

Waitakere City Wetland and Shore Bird Survey 2006:

Wetlands:

**Te Henga Wetland
Harbourview - Orangihina Wetland**

Shore birds:

**Bethells Beach
Harbourview - Orangihina Shoreline
Hobsonville Esplanade Shoreline
Warner Park Shoreline**

Bibliographic Reference:

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1. Introduction

Human-induced changes to New Zealand's environment have been extensive. The loss of habitats and the introduction of mammalian predators and browsers have led to declines and extinctions of many indigenous species (Wilson, 2004). Fifty native vertebrate species have become extinct in New Zealand over the past millennium and many others now only survive in low numbers on small predator-free islands. New Zealand's wetland birds were particularly vulnerable to extinction, with native waterfowl and rails most affected (Wilson, 2004).

Of Waitakere City's remaining wetlands, two are of national and international significance due to their outstanding natural values: Te Henga Wetland and Harbourview - Orangihina. The significance of these wetlands as habitat for rare species has been well documented (Alexander & Chapman 2004, Kingett Mitchell Ltd. 2002, Julian *et al.* 1998, Bioreserches 1996, Denyer *et al.* 1993, WRPS 1978). Te Henga wetland is the largest wetland in the Auckland Ecological Region. It supports a range of vegetation classes and structural types. Such diversity is also reflected by the high number of wildlife species present in the wetland. The wetland at Harbourview is considered to be the most significant wetland in the Waitakere City portion of Tamaki Ecological District. This is because it provides a transition from saline to brackish to a freshwater wetland. In Waitakere City, wetland degradation and the impacts of predators have led to declines and extinctions of a number of native wetland bird species. However, the region still supports a number of threatened wetland bird species (WCC 2001).

The coastal areas of Waitakere City include the west coast of the Waitakere Ranges, and the shorelines of the Manukau and Waitemata Harbours. Among the habitats present are beaches, dunes, rocky shores, intertidal flats, tidal creeks, shell banks, sand bars and mangrove forests. These habitats provide roosting, foraging and nesting habitat for a wide range of bird species, including several rare and threatened species. Threats to Waitakere City's shore birds include uncontrolled dogs, predators, disturbance, sedimentation, and pollution.

The Waitakere City Council contracted Envirollogic Limited to undertake surveys of wetland and shore birds during March and April 2006 at two wetlands and four coastal sites. The aims of the study are: 1) to monitor the bird communities of Waitakere City's ecologically important coastal and wetland reserves, and 2) to make recommendations about the monitoring and management of wetland birds and shore birds in Waitakere City.

2. Methods

2.1 Study sites

This study was undertaken at the following sites:

- 1) Te Henga Wetland
- 2) Harbourview - Orangihina Wetland
- 3) Bethells Beach
- 4) Harbourview - Orangihina Shoreline
- 5) Hobsonville Esplanade Shoreline
- 6) Warner Park Shoreline

2.2 Wetland birds

For wetland birds, survey methodology and timing followed that applied at Harbourview - Orangihina by Bioresarches (1996), Kingett-Mitchell (2002) and Alexander and Chapman (2004). The wetland bird surveys were undertaken during April 2006. A combination of call / response surveys, fernbird territory mapping, and five-minute bird counts was used along with digital recorder-based surveys. Call / response surveys involved the playing of pre-recorded calls of significant wetland bird species and listening for any responses. Territory mapping of fernbird pairs involved undertaking slow-walk transects along the edge of favourable wetland bird habitat while playing taped fernbird calls. Fernbird pairs defend their territory aggressively when the source of the taped calls enters the territory and cease when the observer leaves the territory. The points along the transect at which the aggressive behaviour commenced and ceased was assumed to indicate the approximate extent of a pair's territory.

Digital recorders were used to record the calls of birds present by utilizing the 'voice operated recording' (V.O.R.) function on the recorders. Recorders were set in waterproof containers and left in the field for three days of recording. While undertaking call / response surveys and territory mapping, any signs of significant wetland bird species (e.g., crane tracks) were noted.

