

<i>Juncus edgariae</i>			✓	✓
<i>Juncus kraussii</i>	✓			
<i>Juncus pallidus</i>	✓	✓		
<i>Juncus prismatocarpus</i>		✓		
<i>Juncus tenuis*</i>	✓			
<i>Juncus usitatus</i>		✓		
<i>Lagurus ovatus*</i>	✓			
<i>Libertia grandiflora</i>	✓			
<i>Microlaena avenacea</i>		✓		✓
<i>Microlaena polynoda</i>	✓			
<i>Microlaena stipoides</i>	✓		✓	
<i>Morelotia affinis</i>	✓	✓	✓	✓
<i>Oplismenus hirtellus</i>	✓	✓	✓	✓
<i>Orthocerus novae-zelandiae</i>	✓	✓		
<i>Paspalum dilatatum*</i>			✓	
<i>Paspalum vaginatum*</i>	✓			
<i>Pennisetum clandestinum*</i>	✓			
<i>Phormium tenax</i>	✓	✓		
<i>Poa anceps</i>		✓	✓	
<i>Pterostylis banksii</i>				✓
<i>Rhopalostylis sapida</i>	✓	✓	✓	
<i>Ripogonum scandens</i>	✓	✓		
<i>Rytidosperma racemosum*</i>		✓		
<i>Rytidosperma</i> sp. or spp.	✓	✓	✓	✓
<i>Schoenus apogon</i>		✓	✓	
<i>Schoenus tendo</i>	✓	✓	✓	✓
<i>Spartina alterniflora*</i>	✓			
<i>Spinifex sericeus</i>	✓			
<i>Stenotaphrum secundatum*</i>	✓			
<i>Thelymitra</i> sp.			✓	
<i>Uncinia banksii</i>	✓			
<i>Uncinia uncinata</i>		✓	✓	✓

Muriwai Regional Park Field Trip – 19 February 2011

Helen Preston Jones, James Luty, Joshua Salter, Mike Wilcox

Participants: Ewen Cameron, Litza Coello, Neil Davies, Melanie Dixon, John Smith-Dodsworth, Nerrisa Smith-Dodsworth, Frances Duff, Tom Greer, Kristy Hall, Peter Hutton, Helen Preston Jones, James Luty, Elaine Marshall, Alistair MacArthur, Chris Pronk, Juliet Richmond, Josh Salter, Cheryl Taylor, Richard Tippett, Val Tomlinson, Eleanor Vincent, Simon Vincent, Harold Waite, Alison Wesley, Mike Wilcox, Tony Williams, Maureen Young.

Our first outing of the year, on 19 February 2011, led by our president, Mike Wilcox, was held on a lovely summer afternoon at Muriwai (Fig. 1.). We were glad to start under the shade of the bush, be refreshed by an ice cream and coffee break midway, check out the last fledgling gannets (Plate 1a), and spend some very pleasant hours wandering along the southern Maori Bay foreshore and seabed (Fig. 2, 3) looking at

seaweeds. The programme was timed to benefit from the very low tide, which meant we could walk all the way round the Muriwai headland, beneath the gannet colony (Plate 1b), which is possible only rarely. And the day ended with a swim. What could be better? The trip provided us with a good demonstration of the vegetation changes occurring from cliff top to sea in this area of the Waitakere Ranges, and a gentle introduction to our field programme for 2011. All photos except Fig. 12 were taken on the day, by Alistair MacArthur (AM), Cheryl Taylor (CT), Joshua Salter (JS) and Mike Wilcox (MW).

