

Fauna

Variable oystercatcher and white-fronted terns (both Category C threatened species) and tattlers (sp.) recorded (R.J. Pierce pers. comm.).

Significance

Rocky habitats are scarce along Ninety Mile Beach and uncommon in the Ecological District.

Roosting and feeding area for threatened bird species.

Presence of several threatened and uncommon plant species and representative site for *Spinifex* grassland, taupata shrubland, native iceplant turf, *Dichondra* aff. *brevifolia*-native iceplant turf and glasswort turf.

This site description draws directly from de Lange (1996).

MOTU PURUHI ISLAND & TERAKAUTUHAKA ISLAND

Survey no.	N03/051
Survey date	1988, 1990, 1992, 1993
Grid reference	N03 252 162
Area	6.34 ha
Altitude	0-40 m asl

Ecological unit

- (a) Tawapou forest on gentle coastal slopes
- (b) Coastal shrubland on coastal slopes
- (c) Pohutukawa treeland on coastal cliffs
- (d) *Samolus repens*-glasswort turf on rock

Landform/geology

Altered volcanic rocks of the early Cretaceous Houhora complex.

Vegetation

- (a) Coastal forest 4-5 m tall occurs on Motu Puruhi Island and is dominated by tawapou with occasional mahoe, houpara and karo. The understorey is sparse with occasional *Asplenium flaccidum* subsp. *aurakiense*.
- (b) Shrubland 1.5-2.5 m tall occurs near the coastal edge and includes ti kouka, *Coprosma macrocarpa*, taupata, *Melicytus novae-zelandiae*, hangehange, pohuehue, harakeke, toetoe, bracken and sedges.
- (c) Pohutukawa are scattered around the cliffs.
- (d) Salt tolerant succulents are found in the splash zone.

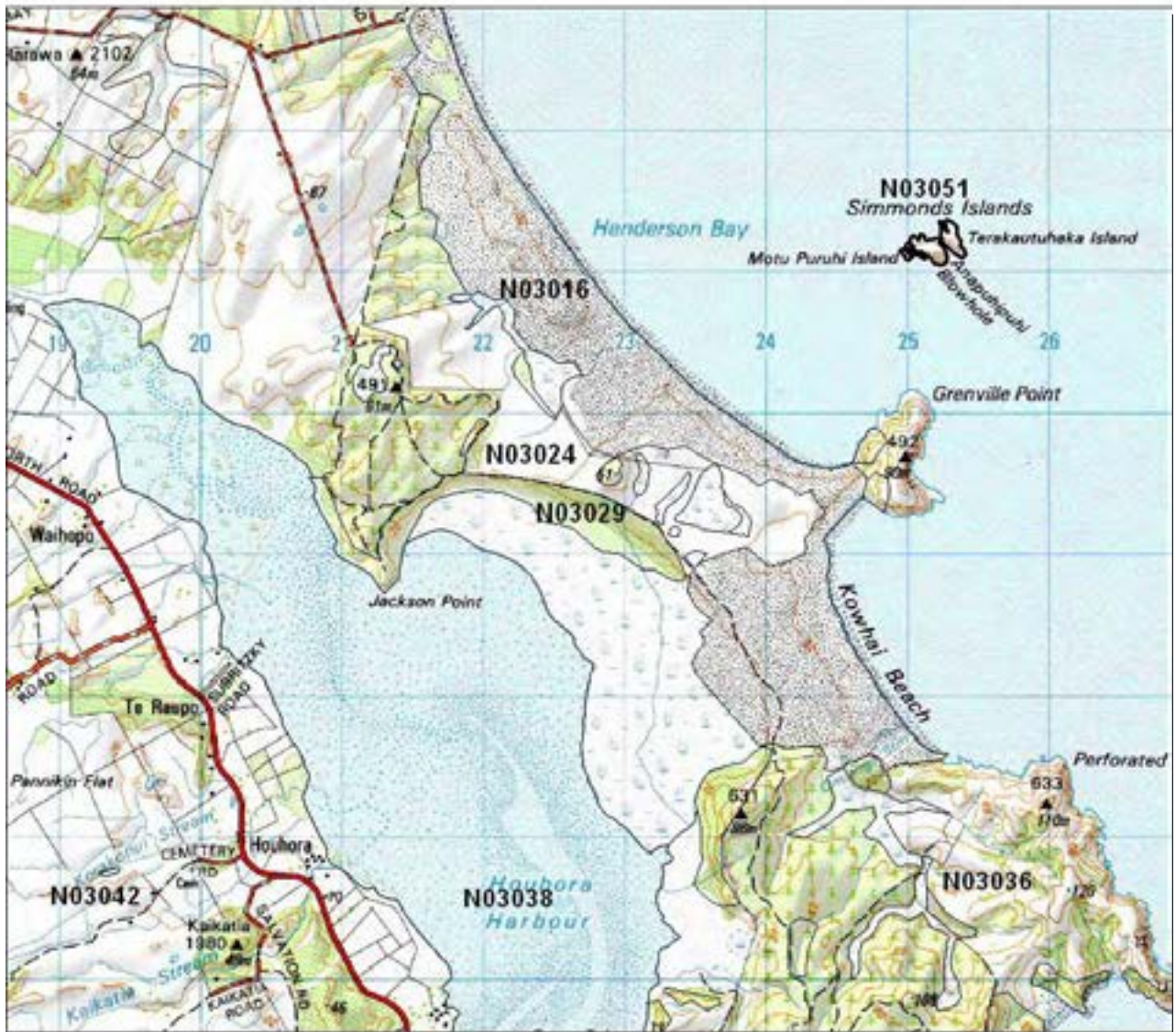
Significant flora

Sicyos australis (Vulnerable) year 2000 record, and tawapou (Regionally significant species).

Fauna

Birds: 1990 record of Buller's shearwater (Category B threatened species), white-fronted tern (Category C threatened species), fluttering shearwater, little blue penguin, grey-faced petrels nesting. Reef heron, and Caspian tern (both Category O threatened species), black-winged petrel, pied shag.

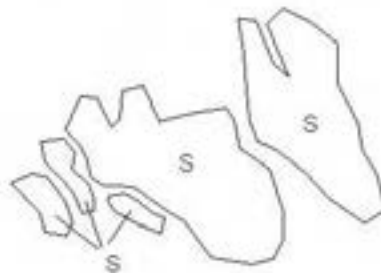
Lizards: shore skink.



Motu Puruhi Is. & Terakautuhaka Is. N03/051

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



Snails: *Placostylus ambagiosus keenorum* (Category A threatened species) were released by the Wildlife Service in 1984; a check in 1990 revealed no live snails, empty shells or shell remains. *Climocella reinga* (Range Restricted), Punctidae sp. "arewa", *Tornatellinops novoseelandica*, *Pbrixgnathus* sp. "marshalli", *Kokikora angulata*, *Delos coresia* all recorded from Motu Puruhi Island.

Significance

Predator and browser free habitats are rare and provide important safe breeding sites for many seabird species including threatened species. They also support threatened plants and have potential for transfers of threatened fauna.

Sicyos australis is unrecorded elsewhere in the Ecological District.

Tawapou forest is a nationally uncommon vegetation type and is solely recorded from this site in the Ecological District and Region. Also a representative site for *Samolus repens*-glasswort turf and pohutukawa treeland. These vegetation types have not been recorded from other island habitats in the Ecological District.

The islands are protected Nature Reserve administered by the Department of Conservation.

FAR NORTH RD SHRUBLANDS & WETLANDS

Survey no.	N04/002
Survey date	10 August 1995, 26 February 1996
Grid reference	N04 298 918, N04 300 910, N04 295 909, N04 299 895, N04 291 883, N04 282 883, N04 285 881, O04 302 877
Area	206.8 ha (193 ha shrubland, 13.8 ha wetland)
Altitude	10-40 m asl

Ecological unit

- (a) Kanuka shrubland on flats and gentle slope
- (b) *Baumea articulata*-giant umbrella sedge-manuka-raupo association in dune hollow
- (c) Kanuka/manuka shrubland on flats and gentle slope
- (d) Raupo reedland in dune hollow
- (e) Kanuka-manuka shrubland on flats
- (f) *Eleocharis sphacelata* reedland in dune hollow
- (g) Manuka-*Baumea teretifolia* swamp association in dune hollow
- (h) *Baumea juncea*-*Eleocharis sphacelata*-manuka association in dune hollow

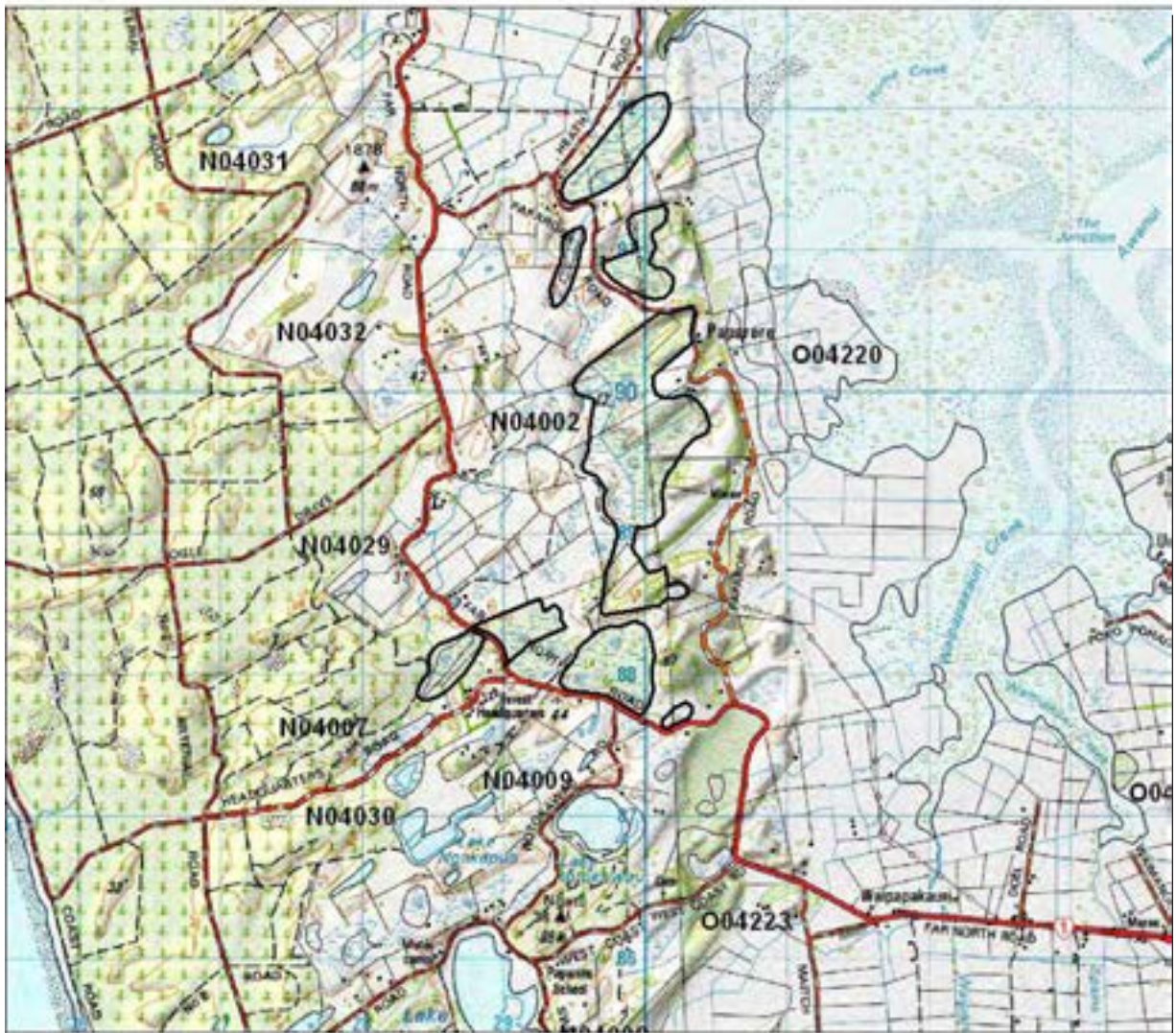
Landform/geology

Pleistocene parabolic dunes and swampy interdune flats.

Vegetation

A mosaic of discontinuous shrubland/wetland habitats at Paparore.

