

# Appendices for:

## Matakohe/Limestone Island Scenic Reserve Restoration Plan

Prepared for the

**Friends of Matakohe/Limestone Island Incorporated Society**

By

Jo Ritchie

**Natural Logic Environmental Management Limited,**

12A Parr Terrace, Milford, Auckland.

Ph: (025) 818464 or (09) 4103306

or fax (09) 4108056 or email [jor@clear.net.nz](mailto:jor@clear.net.nz)

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## **Appendices:**

<a href="#"><u>Appendix One:</u></a>	Map of ecological districts and regions (1pp)
<a href="#"><u>Appendix Two:</u></a>	List of species suitable for planting (5pp)
<a href="#"><u>Appendix Three:</u></a>	Species planted on Matakoho/Limestone Island 1989-1999 (2pp)
<a href="#"><u>Appendix Four:</u></a>	Seed collection guide (5pp)
<a href="#"><u>Appendix Five:</u></a>	Species suitable for planting in and around wetland and saltmarsh communities (4pp)
<a href="#"><u>Appendix Six:</u></a>	Bird species recorded in and around Matakoho/Limestone Island (1pp)
<a href="#"><u>Appendix Seven:</u></a>	Guidelines and critical questions relating to translocation of indigenous plants and animals to islands (2pp)
<a href="#"><u>Appendix Eight:</u></a>	Design for watering stations for birds (1pp)
<a href="#"><u>Appendix Nine:</u></a>	List of invertebrate species present (1pp)
<a href="#"><u>Appendix Ten:</u></a>	Predator monitoring record sheet (2pp)
<a href="#"><u>Appendix Eleven:</u></a>	Analysis of techniques available to eradicate mice (1pp)
<a href="#"><u>Appendix Twelve:</u></a>	Predator reinvasion plan (2pp)
<a href="#"><u>Appendix Thirteen:</u></a>	List of adventive weed species of concern (1pp)
<a href="#"><u>Appendix Fourteen:</u></a>	Herbicide application rates for weed control (1pp)
<a href="#"><u>Appendix Fifteen:</u></a>	Weed control record sheet (A4 landscape, 1pp)
<a href="#"><u>Appendix Sixteen:</u></a>	Examples of information boards (3pp)
<a href="#"><u>Appendix Seventeen:</u></a>	Threatened and uncommon plants of Northland (2pp)
<a href="#"><u>Appendix Eighteen:</u></a>	Botanical Index of Common Plant Names (9pp)
<a href="#"><u>Appendix Nineteen:</u></a>	Complete list of plants in Northland (6pp)
<a href="#"><u>Appendix Twenty:</u></a>	General plant succession (1pp)

## Appendix One: Ecological Regions and Districts of the Upper North Island

### THREE KINGS

02.01 Three Kings



### TE PAKI

03.01 Te Paki

### AUPOURI

4.1 Aupouri

### WESTERN NORTHLAND

05.01 Maungataniwha  
05.02 Hokianga  
05.03 Tutamoe  
05.04 Tangihua

### EASTERN NORTHLAND

06.01 Eastern Northland and Islands  
06.02 Taranga

### POOR KNIGHTS

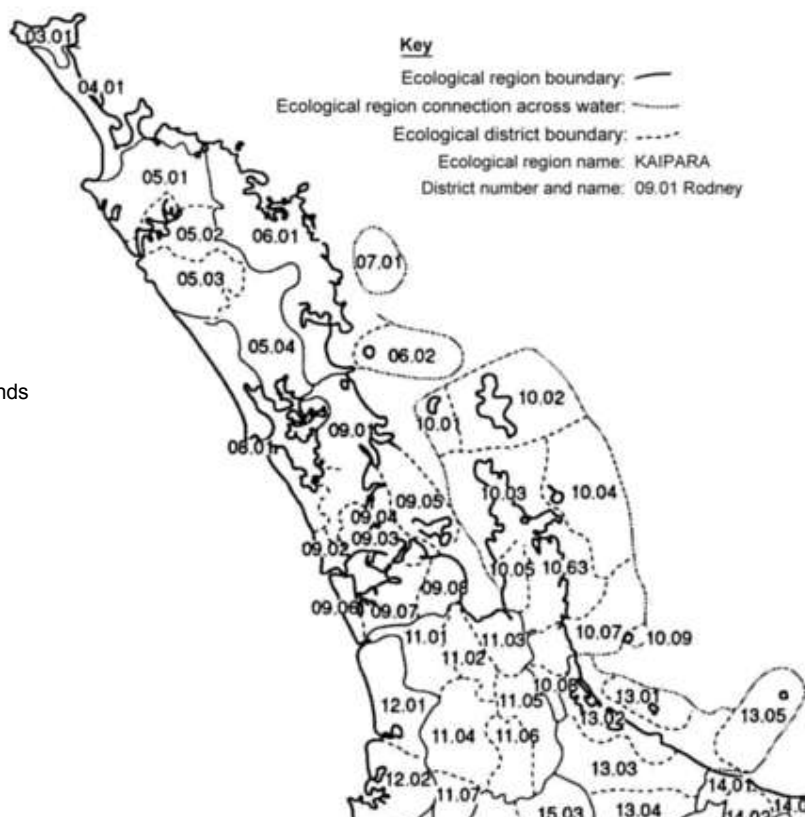
07.01 Poor Knights

### KAIPARA

08.01 Kaipara

### AUCKLAND

09.01 Rodney  
09.02 Waitakere  
09.03 Tamaki  
09.04 Rangitoto  
09.05 Inner Gulf Islands  
09.06 Awhitu  
09.07 Manukau  
9.8 Hunua



### COROMANDEL

10.01 Little Barrier  
10.02 Great Barrier  
10.03 Colville  
10.04 Mercury Islands  
10.05 Thames  
10.06 Tairua  
10.07 Waihi  
10.08 Te Aroha  
10.9 Mayor

### TAINUI

12.01 Raglan  
12.2 Kawhla  
12.3 Herangi

### WESTERN VOLCANIC PLATEAU

15.01 Ranginui  
15.02 Pureora  
15.3 Tokoroa

### NORTHERN VOLCANIC PLATEAU

13.01 Motiti  
13.02 Tauranga  
13.03 Otanewainuku  
13.04 Rotorua  
13.05 White Island

### WAIKATO

11.01 Meremere  
11.02 Hapuakohe  
11.03 Hauraki  
11.04 Hamilton  
11.05 Hinuera  
11.06 Maungatautari  
11.7 Walpa

### WHAKATANE

14.01 Te Teko  
14.02 Taneatua  
14.3 Opotiki

New Zealand has been divided into ecological regions and districts according to geology, landform, soil, climate and native vegetation. An ecological region is a collection of related ecological districts. An ecological district has the same type of ecosystem repeated throughout it.

Plants in a revegetation programme are most likely to successfully grow if plant material is collected close to the site or from within the ecological region or district. Such plants have a growth advantage as they have adapted to local conditions.

[Jump to list of Appendices](#)

## Appendix Two: Coastal Lowland Forest Species for Matakohe/Limestone Island

Species	Common name	Forest	Shrub -land	Open- Rocky	L. Island as a habitat	Local (Y/N)	Plant preference or other comment
<b>GYMNOSPERMS</b>							
<i>Agathis australis</i>	Kauri	✓			Y	Y	Sheltered areas
<i>Dacrycarpus dacrydioides</i>	Kahikatea	✓			G	Y	Wet soils, planted
<i>Dacrydium cupressinum</i>	Rimu	✓			P	Y	Probably not common
<i>Phyllocladus trichomanoides</i>	Tanekaha	✓			Y	Y	Probably not common
<i>Podocarpus totara</i>	Totara	✓			G	Y	Present & planted
<i>Prumnopitys ferruginea</i>	Miro	✓			Y	Y	Probably not common
<i>Prumnopitys taxifolia</i>	Matai	✓			Y	Y	Probably not common
<b>MONOCOTYLEDENOUS TREES AND SHRUBS</b>							
<i>Cordyline australis</i>	Ti Kouka/Cabbage tree	✓	✓		G	Y	Planted
<i>Cordyline banksii</i>	Ti Ngahere/Forest Cabbage Tree	✓			Y	Y	Needs shelter
<i>Cordyline pumilio</i>	Ti Rauriki/Dwarf Cabbage tree	✓	✓		Y	Y	Needs shelter
<i>Rhopalostylis sapida</i>	Nikau	✓			G	Y	Mature forest, planted
<b>DICOTYLEDONOUS TREES AND SHRUBS</b>							
<i>Alectryon excelsus ssp excelsus</i>	Titoki	✓			G	Y	Present and planted
<i>Alseuosmia banksii</i>	Karapapa/Bush Daphne	✓			P	Y	Needs shelter
<i>Alseuosmia macrophylla</i>	Toropapa/ Bush Daphne	✓			P	Y	Needs shelter
<i>Aristotelia serrata</i>	Makomako/Wineberry	✓			G	Y	Planted
<i>Beilschmiedia taraire</i>	Taraire	✓			Y	Y	Hardy
<i>Beilschmiedia tawa</i>	Tawa	✓			Y	Y	Some shelter
<i>Beilschmiedia tawa spp tawaroa</i>	Tawaroa	✓			Y	Y	Some shelter
<i>Brachyglottis repanda</i>	Rangiora	✓	✓		Y	Y	Probably
<i>Carmichaelia arborea</i>	Maukoro/Tree broom		✓		Y	Y	Some shelter
<i>Carmichaelia australis</i>	Maukoro/Tree broom		✓		G	Y	Some shelter
<i>Carmichaelia australis Northland</i>			✓		Y		Some shelter
<i>Carpodetus serratus</i>	Putaputaweta / Marbleleaf	✓			Y	Y	Hardy, shade
<i>Clianthus puniceus</i>	Kowhai ngutu kaka/Kaka beak		✓	✓	G	Y	Planted – source Kaipara Harbour, locally extinct
<i>Colensoa physaloides</i>	Koru/Giant Pratia	✓			P	Y	Some shelter, snails eat it
<i>Coprosma arborea</i>	Mamangi	✓	✓		Y	Y	Hardy
<i>Coprosma areolata</i>	Net Veined Coprosma				Y		Hardy
<i>Coprosma grandifolia</i>	Kanono	✓	✓		Y	Y	Hardy
<i>Coprosma lucida</i>	Shining Karamu	✓	✓		Y	Y	Hardy
<i>Coprosma macrocarpa spp "mainland"</i>	Coast Karamu	✓	✓		G	Y	Present, Hardy
<i>Coprosma propinqua spp propinqua</i>	Mikimiki/Swamp Coprosma		✓		G	Y	Present & hybrid with macrocarpa
<i>Coprosma repens</i>	Taupata/Mirror leaf	✓	✓	✓	G	Y	Planted
<i>Coprosma rhamnoides</i>	Twiggy or red fruited Karamu	✓	✓		Y	Y	Hardy
<i>Coprosma robusta</i>	Karamu	✓	✓		Y	Y	Hardy
<i>Coprosma spathulata</i>	Spoon-leaved Coprosma	✓	✓		Y	Y	Hardy
<i>Coriaria arborea</i>	Tutu	✓			G	Y	Planted, Hardy
<i>Corokia cotoneaster</i>	Korokia		✓		Y	Y	Needs shelter
<i>Corynocarpus laevigatus</i>	Karaka	✓			G	Y	Present & planted
<i>Cyathodes juniperina</i>	Mingimingi	✓	✓		Y	Y	Hardy
<i>Dodonea viscosa</i>	Akeake	✓			G	Y	Planted
<i>Dysoxylum spectabile</i>	Kohekohe	✓			G	Y	Present and planted
<i>Entelea arborescens</i>	Whau/Corkwood	✓			G	Y	Planted
<i>Fuchsia excorticata</i>	Kotukutuku/Tree Fuchsia	✓			Y	Y	Shelter and shade
<i>Geniostoma rupestre</i>	Hangehange	✓	✓		G	Y	Planted
<i>Griselinia lucida</i>	Puka	✓		✓	G	Y	Planted

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May 2000

**Appendix Two: continued ...**

Species	Common name	Forest	Shrub -land	Open- Rocky	L. Island as a habitat	Local (Y/N)	Plant preference or other comment
<i>Hebe bollonsii</i>	Bollon's Koromiko		✓	✓	Y	Y	To be planted- Whangarei heads
<b><i>Hebe ligustrifolia</i></b>	Koromiko		✓	✓	G	Y	Planted
<b><i>Hebe macrocarpa</i></b>	Koromiko		✓		Y	Y	Hardy
<i>Hebe parviflora</i>	Tree Koromiko		✓		Y	Y	Shelter and shade
<b><i>Hebe stricta</i></b>	Koromiko		✓	✓	G	Y	Planted
" <i>Hebe Whangarei</i> "	Koromiko		✓	✓	Y	Y	Whangarei Heads
<i>Hedycarya arborea</i>	Porokaiwhiri / Pigeonwood	✓			G	Y	Planted
<i>Helichrysum lanceolatum</i>	Niniaio		✓	✓	Y	Y	Shelter and shade
<i>Hibiscus trionum</i>	Starry Hibiscus			✓	Y	Y	Shelter and shade
<b><i>Hoheria populnea</i> var. <i>populnea</i></b>	Houhere/Lacebark	✓			G	Y	Present & planted
<i>Knightia excelsa</i>	Rewarewa	✓			G	Y	Planted
<b><i>Kunzea ericoides</i> agg.</b>	Kanuka/Tea tree	✓	✓		G	Y	Planted
<b><i>Leptospermum scoparium</i></b>	Manuka/Tea tree		✓		G	Y	Present & planted
<b><i>Leucopogon fasciculatus</i> var. "Northern"</b>	Mingimingi	✓	✓		Y	Y	Hardy
<i>Litsea calicaris</i>	Mangaeo	✓			Y	Y	Grows nearby Western point
<i>Lophomyrtus bullata</i>	Ramarama	✓			Y	Y	Shelter and shade
<i>Macropiper excelsum</i> spp. <i>excelsum</i>	Kawakawa	✓	✓		Y	Y	Shelter and shade
<b><i>Melicope simplex</i></b>	Poataniwha	✓	✓		G	Y	Hardy
<b><i>Melicope ternata</i></b>	Wharangi	✓	✓		G	Y	Present and planted
<b><i>Melicytus lanceolatus</i></b>	Narrow leaved Mahoe	✓			Y	Y	Hardy
<b><i>Melicytus macrophyllus</i></b>	Large-leaf Mahoe	✓			Y	Y	Hardy
<b><i>Melicytus novae- zelandiae</i></b>	Coastal Mahoe	✓	✓		Y	Y	Hardy
<b><i>Melicytus ramiflorus</i></b>	Mahoe	✓			G	Y	Planted
<b><i>Metrosideros excelsa</i></b>	Pohutakawa	✓			G	Y	Present and planted
<i>Metrosideros robusta</i>	Northern Rata	✓			Y	Y	Shelter and shade
<b><i>Myoporum laetum</i></b>	Ngaio	✓			G	Y	Planted-present Onemana Pt
<b><i>Myrsine australis</i></b>	Mapau	✓	✓		G	Y	Present & planted
<i>Myrsine salicina</i>	Toro	✓			Y	Y	Needs shelter
<b><i>Nestegis apetala</i></b>	Coastal Maire	✓			G	Y	Planted
<b><i>Nestegis lanceolata</i></b>	White Maire	✓			Y	Y	Needs shelter
<i>Nestegis montana</i>	Roro Roro	✓			Y	Y	Needs shelter
<i>Olearia albida</i>	Tanguru		✓		Y	Y	Needs shelter
<i>Olearia angulata</i>	Tanguru		✓		Y	Y	Needs shelter
<b><i>Olearia furfuracea</i> "Northern"</b>	Akipiro	✓	✓		G	Y	Planted
<i>Olearia rani</i> var. <i>rani</i>	Heketara	✓			Y		Needs shelter
<i>Ozothamnus leptophyllus</i>	Tauhinu		✓		Y	Y	Hardy, coastal
<b><i>Pimelia</i> cf. <i>Urvileana</i></b>	Pinaatoro			✓	Y	Y	Coastal cliffs
<b><i>Pimelia longifolia</i></b>	Eastern Northland and Islands		✓		Y	Y	Coastal cliffs
<b><i>Pimelia manaia</i></b>	Daphne sp.			✓	P	Y	Range restricted (Mt. Manaia area)
<b><i>Pimelia prostrata</i></b>	Pinaatoro			✓	Y	Y	Coastal cliffs
<b><i>Pimelia tomentosa</i></b>	Hairy Daphne			✓	Y	Y	Coastal cliffs
<b><i>Pisonia brunoniana</i></b>	Parapara/Bird Catching tree	✓			G	Y	Present one tree Hardy
<b><i>Pittosporum eugenoides</i></b>	Tarata/Lemonwood	✓			Y	Y	Shelter and shade
<b><i>Pittosporum cornifolium</i></b>	Tawhiri Karo	✓			Y	Y	Hardy
<b><i>Pittosporum crassifolium</i></b>	Karo	✓			Y	Y	Hardy
<b><i>Pittosporum kirkii</i></b>	Kirks Karo	✓			Y	Y	Epiphyte large trees
<b><i>Pittosporum tenuifolium</i></b>	Kohuhu	✓			G	Y	Planted
<b><i>Pittosporum umbellatum</i></b>	Haekaro	✓			Y	Y	Shelter and shade
<i>Pomaderris kumeraho</i>	Kumerahou		✓		Y	Y	Shelter and shade
<b><i>Pomaderris phycifolia</i></b>	Tauhinu		✓		Y	Y	Shelter and shade

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May 2000

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Species	Common name	Forest	Shrub-land	Open-Rocky	L. Island as a habitat	Local (Y/N)	Plant preference or other comment
<i>Pouteria costata</i>	Tawapou	✓			G	Y	Present & planted
<i>Pseudopanax arboreus</i>	Five-finger	✓			Y	Y	Hardy
<i>Pseudopanax crassifolius</i>	Horeka/Lancewood	✓			Y	Y	Hardy
<i>Pseudopanax lessonii</i>	Houpara	✓	✓		G	Y	Planted
<i>Rhabdothamnus solandri</i>	Taurepo	✓	✓		Y	Y	Hardy
<i>Schefflera digitata</i>	Pate	✓			G	Y	Planted
<i>Solanum aviculare</i>	Poroporo	✓	✓		G	Y	Planted
<i>Sophora microphylla (coast form)</i>	Kowhai	✓	✓		G	Y	Planted, young plants prone to snail attack
<i>Streblus banksii</i>	Turepo/Large leaf Milkwood Tree	✓			G	Y	Planted, hardy
<i>Streblus heterophyllus</i>	Towai/Small Leaf Milkwood Tree	✓			Y	Y	Hardy
<i>Toronia toru</i>	Toru	✓	✓		Y	Y	Needs shelter
<i>Vitex lucens</i>	Puriri	✓			G	Y	Present & planted
<i>Weinmannia racemosa ssp. silvicola</i>	Towai	✓			Y	Y	Shelter and shade
<b>MONOCOTYLEDONOUS LIANES</b>							
<i>Freycinetia banksii</i>	Kiekie	✓			Y	Y	Needs shelter
<i>Ripogonum scandens</i>	Karaeo/Supplejack	✓			Y	Y	Needs forest
<b>DICOTYLEDONOUS LIANES &amp; RELATED TRAILING PLANTS</b>							
<i>Calystegia marginata</i>	Convolvulus/Morning glory		✓	✓	Y	Y	Coastal cliffs and steep faces
<i>Calystegia sepium</i>	Pohue/Bindweed		✓	✓	Y	Y	Coastal cliffs and steep faces
<i>Calystegia tuguriorum</i>	Pohue		✓	✓	Y	Y	Coastal cliffs and steep faces
<i>Clematis cunninghamii</i>	Clematis		✓		Y	Y	Can grow on young manuka/kanuka
<i>Clematis paniculata</i>	Puawhananga/Clematis	✓	✓		Y	N	As above
<i>Ipomoea cairica</i>	Powhiwhi /Morning Glory			✓	Y	Y	Coastal cliffs and steep faces
<i>Metrosideros carminea</i>	Carmine rata	✓	✓		Y	Y	Needs estab. forest
<i>Metrosideros diffusa</i>	Slender rata	✓	✓		Y	Y	As above
<i>Metrosideros fulgens</i>	Orange rata	✓			Y	Y	As above
<i>Metrosideros perforata</i>	White rata	✓			Y	Y	Coastal cliffs and steep faces
<i>Muehlenbeckia australis</i>	Pohuehue	✓	✓		Y	Y	Coastal cliffs and steep faces
<i>Muehlenbeckia complexa</i>	Pohuehue		✓	✓	G	Y	Coastal cliffs and steep faces
<i>Parsonsia capsularis</i>	Akakiore/Native jasmine	✓	✓		Y	Y	Needs estab. forest
<i>Parsonsia heterophylla</i>	Kaiwhiria/Native jasmine	✓	✓		Y	Y	As above
<i>Passiflora tetrandra</i>	Kohia/Passionfruit	✓			Y	Y	As above
<i>Rubus australis</i>	Tataramoa/Bush lawyer	✓			Y	Y	Hardy
<i>Rubus cissoides</i>	Tataramoa/Bush lawyer	✓	✓		Y	Y	Hardy
<i>Rubus squarrosus</i>	Bush Lawyer	✓	✓		Y	Y	Hardy
<i>Sicyos australis</i>	Mawhai	✓	✓		Y	Y	Endangered
<b>FERNS</b>							
<i>Adiantum aethiopicum</i>	True maidenhair	✓	✓		Y	Y	
<i>Adiantum cunninghamii</i>	Puhinui/Common maidenhair	✓	✓		G	Y	Present
<i>Adiantum hispidulum</i>	Rosy maidenhair	✓	✓		Y	Y	
<i>Asplenium oblongifolium</i>	Huruhuruwhenua / Shining spleenwort	✓	✓		Y	Y	
<i>Asplenium obtusatum</i>	Parako/Paranako/Shore spleenwort	✓	✓	✓	Y	Y	Hardy
<i>Cyathea medullaris</i>	Mamaku/Korau/Black tree fern	✓			Y	Y	Needs shelter
<i>Cyathea dealbata</i>	Ponga/Silver Tree fern	✓			Y	Y	Needs shelter
<i>Deparia patersenii</i>		✓			Y	Y	Needs shelter
<i>Dicksonia squarrosa</i>	Wheki	✓			Y	Y	Needs shelter
<i>Doodia media</i>	Rasp fern	✓	✓		Y	Y	Coastal forest, hardy
<i>Doodia mollis</i>	Mokimoki	✓	✓		Y	Y	Needs shelter

