

# 8. Appendices

## 8.1 FIELD SURVEY FORM

**DEPARTMENT OF CONSERVATION  
PROTECTED NATURAL AREAS PROGRAMME**

**NAME OF HABITAT:** ..... **DATE:**.....

**GRID REF.:** ..... **SSBI NO.:** ..... **PNA NO.:** .....

**HABITAT TYPE(S):** .....

**GEOMORPHOLOGICAL TYPE(S):**.....

**VEGETATION TYPE(S):**

Vegetation Type	% of Total Habitat	Percentage of Cover Value (canopy)			
		Abundant (50-100)	Common (20-50)	Uncommon (5-20)	Rare (0-5)

Vegetation Type	% of Total Habitat	Percentage of Cover Value (canopy)			
		Abundant (50-100)	Common (20-50)	Uncommon (5-20)	Rare (0-5)

## 8.2 LETTER TO RATEPAYERS



Department of  
Conservation  
*Te Papa Atawhai*



WHANGAREI  
DISTRICT  
COUNCIL

Dear Landowner

Department of Conservation officers are currently surveying and updating information on ecologically significant areas, eg bush, wetlands, gumland etc within the Whangarei District. This has involved mapping ecological areas from roadsides or (with the permission of landowners) from other viewpoints, and recording information on their type and condition.

You may well have already been contacted by departmental staff or are currently engaged in discussions with them on the subject. If this is not the case you may, at a later stage, be contacted by someone for permission to enter your land to gather more detailed information on the property's natural areas.

**Why are we doing this survey?** Northland's natural areas, especially bush pockets, make a significant contribution to the character and quality of the region. Many of these areas are habitat for some of our increasingly rare native wildlife and plants. The Department's existing database on natural areas is now out of date, and because of this may no longer be accurate. The information will be valuable as a reference point for assessing habitat changes over time.

You may be aware that the Whangarei District Council has decided to protect some native bush and wetlands under its new District Plan. The Council has written to all landowners affected about this. The results of the survey to be carried out by the Department of Conservation will be given to the Council and used to update and correct the Council's maps and information about the plants and wildlife present in particular locations.

Perhaps the principal value of this survey will be to provide you, the landowners; with information on the significance and makeup of ecological areas that you have had preserved on your property so you can better plan ways of managing these areas.

If you have any questions or concerns about the survey process, please contact your local Department of Conservation (attention Peter Anderson) at their Whangarei Office, telephone 09-438 0299, fax 09-438 9886.

If you wish to contact the Whangarei District Council about this aspect of the District Plan, please phone Neil Taylor at the Whangarei Office 09-438 4879.

A handwritten signature in black ink, appearing to read 'Gerry Rowan'.

Gerry Rowan  
REGIONAL CONSERVATOR  
Department of Conservation

A handwritten signature in black ink, appearing to read 'LR Jacobson'.

LR Jacobson  
GENERAL MANAGER  
Whangarei District Council

## 8.3 CATEGORIES OF THREAT

### **New Zealand Threatened Plant List**

In this report categories of threat are taken from *Threatened and uncommon plants of New Zealand* (de Lange et al. 1999) which is a revision by the New Zealand Threatened Plant Committee of Cameron et al. (1995).

### **Appendix 1. New Zealand threatened and uncommon vascular plants**

#### ***Presumed extinct***

Taxa that are no longer known to exist in the wild both within New Zealand and (if applicable) their overseas range, or in cultivation after repeated searches of known or likely localities.

#### ***Threatened***

Taxa whose classification places them within Critically Endangered, Endangered, or Vulnerable categories. These are taxa whose survival is now a matter of conservation priority. Their classification within the three subheadings of threat provides a measure of the degree of risk associated with each taxon.

#### ***Critically Endangered***

Taxa whose extinction is considered inevitable within a stated time period (10 years) unless there is direct conservation intervention, or which persist as individuals or populations reduced to sufficiently critically low levels that extinction through stochastic events is a distinct possibility. Some critical taxa are now only known from cultivation.

#### ***Endangered***

Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included are taxa whose numbers have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

#### ***Vulnerable***

Taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating. Included are taxa of which most or all populations are decreasing because of over-exploitation, extensive destruction of habitat, or other environmental disturbance; and taxa with populations that continue to be seriously depleted and whose ultimate security is not yet assured.

#### ***Declining***

Taxa that are numerically abundant but which are either under threat from serious adverse factors throughout their range, or occur as widely scattered, typically small populations of which are undergoing declines through loss of reproductive ability, recruitment failure, predation, or through other processes of often subtle habitat change. Declining taxa are listed to highlight their plight, for without some level of management they are destined to become the future threatened plants of New Zealand.

### ***Recovering***

Taxa whose populations are either: (1) naturally restricted to susceptible habitats (e.g. offshore islands), where their survival is utterly dependent on continual rigid conservation measures (e.g. rodent control), or (2) taxa whose populations were once under serious threat and, as a result of past conservation intervention (e.g. goat eradication), have shown the capacity to recover naturally without further management measures.

### ***Conservation Dependent***

Taxa whose survival is now dependent on the continuation of existing conservation measures.

### ***Natural Population Recovery***

Taxa whose populations were once reduced to precariously low levels and still occur as small populations. As a result of past conservation intervention, the candidate taxa have demonstrated the ability to recover their former range through natural means, to such an extent that further conservation assistance is no longer required.

### ***Naturally Uncommon***

Taxa that are not considered under immediate or obvious threat but which, for varying reasons, have the potential to become threatened. Three subheadings are recognised to accommodate the different situations whereby taxa can be naturally uncommon: Sparse, Vagrant, and Range Restricted.

