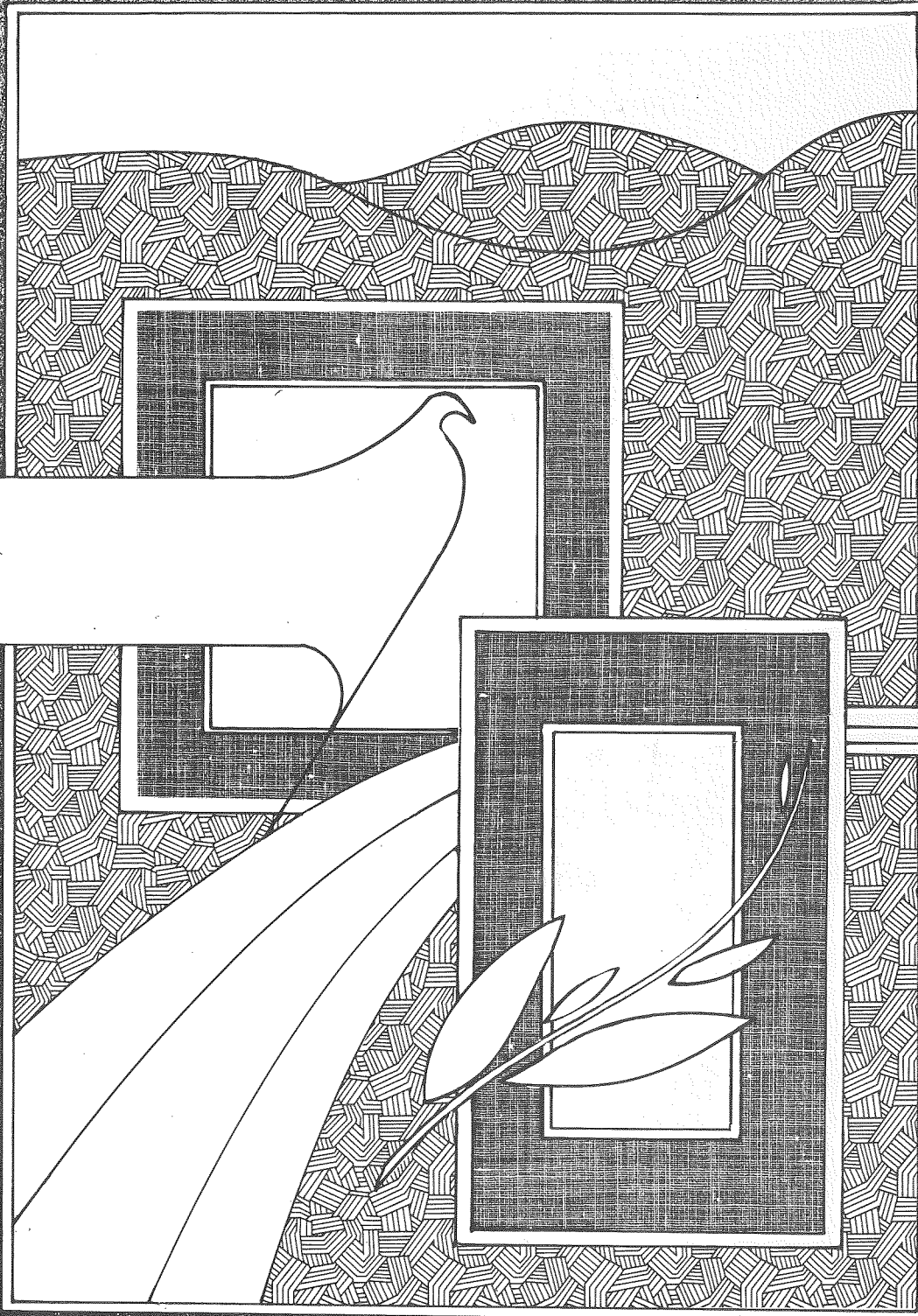


Auckland Conservancy

DEDICATED AREAS REPORT Number 19



Waitangi Wetlands Area

WAITANGI WETLANDS AREA



NZ FOREST SERVICE  
AUCKLAND CONSERVANCY  
CPO Box 39  
AUCKLAND

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September, 1985

WAITANGI WETLANDS AREACONTENTSPAGE NO

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WAITANGI WETLANDS AREALocation

Waitangi Wetlands occupies 159 ha of shallow lakes and swampland in Waitangi State Forest, 6 km east of Kerikeri (midpoint at map reference NZMS 1 N11 521575).

The area is bounded by privately owned farmland, scrub and swamp on all sides, except for the south-western corner which abuts pine plantations in the State Forest. The most recent aerial photographs were flown on 11 January 1979 (NZMS Survey No. 5337, run A, photograph 8).

Access

Access to the area is gained from Kerikeri via Kerikeri Inlet Road. At 3.1 and 3.4 km from Okura River, two forestry logging tracks give access into the area. These two tracks, leading through the radiata pine plantation, are the only tracks into the area. During the summer months when the lakes dry out, access can be gained over the winter lake beds. During the winter months when the area is flooded, it can be negotiated with a small boat. Boats can be easily lowered into the water under the Kerikeri Inlet Road Bridge.

History of Gazettal

Triggered by the drainage of the "Big Swamp" (compartment 19, Waitangi State Forest), the Wildlife Service suggested in November 1972 to reserve the wetland for its birdlife (M.E. Crombie, NZFS file no. 6/193/21/2).

Forest Service lodged plans for dedicating the area on 30th April 1976. The proposal was approved by the Minister of Forests and gazettal occurred on 3rd February 1977 (New Zealand Gazette No. 11 p. 183).

Rationale and Objectives of Designation

The original rationale for reserving the wetland stems from its value for gamebirds (M.E. Crombie, NZFS file 6/193/21/2):

"In addition to being a valuable wildlife habitat, this wetland is a local public attraction and a place of natural interest and appreciation. It is also regularly hunted each game season by a number of sportsmen. It is proposed to develop the area for game bird hunting and other forms of recreation and as a public amenity."

Waitangi Wetlands Area conforms to many of the national criteria for wetlands of local importance (National Wetlands Inventory,

Fig. 1: Location Map of Waitangi State Forest showing Boundaries of Ecological Regions and Districts.