The following significant wetland bird species were targeted in the call / response surveys: Australasian bittern (*Botaurus poiciloptilus*), banded rail (*Rallus philippensis*), North Island fernbird (*Bowdleria punctata vealeae*), marsh crane (*Porzana pusilla*), and spotless crane (*Porzana tabuensis*). Other species present in the wetlands (e.g., common waterfowl, introduced passerines, etc.) were ignored. All locations and routes were recorded using a hand-held GPS unit.

2.3 Shore birds

The abundance of shore birds, and other birds utilising shore line habitats, at four sites along Waitakere City's coastline was assessed by undertaking 2-3 slow-walk transects along the foreshore of each of the four sites. This method was selected because it has been used in other recent shore bird surveys undertaken in and near Waitakere City (D. Slaven, pers. comm.). The surveys were undertaken during March 2006. At least one survey was conducted at or near low tide and at least one was conducted at or near high tide. All shore birds present were identified and counted and their activity recorded (roosting, foraging, flying, etc.). If flocks of a given species were present then estimates were recorded whereas lower bird abundances (≤ 20) were recorded exactly. Where necessary, 8 x 42 binoculars and an SFL digital

camera with a 300mm telephoto zoom lens were used to assist with accurate identification of birds. Bird locations were marked on a map.

3. Results

3.1 Wetland birds

Three of the five targeted wetland bird species were recorded at Te Henga Wetland during the survey: North Island fernbird, spotless crane, and banded rail (Table 1 and Figure 1). North Island fernbirds were the only targeted wetland bird species recorded at Harbourview - Orangihina Wetland during the survey (Table 1 and Figure 2). All species recorded were detected by playing taped calls while undertaking slow walk transects along the wetland margins. Pukekos were the only species detected with digital recorders. No species were detected through the identification of tracks.

Table 1: Presence / absence of targeted wetland birds at Te Henga and Harbourview - Orangihina Wetlands during April 2006 (total estimated minimum numbers of birds detected in parentheses).

Species	Survey site	
	Te Henga Wetland	Harbourview - Orangihina Wetland
Australasian bittern		
Banded rail	✓ (2)	
Fernbird	✓ (6)	✓ (2)
Marsh crane		
Spotless crane	✓ (3)	