Quarry, Edwin Mitchelson and Lookout Tracks: We first explored the Quarry, Edwin Mitchelson and Lookout Tracks (which form the northern end of the Hillary Trail). The Quarry Track, reached from the road to Maori Bay, after a rather weedy start, ascends

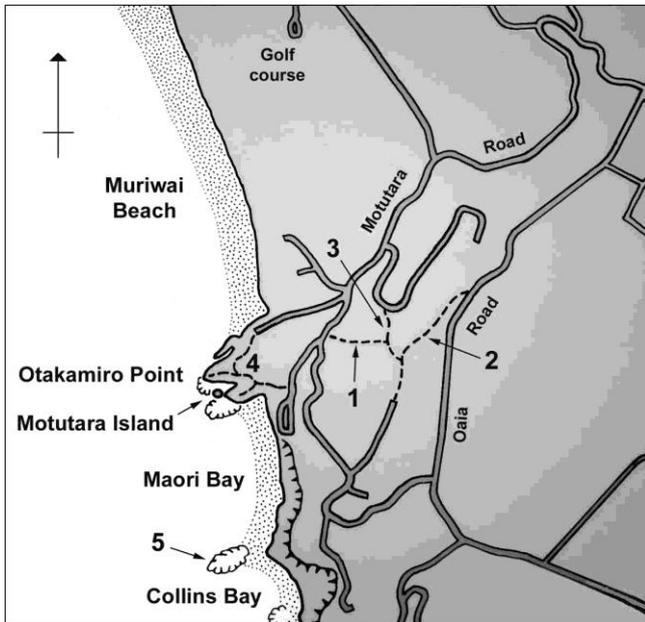


Fig. 1. Muriwai Regional Park, Otakamiro Point (gannet colony) and Maori Bay. 1 = Quarry Track; 2 = Edwin Mitchelson Track; 3 = Lookout Track; 4 = tracks to gannet colonies; 5 = rock platform visited. Topomap modified by JS.

a shallow gully (Plate 1c) through regenerating coastal forest, with large pohutukawa (*Metrosideros excelsa*), puriri (*Vitex lucens*), kohekohe (*Dysoxylum spectabile*) and karaka (*Corynocarpus laevigatus*) more dominant in its composition (Plate 1d; Fig. 4), interspersed with the local kowhai, *Sophora fulvida*, the occasional emergent rewarewa (*Knightia excelsa*) and abundant nikau (*Rhopalostylis sapida*) (Fig. 5). A highlight along the first part of the track was the abundance of native iris (*Libertia grandiflora*) in flower, rengarenga lily (*Arthropodium cirratum*) and *Hebe macrocarpa*, while the ferns *Blechnum membranaceum* and *Pteris saxatilis* were very noticeable on banks (Fig. 6).



Fig. 2. Maori Bay from near gannet colony. Note exposed rock platform in distance at southern end. Photo: CT.

The Lookout Track is also mainly through regenerating coastal forest, while the Edwin Mitchelson Track is a disused road, with numerous



Fig. 3. Maori Bay – Cheryl Taylor, Ewen Cameron, Maureen Young and Alison Wesley walking north towards Otakamiro Point. Photo: JS.

pasture weeds becoming shaded out by native and exotic trees. Higher up, pinkish-purple plumes of pampas (*Cortaderia jubata*) presented an unexpectedly appealing colour combination against the reds of an eroding clay bank of the Pleistocene Kaihu Group coastal sandstones (Plate 1e; Hayward 1983). Native monocots recorded from the banks along the Edwin Mitchelson Track included flax (*Phormium tenax*), karetu (*Machaerina sinclairii*), plume grass (*Dichelachne crinita*), danthonia (*Rytidosperma gracile*) and *Poa anceps*. From the Lookout Track a branch took us to the lookout platform, with views over the coastal forest through which we had walked (Plate 1f), over the wind-swept manuka (*Leptospermum scoparium*) and kanuka (*Kunzea ericoides*), which together with coastal kowhai, mingimingi (*Leucopogon fasciculatus*), shining karamu (*Coprosma lucida*), akepiro (*Olearia furfuracea*) and houpara (*Pseudopanax lessonii*) cloak the ridge leading down to the gannet colony (Fig. 7), and to the northward sweep of Muriwai Beach (Fig. 8).