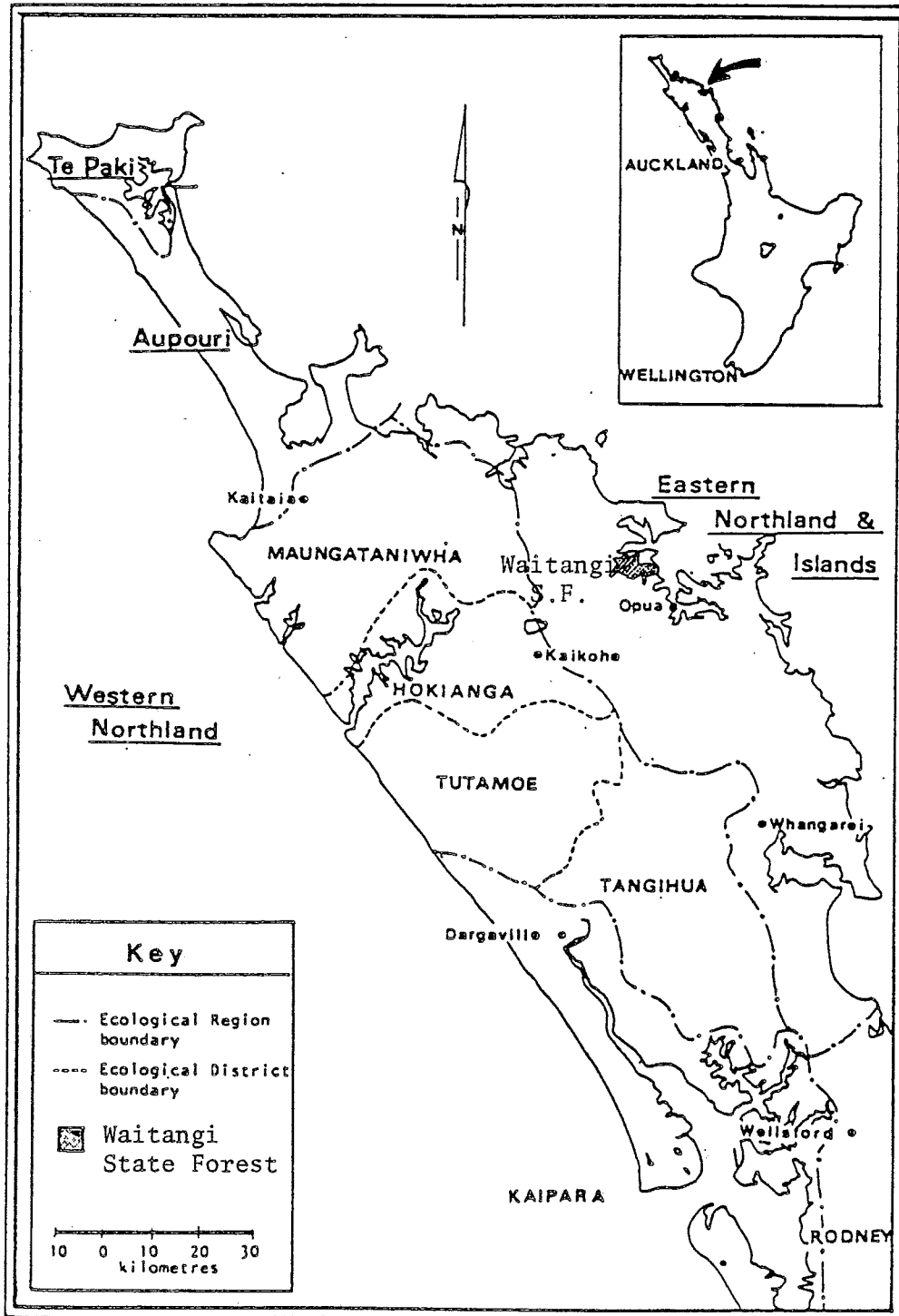
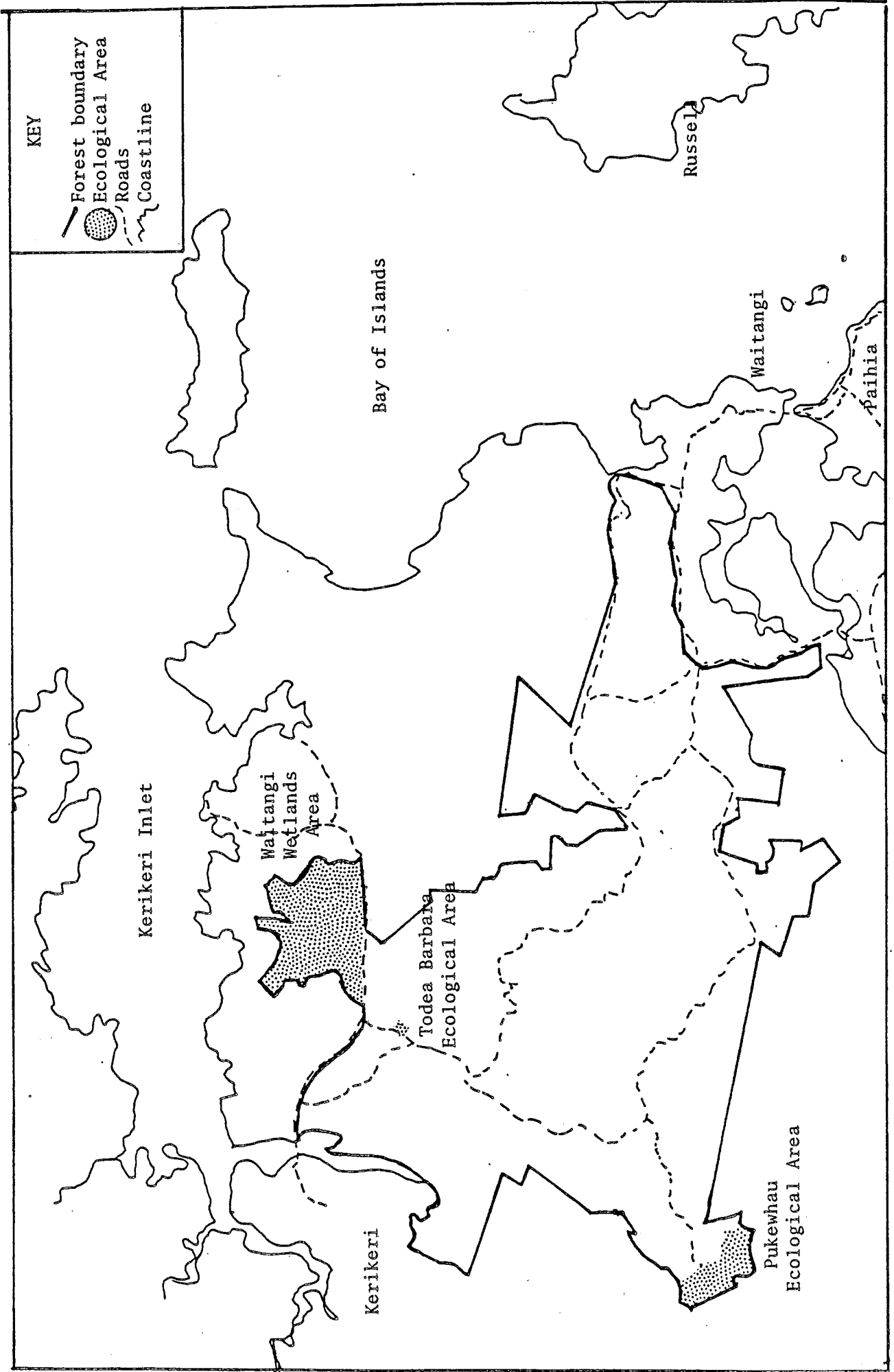


Fig 2 : Location map of Ecological Areas within Waitangi State Forest



NZFS file 6/0/19). It is representative of wetlands found in the district. Within the area are several rare species. It is the third largest suitable freshwater habitat in the Bay of Islands region. It is an important recreational site.

