that on such a small islet these would probably be on a 'boom and bust' cycle (Cameron 2003) which is supported by the presence of plants susceptible to ship rat seed predation. The islet on Medlands Beach clearly needs major botanical restoration to bring it back to something resembling natural.

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Fig. 8. The exotic rhizomatous sedge, *Cyperus albostrigatus*, fills some of the old Maori storage pits near the summit where it is assumed it was originally planted.



Fig. 9. One of ten prostrate mats of *Pimelea urvilleana* to 80 cm across on the SE steep flanks of the islet.



Fig. 10. The significant environmental weed, bushy asparagus, is well established in a shaded part of the islet's summit.

Appendix. Vascular plant list for an unnamed islet on Medlands Beach in Oruawharo Bay.

Key: a = abundant; c = common; l = local; o = occasional; s = scarce (< 5 plants seen); LM = on the islet (L. McAlpine pers. comm., not seen by me); PL = collected by P.J. de Lange in Nov 1989 (not seen by me); V = herbarium voucher (AK); * = naturalised species; ** = suspected to have been originally planted but most now well naturalised.

Vascular plants	Abundance & voucher		
Ferns (6 native + 0 naturalised)			
<i>Adiantum aethiopicum</i>	c	<i>Tetragonia ?implexicaule</i>	s
<i>Asplenium oblongifolium</i>	lc	<i>Trifolium dubium</i> *	lc
<i>Blechnum parrisiae</i>	o	<i>Wahlenbergia vernicosa</i>	l
<i>Microsorium pustulatum</i>	o	Monocotyledons (15 + 22)	
<i>Pteridium esculentum</i>	o	<i>Agapanthus praecox</i> **	o
<i>Pyrrhosia eleagnifolia</i>	lc	<i>Aira caryophyllea</i> *	lc
Dicotyledons (20 + 15)		<i>Aloe maculata</i> **	lc, V
<i>Anagallis arvensis</i> var. <i>arvensis</i> *	o	<i>Anthosachne kingiana</i> subsp. <i>multiflora</i>	c, V
<i>Brachyglottis repanda</i>	o	<i>Anthoxanthum odoratum</i> *	lc
<i>Cakile maritima</i> *	s	<i>Arthropodium cirratum</i>	lc
<i>Calystegia soldanella</i>	s	<i>Asparagus aethiopicus</i> 'Sprengerii' **	lc, V
<i>Centaurium erythraea</i> *	o	<i>Austroderia splendens</i>	o
<i>Cirsium vulgare</i> *	l	<i>Avena barbata</i> *	l
<i>Coprosma rhamnoides</i>	lc	<i>Axonopis fissifolius</i> *	l, V
<i>Cotoneaster glaucophyllus</i> *	lc, V	<i>Briza maxima</i> *	o
<i>Crassula multicaeva</i> **	la, V	<i>Briza minor</i> *	l
<i>Crassula tetragona</i> **	la, V	<i>Bromus hordeaceus</i> *	o
<i>Dichondra repens</i>	o	<i>Carex breviculmis</i>	o
<i>Euchiton audax</i>	lc, V	<i>Cordyline australis</i>	s
<i>Gamochoaeta coarctata</i> *	o, V	<i>Cortaderia selloana</i> *	s
<i>Haloragis erecta</i>	o	<i>Cyperus albostrigatus</i> *	lc, V
<i>Hebe stricta</i> var. <i>stricta</i>	l, V	<i>Cyrtanthus elatus</i> **	LM
<i>Hypochaeris radicata</i> *	o	<i>Dactylis glomerata</i> *	lc
<i>Leucopogon fasciculatus</i>	c	<i>Dianella latissima</i>	o
<i>Leucopogon fraseri</i>	lc	<i>Dichelachne crinita</i>	o
<i>Lobelia anceps</i>	l	<i>Ficinia nodosa</i>	lc
<i>Lotus suaveolens</i> *	o	<i>Lachnagrostis littoralis</i>	l, V
<i>Melicytus ramiflorus</i>	s	<i>Lachnagrostis billardiarei</i>	lc
<i>Metrosideros excelsa</i>	c	<i>Lagurus ovatus</i> *	lc
<i>Muehlenbeckia complexa</i>	o	<i>Oplismenus hirtellus</i>	l
<i>Ornithopus pinnatus</i> *	l	<i>Paspalum dilatatum</i> *	o
<i>Oxalis rubens</i>	s	<i>Phormium tenax</i>	o
<i>Pimelea urvilleana</i>	l, V	<i>Poa anceps</i>	o
<i>Pittosporum crassifolium</i>	o	<i>Rytidosperma unarede</i>	o
<i>Plantago lanceolata</i> *	o	<i>Rytidosperma pilosum</i> *	o
<i>Salvia officinalis</i> **	PL, V	<i>Rytidosperma racemosum</i> *	o
<i>Senecio hispidulus</i>	c	<i>Sporobolus africanus</i> *	lc
<i>Senecio lautus</i>	l	<i>Trisetum arduanum</i>	o, V
<i>Sonchus oleraceus</i> *	o	<i>Vulpia bromoides</i> *	lc
		<i>Watsonia meriana</i> **	la, V
		<i>Zantedeschia aethiopica</i> **	s, V