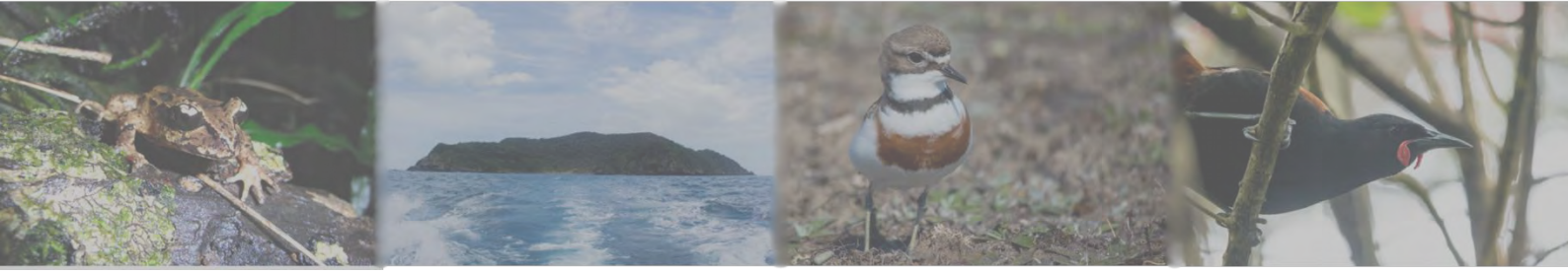

2019 Operational report on Petone Beach to Oteronga Bay, Wellington coastal bird survey

June 2020

WMIL Wildlife Management International

2019 Operational report on Petone Beach to Oteronga Bay, Wellington coastal bird survey

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Cover Image: Variable Oystercatcher/tōrea pango (*Haematopus unicolor*). Image courtesy of Dan Burgin.

EXECUTIVE SUMMARY

Greater Wellington Regional Council and Maritime New Zealand require a detailed and up-to-date understanding of the distribution of indigenous bird values along Wellington's coast in order to meet statutory responsibilities for the sustainable management of the Wellington region coastline. To complement the complete region-wide coastal bird survey in 2017-2018, a sub-section of the coastline was surveyed to continue to help provide knowledge of patterns in the distribution and abundance of coastal birds in the Wellington region.

A total of 60 km of coastline between Petone Beach and Oteronga Bay was traversed by foot, and the presence and number of all species of birds and marine mammals encountered was recorded for each separate ~1 km section of coastline surveyed to enable spatial patterns in the relative abundance of key species to be mapped to a ~ 1 km resolution.

A total of 38 bird species and one marine mammal species were detected during this survey. 26 bird species (68%) are native or endemic to New Zealand, and 12 bird species (32%) are ranked as either Nationally Threatened or At Risk under the New Zealand Threat Classification System.

These survey data help continue to provide an effective prioritisation tool for Greater Wellington Regional Council and Maritime New Zealand to plan an efficient and effective response to a marine oiled wildlife incident in the Wellington region's coastal marine area.

We recommend that coastal bird surveys be repeated at regular intervals to maintain an up-to-date picture of coastal wildlife values in the Wellington region, and to begin building an understanding of the regional population trends of key coastal species.

Keywords:

Coastal bird survey, Greater Wellington Regional Council, Maritime New Zealand, Wellington region

1. INTRODUCTION

This report provides a summary of the results of the second survey of the bird distribution of a section of the Wellington coastline from Petone Beach to Oteronga Bay. Wildlife Management International Ltd (WMIL) has been engaged by Greater Welling Regional Council (GWRC) to carry out these surveys, and this report summarises the results of the second of these surveys. This report presents results for coastal species observed, as well as presenting an analysis of total species diversity. Included are recommendations for further survey and monitoring work required to continue improving GWRC's knowledge of the spatial distribution, population trends and threats facing the Wellington region's coastal bird fauna.