The Ecological Area has an IUCN\* classification of IV (Nature Conservation Reserve). The IUCN management objectives for this type of reserve allow manipulative management techniques to assure the survival of certain species of plants and animals. Scientific research, environmental monitoring and educational use are the primary uses associated with this category (IUCN 1978).

### Topography

Waitangi Wetlands Area has a gently sloping to flat topography. In winter large lakes and swamps are formed bisected by islands of pine, wattle or manuka. The altitudinal range is 5 m to 10 m a.s.l. and the slope is mostly less than 12°. The land rises to the north and west resulting in poor drainage into the Kerikeri Inlet.

Flooding occurs in the winter, forming large shallow lakes and islands. During the summer the lakes reduce to a single stream flowing on a sinuous course over the lake bed and into distinct swallow holes in the lake floor.

Waitangi Wetlands Area collects water from a large part of Waitangi State Forest according to Dymond (NZFS file no. 6/193/21/2) its catchment measures approximately 700 ha. The bulk of this water enters under the Kerikeri Inlet Road bridge.

### Climate

The climate of Northland is subtropical with an airflow which is predominately from the south-west. Tropical cyclonic storms occasionally affect Northland (Town and Country Planning Branch, M.O.W., 1964). The nearest meteorological stations to Waitangi Wetlands are at Waitangi State Forest Headquarters, 6.6 km to the south-east and in Kerikeri, 6.1 km to the west. Waitangi Forest Headquarters received a yearly average of 1421 mm of rain during 1962-1980 and Kerikeri received a yearly average of 1682 mm during 1935-1973. Over the period 1962-1980 the average daily maximum temperature at Waitangi Forest Headquarters was 20.1°C, the average daily minimum 11.1°C, and the yearly average 15.6°C. In Kerikeri over the period 1945-1973 the average daily maximum temperature was 20.1°C, and the average daily temperature was 10.0°C, with a yearly average of 15.1°C.

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\* IUCN = International Union for the Conservation of Nature and Natural Resources.

## Geology

Information on the geology of the Waitangi Wetlands Area was derived from Geological Maps compiled for the Department of Lands and Survey by the Geological Survey Unit (1982).

The western boundary of Waitangi Wetlands Area is formed on sedimentary rocks of interbedded greywacke sandstone and argillite mudstone. Most of the area lies on igneous extrusive rock-basalt with scoria. The surface is very rocky and weathers to a rubbly clay. Throughout the igneous rock, particularly in the swampy areas, is sedimentary alluvium, mud, sand and gravel with minor peat.

M. Dymond, M.O.W.D. Engineer reported on the geology of the winter lake area (unpublished internal report, NZFS file 6/193/21/2):

"The lakes are situated between hills formed of greywackes and argillites from the Waipapa group of sediments (Maitai to Kawhia Series, probably at the beginning of the Mesozoic era) and a basaltic volcanic flow emanating from Te Puke (452 feet) ... the flow has the appearance now of a tumbled mass of rocks with craters dotted throughout. The craters were probably formed by gaseous explosions, are up to 20 feet deep and vary from 10 yards to 75 yards across. The flow has a very porous appearance, the edges of flow and craters being jumbled rocks with only isolated areas of rock which have cooled without disturbance, showing the hexagonal block formation typical of basalt."

## Pedology and Erosion

Information on the pedology of this region was obtained from Pedological Maps compiled for the Department of Lands and Survey by the Soil Bureau (1980).

Waitangi Wetlands Ecological Area contains soils of the rolling land. To the west the soils are moderately podzolised yellow brown earths of the Hukerenui Series. To the east the soils are brown loams, weakly to moderately leached Ohaeawai shallow bouldery silt loam. Between these areas are swamps, whose soil types have not been investigated.

The Land Resource Inventory Worksheet classifies the region as class VI land (Water and Soil Division, M.O.W.D. 1975). This class has severe limitations for productive use.

The Land Resource Inventory Worksheet records nil to moderate (0-20% area affected) sheet, gully, earthslip and soil slip erosion for the area. Only few minor slips were observed along the edges of the cut tracks in the pine plantation.



## Vegetation

A list of plant species recorded, using both common and scientific names, is provided in Appendix 1. The method used to describe the vegetation is a modified recce-type description of the vegetation is in the following five tiers:

Emergents	-	5 m above mean copy height
Canopy	-	variable height
Subcanopy	-	below canopy to 2 m
Shrub	-	0.5 to 2 m
Groundcover	-	below 0.5m

Information was gained from 2 days field work (23rd and 26th July 1985) and reports in New Zealand Forest Service files (file no. 6/193/21/2).

Vegetation descriptions have been grouped into vegetation types. The following were distinguished:

1. raupo-rush-sedge swamp;
2. kanuka-manuka scrub;
3. wattle and grasses;
4. pine plantation.

Tables 1 a-d. give a detailed generalised stand structure and composition for each type. Overlay 2 of figure 3 shows their distribution within Waitangi Wetlands Ecological Area.

### 1. Raupo-rush-sedge swamp

This type occurs in the wetter parts of the Ecological Area between the tongues of pine plantation where the land was considered too wet for planting. Raupo and *Juncus* species form a dense groundcover, in places up to 2 m tall. Associated rushes and sedges are species of *Scirpus*, *Baumea* and *Eleocharis*.