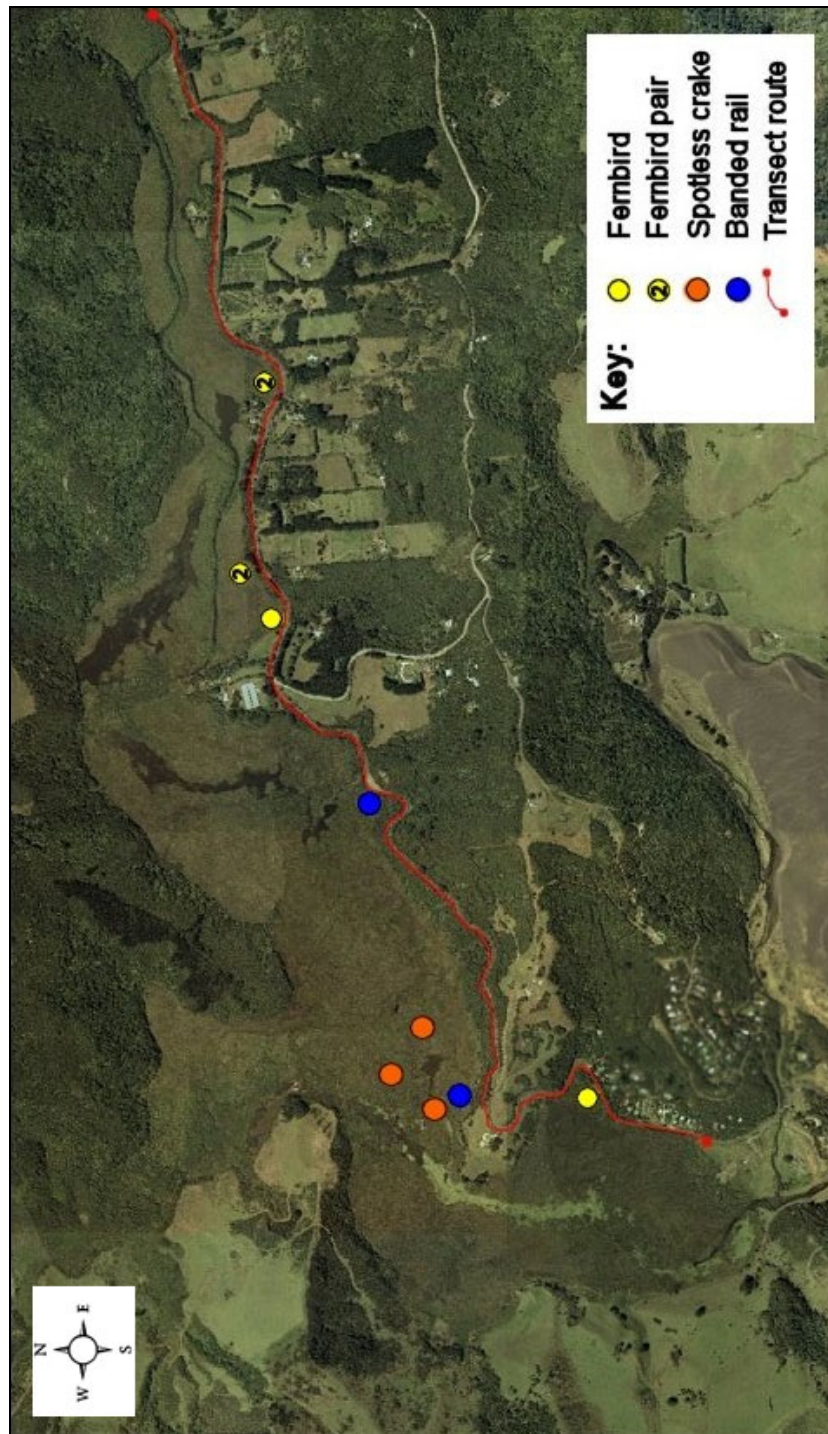


Figure 1: Locations of targeted wetland birds recorded by playing taped calls while undertaking a slow walk transect along the southern margin of Te Henga Wetland on 14 April 2006.