#### ***Sparse***

Taxa that, for largely undetermined reasons, occur within typically small and widely scattered populations. This distribution appears wholly natural and is not considered the result of past or recent anthropogenic disturbance. However, as the candidate taxa usually occur in small numbers at any given site, they are naturally susceptible to extirpation within parts of their range.

#### ***Vagrant***

Taxa whose presence within the New Zealand botanical region is naturally transitory. These are invariable taxa that have failed to establish themselves significantly beyond their point of introduction through reproductive failure or for quite specific ecological reasons. Many vagrants are able to reproduce only by vegetative means and, in such instances, when in suitable habitats, they can form extensive clonal populations.

#### ***Range Restricted***

Taxa whose distribution is naturally confined to specific substrates (e.g. ultramafic rock), habitats (e.g. high alpine fell field), or geographic areas (e.g. subantarctic islands). Typically Range Restricted taxa are under no obvious or immediate anthropogenic threat.

#### ***Insufficiently Known***

Taxa that are suspected but not definitely known to belong to any of the above categories because of a lack of information. It is hoped that listing a taxon as Insufficiently Known will stimulate studies to find out its true category of threat.

## **Appendix 2. Taxonomically indeterminate taxa**

This appendix includes described taxa about which there is doubt regarding taxonomic status and which require further investigation, and those recently discovered taxa whose taxonomic status has yet to be determined. In both instances, available information suggests that candidate taxa could be under some level of threat. A total of 92 taxa are included.

### **Molloy & Davies (1994) Categories of Threat**

The Molloy and Davis categories were developed to identify species that should be assessed for conservation action. It includes taxonomic groups not ranked under IUCN categories such as bryophytes and invertebrates.

The Categories are as follows:

Category A	Highest priority threatened species (score >47 out of a possible 83)
Category B	Second priority threatened species (score 39-47 inclusive)
Category C	Third priority threatened species (score 30-38 inclusive)
Category X	Species which have not been sighted for a number of years but which may still exist
Category I	Species about which little information exists, but based on existing evidence, are considered to be threatened
Category O	Species which are threatened in New Zealand, but which are known to be secure in other parts of their range outside New Zealand
Category M	Species that are rare or localised, and of cultural importance to Maori.

## 8.4 CATEGORIES OF IMPORTANCE FOR GEOLOGICAL AND SOIL SITES

Ranking criteria for New Zealand soil sites of international, national, and regional significance, from Arand et al. (1993).

### **Geological sites**

Sites are listed under three levels of importance:

- a. International - site of international scientific importance.
- b. National - site of national scientific, educational or aesthetic importance.
- c. Regional - site of regional scientific, educational or aesthetic importance.

### **Soil sites**

Soil sites are listed under three levels of importance:

- a. International
  - contains the best example of a soil (generally a soil group) or soil-vegetation or soil-landform association that is unique to New Zealand (or these latitudes);
  - contains a soil that is naturally uncommon or greatly reduced in extent in other parts of the world;
  - contains a wide range of extensive with a relatively unmodified vegetation cover;
  - has been studied in detail and is known internationally.
- b. National
  - Contains the best or a “classic” example of a soil (either a soil group or a mapping unit) or a soil-vegetation or a soil-landform association in New Zealand;
  - contains a soil or soil-vegetation or a soil-landform association that is nationally uncommon or reduced in extent;
  - contains a moderate range of extensive soils with a relatively unmodified vegetation cover;
  - has been studied in detail and is known nationally.
- c. Regional
  - Contains the best regional example of a soil (generally a mapping unit) or a soil or soil-vegetation or a soil-landform association;
  - Contains a limited range of soils under vegetation that is relatively unmodified.

## 8.5 FAUNA

### Checklist of birds of Northland recorded in the Whangarei Ecological District

Follows *Checklist of the birds of New Zealand* (Turbott 1990).

Excludes vagrants; \* = introduced.

X = Recorded in Whangarei Ecological District

COMMON NAME	OTHER NAME	SCIENTIFIC NAME	
North Island kiwi	Kiwi	<i>Apteryx australis mantelli</i>	X
Little-spotted kiwi	Kiwi-pukupuku	<i>A. owenii</i>	
NZ dabchick	Weweia	<i>Poliocephalus rufopectus</i>	
Australian little grebe		<i>Tachybaptus novaehollandiae</i>	X
Buller's mollymawk		<i>Diomedea bulleri</i>	
Yellow-nosed mollymawk		<i>D. chlororhynchos</i>	
Flesh-footed shearwater	Toanui	<i>Puffinus carneipes</i>	
Buller's shearwater		<i>P. bulleri</i>	
Sooty shearwater	Titi	<i>P. griseus</i>	
Fluttering shearwater	Pakaha	<i>P. gavia</i>	
North Island little shearwater		<i>P. assimilis baurakiensis</i>	
Common diving petrel	Kuaka	<i>Pelecanoides urinatrix</i>	
Black petrel	Taiko	<i>Procellaria parkinsoni</i>	
Cape pigeon	Pintado petrel	<i>Daption capense</i>	
Southern giant petrel		<i>Macronectes giganteus</i>	
Fairy prion	Titi wainui	<i>Pachyptila turtur</i>	
Pycroft's petrel		<i>Pterodroma pycrofti</i>	
Black-winged petrel		<i>Pterodroma nigripennis</i>	
Grey-faced petrel	Oi	<i>Pterodroma macroptera</i>	
White-faced storm petrel	Takahikare-moana	<i>Pelagodroma marina</i>	
Blue penguin	Korora	<i>Eudyptula minor</i>	X
Australasian gannet	Takapu	<i>Morus serrator</i>	X
Black shag	Kawau	<i>Phalacrocorax carbo</i>	X
Pied shag	Karuhiruhi	<i>P. varius</i>	X
Little black shag		<i>P. sulcirostris</i>	X
Little shag	Kawaupaka	<i>P. melanoleucos</i>	X
White-faced heron		<i>Ardea novaehollandiae</i>	X
White heron	Kotuku	<i>Egretta alba</i>	X
Reef heron	Matuku moana	<i>E. sacra</i>	X
Cattle egret		<i>Bubulcus ibis</i>	
Australasian bittern	Matuku	<i>Botaurus poiciloptilus</i>	X
Royal spoonbill		<i>Platalea regia</i>	X
Black swan*		<i>Cygnus atratus</i>	X
Canada goose*		<i>Branta canadensis</i>	
Feral goose*		<i>Anser anser</i>	X
Paradise shelduck	Putangitangi	<i>Tadorna variegata</i>	X
Mallard*		<i>Anas platyrhynchos</i>	X
Grey duck	Parera	<i>A. superciliosa</i>	X
Grey teal	Tete	<i>A. gracilis</i>	X
Brown teal	Pateke	<i>A. aucklandica</i>	
Australasian shoveler	Kuruwhengi	<i>A. rhynchotis</i>	X
NZ scaup	Paponga	<i>Aythya novaeseelandiae</i>	X
Australasian harrier	Kahu	<i>Circus approximans</i>	X