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Species	Common name	Forest	Shrub-land	Open-Rocky	L. Island as a habitat	Local (Y/N)	Plant preference or other comment
<i>Gleichenia microphylla</i>	Waewaekaka/Carrier tangle	✓			Y	Y	Hardy
<i>Lygodium articulatum</i>	Mangemange	✓			Y	Y	NCA
<i>Microsorium pustulatum</i>	Kowaowao/Hound's tongue	✓	✓		Y	Y	Epiphyte or ground
<i>Pellaea rotundifolia</i>	Button fern/Tarawera	✓	✓		Y	Y	Needs shelter
<i>Polystichium richardii</i>	Pikopiko/Common shield fern	✓	✓		Y	Y	Hardy coastal fern
<i>Pteridium esculentum</i>	Bracken		✓	✓	Y	Y	Hardy
<i>Pteris macilentata</i>	Sweet brake fern	✓			Y	Y	
<i>Pteris tremula</i>	Trembling brake fern	✓	✓		G	Y	
<i>Pyrrosia eleagnifolia</i>	Ngarara wehi/leather leaf fern	✓	✓	✓	Y	Y	Hardy, coastal cliffs
<i>Trichomanes reniforme</i>	Raurenga/kidney fern	✓	✓	✓	Y	Y	Tolerant of dry summer conditions
<b>GRASSES</b>							
<i>Chionochloa bromoides</i>	Coastal Tussock			✓	Y	Y	Hardy, coastal cliffs
<i>Cortaderia splendens</i>	Coastal Toetoe			✓	Y	Y	Hardy, coastal cliffs
<i>Microlaena avenacea</i>	Bush rice grass	✓	✓		Y	Y	Hardy
<i>Microlaena polynoda</i>	Native bamboo grass	✓	✓		Y	Y	Hardy
<i>Microlaena stipoides</i>	Meadow rice grass	✓	✓	✓	Y	Y	Hardy
<i>Oplismenus imbecillus</i>		✓	✓		Y	Y	Hardy
<b>SEDGES</b>							
<i>Carex dissita</i>	Sedge	✓	✓		Y	Y	Hardy
<i>Carex geminata</i>	Sedge	✓			Y	Y	Hardy
<i>Carex lessoniana</i>	Sedge	✓	✓		Y	Y	Hardy
<i>Carex solandri</i>	Bush Sedge	✓	✓		Y	Y	Hardy
<i>Gahnia lacera</i>	Cutty grass	✓	✓		Y	Y	Hardy
<i>Gahnia setifolia</i>	Cutty grass	✓	✓		Y	Y	Hardy
<i>Uncinia banksii</i>	Watau/ Hook sedge	✓	✓		Y	Y	Hardy
<i>Uncinia uncinata</i>	Cutty Grass	✓	✓		Y	Y	Hardy
<b>MONOCOTYLEDONOUS HERBS (but not orchids, grasses, sedges, rushes and allied plants)</b>							
<i>Arthropodium cirratum</i>	Rengarenga/Rock lily			✓	Y	Y	Hardy coastal cliffs, prone to snails
<i>Astelia banksii</i>	Kowharawhara/Shore astelia	✓	✓	✓	Y	Y	Hardy
<i>Astelia solandri</i>	Kowharawhara/Perching lily	✓	✓	✓	Y	Y	Usually an epiphyte
<i>Collospermum hastatum</i>	Kahakaha	✓		✓	Y	Y	Epiphyte
<i>Dianella nigra</i>	Turutu/ Blueberry	✓	✓	✓	Y	Y	Need shelter
<i>Libertia grandiflora</i>	NZ iris	✓	✓		Y	Y	Understory
<i>Libertia ixioides</i>	Creeping NZ iris	✓	✓		Y	Y	Hardy
<i>Phormium tenax</i>	Harakeke/ Flax		✓	✓	G	Y	Planted
<b>DICOTYLEDONOUS HERBS</b>							
<i>Australina pusilla</i>		✓	✓		Y	Y	Understory
<i>Dichondra repens</i>	Dichondra	✓	✓	✓	Y	Y	May be present
<i>Elatostema rugosum</i>	Parataniwha	✓			Y	Y	Wet/shade
<i>Euphorbia glauca</i>	Waiuatua/ Shore Spurge			✓	Y	Y	Beach areas
<i>Haloragis erecta</i>	Toatoa		✓	✓	G	Y	Present
<i>Hydrocotyle elongata</i>	Wax weed	✓	✓	✓	Y	Y	Hardy
<i>Hydrocotyle novae-zelandiae</i>	Wax weed	✓	✓	✓	Y	Y	Hardy
<i>Lagenifera pumila</i>	Papataniwhaniwha		✓	✓	Y	Y	Shade
<i>Lepidium olearicum</i>	Cooks Scurvy Grass			✓	Y	N	Rare, needs nesting sea birds
<i>Linum monogynum</i>	Rauhuia / Native Flax			✓	Y	Y	Hardy coastal
<i>Nertera sp.</i>	Nerteras	✓			Y	Y	Damp mossy sites
<i>Parietaria debilis</i>		✓	✓		Y	Y	Understory
<i>Peperonia urvilleana</i>	Wharanui/NZ pepper	✓	✓	✓	Y	Y	Hardy epiphyte or rupestral
<i>Scandia rosifolia</i>	Kohekohe/NZ angelica	✓	✓		Y	Y	Hardy
<i>Senecio lautus</i>	Shore Groundsel			✓	Y	Y	Hardy
<i>Urtica incisa</i>	Stinging nettle	✓	✓		Y	Y	Food plant for NZ Admiral butterfly

*Matakohe/Limestone Island Scenic Reserve Restoration Plan  
May 2000*

**KEY:**

- ✓ indicates the habitat(s) the plant is usually found in. Shrublands and open rocky areas are considered part of coastal forest associations.

Limestone Island as a habitat for the plant:

- G indicates the plant is presently growing on the Island
- Y indicates it is probable or highly likely the plant can grow on the Island
- P indicates it is possible the plant can grow on the Island
- ? indicates it is doubtful or unknown if the plant can grow on the Island
- N indicates it is very unlikely the plant can grow on the Island (outside of bio-geographical range or conditions not suitable on Limestone Island)

Those species identified in bold are pioneering and seral species that are initial forest establishers. The remainder of species are either limited in their habitat (as defined in the plant preference or other column) or require shelter or a host tree (climbers such as clematis fall into this category) to become established.

For a description of botanical groupings used, see bottom of plant list in Appendix 19.

[\*\*Jump to list of Appendices\*\*](#)

## Appendix Three: Species Planted on Matakohe/Limestone Island 1989-2000

List compiled by Sheryl Mai, Whangarei District Council.

### List A – sorted by Species

Species	Common Name
<i>Ackama rosaefolia</i>	Makamaka
<i>Alectryon excelsa</i>	Titoki
<i>Apodisma similis</i>	Oioi/Jointed Wire Rush
<i>Aristolelia serrata</i>	Wineberry
<i>Arthropodium cirrhatum</i>	Rengarenga/Rock lily
<i>Astelia banksii</i>	Coastal Astelia
<i>Astelia solandri</i>	Kowharawhara
<i>Baumea juncea</i>	Sedge
<i>Beilschmeidia tarairi</i>	Taraire
<i>Beilschmeidia tawa</i>	Tawa
<i>Bolboschoenus fluviatilis</i>	Marsh clubrush
<i>Carex secta</i>	Pukio
<i>Carmichaelia aligera</i>	Tree Broom
<i>Carmichaelia australis</i>	Tree Broom
<i>Carpodetus serratus</i>	Putaputaweta
<i>Clianthus puniceus</i>	Kakabeak
<i>Collospermum hastatum</i>	Kahakaha
<i>Coprosma arborea</i>	Mamangi/Tree coprosma
<i>Coprosma assorted</i>	Coprosma spp.
<i>Coprosma grandifolia</i>	Kanono
<i>Coprosma lucida</i>	Karamu
<i>Coprosma macrocarpa</i>	Large seeded coprosma
<i>Coprosma repens</i>	Taupata
<i>Coprosma robusta</i>	Karamu
<i>Cordyline australis</i>	Cabbage Tree
<i>Cordyline banksii</i>	Ti-ngahere
<i>Coriaria arborea</i>	Tree tutu
<i>Corokia cotoneaster</i>	Korokio
<i>Cortaderia fulvida</i>	Toe toe
<i>Corynocarpus laevigatus</i>	Karaka
<i>Cyperus ustulatus</i>	Coastal cutty grass
<i>Dacrycarpus dacrydioides</i>	Kahikatea
<i>Dodonaea viscosa</i>	Akeake
<i>Dodonaea viscosa purpurea</i>	Purple akeake
<i>Dysoxylum spectabile</i>	Kohekohe
<i>Dysphyma australis</i>	Horokaka/Ice plant
<i>Elaeocarpus dentatus</i>	Hinau
<i>Entelea arborescens</i>	Whau
<i>Fuchsia exorticata</i>	Kotukutuku
<i>Geniostoma rupestre</i>	Hangehange
<i>Griselinia lucida</i>	Akapuka
<i>Hebe bollonsii</i>	Koromiko
<i>Hebe ligustrifolia</i>	Koromiko
<i>Hebe macrocarpa</i> var. <i>macrocarpa</i>	Koromiko

Species	Common Name
<i>Hebe stricta</i>	Koromiko
<i>Hedycarya arborea</i>	Pigeonwood
<i>Hibiscus trionum</i>	Hibiscus
<i>Hoheria populnea</i>	Houhere
<i>Juncus australis</i>	Leafless Rush
<i>Juncus gregiflorus</i>	Leafless Rush
<i>Juncus pallidus</i>	Giant Rush
<i>Knightia excelsa</i>	Rewa rewa
<i>Kunzea ericoides</i>	Kanuka
<i>Leptospermum scoparium</i>	Manuka
<i>Litsea calicaris</i>	Mangeao
<i>Macropiper excelsum</i>	Kawakawa
<i>Melicope ternata</i>	Wharangi
<i>Melicytus novae zelandiae</i>	Mahoe
<i>Melicytus ramiflorus</i>	Mahoe
<i>Metrosideros excelsa</i>	Pohutukawa
<i>Metrosideros robusta</i>	Rata
<i>Myoporum laetum</i>	Ngaio
<i>Myrsine australis</i>	Matipo
<i>Nestegis apetala</i>	Coastal Maire
<i>Nestegis cunninghami</i>	Black Maire
<i>Nestegis lanceolata</i>	White maire
<i>Olearia albida</i>	Olearia
<i>Olearia furfuracea</i>	Akepiro
<i>Olearia solandri</i>	Coastal Tree Daisy
<i>Phormium cookianum</i>	Mountain flax
<i>Phormium tenax</i>	Harakeke
<i>Pittosporum crassifolium</i>	Karo
<i>Pittosporum ellipticum</i>	Pittosporum
<i>Pittosporum eugenioides</i>	Tarata
<i>Pittosporum tenuifolium</i>	Kohuhu
<i>Pittosporum umbellatum</i>	Haekaro
<i>Plagianthus divaricatus</i>	Ribbonwood
<i>Podocarpus totara</i>	Totara
<i>Pouteria costata</i>	Tawapou
<i>Pseudopanax arboreus</i>	Five-finger
<i>Pseudopanax crassifolium</i>	Lancewood
<i>Pseudopanax lessonii</i>	Houpara
<i>Pteridium esculentum</i>	Bracken
<i>Rhopalostylis sapida</i>	Nikau
<i>Schefflera digitata</i>	Pate
<i>Schoenoplectus vailidus</i>	Lake Clubrush
<i>Solanum aviculare</i>	Poroporo
<i>Sophora microphylla</i>	Kowhai
<i>Streblus banksii</i>	Towai
<i>Toronia toru</i>	Toru
<i>Vitex lucens</i>	Puriri

## Appendix Three: continued ...

### List B – sorted by Common Name

Common Name	Species
Akapuka	<i>Griselinia lucida</i>
Akeake	<i>Dodonaea viscosa</i>
Akepiro	<i>Olearia furfuracea</i>
Black Maire	<i>Nestegis cunninghami</i>
Bracken	<i>Pteridium esculentum</i>
Cabbage Tree	<i>Cordyline australis</i>
Coastal Astelia	<i>Astelia banksii</i>
Coastal cutty grass	<i>Cyperus ustulatus</i>
Coastal Maire	<i>Nestegis apetala</i>
Coastal Tree Daisy	<i>Olearia solandri</i>
Coprosma spp.	<i>Coprosma assorted</i>
Five-finger	<i>Pseudopanax arboreus</i>
Giant Rush	<i>Juncus pallidus</i>
Haekaro	<i>Pittosporum umbellatum</i>
Hangehange	<i>Geniostoma rupestre</i>
Harakeke	<i>Phormium tenax</i>
Hibiscus	<i>Hibiscus trionum</i>
Hinau	<i>Elaeocarpus dentatus</i>
Horokaka/Ice plant	<i>Dysphyma australis</i>
Houhere	<i>Hoheria populnea</i>
Houpara	<i>Pseudopanax lessonii</i>
Kahakaha	<i>Collospermum hastatum</i>
Kahikatea	<i>Dacrycarpus dacrydioides</i>
Kakabeak	<i>Clianthus puniceus</i>
Kanono	<i>Coprosma grandifolia</i>
Kanuka	<i>Kunzea ericoides</i>
Karaka	<i>Corynocarpus laevigatus</i>
Karamu	<i>Coprosma lucida</i>
Karamu	<i>Coprosma robusta</i>
Karo	<i>Pittosporum crassifolium</i>
Kawakawa	<i>Macropiper excelsum</i>
Kohekohe	<i>Dysoxylum spectabile</i>
Kohuhu	<i>Pittosporum tenuifolium</i>
Korokio	<i>Corokia cotoneaster</i>
Koromiko	<i>Hebe bollonsii</i>
Koromiko	<i>Hebe ligustrifolia</i>
Koromiko	<i>Hebe macrocarpa var. macrocarpa</i>
Koromiko	<i>Hebe stricta</i>
Kotukutuku	<i>Fuchsia exorticata</i>
Kowhai	<i>Sophora microphylla</i>
Kowharawhara	<i>Astelia solandri</i>
Lake Clubrush	<i>Schoenoplectus vailidus</i>
Lancewood	<i>Pseudopanax crassifolium</i>
Large seeded coprosma	<i>Coprosma macrocarpa</i>
Leafless Rush	<i>Juncus australis</i>
Leafless Rush	<i>Juncus gregiflorus</i>

Common Name	Species
Mahoe	<i>Meliccytus novae zelandiae</i>
Mahoe	<i>Meliccytus ramiflorus</i>
Makamaka	<i>Ackama rosaefolia</i>
Mamangi/Tree coprosma	<i>Coprosma arborea</i>
Mangeao	<i>Litsea calicaris</i>
Manuka	<i>Leptospermum scoparium</i>
Marsh clubrush	<i>Bolboschoenus fluviatilis</i>
Matipo	<i>Myrsine australis</i>
Mountain flax	<i>Phormium cookianum</i>
Ngaio	<i>Myoporum laetum</i>
Nikau	<i>Rhopalostylis sapida</i>
Oioi/Joined Wire Rush	<i>Apodisma similis</i>
Olearia	<i>Olearia albida</i>
Pate	<i>Schefflera digitata</i>
Pigeonwood	<i>Hedycarya arborea</i>
Pittosporum	<i>Pittosporum ellipticum</i>
Pohutukawa	<i>Metrosideros excelsa</i>
Poroporo	<i>Solanum aviculare</i>
Pukio	<i>Carex secta</i>
Puriri	<i>Vitex lucens</i>
Purple akeake	<i>Dodonaea viscosa purpurea</i>
Putaputaweta	<i>Carpodetus serratus</i>
Rata	<i>Metrosideros robusta</i>
Rengarenga/Rock lily	<i>Arthropodium cirrhatum</i>
Rewa rewia	<i>Knightia excelsa</i>
Ribbonwood	<i>Plagianthus divaricatus</i>
Sedge	<i>Baumea juncea</i>
Taraire	<i>Beilschmeidia tarairi</i>
Tarata	<i>Pittosporum eugenioides</i>
Taupata	<i>Coprosma repens</i>
Tawa	<i>Beilschmeidia tawa</i>
Tawapou	<i>Pouteria costata</i>
Ti-ngahere	<i>Cordyline banksii</i>
Titoki	<i>Alectryon excelsa</i>
Toe toe	<i>Cortaderia fulvida</i>
Toru	<i>Toronia toru</i>
Totara	<i>Podocarpus totara</i>
Towai	<i>Strebilus banksii</i>
Tree Broom	<i>Carmichaelia aligera</i>
Tree Broom	<i>Carmichaelia australis</i>
Tree tutu	<i>Coriaria arborea</i>
Wharangi	<i>Melicope ternata</i>
Whau	<i>Entelea arborescens</i>
White maire	<i>Nestegis lanceolata</i>
Wineberry	<i>Aristolelia serrata</i>

[Jump to list of Appendices](#)

## **Appendix Four: Seed Collection Guide for Limestone Island<sup>1</sup>**

### **Seed Collection Guidelines**

#### **Seed Source**

In order to develop an association of species that were most likely to have occurred on Limestone Island and are most likely to survive, plants will be sourced from seed or cuttings from the Eastern Northland and Islands Ecological District

- In the first instance collect seeds and cuttings from the Whangarei Harbour area. Care must be taken that the source species is one that has established naturally from naturally occurring progeny and not trees that have been planted;
- Seed source should be collected in preference to cuttings as this provides a better range of genetic diversity;
- As seed sources develop on the island, these sources must be collected in preference to mainland sources as they will have adapted to the local conditions;
- To ensure genetic diversity seed should be collected at random from several plants.

#### **Species to Collect and When**

The seed requirements will vary annually in response to the planting programme. As there are seasonal variations, it is not always possible to give very specific information about when the seed of each species will be ripe for collection. The attached chart is a guide only and should be updated as more localised information is obtained. It is also useful to develop a seed map for the island and the mainland locations that seed is being collected from. This provides collectors with information on seed sources that are known to do well on the island. The map simply identifies the species in the particular location along with the months that seed can be collected.

Generally, but not always, trees and shrubs that are flowering should produce seed within 2 months. Regular monitoring of these species and recording the speed of progression from flower to ripe seed should be used to develop a reference list for future years. For some plants the time when the seed starts to ripen and the seed falls can only be a few days, e.g. mapou.

Some species are more easily grown from cuttings than seed, e.g. Carmichaelia species. Other species are easily grown from cuttings if the optimum collection time is missed, e.g. hangehange and hebe.

Most native species produce viable, ripe seed during the period late January to early April. Some that regularly produce earlier than this include:

- Titoki (*Alectryon excelsus*)
- Rangiora (*Brachyglottis repanda*)
- Kumerahou (*Pomaderris kumeraho*)
- Tanekaha (*Phyllocladus trichomanoides*)
- Kawakawa (*Macropiper excelsum*, sub species *excelsum*)
- Puriri (*Vitex lucens*)
- Tawa (*Beilschmiedia tawa*)
- Mahoe (*Melicytus ramiflorus*)
- Wineberry (*Aristotelia serrata*)
- Toetoe (*Cortaderia splendens*)
- Wetland sedges (*Carex* sp.)

#### **Different Seed Types**

Considerable effort can be wasted if unripe or otherwise unviable seed is collected. There are a number of seed types and general rules of collection that apply to each that will greatly assist the collector if adhered to.

It must be stressed that these are generalisations and there will always be exceptions to the rules as well as species that do not fit any of the categories.

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<sup>1</sup> Adapted from Moturoa Restoration Working Plan, Hawley, 1997, App. 10

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*May 2000*

Capsules and pods

The capsules or pods of the following species generally dry and spilt open when seed is ripe, exposing medium/large seeds inside which are sometimes released soon after opening.

- Large capsuled species include all the *Pittosporums*, titoki and kohekohe. Bean pod types include kowhai, rewarewa and flax. Smaller capsuled species include hangehange and native broom.
- Generally the seed is not ripe until the pods or capsules start to dry and open. Caution should be taken not to leave these too long, however, as seed can be released soon after opening.
- To ensure ripeness, kohekohe seed is best picked up from the ground.
- To beat the birds, rewarewa seed is best picked green from the tree, check that the seed is distinct in the pod with a white wing. Dry in a paper bag.
- To remove black sticky seed of karo, mix with French chalk.

Succulent berries

These species produce many succulent, often brightly coloured berries, which contain grain shaped seed within. Species include wineberry, all *Coprosma*, mahoe and cabbage trees.

- Some species produce their own seeds in umbels<sup>2</sup>, e.g. houpara and five finger.
- Seed inside the berries is generally mature when the berries have reached full maturity, e.g. orange for coastal karamu, purple for mahoe. A good test for mature seed is to split the seed and check for a white centre or kernel. Birds can frequently strip shrubs of berries once they ripen so it pays to keep a close eye on the ripening process.
- Cut umbels of houpara when seeds start to mature, put into water and allow seeds to drop off.

Daisy type seed heads

These species produce daisy-like flower heads which dry to produce small wispy seeds that are usually wind dispersed. Species include all the *Olearia* and rangiora.

- The seed of these species is ripe when it releases or falls with only a gentle touch, similar to thistle seed. Because it is wind dispersed the seed disappears very quickly after maturing, and so should be collected soon after ripening. Cut whole flower heads and put into a bag. It is necessary to examine the seed with a hand lens to see if it is viable – if swollen or bloated it is ready.

Raceme<sup>3</sup> – like seed heads

The seed in these species is contained within the numerous capsules that make up the spike-like racemes. Initially they appear as small berries but as the seed matures the husks and stems dry. Species that have this type of seed include all the *Hebe* and tutu.

- The seed of these species is ripe when the husks surrounding the seed are dry and brittle. When a hand is run along the raceme the seed should come off in the hand easily. Care should be taken to ensure there is still seed in the husks before collecting as it is easy to collect just a bag full of husks and no seed.

Nuts and large berries

Species with this type of seed produce reasonably large fruits, which contain a large nut (seed) within, as opposed to pip-like seed (as in succulent berries). Species include tawa, taraire, puriri, miro, karaka and pigeonwood.

- Puriri seed should be red and picked off the ground. Gather seed from groves of trees if possible to provide genetic variety.
- The size and hardness of the nut makes it difficult to check it is a white kernel. The general rule of thumb is that when the fruit is at its softest and most coloured, or when the fruit is starting shrivel, the seed is ripe and collectable.
- Taraire, tawa and karaka seed should be soaked in insecticide to kill insect larvae (especially important if this seed is collected on the mainland).

<sup>2</sup> A flat-topped or rounded seed cluster, as in the onion.

<sup>3</sup> Where seeds are lined up either side of a central stem

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*May 2000*

Grass-type seed heads

Seed heads range from compact seed spikes, as for *Carex* sedges, to more open panicles<sup>4</sup> of the grasses and tussocks or the more luxurious plumes of the toetoe.

- With all these natives the seed and husks go through a green stage and are mature when seed, husks and stems are all dry and brown and can be easily stripped from the plant. Beware of those that have passed ripeness and have already shed their seed.

Small seeds

There are a number of native species that do not produce any conspicuous fruits or berries but instead produce a small seed that gradually dries, hardens and matures, sometimes in a husk. Species include wharangi and mapou.

- Mature seed occurs with these species when the seed capsules and seed brown off and harden. Then mature seed can easily be stripped from the seed stem.
- Mapou seed takes one year to ripen to a black colour.

Receptacle borne, grain-type seed

These include species, which exhibit a small grain-shaped seed which sits or protrudes from the top of a coloured fruit receptacle. This seed type occurs among the podocarps and includes kahikatea, rimu and totara.