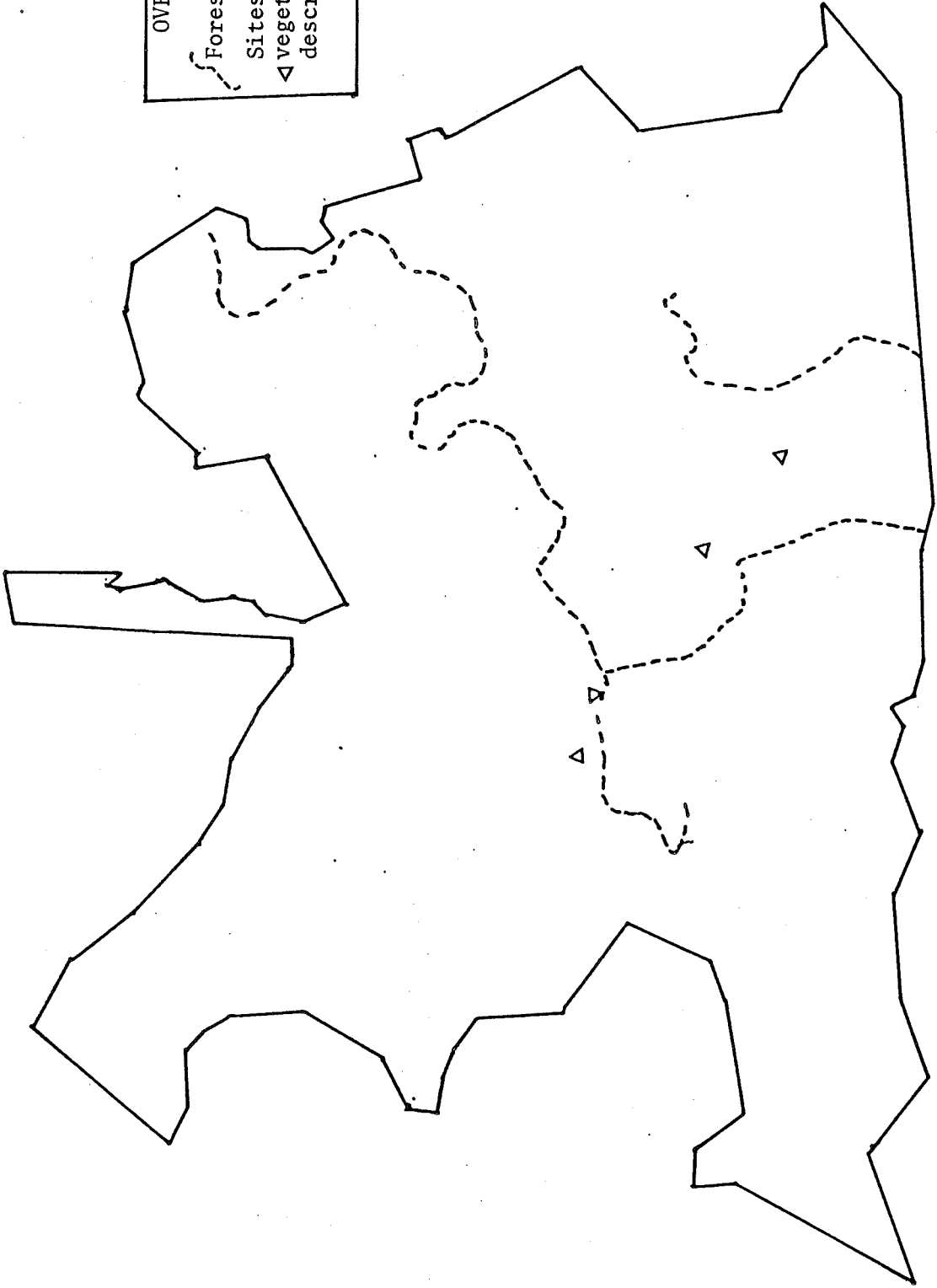
In the eastern half of the wetlands it is possible to walk through these areas when flooded. In the western parts the swamp cannot be negotiated by foot except when the area dries over the summer.

### 2. kanuka-manuka scrub

Small islands within the winter lake area and on the edges of the dry areas are dominated by kanuka and manuka. Kanuka is associated with the occasional manuka, in the canopy with *Coprosma spathulata* and tobacco weed in the subcanopy. The shrub layer consists mainly of blackberry, gorse and tobacco weed.

OVERLAY 1

Forestry tracks  
Sites of  
vegetation  
descriptions.



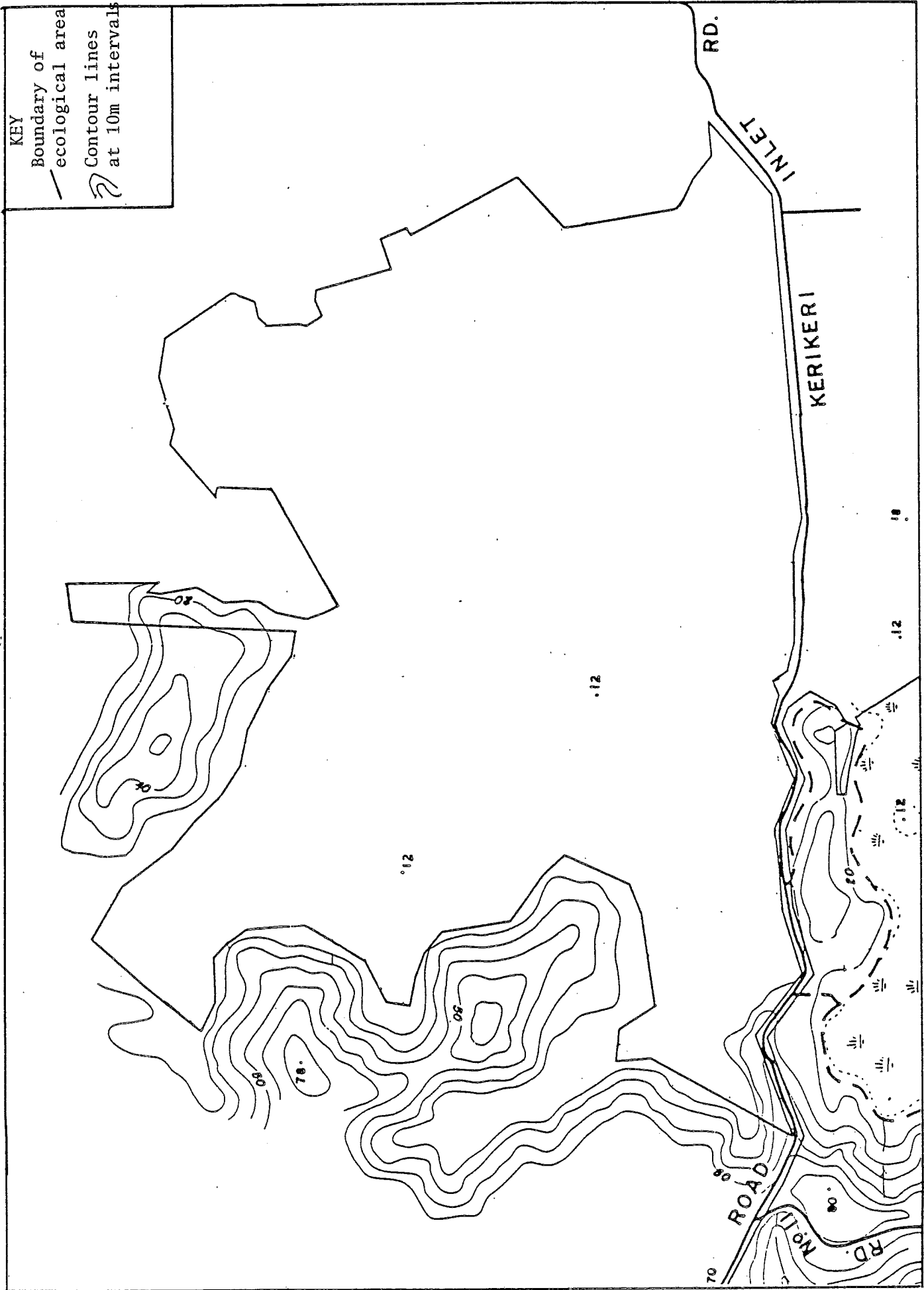
OVERLAY 2

Vegetation types

- raupo-rush-sedge swamp
- kanuka-manuka
- scrub and wattle
- pine plantation



Fig 3 : Waitangi Wetlands Area



### 3. Wattle and grasses

Some dry areas bordering the pine plantation are composed almost entirely of black wattle and grasses. These areas are grazed by domestic horses, resulting in a very open understory and little ground cover, except for grasses and wattle seedlings.