COMMON NAME	OTHER NAME	SCIENTIFIC NAME	
NZ falcon	Karearea	<i>Falco novaeseelandiae</i>	
California quail*		<i>Callipepla californica</i>	X
Brown quail*		<i>Synoicus ypsilophorus</i>	X
Ring-necked pheasant*		<i>Phasianus colchicus</i>	X
Peafowl*		<i>Pavo cristatus</i>	X
Wild turkey*		<i>Meleagris gallopavo</i>	X
Tufted guineafowl*		<i>Numida meleagris</i>	
Banded rail	Moho-pereru	<i>Rallus philippensis</i>	X
NI weka	Woodhen	<i>Gallirallus australis greyi</i>	
Spotless crane	Puweto	<i>Porzana tabuensis</i>	X
Marsh crane	Koitareke	<i>P. pusilla</i>	
Pukeko	Purple swamphen	<i>Porphyrio porphyrio</i>	X
Australian coot		<i>Fulica atra australis</i>	
Pied oystercatcher	Torea	<i>Haematopus ostralegus</i>	X
Variable oystercatcher	Torea	<i>H. unicolor</i>	X
Pied stilt	Poaka	<i>Himantopus himantopus</i>	X
NZ dotterel	Tuturiwhatu	<i>Charadrius obscurus</i>	X
Banded dotterel	Tuturiwhatu	<i>C. bicinctus</i>	X
Wrybill	Ngutuparore	<i>Anarhynchus frontalis</i>	X
Pacific golden plover	Eastern golden plover	<i>Pluvialis fulva</i>	X
Spur-winged plover	Masked lapwing	<i>Vanellus miles</i>	X
Turnstone	Ruddy turnstone	<i>Arenaria interpres</i>	
Lesser knot	Huahou	<i>Calidris canutus</i>	X
Curlew sandpiper		<i>Calidris ferruginea</i>	
Sharp-tailed sandpiper		<i>C. accuminata</i>	X
Red-necked stint		<i>C. ruficollis</i>	
Eastern curlew		<i>Numenius madagascariensis</i>	
Whimbrel		<i>N. pbaeopus</i>	X
Bar-tailed godwit	Kuaka	<i>Limosa lapponica</i>	X
Siberian tattler	Grey-tailed tattler	<i>Tringa brevipes</i>	X
Terek sandpiper		<i>T. terek</i>	
Arctic skua		<i>Stercorarius parasiticus</i>	
Pomarine skua		<i>S. pomarinus</i>	
Black-backed gull	Karoro	<i>Larus dominicanus</i>	X
Red-billed gull	Tarapunga	<i>L. novaebollandiae</i>	X
Caspian tern	Taranui	<i>Sterna caspia</i>	X
White-fronted tern	Tara	<i>S. striata</i>	X
NZ fairy tern		<i>S. nereis</i>	X
Little tern	Eastern little tern	<i>S. albifrons</i>	X
Grey ternlet		<i>Procelsterna cerulea</i>	
NZ pigeon	Kukupā, kereru	<i>Hemiphaga novaeseelandiae</i>	X
Rock pigeon*		<i>Columba livia</i>	
Barbary dove*		<i>Streptopelia roseogrisea</i>	X
NI kaka		<i>Nestor meridionalis septentrionalis</i>	X
Eastern rosella*		<i>Platycercus eximius</i>	X
Red-crowned parakeet	Karariki	<i>Cyanoramphus novaeseelandiae</i>	X
Shining cuckoo	Pipiwharauoa	<i>Chrysococcyx lucidus</i>	X
Long-tailed cuckoo	Koekoea	<i>Eudynamis taitensis</i>	X
Morepork	Ruru	<i>Ninox novaeseelandiae</i>	X
Kookaburra*		<i>Dacelo novaeguinae</i>	X
NZ kingfisher	Kotare	<i>Halcyon sancta vagans</i>	X
NI rifleman	Titipounamu	<i>Acanthisitta cbloris granti</i>	
Skylark*		<i>Alauda arvensis</i>	X