- The seeds of these species mature after the receptacle or seed has ripened and reached its most colourful and then started to shrivel. The best test for mature seed is to split the grain to test for its firmness and for a white kernel.
- Collection from the tree can be slow and time consuming. A recommended way of collecting good volumes of seed is to lay mats (e.g. shade cloth) on the ground, or hang it off the ground from branches or poles where there are rodents present.

Coned seed

Kauri is the one obvious example, bearing its seed with a structure somewhat similar to a pine cone. The seed is small and winged and occurs in a depression at the base of each bract of the cone.

- The seed is mature at the stage when the cone is beginning to brown and open. Frequently cones can fall from the tree at this stage and will often shatter on impact with the ground. The best time to collect is prior to cone disintegration.
- They should be sampled off the tree and left to fully ripen on paper towels.

Pip fruit seed

Kawakawa is unusual in that its small pip-like seeds are scattered over the whole surface of the fruit. Kawakawa produces an elongated cylindrical fruit, which turns bright orange when ripe.

- When the fruit is at its ripest it can be assumed that the seed is also ripe. Seed is best collected by placing the whole fruit in a plastic bag.

Fine capsule borne seed

Pohutukawa, manuka and kanuka all produce small seed capsules which, when mature, shed thousands of very fine gold coloured seed.

- Capsules will open on drying so collect unopened brown-grey coloured capsules and allow to dry in bags, shake and sieve.

Ferns

Ferns are normally grown from spores, which appear on the underside of the fronds in autumn. The *Blechnum* species produce separate (normally brown) fertile fronds. If spore is to be collected then the fronds should be placed in a paper bag and delivered to the nursery as soon as possible.

Some species of fern are not often grown from spore. These include:

- Hen and Chicken Fern where young ferns grow on the mature fronds of the parents. A frond containing young should be placed in a plastic bag.
- Ring Fern can be propagated from plants grown from division in winter. Dig up a patch of fern. Place pieces in a plastic bag with some damp sand.

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<sup>4</sup> irregularly branched collections of seed

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May 2000*

**How Much Seed?**

Provided plenty of seed is available you should aim to collect more seed than the number of plants required to supply each species. Obviously small seed species will be easier to accumulate than larger ones, and in many cases only small numbers of seed will be available.

**What to do with collected seed**

Seed collected from each different species and from every different locality should be placed in a separate plastic bag and sealed with the name of the species, precise location it was collected from, date it was collected and who it was collected by, e.g.

- Puriri from south coast flats, Bream Head Scenic Reserve, 2.4.2000 by J. Ritchie

Seed should then be given to the person who is going to grow it. Most native seed becomes unviable after a year in storage. If for any reasons you must hold the seed for a few days, store the seeds in their plastic bags in the fridge, not the freezer.

If you are unsure of the species (or even a little doubtful), a good sized piece of foliage, including typical leaves should be enclosed with the seed to aid identification.

**SEED COLLECTION GUIDE**

Botanical Name	Common	Ripe seed Id	J	F	M	A	M	J	J	A	S	O	N	D
<i>Ackama rosaefolia</i>	Makamaka		*	*	*									
<i>Agathis australis</i>	Kauri	Brown cone			*	*								
<i>Alectryon excelsus</i>	Titoki	Pods/red fruit										*	*	*
<i>Aristolelia serrata</i>	Wineberry	Deep red berries	*	*									*	*
<i>Arthropodium cirratum</i>	Rengarenga lily	Pod with black seeds	*	*	*									*
<i>Astelia banksii</i>	Coastal astelia	Purple/black berries	*	*	*							*	*	*
<i>A. solandri</i>	Kowharawhara	Purple/black berries	*	*	*									
<i>Beilschmiedia tarairi</i>	Taraire	Purple/black berries			*	*	*	*						
<i>B. tawa</i>	Tawa					*	*							
<i>B. tawaroa</i>	Tawaroa					*	*							
<i>Brachyglottis repanda</i>	Rangiora	Fine daisy like seeds	*	*									*	*
<i>Carmichaelia australis</i>	Tree Broom	Hard red seeds in pod		*	*	*								
<i>Carpodetus serratus</i>	Putaputaweta	Black berries		*	*	*	*	*						
<i>Clematis paniculata</i>	Clematis	Fine brown seeds	*											*
<i>Clianthus puniceus</i>	Kakabeak		*	*	*									
<i>Collospermum hastatum</i>	Kahakaha		*	*	*									
<i>Coprosma arborea</i>	Mamangi			*	*	*								
<i>Coprosma lucida</i>	Karamu	Orange berries		*	*	*								
<i>C. macrocarpa</i>	Coastal karamu	Orange berries	*	*										*
<i>C. repens</i>	Taupata			*	*	*								
<i>C. propinqua</i>	Mingimingi	Small red/pink/white berries	*	*	*	*						*	*	*
<i>C. robusta</i>	Karamu	Orange berries	*	*	*							*	*	*
<i>Corokia cotoneaster</i>	Korokia	Bright red/yellow berries	*	*	*									
<i>Cordyline australis</i>	Cabbage Tree	Soft, white berries	*	*	*									
<i>Coriaria arborea</i>	Tutu	Purple/black berries	*	*	*	*							*	*
<i>Cortaderia toetoe</i>	Toetote	Fine, feathery seeds	*	*	*								*	*
<i>Corynocarpus laevigatus</i>	Karaka	Orange berry	*	*	*	*								
<i>Dacrydium cupressinum</i>	Rimu			*	*	*								
<i>D. dacrydioides</i>	Kahikatea	Orange berry/blue seed		*	*	*								
<i>Dodonaea viscosa</i>	Akeake		*	*	*									
<i>Dysoxylum spectabile</i>	Kohekohe	Green pods – orange/red seeds				*	*	*	*	*				
<i>Entelea arborescens</i>	Whau	Brown spiky pod	*	*									*	*
<i>Elaeocarpus dentatus</i>	Hinau	Purplish berries			*	*								

*Matakohe/Limestone Island Scenic Reserve Restoration Plan  
May 2000*

**SEED COLLECTION GUIDE continued ...**

Botanical Name	Common	Ripe seed Id	J	F	M	A	M	J	J	A	S	O	N	D
<i>Freycinetia bauerana</i>	Kiekie	Yellow/green cobs			*	*	*							
<i>Geniostoma rupestre</i>	Hangehange	Black seed pods	*	*	*	*	*						*	*
<i>Griselinia lucida</i>	Akapuka	Dark purple berries				*	*							
<i>Hebe macrocarpa</i>	Koromiko	Brown capsule, small seeds	*	*	*	*	*							*
<i>H. stricta</i>	Koromiko	As above	*	*	*									*
<i>Hedycarya arborea</i>	Pigeonwood	Orange berries	*	*	*							*	*	*
<i>Hoheria populnea</i>	Lacebark			*	*	*	*	*						
<i>Knightia excelsa</i>	Rewarewa	Velvety brown pod		*	*	*	*	*						
<i>Kunzea ericoides</i>	Kanuka	Hard brown capsule, fine seeds within		*	*	*								
<i>Leptospermum scoparium</i>	Manuka	As for kanuka	*	*	*	*	*	*	*	*	*	*	*	*
<i>Litsea calicaris</i>	Mangeao	Long reddish berries										*	*	
<i>Macropiper excelsum ssp excelsum</i>	Kawakawa	Fleshy orange berries	*	*	*									*
<i>Melicope ternata</i>	Wharangī	Pods of shiny black seeds	*	*	*								*	*
<i>Melicytus ramiflorus</i>	Mahoe	Purple/black berries	*	*	*									*
<i>Metrosideros excelsa</i>	Pohutukawa	Brown capsule/fine seeds within			*	*	*	*						
<i>M. robusta</i>	Northern rata	As above	*						*	*				
<i>Muehlenbeckia australis</i>	Pohuehue	Small white berries	*	*	*	*					*	*	*	*
<i>Myoporum laetum</i>	Ngaio	Purple/black berries	*	*	*									
<i>Myrsine australis</i>	Mapou	Purple/black berries	*	*	*	*	*							*
<i>Nestegis lanceolata</i>	White Maire		*	*	*	*					*	*	*	
<i>Olearia furfuracea</i>	Akepiro	Fine daisy like seeds		*	*									
<i>Ozothamnus leptophylla</i>	Tauhinu	Brown shiny seeds	*	*	*								*	*
<i>Phormium tenax</i>	Flax	Black wide thin seeds	*	*	*	*								
<i>Phyllocladus trichomanoides</i>	Tanekaha		*									*	*	*
<i>Pittosporum crassifolium</i>	Karo	Pods with sticky black seeds			*	*	*	*	*					
<i>P. tenuifolium</i>	Kohukohu	Black seed pods				*	*	*						
<i>P. umbellatum</i>	Haekaro		*										*	*
<i>P. divaricatus</i>	Saltmarsh ribbonwood	Small white seeds	*	*										
<i>Podocarpus totara</i>	Totara	Red berry with hard seed attached			*	*	*	*	*	*				
<i>Planchonella costata</i>	Tawapou						*	*						
<i>Pseudopanax crassifolius</i>	Lancewood	Purplish black seeds	*	*	*	*								
<i>P. arboreus</i>	Fivefinger	Black ball like clusters	*	*	*									
<i>P. lessonii</i>	Houpara	Small black clusters	*	*	*	*	*	*	*	*	*	*	*	*
<i>Rhopalostylis sapida</i>	Nikau	Small orange seeds				*	*							
<i>Schefflera digitata</i>	Pate	Purple black fingers			*	*	*							
<i>Solanum aviculare</i>	Poroporo	Yellow/orange fruit	*	*	*	*	*	*	*	*	*	*	*	*
<i>Sophora microphylla</i>	Kowhai	Brown pods, yellow seeds		*	*	*	*	*	*	*				
<i>Streblus banksii</i>	Towai			*	*	*								
<i>Toronia toru</i>	Toru			*	*									
<i>Vitex lucens</i>	Puriri	Old seeds off ground best (red/brown)	*	*	*	*	*							

**Notes**

- This list has been compiled from a number of sources and from personal observations in the North Auckland area. It would be a good volunteer project to develop records of when seed is ripe for species intended for Limestone Island and for those species already on the island. Local variations can often change fruiting times. Some species are listed as seeding all year round. These should also be checked against local conditions
- Species listed are the main species that have been planted on the island to date. Seed is generally easy to collect and grow under nursery conditions.
- This list should be updated on a regular basis as more species are established on the island.

[Jump to list of Appendices](#)

## Appendix Five: Species Suitable for planting in and around Wetland and Saltmarsh Communities

Species	Common name	Wetland/ Saltmarsh	Plant preference or other comment
<b>GYMNOSPERMS</b>			
<i>Dacrycarpus dacrydioides</i>	Kahikatea/White Pine	W	Planted
<b>MONOCOTYLEDONOUS TREES AND SHRUBS</b>			
<i>Cordyline australis</i>	Ti Kouka/Cabbage tree	W	Planted
<b>DICOTYLEDONOUS TREES AND SHRUBS</b>			
<i>Avicennia marina</i>	Manawa/Mangrove	SM	Naturally present (NP)
<i>Carpodetus serratus</i>	Putaputaweta	W	Banks
<i>Coprosma lucida</i>	Shining Karamu	W	Banks planted
<i>Coprosma parviflora</i>	Swamp Coprosma	W	
<i>Coprosma propinqua</i>	Mikimiki/Swamp Coprosma	W/SM	
<i>Coprosma macrocarpa</i>	Coastal Karamu	W	Banks, naturally present
<i>Coprosma rigida</i>		W	
<i>Coprosma rhamnoides</i>	Twiggy red-fruited Karamu	W	Planted
<i>Coprosma robusta</i>	Karamu	W	Planted
<i>Coprosma hybrids</i>		W	Naturally present
<i>Coprosma tenuicaulis</i>	Hukihuki/Swamp Coprosma	W	
<i>Corynocarpus laevigatus</i>	Karaka	W	Banks
<i>Hebe stricta</i>	Koromiko	W	Planted/banks
<i>Laurelia novae zelandiae</i>	Pukatea	W	Sheltered/doubtful
<i>Leptospermum scoparium</i>	Manuka/Tea Tree	W	NP. & Planted
<i>Melicytus micranthus</i>	Twiggy Mahoe	W/SM	
<i>Melicytus ramiflorus</i>	Mahoe	W	Banks/planted
<i>Myrsine australis</i>	Mapou	W	Banks
<i>Plagianthus divaricatus</i>	Makaka/Marsh Ribbonwood	SM	NP. & Planted
<i>Raukuua anomalus</i>		W?	
<i>Schefflera digitata</i>	Pate/Seven-finger	W	Planted Hasn't survived
<i>Sophora microphylla</i>	Kowhai	W	Planted, banks
<i>Streblus microphylla</i>	Towai/Small-Leaved Milkwood	W	
<i>Syzygium maire</i>	Maire Tawake/Swamp Maire	W	Sheltered from salt/doubtful
<b>DICOTYLEDONOUS LIANES AND TRAILING PLANTS</b>			
<i>Calystegia soldanella</i>	Shore Convolvulus	SM	Naturally present
<i>Metrosideros perforata</i>	White Rata Vine	W	
<i>Muehlenbeckia australis</i>	Pohuehue	SM	Naturally present
<i>Tetragonia teragonioides</i>	Kohihi/NZ Spinach	SM	Rare
<i>Tetragonia trigyna</i>	Beach Spinach	SM	Naturally present
<b>FERNS &amp; ALLIED PLANTS</b>			
<i>Azolla filiculoides</i>	Azolla/Water Fern	W	Most ferns will arrive of their own accord
" <i>Blechnum gracilis</i> "	Swamp Kiokio	W	
<i>Blechnum novae-zelandiae</i>	Hard Fern	W	
<i>Blechnum procerum</i>	Small kiokio	W	
<i>Cyathea medullaris</i>	Mamaku/Black Tree Fern	W	
<i>Dicksonia squarrosa</i>	Wheki	W	
<i>Gleichenia microphylla</i>	Waewaekaha/Tangle fern	W	
<i>Histiopteris incisa</i>	Mata/Water Fern	W	
<i>Hypolepis ambigua</i>	Rough Pig Fern	W	
<i>Hypolepis dicksonioides</i>	Giant Pig Fern	W	

**Appendix Five: continued ...**

Species	Common name	Wetland/ Saltmarsh	Plant preference or other comment
<i>Hypolepis distans</i>		W	Most ferns will arrive of their own accord
<i>Hypolepis rufobarbata</i>		W	
<i>Ophioglossum reticulatum</i>	Stalked Adders Tongue	W	
<i>Schizaea bifida</i>	Forked Comb Fern	W	
<i>Lindsaea linearis</i>		W	
<i>Thelypteris confluens</i>	Swamp Fern	W	
<i>Lycopodium volubile</i>	Waewaekoukou/Scrambling clubmoss	W	
<b>MONOCOT HERBS:</b>			
<b>GRASSES</b>			
<i>Amphibromus fluitans</i>		W	Rare
<i>Cortaderia fulvida-swamp form</i>	Toetoe	W	
<i>Isachne globosa</i>	Swamp millet	W	
<i>Lachnagrostis filiformis</i>	Wind grass	W	
<i>Puccinella stricta</i>		SM	
<i>Zoysia minima</i>	Coastal Turf Grass	SM	
<i>Zoysia pauciflora</i>	Coastal turf grass	SM	
<i>Zoysia planifolius</i>	Coastal Turf Grass	SM	
<b>SEDGES</b>			
<i>Baumea articulata</i>	Jointed twig rush	W	
<i>Baumea arthropphylla</i>	Jointed Rush	W	
<i>Baumea juncea</i>	Jointed Rush	W	Planted
<i>Baumea tenax</i>	Jointed Rush	W	
<i>Baumea rubiginosa</i>	Jointed Rush	W	
<i>Bolboschoenus fluviatilis</i>	Kukuraho/marsh clubrush	W	Naturally present
<i>Bolboschoenus medianus</i>	Club Rush	W	
<i>Carex comans</i>	Sedge	W	
<i>Carex dissita</i>	Sedge	W	
<i>Carex geminata</i>	Sedge	W	
<i>Carex inversa</i>	Sedge	W	
<i>Carex littorea</i>	Coastal Sedge	SM	
<i>Carex ochrosaccus</i>	Sedge	W	
<i>Carex pumila</i>	Sand sedge	SM	
<i>Carex maorica</i>	Sedge	W	
<i>Carex secta</i>	Purei/Makura	W	Planted
<i>Carex solandri</i>	Sedge	W	
<i>Carex subdola</i>	Sedge	W	
<i>Carex testacea</i>	Sedge	W	
<i>Carex virgata</i>	Sedge	W	
<i>Cyperus ustulatus</i>	Upoko ungata/Cutty Grass	W	Naturally present
<i>Eleocharis acuta</i>	Small Spike Rush	W	
<i>Eleocharis gracilis</i>	Slender Spike Rush	W	
<i>Gahnia xanthocarpa</i>	Cutty Grass	W	
<i>Isolepis cernua</i>	Slender club rush	W	
<i>Isolepis distigmata</i>	Club Rush	W	
<i>Isolepis fluitans</i>	Floating Club Rush	W	
<i>Isolepis inundata</i>	Club rush	W	
<i>Isolepis prolifer</i>	Club Rush	W	
<i>Isolepis reticularis</i>	Club rush	W	
<i>Lepidosperma laterale</i>		W	
<i>Lepidosperma filiforme</i>		W	
<i>Machaerina sinclairii</i>	Tuhara	W	
<i>Schoenoplectus tabernaemontani</i>	Kapapunawha/Lake club rush	W	
<i>Schoenus apogon</i>	Club rush	W	
<i>Schoenus carsei</i>		W	
<i>Schoenus maschalinus</i>		W	
<i>Schoenus tendo</i>		W	

**Appendix Five: continued ...**

Species	Common name	Wetland/ Saltmarsh	Plant preference or other comment
<b>RUSHES &amp; ALLIED PLANTS</b>			
<i>Apodissima similis</i>	Oioi/Jointed Wire rush	SM	Naturally present and has been planted
<i>Juncus australis</i>	Rush	W	Ducks will bring in many rush and sedge seeds
<i>Juncus caespiticus</i>	Rush	W	
<i>Juncus gregiflorus</i>	Rush	W	
<i>Juncus holoschoenus</i>	Rush	W	
<i>Juncus krausii</i>	Sea Rush	SM	
<i>Juncus pallidus</i>	Wi	W	
<i>Juncus pauciflorus</i>	Rush	W	
<i>Juncus planifolius</i>	Flat-leaved Rush	W	
<i>Juncus prismatocarpus</i>	Rush	W	
<i>Juncus sarophorus</i>	Rush	W	
<i>Juncus usitatus</i>	Rush	W	
<i>Luzula picta</i>	Rush	W	
<b>ORCHIDS</b>			
<i>Calochilus paludosus</i>		W	All orchid species - Wait to arrive naturally (Windborne seed)
<i>Chiloglottis cornuta</i>		W	
<i>Corybas rivularis</i>		W	
<i>Prasophyllum colensoi</i>	Leek Orchid	W	
" <i>Prasophyllum aff. patens</i> "	Leek Orchid	W	
<i>Pterostylis palludosa</i>	Swamp Greenhood	W	
<i>Spiranthes novae-zealandiae</i>	Swamp orchid	W	
<i>Thelymitra cyanea</i>	Maikaika/Maikuku/Sun Orchid	W	
<i>Thelymitra pulchella</i>	Sun Orchid	W	
<b>MONOCOTYLEDONOUS HERBS (Other than Sedges, Rushes &amp; Orchids)</b>			
<i>Dianella nigra</i>	Turutu/Blueberry	W	Banks
<i>Freycinetia baueriana</i>	Kiekie	W	Banks
<i>Lemna minor</i>	Duckweed	W	Open Water
<i>Lepilaena bilocularis</i>		W	
<i>Phormium tenax</i>	Harakeke/Flax	W	Planted
<i>Potamogeton cheesemanii</i>	Manihi/Pond weed	W	Open water
<i>Ruppia megacarpa</i>	Horses mane weed	W	
<i>Ruppia polycarpa</i>	Horses Mane Weed	W	
<i>Sparganium subglobosum</i>	Maru/Burr-reed	W	
<i>Typha orientalis</i>	Raupo	W	Naturally present
<i>Triglochin striatum</i>	Arrow grass	W/SM	
<i>Wolffia Australiana</i>	Water Meal	W	
<i>Zannichellia palustris</i>		W	
<i>Zostera capricorni</i>	Nana/Eel grass	SM	
<i>Zostera Muelleri</i>	Nana/Eel grass	SM	
<b>DICOTYLEDONOUS HERBS:</b>			
<b>COMPOSITES</b>			
<i>Cotula coronopifolia</i>	Batchelors Buttons	SM	Naturally Present
<i>Senecio lautus</i>	Shore Groundsel	SM	
<i>Sonchus kirkii</i>	NZ Puha	cliffs	Rare
<b>NON-COMPOSITE DICOTS</b>			
<i>Apium prostratum</i>	NZ Celery	SM	
<i>Callitriche Muelleri</i>	Starwort	W	
<i>Chenopodium glaucum</i>	Goosefoot	SM	
<i>Dysphyma australe</i>	Horkaka/iceplant	SM	
<i>Drosera sp ?</i>	Sundews	W	
<i>Einadia triandra</i>		SM	
<i>Elatine gratioloides</i>		W	
<i>Epilobium billardierianum</i>	Willowherb	W	
<i>Epilobium chionanthum</i>	Willowherb	W	
<i>Epilobium hirtigerum</i>	Willowherb	W	
<i>Epilobium komarovianum</i>	Willowherb	W	
<i>Epilobium nerterioides</i>	Willowherb	W	

**Appendix Five: continued ...**

Species	Common name	Wetland/ Saltmarsh	Plant preference or other comment
<i>Epilobium pallidiflorum</i>	Willowherb	W	
<i>Euphorbia glauca</i>	Waiuatua/Shore spurge	SM	
<i>Glossostigma elatinoides</i>		W	
<i>Gratiola nana</i>		W	Threatened
<i>Gratiola pedunculata</i>		W	Threatened
<i>Gratiola sexdentata</i>		W	
<i>Hydrocotyle dissecta</i>	Waxweed	W	
<i>Hydrocotyle elongata</i>	Waxweed	W	
<i>Hydrocotyle heteromeria</i>	Waxweed	W	
<i>Hydrocotyle microphylla</i>	Waxweed	W	
<i>Hydrocotyle moschate</i>	Waxweed	W	
<i>Hydrocotyle novae-zelandiae</i>	Waxweed	W	
<i>Lilaeopsis novae-zelandiae</i>		SM	
<i>Lobelia anceps</i>	Shore Lobelia	SM	
<i>Mazus novae-zelandiae</i>		W	Rare
<i>Mazus pumila</i>		W	Rare
<i>Mentha cunninghamii</i>	Hioi/NZ Mint	W	
<i>Myriophyllum pedunculatum</i>	Water Milfoil	W	
<i>Myriophyllum propinquum</i>	Water Millfoil	W	
<i>Myriophyllum robustum</i>	Water Millfoil	W	Threatened
<i>Myriophyllum votschii</i>	Coastal Water Millfoil	SM	
<i>Nertera depressa</i>	Nertera	W	
<i>Nertera dichondraeolia</i>	Hairy Nertera	W	
<i>Nertera scapanioides</i>	Nertera	W	
<i>Nertera setulose</i>	Common Hairy Nertera	W	
<i>Plantago raoulii</i>	Shore plantain	SM	
<i>Persicaria decipiens</i>	Willowherb	W	
<i>Pratia angulata</i>	Pratia	W	
" <i>Pratia littoralis</i> "		W	
<i>Ranunculus amphitricha</i>	Waoriki/Buttercup	W	
<i>Ranunculus macropus</i>	Swamp Buttercup	W	
<i>Ranunculus reflexus</i>	Maruru/Buttercup	W	
<i>Ranunculus urvilleanus</i>	Buttercup	W	
<i>Rorippa divaricata</i>	Ponui/Marsh Yellow Cress	W	
<i>Rorippa palustris</i>		W	
<i>Samolus repens</i>	Maakoako/Sea primrose	SM	
<i>Sarcocornia quinquefolia</i>	Urere/Glasswort	SM	
<i>Sellieria radicans</i>	Remuremu/	SM	
<i>Spergularia media</i>	Sea spurrey	SM	
<i>Suaeda novae-zelandiae</i>	Sea blight	SM	