- (1) (a) The northernmost area, Hearlings Swamp (N04 298 918) consists of kanuka shrubland with frequent manuka, gorse and wattle. Mamaku, pampas, tobacco weed and *Eucalyptus* sp. are also present.
(b) *Baumea articulata*, raupo, manuka, and giant umbrella sedge form a mosaic of dominance. (Australasian bittern are recorded here.) The area is heavily grazed.
- (2) (c) A few hundred metres to the south (N04 300 910) kanuka/manuka form a 2-4 m canopy with frequent gorse over *Gleichenia dicarpa*. Pine and wattle are scattered. This area appears to be drier than formerly.



Far North Rd Shrublands & Wetlands N04/002

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



- (3) (d) Across the road to the west (N04 295 909), is Broadhursts Swamp, raupo with manuka, kanuka and gorse. About half of the area is type (a), kanuka shrubland with wattle occurring frequently. Harakeke, manuka and pampas are also present.
- (4) (e) Approximately 1 km south (N04 299-895) is a mosaic of kanuka dominant shrubland between 1 m and 6 m. Manuka is common or frequent and locally dominant. Sydney golden wattle is present throughout, locally common or frequent, as is prickly hakea. Other species present are mamaku, harakeke, ti kouka, gorse, tobacco weed, brush wattle (locally common), black wattle, pine, mingimingi, bracken, kumarahou and *Callistachys lanceolata*.
- (5) (f) Contiguous to the east (O04 303 886) is a small wetland, the Paparore Eleocharis Swamp, dense sedges with clumps of manuka. Water fern, *Baumea juncea*, and *B. teretifolia* occur occasionally. (Australasian bittern are recorded here.)
Although grazed to the margins, the wetland itself is fenced from stock.
- (6) (g) A kilometre to the south is Macrae's Wetland, a small, semi-infertile wetland (0.5 ha) of manuka emergent over *Baumea teretifolia* with *Schoenus* sp., *Gleichenia* sp. and *Sphagnum*. Raupo and *Eleocharis sphacelata* are present.
There is a dense shrubland periphery of type (c), kanuka/manuka with frequent gorse and hakea. Mamaku, *Coprosma rhamnoides*, turutu and other sedges are also present. The area is fenced.
- (7) A kilometre or so to the west (N04 291 883) is another area of type (c) kanuka/manuka shrubland about 5 m tall. Mamaku, gorse, prickly hakea and tobacco weed are present.
- (8) (h) Directly across the road to the west (N04 285 881) is Forestry Swamp, which is mostly dense *Baumea juncea* with *Eleocharis sphacelata* and manuka. Some raupo is present (black mudfish are found here). Type (c) occurs here around the fringe, with locally frequent brush wattle. Kiokio, mingimingi, mamaku, ti kouka, gorse and prickly hakea are also present. The area is surrounded by *Eucalyptus* sp.

Fauna

Birds: Australasian bittern (Category O threatened species), NI fernbird (Regionally significant species), little shag.

Aquatic fauna: 1999 record of black mudfish (Category C threatened species), record of giant bully (Regionally significant species), short-finned and long-finned eel and inanga.

Significance

A mosaic of partially linked shrubland and wetland habitats comprising a collective habitat for threatened and regionally significant species. Further survey is recommended.

Representative site for manuka-*Baumea teretifolia* swamp association, *Baumea juncea*-*Eleocharis*-manuka association, and *Baumea articulata*-giant umbrella sedge-manuka-raupo association, with the latter two only recorded at this site. Additional surveying is recommended to determine further ecological significance.

In the south, 30.6 ha of this site (14.8%), is protected by a Queen Elizabeth II National Trust Open Space Covenant.

Ecological unit

Pohutukawa forest remnant on dunes

Landform/geology

Holocene coastal dunes.

Vegetation

A remnant of pohutukawa forest. In the sparse understorey, *Coprosma macrocarpa* is dominant and houpara and shining spleenwort are common.

Also present are *Coprosma rhamnoides*, pohuehue, native broom, knobby clubrush, toetoe, ngaio, mingimingi, bracken, hound's tongue, leather-leaf fern and hook grass.

Fauna

Birds: Common bush birds.

Significance

A representative site for pohutukawa forest on coastal sand, a rare vegetation type in the Ecological Region and one of only three sites in this Ecological District.

COAL CREEK WETLAND

Survey no.	N04/005
Survey date	13 September 1995
Grid reference	N04 206 974, N04 214 963, N04 224 943
Area	3.9 ha
Altitude	0-15 m asl

Ecological unit

(a) Raupo-oioi reedland on coastal dunes

(b) Harakeke-pampas-raupo-association on coastal dunes

Landform/geology

Freshwater wetlands in Holocene coastal duneland.

Vegetation

(a) Coal Creek wetland is raupo dominant with oioi commonly occurring. Toetoe is frequent. Other species present are pohuehue, harakeke, pohutukawa, buffalo grass and pampas. This wetland is surrounded by dense oioi with several young pohutukawa, toetoe and harakeke, with pines to the margin on the eastern side of the bridge.

(b) The Steeds Rd wetland is an association of raupo, harakeke and pampas. Again, toetoe is frequent. Other species occurring are *Blechnum* sp., giant umbrella sedge, pohuehue, water fern, oioi and the threatened *Cyclosorus interruptus*. Pines grow to the margins.

The Waihi Rd site consists of a seepage from a roadside bank and contains sedges, buffalo grass and kiokio. The threatened *Cyclosorus interruptus* is present.



Coal Creek Wetlands N04/005

Each grid is 1000m x 1000m
and = 100 ha.

S = shrubland
F = forest
W = wetland
E = estuarine
D = duneland

Significant flora

Cyclosorus interruptus (Declining).

Fauna

Birds: Common bush birds. Waterbirds such as spotless crakes (Regionally significant species) are likely to be present.

Significance

Three small but important wetland areas on coastal dunes, which is nationally an under-represented habitat type.

Representative site for raupo-oioi reedland.

Presence of *Cyclosorus interruptus*, a threatened fern of warm wetland areas.

Further survey recommended.

HEATH RD POWERLINE SWAMP

Survey no.	N04/006
Survey date	8 August 1995
Grid reference	N04 298 934, O04 303 933
Area	84.5 ha (83 ha shrubland, 0.7 ha wetland)
Altitude	5-25 m asl

Ecological unit

- (a) Manuka swamp shrubland in dune hollow
- (b) Manuka-kanuka shrubland on flats
- (c) Sydney golden wattle-kanuka/manuka shrubland on flats
- (d) *Eleocharis sphacelata* reedland in dune hollow

Landform/geology

Freshwater wetlands ponded by Pleistocene consolidated parabolic dunes.

Vegetation

(a) An area of dense short manuka with *Baumea teretifolia* and *Schoenus* sp. sedges, *Dracophyllum lessonianum* and *Cassytha*.

(b) On the margins are (i) low manuka-kanuka shrubland with frequent gorse and wattle and (ii) type (c) Sydney golden wattle-kanuka shrubland.

There is also a small area of pine and *Eucalyptus*.

(d) At the northern end is a small shallow *Eleocharis sphacelata* reedland with some *Baumea* sp.

Fauna

Birds: Australasian bittern (Category O threatened species).

Aquatic fauna: 1993 record of black mudfish (Category C threatened species).

Significance

Habitat for threatened species and likely to provide habitat for NI fernbirds.

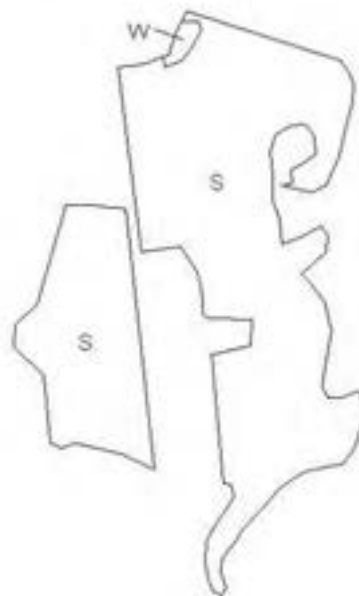
Representative site for manuka swamp shrubland.



Heath Rd Powerline Swamp N04/006

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



HEADQUARTERS POND

Survey no. N04/007
Survey date 8 August 1995
Grid reference N04 283 875
Area 5.77 ha
Altitude 10-20 m asl

Ecological unit

Baumea articulata-Eleocharis sphacelata reedland in dune hollow



Headquarters Pond N04/007

Each grid is 1000m x 1000m
and = 100 ha.

S = shrubland
F = forest
W = wetland
E = estuarine
D = duneland

Landform/geology

Freshwater wetland ponded by Pleistocene parabolic dunes.

Vegetation

A dense sward of *Baumea articulata* and *Eleocharis sphacelata* with raupo, *Juncus* sp., swamp millet and other *Baumea* species.

Pines are planted to the margin with poplars along the roadside. Brush wattle and harakeke are also present.

Significant flora

Myriophyllum robustum (Declining) is reported from this site.

Fauna

Birds: Australasian bittern (Category O threatened species) reported. NI fernbird and spotless crane (both Regionally significant species), pukeko, and grey duck. NZ dabchick (Category C threatened species) and Australasian little grebe (Regionally significant species) have been recorded by the OSNZ in the past.

Significance

Small representative wetland area which is a habitat for several important species including threatened and regionally significant species.

A Conservation Covenant administered by the Department of Conservation protects 5.1 ha (89.4%) of this wetland.

LAKE NGATU COMPLEX

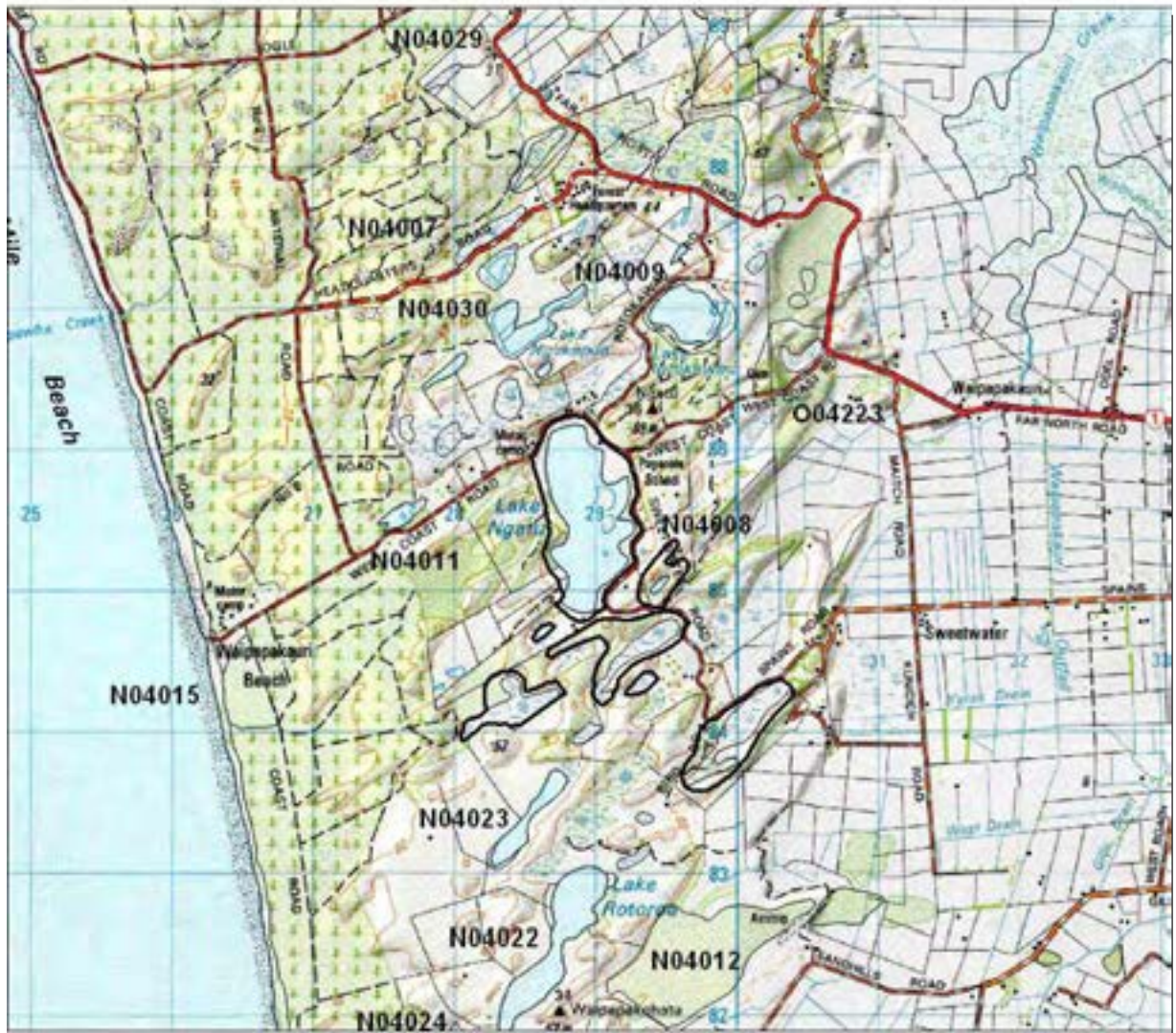
Survey no.	N04/008
Survey date	8 August 1995
Grid reference	N04 290 855, N04 294 891, N04 286 847, N04 284 842, N04 293 846, N04 294 844, N04 300 840
Area	154.8 ha (67 ha shrubland, 87.8 ha forest)
Altitude	5-20 m asl