### 4. Pine plantation

Exotic forest covers 47.0 ha of the eastern half of the wetlands. Radiata pine forms the canopy with tobacco weed and the occasional manuka forming a subcanopy. Blackberry vines, gorse and bracken fill much of the understorey. In some areas these species are so dense that walking through without the use of slashers is impossible.

A fern recorded in the area by Rawlings (1971), *Thelypteris palustris* var. *squarimigera*, has been included in the listing of rare and endangered native plants (Given, 1976). Further investigation by Forest Service personnel has shown this fern to be present among areas of rushes and reeds between the two forestry tracks (NZFS file no. 6/193/19).

### Native Fauna

A list of native fauna recorded in the Ecological Area, using both scientific and common names is provided in Appendix 2.

Waitangi Wetlands is notable for its abundant birdlife, both native and introduced. Fully protected uncommon species present are brown bittern, banded rail and little black shag. Of special interest is the presence of North Island fernbird. Ogle (1982) lists this species as "nationally threatened or of restricted breeding ... (and) should be protected in the region."

### Introduced Animals

Appendix 2 gives a list of the introduced animals in Waitangi Wetlands.

Several of these are wildfowl which are hunted during the season (May-June). Black swans use the wetlands as a breeding area; five nests with birds were seen. Black swans do not normally breed in Northland; a few breed along the shores of freshwater lakes, but most migrate from breeding grounds around the Waikato lakes (Ogle, 1982).

Twelve circular 4 m<sup>2</sup> plots were examined in the Ecological Area. Intact possum pellets were found in 2 (17%) and horse droppings in 1 (8%). Browse was observed on juvenile wattle, and in areas grazed by horses the undergrowth was scarce.

TABLE 1a : GENERALISED STAND STRUCTURE FOR  
RAUPO -RUSH-SEDGE SWAMP

	← INCREASING DOMINANCE →			
	ABUNDANT	FREQUENT	OCCASIONAL	RARE
EMERGENT				
CANOPY				
SUBCANOPY				
SHRUB 2m - 0.5m	raupo	<i>Juncus</i> spp. <i>Scirpus</i> <i>chlorostachyus</i>  <i>Baumea</i> <i>articulata</i>		
GROUNDCOVER			<i>Oplismenus</i> <i>imbecilus</i> mercer grass <i>Epilobium pallidiflorum</i> <i>Polygonum decipiens</i> plantain	
EPIPHYTES AND CLIMBERS				

DISTRIBUTION: on the boundaries of the water channels and between areas of dry land

TABLE 1b : GENERALISED STAND STRUCTURE FOR  
KANUKA-MANUKA SCRUB

	← INCREASING DOMINANCE →			
	ABUNDANT	FREQUENT	OCCASIONAL	RARE
EMERGENT				
CANOPY 6m		kanuka		
SUBCANOPY 4m	manuka		<i>Coprosma</i> spp tobacco weed	
SHRUB 2m - 0.5m		gorse bracken tobacco weed	<i>Coprosma robusta</i> black wattle <i>Juncus</i> spp. hangehange	mexican devil
GROUNDCOVER		blackberry	<i>Blechnum</i> <i>filiforme</i> <i>Oplismenus</i> <i>imbecilus</i>	<i>Cordyline</i> <i>pumilio</i> <i>Scirpus</i> <i>chlorostachyus</i>
EPIPHYTES AND CLIMBERS				

DISTRIBUTION: dry areas scattered throughout the wetlands

TABLE 1c : GENERALISED STAND STRUCTURE FOR  
WATTLE AND GRASS AREAS

	← INCREASING DOMINANCE →			
	ABUNDANT	FREQUENT	OCCASIONAL	RARE
EMERGENT				
CANOPY 18m	black wattle			
SUBCANOPY				
SHRUB 1.5 - 0.5m		bracken	<i>Coprosma</i> spp <i>Histiopteris</i> <i>incisa</i> black wattle	
GROUNDCOVER			turutu, inkweed <i>Opismenus</i> <i>imbecillus</i> <i>Blechnum filiforme</i> <i>Paspalum paspaloides</i> <i>Pteris tremula</i> mexican devil blackberry	
EPIPHYTES AND CLIMBERS				

DISTRIBUTION: edges of pine plantations and western side of the dry ground.



TABLE 1d : GENERALISED STAND STRUCTURE FOR  
PINE PLANTATION

	← INCREASING DOMINANCE →			
	ABUNDANT	FREQUENT	OCCASIONAL	RARE
EMERGENT				
CANOPY 17m	radiata pine			black wattle
SUBCANOPY 2m - 8m			tobacco weed	
SHRUB		blackberry gorse tobacco weed bracken manuka		
GROUNDCOVER		bracken	plantain kiokio <i>Lotus pedunculatus</i> <i>Gleichenia dicarpa</i> broad leaved fleabane inkweed	
EPIPHYTES AND CLIMBERS				

DISTRIBUTION: dry land in eastern half of the area

### Presence of Exotic Plants

Exotic species dominate all the vegetation types, except the raupo-rush-sedge swamp, in the wetlands.

Oak and other amenity species have been planted in the mid-late 1970's along the northern edge. Both survival rate and growth rate are very poor.

Exotic species that are of concern are the blackberry and gorse on the islands. Concern has also been expressed about the accelerated growth of undesirable rushes and aquatic weeds, if the water level is maintained at a high level by the proposed damming.

### Human History and Influence

Much of the land within a few miles of the Kerikeri river estuary was extensively cultivated by the Maoris (Shawcross, 1966). Most of the Waitangi lands were sold by them to Pakeha settlers, in the late 1830's (Turton, 1882).

Archaeological sites of Maori origin recorded by the Auckland Conservancy Archaeologists include a midden on the western side of the pine plantations and a hinaki (eel trap) in the stream between the "big swamp" (compartment 19) and Waitangi Wetland Area (compartment 20).