[Jump to list of Appendices](#)

## Appendix Six: Bird Species Recorded In and Around Matakohe/Limestone Island

Common Name	Species	Notes
Australasian Gannet	<i>Sula serrator</i> (N)	Seen regularly around the island
Australasian Harrier	<i>Circus approximans</i> (T)(N)	Regularly quarters the island
Banded Rail	<i>Rallus phillippensis</i> (N)	Flax and mangrove area, may breed as habitat improves
Blackbird	<i>Turdus merula</i>	A regular visitor
Blue Penguin	<i>Eudyptes minor</i> (N)	Occasional visitor, breeding boxes put out to encourage breeding
Brown Quail	<i>Synoicus ypsilophorus</i>	Seen on the island but not recently
Caspian Tern	<i>Sterna caspia</i> (N)	Seen regularly around island. Breeds on adjacent Knight Island
Common Myna	<i>Acridotheres tristis</i> (T)	A regular visitor
Eastern Bar-Tailed Godwit	<i>Limosa lapponica</i> (N)	Seasonal visitor to Harbour and feeds around Limestone Island at low tide
Eastern Little Tern	<i>Sterna albifrons</i> (N)	Seasonal visitor, occasionally seen between Limestone Island and Portland Cement Works
Fantail	<i>Rhipidura fuliginosa</i> (N)	A few seen on the island
Goldfinch	<i>Carduelis carduelis</i>	Regular visitor especially in autumn to feed on thistle seeds
Greenfinch	<i>Chloris chloris</i>	Heard in macrocarpa's near Mine Manager house
Grey Warbler	<i>Gerygone igata</i> (N)	Seen and heard in increasing numbers as habitat improves. May be breeding
House Sparrow	<i>Passer domesticus</i>	Common visitors and probably breeding
<b>Kingfisher</b>	<b><i>Halcyon sancta</i> (N)</b>	Several pairs live and breed on the island
Lesser Knot	<i>Calidris canutus</i> (N)	Seasonal visitor to Harbour, feeds around Island at low tide
Little Shag	<i>Phalacrocorax melanoleucos</i> (N)	Roost on old wharf
<b>Mallard</b>	<b><i>Anas platyrhynchos</i></b>	Seen regularly and is breeding on the island
Morepork	<i>Ninox novaeseelandiae</i> (N)	Several visit the island to hunt
<b>N.Z. Dotterel</b>	<b><i>Charadrius obscurus</i> (N)</b>	3 breeding pairs on the island 3 chicks raised to date
N.Z. Pigeon	<i>Hemiphaga novaeseelandiae</i> (N)	Occasionally seen flying over the island
<b>N.Z. Pipit</b>	<b><i>Anthus novaeseelandiae</i> (N)</b>	Seen regularly and is resident, and breeding
Paradise Shelduck	<i>Tadorna variegata</i> (N)	Occasional visitor
<b>Pheasant</b>	<b><i>Phasianus colchicus</i></b>	Lives and breeds regularly on island
Pied Shag	<i>Phalacrocorax varius</i> (N)	Common, regularly roost on old barge
Pied Stilts	<i>Himantopus himantopus</i> (N)	Roost and feed in small numbers on sandspit. Attempted to breed in 1999
<b>Pukeko</b>	<b><i>Poryphyrio poryphyrio</i> (N)</b>	Seen regularly and is breeding
Red Billed Gull	<i>Larus novaehollandiae</i> (N)	Common on and around the island
Royal Spoonbill	<i>Platalea regia</i> (N)	Seasonal visitor in winter, roosts between island and port. Numbers are increasing.
Shining Cuckoo	<i>Chrysococcyx lucidus</i> (N)	Heard occasionally
<b>Silvereye</b>	<b><i>Zosterops lateralis</i> (N)</b>	Seen regularly and breeding
<b>Skylark</b>	<b><i>Alauda arvensis</i></b>	Often seen and breeding but will decrease as forest cover establishes
Song Thrush	<i>Turdus philomelos</i>	Regular visitor, keen on snails
South Island Pied Oystercatcher	<i>Haematopus ostralegas</i> (N)	Winter visitor, feeds in large numbers around the island at low tide
Southern Black Backed Gull	<i>Larus dominicanus</i> (T) (N)	Common on and around island. Nesting discouraged. Breeding colony on Knight Island
Spur Winged Plover	<i>Vanellus miles</i> (T) (N)	Regularly seen and rapidly increasing in numbers. May well breed soon
<b>Starling</b>	<b><i>Sternus vulgaris</i> (T)</b>	Common visitor and resident. Probably breeding.
Tui	<i>Prosthemadera novaeseelandiae</i> (N)	Rare visitor to the island
<b>Variable Oystercatcher</b>	<b><i>Haematopus unicolor</i> (N)</b>	Roosts on island for most of the year and around six pairs breed annually
Welcome Swallow	<i>Hirundo neoxena</i> (N)	Common to the island, probably breeding
White Fronted Tern	<i>Sterna striata</i> (N)	Regularly feeds around island
White-faced Heron	<i>Ardea novaehollandiae</i> (N)	Regular visitor
Yellow Hammer	<i>Emberiza citrinella</i>	Seen regularly on the island

Species known to breed on the island are identified with bold lettering and native /indigenous or endemic species are identified with an (N). Species that are particular threats to native birds are identified with a (T).

[Jump to list of Appendices](#)

## **Appendix Seven: Guidelines and critical questions relating to translocation of indigenous plants and animals to islands<sup>1</sup>**

A translocation is the intentional release of plants or animals to the wild in an attempt to establish, re-establish, or augment a population (IUCN 1987). Seven guidelines for making a translocation are listed below together with specific questions that relate to fulfillment of each guideline:

### **1. There must be a SOUND REASON FOR TRANSLOCATING A SPECIES to a particular island**

- What is the primary reason for translocating this species to the island?
  - 16 To reinforce a species population already present?
  - 17 As a short or long term measure to increase the species' chance of survival?
  - 18 As part of a programme to restore a particular biotic community as a fully functioning system?
  - 19 To establish the species for a specific purpose such as education, scientific study, (including co-existence with other species), nature tourism, hunting, etc.

### **2. The ISLAND CHOSEN SHOULD BE THE BEST AVAILABLE CHOICE for the translocated species**

- Is habitat on the island likely to be large enough to support a viable population of the species? If not, is there a case for making further translocations at intervals to reinforce the population?
- Are nutrient and water resources on the island likely to be adequate to support a population of the translocated species?
- With animals, will cover and places to breed be adequate to give the new population sufficient protection from predators and extremes of weather?
- Are unacceptable interactions with other species of plants or animals likely? (see section 3)
- Will the translocation result in conflicts with other uses of the island?
- Is there evidence of the former existence of the species on the island?
  - 15 If "Yes", what were the reasons for its disappearance? Are they still operative or have they been remedied?
  - 16 If "No", is it likely that the translocation will move the species substantially beyond its natural range? What are the implications of extending the range of the species in this way?
- Are there any species present on the island, which may pose a threat to the species, being translocated?

### **3. The possible IMPACT of the translocated species on the island and its biota MUST BE ASSESSED**

- Will the translocated species have any unacceptable effects on populations of native plants and animals already present on the island?
  - 10 Through predation?
  - 11 Through competition for food or nest sites?
  - 12 Through hybridization?
  - 13 Through introduction of disease or parasites?
  - 14 Through indirect effects on the habitats or social behaviour of other species present?
- What is the translocated species capacity for dispersal? Could it reach other islands or land beyond the island of release? If so, does this matter?
- Will fires, droughts, floods or mass-movement erosion promote the rate of spread of the translocated species?
- Will the new population facilitate the spread of weed species or boost the numbers of an alien animal species on the island?
- Can the impact of the translocated species on the island's plants and animals be monitored?

### **4. The translocation SHOULD NOT FORECLOSE IMPORTANT CONSERVATION OPTIONS for the future**

- Will the translocation prevent or make difficult, control or eradication of problem plant or animal species on the island?
- Will the translocation foreclose options for translocating other species to the island in the future? In particular, will options for the establishment of certain endangered species be lost or compromised?
- Could the translocated species be removed or controlled in the future if its effects became unacceptable?

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<sup>1</sup> Developed by I.A.E. Atkinson and sourced from Towns, D.R.; Daugherty, C.H.; Atkinson, I.A.E. (eds), 1990: Ecological Restoration of New Zealand Islands, Conservation Sciences Publication No. 2, Department of Conservation Wellington

**5. Specific REQUIREMENTS FOR ESTABLISHING A FOUNDER POPULATION on the island must be assessed**

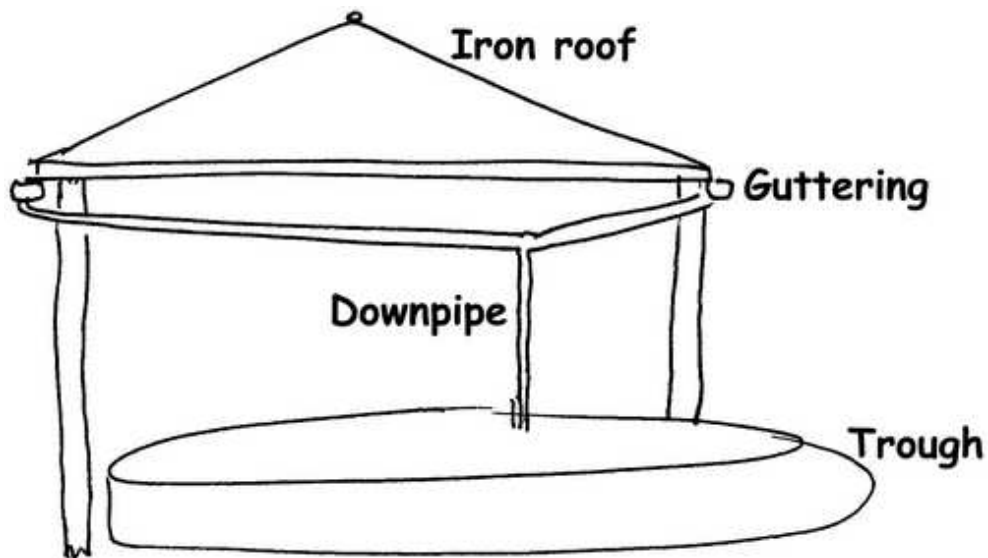
- What is the most appropriate source(s) of individuals for translocation?  
*(Distance between source and release should be chosen to minimise geographic displacement. Translocated individuals should be of known parentage and genetic identity. With animals, captive reared individuals should not be released into the wild unless bred from known parent stocks and adequately socialised, e.g. parent-raised stock.)*
- How many individuals should be translocated?
- What should be the sex ratio of the founder population? Is there reason to use juveniles rather than mated pairs? With plants, what type of material should be used: mature plants, juveniles, seedlings or a mixture of these? Should the mixture be varied in subsequent translocations?
- What should be the timing of the release?
- Will the removal of the translocated individuals have any unacceptable demographic or genetic effects on the population?
- If more than one release is possible, how many should be made?
- What is the most suitable site on the island for the establishment of the founder population?
- What method of release for animals should be used? Should they be held in captivity on the island for a period before release? Is a temporary lifeline approach involving supplementary feeding required following their release?
- If captive reared animals are used for the founder population, how can the risk of disease introduction be minimised?

**6. TRANSLOCATION PROPOSALS with answers to the above listed questions, SHOULD BE MADE AVAILABLE to all interested parties, including the public, key specialists and the Department of Conservation**

**7. DETAILS OF A TRANSLOCATION SHOULD BE RECORDED in an easily retrievable manner, whether the translocation is a success or a failure**

[Jump to list of Appendices](#)

## **Appendix Eight: Schematic design of bird watering station<sup>1</sup>**



[\*Jump to list of Appendices\*](#)

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<sup>1</sup> Designed by McGlynn M., Feb 2000

## Appendix Nine: List of Invertebrate Species Present on Matakohe/Limestone Island<sup>1</sup>

### Arachnida

- Acarina (Mites)
- Araneae (Spiders)
- Opiliones (Harvestmen)

### Chilopoda

- Geophilomorpha (Centipedes)
- Lithobiomorpha (Centipedes)

### Copepoda

- Amphipoda (Litter hoppers)
- Isopoda (Slaters)

### Crustacea

- Malacostraca (Crabs)

### Diplopoda

- Glomerida (Millipedes)

### Gastropoda

- Slugs, Snails

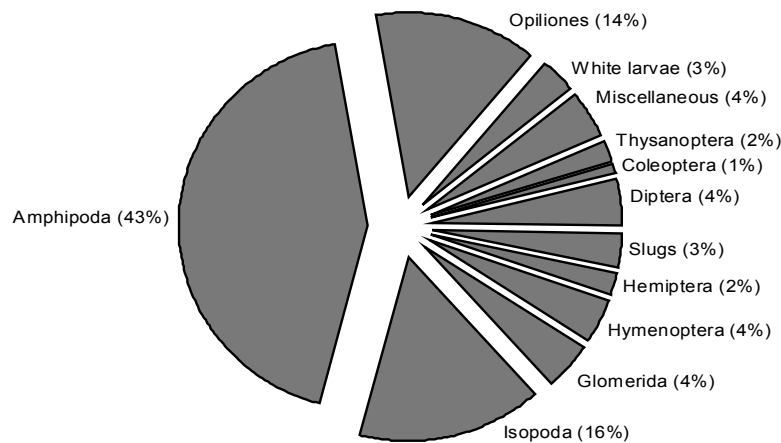
### Insecta

- Blattaria (Cockroaches)
- Coleoptera (Beetles)
- Diptera (Flies)
- Hemiptera (Aphids)
- Hymenoptera (Ants, wasps and others)
- Lepidoptera (Moths)
- Neuroptera (Lacewings)
- Odonata (Dragonflies)
- Orthoptera (Crickets)
- Thysanoptera (Thrips)

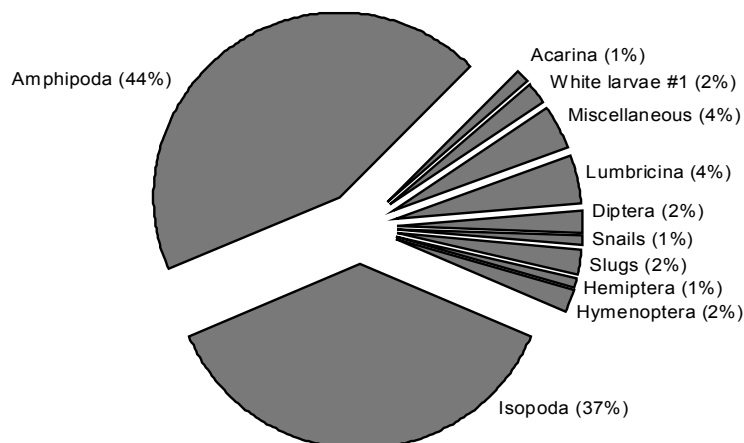
### Oligochaeta

- Lumbricina (Earthworms)

Spring 1996, invertebrates (% by number) in pitfall traps



Spring 1997, invertebrates (% by number) in pitfall traps



[Jump to list of Appendices](#)

<sup>1</sup> Results of surveys undertaken by Douglas and Stevens, 1996 and 1997





## **Appendix Eleven: Analysis of Techniques Available to Eradicate Mice from Matakohe/Limestone Island<sup>1</sup>**

### **Bait Stations**

Because of the small home range of mice (20 metres or less) bait stations would need to be set every 20m on a grid system right across the Island. This would require the placement of close to 900 bait stations.

The cost of setting up and maintaining the grid with viable bait (Talon 20) is considered to be prohibitive and impractical. An example of how time consuming this can be, is the operation undertaken at Mana Island in 1989.

For Mana Island, all bait stations were filled with bait on the same day, once in April and then again in July (A one day operation was considered crucial to the programme's success as it meant that there was no area where the mice population could avoid the bait). In August a further two tonnes of poison was spread by a top dresser. Then followed two years of monitoring and "mop-up" work (getting the last animals).

### **Hand Broadcasting**

Hand broadcasting is also not considered to be viable as it is a very labour intensive and exacting technique. It would require the establishment of well marked out lines across the whole Island. These need to be about 15 metres apart and involve very exact spreading of fixed amounts (approx. 200g) of bait at fixed points along each line to about 7.5 metres away. Although it uses the smallest amount of bait of all the options (about 400kg) hand broadcasting is the most labour intensive option and is reliant on very accurate spreading by the applicators.

### **Aerial Drop by Helicopter**

In comparison aerial application is considered to be the most cost effective and in combination with some ground based mopping up work is capable of eradicating mice from the Island. The use of Trimflight navigational systems and an accurately calibrated helicopter bucket are crucial components.

To achieve the maximum level of success an aerial operation would need to be carried out in winter (June/July) when natural food supplies are at their lowest. Two drops would be required about 10 days apart using Talon 20 (also known as Pestoff Rodent 20R) applied at 15kg per hectare. Having mainly dry weather for at least two days after each drop would provide optimum weather conditions.

#### Drop One

- 10kg per hectare
- helicopter bucket calibrated at 5kg p/ha flying 50% overlap (minimises the likelihood of holes and also targets harder areas (e.g. quarry, cliffs and the ruins). flight pattern giving 10kg p/ha on the ground

#### Drop Two

- 5kg p/ha flying standard flight lines with no overlap

Bait would need to be ordered from Animal Control Products in Wanganui as bait made here does not contain Bitrex. Total quantity required will be confirmed by the Project Manager.

Allowance would also need to be made for additional bait to undertake any ground follow up work. This would involve much smaller quantities of bait. However the exact quantity is difficult to predict until the effectiveness of the poison drop has been quantified.

The estimated cost of the aerial operation is around \$8000 based on using a Squirrel helicopter. Helicopter time (2hrs) is slightly more expensive than bait. A more accurate cost can only be obtained following advice from an island eradication specialist. It is recommended that either Ian McFadden or Simon Mowbray from the Department of Conservation be used.

[Jump to list of Appendices](#)

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<sup>1</sup> Peer review provided by Simon Mowbray, Department of Conservation

## Appendix Twelve: Rodent Plan for Matakohe/Limestone Island

Because of Matakohe/Limestone Island's close proximity to the mainland, and the strong likelihood of invasion by pests (Rodents and Mustelids) the ideal concept of a "pest free" Matakohe/Limestone Island may be an unachievable goal.

However it is possible with the use of Rodenticides, to reduce the rodent numbers and maintain these levels low enough to eliminate the rodents on the island.

### Method

Distribution of the toxin is critical to the success of any poison operation. All rodents must have access to the toxin. Any areas that don't give rodents access to bait are sources of re-invasion. To guarantee the bait distribution is complete Limestone Island has been surveyed into a 100x50m grid. I propose that semi-permanent bait stations along this network be pulse fed a variety of rodenticides in an ongoing programme to maintain low levels of rodents throughout the year.

The grid system will initially be at the maximum recommended spacing of 100x50m. If however this grid proves too large to reduce mice numbers, i.e. mice are living between stations and therefore not getting access to the toxin, the grid can be tightened to a 50x50m grid.

### Bait stations

Bait stations lengthen the life of the toxic baits by sheltering it from the weather, and also reduce the chances of non-target animals gaining access to the baits. Whatever toxin is chosen, a bait station should be used to deliver that toxin.

### Possible bait station design

100mm nova coil tubing cut into ½m lengths is effective at holding toxin in bait form and could possibly be adapted to house other forms of toxin.

Cost:	150 stations x \$2.19/m	= \$164.25+GST
	8 gauge wire to pin stations down	= \$64
	Philproof 150 stations x \$11.50	= \$1725.00

Whatever bait stations are chosen they must:

- Be acceptable to the rodents
- House a variety of baits that are likely to be used in the operation
- Protect the baits from the environment and non-target species

### Toxin choices

#### 1080 – Sodium monofluoroacetate

Advantages: quick acting – only a matter of hours  
Only one feed is needed for an animal to gain lethal dose  
Not persistent in the environment  
Possible advantage of a secondary kill of predators such as mustelids

Disadvantages: Not suitable for an ongoing operation (animals become bait shy if they receive a sub-lethal dose)  
Cost of 1080 pellets = 70.15% pellets = 25kg = \$48  
Public perception  
Secondary kill can also affect some native species e.g kahu, ruru  
Restricted poison

#### Brodifacoum baits – Talon/Pestoff

Advantages: only one feed is needed to get a lethal dose  
No bait shyness  
Not soluble in water  
Not a restricted toxin

Disadvantages: Persistent in the environment  
Costs of Pestoff pellets 10kg = \$65, 25kg = \$80.60  
Would need 30kg to pulse the island

#### Feracol

I do not know a lot about this product and have never used it. It comes in the form of a peanut paste with 0.4% poison. It is delivered to the rodents in a paper bag stamped with a warning label. Each bag contains 50-100g of Feracol paste, and rodents chew through the bags to eat the bait. It costs \$180 for a 4.5kg pail of Feracol plus \$20 for 500 printed bags.

I would imagine that the island would require 10kgs of Feracol for adequate coverage. Per fill = \$380.00

*Matakohe/Limestone Island Scenic Reserve Restoration Plan  
May 2000*

Other products are available such as 1<sup>st</sup> generation anti coagulants which have the advantage of being less persistent in the environment but are less effective on rodents, especially mice.

**Monitoring**

To assess the effect the poisoning operations are having on the rodent populations, it is recommended that regular indexing of rodents be carried out using 'ink and paper' tracking tunnels.

The ink and paper tunnels are a simple method to detect the presence or absence of rodents and have proven useful in a number of New Zealand sites for interpreting population trends. The ink and paper tunnels are a weather proof tube that houses a 3 compartment tray, containing a dyed sponge and two blank papers. The tunnels are baited with peanut butter and foot prints indicate the species of animals visiting the tunnel.

Fifty tunnels should be laid out over the island along the bait grids and especially in areas where invasion is likely. The tunnels should be baited for one clear night a month. These tunnels can also be used to detect small predators (stoats and hedgehogs) by changing the bait to meat and have already proven useful in detecting the presence of mustelids on the island.

