
WHANGAREI HARBOUR WILDLIFE SURVEY

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1.0.0 INTRODUCTION

Whangarei Harbour, occupying some 9890 ha, lies to the east of Whangarei City and flows about 24 km to the east coast of Northland at Marsden Point (Fig. 1).

Northland has an abundance of estuaries in comparison to other regions of New Zealand; fifty-eight estuaries were recorded out of 670 "Habitats of Note" by the New Zealand Wildlife Service's Fauna Survey Unit (Ogle 1982), representing 4% of the region's area. Nine of these estuaries were rated as being of "Outstanding" value to wildlife. Whangarei Harbour was one of those rated as outstanding because it supports large numbers of migrant waders (up to 9,000), a wintering population of wrybill, a breeding population of New Zealand dotterel, good numbers of banded rail and many other species of breeding birds. In recognition of these values, much of the harbour is designated a Wildlife Refuge (Fig. 2).

In July 1979 the New Zealand Wildlife Service began an intensive study of the harbour to monitor:

- (i) bird populations on the harbour;
- (ii) their use of the various habitats;
- (iii) the main wader feeding areas;
- (iv) breeding sites of most bird species;
- (v) roosting sites.

Initially the survey was of three areas of saltmarsh, mangroves and mudflats near Onerahi Peninsula. At the time of the survey, two of the areas were zoned for reclamation and there were plans for development of a boating marina. The areas concerned lie between the Awaroa River mouth and George Point, and between George Point and Pah Road respectively. The third area was Stevens Point Reserve between Onerahi and Waikaraka (Sections 11, 12 and 13 Table 2 and Fig. 3).

After one month, the survey was extended to include the whole harbour. This resulted from an increase in funds for the project and the need for additional information on the harbour with regard to planned industrial developments.

1.1.0 Background

1.1.1 Previous accounts of wildlife in Whangarei Harbour

The birdlife of Whangarei Harbour has been well-studied by amateurs. There are numerous accounts of individual bird species in Notornis, the journal of the Ornithological Society of New Zealand (OSNZ), and a comprehensive paper on the harbour's birds by Munro (1972). Unpublished studies include that by McDougall (1978) in the Onerahi area. The Northland branch of OSNZ has conducted a census of the birds of the harbour three times a year since 1973 and published the results in their regional magazine Amokura. A brief account of the harbour's wildlife and wildlife values is given by Ogle (1982).

1.1.2 Biological processes in estuaries

An estuary is a "semi-enclosed coastal body of water with a free connection to the sea; it is thus strongly affected by tidal action, and within it sea water is mixed (and usually measurably diluted) with freshwater from land drainage" (Knox 1980).

needed to keep open the main shipping channel, which forces the Harbour Board to seek new dumping sites. If reclamations extend to the Otaika River mouth in the future, valuable feeding areas for wildlife will be destroyed.

At Portland, development is near the cement works only, where there is a wharf for loading and discharging. The expected introduction of a new dry process of cement manufacture should prevent sediment reaching the harbour from the cement works.

Development at Marsden Point has centred on the oil refinery which now covers a large area of previously natural sand-dunes. These dunes would probably have been nesting habitat for New Zealand dotterel and variable oystercatchers, and possibly southern black-backed gulls. There are two wharves at Marsden Point, one supplying the refinery and one servicing Harbour Board vessels. Both have been constructed on piles and have had little effect on the harbour's tidal flow. In comparison, the proposed forestry port wharf will eliminate 28 hectares of sandflats used by waders and other species for feeding, and could alter the tidal flow in the vicinity. Future extensions to the forestry port could see the reclamation of Blacksmiths Creek and the Marsden Spit high tide roost.

Residential housing and associated buildings occupy considerable areas of shoreline around the harbour at Marsden Bay, One Tree Point, Whangarei City, Onerahi and along the northern shore. While this development has removed little estuarine habitat (except at Whangarei City), it has resulted in the loss of forest and scrub along the shoreline, permitted greater disturbance to wildlife and increased the speed of water run-off via storm-water reticulation.

2.4 Vegetation Zones

The vegetation of estuaries of the Auckland Isthmus was described in detail by Chapman & Ronaldson (1959). No detailed vegetation survey has been made of the whole of Whangarei Harbour, but Bioresearches (1980 and 1981) give more detailed descriptions of the vegetation in Blacksmiths Creek, Takahiwai and Skull Creek, and the Mangapai River area.