Numbers of exotic trees were present, due to the proximity of the settled areas of Muriwai. Of particular interest was Japanese black pine (*Pinus thunbergii*) growing beside the upper stretches of the Edwin Mitchelson Track, and near the lookout platform. Several eucalypt trees grow in the bush near the top of the Quarry Track, the three species being messmate (*Eucalyptus obliqua*), blackbutt (*E. pilularis*) and bangalay (*E. botryoides*). Other large, cultivated trees seen were holm oak (*Quercus ilex*) and silky-oak (*Grevillea robusta*). Towards the top of the Edwin Mitchelson Track were numerous plants of tree heath (*Erica arborea*), some trees being 4 m tall. On the ridge above the Lookout was a stand of Norfolk Island pines (*Araucaria heterophylla*) (Fig. 9), presumed to be the source of several seedlings growing beside the Lookout Track under the coastal forest canopy. There



Fig. 4. Large puriri (*Vitex lucens*) with split trunk, Quarry Track. Photo: JS.



Fig. 5. Nikau (*Rhopalostylis sapida*) grove, Quarry Track. Photo: CT.

were quite a number of weeds present, but significant weed control has been carried out by the (then) Regional Council, and good regeneration was present. *Elaeagnus* (*Elaeagnus* \times *reflexa*), climbing asparagus (*Asparagus scandens*) and two species of bamboo (*Phyllostachys aurea* and *Pseudosasa japonica*) are still present, partly encroaching from surrounding properties, but kahili ginger (*Hedychium gardnerianum*) appears to have been fairly successfully controlled.



Fig. 6. *Pteris saxatilis*, Lookout Track. Photo: JS.



Fig. 7. View west from lookout platform towards Otakamiro Point (gannet colony). Photo: JS.



Fig. 8. View north from lookout platform to Muriwai Beach. Photo: JS.

Plate 1: Gannet colony and coastal vegetation, Muriwai Regional Park



a. Southern headland of gannet colony, from near northern colony. Note that colony is expanding to occupy the cliff edge between the headlands. Photo: AM.



b. Motutara Island becomes accessible on foot at very low tide. Photo: CT.



c. Mike Wilcox leads the way up the Quarry Track. Photo: CT.



d. Large pohutukawa (*Metrosideros excelsa*) reclining in the arms of a large puriri (*Vitex lucens*), Quarry Track. Photo: JS.



e. Pampas (*Cortaderia jubata*) and Pleistocene sandstone cliff, Edwin Mitchelson Track. Photo: CT.



f. Coastal forest, from lookout platform. Photo: JS.

Plate 2: Maori Bay cliffs, and rock platform at south end of bay



a. Cliffs of Maori Bay dwarf Peter Hutton. Pohutukawa (*Metrosideros excelsa*) dominates the lower slopes, and pillow lava and columnar lava loom above. Photo: CT.



b. Orange sponge (*Clionia celata*) and starfish (*Stichaster australis*), on sheltered faces of rock platform. Photo: JS.



c. The group investigates a rock island at the landward side of rock platform. Photo: CT.



d. Bull kelp (*Durvillaea antarctica*). Photo: MW.



e. *Dictyota kunthii* (a brown alga that resembles toweling strips), on rock platform. Photo: JS.



f. *Gigartina macrocarpa* (a green red alga) with *Jania verrucosa* (a pink coralline red alga), on rock platform. Photo: JS.



Fig. 9. Norfolk Island pines (*Araucaria heterophylla*) on the ridge above lookout platform. Photo: CT.

We added significant numbers of plants to the draft species list. Plants of particular interest were *Scandia rosifolia*, lying flat on the clay banks, *Hebe obtusata*, found only on this coast from Muriwai to Manukau Heads and at Kawhia Harbour (Bayly & Kellow 2006), and *Blechnum triangularifolium*, looking a bit scruffy, but recognisable once you knew its characteristic form. We also debated yet another name change, that of our local *Cortaderia*, now *Austroderia splendens*.



