

Christmas pot-luck picnic and field trip to the Whatipū Sands, Manukau Heads, 5 December 2020

Ewen K. Cameron

We had hoped to be able to utilise a space in the Whatipū Lodge but it was not available. Fortunately, Tiago Mahalingam managed to arrange the use of a bach for our shared lunch by the Whatipū camping ground, courtesy of the Friends of Whatipū. Once our food was safely stored in the bach our group of 25 headed down the track over the Whatipū Stream footbridge and across the sand dunes for 0.5 km to the Whatipū Beach, between Paratūtai and Ninepin Rock (see map – Fig. 1). The stream by the footbridge wasn't running – the stream mouth has been blocked for several decades. The stream banks by the bridge are lined with kikuyu grass (*Cenchrus clandestinus*), and tall emergent stems of the native sedge, lake clubrush (*Schoenoplectus tabernaemontani*), were evident, sticking up in places well above the water. Summer warning: the black sand can be too hot for bare feet, and Asian paper wasps (*Polistes chinensis*) can be abundant.



Fig. 1. Location of Whatipū and where we went on 5 Dec 2020. Auckland Council Geomap (aerial base map) modified by Joshua Salter. Scale bar = 200 m.

Participants: Jenny Andrew, Jessica Beever, Maureen Burke, Helen Cogle, Janeen Collings, Ewen Cameron (field trip leader), Brian Cumber, Bev & Geoff Davidson, Neil Davies, Leslie Haines, Rebecca Jerram, Luke Luddell, Tiago Mahalingam (organiser), Peter Moosberger, Helen Preston Jones, Juliet Richmond, Olivia Rooke-Devoy, Joshua Salter, Lydia & Ian Smith, Claire Stevens, Cheryl Taylor, Elizabeth Walker, Alison Wesley, Maureen Young.

Fixed sand-dunes

After crossing the footbridge, we began by admiring a large vine of kōhia (*Passiflora tetrandra*) which covered a 4 m-tall mahoe (*Melicactus ramiflorus*); it has also spread out over the exotic grassland, some 25 m from the bridge. This is the only plant of kōhia known on the dunes. The sand-dunes in this area are dominated by two exotic sward-forming grasses: kikuyu and buffalo grass (*Stenotaphrum secundatum*). Little is able to compete with their thick cover apart from the native pōhuehue vine (*Muehlenbeckia complexa*) which is commonly mixed through it. Pōhuehue is the exclusive host plant of the copper butterfly (*Lycaena* spp.) larvae; the butterflies were common in the area. Marram grass (*Ammophila arenaria*) was locally present along the track margin, but is expanding its coverage. Few woody species are present in the dunes, the main ones being mahoe, kanukā (*Kunzea* spp.) and, more locally, gorse (*Ulex europaeus*). Karaka (*Corynocarpus laevigatus*), māpou (*Myrsine australis*), mānuka (*Leptospermum scoparium*), houpapa (*Pseudopanax lessonii*) and boxthorn (*Lycium ferocissimum*) are more local. The mahoe and kanukā were both up to 6 m tall, while the gorse was usually under 1 m.

We stopped to admire a kanukā flowering (Figs. 2, 3) and Joshua Salter declared that she thought it was a hybrid kanukā (*Kunzea* hybrid) between the widespread species (*K. robusta*) and the dune species (*K. amathicola*) – this was an addition to EKC's Whatipū Sands species list for the sand dune area from Whatipū right up to Karekare Point, some 6 km to the north. Shortly after that another addition was found, an exotic rush (*Juncus tenuis* subsp. *dichotomus*). It was right next to the common track rush (*J. tenuis* s.str.), offering a good opportunity to see the differences in these closely related rushes. Several yellow flowers of the native dune oxalis (*Oxalis rubens*, Fig. 4) were spotted. Wild carrot (*Daucus carota*) and catchfly (*Silene gallica*) were locally common and both in flower. Maureen Young encouraged us to look at the different-coloured



flower in the centre of the wild carrot's umbel of flowers (Fig. 5). Some think that this may be to attract pollinators to the flowers (Kew/wild-carrot). Another addition was a moss, *Eurhynchium praelongum*, spotted by Juliet Richmond and identified by Jessica Beever.

