

Proposed bylaw to exclude vehicles on Marlborough's East Coast

Submission by Marlborough branch of NZ Forest & Bird Society

Summary: Marlborough branch of NZ Forrest & Bird Society strongly supports the proposed bylaw to ban vehicles on the coast from the Awatere River mouth to the Waima/Ure River mouth.

Introduction

The terrestrial uplift brought about by the Kaikoura earthquake resulted in significant changes to Marlborough's East Coast; particularly the easier access by vehicles, pedestrians and horses that was previously limited to low tides. Consequential damage to fauna and flora is raised in submissions to these hearings by Forest & Bird members. This submission looks at what we know about East Coast (EC) birdlife and how EC bird habitat compares with similar coastal areas.

What bird species and how many?

Marlborough's East Coast (EC) has a range of coastal bird species that include in their life cycles, to varying extent, areas such as inland, coast, high tide zone, inter-tidal zone and reefs, while individual species may use areas as local tides permit. Some species come and go with the seasons and breeding patterns; for example, nesting on inland braided rivers in spring and then migrate to the coast and head north for winter. Others are long distance migrators. These features of habitat and bird lifecycle help us understand changes in bird numbers and the dynamics of EC birds.

How we surveyed birds on Marlborough's East Coast

Volunteer members of BirdsNZ (formally OSNZ) and Marlborough Forest and Bird with a broad experience of bird monitoring, worked in pairs (usually) to survey the coast from Marfells Beach to the Waima/Ure River, about 33 km. This stretch of coast was subdivided into 1 km sections giving 33 sections in total. Figure 1 (PowerPoint) shows the locations of these sections.

Volunteers walked in pairs along sections of the coast and recorded what bird species and numbers they saw at the end of each 1 km section. Individual pairs covered only their part of this total and all sections were covered on the same morning (about 4 hours).

The use of 1 km monitoring sections was developed for the Greater Wellington Coastal Bird Survey and proved valuable in yielding finer detail information than what usually comes with monitoring larger sections (McCarthy *et al* 2019). Comparison of EC data with Wellington Coastal survey (WC) results showed that trends in differences and similarities

could be explained by variables like habitat and bird lifecycle behaviour. Overall, these comparisons indicate a strength of the method and validation of the EC survey data.

Bird surveys were conducted in “summer” (November – December) and “winter” (May-June) during 2018, 2019 and 2021. Covid19 interfered with 2020.

Data was entered into eBird New Zealand, an online open-access citizen science database and downloaded for this analysis (see references).

What species were recorded

Table 1 shows the species, conservation and threat status categories for Endemic, Native and Introduced birds recorded for the coast between Marfell's Beach and Waima/Ure estuary over 2018, 2019 and 2021. Also shown are the average counts of these 5 surveys.

- Table 1 shows that 5 out of 9 Endemic species (55%) are under threat, with one species in the Recovering category (Table 1(a))
- One-third of Native bird species (4 out of 12) are Declining, with 2 species Naturally Uncommon (Table 1 (b))
- Overall, 42% of Endemic plus Native species combined are under threat.

We get a picture of a declining avian environment with species requiring intervention and support to avoid further decline.

Species that have been Introduced and become Naturalised in New Zealand are shown in Table 1(c). These species have not been analysed.

East Coast (EC) and Wellington Coast (WC) surveys

While EC and WC surveys both used 1 km sub-sections, which could validate any comparison of these surveys, there are significant differences (EC vs WC) in: the length surveyed (33 vs 460 km), the number of surveys (5 vs 1), range of habitats (pasture, shingle/reef vs urban, beach), the surrounding proximate areas (farmed pasture vs native bush, wetland).

Cell occupancy was used to compare the distribution of species rather than raw numbers. Cell occupancy was calculated using the number of sections (cells) containing a species.

For example: EC banded dotterels were observed over 5 surveys in 54 sections (54 cells) giving an average of 10.8 cells per survey. The maximum number of subsections was 33 per survey, therefore 10.8 cells per survey is equivalent to about 33% of the maximum (100%).

Cell occupancy used here is a measure of the spread of birds along the EC, or the frequency of encountering the species (rather than the number of birds per section).

Cell occupancy data for Endemic and Native species recorded in EC coastal surveys (Table 2) show that the spread of EC species across the surveyed area varied widely. These results could be allocated to 3 groupings:

- A high group included black-backed gull (78%), red-billed gull (61%), pied shag and VOC (about 50%).

- A middle range included NZ pipit (38%), banded dotterel (33%), little pied shag (30%), white-face heron (25%) and SIPO (23%).
- Other species were distributed over a lower range.

Dotterel counts and Site

Banded dotterel counts at different sections/sites (Figure 2) indicates these birds are found more often at some sites of the surveys more than others, which probably reflects preferred habitats. (McArthur 2019, Orchard 2020).

Data in Table 2 however, has been compiled assuming a uniform, contiguous distribution to illustrate relationships on a macro-scale; presented in descending order. These results suggest that the chances of encountering VOC are greater than encountering Banded dotterel which is greater than encountering SIPO.

Comparison of EC with WC data (Table 3)

McArthur et al (2019) presented data for 8 species that spend a significant portion of their lifecycle on the coast. Table 3 compares occupancy rates for EC surveys and WC survey. These results suggest

- Similar occupancy rates for VOC (49 vs 51%), and red-billed gull (61 vs 57%).
- Different occupancy rates include banded dotterel (33% vs 13%), NZ pipit (38 vs 11%), pied shag (50 vs 27%), Caspian tern (17 vs 7%).