Fig. 10. Low coastal shrubs, trees and flax, and mainly exotic grasses, near gannet colony. Photo: CT.

Coastal cliffs and gannet colony: The walk from the main beach over the headland to Maori Bay demonstrated the resilience of native species, with coastal littoral vegetation perched on ledges and hanging on in small seeps on the cliff faces, and by the access stairs to the gannet (*Morus serrator*) colony. The vegetation around the gannet colony on the cliffs between Muriwai and Maori Bay shifts from relatively open areas dominated by exotic grasses to small patches of bush (Fig. 10). The open areas consist mainly of kikuyu grass (*Pennisetum clandestinum*), buffalo grass (*Stenotaphrum secundatum*) and beach pohuehue (*Muehlenbeckia*

complexa) with bindweed (*Calystegia sepium*) intertwining amongst them.



Fig. 11. Vegetation disappears from areas occupied by gannets. Note large guano fall from headland colony. Photo: JS.

On the open rocks, where a high degree of salt and wind tolerance is required, sea primrose (*Samolus repens*), glasswort (*Sarcocornia quinqueflora*) and remuremu (*Selliera radicans*) can be observed. These exposed areas of cliff are also being invaded by boxthorn (*Lycium ferocissimum*), boneseed (*Chrysanthemoides monilifera*) and *Carpobrotus edulis*, threatening the native herbs and grasses that thrive in similar conditions. Growing in a guano-ridden area just behind the gannets were *Einadia trigonos* and the exotic purslane (*Portulaca oleracea*).

Behind the second gannet-viewing platform there is a small remnant bush composed primarily of karaka, karo (*Pittosporum crassifolium*), hangehange (*Geniostoma ligustrifolium*) and kawakawa (*Macropiper excelsum*). Further up the hill combinations of stunted ngaio (*Myoporum laetum*), kawakawa, houpara and flax can be observed. A somewhat leathery form of *Adiantum viridescens* was seen in the shelter of overhanging shrubs and sedges on the south-facing bank beside the path between the gannet colony and the car park. It is possible that enrichment planting has taken place in this area and beside the track. No vegetation had survived the expanding area occupied by the gannets, and spills of guano down the cliff face were evident (Fig. 11). Planting had also taken place on the Maori Bay toilet block roof, where sustainable and green roof principles had been used in its design. Of the original species, flax and pohuehue seemed to be the best survivors, mixed with exotic grass and some self-seeded karo.

Marine life at Maori Bay: In our walk south along the beach at Maori Bay, the Miocene volcanic origin of the Waitakeres was clearly evident. The upper layer of the cliff face shows the distinctive, world famous, patterning of fractured pillow lava (Plate 2a). About

17 million years ago, hot basaltic lava was extruded on the sea floor, forming narrow tubes as it cooled rapidly underwater (Cameron et al. 2008). Under this layer, the lower slopes were mostly covered in exotic grasses (e.g. kikuyu), with some regeneration of coastal species. Beneath the lava lies the bedded volcanic sandstones of the Nihotupu Formation (Hayward 1983, 2006), extending from Muriwai south to Te Waharoa Point, and it is these rocks which form the low reefs which we explored at the southern end of Maori Bay (Fig. 2).



Fig. 12. Starfish (*Stichaster australis*) at south end of Maori Bay. Photo: MW, 20 Sept. 2009.

Our visited coincided with a very low spring tide and calm seas, giving us convenient and safe access to the intertidal reefs. An immediate first impression, and undoubted highlight, was the starfish, *Stichaster australis*, occurring gregariously in abundance on the shaded sides of rocks (Fig. 12). This creature is well-known as a predator of mussels. Further down the shore there were spectacular displays of an orange, encrusting sponge, *Clionia celata* on sheltered faces and undersides of overhanging rocks (Plate 2b).



Fig. 13. Exploring the seaward edge of rock platform, south end of Maori Bay. Photo: CT.