As we neared the beach there was a damp dune hollow near the track (west side). Cabbage trees (*Cordyline australis*) surrounded it and harakeke (*Phormium tenax*) was common. A little further on there was a pond of open water (Fig. 6), c. 10 x 20 m, with a sward of Mercer grass (*Paspalum distichum*) around the margin, and between the track and the pond *Machaerina juncea* dominated locally. Close to the pond the exotic, bright green sedges, *Cyperus brevifolius* and the European *Carex punctata* (Fig. 7), were present. In 2003 this area of the track was choked with tussocks of purple pampas grass (*Cortaderia jubata*) (see Cameron 2006: p. 195, fig. 1) – Auckland Council successfully eradicated it, although pampas (*Cortaderia* spp.) keeps trying to re-establish. By the beach, tree lupin (*Lupinus arboreus*) was well established. It died back in the late 1980s throughout New Zealand due to a fungus, *Colletotrichum lupini*. When Bot Soc visited Whatipū in 2012 we saw the first signs of tree lupin returning to the Whatipū dunes (Cameron 2013: fig. 10) – a fungus-resistant strain of lupin? A patch of *Vicia disperma* first observed here on the track margin in 2017, had greatly expanded and now virtually reached the beach.

Wet brackish sandflats on Whatipū Beach

This beach was gouged out and invaded by the sea on the 14 July 2005 (see Pegman 2005, Timoti 2005). The sandflats generally have always been a wonderfully dynamic place of rapid progradation since 1940, reaching maximum extension in 1987 (> 1 km wide), and since that time generally oscillating between progradation and erosion (Williams 1977, Pegman & Rapson 2005). Whatipū Beach itself is extremely dynamic, with storms altering where the freshwater flows out on to the beach and where the beach drains to (EKC pers. obs.). We admired and identified the small herbaceous vascular plants growing on the wet sand flats (Fig. 8), often in mats of a filamentous green alga, most likely

Rhizoclonium riparium (see Wilcox 2018; Fig. 9). Many of the herbaceous native favourites were present: *Carex pumila*, *Myriophyllum votschii*, *Triglochin striata* (Fig. 10), *Lilaeopsis novae-zelandiae* (Fig. 10), *Isolepis cernua* (Fig. 11), *Lobelia anceps* (Fig. 11), and *Samolus repens* (Fig. 12). Some exotics were also present: *Juncus bufonius*, *J. sonderianus*, *Vellereophyton dealbatum* (Fig. 9) and the weedy saltwater paspalum (*Paspalum vaginatum*, Fig. 12). The most exciting find was a couple of tiny plants of the sand buttercup (*Ranunculus acaulis*) – this appears to be the first record of this species on the Whatipū Sands, although it is well-known in the Manukau Harbour (AK herbarium specimens) and at several places on the exposed Waitakere coast (EKC, pers. obs.). Small concentrated areas of rabbit droppings were seen (Fig. 11), often on slightly higher ground – the place of the guard rabbit? In the wetter areas taller vegetation was present: lake clubrush, oioi (*Apodasmia similis*), sea rush (*Juncus kraussii*), areas of three-square (*Schoenoplectus pungens*), and two weedy exotics that need controlling, spike rush (*Juncus acutus*) and aristeia (*Aristea ecklonii*) (Fig. 13).

Mouth of the Whatipū Stream near Cutter Rock

We continued along the beach until we reached the outflow of the Whatipū Stream, which was only a trickle. This stream feeds into a large wetland north of Cutter Rock which is also partly fed by a virtually continuous wetland from a southern branch of the Pararaha Stream south to Cutter Rock (part of this Pararaha wetland usually also flows out to the west of Cutter Rock). Much of that 4 km Pararaha-to-Whatipū wetland is dominated by oioi. In the mouth of the Whatipū Stream just behind the beach was a single large clump of yellow flag (*Iris pseudacorus*) c.1 x 2 m across (Fig. 14) amongst lake clubrush. There were only a few withered yellow flowers seen – the end of flowering. However, copious amounts of green pods were present. A few keen members carefully picked all the pods (Fig. 15) which were bagged and removed. Each pod contained 3 rows of c.25 seeds (Fig. 16), potentially totalling >20,000 seeds! EKC first saw this clump in October 2017 during the Whatipū BioBlitz