Broadly speaking the various vegetation zones are:

1. Mangrove (Avicennia marina var. resinifera) zone:
 - (a) tall trees up to 7 m along the edges of creeks. These large trees are festooned with lichens and occasionally have epiphytic vascular plants such as the ferns, Pyrrosia serpens and Asplenium flaccidum. The mud and the mangrove pneumatophores support several species of green algae plus the more noticeable brown alga, Venus's necklace (Hormosira banksii);
 - (b) behind the tall trees and on wider flats are shorter (0.5 m) mangroves which are either young colonising trees or trees stunted through sluggish drainage (Chapman & Ronaldson 1958). These smaller mangroves support the same algae beneath but lack epiphytic plants and most lichens;

2. Saltmarsh
 - (a) Glasswort (Salicornia australis) zone: this zone covers large areas of upper tidal flats behind the mangroves in the Skull Creek/Takahiwai area. Other species associated with glasswort are Samolus repens, Suaeda novaezealandiae and Triglochin striatum. This zone is used for roosting by thousands of waders during neap tides as it is covered during spring high tides only;
 - (b) Sea rush (Juncus maritimus var. australiensis) zone: dense swards (0.5 m to 1 m high) of sea rush grow over extensive areas which then merges with zone (c), below;
 - (c) Jointed rush (Leptocarpus similis) and sea rush share dominance, with the occasional emergent bush of saltmarsh ribbonwood (Plagianthus divaricatus);
3. Brackish zone: this zone usually forms a narrow belt around the shoreline where freshwater seepages meet the saline estuary. The two dominant plants are jointed rush and Baumea juncea with emergent saltmarsh ribbonwood;
4. Manuka - flax swamp zone: only small areas of this zone remain on the harbour as most has been developed for farmland. The main species are manuka, flax, toetoe, Cyperus ustulatus and raupo;
5. Dune vegetation: this is another zone that has suffered from development and much of the dune country in the Marsden Point area is now covered in housing and by the Oil Refinery. The main plant species of this zone are Scirpus nodosus, Stipa teretifolia, Spinifex hirsutus, Desmoschoenus spiralis, marram grass and Pimelia arenaria.

Some areas of native vegetation contain all of these zones, but each zone can occur as a discrete unit resulting from local conditions or man's modification of the environment.

One important zone is missing from the harbour: eelgrass (Zostera muelleri) beds, which are often the first colonisers of mudflats. Examination of aerial photographs taken in the late 1940's revealed that at that time there were beds of eelgrass over large areas of McDonald and Snake Banks, and along the Takahiwai-Skull Creek sandflats. These beds were present up to 1970. Bioresearches Ltd. (1976 and 1979) suggested that their disappearance was caused by an infection of slime mould. However, Larkum (1976) suggested that in Australia industrial wastes and dredging are the major causes of eelgrass decline.

Plants of special note on the harbour include the uncommon hybrids Myrsine montana (M. australis X M. divaricata) and Plagianthus regius X P. divaricatus which grow on Pirate Island off Mangawhati Point.

5.0 SUMMARY

This survey has highlighted the importance of Whangarei Harbour to Northland's coastal birds and has shown that the harbour:

- (a) supports high numbers of birds, despite of considerable modifications to the harbour's environment and the surrounding catchments;
- (b) is important for thousands of Arctic waders such as godwit and knot, and hundreds of internal migratory species such as South Island pied oystercatcher, wrybill, banded dotterel and pied stilts;
- (c) supports populations of declining swampland species such as North Island fernbird, banded rail and possibly marsh crake;
- (d) has a number of species breeding, including significant numbers of New Zealand dotterel, reef heron, Caspian and white-fronted terns, red-billed gull, North Island fernbird, pied and black shags and banded rail.
- (e) is important for nationally rare or declining species such as North Island fernbird, banded rail, marsh crake, Caspian tern, wrybill, New Zealand dotterel and reef heron;
- (f) meets criteria established by the International Union for the Conservation of Nature and Natural Resources as a wetland of international importance.

6.0 RECOMMENDATIONS

The New Zealand Wildlife Service recommends that:

- 1. the whole harbour be designated a Wildlife Refuge;
- 2. the Northland Harbour Board confer with the Wildlife Service regarding any future work or development with the aim of minimising detrimental effects on wildlife;
- 3. steps be taken to protect the spring high tide roosts at Portland and Port Whangarei, or alternatively to construct and maintain a spring high tide roost away from any disturbance;
- 4. farmland bordering the harbour be fenced to prevent stock damaging the harbour environs;
- 5. all patches of Spartina townsendii within the harbour be eradicated;
- 6. a riparian strip of natural vegetation be established around the harbour to protect the harbour and its wildlife from possibly harmful land management practices on the adjacent land;
- 7. conservation of remaining estuarine habitats should over-ride recreational, residential and commercial pressures to use these areas.