COMMON NAME	OTHER NAME	SCIENTIFIC NAME	
Welcome swallow		<i>Hirundo tabiti neoxena</i>	X
NZ pipit	Pihoihoi	<i>Antbus n. novaeseelandiae</i>	X
Dunnock*	Hedge sparrow	<i>Prunella modularis</i>	X
Blackbird*		<i>Turdus merula</i>	X
Song thrush*		<i>T. philomelos</i>	X
NI fernbird	Matata	<i>Bowdleria punctata vealeae</i>	X
Grey warbler	Riroriro	<i>Gerygone igata</i>	X
NI fantail	Piwakawaka	<i>Rhipidura fuliginosa placabilis</i>	X
NI tomtit	Miromiro, pied tit	<i>Petroica macrocephala toitoi</i>	X
NI robin	Toutouwai	<i>P. australis longipes</i>	
Silvereye	Tahou, whiteye	<i>Zosterops lateralis</i>	X
Bellbird	Makomako	<i>Anthornis melanura melanura</i>	
Three Kings bellbird		<i>A. melanura obscura</i>	
Tui		<i>Prosthemadera novaeseelandiae</i>	X
Yellowhammer*		<i>Emberiza citrinella</i>	X
Cirl bunting*		<i>E. cirlus</i>	
Chaffinch*		<i>Fringilla coelebs</i>	X
Greenfinch*		<i>Carduelis chloris</i>	X
Goldfinch*		<i>C. carduelis</i>	X
Redpoll*		<i>C. flammea</i>	X
House sparrow*		<i>Passer domesticus</i>	X
Starling*		<i>Sturnus vulgaris</i>	X
Common myna*		<i>Acridotheres tristis</i>	X
NI kokako	Blue-wattled crow	<i>Callaeas cinerea wilsoni</i>	
NI saddleback	Tieke	<i>Ptilosternus carunculatus rufusater</i>	
Australian magpie*		<i>Gymnobia tibicen</i>	X

### Other fauna recorded in the Whangarei Ecological District

COMMON NAME	SCIENTIFIC NAME	COMMENTS
<b>Bats</b>		
Long-tailed bat	<i>Chalinolobus tuberculata</i>	
<b>Lizards</b>		
Copper skink	<i>Cyclodina aenea</i>	Widespread
Ornate skink	<i>C. ornata</i>	Maunu Mountain
Shore skink	<i>Oligosoma smitbi</i>	McDonalds Island
Auckland green gecko	<i>Naultinus elegans elegans</i>	Hurupaki Cone, Parahaki
Forest gecko	<i>Hoplodactylus granulatus</i>	Edge of Pukenui Forest
Pacific gecko	<i>H. pacificus</i>	Widespread, but nowhere common
<b>Snails</b>		
<i>Amborhytida dunniiae</i>		Declining Northland/Auckland endemic
<i>Fectola charopiformis</i>		Northland endemic
" <i>Hyalolama maungatapere</i> "		Northland endemic
" <i>H. waimatanui</i> "		Northland endemic
<i>Liarea t. turriculata</i>		Northland endemic
" <i>Microlaoma unicolorata</i> "		Northland limestone endemic
<i>Paryphanta busbyi busbyi</i>		Threatened Northland endemic

COMMON NAME	SCIENTIFIC NAME
<b>Freshwater invertebrates</b>	
Freshwater crab	<i>Halicarcinus lacustris</i>
Freshwater crayfish, koura	<i>Parenebrops planifrons</i>
<b>Indigenous freshwater fish</b>	
Long-finned eel	<i>Anguilla dieffenbachii</i>
Short-finned eel	<i>A. australis</i>
Torrentfish	<i>Cheimarrichthys fosteri</i>
Inanga	<i>Galaxia maculatus</i>
Banded kokopu	<i>G. fasciatus</i>
Common bully	<i>Gobiomorphus cotidianus</i>
Giant bully	<i>G. gobioides</i>
Grey mullet	<i>Mugil cephalus</i>
Black mudfish	<i>Neobanna diversus</i>
Common smelt	<i>Retropinna retropinna</i>
<b>Introduced freshwater fish</b>	
Mosquito fish	<i>Gambusia affinis</i>
Goldfish	<i>Carassius auratus</i>
Bullhead catfish	<i>Ictalurus nebulosus</i>
Rainbow trout	<i>Oncorhynchus mykiss</i>
Rudd	<i>Scardinius erythrophthalmus</i>
Brown trout	<i>Salmo trutta</i>
<b>Introduced mammals</b>	
Cattle	<i>Bos taurus</i>
Feral dog	<i>Canis familiaris</i>
Goat	<i>Capra hircus</i>
Hedgehog	<i>Erinaceus europeus occidentalis</i>
Feral cat	<i>Felis catus</i>
Mouse	<i>Mus musculus</i>
Stoat	<i>Mustela erminea</i>
Ferret	<i>M. furro</i>
Weasel	<i>M. nivalis</i>
Ship rat	<i>Rattus rattus rattus</i>
Norway rat	<i>R. norvegicus</i>
Pig	<i>Sus scrofa</i>
Possum	<i>Trichosurus vulpecula</i>
<b>Introduced amphibians</b>	
Green and golden bell frog	<i>Litoria aurea</i>
Southern bell frog	<i>L. raniformis</i>

## 8.6A COMMON AND SCIENTIFIC PLANT NAMES USED IN THE TEXT

This is not a definitive list of common names used for plants from the ecological district. Rather it is a guide to the reader as to exactly which species is referred to when the common name is used in the text.