Figs. 2–9: **2.** Our group discussing the botany as we traverse the fixed sand-dunes. The hybrid kanukā is on our left and a mahoe on the right. Photo: CT. **3.** A 2 m-tall x 4 m-across (on a lean) flowering hybrid kanukā (*Kunzea amathicola* x *K. robusta*), closest to *K. amathicola* but the leaves are too narrow. Photo: JS. **4.** Evident through a sward of exotic grass, is the yellow-flowering, native dune oxalis (*Oxalis rubens*), frequent in the Whatipū dunes. Photo: BD. **5.** A patch of pink-flowering wild carrots had a deep-purple flower in the centre of the umbel, whereas the usual white-flowering carrots had a pink central flower. Photo: JS. **6.** A pond in the fixed dunes near the beach was surrounded by Mercer grass, with cabbage trees, flax and mostly dead mahoe. Photo: BD. **7.** The bright green European sedge (*Carex punctata*), 30-40 cm tall, with 1 male and 2 female spikes, by a pond in the fixed sand-dunes. Photo: JS. **8.** The changeable wet sand flats on Whatipū Beach, currently being kept wet by the Whatipū Stream disgorging at the western end of the beach. Ninepin Rock behind. Photo: BD. **9.** The exotic *Vellereophyton dealbatum* (pale-coloured) and *Juncus sonderianus* (fruiting) amongst a mat of the filamentous green alga, most likely *Rhizoclonium riparium*. Photo: JS.





Fig. 18. The panoramic view from Trixie's seat over the camping ground, the picnic bach, fixed sand-dunes, Ninepin Rock (L) and Cutter Rock (R) and the Manukau Harbour entrance behind. Photo: CT.

that several of our members participated in. Auckland Council removed the clump in 2021 (Belinda Harvey pers. comm.; EKC pers. obs. Apr 2022). I suspect that the seed possibly originates from the infestations of this species along the margins of the Waikato River (easily observed near Huntly, AK 293447). Pods could be carried down the river, and then the northern drift transports them along the coast, and during storms they occasionally get washed into wetlands, such as at Whatipū (AK 381539) and Karekare (AK 363193).

Shared lunch

Stomachs were rumbling, it was time to retrace our steps and return to the bach for our lunch. We shared a wonderful potluck lunch, and said our goodbyes to Janeen who informed us that she

had just accepted a job in Nelson. Then several people took on the short, steep climb behind us up to the memorial Trixie Harvey seat (Fig. 17) and gained the splendid view over Whatipū and the Manukau Heads (Fig. 18). Catherine ('Trixie') Harvey (1938–2018) was a local champion for conservation in west Auckland.

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Figs. 10–17: **10.** *Triglochin striata* fruiting and *Lilaeopsis novae-zelandiae* with the banded leaves, on the wet sand flats. Photo: JS. **11.** Rabbit droppings on sward of *Isolepis cernua* and flowering *Lobelia anceps*, wet sand flats, Whatipū Beach. Do the rabbits favour the native or exotic plants? Photo: EKC. **12.** *Samolus repens* on the wet dunes being invaded by the exotic saltwater paspalum. Photo: JS. **13.** A sterile plant of the aggressive weed aristeia (*Aristea ecklonii*) was present on the wet sand flats among *Isolepis prolifera*, *Juncus sonderianus* and *Myosotis laxa*. Aristeia is still very local at Whatipū. Photo: EKC. **14.** Members de-podding a yellow flag iris clump, partially blocking the Whatipū Stream near the Whatipū Beach. Foreground: flax, kikuyu and lake clubrush; background: (L to R) gorse, pampas grass tussocks (dead), mānuka and a cabbage tree. Photo: EKC. **15.** The 344 green pods, collectively producing >20,000 seeds, removed from the single clump of yellow flag iris. Photo: EKC. **16.** Yellow flag seed pods dissected. Photo: EKC. **17.** A few members climbing up to the Trixie Harvey memorial seat, above the Whatipū camping ground (see also cover illustration). Photo: JS.

Mahurangi East Regional Park Extension Fieldtrip – 20 March 2021

Sam Sutherland and Yumiko Baba



Fig. 1. Aerial image showing the boundaries of the Mahurangi East Regional Park extension in white outline. Scale bar = 500 m.