Ecological unit

- (a) Open water in dune lake
- (b) *Eleocharis sphacelata* reedland in lake bed
- (c) *Eleocharis acuta-Isolepis prolifer-Myriophyllum propinquum*-willow weed association in lake bed
- (d) Kanuka shrubland on lake margin
- (e) Kanuka/manuka shrubland on dunes
- (f) Manuka swamp shrubland on flats
- (g) *Baumea teretifolia-Schoenus brevifolius* sedgeland in peat bog

Landform/geology

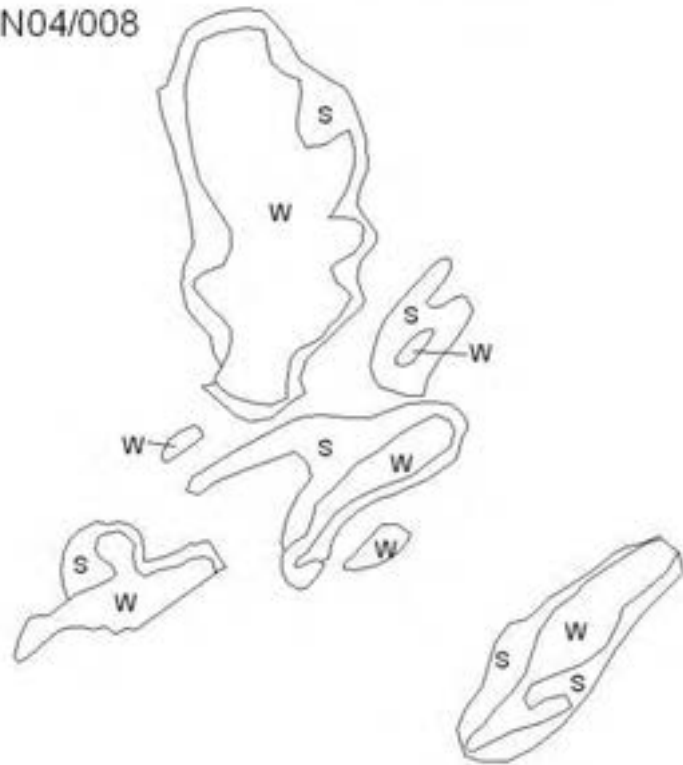
Lake and freshwater wetland ponded within Pleistocene consolidated parabolic dunes.



Lake Ngatu Complex N04/008

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



Vegetation

A number of peat swamps with narrow manuka and kanuka dominant shrubland margins.

(a) Lake Ngatu is a large dune lake, almost 90% open water.

(b) About 5% is *Eleocharis sphacelata* with *Isolepis prolifer*, *Baumea articulata*, *B. teretifolia* and *B. juncea*.

On the fringes are kikuyu with planted harakeke and ti kouka, kanuka/manuka to 3 m and bracken and gorse scrub.

To the south-west is the small Ngatu Pond (N04 286 847) which is 60% open water and 40% type (b) *Eleocharis sphacelata*, with manuka, *Baumea articulata*, *Isolepis prolifer* and *Eleocharis acuta*. It is grazed to the margins.

Further south-west is the larger Waipapakauri Beach 'Lake', a luxuriant bed of type (b), *Eleocharis sphacelata* with *Baumea articulata*.

(c) There is a small area of *Eleocharis acuta*, *Isolepis prolifer*, *Myriophyllum propinquum* and willow weed.

(d) On the northern shore is kanuka shrubland to 6m. Other species present are *Cassytba*, ti kouka, mamaku, brush wattle, manuka, *Coprosma rhamnoides*, *Lepidosperma laterale*, mingimingi, bracken, hangehange, *Nertera* sp. and *Gonocarpus* sp..

To the south-east of Lake Ngatu is Wasp Nest Lake (N04 295 852), partly open water, *Eleocharis sphacelata* and *Baumea articulata*.

(e) On the margin is kanuka/manuka shrubland with frequent gorse. Tobacco weed, brush wattle and sedges are present.

(f) Across the road to the south west is Sweetwater Rd Swamp, which is 60% manuka and *Eleocharis sphacelata* with *Baumea teretifolia*, *B. articulata* and *Isolepis prolifer*.

The margins are mostly type (d) kanuka to 4 m with frequent mamaku, gorse, prickly hakea and tobacco weed. Pampas *Cassytba*, *Schoenus brevifolius*, bracken, mingimingi, *Coprosma rhamnoides* are also present. On the edge of this is Andrews Swamp, (N04 293 843), type (b) an *Eleocharis sphacelata* reed bed with *Sphagnum* forming a mat underneath. Old tree stumps occur in the swamp.

(g) A few hundred metres to the south-east is the Spains Rd swamp, which is mostly *Baumea teretifolia* and *Schoenus brevifolius* with scattered patches of manuka. A small muddy-bottomed area of open water (possibly intermittent) occurs. Old tree stumps occur in the swamp. Wire rush, sphagnum moss, *Eleocharis sphacelata* and *Baumea articulata* are also present.

Kanuka-manuka shrubland type (e) with frequent gorse occurs on the fringe. A variety of exotic weeds are present.

Significant flora

A 1988 record of *Hydatella inconspicua* (Declining). Wire rush is a regionally significant species in Northland.

Fauna

Birds: NZ dabchick (Category C threatened species), Australasian bittern, white heron and Caspian tern (all Category O threatened species), NZ scaup and NI fernbird (both Regionally significant species), black shag, pied shag, glossy ibis,

yellow-billed spoonbill. A year 2000 survey by the OSNZ confirmed the presence of NZ dabchick and Caspian tern and also recorded little black shag, Aquatic fauna: common bully, common smelt, short-finned eel, landlocked inanga.

Significance

A complex of dune lakes and wetlands with good quality habitat. An important area for a diversity of waterbirds including threatened and uncommon species and habitat for the threatened *Hydatella inconspicua* and regionally significant wire rush.

Representative site for type (a) open water, type (b) *Eleocharis sphacelata* reedland, type (c) *Eleocharis acuta-Isolepis prolifer-Myriophyllum propinquum*-willow weed association, type (d) kanuka shrubland, type (f) manuka swamp shrubland, and type (g) *Baumea teretifolia-Schoenus brevifolius* sedgeland. Only record of type (c) and (g) in the Ecological District.

Recreation Reserve protects 68.7 ha (44.3%) of this site and is administered by the Department of Conservation.

LAKE ROTOKAWAU & POND

Survey no.	N04/009
Survey date	8 August 1995
Grid reference	N04 296 869, N04 296 874
Area	24.9 ha (10 ha shrubland, 14.9 ha wetland)
Altitude	20-40 m asl

Ecological unit

- (a) Open water
- (b) *Eleocharis sphacelata* reedland on lake bed
- (c) *Baumea juncea* sedgeland in dune hollow
- (d) Manuka shrubland on lake margin

Landform/geology

Lake ponded by Pleistocene consolidated parabolic dunes.

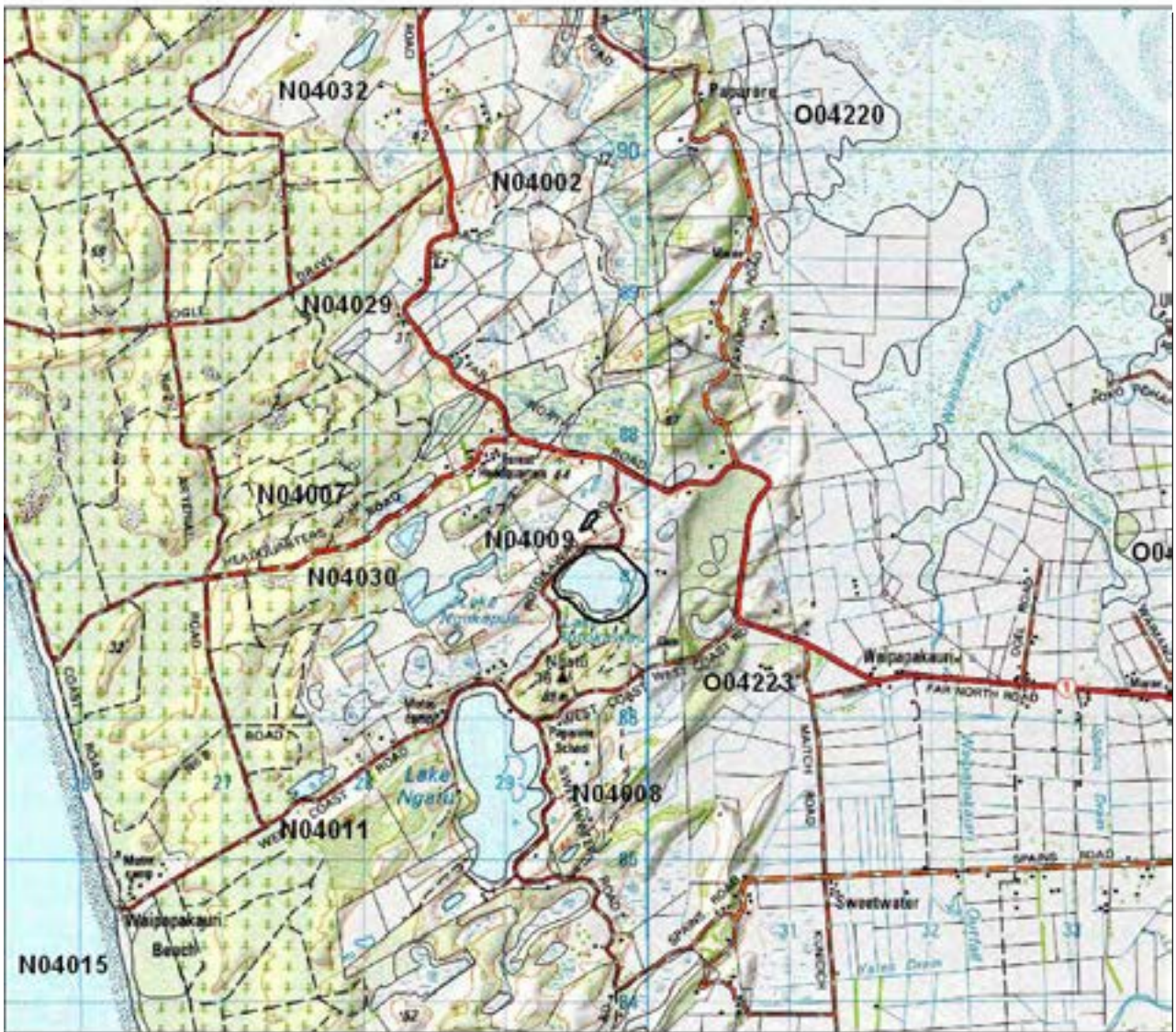
Vegetation

- (a) This is a shallow lake with open water comprising 70% of the area.
- (b) Reed beds dominated by *Eleocharis sphacelata* with *Baumea articulata*.
- (c) Elsewhere *Baumea juncea* is locally dominant with oioi, *Schoenus brevifolius* and *Isolepis prolifer*.
- (d) The shrubland margin is abundant manuka with frequent brush wattle and *Baumea juncea*. Other species present are mamaku, pampas, harakeke, ti kouka and gorse.

The smaller pond across the road is about one quarter open water and three quarters *Eleocharis sphacelata*, and is grazed to the margin.