2. METHODS

2.1 Survey Area

Bird surveys were carried out on foot along a total of 60 km of coastline from Petone Beach to Oteronga Bay in December 2019 (Figure 1). For safety and access reasons, four 1km sections and part of another 1 km section were surveyed from the train running alongside the Petone-Nguaranga coastline. Five sections along the Wellington CBD waterfront could not be surveyed as they were not accessible on foot or by train. A separate survey was also completed for Taputeranga Island.

Figure 1: 1km section waypoints (yellow) along the extent of the Wellington coastline surveyed in December 2019, from Petone Beach to Oteronga Bay.

2.2 Field Methods

Surveys were carried out in December during the shorebird breeding season, a time of year when the majority of a number of coastal-breeding shorebirds were occupying established breeding territories and were 'anchored' to active nests or broods of chicks. Carrying out these surveys at a time of year during which a number of these species were relatively sedentary therefore minimised the risk of double-counting birds that would be more likely to disperse over larger distances along the coastline in other seasons. All surveys were carried out during fine weather, and in relatively calm sea conditions.

When surveying the coastline, one or two observers walked along the foreshore, usually near the high tide mark, recording the identity and numbers of all birds seen or heard, including any birds encountered on the foreshore as well as any birds detected either offshore or further inland. Any birds seen flying overhead were also counted, provided they were flying in a direction perpendicular or opposite to the direction of travel of the observers. Birds flying in the same direction that the observers were travelling in were not counted, to minimise the risk of double-counting birds. Special care was taken to systematically scan all areas of dry, un-vegetated gravels or sand on the foreshore, and any muddy backwaters, seepages, ponds, lagoons, rock pools, rock platforms, rocky islands and rock outcrops encountered along the coast to minimise the risk of missing key shorebird taxa such as dotterels, oystercatchers, gulls, terns and herons. Separate counts were recorded for each ~1 km section of coastline traversed, so that spatial patterns in the distribution and relative abundance of shorebirds could be mapped to a 1 km resolution. These 1 km sections had already been mapped out in advance for the 2018 coastal survey and were aligned with Maritime New Zealand's Marine Oil Spill Risk Assessment Coast Cells (http://mosra18.navigatusconsulting.com/map, accessed 10/07/2019; Maritime New Zealand, unpublished data).

Noting down all species observed during these surveys supports complete checklist data for upload to the New Zealand Bird Atlas eBird database. In addition to counting all birds that were detected, the locations of any active nests or nesting colonies, and any dependent chicks encountered along the coastline were also recorded using handheld GPS devices.

2.3 Data Analysis

These survey data were entered into a Microsoft Excel™ spreadsheet, and into the New Zealand Bird Atlas eBird database, an open-access bird observation database jointly maintained by Birds New Zealand and the Cornell Lab of Ornithology. A copy of this dataset was also provided to GWRC's Environmental Science Department. Total counts were calculated using Microsoft Excel™, and species diversity and distribution maps were created using QGIS version 2.18.10.

3. RESULTS

3.1 Total Species Diversity

A total of 38 bird species were detected along this 60 km section of Wellington region coastline. 26 species (68%) were either native or endemic to New Zealand and the remaining 12 species (32%) were introduced and naturalised species. 11 of the bird species detected (29%) are ranked as either Nationally Endangered, Nationally Vulnerable or At Risk under the New Zealand Threat Classification System (Robertson et al. 2017), including one species ranked as Nationally Endangered (reef heron, *Egretta sacra*); one species as Nationally Vulnerable (banded dotterel, *Charadrius bicinctus);* three species ranked as At Risk, Recovering; one species ranked as At Risk, Relict; one species ranked as At Risk, Naturally Uncommon and four species ranked as At Risk, Declining (see Appendix One).

All bird species observed along the coastline were recorded between Petone beach and Oteronga Bay. During the 2019 surveys 68% of species were indigenous (native and endemic), with the remaining 32% being exotic (introduced) species. Regarding total number of birds observed, a larger number of birds in total was observed in 2019, and the proportions of indigenous versus exotic between 2018 and 2019 are only slight, with more exotic species noted in 2019 (Table 1).