Attendees: Jenny Andrew, Yumiko Baba (co-leader), Bev Davidson, Geoff Davidson, Neil Davies, Marley Ford, Leslie Haines, Jane Henrys, Mark Paterson, Vivienne Paterson, Juliet Richmond, Mere Roberts, Joshua Salter, Sam Sutherland (leader), Jack Warden, Alison Wesley, David Wilson, Liam Winterton, Maureen Young.

In 2020, a 91.9 ha land parcel adjacent to the Mahurangi East Regional Park was purchased by Auckland Council, which doubled the size of the existing Mahurangi East Regional Park (Fig. 1). This purchase was made possible through significant philanthropic funding. The property contains remnant coastal forest, a wetland area behind a bund, a beach and saltmarsh grading into mangroves. Near the beach there is an existing bach. There is currently no public vehicle access to the property.

On a sunny blue-sky morning in March 2021, we met at Martins Bay to consolidate vehicles. We convoyed into the Mahurangi East Regional Park Extension via a long gravel farm track which passes



Fig. 2. Participants admiring a skeleton fork fern (*Psilotum nudum*) on a pūriri trunk (*Vitex lucens*). All photos taken on 20 Mar, by S. Sutherland, except Fig. 3.



Fig. 3. The *Psilotum nudum*, sporting hundreds of sporangia. Photo: Joshua Salter.

through private property. Near the entrance to the park, we stopped to take a look at a couple of large *Streblus* trees. The general verdict was that they were likely small-leaved milk trees (*Streblus heterophylla*), or maybe a hybrid, based on the fact that the leaves were unusually large for an ordinary *S. heterophylla* but not as large as the large-leaved milk tree (*S. banksii*) on offshore islands. The trees were in flower but most of the flowers had been deformed due to witches-broom gall, likely caused by Eriophyid mites. Just as we were rounding up people back into vehicles, a skeleton fork fern (*Psilotum nudum*) was spotted growing on a pūriri trunk (*Vitex lucens*) (Figs. 2, 3). This species has a regional threat status of Sparse.

Most of the vehicles were parked at a gravel pad area near the start of the property and we walked down the steep gravel farm track to explore a wetland complex behind a coastal bund. The wetland complex (Fig. 4) has some large areas of open water with aquatic plants such as common water milfoil (*Myriophyllum propinquum*), *Azolla* ?*pinnata* common duck weed (*Lemna disperma*), exotic swamp lily (*Ottelia ovalifolia*) and other exotic species such as purple-backed duckweed (*Landoltia punctata*) and water lily (*Nymphaea* sp.). A dab chick (Conservation status: Recovering) was seen in one of the ponds and one of the group thought they heard a fernbird (Conservation status: Declining).

Around the fringes of the open water, water purslane (*Ludwigia palustris*), *Isolepis prolifera* and *Persicaria decipiens* were observed, whilst in the drier wetland areas there were rautahi (*Carex geminata*), giant umbrella sedge (*Cyperus ustulatus*) and *Schoenoplectus tabernaemontani* amongst pasture grasses (e.g., *Paspalum* spp.). Patches of *Bolboschoenus medianus* were also present in the immediate areas. Within the wetland there were some small dry islands with karo (*Pittosporum crassifolium*), cabbage tree (*Cordyline australis*), pōhutukawa (*Metrosideros excelsus*), kōwhai (*Sophora chathamica*), mahoe (*Meliccytus ramiflorus*), hangehange (*Geniostoma ligustrifolium*), *Coprosma macrocarpa* and akeake (*Dodonaea viscosa*). It is possible that some of these areas may have been planted along with vegetation on the fringe of the wetland to the south.

Vegetation in the fringe included cabbage tree, mānuka (*Leptospermum scoparium*), tōtara (*Podocarpus totara*), kānuka (*Kunzea robusta*), kawakawa (*Piper excelsum*), māhoe, *Coprosma macrocarpa* and flax (*Phormium tenax*). The presence of kahikatea (*Dacrycarpus dacrydioides*), kauri (*Agathis australis*) and tānekaha (*Phyllocladus trichomanoides*) of a similar size, was further evidence that this area has been at least partly planted. There was some bamboo (*Bambusa* sp) and boneseed (*Chrysanthemoides monilifera*) on the edge of this area which would be beneficial to control.