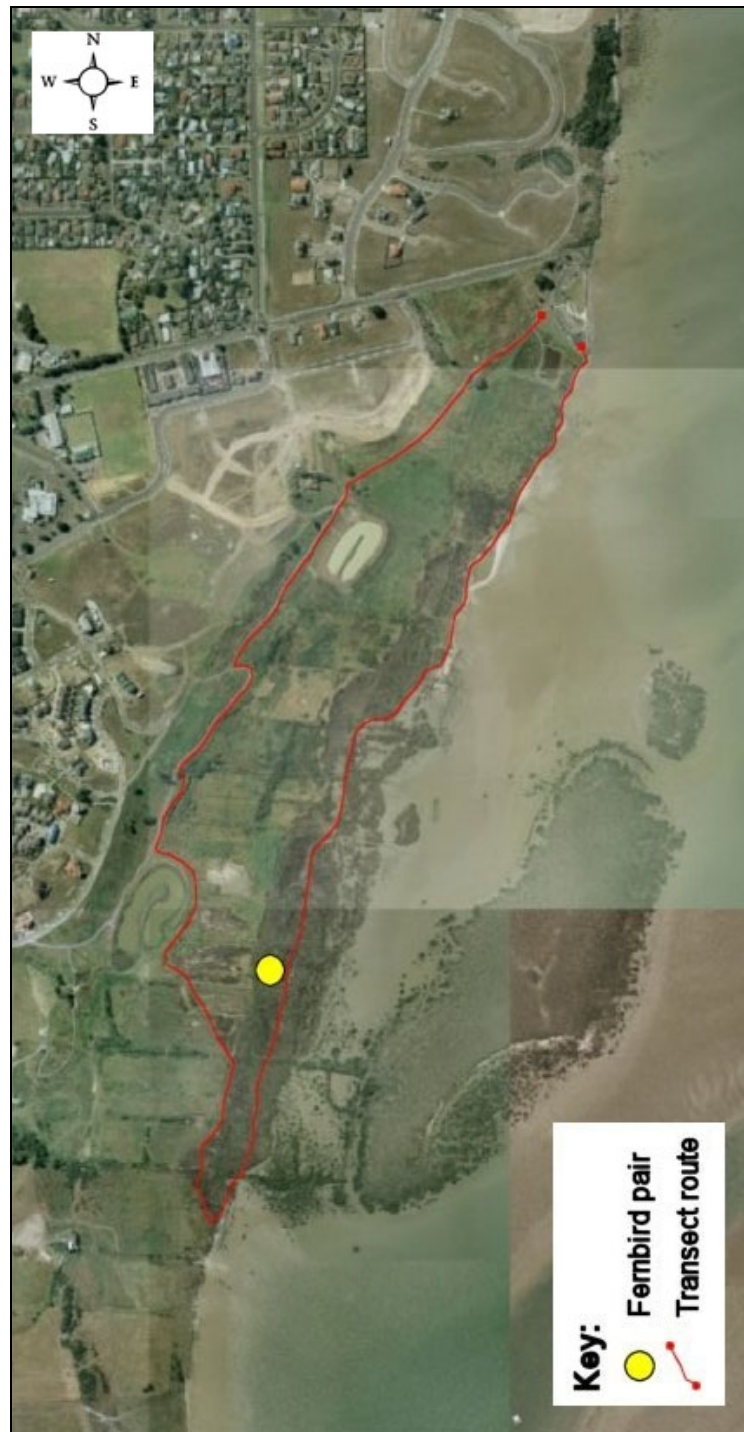


Figure 2: Location of the fernbird pair recorded by playing taped calls while undertaking a slow walk transect along the western and eastern margins of Harbourview - Orangihina Wetland on 14 April 2006.

3.2 Shore birds

A total of 11 bird species was observed during the shore bird surveys (Table 2). Warner Park had the most bird species (8) and Hobsonville Esplanade had the least (3; Table 2). Two rare / threatened species were recorded: a Caspian tern at Warner Park and a New Zealand dotterel at Bethells Beach. Black-backed and red billed gulls were the only bird species to be recorded at all four monitoring sites (Table 2).

Table 2: Presence / absence of birds at the four shore bird monitoring sites (* denotes rare / threatened species).

Species	Survey site			
	Bethells Beach	Harbourview - Orangihina Shoreline	Hobsonville Esplanade Shoreline	Warner Park Shoreline
Black-backed gull	✓	✓	✓	✓
Caspian tern*				✓
Kingfisher				✓
NZ dotterel*	✓			
NZ pipit	✓			
Pied shag	✓		✓	✓
Pied stilt				✓
Red-billed gull	✓	✓	✓	✓
Variable oystercatcher	✓	✓		✓
White-faced heron		✓		✓
White-fronted tern	✓			

3.2.1 Bethells Beach

Table 3: Abundance of shore birds at Bethells Beach over two surveys conducted during March 2006 (Flock size(s) in parentheses).

Species	Shore bird numbers	
	17/3/06 - Low tide	20/3/06 - High tide
Black-backed gull	2 (1, 1)	14 (2, 10, 2)
NZ dotterel	0 (0)	1 (1)
NZ pipit	0 (0)	1 (1)
Pied shag	1 (1)	2 (1, 1)
Red billed gull	1 (1)	16 (1,15)
Variable oystercatcher	10 (10)	0 (0)
White-fronted tern	40 (40)	3 (3)