Table 1: Total bird species diversity for all 1 km sections surveyed between Petone Beach and Oteronga Bay 2018 and 2019

Year	Indigenous	Exotic	Total	% Indigenous	% Exotic
2018	1438	193	1631	88.2	11.8
2019	2590	807	3397	76.2	23.8

3.2 Spatial patterns in species abundance

In the following sections of the report, we have mapped spatial patterns in the abundance of eight of the eleven Nationally Threatened or At Risk species that were detected along the Wellington region coastline. These species have been chosen either because they are entirely restricted coastal habitats (e.g. reef heron and variable oystercatcher), or because these coastal survey data can be combined with other regional-scale datasets to estimate the total regional population size for a particular species (e.g. banded dotterel).

3.2.1 Reef heron (*Egretta sacra*) Nationally Endangered

Image courtesy of Duncan Watson/NZ Birds Online

A total of 4 adult reef herons were counted during this survey (Figure 2), which is twice the number counted during previous surveys (McArthur et al. 2019). This total includes a pair on Taputeranga Island with a nest. Mean number of individuals per 1km section therefore remained the same in both years at 0.03 birds per km. This result continues to illustrate reef heron as one of the Wellington region's rarest breeding bird species.

No breeding activity was found during these surveys.

Figure 2: Distribution and relative abundance of reef heron along the surveyed Wellington coastline

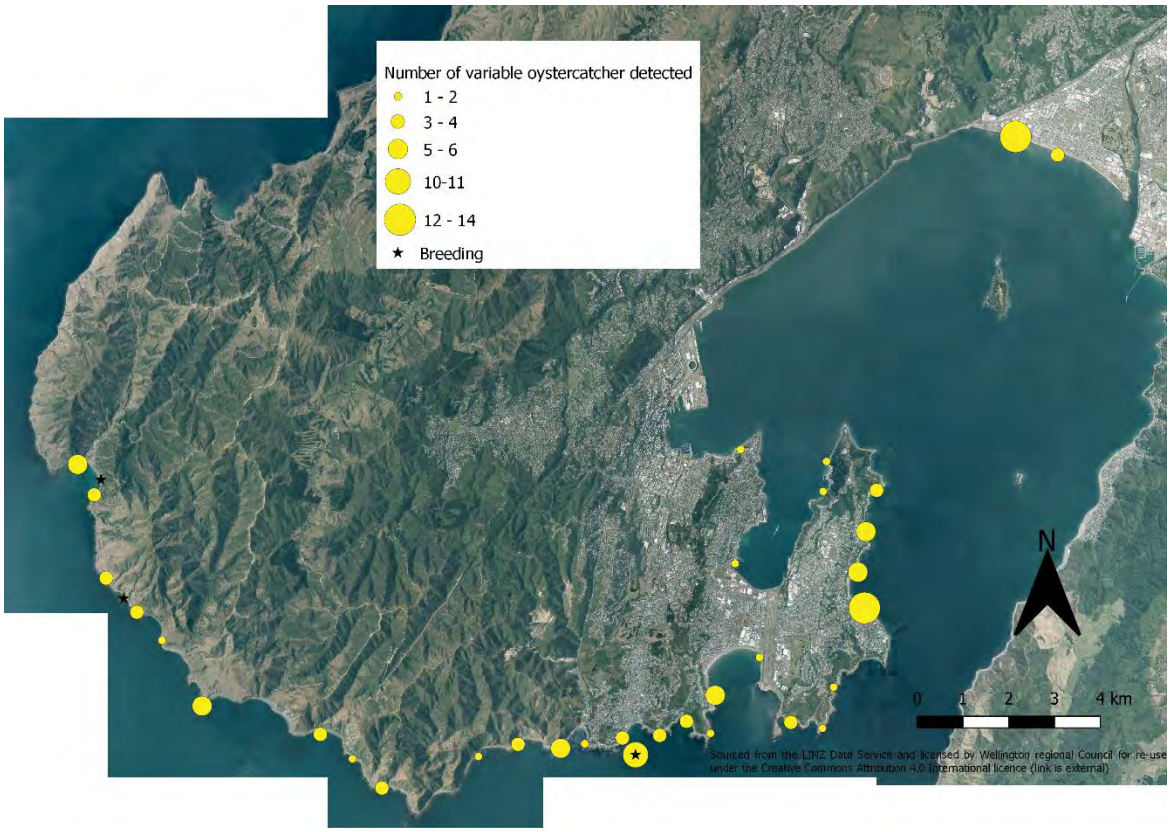
3.2.2 Variable oystercatcher (*Haematopus unicolor*) At Risk: Recovering