Fig. 4. Exploring a wetland complex.



Fig. 5. Lunch in the shade overlooking the wetland.

The group stopped to have lunch in the shade on a slope overlooking the wetland (Fig. 5). After lunch we visited the beach on the east coast just below the bach on the property (Fig. 6). Shore bindweed (*Calystegia soldanella*) was growing above the high tide line of the beach, and one small New Zealand spinach (*Tetragonia tetragonoides*) was found with knobbly green fruit. A small area of spinifex (*Spinifex sericeus*) was found growing at the northern end of the beach. Pest plants on this coast included pampas (*Cortaderia jubata*) and some agapanthus (*Agapanthus praecox* subsp. *orientalis*) growing above a pōhutukawa at the southern end of the beach.

We headed back across to the west coast of the park where saltmarsh vegetation (e.g. saltmarsh ribbonwood (*Plagianthus divaricatus*) and *Machaerina juncea*) grades into mangroves (*Avicennia marina*). Unfortunately, the weedy *Carex divisa* was present in large swathes on the edge of the saltmarsh habitat.

The coast was followed north to an area of coastal broadleaf forest which had abundant NZ jasmine (*Parsonsia heterophyllus*) growing in the canopy.



Fig. 6. Checking out the flora along the beach on the east coast.

Whilst this area was fenced there was an existing track, presumably created by farm animals, which we followed around the coast. Canopy trees included kōwhai, pigeonwood (*Hedycarya arborea*), kānuka and tītoki (*Alectryon excelsus*), and pōhutukawa laden with *Astelia* species at the bottom of the slope. There was also the large-leaved form of tawa (*Beilschmiedia tawa*, also known as *B. tawaroa*) which had shiny dark black fruit. Some very large ngaio trees (*Myoporum laetum*) were admired, and we reflected that it was nice to see non-planted ngaio for a change.

Growing amongst *Gahnia lacera* within the coastal forest, an exciting find for the day was bamboo grass (*Microlaena polynoda*) which has a regional threat status of Scarce. Pest plants in the coastal forest area included woolly nightshade (*Solanum mauritianum*) which was common in canopy gaps, and apple of Sodom (*Solanum linnaeanum*). Conveniently we were able to cut back up the paddocks to our parked vehicles, completing an enjoyable loop exploring the Mahurangi East Regional Park Extension. See the Appendix for the Species List.

Appendix. Species List for Mahurangi East Regional Park Extension from ABS field trip on 20 Mar 2021 and two recces on 4 Nov 2020 and 9 Feb 2021. Plant species list compiled by Sam Sutherland and Yumiko Baba; lichen species contributed by Marley Ford.

* = exotic species # = additions from ABS visit, 20 Mar 2021

Scientific names	Common names	Notes
Ferns		
<i>Adiantum hispidulum</i>	rosy maidenhair	
<i>Adiantum cunninghamii</i>	common maidenhair	
<i>Asplenium flaccidum</i>	hanging spleenwort	#
<i>Asplenium oblongifolium</i>	shining spleenwort	#
<i>Azolla ?pinnata</i> *	ferny azolla	#
<i>Cyathea dealbata</i>	silver fern	
<i>Dendroconche scandens</i> Syn. <i>Microsorium scandens</i>	fragrant fern	
<i>Deparia petersenii</i> subsp. <i>congrua</i>		
<i>Doodia australis</i>	rasp fern	
<i>Lastreopsis glabella</i>	smooth shield fern	
<i>Hymenophyllum sanguinolentum</i>	filmy fern	#
<i>Nephrolepis cordifolia</i> *	tuber ladder fern	Growing on one of the bunds in the wetland
<i>Parapolystichum microsorium</i> Syn. <i>Lastreopsis microsora</i>		#
<i>Pneumatopteris pennigera</i>	gully fern	
<i>Psilotum nudum</i>	skeleton fork fern	
<i>Pteridium esculentum</i>	bracken	
<i>Pteris tremula</i>		
<i>Pyrrosia elaeagnifolia</i>	leather-leaf fern	
<i>Zealandia pustulata</i> Syn. <i>Microsorium pustulatum</i>		