Overall, EC bird data were either higher or closely similar to WC species, suggesting EC habitat supports a wider avian diversity. McArthur et al note that “threatened bird species tend to be highest on wide stretches of unvegetated sand or gravel”, habitat common on EC.

Migrations

There was evidence that for some EC species, bird counts were substantially higher in the winter surveys than summer survey, a trend evident in NZ pipit, Black-fronted tern, Spotted shag, Black shag, SIPO.

Birds that breed inland on braided rivers and wetlands move to the coast and to northern regions post breeding. For example, Black-fronted tern counts were about 20 times-higher in winter than summer.

The EC then is part of their migratory pathways and should be seen as an essential overwintering area and flyway, playing significant roles for these birds.

Conclusions

The best outcome for these birds will come from the proposed ban on vehicles with support for predator control.

Table 1(a) Endemic species in EC surveys: threat status and average count per survey

Species	Threat status	Count
Australasian Gannet (<i>Morus serrator</i>)	Not Threatened	6
Australasian Pipit (<i>Anthus novaeseelandiae</i>)	Declining	31
Banded Dotterel (<i>Charadrius bicinctus</i>)	Nationally Vulnerable	106
Black-billed Gull (<i>Chroicocephalus bulleri</i>)	Nationally Vulnerable	25
Black-fronted Tern (<i>Chlidonias albobriatus</i>)	Nationally Endangered	53
Paradise Shelduck (<i>Tadorna variegata</i>)	Not Threatened	9
Spotted Shag (<i>Phalacrocorax punctatus</i>)	Not Threatened	23
Variable Oystercatcher (<i>Haematopus unicolor</i>)	Recovering	58
South Island Pied Oystercatcher (<i>Haematopus unicolor</i>)	Declining	33

Table 1 (b) Native species in EC surveys: threat status and average count per survey

Species	Threat status	Count
Australasian Harrier (<i>Circus approximans</i>)	Not Threatened	7
Little Pied Shag (<i>Microcarbo melanoleucos</i>)	Not Threatened	20
Pied Shag (<i>Phalacrocorax varius</i>)	Recovering	86
Pied Stilt (<i>Himantopus leucocephalus</i>)	Not Threatened	9
Red-billed Gull (<i>Chroicocephalus novaehollandiae scopulinus</i>)	Declining	495
Silvereye (<i>Zosterops lateralis</i>)	Not Threatened	55
Black-backed Gull (<i>Larus dominicanus dominicanus</i>)	Not Threatened	275
White-faced Heron (<i>Egretta novaehollandiae</i>)	Not Threatened	15
White-fronted Tern (<i>Sterna striata</i>)	Declining	33
Caspian Tern (<i>Hydroprogne caspia</i>)	Nationally vulnerable	7
Little Black Shag (<i>Phalacrocorax sulcirostris</i>)	Uncommon	1
Black Shag (<i>halacrocorax carbo</i>)	Uncommon	4

1(c) Introduced and Naturalised species in EC surveys*

Species	Conservation	Threat
Chaffinch (<i>Fringilla coelebs</i>)	Introduced	Not Threatened
Cirl Bunting (<i>Emberiza cirrus</i>)	Introduced	Not Threatened
Dunnock (<i>Prunella modularis</i>)	Introduced	Not Threatened
European Goldfinch (<i>Carduelis carduelis</i>)	Introduced	Not Threatened
European Starling (<i>Sturnus vulgaris</i>)	Introduced	Not Threatened
House Sparrow (<i>Passer domesticus</i>)	Introduced	Not Threatened
Lesser Redpoll (<i>Acanthis cabaret</i>)	Introduced	Not Threatened
Sacred Kingfisher (<i>Todiramphus sanctus</i>)	Introduced	Not Threatened
Skylark (<i>Alauda arvensis</i>)	Introduced	Not Threatened
Song Thrush (<i>Turdus philomelos</i>)	Introduced	Not Threatened
Welcome Swallow (<i>Hirundo neoxena</i>)	Introduced	Not Threatened
Yellowhammer (<i>Emberiza citrinella</i>)	Introduced	Not Threatened

*Species that have been Introduced and become Naturalised in New Zealand

Table 2: the number of 1km cells per survey and the % occupancy rate for EC surveys

Species	EC cells per survey #	EC cell occupancy %
Black-backed Gull	25.6	78
Red-billed Gull	20.2	61
Pied shag	16.8	51
VOC	16.0	49
NZ Pipit	12.6	38
Banded Dotterel	10.8	33
Little Pied Shag	10.0	30
White-faced Heron	8.2	25
SIPO	7.6	23
Caspian Tern	5.6	17
White-fronted Tern	5.2	16
Black-fronted Tern	5.2	12
Gannet	3.4	10
Spotted Shag	5.2	8
Paradise Shellduck	2.8	8
Black Shag	2.2	7
Pied Stilt	1.4	4

Maximum = 33 cell sections per survey

Table 3: Comparison of WC cell occupancy* with EC cell occupancy

Species	WC cells per survey *	WC cell occupancy %	EC cell occupancy %	EC occupancy rate compared with WC
Red-billed Gull	273	57	61	Similar
Pied Shag	125	27	51	EC Higher
VOC	236	51	49	Similar
NZ Pipit	52	11.3	38	EC higher
Banded Dotterel	58	13	33	EC higher
Caspian Tern	30	7	17	EC higher
White-fronted Tern	98	21	16	Similar
Black-Shag	78	13	7	Similar

- WC data for 8 species from McArthur *et al* (2019)

Banded dotterel