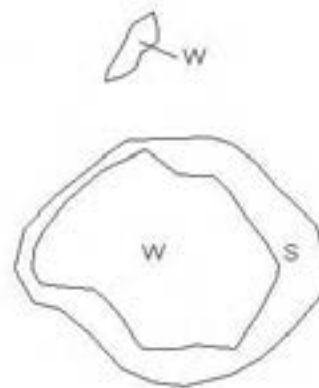
Significant flora

A 1988 record of *Hydatella inconspicua* (Declining) and a 1983 record of *Utricularia protrusa* (Vulnerable).



Lake Rotokawau & Pond N04/009

Each grid is 1000m x 1000m
 and = 100 ha.
 S = shrubland
 F = forest
 W = wetland
 E = estuarine
 D = duneland



Fauna

Birds: NZ dabchick (Category C threatened species), Australasian bittern (Category O threatened species), Australasian little grebe spotless crane and NI fernbird (all Regionally significant species), grey duck and other common

waterbirds. A year 2000 OSNZ survey also recorded black shag, pied shag, little shag and little black shag.

Aquatic fauna: landlocked inanga, common bully.

Significance

An extremely important high-quality shallow lake with reedbeds providing habitat for four threatened and three regionally significant species.

Representative site for *Baumea juncea* sedgeland.

Marginal Strip administered by the Department of Conservation protects 3.6 ha (14.4%) of this site.

LAKE WAIPARERA & WETLANDS

Survey no.	N04/010
Survey date	8 August 1995
Grid reference	N04 265 950, N04 260 954, N04 253 950, N04 254 943
Area	212.3 ha (25.8 ha shrubland, 186.5 ha wetland)
Altitude	20–40 m asl

Ecological unit

- (a) Open water in dune lake
- (b) Oioi rushland on lake bed
- (c) Manuka shrubland on lake margin
- (d) *Baumea articulata* reedland on lake bed
- (e) *Eleocharis sphacelata* reedland on lake bed
- (f) Raupo reedland on lake bed
- (g) Kanuka shrubland on lake margin

Landform/geology

Lake ponded between Pleistocene consolidated parabolic dunes in the east and late Pleistocene parabolic dunes to the west.

Vegetation

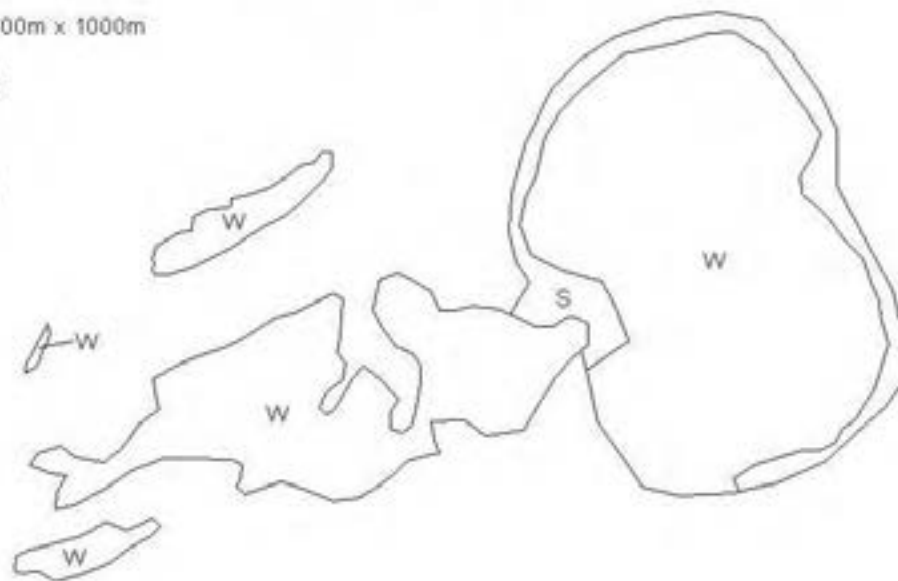
- (a) Lake Waiparera is a large lake with a sandy shore.
- (b) An oioi fringe occurs on the eastern side. Raupo occurs at the southern end.
- (c) A fringe of manuka contains tobacco weed, brush wattle and Sydney golden wattle. There are also grassy margins.
- (d) To the west is an extensive semi-fertile wetland system. Nearest to Lake Waiparera *Baumea articulata* is dominant over a large area. *Eucalyptus* sp. and pines are planted to the margins in places with a small area of tall kanuka elsewhere.
- (e) At the western end there is a sizeable area of open water with the remainder consisting of *Eleocharis sphacelata* reedbeds with frequent *Baumea articulata* and occasional raupo. The threatened fern *Cyclosorus interruptus* is present.
- (f) To the south is a small side wetland of raupo, with frequent bracken fern and occasional ti kouka and harakeke. Pines are planted to the margins.



Lake Waiparera & Wetlands N04/010

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



On the northern side is a small lake (mostly open water) with a small area of type (e) *Eleocharis sphacelata* and surrounded by grazed pasture and type (g) tall kanuka with hangehange, harakeke, mingimingi, *Coprosma rhamnoides*, *C. tenuicaulis* and pampas.

A short distance north is Arterial Rd No 3 Lake, about a third of which is open water, with the remainder consisting of (i) type (f) dense raupo and occasional harakeke (ii) type (d) *Baumea articulata* with other *Baumea* and *Juncus* species.

There is tobacco weed on the pasture periphery and pines to the margin on the north side. Pampas, kanuka, mamaku, hangehange and mingimingi also occur on the periphery.

East of here is Katavich Lake, 60% raupo, type (f), and 40% open water, type (a). There is some scattered kanuka on the margins but it is grazed to the periphery.

Significant flora

1990 record of *Utricularia protrusa* (Vulnerable), 1988 record of *Hydatella inconspicua* (Declining), *Cyclosorus interruptus* (Declining).

Fauna

Birds: NZ dabchick (Category C threatened species), Australasian bittern (Category O threatened species), NI fernbird, NZ scaup and spotless crane (all Regionally significant species), and a wide diversity of waterbirds.

Aquatic fauna: 1999 records of black mudfish (Category C threatened species), common bully, long-finned eel and inanga.

Significance

One of the best lake/wetland systems in the Ecological Region with several threatened plant and animal species and a variety of vegetation types.

Lake Waiparera wetlands is one of the most significant sites for black mudfish in Northland due to the extensive size of the wetland, its stable hydrology and high density of fish surveyed showing a complete age structure (V. Kerr pers. comm.).

Representative site for type (a) open water, type (d) *Baumea articulata* reedland and type (e) *Eleocharis sphacelata* reedland.

A total of 61.6 ha (29%) is protected within this site; 54.4 ha is Conservation Covenant and 7.2 ha is administered by the Department of Conservation.

WEST COAST RD LAKE

Survey no.	N04/011
Survey date	9 August 1995
Grid reference	N04 277 855
Area	3.5 ha
Altitude	15-25 m asl

Ecological unit

(a) Open water in dune lake

(b) *Eleocharis sphacelata* reedland in dune hollow



West Coast Rd Lake N04/011

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland

Landform/geology

Freshwater wetland ponded by Holocene dunes.

Vegetation

(a) An area of open water (15%) at the western end.

(b) The remainder consists of a dense bed of *Eleocharis sphacelata* with frequent *Baumea articulata*. The threatened *Myriophyllum robustum* is present.

Pines and farmland occur on the borders, and there is a weedy margin.

Significant flora

Myriophyllum robustum (Declining). The largest known North Island site of this plant (permission granted by Northland Regional Council to use this information from Champion et al. 2002).

Fauna

Birds: NZ dabchick (Category C threatened species), Australasian bittern (Category O threatened species), spotless crane (Regionally significant species), pied shag, and grey duck.

Significance

A high-quality wetland providing habitat for threatened and regionally significant species.

WAIPAPAKAURI BEACH COASTAL SHRUBLAND

Survey no.	N04/015
Survey date	9 August 1995
Grid reference	N04 265 844
Area	16.6 ha
Altitude	0-15 m asl

Ecological unit

Harakeke-kanuka association on dunes

Landform/geology

Holocene coastal dunes.

Vegetation

An association of harakeke, kanuka and sedges. *Coprosma acerosa*, native ice plant, kikuyu, toetoe, pohutukawa and areas of open sand are scattered.

Significant flora

Year 2000 record of *Pimelea arenaria* (Declining).

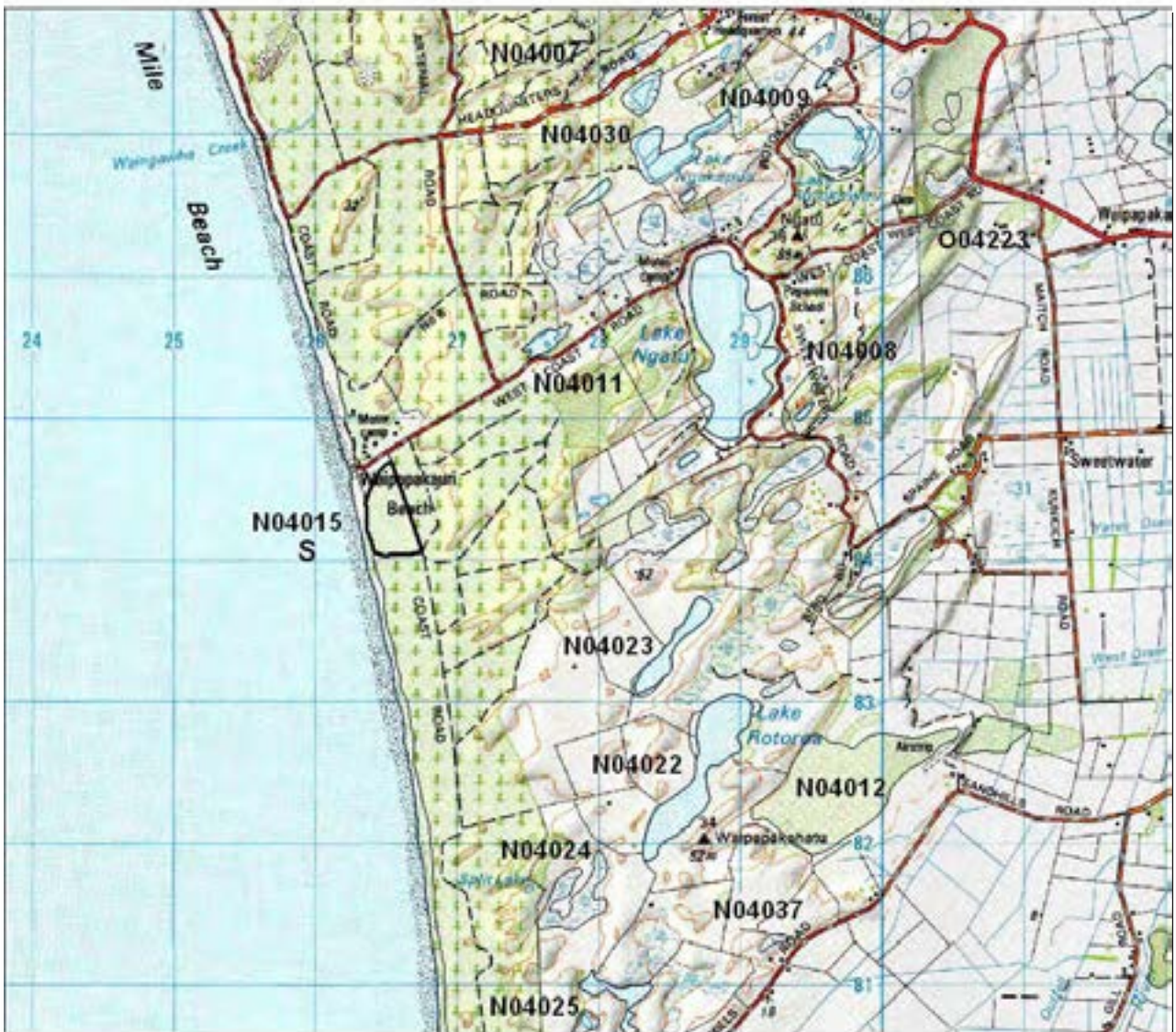
Fauna

Not surveyed.

Significance

A shrubland area which is a good example of a now much-reduced vegetation type. Representative site for, and only record of, harakeke-kanuka association in the Ecological District.

Most of this site, 15.8 ha (95%), is protected Stewardship Land administered by the Department of Conservation.



Waipapakauri Beach Coastal Shrubland N04/015

Each grid is 1000m x 1000m
and = 100 ha.