**Reinvasion**

Because Limestone Island is within the swimming distance of rats and stoats and possibly mice and weasels, re-invasion is likely to occur. By reducing the density of animals in its poisoned buffer zone, dispersal of animals from this area can be greatly reduced.

**Possible Poisoning Sequence**

- Index rodent numbers (with tracking tunnels)
- Fill all stations with 200g of Brodifacoum bait
- After one week index rodent populations
- Spot poison areas where rodents are still tracking or bait take was rapid
- Continue to index rodent populations monthly and pulse feed 200g of Brodifacoum to the stations monthly or as the tracking papers dictate

**Conclusions**

Rats and especially mice are very hard to control. Their rapid breeding can turn a near perfect eradication into a waste of money within 3-4 breeding cycles, so the project must be viewed as a long term one. Over a period of time, bait and toxin types may have to be changed to accommodate bait shy rodents. So bait stations should be able to house a range of bait forms.

People and stock must be kept away from all toxins and adequate public warnings and stock proof fencing must be in place before toxin is introduced to the island.

Pete Graham  
Field Technician (Pests)  
Department of Conservation (Northland Conservancy)  
1999

[Jump to list of Appendices](#)

## Appendix Thirteen: List of Adventive Weed Species of Concern on Matakohe/Limestone Island<sup>1</sup>

Date of first edition: September 1994, Date of this update: December 1999

**Sorted by Species:**

Species	Common name
<i>Ageratina adenophora</i>	Mexican devil
<i>Ageratina riparia</i>	mistflower
<i>Araujia sericifera</i>	moth plant
<i>Arum italicum</i>	Italian arum
<i>Brugmansia candida</i>	angels trumpet
<i>Carex longebrachiata</i>	Australian sedge
<i>Cerastium sp.</i>	chickweed
<i>Cirsium vulgare</i>	Scotch thistle
<i>Cortaderia selloana</i>	pampas
<i>Cotoneaster glaucophyllus</i>	cotoneaster
<i>Cupressus macrocarpa</i>	macrocarpa
<i>Elaeagnus x reflexa</i>	elaeanus
<i>Epilobium spp.</i>	willow herbs (several spp)
<i>Erechtites spp.</i>	fireweeds
<i>Erigeron karvinskianus</i>	Mexican daisy
<i>Euphorbia spp.</i>	spurges
<i>Feijoa sellowiana</i>	feijoa
<i>Ficus carica</i>	fig
<i>Foeniculum vulgare</i>	fennel
<i>Ligustrum sinense</i>	chinese privet
<i>Linum sp.</i>	flax weed annual
<i>Melianthus major</i>	Cape honey flower
<i>Myoporum insulare</i>	Australian ngaio
<i>Nerium oleander</i>	oleander
<i>Oenanthe pimpinelloides</i>	carrot weed
<i>Paraserianthes lapantha</i>	shrub wattle
<i>Pennisetum clandestinum</i>	kikuyu
<i>Phytolacca octandra</i>	inkweed
<i>Pinus radiata</i>	radiata pine
<i>Plantago spp.</i>	plantains
<i>Portulaca oleracea</i>	portulaca
<i>Quercus robur</i>	oak
<i>Racosperma sp.</i>	wattle
<i>Rhododendron sp.</i>	Rhododendron
<i>Rosa canina</i>	dog rose
<i>Rubus fruticosus agg.</i>	blackberry
<i>Rumex spp.</i>	docks
<i>Salix sp. (1)</i>	willow
<i>Salix sp. (2)</i>	willow
<i>Senecio jacobaea</i>	ragwort
<i>Senecio mikanioides</i>	German ivy
<i>Solanum linnaeanum</i>	apple of sodom
<i>Solanum mauritianum</i>	woolly nightshade
<i>Solanum nigrum agg.</i>	black nightshade
<i>Stenotaphrum secundatum</i>	buffalo grass
<i>Taraxacum officinale</i>	dandelion
<i>Tropaeolum majus</i>	nasturtium
<i>Ulex europaeus</i>	gorse
<i>Verbena bonariensis</i>	purple top
<i>Vinca major</i>	periwinkle
<i>Vitis vinifera</i>	grape
<i>Zantedeschia aethiopica</i>	arum lily

**Sorted by Common name:**

Common name	Species
angels trumpet	<i>Brugmansia candida</i>
apple of sodom	<i>Solanum linnaeanum</i>
arum lily	<i>Zantedeschia aethiopica</i>
Australian ngaio	<i>Myoporum insulare</i>
Australian sedge	<i>Carex longebrachiata</i>
black nightshade	<i>Solanum nigrum agg.</i>
blackberry	<i>Rubus fruticosus agg.</i>
buffalo grass	<i>Stenotaphrum secundatum</i>
Cape honey flower	<i>Melianthus major</i>
carrot weed	<i>Oenanthe pimpinelloides</i>
chickweed	<i>Cerastium sp.</i>
chinese privet	<i>Ligustrum sinense</i>
cotoneaster	<i>Cotoneaster glaucophyllus</i>
dandelion	<i>Taraxacum officinale</i>
docks	<i>Rumex spp.</i>
dog rose	<i>Rosa canina</i>
elaeanus	<i>Elaeagnus x reflexa</i>
feijoa	<i>Feijoa sellowiana</i>
fennel	<i>Foeniculum vulgare</i>
fig	<i>Ficus carica</i>
fireweeds	<i>Erechtites spp.</i>
flax weed annual	<i>Linum sp.</i>
German ivy	<i>Senecio mikanioides</i>
gorse	<i>Ulex europaeus</i>
grape	<i>Vitis vinifera</i>
inkweed	<i>Phytolacca octandra</i>
Italian arum	<i>Arum italicum</i>
kikuyu	<i>Pennisetum clandestinum</i>
macrocarpa	<i>Cupressus macrocarpa</i>
Mexican daisy	<i>Erigeron karvinskianus</i>
Mexican devil	<i>Ageratina adenophora</i>
mistflower	<i>Ageratina riparia</i>
moth plant	<i>Araujia sericifera</i>
nasturtium	<i>Tropaeolum majus</i>
oak	<i>Quercus robur</i>
oleander	<i>Nerium oleander</i>
pampas	<i>Cortaderia selloana</i>
periwinkle	<i>Vinca major</i>
plantains	<i>Plantago spp.</i>
portulaca	<i>Portulaca oleracea</i>
purple top	<i>Verbena bonariensis</i>
radiata pine	<i>Pinus radiata</i>
ragwort	<i>Senecio jacobaea</i>
Rhododendron	<i>Rhododendron sp.</i>
Scotch thistle	<i>Cirsium vulgare</i>
shrub wattle	<i>Paraserianthes lapantha</i>
spurges	<i>Euphorbia spp.</i>
wattle	<i>Racosperma sp.</i>
willow	<i>Salix sp. (1)</i>
willow	<i>Salix sp. (2)</i>
willow herbs (several spp)	<i>Epilobium spp.</i>
woolly nightshade	<i>Solanum mauritianum</i>

plus assorted other grasses and annual flatweeds.

[Jump to list of Appendices](#)

<sup>1</sup> Craw, 1999

## Appendix Fourteen: Herbicide application rates for weed control<sup>1</sup>


<b>PRIORITY 1</b>	<b>Herbicide</b>	<b>In 15 litres use ...</b>	<b>Timing</b>
Periwinkle	Glyphosate + Pulse.	300 ml +20 ml respectively	all year
Mexican daisy	Escort.	3 gm	all year
	or Tordon BK.	60 ml	all year
	or Roundup.	150 ml	all year
Mistflower	Escort.	6 gm	all year
	or Roundup	300 ml	all year
Mothplant	Tordon BK.	90 ml	all year
<b>PRIORITY 2</b>	<b>Herbicide</b>	<b>In 15 litres use ...</b>	<b>Timing</b>
Pampas, Kikuyu (no Pulse needed on new growth)	Roundup + Pulse.	150 ml +20 ml	all year
	or Gallant + Crop oil.	150 ml + 150 ml	all year
Cotoneaster	Escort + Pulse.	9 gm + 20 mls	all year
Elaeagnus	Tordon BK.	neat on fresh cut stump	all year
Privet	Escort + Pulse.	6 gm + 20 mls	all year
Nasturtium	Roundup	150 ml	Spring-summer
Climbing dock	Escort	9 gm	Spring-summer
Tobacco weed	Tordon BK.	90 mls	all year
Mexican devil	Escort.	6 gm	all year
Blackberry	Escort.	8gm	Feb-May
Willow	Roundup	Inject or paint stump, use 1 part in 5 water	all year
	or Tordon BK.		all year
German ivy	Roundup.	150 mls	all year
	or Escort.	6 mls	all year
Gorse	Tordon BK.	90 mls	all year
	or Escort + Pulse.	6 gms + 20 mls.	all year
Cape honey flower	Escort + Pulse.	9 mls + 20 mls	all year
<b>PRIORITY 3</b>	<b>Herbicide</b>	<b>In 15 litres use ...</b>	<b>Timing</b>
Arum lily	Roundup + Escort + Pulse.	150 mls +6 gms +20 mls	all year
Angels trumpet	Tordon BK.	90 mls	all year
Dog rose	Escort.	9 gms	Feb-May
<b>PRIORITY 4</b>	<b>Herbicide</b>	<b>In 15 litres use ...</b>	<b>Timing</b>
Fennel	Roundup.	150 mls	Oct-March
Australian sedge	Roundup.	150 mls	Oct-April
Buffalo grass	Roundup.	150 mls	8wks pre-plant
Hedge wattle *	Escort.	9 gms	all year
Oleander	Escort.	9 gms	all year
Australian ngaio	Escort.	paint stump with 1 gm/litre	all year
Apple of sodom	Tordon BK.	90 mls	Nov-Feb
<b>PRIORITY 5</b>	<b>Herbicide</b>	<b>In 15 litres use ...</b>	<b>Timing</b>
Grape	Escort.	9 gms	Oct-March
	or Tordon BK.	90 mls	Oct-March
Fig	Escort	9 gms	Oct-March
	or Tordon BK	90 mls	Oct-March
Feijoa	Escort	9 gms	Oct-April

[Jump to list of Appendices](#)

<sup>1</sup> Adapted from Matakohe/Limestone Island Weed Control Plan, revised by J. Craw 1999




Appendix Sixteen: Examples of information boards



# Tiritiri Matangi Island

## Scientific Reserve



**Tiritiri Matangi is an open sanctuary for public recreation as well as the protection of native plants and birds.**

**Tracks and walking information:**

- Wattle Track**  
 What's the Lightness? 20 minutes one way. This track is a gully of wattle trees in the lower part of the island. It is a good place to see the native birds, tui, and other birds. The track is well maintained and is a good place to see the native birds.
- Hobbs Beach**  
 What's the Lightness? 10 minutes. This track is a gully of wattle trees in the lower part of the island. It is a good place to see the native birds, tui, and other birds. The track is well maintained and is a good place to see the native birds.
- Kawerau Track**  
 Hobbs beach to ridge track via the gully. 20-40 minutes. This track is a gully of wattle trees in the lower part of the island. It is a good place to see the native birds, tui, and other birds. The track is well maintained and is a good place to see the native birds.
- Ridge Track**  
 Lightness to Junction with Ngatipapa track 20 minutes. This is a good track to see the native birds, tui, and other birds. The track is well maintained and is a good place to see the native birds.
- Ngati Paoa Track**  
 End of ridge track returns via Ngati Paoa Track and Herringbone Bay. 40 minutes. This track is a gully of wattle trees in the lower part of the island. It is a good place to see the native birds, tui, and other birds. The track is well maintained and is a good place to see the native birds.

**Circular Walks**  
 A number of circular walks can be made on T.M. and some suggestions are listed below. The total is used as a starting point.

- 1 hour: What's the Lightness - Wattle Track - What's the Lightness
- 3 hours: What's the Lightness - Hobbs Beach - Lightness - Wattle Track - What's the Lightness
- 3 hours: What's the Lightness - Hobbs Beach - Keweenaw Track - Ridge Track - Lightness - Wattle Track - What's the Lightness
- 4-8 hours: You could cover all of the walks named above.

**One Day:** This would give you time to explore most of the ridge and coastal walks on the island.

**Environmental Care Code**

- Bin:** This is rubbish every with you and off the island.
- Fire:** Lighting fires is banned because of the risk to forests.
- Food:** Take great care not to bring rodents or pests to the island as they destroy plants and wildlife.
- Fire/Smoke:** From New Zealand's Forested Birds with very and respect. They are native and often rare.
- Camping:** Camping is not permitted on the island.

**Replanting Programme**

The replanting programme began in 1984, and the success is evident in the significant improvement of the island's vegetation. Over 200,000 trees have been planted by volunteers since 1984.

Central to the replanting programme has been the establishment of a nursery on the island, which produces 20,000 trees and shrubs a year from seed produced on the island.

Publications for the replanting programme have been planned biennially. One is a recent book on the island's native plants and animals and another is a book on the island's native plants and animals.

**Bird Sanctuary**

Tiritiri Matangi is a bird sanctuary. It is a good place to see the native birds, tui, and other birds. The track is well maintained and is a good place to see the native birds.

**Lighthouse**

THOMAS' tower lighthouse has guided ships on the coast since 1863 and the lighthouse provided a beacon for the island. The original lighthouse was replaced by the 1920's lighthouse which is still in use. The lighthouse is well maintained and is a good place to see the native birds, tui, and other birds.


**For further information contact the conservation officers on the island  
 - (09) 479 4490, or the Department of Conservation Regional office, cnr  
 K-Rd and Liverpool St, Auckland - (09) 307 9279.**

Appendix Sixteen: continued ...

# Tiritiri Matangi Island

## Scientific Reserve

The island is an open sanctuary where the public are free to enjoy the unique wildlife of New Zealand.




**Marked Areas**

- landing sites
- wharf
- lighthouse/nursery
- main walking tracks

Please respect the following regulations -

- no overnight camping
- no fires
- no animals including pets and rodents
- please when leaving the island remove all your rubbish.

For further information contact the conservation officers on the island - (09) 479 4490, or the Department of Conservation Regional office, cnr K-Rd and Liverpool St, Auckland - (09) 307 9279.



DEPARTMENT OF CONSERVATION  
H. PAPA AIAWTEA

Appendix Sixteen: continued ...

# NORTH HEAD HISTORIC RESERVE

North Head (Takapuna) is one of about 50 volcanic cones in the Auckland volcanic field. Its wide views over the Hauraki Gulf and Waitemata Harbour entrance have made it an important look out and defence site for centuries.

The map shows the layout of North Head, including the North and South Batteries, the Naval Area, and the 'YOU ARE HERE' marker. It also indicates parking areas, searchlight emplacements, and a self-guided walk route. A scale bar and legend are provided at the bottom of the map.

Maori people first settled Takapuna (meaning rock with a spring) and built a fortified pa here. Following European settlement of Auckland, North Head became an important part of a coastal defence system, developed to protect the city from feared foreign invasions. The remains of an extensive system of guns, tunnels, searchlights and a minefield dating from the 1870s through to World War II, are still evident.

Today, North Head is protected as part of the Hauraki Gulf Maritime Park, administered by the Department of Conservation.

Take your rubbish away with you  
 Please don't light fires  
 Vehicle gates are locked 6pm daily  
 Emergencies: Phone (09) 3079 279

A self-guided walk starts at this point and visits historic and other features of North Head. Walking time: 3/4 hour approximately. Information pamphlets are available from Department of Conservation, Haywards Paper Plus, Devonport and Domain Dairy, Tainui Rd. Reserve open daily 6am-10pm.

[Jump to list of Appendices](#)

## Appendix Seventeen: Threatened And Uncommon Plants Of Northland<sup>1</sup>

### THREE KINGS SPECIES

*Pennantia baylisiana* (CE)  
*Tecomanthe speciosa* (CE)  
*Brachyglottis arborescens* (CD)  
*Alectryon excelsus* ssp. *grandis* (NPR)  
*Myrsine oliveri* (NPR)  
*Elingamita johnsonii* (RR)  
*Kirkianella novae-zelandiae*  
f. *glauca* (RR)  
*Macropiper excelsum* ssp. *petatum*  
f. *de Langei* (RR)  
*Macropiper melchior* (RR)  
*Pittosporum fairchildii* (RR)

### SURVILLE CLIFF SPECIES

*Pittosporum ellipticum* ssp. *serpentinum* (V)  
*Parsonsia praeruptis* (CD)  
*Carex ophiolithica* (RR)  
*Cassinia amoena* (RR)  
*Geniostoma rupestre* var. *crassum* (RR)  
*Haloragis erecta* ssp. *cartilaginea* (RR)  
*Hebe brevifolia* (RR)  
*Coprosma* aff. *obconica* (T/RR)  
*Coprosma* aff. *spathulata* (T/RR)  
*Hebe* aff. *ligustrifolia* (T/RR)  
*Helichrysum* aff. *aggregatum* (T/RR)  
*Leucopogon* aff. *parviflorus* (T/RR)  
*Phyllocladus* aff. *trichomanoides* (T/RR)  
*Hebe* aff. *brevifolia* (T/RR)

### OTHERS

*Trilepidea adamsii* (EX)  
*Amphibromus fluitans* (CE)  
*Asplenium pauperequitum* (CE)  
*Clianthus puniceus* var. *puniceus* (CE)  
*Corybas carsei* (CE)  
*Mazus novae-zelandiae* spp. *impolitus*  
f. *hirtus* (CE)  
*Pterostylis puberbula* (CE)  
*Sebaea ovata* (CE)  
*Crassula hunua* (E)  
*Hebe speciosa* (E)  
*Juncas holoschoenus* var. *holoschoenus* (E)  
*Lepidium olearaceum* ss (E)  
*Metrosideros bartletii* (E)  
*Phylloglossum drummondii* (E)  
*Pterostylis micromega* (E)  
*Rorippa divaricata* (E)  
*Anogramma leptophylla* (V)  
*Carmichaelia williamsii* (V)  
*Coprosma waima* (V)  
*Gratiola nana* (V)  
*Hebe perbella* (V)

### OTHERS *continued*

*Hibiscus diversifolius* (V)  
*Lycopodiella serpentina* (V)  
*Mazus novae-zelandiae* spp. *impolitus*  
f. *impolitus* (V)  
*Myosotis mathewsii* (V)  
*Ophioglossum petiolatum* (V)  
*Picris burbridgei* (V)  
*Pomaderris polifolia* (V)  
*Senecio scaberulus* (V)  
*Sicyos australis* (V)  
*Thelypteris confluens* (V)  
*Todea barbara* (V)  
*Utricularia protrusa* (V)

### TAXONOMICALLY INDETERMINATE

*Atriplex* aff. *billardi* (T/CE)  
*Calochilus* aff. *herbaceus* (T/CE)  
*Christella* aff. *dentata* (T/CE)  
*Hebe* aff. *bishopiana* (T/CE)  
= *Hebe* "Swamp"  
*Isoetes* aff. *kirkii* (T/CE)  
*Thelymitra* (a) (Ahipara) (T/E)  
*Hibiscus* aff. *trionum* (T/V)  
*Olearia* (a) (Waima) (TV)  
*Peperomia* aff. *urvilleana* (T/S)  
= *P.* "purple vein"  
*Hebe acutiflora* (T/IK)  
*Spiranthes* aff. *novae-zelandiae* (T/IK)  
*Prasophyllum* aff. *patens* (T/IK)

### DECLINING

*Austrofestuca littoralis* (D)  
*Baumea complanata* (D)  
*Calystegia marginata* (D)  
*Colensoa physaloides* (D)  
*Cyclosorus interruptis* (D)  
*Eleocharis neozelandica* (D)  
*Epilobium hirtigerum* (D)  
\**Euphorbia glauca* (D)  
*Hydatella inconspicua* (D)  
*Ileostylus micranthus* (D)  
*Isolepis fluitans* (D)  
*Leptinella rotundata* (D)  
*Marattia salicina* (D)  
*Myriophyllum robustum* (D)  
*Peraxilla tetrapetala* (D)  
*Pimelea arenaria* (D)  
*Pimelea tomentosa* (D)  
*Pterostylis tasmanica* (D)  
*Schoenus carsei* (D)  
*Sonchus kirkii* (D)  
*Sporodanthus ferrugineus* (D)  
*Thelymitra tholiformis* (D)  
*Teuclidium parvifolium* (D)  
*Tupeia antarctica* (D)

<sup>1</sup> Compiled by Lisa Forrester, Department of Conservation, Northland Conservancy

Appendix Seventeen: continued ...

**RECOVERING**

*Cordyline kasper* (RCD)  
*Dactylanthus taylorii* (RCD)  
*Desmoschoenus spiralis* (RCD)  
*Meryta sinclairii* (RCD)  
*Pittosporum obcordatum* (RCD)  
*Streblus banksii* (RCD)

**NATURALLY UNCOMMON**

*Amenanthele lessoniana* (S)  
*Caladenia atradenia* (S)  
*Calochilus paludosus* (S)  
*Centipeda minima* (S)  
*Corybas rivularis* ss. (S)  
*Drosera pygmaea* (S)  
*Fuchsia procumbens* (S)  
*Grammitis rawlingsii* (S)  
*Korthalsella salicorniodes* (S)  
*Lepilaena bilocularis* (S)  
*Mircolaela carsei* (S)  
*\*Pellaea falcata* (S)  
*Peperomia tetraphylla* (S)  
*Pittosporum pimelioides* ssp.  
*pimelioides* (S)  
*Pittosporum virgatum* (S)  
*Plectranthus parviflorus* (S)  
*Pseudopanax ferox* (S)  
*Senecio marotiri* (S)  
*Senecio repangae* ssp. *repangae* (S)

**NATURALLY UNCOMMON continued**

*Tetragonia tetragonioides* (S)  
*Thelymitra mathewsii* (S)  
*Thelymitra sanscilla* (S)  
*Thismaia rodwayi* (S)  
*Adiantum formosum* (Va)  
*Caleana minor* (Va)  
*Chiloglottis formicifera* (Va)  
*Doodia aspera* (Va)  
*Gratiola pedunculata* (Va)  
*Mazus pumilio* (Va)  
*Muellerina celastroides* (Va)  
*Picris angustifolia* ssp. *angustifolia* (Va)  
*Pterostylis nutans* (Va)  
*Celmisia adamsii* var. *rugulosa* (RR)  
*Centrolepis strigosa* (RR)  
*Cryptostylis subulata* (RR)  
*Davalia tasmanii* ssp. *cristata* (RR)  
*Hebe adamsii* (RR)  
*Leptinella dispersa* ssp. *rupestris* (RR)  
*Pittosporum pimeleoides* ssp. *maius* (RR)  
*Pomaderris paniculosa* ssp. *novae-*  
*zelandiae* (RR)  
*Thelymitra malvina* (RR)  
*Xeronema callistemon* f. *bracteosa* (RR)

**KEY**

(EX) Presumed extinct  
(CE) Critically Endangered  
(E) Endangered  
(V) Vulnerable  
(T / ) Taxonomically Indeterminate  
(D) Declining  
(RCD) Recovering - Conservation Dependant  
(S) Sparse  
(Va) Vagrant  
(RR) Range Restricted  
(NPR) Natural Population Recovery  
(IK) Insufficient Known

For more information refer to:-

**“THREATENED AND UNCOMMON PLANTS OF NORTHLAND”** – draft listing compiled by Lisa Forester, DOC Botanist, Northland Conservancy, 2000.