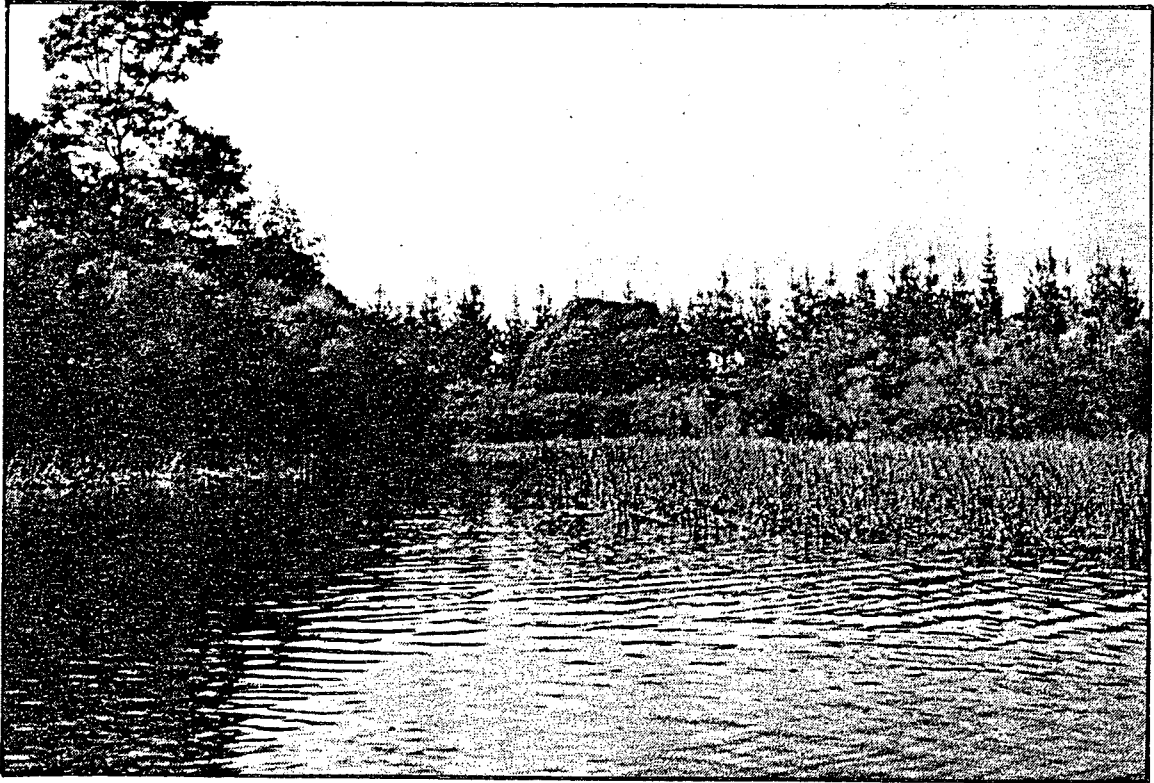
Other archaeological records of Maori origin, just outside the area, include pits, a fish trap, another midden and a burial ground. The burial ground is reserved as a Wahitapu. The Edmonds Ruins, an archaeological site of European origin vested in the Historic Places Trust, is located on the western boundary of the area.

In the late 1840's large tracts of land within the Bay of Islands had been burnt when fires used to clear farmland had swept uncontrolled into the forests (Cameron, 1964). The first record of planting in Waitangi State Forest dates from 1934, when kauri was planted. Pines were not planted in Waitangi Wetlands Area until 1976. Before and since the pines were planted the dry areas have been occasionally grazed by neighbouring farms (N.Z.F.S. files, 6/193, 6/193/21/2). The amenity plantings along the northern edge have been discussed in the section on introduced plants.

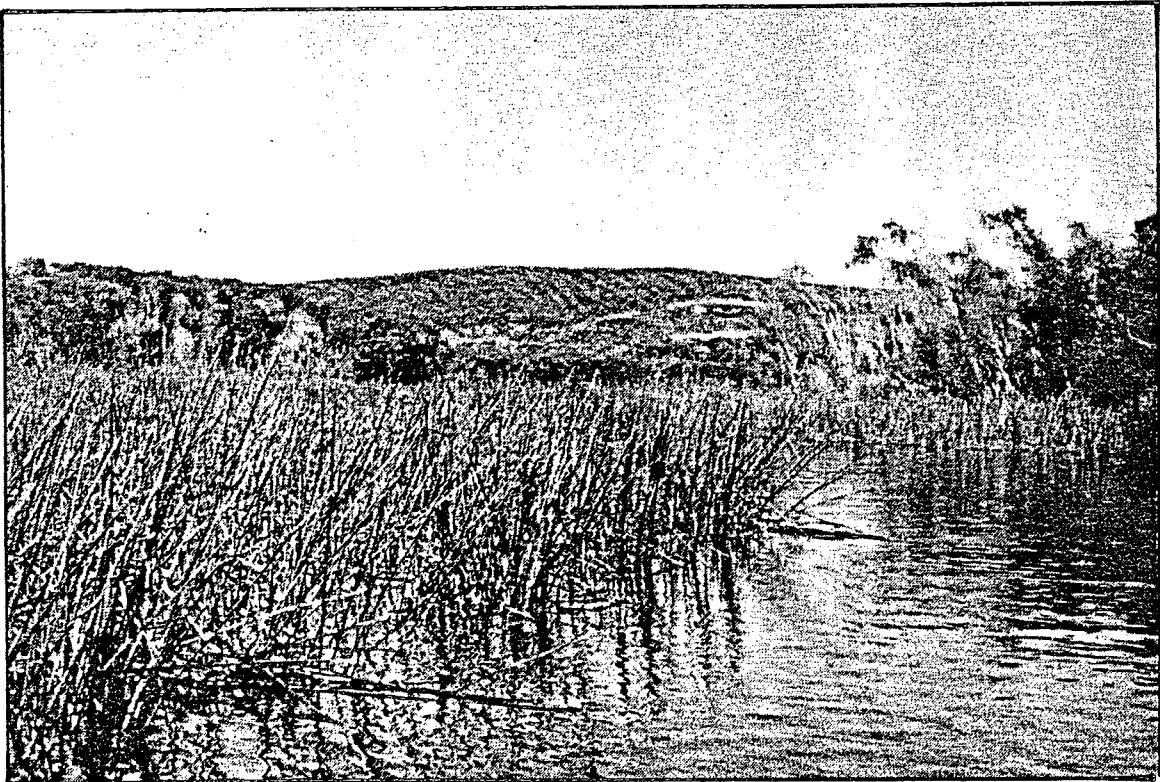
The Bay of Islands Acclimitisation Society has instructed the Ministry of Works and Development to build a dam in the wetlands. C. Sutherland, District Ranger of Kaikohe recorded the purpose of damming the wetlands as:

"to ensure water fowls were able to rest in areas and also to ensure flooding of the Inlet Road and uplands was minimised." (NZFS file 6/193/21/2).

Construction is planned for the next dry summer.