S = shrubland
F = forest
W = wetland
E = estuarine
D = duneland

SANDHILLS RD SWAMP

Survey no. N04/016
Survey date 13 September 1995
Grid reference N04 277 746
Area 0.6 ha
Altitude 5-15 m asl

Ecological unit

Gorse-manuka shrubland on peat



Sandhills Rd Swamp N04/016

Each grid is 1000m x 1000m
and = 100 ha.

S = shrubland
F = forest
W = wetland
E = estuarine
D = duneland

Landform/geology

Interdune flat in dunefield of Pleistocene consolidated parabolic dunes.

Vegetation

Part of a peat depression that is temporarily wet. Low (1-2 m) shrubland dominated by gorse with manuka commonly occurring. Tasmanian blackwood have been planted throughout.

Significant flora

Thelymitra (a) (Taxonomically Indeterminate-Endangered) and *T. malvina* (Naturally Uncommon-Range Restricted) recorded in 1990, *T.* "darkie" and *T.* "rough leaf" (both Regionally significant species).

Historical record of *T. matthewsii* (Naturally Uncommon-Sparse) by Matthews in 1911.

Fauna

Not surveyed.

Significance

This habitat is very modified and reduced (a pond has been constructed and the area planted (L.J. Forester pers. comm.) since the threatened plant records but continues to provide habitat for threatened species with a narrow habitat range. Frequent monitoring is recommended.

SWEETWATER STATION DEPRESSIONS

Survey no.	N04/017
Survey date	13 September 1995
Grid reference	N04 286 799, N04 284 798, N04 283 794, N04 284 795, N04 281 796, N04 282 795, N04 286 795, N04 278 793
Area	15 ha
Altitude	5-15 m asl

Ecological unit

- (a) Open water
- (b) Rushland in dune depression
- (c) Manuka-gorse shrubland in dune depression
- (d) *Eleocharis sphacelata* reedland in dune depression
- (e) *Eleocharis sphacelata*-*Baumea articulata*-raupo reedland in dune depression

Landform/geology

Interdune flat in dunefield of Pleistocene consolidated parabolic dunes.

Vegetation

A cluster of dune depressions that are seasonally wet.

- (a) The wetlands have little or no permanent water.
- (b) Rushes are common throughout. Giant umbrella sedge occurs in almost all areas.
- (c) Manuka and gorse occur in the more shallow wetlands.
- (d) *Eleocharis sphacelata* is abundant in one area but absent or rare in most other areas. Harakeke and raupo are scattered intermittently throughout. Other species present are *Coprosma propinqua* x *robusta*, *Myriophyllum* sp. and pohuehue.

(e) The south-western wetland, the largest in the group, is *Eleocharis sphacelata* dominant with raupo and *Baumea articulata*. *Isolepis prolifer* is also present. This site is seasonally dry.

Fauna

Birds: Common bird species.

Aquatic fauna: Black mudfish (Category C threatened species).

Significance

Seasonally wet habitats and habitat for a nationally threatened species.

TANGONGE WETLAND

Survey no. N04/018
Survey date 7 August 1995
Grid reference O04 300 760, O04 314 755
Area 486 ha (413 ha shrubland, 73 ha wetland)
Altitude 5-15 m asl

Ecological unit

- (a) Open water
- (b) Manuka-gorse shrubland on peat
- (c) Gorse shrubland on peat

Landform/geology

Holocene swamp and alluvial deposits.

A semi-mineralised wetland with areas of semi-acid peat bog.

Vegetation

- (a) This area is now only seasonally wet.
- (b) Occasional ti kouka are emergent over thickets of manuka and gorse with swards of *Baumea articulata* mixed with blackberry, *Juncus* rushes, *Baumea* sedges, umbrella fern and bracken.
- (c) Drainage of surrounding land has lowered the watertable causing a drying out and favouring invasion of weed species such as blackberry, gorse, pampas and tobacco weed which are locally frequent or abundant.

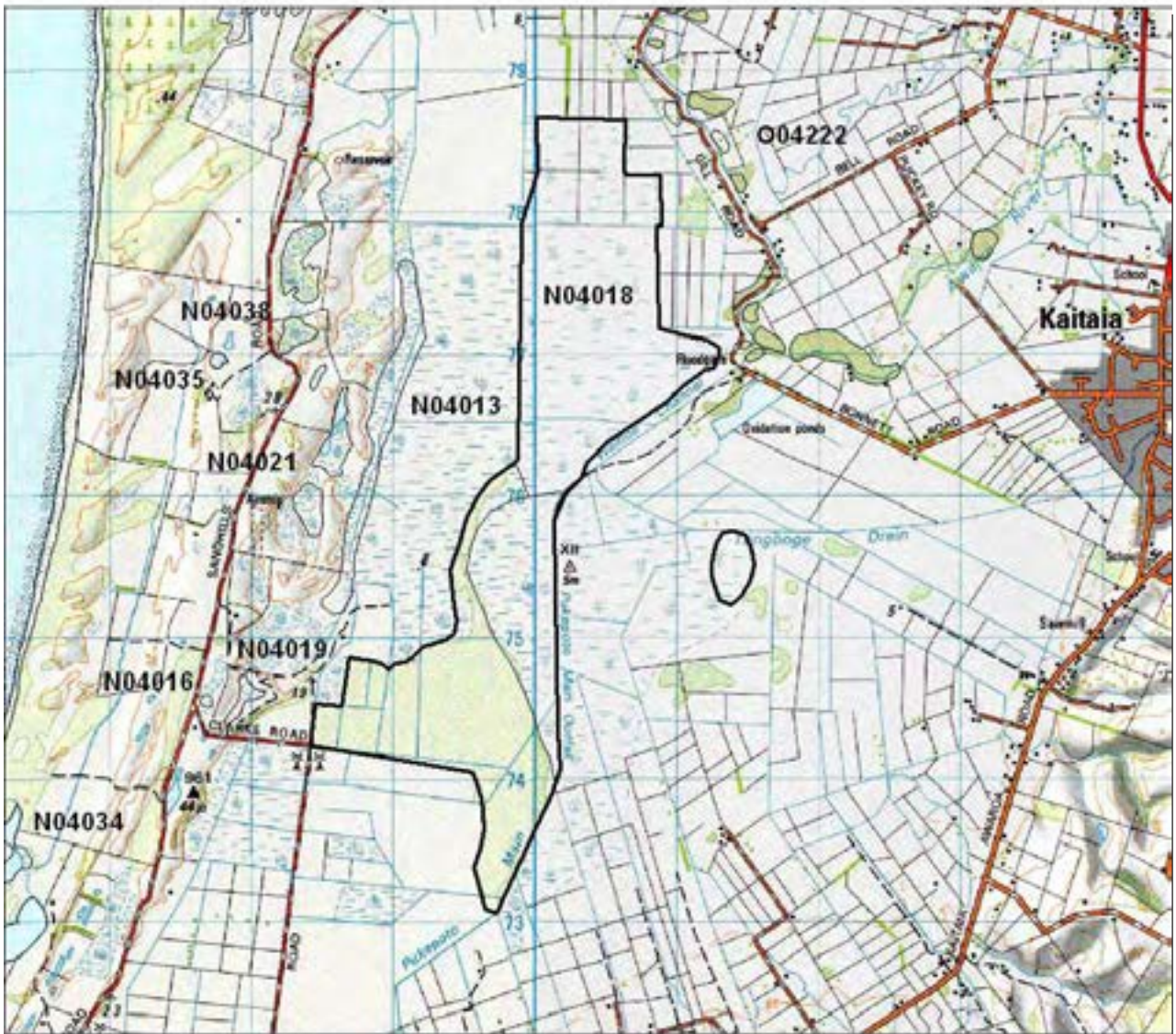
Significant flora

Utricularia protusa (Vulnerable) has been recorded from this site.

Historical records

The now-endangered orchid *Corybas carsei* (Critically Endangered) was recorded from Lake Tangonge in 1919 and there is a 1912/13 record of *Sporodanthus ferrigineus* (Declining) by Carse, also recorded by H.B and R.H. Matthews.

Thelymitra matthewsii (Naturally Uncommon-Sparse) in 1911, *Pterostylis micromega* (Endangered) in 1902 and *Chiloglottis formicifera* (Naturally Uncommon-Vagrant) was recorded in 1900.



Tangonge Wetland N04/018

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



Fauna

Birds: Australasian bittern (Category O threatened species). NI fernbird, and spotless crane (both Regionally significant species) and NZ shoveler.

Aquatic fauna: 1993 record of black mudfish (Category C threatened species), freshwater mussel.

Significance

A large shrubland area that is seasonally wet, providing extensive habitat for a diversity of wetland species, including several which are threatened. Tangonge Wetland is a remnant of a larger system that has mostly been drained.

As many as 3000 pied stilts utilise Lake Tangonge during the winter season (R.J. Pierce pers. comm.).

The Tangonge wetlands in 1978 were 341 ha in size; a resurvey in 1988 revealed a loss of 221 ha, to 120 ha.

Approximately 43.2 ha of the wetland (8.8%) is protected Stewardship Land administered by the Department of Conservation.

CLARKE RD WETLAND

Survey no.	N04/019
Survey date	11 August 1995
Grid reference	N04 280 746
Area	3.1 ha
Altitude	10-20 m asl

Ecological unit

(a) Open water

(b) *Eleocharis sphacelata* reedland in dune hollow

Landform/geology

Wetland ponded by Pleistocene consolidated parabolic dunes.

Vegetation

A small shallow peaty depression with dense *Eleocharis sphacelata* and some open water. It is grazed to the margins.

Fauna

Common waterbirds.

Significance

A small wetland area which is habitat for waterbirds.

Peat habitats are much reduced from their former extent.



Clarke Rd Wetland N04/019

Each grid is 1000m x 1000m
and = 100 ha.

S = shrubland
F = forest
W = wetland
E = estuarine
D = duneland

SANDHILLS RD WETLAND NO 1

Survey no.	N04/021
Survey date	12 February 1996
Grid reference	N04 284 768, N04 286 765, N04 284 758
Area	14.1 ha
Altitude	<20 m asl



Sandhills Rd Wetland No1 N04/021

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



Ecological unit

- (a) Manuka swamp shrubland on peat
- (b) *Eleocharis sphacelata* reedland on peat
- (c) Open water
- (d) *Baumea articulata*-*Eleocharis sphacelata*-*Isolepis prolifer* association on peat

Landform/geology

Freshwater wetlands in interdune hollows on Pleistocene parabolic dunefield.

Vegetation

(a) The southern area is a semi-wet manuka peat bog containing some gorse, *Baumea articulata* and other *Baumea* and *Juncus* species.

(b) There is also a tiny area of *Eleocharis sphacelata* reed beds on the periphery.

(c) The main central area is a mosaic of open water, with type (d) *Baumea articulata*, *Eleocharis sphacelata* and *Isopelis prolifer*.

Other species present are manuka, raupo, ti kouka and willow weed.

To the north-west, type (b) also occurs in another *Eleocharis sphacelata* reed bed with a small amount of open water.

All areas are grazed to their margins.

Significant flora

The threatened *Myriophyllum robustum* (Declining) is recorded.

Fauna

Birds: Australasian bittern (Category O threatened species).

Aquatic fauna: 1993 record of black mudfish (Category C threatened species).

Significance

Peat swamps are much reduced from their previous extent and are now an under-represented habitat type.

Representative site for and the only record of *Baumea articulata*-*Eleocharis sphacelata*-*Isolepis prolifer* association in the Ecological District.

This area is also habitat for the threatened black mudfish and Australasian bittern.