Image courtesy of Tony Whitehead/NZ Birds Online

A total of 125 variable oystercatcher were counted during this survey (Figure 3), 31% more than the number counted in the 2018 survey (88 individuals; McArthur et al. 2019). Ten of these individuals were counted on Taputeranga Island. Mean number of individuals per 1 km section was 1.92 birds per kilometre.

Three breeding records for variable oystercatcher were noted, one on an offshore rock stack, one of a nest with two eggs along the coast and another of a nest with 2 eggs on Taputeranga Island.

Figure 3: Distribution and relative abundance of variable oystercatcher along the surveyed Wellington coastline



3.2.3 Banded dotterel (*Charadrius bicinctus*) Nationally Vulnerable

Image courtesy of Tony Whitehead/NZ Birds Online

A total of 25 banded dotterels were counted during this survey (Figure 4), 26% less than the number counted in the 2018 survey (34 individuals; McArthur et al. 2019). Mean number of individuals per 1 km section was 0.42 birds per kilometre.

An adult and chick were noted together in one of the sections, the chick being half grown and still having down feathers present.

Figure 4: Distribution and relative abundance of banded dotterel along the surveyed Wellington coastline

3.2.4 Black shag (*Phalacrocorax carbo*) At Risk: Naturally Uncommon

Image courtesy of Ormond Torr/NZ Birds Online

A total of 5 black shag were counted during this survey (Figure 5), 67% more than the number counted in the 2018 survey (3 individuals; McArthur et al. 2019). Mean number of individuals per 1 km section was 0.08 birds per kilometre.

No breeding activity was found during these surveys.

Figure 5: Distribution and relative abundance of black shag along the surveyed Wellington coastline

3.2.5 New Zealand pipit (*Anthus novaeseelandiae*) At Risk: Declining

Image courtesy of Craig McKenzie/NZ Birds Online

A total of 7 New Zealand pipit were counted during this survey (Figure 6), 46% less than the number counted in the 2018 survey (13 individuals; McArthur et al. 2019). Mean number of individuals per 1 km section was 0.12 birds per kilometre.

No breeding activity was found during these surveys.

Figure 6: Distribution and relative abundance of NZ Pipit along the surveyed Wellington coastline

3.2.6 Pied shag (*Phalacrocorax varius*) At Risk: Recovering

Image courtesy of Rob Lynch/NZ Birds Online

A total of 36 pied shags were counted during this survey (Figure 7), 13% more than the number counted in the 2018 survey (32 individuals; McArthur et al. 2019). Mean number of individuals per 1 km section was 0.6 birds per kilometre.

No breeding activity was found during these surveys.

Figure 7: Distribution and relative abundance of pied shag along the surveyed Wellington coastline