Gymnosperms			
<i>Agathis australis</i>	kauri	Appears to be planted	
<i>Araucaria heterophylla</i> *	Norfolk Island pine		
<i>Cupressus macrocarpa</i> *	macrocarpa		
<i>Dacrycarpus dacrydioides</i>	kahikatea	On edge of wetland area. Planted?	
<i>Dacrydium cupressinum</i>	rimu	On edge of wetland area. Planted?	#
<i>Pinus</i> sp. *	pine		
<i>Podocarpus totara</i>	totara		
<i>Phyllocladus trichomanoides</i>	tanekaha	On edge of wetland area. Planted?	#
<i>Quercus robur</i> *	European oak		#
<i>Taxodium distichum</i> *	swamp cypress		#
Dicots			
<i>Agapanthus praecox</i> subsp. <i>orientalis</i> *	agapanthus	Above pohutukawa at southern end of the beach	#
<i>Alectryon excelsus</i> subsp. <i>excelsus</i>	titoki		
<i>Alnus glutinosa</i> *	common alder	On bund in wetland Planted?	
<i>Amaryllis belladonna</i> *	belladonna lily	On slope below house	#
<i>Atriplex prostrata</i> *			#
<i>Avicennia marina</i>	mangrove		
<i>Beilschmiedia tarairi</i>	taraire		
<i>Beilschmiedia tawa</i>	tawa	Wide leaved tawa (tawaroa)	
<i>Cakile maritima</i> *		On beach	#
<i>Calystegia sepium</i> subsp. <i>roseata</i>	pink bindweed	In wetland	#

<i>Calystegia soldanella</i>	shore bindweed	On beach	#
<i>Carmichaelia australis</i>	broom		
<i>Centella uniflora</i>			
<i>Cirsium vulgare</i> *	Scotch thistle		
<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i> *	boneseed		
<i>Coprosma areolata</i>	thin-leaved coprosma		
<i>Coprosma macrocarpa</i> subsp. <i>minor</i>	karamu		
<i>Coprosma rhamnoides</i>	twiggy coprosma		
<i>Corynocarpus laevigatus</i>	karaka		
<i>Cotoneaster</i> sp. *	cotoneaster		#
<i>Cotula coronopifolia</i>	bachelors button		
<i>Crataegus monogyna</i> *	hawthorn		
<i>Dichondra repens</i>			#
<i>Dodonaea viscosa</i>	akeake	On bund in wetland Planted?	
<i>Dysoxylum spectabile</i>	kohekohe		
<i>Erechtites valerianifolia</i> *	Brazilian fireweed		#
<i>Galium divaricatum</i> *			
<i>Geniostoma ligustrifolium</i> var. <i>ligustrifolium</i>	hangehange		
<i>Geranium homeanum</i>			
<i>Hedycarya arborea</i>	pigeonwood		
<i>Hoheria populnea</i>	lacebark		#
<i>Hypericum humifusum</i> *	trailing St John's wort		#
<i>Hypochaeris radicata</i> *	catsear		
<i>Knightia excelsa</i>	rewarewa		
<i>Kunzea robusta</i>	kanuka		
<i>Lapsana communis</i> *	nipplewort		
<i>Leptospermum scoparium</i>	manuka		
<i>Lilaeopsis novae-zelandiae</i>			#
<i>Linum bienne</i> *	pale flax		

<i>Lobelia anceps</i>	shore lobelia		
<i>Lotus suaveolens</i> *	hairy birdsfoot trefoil		#
<i>Lotus pedunculatus</i> *	lotus		#
<i>Ludwigia palustris</i> *	water purslane		#
<i>Lysimachia arvensis</i> var. <i>arvensis</i> *	scarlet pimpernel		
<i>Medicago arabica</i> *	spotted bur medick		#
<i>Melicytus ramiflorus</i>	mahoe		
<i>Metrosideros excelsa</i>	pohutukawa		
<i>Myoporum laetum</i>	ngaio		
<i>Myriophyllum propinquum</i>	common water milfoil		#
<i>Myrsine australis</i>	red mapou, red matipo		
<i>Nymphaea</i> sp. *	water lily	Although flowers red, it fits descriptions of <i>N. alba</i>	
<i>Olea europaea</i>	olive	Few plants down slope of the house	#
<i>Oxalis exilis</i>	yellow oxalis		#
<i>Parsonsia heterophylla</i>	NZ jasmine		#
<i>Persicaria decipiens</i>			#
<i>Pittosporum crassifolium</i>	karo		
<i>Planchonella costata</i>	tawapou	1 adult tree seen on coastal cliff	
<i>Plantago lanceolata</i> *	narrow-leaved plantain		#
<i>Physalis peruviana</i> *	cape gooseberry		
<i>Phytolacca octandra</i> *	inkweed		
<i>Piper excelsum</i> subsp. <i>excelsum</i>	kawakawa		
<i>Plagianthus divaricatus</i>	salt marsh ribbonwood		
<i>Plantago lanceolata</i> *	narrow-leaved plantain		
<i>Populus</i> sp. *			
<i>Prunella vulgaris</i> *	self-heal		
<i>Ranunculus repens</i> *	buttercup		
<i>Rosa rubiginosa</i> *	briar		#