LAKE ROTOROA & WETLANDS

Survey no.	N04/022
Survey date	19 January 1996
Grid reference	N04 293 834, N04 293 832, N04 287 255
Area	32 ha (2.1 shrubland, 29.9 ha wetland)
Altitude	< 20 m asl

Ecological unit

(a) Open water in dune lake

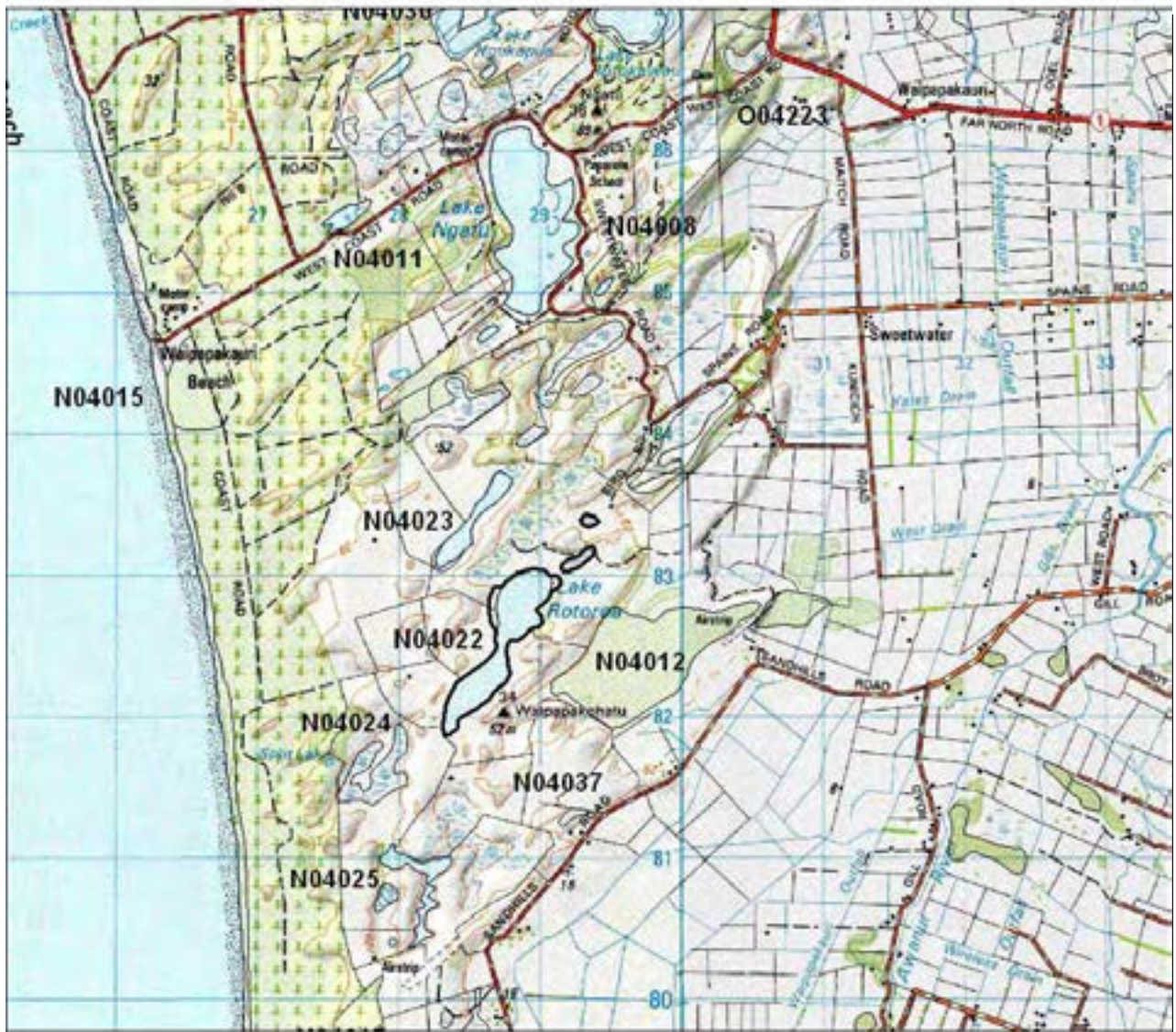
(b) *Eleocharis sphacelata* reedland on lake bed

(c) Kanuka-manuka-gorse shrubland on lake margin

(d) *Eleocharis sphacelata*-*Baumea articulata* reedland on lake bed

Landform/geology

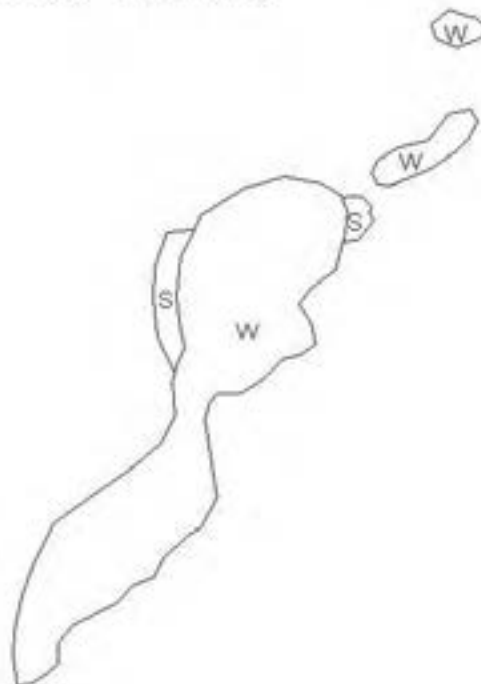
Freshwater lake on Pleistocene parabolic dunefield ponded by late Holocene dunes.



Lake Rotorua & Wetlands N04/022

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



Vegetation

- (a) A dune lake which is 95% open water.
- (b) The remainder comprises *Eleocharis sphacelata* reed beds with frequent raupo. *Baumea articulata* is also present. Old kauri stumps are present on the lake bed.
- (c) On the northern shoreline is a small area of kanuka-manuka-gorse.
- (d) A short distance to the north-east is the semi-fertile Lake Rotoroa Swamp which was once connected to Lake Rotoroa and is mostly *Eleocharis sphacelata*. *Baumea articulata* is common. Harakeke, *Baumea teretifolia*, oioi, *Eleocharis acuta* and other small herbaceous weeds are present.

This area is fenced and has poplars planted on the margins.

Type (d) also occurs north of this in another small wetland, Bird Rd Swamp, which has only a small area of open water and is mainly *Eleocharis sphacelata* with *Baumea articulata*. *Juncus* rushes and swamp grass occur on the margin, which is grazed.

Significant flora

The threatened plants *Hydatella inconspicua* and *Myriophyllum robustum* (both Declining) are present.

Fauna

Birds: A wide diversity of waterbirds including NZ dabchick (Category C threatened species), spotless crane and Australasian little grebe (both Regionally significant species). OSNZ have recorded Australasian bittern (Category O threatened species) in recent surveys.

Aquatic fauna: common bully, short-finned eel.

Significance

One of the largest in a chain of dune lakes, with high ecological values, containing several threatened species and two regionally significant species. Representative site for open water, and *Eleocharis sphacelata*-*Baumea articulata* reedland.

Stewardship Land of 29 ha and a small area of Scenic Reserve, 0.4 ha, both administered by the Department of Conservation protects 91.8% of this site.

LAKE HEATHER

Survey no.	N04/023
Survey date	19 January 1996
Grid reference	N04 285 835, N04 290 840
Area	11 ha
Altitude	< 20 m asl

Ecological unit

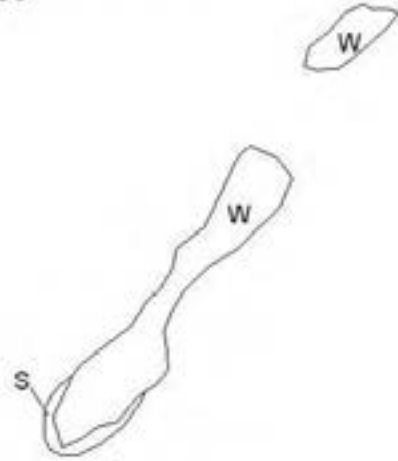
- (a) Open water in dune lake
- (b) *Eleocharis sphacelata*-raupo reedland on lake bed
- (c) Gorse-tobacco scrub weed on lake margin



Lake Heather N04/023

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



Landform/geology

Freshwater wetland ponded on Pleistocene parabolic dunefield by late Holocene dunes.

Vegetation

(a) At least three quarters of the lake is open water.

(b) *Eleocharis sphacelata* dominates the reed beds but raupo is also common. *Baumea* is frequent. Harakeke and kuta are also present. On the margins swamp millet, giant umbrella sedge, *Carex* and willow weed occur as do the threatened plants *Myriophyllum robustum* and *Thelypteris confluens*.

(c) On the southern boundary gorse and tobacco weed occur with occasional ti kouka and mamaku. Some poplars and brush wattle are also present.

Significant flora

Myriophyllum robustum (Declining) and *Thelypteris confluens* and *Utricularia protrusa* (both Vulnerable). Historical record of *Hydatella inconspicua* (Declining) from this site.

Fauna

Birds: NZ dabchick (Category C threatened species), Australasian bittern (Category O threatened species), grey teal (Regionally significant species) and NZ shoveler, black shag, and grey duck.

Aquatic fauna: black mudfish (Category C threatened species), common bully, short-finned eel.

Significance

A large, relatively unmodified dune lake which is used by high numbers of waterbirds including the threatened NZ dabchick and Australasian bittern.

Two threatened plants are also present.

Bushlands Trust is a voluntary organisation that has had an on-going planting regime at Lake Heather for several years. Most plants are sourced from the District such as ngaio, *Pittosporum* sp., harakeke, etc.

Representative site for open water in dune lake.

Stewardship Land of 7.5 ha and 0.8 ha of Scenic Reserve both administered by the Department of Conservation protects 75% of this site.

SPLIT LAKE WETLAND

Survey no.	N04/024
Survey date	19 January 1996
Grid reference	N04 278 815
Area	12.6 ha
Altitude	20 m asl

Ecological unit

(a) Open water (intermittent)

(b) *Eleocharis sphacelata* reedland on lake bed



Split Lake Wetland N04/024

Each grid is 1000m x 1000m
and = 100 ha.

S = shrubland
F = forest
W = wetland
E = estuarine
D = duneland

Landform/geology

Freshwater wetland ponded against Pleistocene parabolic dunefield by Holocene dunes.

Vegetation

(a) A suspended floating bog in a shallow depression amongst undulating grass-covered dunes.

(b) *Eleocharis sphacelata* is dominant, *Baumea articulata* frequent with occasional raupo, harakeke, water fern, kiokio, ring fern, *Juncus* sp., *Carex* sp., swamp millet and small sedges. It is grazed to the margins.

Fauna

Birds: Australasian bittern (Category O threatened species), past records of black-fronted dotterel. Presence of common waterbirds.

Aquatic fauna: long-finned eel

Significance

Excellent habitat for the threatened Australasian bittern and other marsh species. The suspended nature of this wetland is an unusual feature.

Representative site for *Eleocharis sphacelata* reedland.

The majority of this site (10.8 ha, 85.7%) is protected by Conservation Covenant administered by the Department of Conservation.

MINI & ROUND LAKES

Survey no.	N04/025
Survey date	19 January 1996
Grid reference	N04 283 807, N04 279 807, N04 279 804, N04 293 813
Area	9.9 ha
Altitude	20 m asl

Ecological unit

- (a) Open water
- (b) Raupo reedland on lake bed
- (c) *Eleocharis sphacelata*-raupo reedland on lake bed

Landform/geology

Freshwater wetland ponded against Pleistocene parabolic dunefield by late Holocene dunes.

Vegetation

- (a) The largest lake is half open water.
- (b) The remaining area is raupo dominant with frequent *Eleocharis sphacelata* and occasional *Isolepis prolifer*, willow weed, *Myriophyllum propinquum*, *Eleocharis acuta*, and *Cotula* sp. on the margins.
- (c) The middle site is also half open water, with the other half *Eleocharis sphacelata* dominant and raupo commonly occurring. *Baumea articulata* is also present.

The smallest site is almost all dense raupo, type (b), with just a fraction of open water.

All sites are grazed to the margins.

Fauna

Birds: NZ dabchick (Category C threatened species), Australasian bittern (Category O threatened species), spotless crane and Australasian little grebe (both Regionally significant species), NZ shoveler and yellow-billed spoonbill. Black shag, and pied shag were recorded by the OSNZ in recent surveys.

Aquatic fauna: common bully.

Significance

Habitat for a diversity of bird species including threatened and regionally significant species.

A Conservation Covenant administered by the Department of Conservation protects 8.7 ha (87.8%) of this site.

TURKS LAKE & WETLAND

Survey no.	N04/026
Survey date	17 January 1995
Grid reference	N04 247 998
Area	12.4 ha
Altitude	40 m asl

Ecological unit

- (a) *Eleocharis sphacelata*-*Baumea articulata* reedland on lake bed
- (b) Open water in dune lake
- (c) Raupo reedland on lake bed
- (d) Manuka shrubland on lake margin

Landform/geology

Freshwater wetland on Pleistocene parabolic dunefield, with lake ponded by late Holocene dunes.