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### Indigenous

akeake	<i>Dodonaea viscosa</i>	mangeao	<i>Litsea calicaris</i>
akepiro	<i>Olearia furfuracea</i>	mangrove	<i>Avicennia resinifera</i> var. <i>marina</i>
bamboo spike-sedge	<i>Eleocharis spbacelata</i>		<i>Leptospermum scoparium</i>
black maire	<i>Nestegis cunninghamii</i>	manuka	<i>Myrsine australis</i>
bracken	<i>Pteridium esculentum</i>	mapou	<i>Prumnopitys taxifolia</i>
burr-reed	<i>Sparganium subglobosum</i>	matai	<i>Leucopogon fasciculatus</i>
cabbage tree, ti kouka	<i>Cordyline australis</i>	mingimingi	<i>Prumnopitys ferruginea</i>
coastal astelia	<i>Astelia banksii</i>	miro	<i>Ileostylus micranthus</i>
coastal needle grass	<i>Stipa stipoides</i>	mistletoe	<i>Hoberia angustifolia</i>
coprosma sp.	<i>Coprosma</i> sp.	narrow-leaved houhere	<i>Apium prostratum</i>
duckweed	<i>Lemna minor</i>	native celery	<i>Disphyma australe</i>
eelgrass	<i>Zostera muelleri</i>	native ice plant	<i>Parsonsia heterophylla</i>
five finger	<i>Pseudopanax arboreum</i>	native jasmine	<i>Passiflora tetrandra</i>
forest cabbage tree	<i>Cordyline banksii</i>	native passion flower, kohia	<i>Rhopalostylis sapida</i>
giant umbrella sedge	<i>Cyperus ustulatus</i>	nikau	<i>Metrosideros robusta</i>
harakeke	<i>Pbormium tenax</i>	northern rata	<i>Apodasmia similis</i>
hangehange	<i>Geniostoma rupestre</i>	oioi	<i>Azolla filiculoides</i>
hard beech	<i>Notbofagus truncata</i>	Pacific azolla	<i>Pisonia brunoniana</i>
heart-leaved kohuhu	<i>Pittosporum obcordatum</i>	parapara, bird catching tree	<i>Schefflera digitata</i>
hebe "swamp"	<i>Hebe</i> aff. <i>bishopiana</i>	pate	<i>Hedycarya arborea</i>
hinau	<i>Elaeocarpus dentatus</i>	pigeonwood, porokaiwhiri	<i>Calystegia sepium</i>
houhere	<i>Hoberia populnea</i>	pink bindweed	<i>Melicope simplex</i>
houpara	<i>Pseudopanax lessonii</i>	poataniwha	<i>Muehlenbeckia australis</i>
jointed twig-rush	<i>Baumea articulata</i>	pohuehue	<i>Metrosideros excelsa</i>
kahikatea	<i>Dacrycarpus dacrydioides</i>	pohutukawa	<i>Elaeocarpus bookerianus</i>
kaikomako	<i>Pennantia corymbosa</i>	pokaka	<i>Griselinia lucida</i>
kanuka	<i>Kunzea ericoides</i>	puka	<i>Laurelia novae-zelandiae</i>
karaka	<i>Corynocarpus laevigatus</i>	pukatea	<i>Vitex lucens</i>
karamu	<i>Coprosma robusta</i>	puriri	<i>Carpodetus serratus</i>
kauri	<i>Agathis australis</i>	putaputaweta, marble leaf	<i>Metrosideros fulgens</i>
kawaka	<i>Libocedrus plumosa</i>	rata	<i>Typha orientalis</i>
kawakawa	<i>Macropiper excelsum</i>	raupo	<i>Artbropodium cirratum</i>
kiekie	<i>Freycinetia baueriana</i>	renga lily, rengarenga	<i>Knightia excelsa</i>
knobby clubrush	<i>Isolepis nodosa</i>	rewarewa	<i>Dacrydium cupressinum</i>
kohekohe	<i>Dysoxylum spectabile</i>	rimu	<i>Paesia scaberula</i>
kohuhu	<i>Pittosporum tenuifolium</i>	ring fern	<i>Coprosma rotundifolia</i>
kowhai	<i>Sophora microphylla</i>	round-leaved coprosma	<i>Plagianthus divaricatus</i>
large-seeded coprosma	<i>Coprosma macrocarpa</i>	saltmarsh ribbonwood, makaka	<i>Juncus kraussii</i>
lancewood, horoeka	<i>Pseudopanax crassifolius</i>	sea rush	<i>Eleocharis acuta</i>
leafless rush	<i>Juncus gregiflorus</i>	sharp spike-sedge	<i>Senecio lautus</i>
leather-leaf fern	<i>Pyrrosia eleagnifolia</i>	shore groundsel	<i>Cyathea dealbata</i>
mahoe	<i>Melicytus ramiflorus</i>	silver fern, ponga	<i>Muehlenbeckia complexa</i>
makamaka	<i>Ackama rosaefolia</i>	small leaved pohuehue	<i>Streblus heterophyllus</i>
mamaku	<i>Cyathea medullaris</i>	small-leaved milk tree, turepo	<i>Sphagnum</i> sp.
mamangi	<i>Coprosma arborea</i>	sphagnum moss	<i>Spinifex</i> sp.
manatu, lowland ribbonwood	<i>Plagianthus regius</i>	spinifex	