The additional information found in that publication includes:

- Status (Present/Absent)
- Land Status –DOC/Private/Public Reserve/ QEII Covenant/covenant
- DOC Area (Kaitaia/Kerikeri/Whangarei)
- Distribution and other notes
- Conservation requirements

For reasons of space, that information has not been included in this appendix.

[Jump to list of Appendices](#)

## Appendix Eighteen: Botanical Index of Common Plant Names

Common Name	Botanical Name
Adders tongue Fern - stalked	<i>Ophioglossum reticulatum</i>
Ahikikiakiore	<i>Parsonsia heterophylla</i>
Akapuka	<i>Griselinia littoralis</i>
Akeake	<i>Dodonaea viscosa</i>
Akepiro/Tree daisy	<i>Olearia furfuracea</i>
Angle-fruited Rush	<i>Juncus holoschoenus ssp.</i>
Annual Fern/Jersey Fern	<i>Anogramma leptophylla</i>
Arrow Grass	<i>Triglochin striata</i>
Autetaranga/Sand Daphne	<i>Pimelea arenaria</i>
Bamboo - native	<i>Microlaena polynoda</i>
Bamboo Orchid/Peka weka	<i>Earina mucronata</i>
Basket Grass	<i>Oplismenus imbecillus</i>
Batchelors Button	<i>Cotula coronopifolia</i>
Beach Spinach	<i>Tetragonia trigyna</i>
Bedstraw	<i>Galium sp.</i>
Bindweeds	<i>Calystegia sp.</i>
Black Maire	<i>Nestegis cunninghamii</i>
Black Tree Fern/Mamaku	<i>Cyathea medullaris</i>
Bladder Hibiscus/Puarangi	<i>Hibiscus aff. trionum</i>
Bladderwort	<i>Utricularia sp.</i>
Blueberry/Turutu	<i>Dianella nigra</i>
Bluegrass	<i>Elymus multiflorus</i>
Bracken/Rahurahu	<i>Pteridium esculentum</i>
Brake Ferns	<i>Pteris sp.</i>
Bristle Fern	<i>Trichomanes elongatum</i>
Broadleaf - Shining/Akapuka/Puka	<i>Griselinia lucida</i>
Broadleaf/Kapuka	<i>Griselinia littoralis</i>
Bush Astelia	<i>Astelia fragrans</i>
Bush Daphne/Karapapa/Toropapa	<i>Alseuosmia macrophylla</i>
Bush Lawyer/Tatamaroa	<i>Rubus sp.</i>
Bush rice grass	<i>Microlaena avenacea</i>
Button Fern/Tarawera	<i>Pellaea rotundifolia</i>
Cabbage Trees/Ti	<i>Cordyline sp.</i>
Carrot NZ	<i>Daucus glochidiatus</i>
Celery - Native/Tutae koau	<i>Apium prostratum</i>
Celery Pines	<i>Phyllocladus sp.</i>
Celmisia's	<i>Celmisia sp.</i>
Climbing Shield Fern/Karuwhai	<i>Rumohra adiantiformis</i>
Club rush	<i>Isolepis &amp; Schoenus sp.</i>
Clubmoss	<i>Huperzia sp. Lycopodium sp. &amp; Lycopodiella sp.</i>
Coastal Astelia/Kowharawhara	<i>Astelia banksii</i>
Coastal Cutty Grass	<i>Cyperus ustulatus</i>
Coastal Fivefinger/Houpara	<i>Pseudopanax lessonii</i>
Coastal Karamu	<i>Coprosma macrocarpa</i>
Coastal Maire	<i>Nestegis apetala</i>
Coastal Needle Grass	<i>Stipa stipoides</i>
Coastal Toetoe	<i>Cortaderia splendens</i>
Coastal turf grass	<i>Zoysia sp.</i>
Coastal tussock	<i>Chionchloa bromoides</i>
Cockspur	<i>Plectranthus parviflora</i>
Comb Fern	<i>Schizaea fistulosa</i>

*Matakohe/Limestone Island Scenic Reserve Restoration Plan*  
*May 2000*

**Appendix Eighteen: continued ...**

<b>Common Name</b>	<b>Botanical Name</b>
Common Maidenhair Fern/Puhunui	<i>Adiantum cunninghamii</i>
Common Shield Fern/Pikopiko	<i>Polystichum richardii</i>
Cooks Scurvey Grass	<i>Lepidium oleraceum</i>
Coprosma - roundleaf	<i>Coprosma rotundifolia</i>
Coprosma - spoon leaf	<i>Coprosma spathulata</i>
Coprosmas	<i>Coprosma sp.</i>
Corokias/Korokia	<i>Corokia buddleioides</i> & <i>C. cotoneaster</i>
Cottonwood/Tauhinu	<i>Ozothamnus (Cassinia) leptophylla</i>
Cotula	<i>Cotula</i> & <i>Leptinella sp.</i>
Creek Fern/Kiwikiwi	<i>Blechnum fluviatile</i>
Cudweed	<i>Euchiton sp.</i>
Cutty Grass	<i>Gahnia sp.</i> & <i>Cyperus ustulatus</i>
Dainty daisy	<i>Celmisia gracilentia</i>
Duckweed	<i>Lemna minor</i>
Easter Orchid/Peka waka	<i>Earina autumnalis</i>
Eel Grass/Nana	<i>Zostera sp.</i>
Emiemi/Spiderwood	<i>Dracophyllum latifolium</i>
Ewekuri/Towai/large leaf milk tree	<i>Streblus banksii</i>
Filmy Ferns	<i>Hymenophyllum sp.</i> & <i>Trichomanes sp.</i>
Fireweed	<i>Epilobium sp.</i> & <i>Senecio sp.</i>
Fivefinger/Whauwhaupaku	<i>Pseudopanax arboreum</i>
Flax NZ - Common/Harakeke	<i>Phormium tenax</i>
Flax NZ - Wharariki	<i>Phormium cookianum</i>
Flax True - Rauhuia	<i>Linum monogynum</i>
Foetid Astelia	<i>Collospermum microspermum</i>
Forget-me-not	<i>Myosotis sp.</i>
Fork Fern	<i>Tmesipteris sp.</i>
Forked Comb Fern	<i>Schizaea bifida</i>
Giant Flowered Broom	<i>Carmichaelia williamsii</i>
Giant Rush	<i>Juncus pallida</i>
Giant Sedge	<i>Gahnia xanthocarpa</i>
Giant Umbrella Sedge/Toetoe Upoko-Tangata	<i>Cyperus ustulatus</i>
Goosefoot	<i>Chenopodium sp.</i>
Greenhood Orchid/Tutakiwi	<i>Pterostylis sp.</i>
Ground orchid/Sun Orchid	<i>Thelymitra sp.</i>
Groundsel	<i>Senecio sp.</i>
Gumdiggers soap/Kumerahou	<i>Pomaderris kumeraho</i>
Hairy Daphne/	<i>Pimelea tomentosa</i>
Hairy Fern/Tuakura	<i>Lastreopsis hispida</i>
Hangehange/NZ privet	<i>Geniostoma rupestre</i>
Harakeke/Flax	<i>Phormium tenax</i>
Hard Beech/Tawhai raunui	<i>Nothofagus truncata</i>
Harebell NZ	<i>Wahlenbergia gracilis</i>
Hawkweed NZ	<i>Picris sp.</i>
Heart-Leaf Kohuhu	<i>Pittosporum obcordatum</i>
Heart-Leaf Orchid	<i>Acianthis sinclairii</i>
Heketara	<i>Olearia rani</i>
Heruheru/Crape Fern	<i>Leptolepis hymenophylloides</i>
Hibiscus - bladder/Star	<i>Hibiscus aff. trionum</i>
Hibiscus - yellow flowered	<i>Hibiscus diversifolius</i>
Hinau	<i>Elaeocarpus dentatus</i>
Hioi/NZ Mint	<i>Mentha cunninghamii</i>
Hook Sedge	<i>Uncinia sp.</i>

*Matakohe/Limestone Island Scenic Reserve Restoration Plan  
May 2000*

Appendix Eighteen: continued ...

<b>Common Name</b>	<b>Botanical Name</b>
Horeka/Lancewood	<i>Pseudopanax crassifolium</i>
Horokaka/Ice plant	<i>Disphyma australe</i>
Horses mane Weed	<i>Ruppia sp.</i>
Houhere/Lacebark	<i>Hoheria sp.</i>
Houpara/Coast Five-finger	<i>Pseudopanax lessonii</i>
Huruhuru whenua/Shining Spleenwort	<i>Asplenium oblongifolium</i>
Hutu	<i>Ascarina lucida</i>
Iwituna/Cubmoss	<i>Huperzia varia</i>
Jointed Rush	<i>Baumea sp.</i>
Jointed wire rush/Oioi	<i>Apodissima similis</i>
Kahaha	<i>Astelia sp.</i>
Kahakaha/Perching Lily	<i>Collospermum hastatum</i>
Kahikatea/White Pine	<i>Dacrycarpus dacrydioides</i>
Kaikomako	<i>Pennantia corymbosa</i>
Kakabeak/Kowhai ngutu kaka	<i>Clianthus puniceus</i>
Kanono	<i>Coprosma grandifolia</i>
Kanuka/Tea Tree	<i>Kunzea ericoides</i>
Kapapunawha/Kapataniwha/Lake club Rush	<i>Schoenoplectus tabernaemontani</i>
Kapuka/Broadleaf	<i>Griselinia littoralis</i>
Karaka	<i>Corynocarpus laevigata</i>
Karamu - Coast	<i>Coprosma macrocarpa</i>
Karamu - Common	<i>Coprosma robusta</i>
Karamu - Shining	<i>Coprosma lucida</i>
Karamu - Twiggy	<i>Coprosma rhamnoides</i>
Karapara	<i>Alseuosmia banksii</i>
Kareora/Supplejack	<i>Ripogonum scandens</i>
Karo	<i>Pittosporum crassifolium</i>
Karwhai/Climbing Shield Fern	<i>Rumohra adiantiformis</i>
Katote/Soft Tree Fern	<i>Cyathea smithii</i>
Kauri	<i>Agathis australis</i>
Kauri Grass	<i>Astelia trinervia</i>
Kawaka/NZ Cedar	<i>Libocedrus plumosa</i>
Kawakawa	<i>Macropiper excelsum &amp; sp.</i>
Kidney Fern/Konehu	<i>Trichomanes reniforme</i>
Kieke	<i>Freycinettia baueriana ssp. banksii</i>
King Fern/Para	<i>Marrattia salicina</i>
Kiokio/Palm-leaf Fern/Swamp ferns	<i>Blechnum sp.</i>
Kiwikiwi/Creek Fern	<i>Blechnum fluviatile</i>
Kohekohe	<i>Dysoxylum spectabile</i>
Kohekohe/NZ Angelica	<i>Scandia rosifolia</i>
Kohia/NZ Passionfruit	<i>Passiflora tetrandra</i>
Kohikohi/Beach Spinach	<i>Tetragonia trigyna</i>
Kohukohu rangi/Kirks Tree daisy	<i>Brachyglottis kirkii</i>
Kohukohu/Matipo	<i>Pittosporum tenuifolium</i>
Konehu/Kidney Fern	<i>Trichomanes reniforme</i>
Korokia taranga	<i>Corokia buddleioides</i>
Koromiko	<i>Hebe sp.</i>
Koru/Giant Pratia	<i>Colensoa physalloides</i>
Korupuka/Snowberry	<i>Gaultheria antipoda</i>
Kotukutuku/Tree Fuchsia	<i>Fuchsia excorticata</i>
Kowaowao/Hounds Tongue Fern	<i>Microsorium pustulatum</i>
Kowhai	<i>Sophora sp.</i>
Kowhai ngutu kaka/Kakabeak	<i>Clianthus puniceus</i>
Kowhangatira/Silver Sand Grass	<i>Spinifex sericeus</i>

*Matakohe/Limestone Island Scenic Reserve Restoration Plan*  
May 2000

Appendix Eighteen: continued ...

<b>Common Name</b>	<b>Botanical Name</b>
Kowharawhara/Perching Lily	<i>Astelia solandri</i>
Kumerahou/Gumdiggers soap	<i>Pomaderris kumeraho</i>
Kuta/Lake Club rush	<i>Schoenoplectus tabernaemontani</i>
Kutakuta	<i>Elaeocharis sphaceolata</i>
Lacebark/Houhere	<i>Hoheria sp.</i>
Ladys Slipper Orchid/Dendrobium	<i>Winika cunninghamii</i>
Lance Fern/Wharengarara	<i>Anarthropteris lanceolata</i>
Lancewood - Common/Horoeka	<i>Pseudopanax crassifolium</i>
Lancewood - Fierce	<i>Pseudopanax ferox</i>
Leather-Leaf Fern/Ngara wehi	<i>Pyrrrosia eleagnifolia</i>
Leek Orchids	<i>Prasophyllum sp.</i>
Lily - Perching/Kowharawhara	<i>Astelia banksi &amp; Collospermum sp.</i>
Lily - Poor Knights/Raupo taranga	<i>Xeronema callistemon</i>
Lily - Rock/Rengarenga	<i>Arthropodium cirratum</i>
Maakoako/Sea primrose	<i>Samolus repens</i>
Mahoe/Whiteywood	<i>Melicytus sp.</i>
Mahoewao/Lance-leaf Whiteywood/Mahoe	<i>Melicytus lanceolata</i>
Maidenhair ferns	<i>Adiantum sp.</i>
Maikaka/Sun Orchids	<i>Thelymitra sp.</i>
Maire - coastal	<i>Nestegis apetala</i>
Maire - native olives - Sandlewood	<i>Nestegis sp.</i> <i>Mida salicifolia</i>
Maire - ranui/Black maire	<i>Nestegis cunninghamii</i>
Maire - rauriki/White maire	<i>Nestegis lanceolata</i>
Maire - tawaka/Swamp Maire	<i>Syzygium maire</i>
Mairehau	<i>Leionema (Phebalium) nudum</i>
Makaka/Marsh Ribbonwood	<i>Plagianthus divaricatus</i>
Makamaka	<i>Ackama rosifolia</i>
Makawae/Hanging Spleenwort	<i>Asplenium flaccidum</i>
Makomako/Wineberry	<i>Aristotelia serrata</i>
Mamaku/Black Tree Fern	<i>Cyathea medullaris</i>
Mamangi/Tree Coprosma	<i>Coprosma arborea</i>
Manamana/Hen & Chicks Fern	<i>Asplenium bulbiferum</i>
Manawa/Mangrove	<i>Avicennia marina var. resinifera</i>
Mangemange/Bushmans Mattress	<i>Lygodium articulatum</i>
Mania/Sedge	<i>Carex flagellifera</i>
Manihi/Red Pondweed	<i>Potamogeton cheesemanii</i>
Manoao/Silver Pine	<i>Manoao colensoi</i>
Manuka/Tea tree	<i>Leptospermum scoparium agg.</i>
Mapere/Cutty Grass	<i>Gahnia setifolia</i>
Mapou/Red Matipo	<i>Myrsine australis</i>
Marsh Club Rush	<i>Bolboschoenus fluviatilis</i>
Marsh Cress	<i>Rorippa sp.</i>
Marsh Fern	<i>Thelypteris confluens</i>
Marsh Ribbonwood/Makaka	<i>Plagianthus divaricatus</i>
Maru/Burr Reed	<i>Sparganium suboblongatus</i>
Maru/Scented Fern/Ring Fern	<i>Paesia scaberula</i>
Maruru/Buttercup	<i>Ranunculus reflexus</i>
Mata/Water Fern	<i>Histiopteris incisa</i>
Matai/Black Pine	<i>Prumnopitys taxifolia</i>
Matakutuku/Clubmoss	<i>Lycopodiella cernua</i>
Matata/Ring Fern	<i>Paesia scaberula</i>
Mauko/Filmy Ferns	<i>Hymenophyllum sp.</i>
Maukoro/Tree Brooms	<i>Carmichaelia sp.</i>

*Matakohe/Limestone Island Scenic Reserve Restoration Plan*  
May 2000

Appendix Eighteen: continued ...

<b>Common Name</b>	<b>Botanical Name</b>
Maukurangi/Miniature Tree Fern	<i>Blechnum fraseri</i>
Mawhai/Native Cucumber	<i>Sicyos australis</i>
Meadow rice grass	<i>Microlaena stipoides</i>
Mikimiki/Swamp coprosma	<i>Coprosma propinqua</i>
Mikoimikoi/Native Iris	<i>Libertia grandiflora &amp; ixioides</i>
Milk tree - large leaf/Towai/Ewekuri	<i>Streblus banksii</i>
Milk tree - small leaf/Turepo	<i>Streblus heterophyllus</i>
Millfoil	<i>Myriophyllum sp.</i>
Mingimingi	<i>Leucopogon fasciculatus &amp; parvifolia</i>
Miro/Brown pine	<i>Prumnopitys ferruginea</i>
Mistletoe	<i>Ileostylis sp. Peraxilla sp. Trilepidea sp. Tupeia sp. Korthalsella sp.</i>
Moakoaka/Sea primrose	<i>Samolus repens</i>
Mokimoki/Fragrant Fern	<i>Microsorium scandens</i>
Mokimoki/Rasp Fern	<i>Doodia sp.</i>
Monoao/Kirks Rimu	<i>Halocarpus kirkii</i>
Mouku/Hen & Chicks Fern	<i>Asplenium bulbiferum</i>
Mountain Flax/Wharariki	<i>Phormium tenax</i>
Mudwort	<i>Limosella lineata</i>
Nana/Eel grass	<i>Zostera sp.</i>
Nau/Cooks scurvey Grass	<i>Lepidium oleraceum</i>
Necklace Fern/Walking Fern	<i>Asplenium flabellifolium</i>
Neinei/Spiderwood	<i>Dracophyllum latifolium</i>
Nertera	<i>Nertera sp.</i>
Net-veined Coprosma	<i>Coprosma areolate</i>
Ngaio NZ	<i>Myoporum laetum</i>
Ngaio Poor Knights	<i>Myoporum laetum ssp. decumbens</i>
Ngarara Wehi/Leather-Leaf Fern	<i>Pyrrhosia eleagnifolia</i>
Nihinihi/Shore Bindweed	<i>Calystegia soldanella</i>
Nikau/Feather Duster Palm	<i>Rhopalostylis sapida</i>
Ninao	<i>Helichrysum lanceolatum</i>
Nini	<i>Blechnum chambersi</i>
Nodding Poa	<i>Poa anceps</i>
Northern Rata	<i>Metrosideros robusta</i>
NZ Angelica	<i>Scandia rosifolia</i>
NZ Cedar/Kawaka	<i>Libocedrus plumosa</i>
NZ Celery	<i>Apium prostratum</i>
NZ Harebell	<i>Wahlenbergia sp.</i>
NZ Iris	<i>Libertia sp.</i>
NZ Jasmine/Maori Jasmine	<i>Parsonsia sp.</i>
NZ Privet	<i>Geniostoma rupestre</i>
NZ Spinach	<i>Tetragonia trigyna</i>
Oat Bent Grass	<i>Deyeuxia avenoides</i>
Oioi/jointed wire rush	<i>Apodissima similis</i>
Olearia/Tree daisy's	<i>Olearia sp.</i>
Oro Oro	<i>Nestegis montana</i>
Pa totara	<i>Leucopogon fraseri</i>
Pakaoharoa/Pakau/Gully Fern	<i>Pneumatopteris pennigera</i>
Panako/Thread Fern	<i>Blechnum filiforme</i>
Panakuru/Shore Lobelia	<i>Lobelia anceps</i>
Panapana/Cress	<i>Cardamine debilis</i>
Panekanake	<i>Pratia angulata</i>
Papataniwhaiwha	<i>Lagenifera sp.</i>
Para/King Fern	<i>Marrattia salicina</i>

*Matakohe/Limestone Island Scenic Reserve Restoration Plan  
May 2000*

Appendix Eighteen: continued ...

<b>Common Name</b>	<b>Botanical Name</b>
Parako/Parenako/Shore spleenwort	<i>Asplenium obtusatum</i>
Parapara/Bird Catching Tree	<i>Pisonia brunoniana</i>
Paretao/Strap Fern	<i>Grammitis billardierii</i>
Parsley Fern/Patotara	<i>Botrychium sp.</i>
Pate/Seven-finger	<i>Schefflera digitata</i>
Peka-a-weka/Bamboo Orchid	<i>Earina mucronata</i>
Perching Lily/Tank Lilies	<i>Astelia solandri &amp; Collospermum sp.</i>
Perei	<i>Gastrodia sp. &amp; Orthoceras novae zealandiae</i>
Peretao/Waterfall Fern	<i>Blechnum colensoi</i>
Petako/Sickle Spleenwort	<i>Asplenium polyodon</i>
Pig Ferns	<i>Hypolepis sp.</i>
Pigeonwood/Porokaiwhiri	<i>Hedycarya arborea</i>
Pikopiko/Common Shield Fern	<i>Polystichum richardii</i>
Pinaatoro/NZ Daphne	<i>Pimelia prostrata agg</i>
Pingao/Golden Sand Dedge	<i>Desmoschoenus spiralis</i>
Pirianga/Mistletoe	<i>Alepis/Korthalsella. Trilepia. Peraxilla sp.</i>
Piripiri/Bidibidi	<i>Acaenia sp.</i>
Piripiri/Filmy Fern	<i>Hymenophyllum sanguinolentum</i>
Pittosporums	<i>Pittosporum spp</i>
Piupiu/Crown Fern	<i>Blechnum discolor</i>
Plantain	<i>Plantago raouli</i>
Plume Grass	<i>Dichelachne sp.</i>
Poananga/NZ Clematis	<i>Clematis forsteri</i>
Poataniwha	<i>Melicope simplex</i>
Pohue/Bindweed/Convolvulus	<i>Calystegia sp.</i>
Pohuehue	<i>Muehlenbeckia sp.</i>
Pohutakawa	<i>Metrosideros excelsa</i>
Pokaka	<i>Elaeocarpus hookerianus</i>
Pondweed	<i>Potamogeton sp.</i>
Ponga/Silver Tree Fern	<i>Cyathea dealbata</i>
Ponui/Marsh Cress	<i>Rorippa sp.</i>
Poor Knights Lily/Raupo taranga	<i>Xeronema callistemon</i>
Porokaiwhiri/Pigeonwood	<i>Hedycarya arborea</i>
Poroporo	<i>Solanum aviculare</i>
Potatoe Orchid	<i>Gastrodia sp.</i>
Powhiwhi/Morning Glory	<i>Ipomaea cairica</i>
Powhiwhi/Shore Bindweed	<i>Calystegia soldanella</i>
Pua O Te reinga/Wood Rose	<i>Dactylanthus taylori</i>
Puakarimu/Clubmoss	<i>Lycopodium deuterodensum</i>
Puarangi/Bladder Hibiscus	<i>Hibiscus trionum</i>
Puatea/Cudweed	<i>Anaphalis trinervia</i>
Puawananga/Clematis	<i>Clematis paniculata</i>
Puha/NZ Sowthistle	<i>Sonchus kirki</i>
Puhinui/Common Maidenhair Fern	<i>Adiantum cunninghamii</i>
Puka	<i>Meryta sinclairi</i>
Puka/Akapuka/Shining Broadleaf	<i>Griselinia lucida</i>
Pukatea	<i>Laurelia novae-zelandiae</i>
Pukupuku/Rasp Fern	<i>Doodia media</i>
Punakura/Shore Lobelia	<i>Lobelia anceps</i>
Purei/Niggerhead Sedge	<i>Carex secta</i>
Puriri	<i>Vitex lucens</i>
Putaputaweta/Marbleleaf	<i>Carpodetus serratus</i>
Rahurahu/Rahuru/Bracken	<i>Pteridium esculentum</i>
Ramarama	<i>Lophomyrtus bullata</i>

*Matakohe/Limestone Island Scenic Reserve Restoration Plan  
May 2000*

Appendix Eighteen: continued ...