Vegetation

- (a) The northern area is almost totally *Eleocharis sphacelata* reed beds with *Baumea articulata* commonly occurring. Raupo, harakeke and ti kouka are occasional.
- (b) There is a small amount of open water, the level of which is fluctuating.
- (c) The southern area is a raupo swamp with frequently occurring ti kouka.
- (d) Manuka occurs around the margins and in arms penetrating the wetlands. Pines and *Eucalyptus* sp. are planted to the margins.

Significant flora

Cyclosorus interruptus (Declining) (P. Anderson pers. comm.).

Fauna

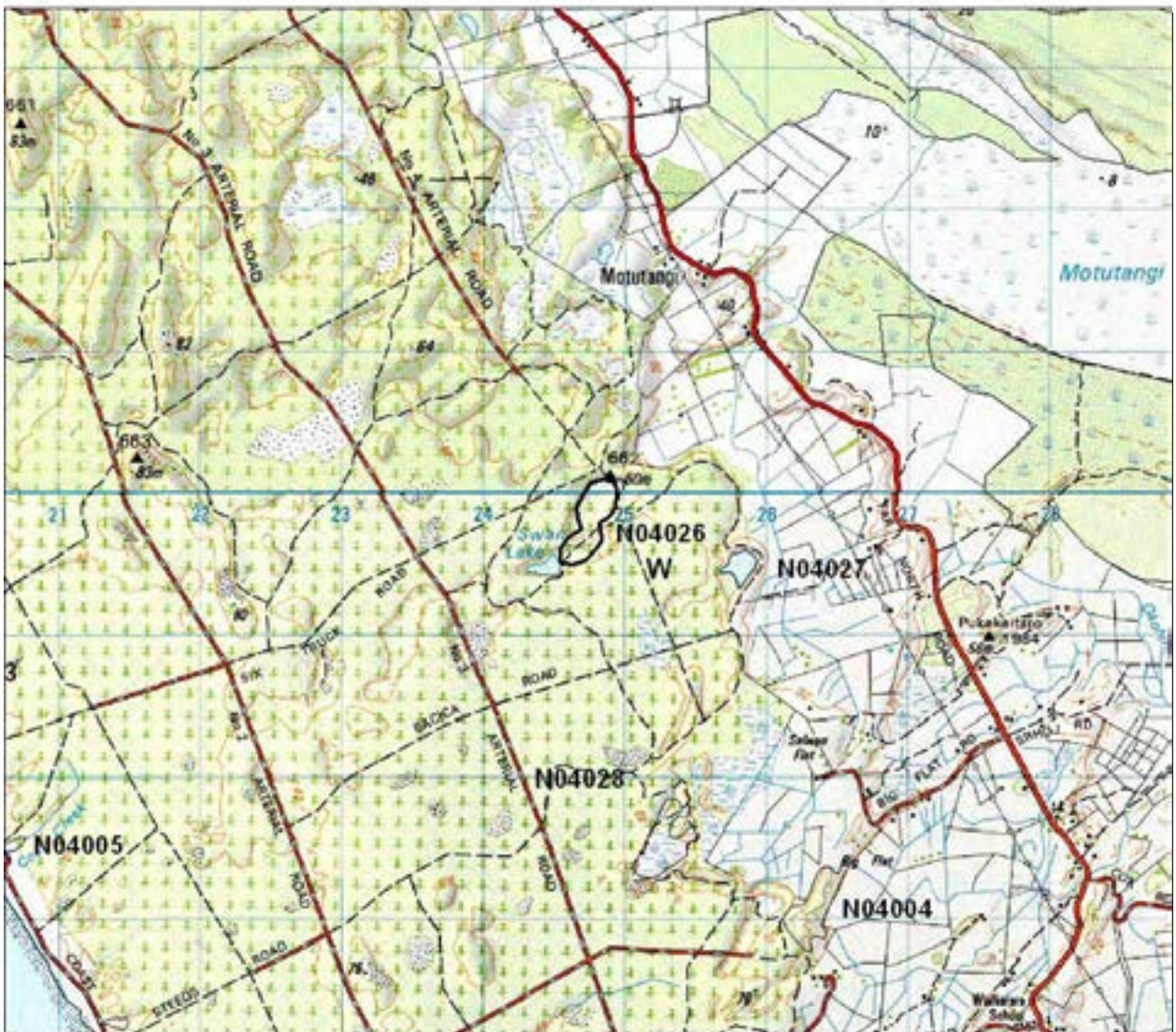
Birds: NI fernbird and Australasian little grebe. (both Regionally significant species).

Significance

Good quality and sized habitat for regionally significant species and provides potential habitat for spotless crane (Regionally significant species) and Australasian bittern (Category O threatened species). Habitat for the threatened fern *Cyclosorus interruptus*.

Representative site for *Eleocharis sphacelata*-*Baumea articulata* reedland and raupo reedland.

A Conservation Covenant administered by the Department of Conservation protects 8.1 ha of this site.



Turks Lake & Wetland N04/026

Each grid is 1000m x 1000m
and = 100 ha.

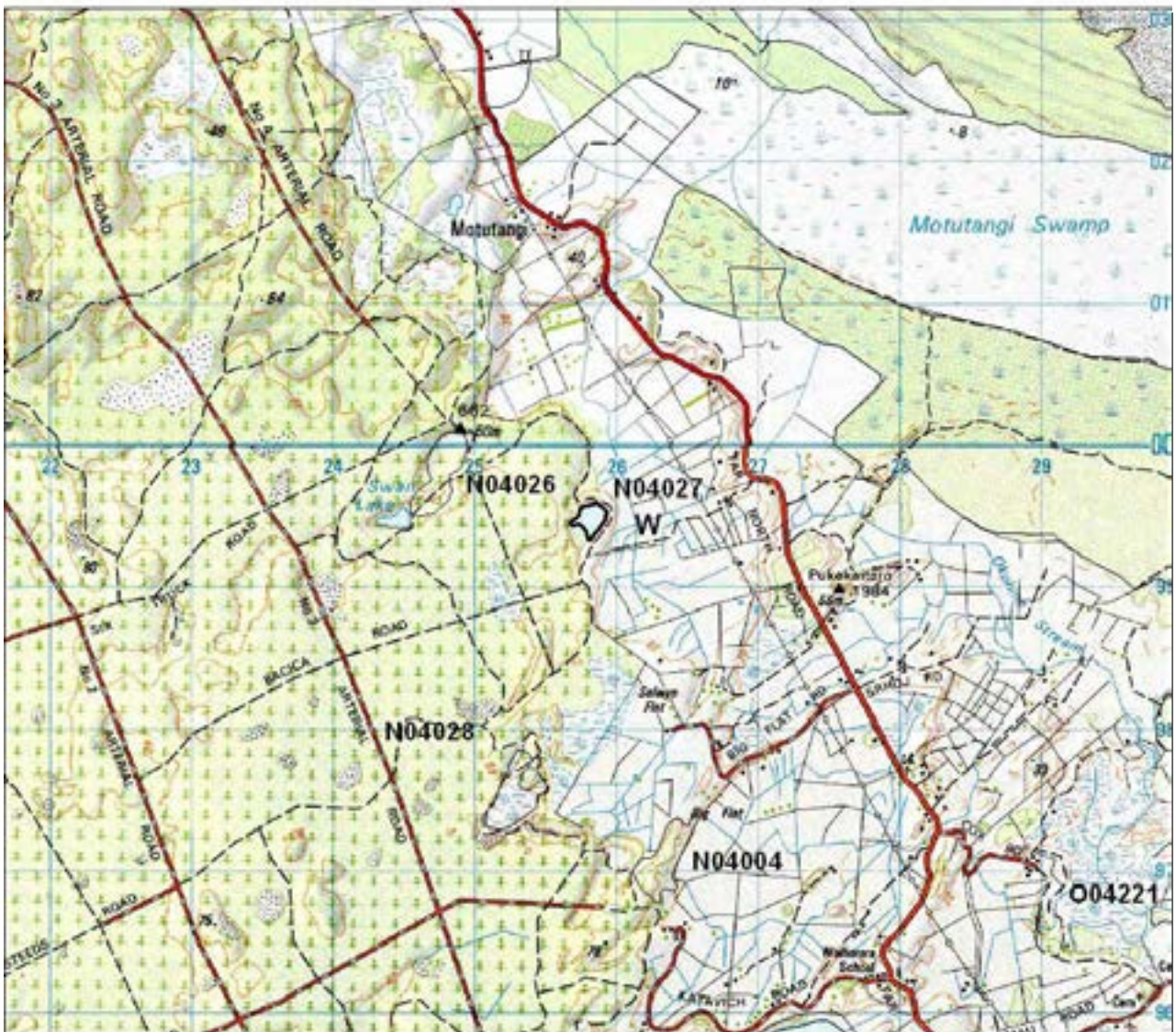
S = shrubland
F = forest
W = wetland
E = estuarine
D = duneland

BACICA RD LAKE

Survey no. N04/027
Survey date 16 January 1996
Grid reference N04 258 995
Area 3.5 ha
Altitude < 20 m asl

Ecological unit

(a) Open water in dune lake



Bacica Rd Lake N04/027

Each grid is 1000m x 1000m
and = 100 ha.

S = shrubland
F = forest
W = wetland
E = estuarine
D = duneland

(b) *Eleocharis sphacelata* reedland on lake bed

(c) Raupo reedland on lake bed

Landform/geology

Freshwater wetland in interdune hollow on Pleistocene parabolic dunefield.

Vegetation

(a) Approximately 50% of the habitat is open water.

(b) *Eleocharis sphacelata* is dominant with *Eleocharis acuta*, *Carex secta*, *Isolepis prolifer*, *Baumea articulata* and willow weed also present.

(c) Manuka is emergent over raupo, with *Baumea articulata*, harakeke and ti kouka also present. A few maire tawake trees occur in the raupo swamp. The area is fenced. Pines are planted to the margin on the western side.

Fauna

Birds: NZ scaup (Regionally significant species) and common waterbirds.

Aquatic birds: Banded kokopu (Category C threatened species), and eels.

Significance

Ideal habitat for waterbirds and the unusual occurrence in this Ecological Region of maire tawake. Presence of threatened and regionally significant species.

Representative site for *Eleocharis sphacelata* reedland.

The lake is protected Conservation Covenant administered by the Department of Conservation.

SELWYN FLAT WETLAND

Survey no.	N04/028
Survey date	16 January 1996
Grid reference	N04 253 975
Area	11.7 ha
Altitude	40 m asl

Ecological unit

Baumea articulata-raupo reedland in dune hollow

Landform/geology

Freshwater wetland in hollow between Pleistocene parabolic dunes and late Holocene dunes.

Vegetation

A fertile swamp dominated by *Baumea articulata* with raupo commonly occurring. Harakeke is locally dense. Other species present are *Coprosma tenuicaulis*, *C. robusta*, *Baumea rubiginosa*, giant umbrella sedge, shaking brake, ti kouka, thistle and Mexican devilweed. The threatened *Thelypteris confluens* is present as are two maire tawake.

There is a narrow buffer of kanuka in places. Pines and *Eucalyptus* sp. are planted to the margins and willow, tobacco weed and black wattle occur occasionally.

Significant flora

Thelypteris confluens (Vulnerable).

Fauna

Birds: NI fernbird (Regionally significant species).

Significance

A fertile wetland which is habitat for threatened and regionally significant species and potential habitat for spotless crane (Regionally significant species) and Australasian bittern (Category O threatened species).



Selwyn Flat Wetland N04/028

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland

Unusual occurrence of maire tawake in the Ecological Region.