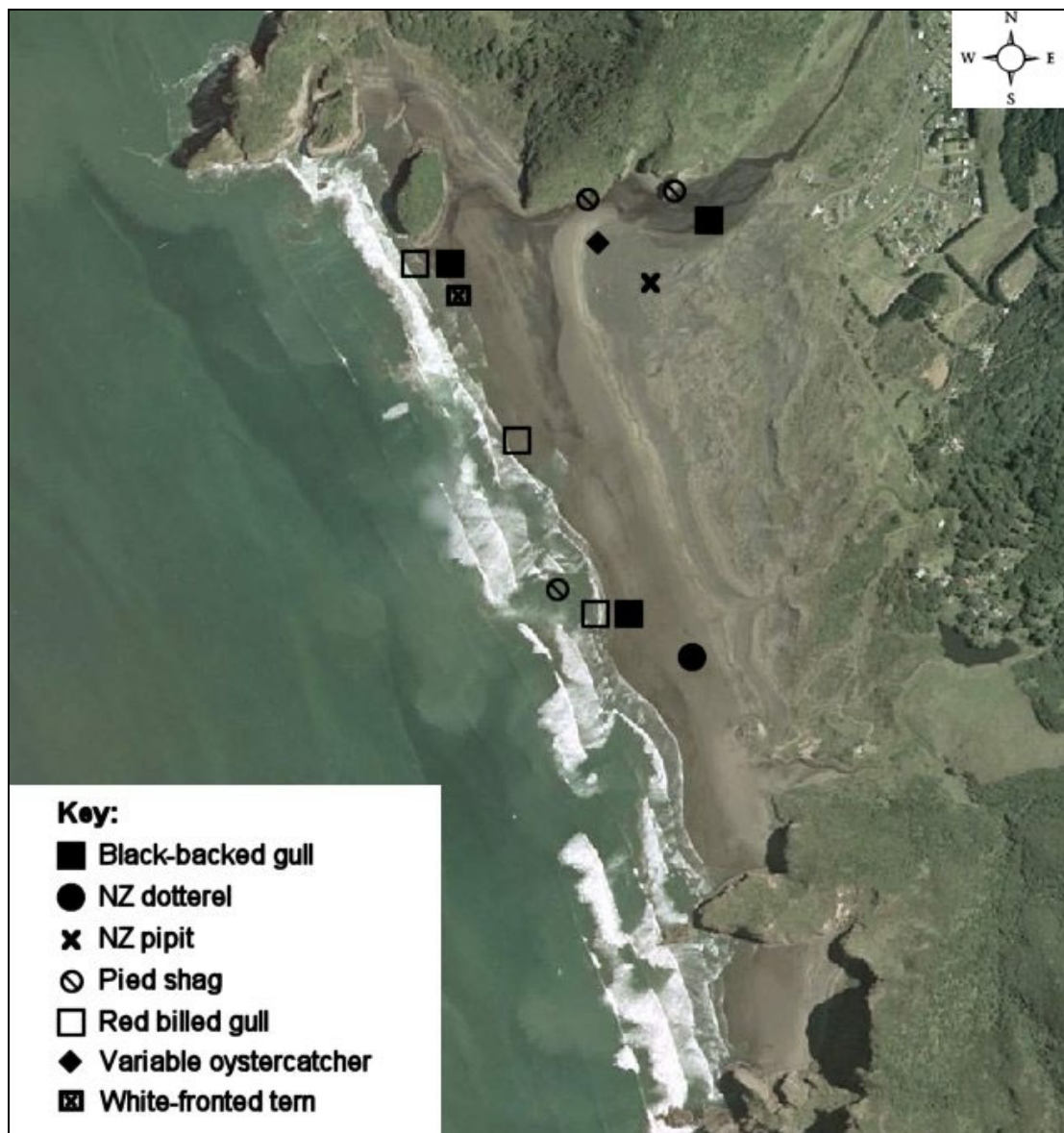


Figure 3: Locations of shore birds at Bethells Beach during March 2006.

3.2.2 Harbourview - Orangihina Shoreline

Table 4: Abundance of shore birds at Harbourview - Orangihina Shoreline over two surveys conducted during March 2006 (Flock size(s) in parentheses).

Species	Shore bird numbers	
	23/3/06 - Low tide	29/3/06 - High tide
Black-backed gull	>245 (>100, >100, 25, 20)	62 (12, 50)
Red billed gull	45 (25, 20)	>200 (>100, >100)
Variable oystercatcher	22 (10, 12)	>158 (8, >150)
White-faced heron	10 (10)	16 (4, 12)



Figure 4: Locations of shore birds at Harbourview - Orangihina Shoreline during March 2006.