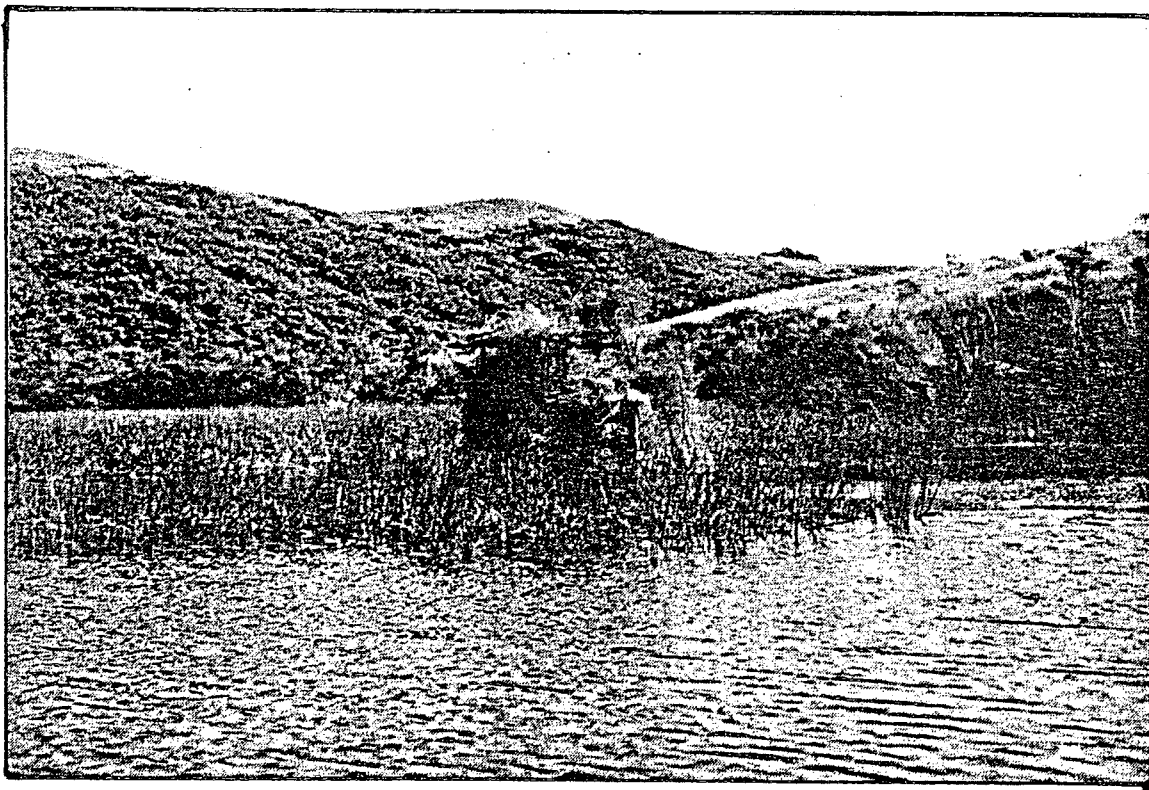
Stands of wattle, manuka scrub and pine within the swamp.



Waitangi Wetlands looking south over the swamp and the winter lake.



The four vegetation types, wattle (top left), pine, manuka scrub and swamp.



Hunters maimai surrounded by rushes and reeds on the western side of the wetlands.



Waitangi Wetlands area looking east  
onto the pine plantation over the  
lake, swamp and manuka scrub.

### Recreational Facilities and Opportunities

Waitangi Wetlands is used generally only during the hunting season for wild fowl shooting. Fifteen permits are issued each year by the Forest Service to the Acclimitisation Society. The Acclimitisation Society then issue the permits to hunters, resulting in about 20 people using the area each season. Reported catches by these hunters include black swan, paradise duck, grey duck and mallard (S. Olsen, pers. comm.).

The only recreational facilities present are maimai's (shooting hides) and remains of old maimai's, scattered throughout the swamp.

### Research Carried Out and Suggested

Pam Chester of the University of Auckland is in the process of completing a Master of Arts thesis reconstructing the vegetation history of the Bay of Islands region, using pollen analysis. She used Waitangi Wetlands Area as one of her sites, sampling organic material from the swamp.

Interest and concern about the area has resulted from problems of flooding and reclamation of adjacent swamps. The Bay of Islands Acclimitisation Society, Wildlife Service, Ministry of Works and Development and NZ Forest Service have been involved in plans to manage the area for wildfowl and recreation. As a result, internal reports have been submitted by Wildlife Service (M.C. Crombie 1972), Forest Service (K.D. Seymour 1973, J. Harris 1976, C. Sutherland 1977, M. Williamson 1979) and by M.N. Dymond (1975) Ministry of Works engineer (NZFS files 6/193/21/2, 6/193/21/5).

Three kiwi vocalisation surveys have been carried out in Waitangi State Forest over the years 1978 (Corbett, Thode and Reid 1979), 1981-82 (Colbourne and Kleinpaste, 1983) and 1985. Stations for listening for kiwis occur on Kerikeri Inlet Road and on the boundary of the Ecological Area.

### Summary, Discussion and Recommendations

Waitangi Wetlands is a 159 ha tract of swamp, lakes and dry ground in Waitangi State Forest, just north of Kerikeri Inlet Road, 6 km east of Kerikeri. The area was gazetted in 1977, primarily for use as a wildfowl hunting area.

A catchment of about 700 ha supplies it with water, which drains into sumpholes in the lake bottom. In winter the swamp is flooded, but in a dry summer only a thin stream remains, meandering over the lake bed, with pools around the sump holes.

Most of the area lies on volcanic rock, basalt with scoria, interbedded with sedimentary alluvium. The soils are a combination of Hukerenui series yellow brown earths and Ohaeawai shallow bouldery silt loam.

The vegetation was grouped into four types: raupo-rush-sedge swamp, kanuka-manuka scrub, wattle and grasses and pine plantation. Exotic plants are common in the area and several, including gorse and blackberry, are of concern.

Four uncommon protected birds were recorded from the area: fernbird, brown bittern, banded rail and little black shag.

The area has a history of Maori occupation and two archaeological sites are recorded from the area.

Fifteen hunting permits are issued for this area each season.

Waitangi Wetlands Area has been relatively well studied. Several reports on the wildlife, topography and geology of this area have been written, also the area has been used in studies of pollen analysis and kiwi vocalisation surveys.

Management of this reserve should be directed toward sustaining and enhancing this valuable wildlife recreational area of the Bay of Islands.

Management recommendations in order of priority are:

1. that a detailed environmental assessment should be carried out as to the consequences of permanently raising the water level, before damming occurs;
2. that the population trends of the wildfowl in the area be monitored;
3. that planting of amenity trees for wildfowl food should be reinvestigated; and
4. that invasion by gorse and blackberry be controlled.

#### Acknowledgements

I would like to thank Lisa Forester and Freek Deuss for their assistance in editing and proofreading, Lisa also for her valuable assistance in the field.

Appendix 1 : Botanical Species List - Waitangi Wetlands Area

A = Adventive species

Ferns

<i>Adiantum hispidulum</i>	rosy maidenhair
<i>Blechnum filiforme</i>	
<i>Blechnum</i> sp. ( <i>B. capense</i> agg.)	kiokio
<i>Doodia media</i> subsp. <i>australis</i>	
<i>Gleichenia dicarpa</i>	swamp umbrella fern
<i>Histiopteris incisa</i>	
<i>Paesia scaberula</i>	hard fern or ring fern
<i>Pteridium esculentum</i>	bracken
<i>Pteris tremula</i>	
<i>Thelypteris confluens</i> (= <i>Thelypteris palustris</i> var. <i>squarraigera</i> )	