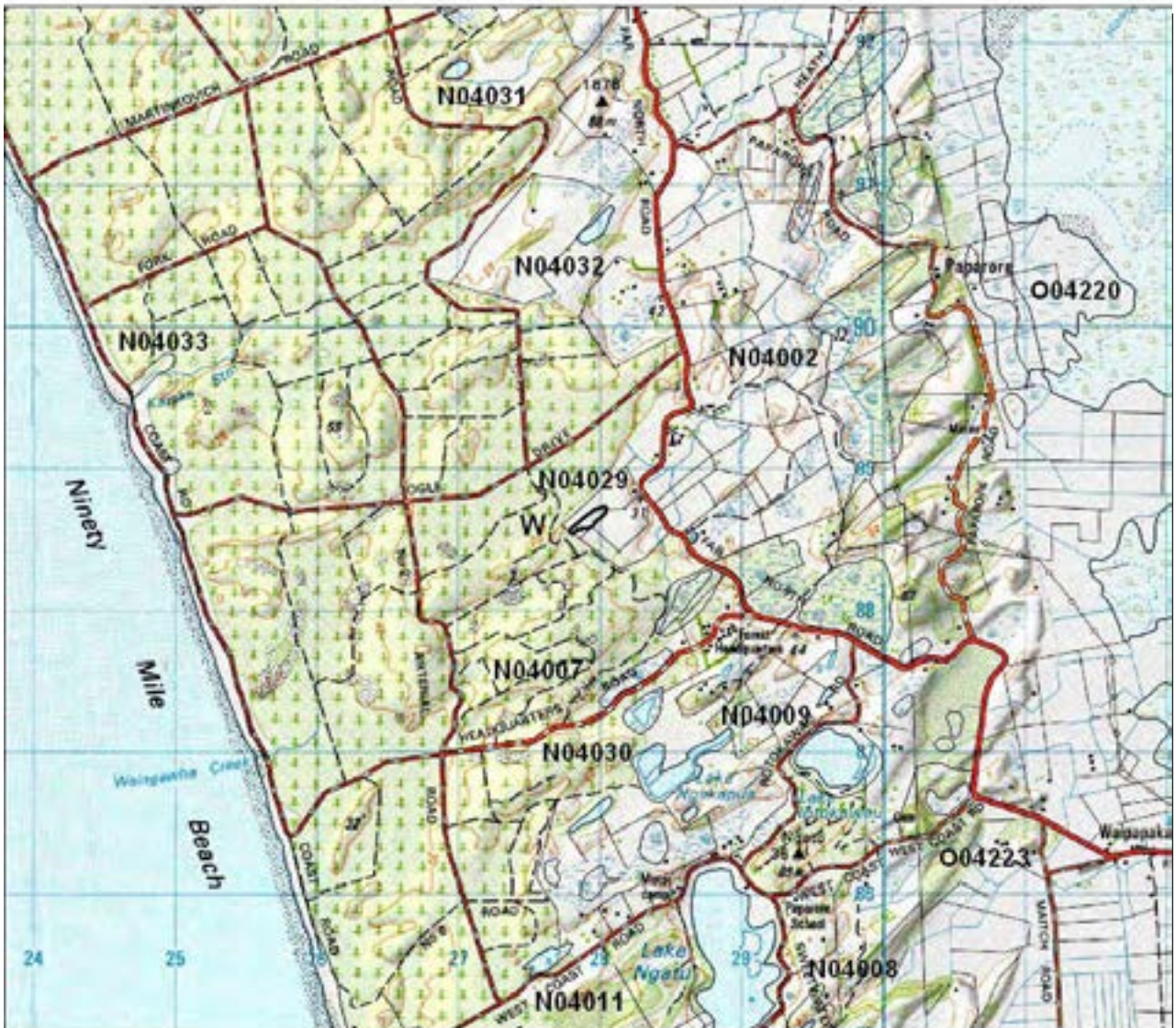
Representative site for *Baumea articulata*-raupo reedland. A Conservation Covenant, 8.9 ha, administered by the Department of Conservation protects 76% of this site.

HERBERTS SWAMP

Survey no. N04/029
Survey date 16 January 1996
Grid reference N04 279 886
Area 1.7 ha
Altitude 30 m asl

Ecological unit

(a) *Baumea articulata*-*Eleocharis sphacelata* reedland in dune hollow



Herberts Swamp N04/029

Each grid is 1000m x 1000m
and = 100 ha.
S = shrubland
F = forest
W = wetland
E = estuarine
D = duneland

(b) Open water

Landform/geology

Freshwater wetland in interdune hollow on Pleistocene dunefield ponded by Holocene dunes.

Vegetation

(a) *Baumea articulata* is abundant and *Eleocharis sphacelata* common. Raupo is also present.

(b) There is a small amount of open water which varies seasonally.

Pines occur at the south east end and ungrazed pasture with scattered weeds occur on the other margins.

Fauna

Birds: Australasian bittern (Category O threatened species), and common waterbirds were recorded by the OSNZ in early 2000. NZ dabchick (Category C threatened species), spotless crane (Regionally significant species) and Australasian little grebe (Regionally significant species) reported.

Aquatic fauna: short-finned eel.

Significance

A high-quality, relatively unmodified habitat used by a diversity of birds including threatened and regionally significant species.

LAKE NGAKAPUA COMPLEX

Survey no.	N04/030
Survey date	16 January 1996
Grid reference	N04 283 873, N04 285 868, N04 280 866, N04 284 863, N04 280 862, N04 276 862, N04 286 865
Area	30.6 ha
Altitude	50 m asl

Ecological unit

- (a) Open water in dune lake
- (b) *Baumea articulata*-*Eleocharis sphacelata* reedland on lake bed
- (c) Manuka shrubland on lake margin
- (d) *Eleocharis sphacelata* reedland on lake bed
- (e) Harakeke-manuka association on lake bed
- (f) Raupo reedland on lake bed
- (g) Manuka swamp shrubland in dune hollow
- (h) *Eleocharis sphacelata*-*Baumea articulata* reedland on lake bed

Landform/geology

Freshwater wetlands in interdune hollows on Pleistocene parabolic dunefield ponded by Holocene dunes.

Vegetation

- (1) (a) The northernmost site is Pumphouse Pond (N04 283 873), a dune lake (40%).



Lake Ngakapua Complex N04/030

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



(b) There is an adjoining wetland (60%) of abundant *Baumea articulata*, in which *Eleocharis sphacelata* occurs commonly. Raupo, water fern, and brake fern are present.

(c) A narrow fringe of shrubland on the periphery consists of abundant manuka with black wattle and mamaku frequently occurring. Also present are a number of other exotic species and totara.

Eucalyptus sp. and pines join two thirds of the habitat.

(2) Lake Ngakapua (N04 285 868) is three quarters open water type (a) with the remaining area type (d) *Eleocharis sphacelata*-dominant reedbeds with raupo, rushes and sedges.

(e) A small island of harakeke and manuka occurs, and there is scattered gorse, tobacco weed and kanuka on the periphery. Grazed pasture forms three-quarters of the surrounding land, forestry plantations on the remainder.

(3) Lake Ngakapua West (N04 280 866) is a dune lake which is 80% open water type (a) and type (f) 20% raupo with frequent *Eleocharis sphacelata*. Other species occurring are water fern, mamaku, *Myriophyllum* sp., willow weed and gorse.

The margins are a mix of *Eucalyptus* sp. and pasture, and 75% is fenced.

(4) Dunns Swamps

South of Lake Ngakapua West are three small wetland remnants:

(g) A - The easternmost (N04 284 863) contains sedges and wetland plants such as *Eleocharis sphacelata*, *Baumea teretifolia*, *Isolepis* spp. under a manuka canopy.

(h) B - The centre site (N04 280 862) is dominated by *Eleocharis sphacelata*. *Baumea articulata* occurs commonly. *Carex secta* is occasional. Less than 5% is open water.

C - The westernmost (N04 276 862) site is mostly *Eleocharis sphacelata*, type (d). A few water lilies are present.

All areas are grazed to the margins.

(5) Deans Swamp (N04 286 865) is directly south of Lake Ngakapua. It is a shallow *Eleocharis sphacelata* swamp, type (d), with a fluctuating area of open water over bare mud. It is grazed to the margin.

Significant flora

Utricularia protrusa (Vulnerable), *Myriophyllum robustum* and *Hydatella inconspicua*, both Declining, are reported.

Fauna

Birds: NZ dabchick (Category C threatened species), Australasian bittern (Category O threatened species), NZ scaup, NI fernbird and spotless crane (all Regionally significant species).

A year 2000 OSNZ survey also recorded pied shag, black shag, little shag, little black shag, Australasian little grebe (Regionally significant species), and common waterbirds.

Aquatic fauna: common bully.

Significance

A complex of lakes and wetlands, the larger being good examples of dune lakes and are habitat for a diversity of waterbirds including threatened and regionally significant species.

The small wetlands are typical of the Ecological Region and are feeding and breeding sites for waterbirds including threatened and regionally significant species.

The presence of totara on the edge of Pumphouse Pond is of botanical interest. Representative site for type (a) open water, type (b) *Baumea articulata-Eleocharis sphacelata* reedland, type (d) *Eleocharis sphacelata* reedland, type (e) harakeke-manuka association, and type (g) manuka swamp shrubland.

JONES LAKE

Survey no.	N04/031
Survey date	18 January 1996
Grid reference	N04 270 918
Area	1.7 ha
Altitude	40 m asl

Ecological unit

- (a) Open water in dune lake
- (b) *Eleocharis sphacelata* reedland in lake bed

Landform/geology

Freshwater wetland in hollow between Pleistocene parabolic dune ridges, ponded by Holocene dunes.

Vegetation

- (a) The water level varies in this small lake.
- (b) *Eleocharis sphacelata* is dominant with *Baumea* sp., *Juncus* spp. and raupo. *Isolepis prolifer* is frequent and kuta is occasional.

Pines are planted almost to the margins along one third of the lake which is fenced from stock. Some exotic species occur on the margins.

Fauna

Birds: NZ dabchick (Category C threatened species) has been recorded from this site. Australasian little grebe and grey teal (both Regionally significant species), little shag and black shag and common waterbirds were recorded by the OSNZ in early 2000.

Significance

Uncommon habitat type and good feeding areas for waterbirds including threatened and regionally significant species.

Over half of this site (0.98 ha, 56.6%) is protected Conservation Covenant administered by the Department of Conservation.



Jones Lake N04/031

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland

GLEESON'S LAKE

Survey no. N04/032
 Survey date 18 January 1996
 Grid reference N04 280 907
 Area 2.6 ha
 Altitude 30 m asl

Ecological unit

- (a) Open water in dune lake
- (b) Raupo reedland in dune hollow



Gleeson's Lake N04/032

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



Landform/geology

Freshwater wetland on Pleistocene parabolic dunefield.

Vegetation

A raupo fringed lake. *Eleocharis sphacelata* and kuta are present.

The area is grazed to the margin.

Fauna

Common waterbirds.

Significance

Dune lakes are a nationally uncommon habitat type. Habitat for common waterbirds. Potential habitat for threatened and regionally significant species such as NZ dabchick and spotless crane. Further survey recommended.

NINETY MILE SWAMP

Survey no. N04/033
Survey date 9 August 1995
Grid reference N04 248 897, N04 250 890
Area 5.1 ha
Altitude 0-15 m asl

Ecological unit

- (a) Raupo-harakeke reedland on dunes
- (b) Raupo-sedge association on dunes
- (c) Pohutukawa-toetoe coastal forest on dunes

Landform/geology

Freshwater wetlands in Holocene foredune belt.

Vegetation

(a) Along the Karaka Stream harakeke occurs commonly within a raupo swamp. Oioi and sedges are frequent. Also present are knobby clubrush, giant umbrella sedge, toetoe, willow weed and the threatened *Cyclosorus interruptus*.

(b) South of the stream mouth is another raupo wetland where sedges are common. Harakeke and kikuyu occur frequently. Other species occurring are pampas, water fern, kiokio and *Eleocharis acuta*. Harakeke, houpara and toetoe occur on the margins. Pines are present to the margins of both these areas.

(c) The coastal forest is dominated by abundant pohutukawa about 3m, with toetoe commonly occurring. Houpara, harakeke and kanuka are also present.

Significant flora

Cyclosorus interruptus (Declining).

Fauna

Birds: Not surveyed.

Aquatic fauna: Banded kokopu (Category C threatened species), giant bully (Regionally significant species) and inanga recorded from Karaka Stream.

Significance

The wetlands are good examples of their type and provide habitat for threatened species.

Representative site for raupo-harakeke reedland, and pohutukawa-toetoe coastal forest which is the only record of this type in the Ecological District.

The coastal forest is also a good, if small, example of a nationally uncommon habitat type.



Ninety Mile Swamp N04/033

Each grid is 1000m x 1000m
and = 100 ha.

- S = shrubland
- F = forest
- W = wetland
- E = estuarine
- D = duneland



WAIMIMIHA LAKES

Survey no. N04/034
 Survey date 26 February 1996
 Grid reference N04 264 730, N04 263 735
 Area 16.4 ha
 Altitude < 20 m asl

Ecological unit

- (a) Open water in dune lake
- (b) Raupo reedland on dunes