3.2.3 Hobsonville Esplanade Shoreline

Table 5: Abundance of shore birds at Hobsonville Esplanade Shoreline over two surveys conducted during March 2006 (Flock size(s) in parentheses).

Species	Shore bird numbers	
	17/3/06 - High tide	21/3/06 - Low tide
Black-backed gull	2 (2)	4 (4)
Pied shag	2 (1, 1)	0 (0)
Red billed gull	0 (0)	20 (20)



Figure 5: Locations of shore birds at Hobsonville Esplanade Shoreline during March 2006.

3.2.4 Warner Park Shoreline

Table 6: Abundance of birds at Warner Park Shoreline over two surveys conducted during March 2006 (Flock size(s) in parentheses).

Species	Bird numbers		
	20/3/06 - High tide	23/3/06 - Mid tide	27/3/06 - Low tide
Black-backed gull	1 (1)	6 (6)	7 (1, 6)
Caspian tern	0 (0)	1 (1)	0 (0)
Kingfisher	0 (0)	4 (4)	3 (2, 1)
Pied shag	0 (0)	40 (40)	20 (20)
Pied stilt	7 (6, 1)	4 (4)	1 (1)
Red billed gull	15 (15)	0 (0)	4 (3, 1)
Variable oystercatcher	>200 (>200)	>120 (20, >100)	16 (1, 15)
White-faced heron	8 (4, 4)	0 (0)	1 (1)



Figure 6: Locations of shore birds at Warner Park Shoreline during March 2006.

4. Discussion

4.1 Wetland birds

This study has confirmed the ongoing ecological significance of Waitakere City's wetlands as highlighted by previous studies (Alexander & Chapman 2004, Kingett Mitchell Ltd. 2002, Julian *et al.* 1998, Bioresearches 1996, Denyer *et al.* 1993, WRPS 1978). Waitakere City's wetland birds are of major conservation concern, with most species rare or locally extinct (Table 7). The wetland bird species that are of the highest conservation significance in Waitakere City are: Australasian bittern, banded rail, North Island fernbird, marsh crake, and spotless crake. Te Henga wetland provides habitat for a greater number of wetland bird species than Harbourview. There is considerable scope for ecological restoration at Harbourview and the long-term viability of the fernbird population may be in doubt without such measures.

Table 7: National and local conservation status of Waitakere City's wetland birds.

Species	DoC Threat Classification	Population status	
		Te Henga Wetland	Harbourview - Orangihina
Australasian Bittern	Nationally endangered	Rare	Locally extinct
Banded Rail	Sparse	Rare	? Rare or locally extinct
Marsh Crake	Sparse	Rare	Locally extinct
North Island Fernbird	Sparse	Rare	Rare
Spotless Crake	Sparse	Rare	Locally extinct

Source: Julian *et al.*, 1998; Denyer *et al.*, 1993

The secretive behavioural characteristics of many wetland bird species makes surveys and ongoing monitoring difficult. The most successful survey method tested was the playing of taped calls while slowly walking along wetland margins. This was particularly effective at Harbourview - Orangihina because it was possible to walk around the entire margin of the wetland. At Te Henga Wetland it is probably also necessary to undertake future surveys from a kayak so that more accurate bird locations can be obtained and the more secretive species (e.g., Australasian bittern) can be detected.

While habitat loss accounts for the declines in wetland bird populations of the past, the impacts of introduced predators is probably the greatest threat to wetland bird populations at present. Predation accounted for 73% of fernbird nesting failures at Omaha (Parker, 2002). Evidence from Parker's (2002) Omaha study suggests that mustelids and mice are the most significant egg predators in wetlands. Parker also highlighted a potential difficulty with detecting changes in fernbird populations is that individuals may increase their territory size as numbers fall potentially masking the decline. Careful mapping of territories on an annual basis may be required to detect population declines. The issues associated with determining population trends and causes of decline for fernbirds are similar or greater for Australasian bitterns, banded rails, marsh crakes and spotless crakes as these species are very secretive in their habits.