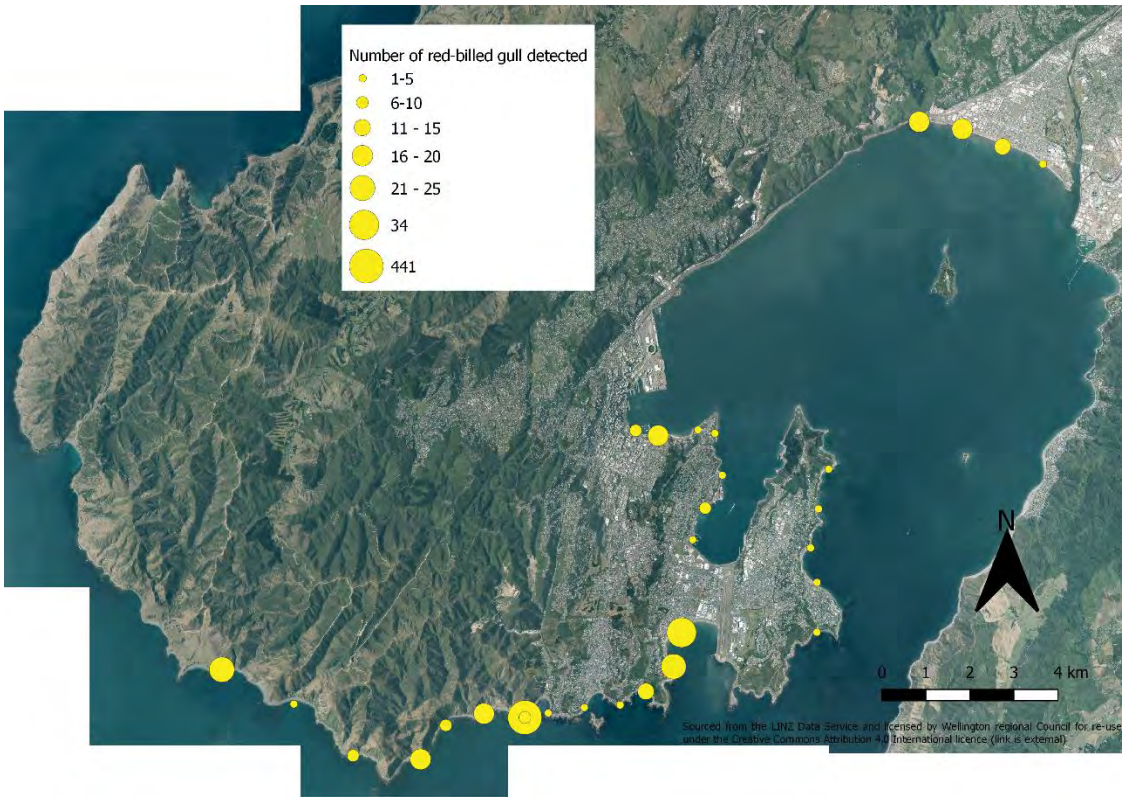
3.2.7 Red-billed gull (*Larus novaehollandiae*): At Risk: Declining

Image courtesy of Peter Reese/NZ Birds Online

A total of 726 red-billed gulls were counted during this survey (Figure 8), 98% more than the number counted in the 2018 survey (366 individuals; McArthur et al. 2019). Mean number of individuals per 1 km section was 12.1 birds per kilometre.

No breeding activity was found during these surveys.

Figure 8: Distribution and relative abundance of red-billed gulls along the surveyed Wellington coastline