<i>Rumex conglomeratus</i> *	clustered dock	
<i>Sagina procumbens</i> *	procumbent pearlwort	#
<i>Salicornia quinqueflora</i>	glasswort	#
<i>Samolus repens</i> var. <i>repens</i>	sea primrose	
<i>Senecio bipinnatisectus</i>	Australian fireweed	#
<i>Sison amomum</i> *	stone parsley	#
<i>Solanum americanum</i> / <i>opacum</i>		
<i>Solanum linnaeanum</i> *	apple of sodom	#
<i>Solanum mauritianum</i> *	woolly nightshade	
<i>Sonchus asper</i> *	prickly sow thistle	#
<i>Sophora chathamica</i>	kowhai	
<i>Streblus heterophyllus</i>	small-leaved milk tree, turepo	Possible hybrid between <i>S. banksii</i> & <i>S. heterophyllus</i> ?
<i>Symphyotrichum subulatum</i> *	sea aster	#
<i>Tetragonia tetragonoides</i>	NZ spinach	#
<i>Torilis arvensis</i> *	spreading hedge-parsley	
<i>Trifolium fragiferum</i> *	strawberry clover	
<i>Trifolium repens</i> *	white clover	
<i>Ulex europaeus</i> *	gorse	
<i>Verbascum creticum</i> *	Cretan mullein	On coastal cliff area
<i>Vicia disperma</i> *	small French tare	
<i>Vinca major</i> *	periwinkle	On coastal cliff area
<i>Vitex lucens</i>	puriri	
<i>Wahlenbergia violacea</i>	violet harebell	#
Monocots		
<i>Agave americana</i> *	century plant	On coastal cliff
<i>Agrostis capillaris</i> *	browntop	
<i>Anthoxanthum odoratum</i> *	sweet vernal	
<i>Apodasmia similis</i>	oioi	
<i>Astelia banksia</i>	shore kowharawhara	

<i>Astelia hastata</i>	tank lily	
<i>Avena barbata</i> *	slender oat	
<i>Axonopus fissifolius</i> *	narrow-leaved carpet grass	
<i>Bambusa</i> sp. *	bamboo	On edge of wetland
<i>Bolboschoenus medianus</i>	purua grass	In wetland area
<i>Bromus diandrus</i> *	ripgut broom	#
<i>Carex divisa</i> *		On edge of saltmarsh #
<i>Carex divulsa</i> *	grey sedge	
<i>Carex flagellifera</i>	trip me up	
<i>Carex geminata</i>		#
<i>Carex longibrachiata</i> *	Australian sedge	#
<i>Carex solandri</i>	forest sedge	#
<i>Carex virgata</i>	swamp sedge	
<i>Cordyline australis</i>	cabbage tree, ti	
<i>Cortaderia jubata</i> *	purple pampas	On coast by beach
<i>Cynodon dactylon</i> *	Bermuda grass	
<i>Cyperus brevifolius</i> *		#
<i>Cyperus eragrostis</i> *	umbrella sedge	#
<i>Cyperus ustulatus</i>	giant umbrella sedge	
<i>Dactylis glomerata</i> *	cocksfoot	#
<i>Dichelachne crinita</i>	long-hair plume grass	#
<i>Earina</i> sp.		#
<i>Eleocharis acuta</i>	sharp spike sedge	#
<i>Ficinia nodosa</i>	knobby clubrush	
<i>Gahnia lacera</i>	cutty grass	
<i>Gastridium ventricosum</i> *	nit grass	
<i>Iris ?foetidissima</i> *		
<i>Isolepis prolifera</i>		
<i>Juncus anthelatus</i> *		#
<i>Juncus australis</i>	leafless rush	#
<i>Juncus edgariae</i>	wiwi	#