Undertaking mustelid and rodent control within wetlands is difficult therefore the programme should initially focus on establishing a perimeter of tracking tunnels and traps along the edge(s) of Harbourview and Te Henga wetlands. At Harbourview, a

single trap line running north-south along the relatively accessible western edge of the known fernbird territories is most appropriate. At Te Henga, a line of tracking tunnels and traps should be established along the southern margin of the wetland between Brissenden Stream and Tasman View Road (a transect length of approximately 4.5 km). A similar line of traps / tracking tunnels should also be established along the (Rodney District Council administered) northern margin of the wetland. Pest control would require support from local landowners, residents, and care groups. While the northern portion of the wetland area is under the jurisdiction of the Rodney District Council, Forest and Bird and the Department of Conservation also manage parts of the area. Any predator control would need to be undertaken as a joint operation in conjunction with private landowners. The mechanisms for a joint operation between the WCC and the RDC are already in place through the willow control project. A pest control operation to protect the birds of Te Henga Wetland could be implemented as an extension of the existing willow control programme.

4.2 Shore birds

Shore bird surveys undertaken at low tide enable important feeding areas to be identified whereas high tide surveys allow important roosting / nesting areas to be identified. All shorebird sightings were consistent with foraging behaviour and the greatest variety and abundance of birds was observed at low tide when intertidal flats were exposed and food availability was greatest. No breeding behaviour was observed but this was expected because the surveys were undertaken outside the breeding season (most breeding occurs in spring and summer). Without intensive predator control, the sites surveyed for shore birds are unlikely to support breeding colonies of shore birds. The only notable shore bird breeding site in Waitakere City is the Whatipu beach / duneland area. However, there are significant shore bird roosting / breeding sites relatively near to Waitakere City including Pollen and Traherne Islands, Muriwai's gannet colony, Shoal Bay, and the middle and southern reaches of the Manukau Harbour (Julian *et al.* 1998).

Julian *et al.* (1998) highlighted the strong case for the creation of additional roosting habitat on the shores of the Waitemata Harbour. Such created habitat would be of great benefit to shore birds, especially migratory species foraging and roosting prior to departure. Achieving maximum benefits would require the elimination or significant reduction of pressure from predators, recreation and development at any created habitat. Shore bird habitat creation techniques have been successfully applied at Shoal Bay on the northern side of the Waitemata Harbour as part of mitigation measures associated with the construction of the Northern Busway. The need for additional shore bird habitat may become very urgent if climate change leads to the loss of existing roosts as a result of sea level rises.

5. Recommendations

The highest priorities for Waitakere City's wetland bird populations are:

1. To monitor populations of Australasian bittern, banded rail, North Island fernbird, marsh crake, and spotless crake at Te Henga Wetland by implementing an annual monitoring programme during February / March. The established transect along the southern margin should be retained and a kayak-based survey added.
2. To monitor the North Island fernbird population at Harbourview - Orangihina by implementing an annual monitoring programme during February / March. Future monitoring should be based on playing taped calls while slowly walking around the margin of the wetland and mapping territories.
3. To minimise the impacts of predation on wetland birds by implementing an annual pest control programme (for rodents and mustelids) immediately prior to and during each breeding season (primarily September to January) at Harbourview - Orangihina and Te Henga Wetland.

The highest priorities for Waitakere City's shore bird populations are:

4. To investigate options and potential sites for increasing the availability of roosting / nesting habitat around the shoreline of the Waitemata Harbour (e.g., the creation of shell banks higher than the spring tide level).
5. To minimise the impacts of predation on shore birds by implementing an annual pest control programme (for rodents and mustelids) immediately prior to and during each breeding season (primarily September to January) adjacent to key shore bird habitats (e.g., Bethells Beach, Warner Park, Harbourview - Orangihina shoreline).
6. To investigate the potential impacts of climate change induced sea level changes on the roosting / nesting habitat of Waitakere City's shore birds. This issue might best be tackled at the regional level in conjunction with the other Auckland councils.

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7. Appendix: List of relevant literature*

Selected literature relating to the birds of Te Henga Wetland:

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* This list is not exhaustive.