Gymnosperms

A <i>Pinus radiata</i>	radiata pine
<i>Podocarpus totara</i>	totara

Dicotyledons

A <i>Acacia mearnsii</i>	black wattle
A <i>Callitriche muelleri</i>	starwort
<i>Centella uniflora</i>	centella
A <i>Cerastium fonatnum</i> subsp. <i>trivale</i>	mouse-ear chickweed
A <i>Cirsium vulgare</i>	scotch thistle
A <i>Conyza floribunda</i>	broad leaves fleaband
<i>Coprosma lucida</i>	karamu
<i>C. propinqua robusta</i>	
<i>C. rhamnoides</i>	
<i>C. robusta</i>	karamu
A <i>Crepis capillaris</i>	hawksbeard
<i>Epilobium pallidiflorum</i>	creeping willow herb
<i>E. rotundifolium</i>	creeping willow herb
A <i>Eupatorium adenophorum</i>	Mexican devil
<i>Geniostoma ligustrifolium</i>	hangehange
A <i>Gnaphalium spicatum</i>	purple cudweed
A <i>Gonocarpus micranthus</i>	
<i>Gratiola sexdentata</i>	
A <i>Hakea sericea</i>	prickly hakea
<i>Hydrocotyle heteromeria</i>	
A <i>Hypochaeris radicata</i>	catsear
A <i>Lamium purpureum</i>	red dead-nettle
<i>Leptospermum ericoides</i>	kanuka
<i>L. scoparium</i>	manuka
<i>Lobelia anceps</i>	
A <i>Lonicera japonica</i>	japanese honeysuckle
A <i>Lotus pedunculatus</i>	lotus major
A <i>Ludwigia palustris</i>	water purslane
<i>Melicytus ramiflorus</i>	mahoe



	<i>Modiola caroliniana</i>	creeping mallow
	<i>Muehlenbeckia complexa</i>	wire vine
	<i>Myriophyllum propinquum</i>	water milfoil
	<i>Nertera setulosa</i>	
A	<i>Phytolacca octandra</i>	inkweed
A	<i>Plantago australis</i>	swamp plantain
A	<i>P. lanceolata</i>	narrow-leaved plantain
A	<i>P. major</i>	broad-leaved plantain
	<i>Polygonum decipiens</i>	swamp willow weed
A	<i>P. persicaria</i>	willow weed
	<i>Pomaderris kumerahou</i>	kumarahou
	<i>Ranunculus hirtus</i>	
A	<i>R. repens</i>	creeping buttercup
	<i>R. rivularis</i>	waoriki
A	<i>R. sardous</i>	hairy buttercup
A	<i>Rubus fruticosus</i>	blackberry
A	<i>Senecio bipinnatisectus</i>	Australian fireweed
A	<i>S. jacobaea</i>	ragwort
A	<i>S. minimus</i>	fireweed
A	<i>Solanum mauritianum</i>	woolly nightshade
A	<i>S. nigrum</i>	black nightshade
A	<i>Sonchus oleraceus</i>	sow thistle
A	<i>Stellaria media</i>	chickweed
A	<i>Taraxacum officinale</i>	dandelion
A	<i>Verbena litoralis</i>	blue vervain
	<i>Veronica arvensis</i>	field speedwell
	<u>Monocotyledons</u>	
	<i>Astelia trinervia</i>	
A	<i>Axonopus affinis</i>	narrow-leaved carpet grass
	<i>Baumea articulata</i>	jointed cladium
	<i>Carex lessoniana</i>	ratahi
	<i>C. virgata</i>	
	<i>Cordyline australis</i>	cabbage tree
A	<i>C. pumilio</i>	
	<i>Dactylis glomerata</i>	cocksfoot
	<i>Dianella nigra</i>	turutu
A	<i>Digitaria sanguinalis</i>	summer grass
	<i>Eleocharis acuta</i>	
A	<i>Holcus lanatus</i>	yorkshire fog
A	<i>Isachne globosa</i>	
	<i>Juncus acuminatus</i>	
	<i>J. articulatus</i>	jointed rush
	<i>J. planifolius</i>	
	<i>J. usitatus</i>	
	<i>Lepidosperma laterale</i>	sword sedge
	<i>Microlaena stipoides</i>	Meadow rice grass
	<i>Oplismenus imbecillus</i>	
A	<i>Paspalum dilatatum</i>	paspalum
	<i>P. paspaloides</i>	mercier grass
A	<i>Pennisetum clandestinum</i>	kikuyu grass
	<i>Phormium cookianum</i>	mountain flax
	<i>Scirpus chlorostachyus</i>	
	<i>Tetraria capillaris</i>	
	<i>Typha orientalis</i>	raupo

Appendix 2 : Faunal Species List - Waitangi Wetlands Area

- x Recorded by Crombie (1972)  
 o Recorded by author and L. Forester during field work 1985  
 \* Reported by Officer in Charge, Waitangi State Forest  
 from hunting permits

Native Birds

- |     |                                     |                            |
|-----|-------------------------------------|----------------------------|
| x   | <i>Anas rhynchotis</i>              | N.Z. shoveler              |
| xo* | <i>A. superciliosa</i>              | grey duck                  |
| xo  | <i>Ardea novaehollandiae</i>        | white faced heron          |
| x   | <i>Botaurus poiciloptilus</i>       | brown bittern              |
| xo  | <i>Bowdleria punctata</i>           | fernbird                   |
| o   | <i>Circus approximans</i>           | harrier                    |
| o   | <i>Gerygone igata</i>               | grey warbler               |
| o   | <i>Halcyon sancta</i>               | kingfisher                 |
| xo  | <i>Hirundo neoxena</i>              | welcome swallow            |
| xo  | <i>Larus dominicanus</i>            | southern black-backed gull |
| x   | <i>L. scopulinus</i>                | red-billed gull            |
| o   | <i>Ninox novaeseelandiae</i>        | morepork                   |
| x   | <i>Phalacrocorax carbo</i>          | black shag                 |
| xo  | <i>P. melanoleucos</i>              | little shag                |
| x   | <i>P. varius</i>                    | piebald shag               |
| x   | <i>P. sulcirostris</i>              | little black shag          |
| xo  | <i>Porphyrio melanotus</i>          | pukeko                     |
| o   | <i>Prothemadera novaeseelandiae</i> | tui                        |
| x   | <i>Rallus philippensis</i>          | banded rail                |
| o   | <i>Rhipidura fuliginosa</i>         | fantail                    |
| *   | <i>Tadorna variegata</i>            | paradise duck              |
| o   | <i>Zosterops lateralis</i>          | silveryeye                 |

Introduced Birds

- |     |                               |                  |
|-----|-------------------------------|------------------|
| o   | <i>Acridotheres tristis</i>   | myna             |
| xo* | <i>Anas platyrhynchos</i>     | mallard          |
| o   | <i>Carduelis carduelis</i>    | goldfinch        |
| xo* | <i>Cygnus atratus</i>         | black swan       |
| o   | <i>Fringilla coelebs</i>      | chaffinch        |
| o   | <i>Lophortyx californicus</i> | California quail |
| o   | <i>Passer domesticus</i>      | house sparrow    |
| o   | <i>Platycercus eximius</i>    | eastern rosella  |
| o   | <i>Prunella modularis</i>     | hedge sparrow    |
| o   | <i>Turdus merula</i>          | blackbird        |

Molluscs

- o *Rhytida greenwoodi*

Amphibians

- o *Litoria aurea* Australian green frog

Fish

- o *Gambusia affinis*

mosquitofish

Introduced mammals

- o *Trichosurus vulpecula*
- o *Equus caballus*

possum

horse

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