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swamp coprosma	<i>Coprosma tenuicaulis</i>	<b>Adventive</b>	
swamp kiokio	<i>Blechnum novae-zelandiae</i>	acacia	<i>Acacia</i> sp.
maire tawake	<i>Syzygium maire</i>	barberry	<i>Berberis darwinii</i>
swamp millet	<i>Isachne globosa</i>	beggars' ticks	<i>Bidens frondosa</i>
tanekaha	<i>Phyllocladus trichomanoides</i>	blackberry	<i>Rubus fruticosus</i>
taraire	<i>Beilschmiedia tarairi</i>	buttercup	<i>Ranunculus repens</i>
tarata, lemonwood	<i>Pittosporum eugeniioides</i>	Chinese privet	<i>Ligustrum sinense</i>
taupata	<i>Coprosma repens</i>	climbing asparagus	<i>Asparagus scandens</i>
tawa	<i>Beilschmiedia tawa</i>	crack willow	<i>Salix fragilis</i>
tawapou	<i>Pouteria costata</i>	gorse	<i>Ulex europaeus</i>
tawaroa	<i>Beilschmiedia tawa</i> (including <i>B. tawaroa</i> )	hawthorn	<i>Crataegus monogyna</i>
titoki	<i>Alectryon excelsus</i>	Japanese honeysuckle	<i>Lonicera japonica</i>
toru	<i>Toronia toru</i>	jointed rush	<i>Juncus articulatus</i>
totara	<i>Podocarpus totara</i>	kahili ginger	<i>Hedychium gardnerianum</i>
towai	<i>Weinmannia silvicola</i>	kikuyu grass	<i>Pennisetum clandestinum</i>
water fern	<i>Histiopteris incisa</i>	lotus major	<i>Lotus pedunculatus</i>
wheki	<i>Dicksonia squarrosa</i>	macrocarpa	<i>Cupressus macrocarpa</i>
white maire	<i>Nestegis lanceolata</i>	mallow	<i>Malva</i> sp.
wire rush	<i>Empodisma minus</i>	Mexican devil weed	<i>Ageratina adenophora</i>
		mist flower	<i>Ageratina riparia</i>
		oval sedge	<i>Carex ovalis</i>
		oxygen weed	<i>Lagarosiphon major</i>
		pampas	<i>Cortaderia selloana</i>
		parrot's feather	<i>Myriophyllum aquaticum</i>
		pine	<i>Pinus radiata</i>
		poplar	<i>Populus</i> sp.
		prickly sow thistle	<i>Sonchus asper</i>
		soft rush	<i>Juncus effusus</i>
		sweet grass	<i>Glyceria maxima</i>
		Tasmanian blackwood	<i>Acacia melanoxylon</i>
		tobacco weed	<i>Solanum mauritianum</i>
		vetch	<i>Vicia sativa</i>
		wandering willie	<i>Tradescantia fluminensis</i>
		watercress	<i>Rorippa nasturtium-aquaticum</i>
		weeping willow	<i>Salix babylonica</i>
		willow	<i>Salix</i> sp.
		willow weed	<i>Polygonum</i> sp.

## 8.6B WHANGAREI ECOLOGICAL DISTRICT TYPE LOCALITIES

(from Goulding 1980)

SCIENTIFIC NAME	COLLECTOR	YEAR OF COLLECTION	LOCALITY
<i>Collespermum nana</i> (listed as <i>Astelia nana</i> )	H. Carse	1898	Maungatapere
<i>Schoenus carsei</i>	H.Carse	1899	Big swamp, Maungatapere

## 8.7 GLOSSARY

### ***Allocthonous***

Geologic units that have been transported to their present position.

### ***Biodiversity***

The variability among living organisms from all sources including, *inter alia*, terrestrial, marine, freshwater and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. (IUCN 1994)

### ***Bog***

Infertile/acid wetland. Usually characterised by a peat substrate, sedges, manuka and *Gleichenia* fern. Water arrives via rainfall rather than by streams and other run-off.

### ***Buffer***

A zone surrounding a natural area which reduces the effects of external influences on the natural area. For example shrubland, scrub and exotic trees around native forested areas provide a gradation of habitats from fully modified to a natural state. This effect also applies to waterways – riparian vegetation and wetlands protect both water quality and habitat from influences arising from the surrounding land.

### ***Community***

An association of populations of plants and animals which occur naturally together in a common environment.

### ***Diversity and Pattern***

Diversity is the variety and range of species of biological communities, ecosystems and landforms. Pattern refers to changes in species composition, communities and ecosystems along environmental gradients.

### ***Ecological District***

A local part of New Zealand where geological, topographical, climatic and biological features and processes, including the broad cultural pattern, interrelate to produce a characteristic landscape and range of biological communities.

### ***Ecological Region***

A group of adjacent Ecological Districts which have diverse but closely related characteristics, or in some cases a single very distinctive Ecological District.

### ***Ecological unit***

Vegetation type occurring on a particular landform or soil or rock type.

### ***Ecosystem***

Any inter-related and functioning assemblage of plants, animals and substrates (including air, water and soil) on any scale including the processes of energy flow and productivity. (Myers et al. 1987)

### ***Endemic***

Occurring naturally in, and restricted to, a particular country, region or locality.

***Exotic***

Introduced from outside New Zealand.

***Fernland***

Dominated by ferns such as *Gleichenia*, bracken, tree ferns, with occasional woody plants.

***Foredune***

Mobile and fixed transverse dunes along coastal margins.

***Forest***

A tall, predominantly closed canopy consisting mainly of tree species (a tree being a woody plant which attains a 10 cm diameter at breast height - Atkinson 1985).

Much of Northland's forest consists of or includes secondary growth which has developed following disturbance or destruction of the original forest. This may include secondary manuka/kanuka forest where those species have reached tree size and may contain other canopy species.

***Greywacke***

Hard sandstone containing a high proportion of clay minerals.

***Habitat***

The part of the environment where a plant or animal lives. It includes both the living and non-living features of the area.

***Herbfield***

Vegetation in which the dominant cover is of non-woody or semi-woody plants < 1 m tall.

***Indigenous***

Native to and occurring naturally within the New Zealand Biogeographic region.

***Landform***

A part of the land's surface with distinctive naturally formed physical characteristics, e.g. a hill, valley, etc.

***Linkages/Corridors***

Vegetated or aquatic areas (can be forest, shrubland, wetland, streams, beach or exotic vegetation such as pine) that link up two or more habitats. With a link between habitats the gene pool for a species is greater, which enhances the viability of that population. The corridor does not have to be continuous for many species to utilise it. Small remnants can act as stepping stones between two larger habitats so that birds such as kiwi can move from remnant to remnant up to 500 m apart.