Seaweeds were abundant on these sandstone reefs, much divided by numerous channels into small islands (Plate 2c) and more extensive, continuous platforms (Fig. 13). Three green algae were common. The first, a small rosette-like sea lettuce, *Ulva californica*, grew in colonies on the top of lower intertidal rocks. The second, *Codium fragile* subsp. *novae-zelandiae*, dominated the reef-tops of the broad, mid-intertidal zone, lying spread-eagled in impressive numbers (Fig. 14). The third, *Ulva linza* – a tubular species – was altogether different in its ecology, for it was found at the foot of the Maori Bay cliffs in the high-tide zone, surviving with the help of dripping freshwater.

Brown algae were represented by two large, robust species, the laminarian kelp (*Lessonia variegata*), and bull kelp (*Durvillaea antarctica*) (Plate 2d). Both were only intermittent on this reef, the former seen draped over rocks at the very lowest intertidal level, the latter higher up on the shore – but by no means as abundant here as it is further south along the coast at Bethells, Anawhata, Piha and Karekare. Other smaller, brown algae much in evidence were *Enderachne binghamiae* and *Dictyota kunthii* (Plate 2e).



Fig. 14. *Codium fragile* subsp. *novae-zelandiae* around a pool on the rock platform, south end of Maori Bay. Mussels occupied the top of the central rock and the orange sponge, *Clionia elata*, coated the base. Photo: CT.

Red algae were by far the dominant group. In zonation order, down the shore, the most prominent ones were *Psilophycus* (*Gigartina*) *alveata*, *Pachymenia lusoria*, *Sarcothalia marginifera*, *Cladhymenia oblongifolia* and *Pachymenia laciniata*. At the lowest tide the exposed rock platforms were covered in a pink turf of *Plocamium angustum*, together with the coralline red algae *Jania verrucosa* and *J. rosea*, and the occasional *Gigartina macrocarpa*, a red alga that can turn green in high light conditions (Plate 2f).

Acknowledgements

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Two Vascular Plant Species Lists compiled 19 Feb 2011:

Muriwai Regional Park, Quarry Track, Edwin Mitchelson Track, and Lookout Track (* = exotic; PL = planted)

Lycopods

*Selaginella kraussiana**

Ferns

Adiantum cunninghamii
Adiantum viridescens
Asplenium flaccidum
Asplenium oblongifolium
Blechnum filiforme
Blechnum membranaceum
Blechnum novae-zelandiae
Blechnum triangularifolium
Cyathea dealbata
Cyathea medullaris
Doodia australis
Microsorium pustulatum
*Nephrolepis cordifolia**
Pneumatopteris pennigera
Polystichum neozelandicum
Pteridium esculentum
Pteris saxatilis
Pteris tremula
Pyrrhosia eleagnifolia

Gymnosperms

Agathis australis
*Araucaria heterophylla** PL & wild
*Cupressus macrocarpa** PL & wild
Dacrydium cupressinum
*Pinus muricata** PL
*Pinus pinaster** PL & wild
*Pinus radiata** PL & wild
*Pinus thunbergii** PL & wild
Podocarpus hallii
Podocarpus totara

Dicots

Anagallis arvensis var. *arvensis**
Apium prostratum
*Bellis perennis**
Brachyglottis repanda
*Camellia japonica**
Carmichaelia australis
*Centaurium erythraea**
Centella uniflora
*Cestrum nocturnum**
*Conyza sumatrensis**
Coprosma grandifolia
Coprosma lucida
Coprosma macrocarpa
Coprosma rhamnoides
Coprosma robusta
*Crepis capillaris**
*Daucus carota**