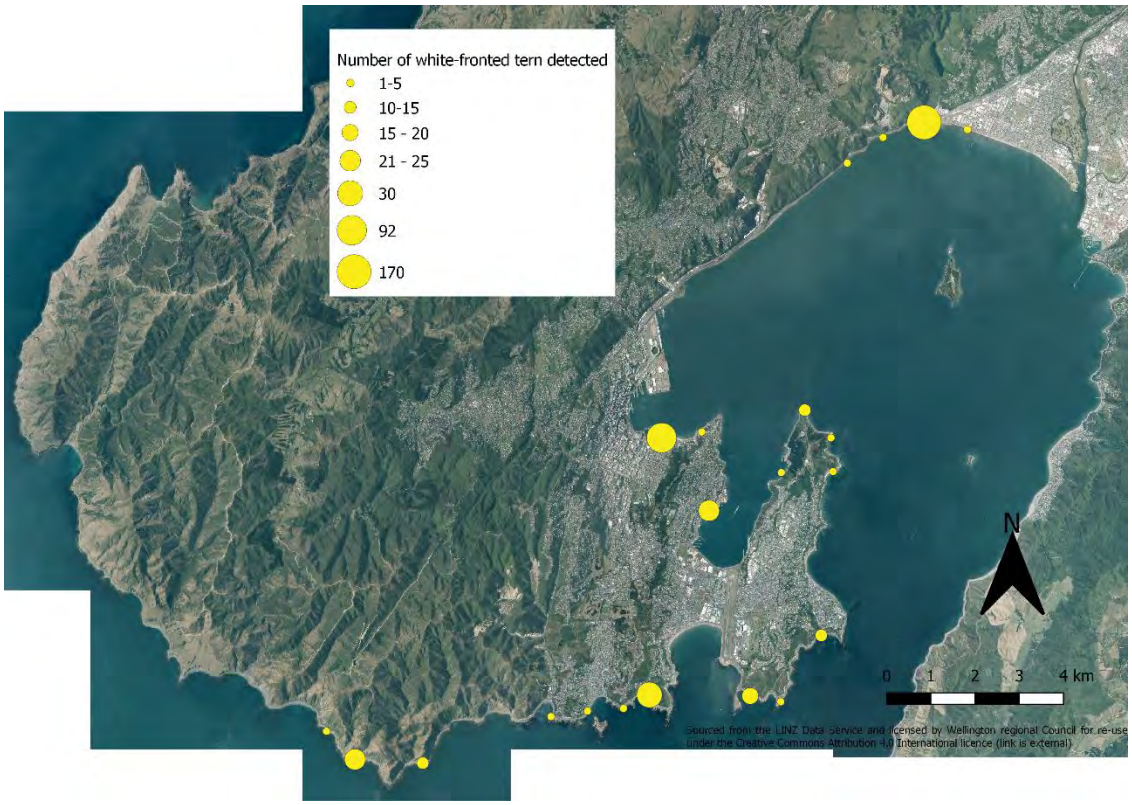
3.2.7 White-fronted tern (*Sterna striata*) At Risk: Declining

Image courtesy of Thomas Musson/NZ Birds Online

A total of 424 white-fronted terns were counted during this survey (Figure 9), 356% more than the number counted in the 2018 survey (93 individuals; McArthur et al. 2019). Mean number of individuals per 1 km section was 7.07 birds per kilometre.

No breeding activity was found during these surveys.

Figure 9: Distribution and relative abundance of white-fronted terns along the surveyed Wellington coastline



3. DISCUSSION

Wellington region's dynamic coastal habitats and the species that inhabit them are under ever-increasing pressure from intensifying land use and other myriad anthropogenic activities. The distribution and abundance of several bird species that are largely restricted to the coastline, including reef heron and variable oystercatcher will likely continue to change. We therefore strongly recommend continuing regional coastal bird surveys at regular intervals as recommended in the previous report (McArthur et al. 2019). This will continue to allow WCC, GWRC, DOC and Maritime NZ to maintain an up-to-date picture of spatial patterns in the diversity and abundance of bird species along the Wellington region coastline, and to accurately monitor the regional population trends of all Nationally Threatened or At Risk bird species that are largely restricted to coastal habitats in the Wellington region. Furthermore, this will continue to provide GWRC with the ability to respond appropriately to future changes to the natural values of the Wellington region coastline.

4. ACKNOWLEDGEMENTS

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6. APPENDIX ONE

This appendix contains a list of all of the bird species encountered during this Wellington regional coastal bird survey. Species names and taxonomic order are those listed in Gill et al., (2010), national threat rankings are those listed in Robertson et al., (2017) and regional threat rankings are from GWRC/DOC, unpublished data. The date ranges delimiting the breeding season for each bird species observed have been sourced from New Zealand Birds Online, accessed 24th June, 2019.