***Natural Area***

A tract of land which supports natural landforms and predominantly native vegetation or provides habitat for indigenous species; identified as a unit for evaluation of ecological quality and representativeness and has potential to be ecologically significant.

### ***Naturalness***

The degree to which a habitat is modified and disturbed by human activity or introduced plants and animals and what natural values are retained despite these factors, i.e. to what extent native species are functioning according to natural processes.

### ***Rarity***

A measure of commonness that may apply to entire ecosystems through to single species. It may refer to the threatened status of a species (see Appendix 8.3) or habitat type in any one of the following ways: formerly common but now rare; rare elsewhere but common in the district; rare in the district but common elsewhere; confined to a limited geographic area; at the limit of its range; or with a contracting or fragmented range. For example, old growth alluvial swamp forests are an extremely rare ecosystem type in Northland, and indeed nationally, even though they contain no species which are regarded as rare in themselves.

### ***Reedland***

A swampy area dominated by reeds such as raupo.

### ***Refuge***

Native bush enclaves in production pine forest become a refuge for some native species during the logging phase. For example, they allow bird species, such as kiwi, a retreat from logged areas.

### ***Representativeness***

The extent to which an area represents or exemplifies the components of the natural diversity of the ecological district. This implies consideration of the full range of natural ecosystems and landscapes that were originally found in the Ecological District, how well they are represented in today's environment, and the extent to which they are included in the protected areas network.

### ***Riparian functions***

Riparian vegetation performs important functions such as providing corridors linking habitats and providing shading to streams, which is important in Northland. With many streams having small catchments, the water temperature can rise, depleting the available oxygen and leading to the death of aquatic life. Litter debris enters into the nutrient cycle with invertebrates like mayfly, caddisfly and stonefly feeding on it. Riparian vegetation acts as a buffer for non-point water discharges.

### ***Riparian zone***

An area of land immediately adjacent to a watercourse.

### ***Riverine forest***

Forest situated on a floodplain alongside a stream/river and subject to periodic inundation by floodwaters.

It is characterised by species such as cabbage tree, lowland ribbonwood, kowhai, kahikatea, pukatea, kaikomako, titoki and divaricating shrubs. On drier areas totara, taraire, kohekohe, matai and kanuka may occur. It commonly occurs only as narrow strips due to the deforestation of flat land for pasture.



### ***Rush/Sedgeland***

Swampy areas dominated by rushes, sedges, rush-like sedges or restiads, e.g. *Baumea*, *Juncus* (rush), *Carex*, *Schoenus*, *Isolepis*, *Bolboschoenus*, *Empodisma*, and *Apodasmia*.

### ***Scrub***

Refers to seral communities, often dominated by or with a large component of exotic species such as gorse, *Hakea*, tobacco weed etc and/or commonly lacking a closed canopy and in which an understorey is either absent or composed primarily of exotic species.

### ***Secondary Vegetation***

Native vegetation established after destruction or disturbance of the previous vegetation and which is essentially different from the original vegetation. (See Succession, below.)

### ***Seral***

Describes a plant community in the process of succession.

### ***Shrubland***

Vegetation in which the canopy is dominated by woody plants less than 10 cm diameter at breast height.

There are 2 main types:

- (i) Successional vegetation dominated by seral species such as manuka, kanuka, mahoe, etc., or shrubs such as hangehange, bracken, kumerahou.

As used in this report it implies a closed canopy and in more advanced stages contains an understorey of indigenous species.

- (ii) Seral vegetation where the rate of further succession is extremely slow, being limited by abiotic factors such as soil structure and fertility, wind shear, etc., e.g. gumland manuka shrubland, *Muehlenbeckia* shrubland on dunes.

### ***Site***

An area of habitat identified during the rapid field inventory phase of the PNAP.

Its boundaries may be defined by the edge of the habitat (where discrete), catchment or other geographical feature, e.g. river, vegetation type or legal title.

### ***Succession***

The process of change in the appearance, composition and structure of a community, usually over a period of time. Change may be due to natural or human-induced factors, or both. For example, the colonisation of bare rock or soil by algae and lichens, ending with a stable climax community in equilibrium with the environment. Secondary succession occurs where the original vegetation has been destroyed, e.g. by fire.

### ***Survey no.***

The identifier number given to each site. The first three figures refer to the NZMS 260 topographical map sheet that the habitat is on.

***Sustainability***

The long-term ecological viability of a natural area. This is related to the size and shape of the area as well as to threats from introduced pests.

***Swamp***

Fertile or eutrophic wetland, usually dominated by raupo, *Carex*, jointed twig-rush, harakeke and cabbage tree.

***Swamp forest***

A forest type containing water tolerant trees and swamp species such as kahikatea, maire tawake, and pukatea. It may occur on alluvial valley areas but also occurs on poorly drained, semi-level sites within forests at higher altitudes.

***Swamp shrubland***

A transitional type with woody co-dominants like *Coprosma propinqua*-manuka-*Cordyline* with putaputaweta, *Coprosma tenuicaulis*, and other divaricating shrubs.

***Toeslope***

The area at the base of a slope where debris and topsoil has accumulated and may be more fertile than higher up the slope.

***Vegetation type***

Defined by the dominant canopy species and the structure of the vegetation, e.g. taraire forest, manuka shrubland.

***Viability***

The ability of an area's natural communities to maintain themselves in the long term in the absence of particular management efforts to achieve this. Regeneration and vigour of species within these communities and stability of communities and processes contribute to viability.

***Wetland***

An area of land that is permanently or intermittently waterlogged and supports flora and fauna adapted to wet conditions. Wetland is used as a broad definition for several types of aquatic systems, e.g. swamps, bogs and ephemerals.