<b>Common Name</b>	<b>Botanical Name</b>
Rangiora/Bushmans Friend	<i>Brachyglottis repanda</i>
Rasp Fern	<i>Doodia sp.</i>
Rata – Bartlets	<i>Metrosideros bartletii</i>
Rata - Large White flowered	<i>Metrosideros albiflora</i>
Rata – Northern	<i>Metrosideros robusta</i>
Rata – Orange	<i>Metrosideros diffusa</i>
Rata - Scarlet/Carmine	<i>Metrosideros carminea</i>
Rata - Slender Pink	<i>Metrosideros diffusa</i>
Rata – Southern	<i>Metrosideros umbellata</i>
Rata – White	<i>Metrosideros perforata</i>
Rauhuia/True NZ Flax	<i>Linum monogynum</i>
Raukawa	<i>Raukura (Pseudopanax) edgerleyi</i>
Raupeka/Easter Orchid	<i>Earina autumnalis</i>
Raupo	<i>Typha orientalis</i>
Raupo Taranga/Poor Knights Lily	<i>Xeronema callistemon</i>
Red Matipo/Mapou	<i>Myrsine australis</i>
Remuremu	<i>Selliera radicans</i>
Rengarenga/Rock Lily	<i>Arthropodium cirratum</i>
Rereti	<i>Blechnum chambersi</i>
Rerewia/Pondweed	<i>Potamogeton suboblongatus</i>
Rewarewa/NZ Honeysuckle	<i>Knightia excelsa</i>
Ribbonwood./Manatu	<i>Plagianthus regius</i>
Ribbonwood-Marsh/Makaka	<i>Plagianthus divaricatus</i>
Rimu/Red Pine	<i>Dacrydium cupressinum</i>
Ring Fern/Scented Fern/Matata	<i>Paesia scaberula</i>
Rock Fern	<i>Christella dentata</i>
Rock Lily/Rengarenga	<i>Arthropodium cirratum</i>
Rohutu	<i>Neomyrtus pedunculata</i>
Rough Pig Fern	<i>Hypolepis ambigua</i>
Rough Tree Fern/Wheki	<i>Dicksonia squarrosa</i>
Salt Marsh Olearia	<i>Olearia solandri</i>
Sand bent grass	<i>Deyeuxia billiardierii</i>
Sand coprosma/Tatarakeke	<i>Coprosma acerosa</i>
Sand Daphne/Autetaranga	<i>Pimelea arenaria</i>
Sand Tussock	<i>Austrofestuca littoralis</i>
Sandlewood	<i>Mida slicifolia</i>
Scented Fern/Matata/Ring Fern	<i>Paesia scaberula</i>
Sea grass/Eel grass/Nana	<i>Zostera sp.</i>
Sea primrose/Maakoaku	<i>Samolus repens</i>
Sea rush/Wiwi	<i>Juncus krausii</i>
Sea spurrey	<i>Spergularia media</i>
Shining Oat Grass	<i>Trisetum antarcticum</i>
Shining Spleenwort/Huruhuru Whenua	<i>Asplenium oblongifolium</i>
Shore groundsel	<i>Senecio lautus</i>
Shore Lobelia/Punakura	<i>Lobelia anceps</i>
Shore Spurge/Waiutua	<i>Euphorbia glauca</i>
Sickle Spleenwort/Huruhuru Whenua	<i>Asplenium polyodon</i>
Silver Pine/Manoao	<i>Manoao colensoi</i>
Silver Sand Grass/Spinifex/Kowhangatara	<i>Spinifex sericeus</i>
Silver Tree Fern/Ponga	<i>Cyathea dealbata</i>
Slender Poa	<i>Poa imbecilla</i>
Snowberry/Tawiniwini	<i>Gaultheria antipoda</i>
Southern Rata	<i>Metrosideros umbellata</i>
Spiderwood	<i>Dracophyllum sp.</i>

*Matakohe/Limestone Island Scenic Reserve Restoration Plan*  
May 2000

Appendix Eighteen: continued ...

<b>Common Name</b>	<b>Botanical Name</b>
Spike Rush	<i>Elaeocharis sp.</i>
Spleenworts	<i>Asplenium sp.</i>
Starwort	<i>Callitriche sp. and Stellaria sp.</i>
Stinging Nettle	<i>Urtica incisa</i>
Stinging Nettle Tree	<i>Urtica ferox</i>
Strap Fern/Peretao	<i>Grammitis billardierii</i>
Sun orchid/Maikaika/Maikuku	<i>Thelymitra sp.</i>
Sundews	<i>Drosera sp.</i>
Supplejack/Karaeo	<i>Ripogonum scandens</i>
Swamp Coprosmas	<i>Coprosma propinqua, C. tenuicaulis, C. parviflora</i>
Swamp Fern	<i>Thelypteris confluens</i>
Swamp kiokio	" <i>Blechnum gracilis</i> "
Swamp maire/Maire taweka	<i>Syzygium maire</i>
Sweet Brake Fern/Titipo	<i>Pteris macilenta</i>
Tanekaha/Celery Pine	<i>Phyllocladus trichomanoides</i>
Tangle Fern/Waewaekaka	<i>Gleichenia dicarpa</i>
Tanguru/Coastal Tree Daisy	<i>Olearia albida &amp; Olearia angulata</i>
Tapuwae kotuku/Umbrella Fern	<i>Sticherus cunninghamii</i>
Taraire	<i>Beilschmiedia taraire</i>
Taranaga	<i>Pimelea longifolia</i>
Tarata/Lemonwood	<i>Pittosporum eugenoides</i>
Tarawera/Button Fern	<i>Pellaea rotundifolia</i>
Tatamaroa/Bush Lawyer	<i>Rubus sp.</i>
Tatarakeke/Sand corposma	<i>Coprosma acerosa</i>
Tauhinu/Cottonwood	<i>Ozothamnus (Cassinia) leptophylla</i>
Taupata/Mirror Leaf	<i>Coprosma repens</i>
Taupeka/Gypsy Fern	<i>Ctenopteris heterophylla</i>
Tawa	<i>Beilschmiedia tawa</i>
Tawapou	<i>Pouteria costata</i>
Tawaroa	<i>Beilschmiedia tawaroa</i>
Tawatawa/Maidenhair Fern	<i>Adiantum aethiopicum</i>
Tawhai Ranui/Hard Beech	<i>Nothofagus truncata</i>
Tawheowheo	<i>Quintinnia serrata</i>
Tawhinu	<i>Pomaderris phyllicifolia</i>
Tawhiri	<i>Ixerba brexioides</i>
Tawini Karo/Kirks Karo	<i>Pittosporum kirkii</i>
Tawinwini takapo/Snowberry	<i>Gaultheria antipoda</i>
Thread Fern/Panako	<i>Blechnum filiforme</i>
Three Square	<i>Schoenoplectus pungens</i>
Ti ngahere/Bush Cabbage Tree	<i>Cordyline banksi</i>
Ti rakau/Cabbage Tree	<i>Cordyline australis</i>
Ti rauriki/Dwarf Cabbage tree	<i>Cordyline pumila</i>
Ti/Cabbage trees	<i>Cordyline sp.</i>
Titipo/Sweet Brake Fern	<i>Pteris macilenta</i>
Titirangi	<i>Hebe speciosa</i>
Titoki	<i>Alectryon excelsus</i>
Toatoa	<i>Haloragis erecta</i>
Toatoa/Celery Pine	<i>Phyllocladus glauca</i>
Toetoe - Coast	<i>Cortaderia splendens</i>
Toetoe - Slender	<i>Cortaderia fulvida</i>
Toetoe hunangamoho/Tussock	<i>Chionchloa conspicua ssp. cunninghami</i>
Toetoe raurahi/Sedge	<i>Carex geminata</i>
Toetoe tuhara/Pepepe	<i>Machaerina sinclairii</i>
Toetoe Upoko-tangata/Coastal Cutty grass	<i>Cyperus ustulatus</i>

*Matakohe/Limestone Island Scenic Reserve Restoration Plan  
May 2000*

Appendix Eighteen: continued ...

<b>Common Name</b>	<b>Botanical Name</b>
Toro	<i>Myrsine salicina</i>
Toropapa	<i>Alseuosmia macrophylla</i>
Toru	<i>Toronia toru</i>
Totara	<i>Podocarpus totara</i>
Totara – Mountain	<i>Podocarpus halli</i>
Towai	<i>Weinmannia silvicola</i>
Towai/Ewekuri/ large leaf milk tree	<i>Streblus banksii</i>
Tree Coprosma/Mamangi	<i>Coprosma arborea</i>
Tree Fern - black/Mamaku	<i>Cyathea medullaris</i>
Tree Fern – creeping	<i>Cyathea colensoi</i>
Tree Fern - dwarf/Tuokura	<i>Dicksona lanata</i>
Tree Fern – Gully	<i>Cyathea cunninghamii</i>
Tree Fern - rough/Wheki	<i>Dicksonia squarrosa</i>
Tree Fern - Silver/Ponga	<i>Cyathea dealbata</i>
Tree Fern - Soft/Katote	<i>Cyathea smithii</i>
Tree Fuchsia/Kotukutuku	<i>Fuchsia excorticata</i>
Tree Tutu	<i>Coriaria arborea</i>
Tuakura/Hairy Fern	<i>Lastreopsis hispida</i>
Turawera/Trembling Brake Fern	<i>Pteris tremula</i>
Turepo/Small leaf milk tree	<i>Streblus heterophyllus</i>
Turutu/Blueberry	<i>Dianella nigra</i>
Tutae Koau/Native celery	<i>Apium prostratum</i>
Tutu	<i>Coriaria arborea</i>
Tutukiwi	<i>Pterostylis sp.</i>
Tututaniwai	<i>Persicaria decipiens</i>
Umbrella Fern	<i>Sticherus sp.</i>
Upoko-tangata/Coastal Cutty Grass	<i>Cyperus ustulatus</i>
Urere/Glasswort	<i>Sarcocornia quinqueflora</i>
Viola/Native violets	<i>Viola sp.</i>
Waekura/Umbrella Fern	<i>Sticherus cunninghamii</i>
Waewaekaka/Tangle Fern	<i>Gleichenia microphylla</i>
Waewakoukou/Clubmoss	<i>Lycopodium volubile</i>
Waoiki/Buttercup	<i>Ranunculus amphitrichus</i>
Watau/Hook Sedge	<i>Uncinia sp.</i>
Water Fern/Mata	<i>Histiopteris incisa</i>
Watermeal	<i>Wolffia australiana</i>
Waxweed	<i>Hydrocotyle sp.</i>
Whara	<i>Astelia sp. &amp; other sword -leaved plants</i>
Wharaiki/Mountain/coast Flax	<i>Phormium cookianum</i>
Wharangi	<i>Melicope ternata</i>
Wharanui/Pepper Plant	<i>Peperomia urvilleana</i>
Whare ngaruru/Lance Fern	<i>Anarthropteris lanceolata</i>
Whau/Cork tree	<i>Entelea arborescens</i>
Whauwhaoaku/Fivefinger	<i>Pseudopanax arboreus</i>
Wheki/Rough Tree Fern	<i>Dicksonia squarrose</i>
Whitey-wood/Mahoe	<i>Melicytus ramiflorus</i>
Wi/Giant rush	<i>Juncus pallidus</i>
Willow herb	<i>Epilobium sp.</i>
Wineberry/Makomako	<i>Aristolelia serrata</i>
Wire Rush	<i>Empodissima minus</i>
Wiwi/Knobby Club Rush	<i>Isolepis nodosa</i>
Wood rush	<i>Luzulla sp.</i>
Woolly Cloak Fern	<i>Cheilanthes distans</i>

[Jump to list of Appendices](#)

## Appendix 19: Checklist Of Northland Native Vascular Plants - Three Kings To Auckland And Offshore Islands (April 2000 – FOMLI)

### GYMNOSPERMS

**Agathis australis**  
**Dacrycarpus dacrydioides**  
**Dacrydium cupressinum**  
Halocarpus kirkii  
Libocedrus plumosa  
Manoao colensoi  
Phyllocladus glauca  
**Phyllocladus trichomanoides**  
Phyllocladus aff. trichomanoides  
Podocarpus hallii

**Podocarpus totara**  
**Prumnopitys ferruginea**  
**Prumnopitys taxifolia**

### ANGIOSPERMS

Moncot Trees and Shrubs

**Cordyline australis**  
**Cordyline banksii**  
Cordyline kaspar  
**Cordyline pumilio**  
**Rhopalostylis sapida**

### ANGIOSPERMS

Dicot Trees and Shrubs

Ackama rosifolia  
**Alectryon excelsus (2)**  
Alectryon e. ssp. grandis  
**Alseuosmia banksii**  
**Alseuosmia macrophylla**  
**Alseuosmia x quercifolia**  
**Aristolelia serrata**  
Ascarina lucida  
**Avicennia maritima**  
**Beilschmiedia tarairi**

**Beilschmiedia tawa (2)**

**B.t. tawaroa**  
Brachyglottis arborescens  
Brachyglottis kirkii  
Brachyglottis myrianthos  
**Brachyglottis repanda**  
**Carmichaelia arborea**  
**Carmichaelia australis**  
Carmichaelia williamsii  
"Carmichaelia australis  
Northland"  
**Carpodetus serratus**

**Clianthus puniceus**  
**Colensoa physaloides**  
Coprosma acerosa

**Coprosma arborea**  
Coprosma areolata  
Coprosma cheesemanii  
Coprosma crassifolia  
Coprosma foetidissima  
**Coprosma grandifolia**  
**Coprosma lucida**

Coprosma macrocarpa (3)  
**Coprosma m. "mainland"**  
Coprosma m. Macrocarpa  
Coprosma m. "surville"  
Coprosma neglecta (4)  
Coprosma n. "3 Kings"  
Coprosma n. "Maunganui"  
Coprosma n. "Whangaroa"  
Coprosma aff. obconica  
**Coprosma parviflora**

**Coprosma propinqua**  
**Coprosma repens**  
**Coprosma rhamnoides**  
**Coprosma rigida**  
**Coprosma robusta**  
**Coprosma rotundifolia**  
Coprosma rugosa  
**Coprosma spatulata(2)**  
Coprosma aff. spatulata  
Coprosma tenuicaulis

Coprosma tenuifolia  
Coprosma waima  
**Coriaria arborea**  
**Corokia buddleoides**  
**Corokia cotoneaster(2)**  
Corokia c. "surville"  
**Corynocarpus laevigatus**  
**Cyathodes juniperina**  
**Dodonaea viscosa**  
**Dracophyllum latifolium**

Dracophyllum lessonianum  
Dracophyllum sinclairii  
**Dysoxylum spectabile**  
**Elaeocarpus dentatus**  
Elaeocarpus hookerianus  
Elingamita johnsonii  
**Entelea arborescens**  
Epacris pauciflora  
**Fuchsia excorticata**  
Gaultheria antipoda

**Geniostoma rupestre**  
Geniostoma maius  
Griselinia littoralis

**Griselinia lucida**  
Hebe acutiflora  
Hebe adamsi  
**Hebe bollonsii**  
Hebe brevifolia  
Hebe diosmifolia  
Hebe insularis  
**Hebe ligustrifolia (2)**

Hebe aff. ligustrifolia  
Hebe Macrocarpa (2)  
Hebe .m. "corriganii"  
Hebe obtusata  
**Hebe parviflora**  
Hebe perbella  
Hebe speciosa  
**Hebe stricta**  
"Hebe aff. diosmifolia"  
Hebe aff. bishopiana ("Swamp")

"Hebe latisepala"  
Hebe mokohinau  
**Hebe Whangarei**  
**Hedycarya arborea**  
Helichrysum lanceolatum(3)  
**Helichrysum l. aggregatum**  
Helichrysum l. "Surville"  
**Hibiscus diversifolius**  
**Hibiscus trionum**  
Hoheria angustifolia  
**Hoheria populnea (3)**  
Hoheria p. sexstylosa  
Hoheria p. "Poor Knights"  
Ileostylus micranthus  
Ixerba brexioides  
**Knightia excelsa**  
Korthalsella lindsayi  
Korthalsella salicornioides  
**Kunzea ericoides agg.**  
**Laurelia novae-zelandiae**

**Leionema nudum**  
**Leptospermum scoparium**  
**Leucopogon fascicularis**  
**Leucopogon fraseri**  
Leucopogon aff. parviflorus  
**Litsea calicaris**  
**Lophomyrtus bullata**  
Lophomyrtus obcordata  
**Macropiper excelsum (3)**  
Macropiper m. psittacorum

Macropiper m. peltatum  
Macropiper melchior  
**Melicope simplex**  
**Melicope ternata**

<b>Melicytus lanceolatus</b>	<b>Pittosporum tenuifolium</b>	Cassytha paniculata
<b>Melicytus macrophyllus</b>	<b>Pittosporum umbellatum</b>	Cassytha pubescens
<b>Melicytus micranthus</b>	Pittosporum virgatum	<b>Clematis cunninghamii</b>
<b>Melicytus novae-zelandiae</b>	<b>Plagianthus divaricatus</b>	Clematis foetida
<b>Melicytus ramiflorus</b>	Plagianthus regius	Clematis forsteri
Meryta sinclairii		<b>Clematis paniculata</b>
	Pomaderris edgerleyi	Fuchsia procumbens
Metrosideros bartlettii	Pomaderris hamiltonii	<b>Ipomoea cairica</b>
<b>Metrosideros excelsa</b>	<b>Pomaderris kumeraho</b>	Ipomoea pes-caprae
<b>Metrosideros robusta</b>	<b>Pomaderris phycifolia</b>	Metrosideros albiflora
Metrosideros umbellata	Pomaderris paniculosa	<b>Metrosideros carminea</b>
Mida salicifolia	Pomaderris rugosa	<b>Metrosideros diffusa</b>
Muellerina celastroides	<b>Pouteria costata</b>	<b>Metrosideros fulgens</b>
<b>Myoporum laetum (2)</b>	<b>Pseudopanax arboreus</b>	<b>Metrosideros perforata</b>
M. l. var. decumbens	<b>Pseudopanax crassifolius</b>	<b>Muehlenbeckia australis</b>
<b>Myrsine australis</b>		<b>Muehlenbeckia complexa agg.</b>
<b>Myrsine divaricata</b>	Pseudopanax ferox	Muehlenbeckia "Poor Knights"
Myrsine oliveri	Pseudopanax gilliesii	Parsonsia capsularis
	<b>Pseudopanax lessonii</b>	<b>Parsonsia heterophylla</b>
<b>Myrsine salicina</b>	"Pseudopanax Surville"	Parsonsia praeruptis
"Myrsine Poor Knights"	Pseudowintera axillaris	<b>Passiflora tetrandra</b>
Neomyrtus pedunculata	Pseudowintera colorata	<b>Rubus australis</b>
<b>Nestegis apetata</b>	Quintinnia serrata	<b>Rubus cissoides</b>
Nestegis cunninghamii	Raukana anomalus	<b>Rubus schmideliodes</b>
<b>Nestegis lanceolata</b>	Raukana edgerleyi	<b>Rubus squarrosus</b>
Nestegis montana	<b>Rhabdothamnus solandri (2)</b>	<b>Sicyos australis</b>
Nothofagus truncata	R. s. var. "Maunganui Bluff"	Tecomanthe speciosa
<b>Olearia albida</b>		
Olearia angulata	<b>Schefflera digitata</b>	<b>Tetragonia tetragonioides</b>
	<b>Solanum aviculare (2)</b>	<b>Tetragonia trigyna</b>
<b>Olearia furfuracea</b>	Solanum a. var. latifolium	
<b>Olearia rani</b>	Sophora microphylla	<b>MONOCOT HERBS</b>
Olearia solandri	"Sophora fulvida"	Orchids
"Olearia waima"	<b>"Sophora East Coast"</b>	
Ozothamnus amoena	<b>Streblus banksii</b>	<b>Acianthus sinclairii</b>
<b>Ozothamnus leptophyllus</b>	<b>Streblus heterophyllus</b>	<b>Bulbophyllum pygmaeum</b>
Pennantia baylisiana	Streblus smithii	<b>Bulbophyllum tuberculatum</b>
Pennantia corymbosa		<b>Caladenia alata</b>
Peraxilla tetrapetala	<b>Syzygium maire</b>	<b>Caladenia atradenia</b>
Pimelea arenaria	Teucrium parvifolium	<b>Caladenia chlorostyla</b>
<b>Pimelea longifolia</b>	<b>Toronia toru</b>	Caladenia lyalli
	Trilepidea adamsii	"Caladenia aff. Carneae"
<b>Pimelea prostrata agg.</b>	Tupeia antarctica	<b>Caladenia minor</b>
<b>Pimelea tomentosa</b>	Urtica ferox	<b>Caleana minor</b>
Pimelea c.f. urvilleana	<b>Vitex lucens</b>	
"Pimelea Mt Manaia"	<b>Weinmannia racemosa var. silvicola</b>	<b>Calochilus herbaceus</b>
"Pimelea Three Kings"		<b>Calochilus paludosus</b>
<b>Pisonia brunoniana</b>	<b>MONOCOT LIANES</b>	<b>Chiloglottis cornuta</b>
<b>Pittosporum cornifolium</b>	<b>Freycinetia banksii</b>	Chiloglottis formicifera
<b>Pittosporum crassifolium</b>	<b>Ripogonum scandens</b>	Corybas carsei
Pittosporum ellipticum (2)		<b>Corybas cheesemanii</b>
P. e. ssp. serpentuinum	<b>DICOT LIANES &amp; TRAILING PLANTS</b>	<b>Corybas cryptanthus</b>
<b>Pittosporum eugenioides</b>		Corybas macranthus
	<b>Calystegia marginata</b>	Corybas oblongus
Pittosporum fairchildii	<b>Calystegia sepium</b>	Corybas rivularis
Pittosporum kirkii	<b>Calystegia soldanella</b>	<b>Corybas rotundifolius</b>
Pittosporum obcordatum	<b>Calystegia tuguriorum</b>	<b>Corybas trilobus</b>
Pittosporum pimeleiodes (2)		"Corybas aff. trilobus"
Pittosporum p. ssp. major		