Common name	Scientific name	National Threat Ranking	Regional Threat Ranking	Breeding Season
Paradise shelduck	*Tadorna variegata*	Not Threatened	Not Threatened	August - February
Mallard	*A. platyrhynchos*	Introduced and Naturalised	Introduced and Naturalised	July – December
Little penguin	*Eudyptula minor*	At Risk, Declining	Regionally Vulnerable	July - February
Northern giant petrel	*Macronectes halli*	Recovering	N/A	August – February
Fluttering Shearwater	*Puffinus gavia*	At Risk, Relict	Regionally Critical	August - January
Australasian gannet	*Morus serrator*	Not Threatened	Migrant	August - March
Little shag	*Phalacrocorax melanoleucos*	Not Threatened	Regionally Vulnerable	August - March
Black shag	*P. carbo*	At Risk, Naturally Uncommon	Regionally Critical	Year round
Pied shag	*P. varius*	At Risk, Recovering	Regionally Vulnerable	Year round
Spotted shag	*Stictocarbo punctatus*	Not Threatened	Regionally Endangered	Year round

Common name	Scientific name	National Threat Ranking	Regional Threat Ranking	Breeding Season
White-faced heron	*Egretta novaehollandiae*	Not Threatened	Not Threatened	June - April
Reef heron	*E. sacra*	Nationally Endangered	Regionally Critical	September - December
Swamp harrier	*Circus approximans*	Not Threatened	Not Threatened	September - April
Pukeko	*Porphyrio melanotus*	Not Threatened	Not Threatened	Year round
Variable oystercatcher	*Haematopus unicolor*	At Risk, Recovering	Regionally Vulnerable	September - March
Pied stilt	*Himantopus himantopus*	Not Threatened	Regionally Vulnerable	June - February
Banded dotterel	*Charadrius bicinctus*	Nationally Vulnerable	Regionally Vulnerable	July – January
Spur-winged plover	*Vanellus miles*	Not Threatened	Not Threatened	April - November
Southern black-backed gull	*Larus dominicanus*	Not Threatened	Not Threatened	September - March
Red-billed gull	*L. novaehollandiae*	At Risk, Declining	Regionally Vulnerable	September - January
White-fronted tern	*Sterna striata*	At Risk, Declining	Regionally Endangered	October - January
Rock pigeon	*Columba livia*	Introduced and Naturalised	Introduced and Naturalised	Year round

Common name	Scientific name	National Threat Ranking	Regional Threat Ranking	Breeding Season
Grey warbler	*Gerygone igata*	Not Threatened	Not Threatened	August – February
Tūī	*Prosthemadera novaeseelandiae*	Not Threatened	Not Threatened	September - February
New Zealand fantail	*Rhipidura fuliginosa*	Not Threatened	Not Threatened	August - March
Skylark	*Alauda arvensis*	Introduced and Naturalised	Introduced and Naturalised	August - January
Silvereye	*Zosterops lateralis*	Not Threatened	Not Threatened	August - February
Welcome swallow	*Hirundo neoxena*	Not Threatened	Not Threatened	August - March
Eurasian blackbird	*Turdus merula*	Introduced and Naturalised	Introduced and Naturalised	August - February
Song thrush	*T. philomelos*	Introduced and Naturalised	Introduced and Naturalised	August - February
Common starling	*Sturnus vulgaris*	Introduced and Naturalised	Introduced and Naturalised	September - December
House sparrow	*Passer domesticus*	Introduced and Naturalised	Introduced and Naturalised	September - March
New Zealand pipit	*Anthus novaeseelandiae*	At Risk, Declining	Regionally Vulnerable	August - February
Dunnock	*Prunella modularis*	Introduced and Naturalised	Introduced and Naturalised	September - February
Chaffinch	*Fringilla coelebs*	Introduced and Naturalised	Introduced and Naturalised	September - February

Common name	Scientific name	National Threat Ranking	Regional Threat Ranking	Breeding Season
Greenfinch	*Carduelis chloris*	Introduced and Naturalised	Introduced and Naturalised	October - March
Goldfinch	*C. carduelis*	Introduced and Naturalised	Introduced and Naturalised	October - March
Yellowhammer	*Emberiza citrinella*	Introduced and Naturalised	Introduced and Naturalised	October - March