## 9. Index of sites

<b>Site</b>	<b>Level</b>	<b>Survey no.</b>	<b>Page</b>
206 Mound	2	Q06/132	246
Akerama Bridge Riverine Forest	1	Q06/007	36
Apotu Swamp Shrubland	1	Q06/134	50
Baker Road Bush	1	Q07/031	162
Bint Road Bush	1	Q07/037	175
Calliope Island	1	Q07/085	231
Cemetery Road Remnants	1	Q07/056	210
Church Road Remnants	1	Q06/162	99
Church Road Wetland	1	Q06/160	96
Codlin Road Bush	1	Q07/035	172
Corbett Road Bush	2	Q06/138	247
Crows Nest Road Pond	1	Q07/177	125
Crows Nest Road Remnants	1	Q06/131	44
Draffin Farm Wetland	1	P07/029	239
Dunford Road Bush	1	Q06/141	60
Finlayson Stream	1	Q06/159	94
Forsythe Meander	1	Q06/010	38
Hanham's Bush	1	P07/032	244
Hayward Road Bush	1	Q07/042	185
Heaton Road Bush	1	Q06/137	52
Hikurangi Swamp Remnant	1	Q06/016	41
Hodge Road Dams	1	Q06/143	64
Hodges Bush	1	Q06/140	58
Hukerenui Road Shrublands	1	Q06/171	116
Hurupaki Cone	1	Q06/163	101
Jackson Road Bush	1	Q07/025	151
Jordan Valley Forest Remnants	1	Q06/154	85
Jordan Valley Shrubland	1	Q06/155	87
Kai Goose Quarry Bush	1	Q07/024	150
Kara Road Wetland	1	Q06/145	64
Kauri School Bush	2	Q06/152	249
Kauritutahi Stream	1	Q07/053	204
Kerehunga Road Remnants	1	Q07/051	200
Kokopu Block Road Bush	1	Q07/027	155
Lake Ora	1	Q06/165	105
Limestone Island & Surrounding Islands	1	Q07/062	223
Limeworks Bush Remnants	1	Q07/041	183
Lower Whau Valley Forest	1	Q06/164	103
McDonalds Island	1	Q07/084	230
Mangahahuru Bush	2	Q06/173	250
Mangakahia River	1	P07/024	233
Mangakino Stream	1	Q06/169	112
Mangapai Estuary Bush	1	Q07/046	191
Mangarotiti Stream	1	Q07/038	178
Mangere River	1	Q06/149	70
Mannington Road Wetland	1	Q07/061	221
Matarau Road Remnants	1	Q06/136	52
Maungakaramea Mountain	1	Q07/059	217
Maungatapere Mountain	1	Q07/032	164
Maungatapere Remnants	1	Q07/063	225
Maungatapere Walkway	1	Q07/033	167
Maunu Mountain	1	Q07/026	153

McCullough Road Bush	1	Q07/043	186
Millington Road Remnants	1	Q07/055	208
Mirowhakatiki Trig Bush	1	Q06/146	66
Mount Hikurangi	1	Q06/139	56
Mount Parakiore	1	Q06/156	89
Newton Road Remnants	1	Q07/054	206
Ngunguru Road Bush	1	Q06/172	118
Ngunguru Volcanic Hill Reserve	1	Q06/167	109
Old Parua Bay Road Bush	1	Q07/019	130
Otaika Valley Bush	1	Q07/023	142
Otakairangi Peat Bog	1	Q06/133	48
Otonga Kahikatea Remnant	1	Q06/024	43
Otuhi Road Bush	1	Q07/034	171
Owhina Scenic Reserve	1	Q07/021	134
Parahaki	1	Q07/018	127
Portland Quarry Bush	1	Q07/044	188
Pukehinau Bush	1	Q07/040	181
Pukenui Forest	1	Q07/022	135
Puketotara Hill Bush	1	Q06/168	110
Raumanga Valley	1	Q07/048	194
Riponui Road Bush Remnants	1	Q06/132	47
Rotomate Road Volcanic Cones	1	Q06/161	98
Simons Road Remnants	1	Q07/050	198
Smithville Road Remnants	1	Q06/170	114
Tatton Road Remnants	1	Q07/049	196
Tauraroa River	1	Q07/045	189
Tauraroa Road Remnants	1	Q07/057	211
Te Hihi Stream	1	Q07/060	219
Te Ngau Trig Bush	1	Q06/130	44
Tikipunga Golf Course	1	Q06/157	91
Vinegar Hill Road Bush	1	Q06/153	83
Waikokopa Stream	1	Q07/047	192
Waimahanga Walkway	1	Q07/020	132
Waionepu River	1	Q07/036	174
Waiotama Reserve	1	P07/030	242
Waiotama River	2	P07/031	253
Waiotu Riverine Remnants	1	Q06/011	40
Waipao Stream	1	Q07/052	202
Waipui Bush	1	Q06/148	68
Wairua Falls Scenic Reserve	1	P07/028	237
Wairua River	1	Q06/151	78
Wairua River Oxbow	2	Q06/175	252
Wairua River Wildlife Management Reserve	1	Q06/150	74
Waitangi River	1	Q06/174	120
Waitaua Stream	1	Q06/158	92
Waiotomoto Stream	1	P07/025	235
Weke Road Remnants	1	Q07/065	228
Whakapara River Remnants	1	Q06/176	123
Whangarei Falls	1	Q06/166	107
Whangarei Harbour	1	Q07/058	213
Whatitiri Scenic Reserve and Remnants	1	Q07/029	159
Whatitiri Scientific Reserve & Remnants	1	Q07/028	157
Whatitiri Road Remnants	1	Q07/030	160
Wheki Stream Bush	1	Q07/039	180
Wheki Stream Swamp	1	Q07/064	227
Worsnop Road Bush	1	Q06/142	62