Dichondra repens
Dysoxylum spectabile
*Elaeagnus × reflexa**
*Erica arborea**
*Erica lusitanica**
*Eucalyptus obliqua** PL
*Eucalyptus pilularis** PL
*Eucalyptus botryoides** PL
*Euchiton sphaericus**
*Euonymus japonicus**
*Gamochaeta simplicicaulis**
Geniostoma ligustrifolium
*Grevillea robusta** PL
Haloragis erecta
Hebe macrocarpa
Hebe obtusata
Hoheria populnea
Hydrocotyle moschata
*Hypochaeris radicata**
Knightia excelsa
Kunzea ericoides s.l.
*Lepidium didymum**
Leptospermum scoparium
Leucopogon fasciculatus
Lobelia anceps
*Lotus pedunculatus**
Macropiper excelsum
*Malvaviscus arboreus**
Melicope ternata
Melicytus ramiflorus
Metrosideros excelsa
Muehlenbeckia complexa
Myrsine australis
Olearia furfuracea
Oxalis exilis
Parsonsia heterophylla
*Phytolacca octandra**
*Plantago lanceolata**
*Plantago major**
Pseudognaphalium luteoalbum
Pseudopanax crassifolius × *P. lessonii*
Pseudopanax lessonii
Pittosporum crassifolium
*Prunella vulgaris**
*Quercus ilex** PL & wild
*Rumex sagittatus**
Scandia rosifolia
*Sison amomum**
Solanum nodiflorum
*Sonchus oleraceus**
Sophora fulvida
*Syzygium smithii**
*Tecomaria capensis** PL
Tetragonia implexicoma
*Trifolium repens**

Vitex lucens
Wahlenbergia violacea

Monocots

Arthropodium cirratum
*Arundo donax**
*Asparagus scandens**
Astelia banksii
Austroderia splendens (= *Cortaderia splendens*)
*Briza maxima**
*Bromus lithobius**
Carex flagellifera
Carex lambertiana
Carex solandri
Carex spirostris
Collospermum hastatum
Cordyline australis
*Cortaderia jubata**
*Cyperus eragrostis**
*Cyrtanthus elatus**
*Dactylis glomerata**
Dianella nigra
Dichelachne crinita
*Ehrharta erecta**

Ficinia nodosa
Gahnia lacera
*Hedychium gardnerianum**
*Juncus tenuis**
Lepidosperma laterale
Libertia grandiflora
Machaerina sinclairii
Microlaena stipoides
Oplismenus hirtellus
*Paspalum dilatatum**
*Phalaris aquatica**
Phormium tenax
*Phyllostachys aurea**
Poa anceps
*Poa annua**
*Pseudosasa japonica**
Pterostylis banksii
Rhopalostylis sapida
Ripogonum scandens
Rytidosperma gracile
Schoenus tendo
*Setaria sp.**
*Sporobolus africanus**

2. Muriwai coastal cliffs (* = exotic)

Ferns

Asplenium oblongifolium
Pyrrisia eleagnifolia

Dicots

Apium prostratum
*Atriplex prostrata**
Calystegia sepium subsp. *roseata*
Calystegia soldanella
*Carpobrotus edulis**
*Chrysanthemoides monilifera**
Coprosma macrocarpa
Coprosma repens
Corynocarpus laevigatus
Disphyma australe
Einadia trigonos
Geniostoma ligustrifolium
Haloragis erecta
*Lepidium didymum**
*Lupinus arboreus**
*Lycium ferocissimum**
Macropiper excelsum
Melicytus ramiflorus
Metrosideros excelsa
Muehlenbeckia complexa
*Myoporum insulare** PL
Myoporum laetum
*Paraserianthes lophantha**

Pittosporum crassifolium
*Plantago australis**
*Portulaca oleracea**
Pseudopanax lessonii
Samolus repens
Sarcocornia quinqueflora
Selliera radicans
*Solanum nigrum**
Tetragonia implexicoma

Monocots

*Ammophila arenaria**
Apodasmia similis
Austroderia splendens
Baumea juncea
*Bromus willdenowii**
Carex flagellifera
Carex "raotest"
Carex testacea
Ficinia nodosa
Isolepis cernua
*Lagurus ovatus**
*Paspalum dilatatum**
*Pennisetum clandestinum**
Phormium tenax
Schoenoplectus tabernaemontani
*Stenotaphrum secundatum**