Cryptostylis subulata	<b>Chionochloa bromoides</b>	Carex geminata
<b>Cyrtostylis oblonga</b>	Chionochloa conspicua ssp.	<b>Carex inversa</b>
Cyrtostylis reniformis	cunninghamii	<b>Carex lambertiana</b>
<b>Danhatchii australis</b>	<b>Cortaderia fulvida</b>	<b>Carex lessoniana</b>
<b>Drymoanthus adversus</b>	<b>Cortaderia splendens</b>	<b>Carex litorosa</b>
<b>Drymoanthus flavus</b>	“Cortaderia Puketi”	<b>Carex maorica</b>
<b>Earina aestivalis</b>	<b>Deyeuxia avenoides</b>	<b>Carex ochrosaccus</b>
<b>Earina autumnalis</b>	<b>Dichelachne crinita</b>	Carex ophiolithica
<b>Earina mucronata</b>	<b>Dichelachne micrantha</b>	<b>Carex pumila</b>
	<b>Echinopogon ovatus</b>	Carex raoulii
	<b>Elymus multiflorus</b>	<b>Carex secta</b>
<b>Gastrodia cunninghamii</b>		<b>Carex solandri</b>
<b>Gastrodia minor</b>		Carex spinostris
“Gastrodia aff. sessamoides”	<b>Isachne globosa</b>	
Genoplesium nudum	Lachnagrostis billardierei	<b>Carex testacea</b>
<b>Genoplesium pumilum</b>	<b>Lachnagrostis filiformis</b>	<b>Carex virgata</b>
<b>Microtis parviflora</b>	<b>Lachnagrostis littoralis</b>	<b>Cyperus ustulatus</b>
<b>Microtis unifolia</b>	<b>Microlaena avenacea</b>	Desmoschoenus spiralis
<b>Orthoceras novae-zeelandiae</b>	<b>Microlaena carsei</b>	<b>Eleocharis acuta</b>
<b>Prasophyllum colensoi</b>	<b>Microlaena polynoda</b>	<b>Eleocharis gracilis</b>
“Prasophyllum aff. Patens”	<b>Microlaena stipoides</b>	Eleocharis neozelandica
<b>Pterostylis agathicola</b>	<b>Oplismenus imbecilus</b>	<b>Eleocharis pusilla</b>
<b>Pterostylis alobula</b>	<b>Paspalum orbiculare</b>	<b>Eleocharis sphacelata</b>
<b>Pterostylis banksii</b>	<b>Poa anceps</b>	Gahnia lacera
Pterostylis brumalis		
	<b>Poa imbecilla</b>	
Pterostylis cardiostigma	<b>Poa pusilla</b>	Gahnia pauciflora
<b>Pterostylis graminea</b>	<b>Puccinilla stricta</b>	<b>Gahnia setifolia</b>
Pterostylis nutans	<b>Rytidosperma biannulare</b>	<b>Gahnia xanthocarpa</b>
Pterostylis paludosa	<b>Rytidosperma clavatum</b>	<b>Isolepis cernua</b>
Pterostylis tasmanica	<b>Rytidosperma gracile</b>	<b>Isolepis distigmatosa</b>
<b>Pterostylis trullifolia</b>	<b>Rytidosperma tenue</b>	Isolepis fluitans
	<b>Rytidosperma unarede</b>	<b>Isolepis inundata</b>
	Spinifex sericeus	<b>Isolepis nodosa</b>
<b>Spiranthes novae-zeelandiae</b>	<b>Stipa stipoides</b>	<b>Isolepis prolifer</b>
“Spiranthes Motutangi”	<b>Trisetum antarcticum</b>	<b>Isolepis reticularis</b>
<b>Thelymitra aemula</b>	<b>Zoysia minima</b>	
<b>Thelymitra carnea</b>	<b>Zoysia pauciflora</b>	Lepidosperma australe
<b>Thelymitra circumsepta</b>	<b>Zoysia planifolius</b>	<b>Lepidosperma laterale</b>
<b>Thelymitra cyanea</b>		<b>Lepidosperma filiforme</b>
<b>Thelymitra hatchii</b>		<b>Machaerina sinclairii</b>
<b>Thelymitra longifolia</b>	<b>SEDGES</b>	Morelotia affinis
Thelymitra malvina	<b>Baumea articulata</b>	Oreobolus strictus
Thelymitra mathewsii	Baumea complanata	Schoenoplectus pungens
	<b>Baumea arthrophylla</b>	<b>Schoenoplectus tabernaemontani</b>
Thelymitra nervosa	<b>Baumea juncea</b>	<b>Schoenus apogon</b>
<b>Thelymitra pauciflora</b>	<b>Baumea rubiginosa</b>	Schoenus brevifolius
<b>Thelymitra pulchella</b>	<b>Baumea tenax</b>	
<b>Thelymitra sanscilla</b>	Baumea teretifolia	<b>Schoenus carsei</b>
<b>Thelymitra tholiformis</b>	Bolboschoenus caldwellii	<b>Schoenus maschalinus</b>
“Thelymitra aff. ixioides”	<b>Bolboschoenus fluviatilis</b>	Schoenus nitens
“Thelymitra Ahipara”	<b>Bulboschoenus medianus</b>	<b>Schoenus tendo</b>
“Thelymitra Darkie”		<b>Tetraria capillaris.</b>
“Thelymitra rough leaf”		<b>Uncinia banksii</b>
<b>Winika cunninghamii</b>	Carex breviculmis	Uncinia distans
	<b>Carex comans</b>	Uncinia gracilentia
<b>GRASSES</b>	<b>Carex dipsacea</b>	Uncinia laxiflora
	<b>Carex dissita</b>	Uncinia rupestris
Anemanthele lessoniana	Carex elingamita	<b>Uncinia unciniata</b>
Amphibromus fluitans	<b>Carex fascicularis</b>	<b>Uncinia zotovii</b>
<b>Austrofestuca littoralis</b>	<b>Carex flagellifera</b>	
	Carex forsteri	

*Matakohe/Limestone Island Scenic Reserve Restoration Plan  
May 2000*

**RUSHES & ALLIED PLANTS**

**Apodissima similis**  
Centrolepis strigosa  
Empodisma minus  
Hydatella inconspicua  
**Juncus australis**  
**Juncus caespiticus**  
**Juncus gregiflorus**  
**Juncus holoschoenus**

**Juncus kraussii**  
**Juncus pallidus**  
**Juncus pauciflorus**  
**Juncus planifolius**  
**Juncus prismatocarpus**  
**Juncus sarophorus**  
**Juncus usitatus**  
**Luzula banksiana**  
**Luzula picta**  
Sporodanthus ferrugineus

**MONOCOT HERBS**  
(not orchids and grasses)

**RUSHES & ALLIED PLANTS**

**Arthropodium cirratum**  
**Astelia banksii**  
Astelia fragrans  
Astelia nervosa  
**Astelia solandri**  
Astelia trinervia  
Bulbinella angustifolia  
**CollospERMUM hastatum**  
CollospERMUM microspermum  
**Dianella nigra**

“Dianella Waima”  
“Lemna minor NZ”  
**Lepilaena bilocularis**  
**Libertia grandiflora**  
**Libertia ixioides**  
Libertia pulchella  
Phormium cookianum  
“Phormium Goldstripe”

**Phormium tenax**  
**Potamogeton chessemanii**

Potamogeton ochreatus  
Potamogeton pectinatus  
Potamogeton suboblongus  
**Ruppia megacarpa**  
**Ruppia polycarpa**  
**Sparganium subglobosum**  
Thismia rodwayii  
**Triglochin striata**

**Typha orientalis**  
**Wolffia australiana**

Xeronema callistemon  
**Zannichellia palustris**  
**Zostera capricorni**  
**Zostera muelleri**

**DICOT HERBS**  
Compositae

Anaphaloides trinervis  
Celmisia gracilentia  
**C. adamsii var. rugulosa**  
**Centipeda minima**  
**Cotula coronopifolia**  
Euchiton audax  
Euchiton delicatus  
Euchiton gymnocephalus  
Euchiton involucratus  
Euchiton sphaericus  
Lagenifera lanata  
Lagenifera pumila  
Lagenifera stipitata  
Leptinella dispersa  
Leptinella rotundata  
Leptinella squalida  
Leptinella tenella  
**Picris angustifolia**  
**Picris burbridgei**  
**Senecio biserratus**  
**Senecio glomeratus**

**Senecio hispidulus**  
**Senecio lautus**  
**Senecio marotiri**  
**Senecio minimus**  
**Senecio quadridentatus**  
**Senecio scaberulus**  
**Sonchus kirkii**  
Sonchus novae zelandiae  
f. glauca  
Vittadinia australis

**DICOT HERBS**  
Other than compositae

**Acaena anserinifolia**  
**Apium prostratum**  
“Apium White Denticle”  
Atriplex billardieri agg.  
**Australina pusilla**  
**Callitriche muelleri**  
Callitriche petriei  
**Cardamine debilis var. debilis**  
**Cardamine debilis var. hirtella**  
**Centella uniflora**

**Chenopodium glaucum**  
Crassula hunua  
Crassula sieberiana  
Crassula sinclairi  
Crassula tetrameria  
Dactylanthus taylorii  
**Daucus glochidiatus**  
**Dichondra brevifolia**  
**Dichondra repens**  
**Disphyma australe**

Drosera binata  
Drosera peltata  
Drosera pygmaea  
Drosera spathulata  
**Einadia triandra**  
**Elatine gratiolooides**  
**Elatostema rugosum**  
Epilobium alsinoides  
**Epilobium**  
**billardioreanum**  
**Epilobium chionanthum**

**Epilobium hirtigerum**  
**Epilobium komarovianum**  
**Epilobium nerteriodes**  
**Epilobium nummulariifolium**  
**Epilobium pallidiflorum**  
**Epilobium pedunculare**  
**Epilobium pubens**  
**Epilobium rotundifolium**  
**Euphorbia glauca**  
**Galium perpusillum**

**Galium propinquum**  
**Galium trilobum**  
**Geranium homeanum**  
**Geranium retrorsum**  
**Geranium solandri**  
**Glossostigma elatinoides**  
**Gonocarpus aggregatus**  
**Gonocarpus incanus**  
**Gonocarpus micranthus**  
Gratiola nana

Gratiola pedunculata  
Gratiola sexdentata  
Gunnera dentata  
Gunnera monoica  
**Haloragis erecta (2)**  
H. e. ssp. Cartaginea  
**Hydrocotyle dissecta**  
**Hydrocotyle elongata**  
**Hydrocotyle heteromeria**  
**Hydrocotyle microphylla**  
**Hydrocotyle moschata**  
  
**Hydrocotyle novae-zeelandiae**  
Hydrocotyle pterocarpa

*Matakohe/Limestone Island Scenic Reserve Restoration Plan  
May 2000*

Hypericum japonicum agg.	Utricularia laterifolia	<b>Blechnum filiforme</b>
<b>Lepidium oleraceum</b>	Viola cunninghamii	Blechnum fluviatile agg.
<b>Lilaeopsis novae-zelandiae</b>	Viola filicaulis	
Limosella lineata	Viola lyalli	<b>Blechnum fraseri</b>
<b>Linum monogynum</b>	Wahlenbergia vernicosa	<b>Blechnum membranaceum</b>
<b>Lobelia anceps</b>		Blechnum nigrum
Mazus novae-zelandiae	<b>PSILOPSIDS, LYCOPODS</b>	<b>Blechnum norfolkianum</b>
Mazus pumilio	<b>&amp; QUILLWORTS</b>	<b>Blechnum novae-zelandiae</b>
<b>Mentha cunninghamii</b>	Isoetes kirkii	Blechnum penna-marina
Myosotis petiolata	Isoetes North Auckland”	<b>Blechnum procerum</b>
	<b>Huperzia varia</b>	Blechnum triangularifolium
Myosotis mathewsii	<b>Lycopodiella cernua</b>	Blechnum vulcanicum
Myosotis spathulata	Lycopodiella lateralis	<b>“Blechnum gracilis”</b>
Myriophyllum pedunculatum	Lycopodiella serpentina	Botrychium australe
<b>Myriophyllum propinquum</b>	<b>Lycopodium deuterodensum</b>	Botrychium bifforme
Myriophyllum robustum	Lycopodium scariosum	Cheilanthes distans
Myriophyllum triphyllum	<b>Lycopodium volubile</b>	Cheilanthes sieberi
<b>Myriophyllum votschii</b>	Phylloglossum drummondii	Christella dentata
<b>Nertera depressa</b>		Ctenopteris heterophylla
<b>Nertera dichondrifolia</b>	<b>Pilotum nudum</b>	Cyathea cunninghamii
<b>Nertera scapanoides</b>	<b>Tmesipteris elongata</b>	<b>Cyathea dealbata</b>
<b>Nertera setulosa</b>	<b>Tmesipteris lanceolata</b>	<b>Cyathea medullaris</b>
	<b>Tmesipteris sigmatifolia</b>	Cyathea smithii
	<b>Tmesipteris tannensis</b>	Cyclosorus interruptus
<b>Oxalis exilis</b>		
Oxalis magellanica	<b>FERNS</b>	Davalia tasmanii
<b>Parietaria debilis</b>	<b>Adiantum aethiopicum</b>	D. t. ssp. cristata (“Puketii”)
<b>Pelargonium inodorum</b>	<b>Adiantum cunninghami</b>	<b>Deparia petersenii</b>
Peperomia tetraphylla	<b>Adiantum diaphanum</b>	Dicksonia fibrosa
<b>Peperomia urvilleana</b>	Adiantum formosum	Dicksonia lanata
“Peperomia Purple Vein”	<b>Adiantum fulvum</b>	<b>Dicksonia squarrosa</b>
<b>Persicaria decipiens agg.</b>	<b>Adiantum hispidulum</b>	“Dicksonia lanata North”
<b>Plantago raoulii</b>	<b>Adiantum viridescens</b>	<b>Diplazium australe</b>
<b>Plectranthus parviflorus</b>	<b>Anarthropteris lanceolata</b>	Doodia aspera
<b>Pratia angulata agg.</b>	Anogramma leptophylla	<b>Doodia australis</b>
	<b>Arthropteris tenella</b>	
“Pratia littoralis”	Asplenium appendiculatum	<b>Doodia mollis</b>
“Pratia Woodhill”	<b>Asplenium bulbiferum</b>	<b>Doodia squarrosa</b>
Ranunculus acaulis	<b>Asplenium flabellifolium agg.</b>	Gleichenia dicarpa
<b>Ranunculus amphitrichus</b>	<b>Asplenium flaccidum</b>	<b>Gleichenia microphylla</b>
<b>Ranunculus macropus</b>	<b>Asplenium gracillimum</b>	<b>Grammitis billardierei</b>
<b>Ranunculus reflexus</b>	<b>Asplenium haurakiense</b>	<b>Grammitis ciliata</b>
<b>Ranunculus urvilleanus</b>	Asplenium hookerianum	Grammitis magellanica
<b>Rorippa divaricata</b>	<b>Asplenium lamprophyllum</b>	Grammitis pseudociliata
<b>Rorippa palustris</b>	<b>Asplenium northlandicum</b>	Grammitis rawlingsii
<b>Samolus repens</b>	<b>Asplenium oblongifolium</b>	<b>Histiopteris incisa</b>
<b>Sarcocornia quinqueflora</b>	<b>Asplenium obtusatum</b>	Hymenophyllum armstrongii
<b>Scandia rosifolia (2)</b>	Asplenium pauperequitum	Hymenophyllum atrovirens
<b>Scleranthus biflorus</b>	<b>Asplenium polyodon</b>	Hymenophyllum bivalve
Sebea cf. Ovata	<b>Azolla filiculoides</b>	Hymenophyllum cupressiforme
<b>Selliera radicans</b>	Blechnum blechnoides	<b>Hymenophyllum demissum</b>
<b>Solanum americanum</b>	Blechnum chambersii	Hymenophyllum dilatatum
<b>Spergularia media</b>	Blechnum colensoi	Hymenophyllum ferrugineum
<b>Stellaria decipiens</b>	Blechnum discolor	<b>Hymenophyllum flabellatum</b>
“Stellaria Poor Knights”		Hymenophyllum flexuosum
		Hymenophyllum lyallii
<b>Suaedia australis</b>		Hymenophyllum multifidum
<b>Urtica incisa</b>		<b>Hymenophyllum rarum</b>
Utricularia dicotoma		
Utricularia protrusa		

*Matakohe/Limestone Island Scenic Reserve Restoration Plan*  
*May 2000*

Hymenophyllum revolutum	Lindsaea viridis	Pteris saxatilis
Hymenophyllum rufescens	<b>Loxosoma cunninghamii</b>	<b>Pyrrosia eleagnifolia</b>
<b>Hymenophyllum sanguinolentum</b>	<b>Lygodium articulatum</b>	Rumohra adiantiformis
<b>Hymenophyllum scabrum</b>	Marrattia salicina	<b>Schizaea bifida</b>
Hymenophyllum villosum	Microsorium novae-zelandiae	<b>Schizaea dichotoma</b>
<b>Hypolepis ambigua</b>	<b>Microsorium pustulatum</b>	<b>Schizaea fistulosa</b>
<b>Hypolepis dicksonioides</b>	<b>Microsorium scandens</b>	
<b>Hypolepis distans</b>	Nephrolepis hirsutula	Sticherus cunninghamii
	<b>Ophioglossum reticulatum</b>	<b>Sticherus flabellatus</b>
Hypolepis lactea		Thelypteris confluens
Hypolepis rufobarbata	<b>Paesia scaberula</b>	Todea barbara
<b>Lastreopteris glabella</b>	<b>Pellaea falcata</b>	Trichomanes elongatum
<b>Lastreopteris hispida</b>	<b>Pellaea rotundifolia</b>	<b>Trichomanes endlicherianum</b>
<b>Lastreopteris microsora</b>	<b>Pneumatopteris pennigera</b>	<b>Trichomanes reniforme</b>
<b>Lastreopteris velutina</b>	<b>Polystichum richardii</b>	Trichomanes strictum
Leptolepia novae-zelandiae	<b>Pteridium esculentum</b>	<b>Trichomanes venosum</b>
<b>Leptopteris hymenophylloides</b>	<b>Pteris macilentia</b>	
<b>Lindsaea linearis</b>	<b>Pteris tremula</b>	
Lindsaea trichomanoides	“Pteris comans NZ”	

### **Explanation:**

Names in bold indicate plants most likely to grow on Matakohe/Limestone Island given the habitats available and natural distribution of the plants.

NB. 1. Some of these plants will need forest conditions before establishing. Maybe 20 or more years down the track. Some will require host trees to establish e.g. Climbers/epiphytes and parasites.

NB. 2. This is not a ‘shopping list’, only a guide to what may grow on the island. Refer to specific annual planting guides set by FOMLI Committee.

**Gymnosperms** (Naked seed): A major group of plants, including pines and podocarps, in which each ovule (egg cell) is borne on the surface of a cone scale rather than enclosed with the ovary of a flower (Angiosperms – Vessel seed).

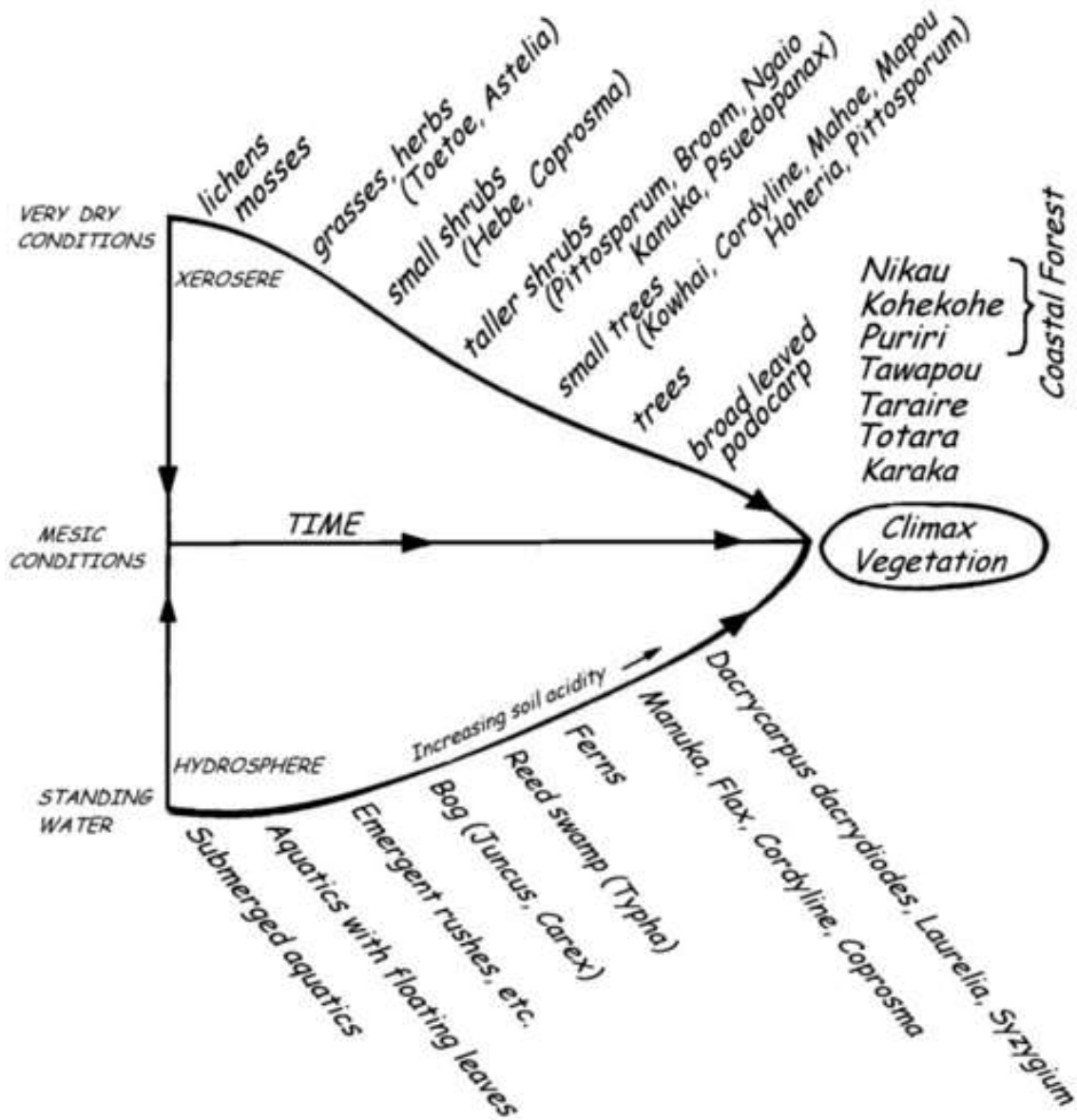
**Monocotyledons:** Flowering plants with one seed leaf.

**Dicotyledons:** Flowering plants with two seed leaves.

**Use this space to record additional species discovered and/or described from the region since publication of this document:**

[Jump to list of Appendices](#)

## Appendix Twenty: General Plant Succession



(Source: Adapted from Jacob de Ruyter, *Gardens in the Wind*, G.P. Publishing, 1991)

As time goes on, the two extremes of bare rock and open water are subject to a succession of plant associations. Colonising plants give way to larger physiognomic dominants as soil depth increases. Matakohe/Limestone Island has alkaline limestone rock as the parent material, which means the aquatic succession does not attain the acid conditions that would give rise to heath bog types.

[Jump to list of Appendices](#)