<i>Juncus effusus</i> *	soft rush	
<i>Juncus kraussii</i>	sea rush	
<i>Juncus sarophorus</i>	broom rush	#
<i>Juncus subsecundus</i> *		
<i>Juncus tenuis</i> subsp. ? <i>tenuis</i> *		
<i>Juncus tenuis</i> subsp. <i>dichotomus</i> *		#
<i>Juncus usitatus</i>		#
<i>Landoltia punctata</i> *	purple-backed duckweed	
<i>Lemna disperma</i>	common duckweed	Previously known as <i>Lemna minor</i> #
<i>Lolium arundinaceum</i> subsp. <i>arundinaceum</i> *	tall fescue	
<i>Lolium perenne</i> *	perennial rye grass	
<i>Machaerina juncea</i>	tussock swamp twig rush	#
<i>Machaerina rubiginosa</i>		#
<i>Microlaena polynoda</i>	bamboo grass	#
<i>Microlaena stipoides</i>	meadow rice	
<i>Oplismenus hirtellus</i>		

<i>Ottelia ovalifolia</i> *	swamp lily	
<i>Paspalum dilatatum</i> *		
<i>Paspalum distichum</i> *	freshwater paspalum	
<i>Phormium tenax</i>	harakeke	
<i>Rhopalostylis sapida</i>	nikau	
<i>Ripogonum scandens</i>	supplejack, kareao	
<i>Rytidosperma racemosum</i> *	danthonia	
<i>Schoenoplectus tabernaemontani</i>	kuawa	
<i>Spinifex sericeus</i>	spinifex	#
<i>Sporobolus africanus</i> *	rat's tail	
<i>Stenotaphrum secundatum</i> *	buffalo grass	
<i>Vulpia bromoides</i> *	vulpia hair grass	#
<i>Zantedeschia aethiopica</i> *	arum lily	
<i>Wolffia australiana</i>	water meal	#

Mosses

<i>Leucobryum javense</i>		#
<i>Ptychomnion aciculare</i>	pipe cleaner moss	#

Lichens

<i>Bacidia</i> sp.	#	<i>Lecanora</i> sp.	#	<i>Pertusaria thiospoda</i>	#	<i>Pyrenula</i> sp.	#
<i>Biatoropsis usnearum</i>	#	<i>Lepraria finkii</i>	#	<i>Pertusaria</i> sp.	#	<i>Pyxine subcinerea</i>	#
<i>Chrysothrix xanthina</i>	#	<i>Notoparmelia erumpens</i>	#	<i>Phlyctis</i> sp.	#	<i>Ramalina celastri</i>	#
<i>Cladonia darwinii</i>	#	<i>Pannaria allorhiza</i>	#	<i>Phyllospora</i> sp.	#	<i>Ramalina peruviana</i>	#
<i>Coccocarpia palmicola</i>	#	<i>Pannaria elixii</i>	#	<i>Podostictina pickeringii</i>	#	<i>Sticta squamata</i>	#
<i>Collema leave</i>	#	<i>Parmeliella</i> sp.	#	<i>Porina exocha</i>	#	<i>Teloschistes chrysophthalmus</i>	#
<i>Crocodia aurata</i>	#	<i>Parmotrema austrocetratum</i>	#	<i>Pseudocyphellaria carpoloma</i>	#	<i>Usnea nidifica</i>	#
<i>Dirinaria applanata</i>	#	<i>Parmotrema crinitum</i>	#	<i>Pseudocyphellaria crocata</i>	#	<i>Usnea rubicunda</i>	#
<i>Dufourea ligulata</i>	#	<i>Parmotrema perlatum</i>	#	<i>Pseudocyphellaria montagnei</i>	#	<i>Xanthoria parietina</i>	#
<i>Flavoparmelia haywardiana</i>	#	<i>Parmotrema reticulatum</i>	#	<i>Pseudocyphellaria wilkinsii</i>	#		