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Birds of Te Araroa Trail – Aotearoa New Zealand's long pathway

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Abstract: Te Araroa Trail runs for more than 3,200 km between Cape Reinga and Bluff, along the length of Aotearoa New Zealand's two main islands. All birds seen and heard along the trail during the austral summer were counted in 1,720 contiguous transects during 124 days of walking from north to south between 2 November 2023 and 11 March 2024 (84.7% of transects were 2 km long). A total of 106,207 birds of 107 species were counted during daylight transects, at a mean encounter rate of 32.6 individuals per km. The highest counts were for house sparrow (*Passer domesticus* – 12,517 birds), chaffinch (*Fringilla coelebs* – 5,806), and red-billed gull (*Chroicocephalus novaehollandiae* – 5,427). The species recorded most frequently were chaffinch (62.3% of transects), silvereye (*Zosterops lateralis* – 58.5%), and Eurasian blackbird (*Turdus merula* – 56.7%). Bird communities are summarised and compared for 19 sections covering the entirety of the trail, providing a baseline for comparisons within regions and over time. Northern and/or southern limits are presented for 30 species with restricted distributions. Comparison of counts along sections of the trail that were trapped (233 km, including 22.4% of forest) with counts from untrapped forest sections revealed that tūī (*Prosthemadera novaeseelandiae*), kererū (*Hemiphaga novaeseelandiae*), and New Zealand fantails (*Rhipidura fuliginosa*) were more abundant where predator control was undertaken. Twenty of the fantails seen in the South Island were black morph (5.6%), with the remaining 339 (94.4%) pied morph, indicating that the proportion of black morph birds has been stable over the past two decades. In addition to describing bird communities likely to be encountered on different sections of Te Araroa Trail, this account (and the dataset it is based on) provides a baseline for comparing New Zealand bird communities over time and space.

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Keywords: abundance, bird community, eBird, frequency of occurrence, New Zealand Bird Atlas Scheme, predator control, Te Araroa Trail

INTRODUCTION

Te Araroa Trail was opened in 2011, creating a continuous walking trail stretching for more than 3,000 km along the length of Aotearoa New Zealand's two main islands (Chapple 2017). The trail is predominantly coastal north of Auckland, and predominantly inland between Auckland and Bluff (Fig. 1). Although about 2,000 people walk the trail every year (Chapple 2017), there was little information available on the birds of the trail before 2023.

I walked the trail from north to south between 2 Nov 2023 and 11 Mar 2024, identifying and counting every bird seen and heard along the route. This information was summarised in a series of Te Papa blogs covering 19 contiguous sections that were separated by towns, cities, or other frequently used resupply or access points along the trail (https://blog.tepapa.govt.nz/tag/te-araroa-trail/). These same sections are used here as a framework to describe and contrast bird communities along a linear transect running the length of the country (Fig. 1).

Counts were a mixture of travelling counts (transects) and stationary counts, with the latter mainly undertaken at night, targeting nocturnal birds. All data were entered into eBird (Sullivan *et al*. 2009) and contributed to the 2019–2024 New Zealand Bird Atlas Scheme. Only data from diurnal transects are considered herein.

Records were kept of the presence of well-maintained predator traps along the trail, to determine whether trapping provided a measurable difference to encounter rates of endemic forest birds. Within the South Island, records were kept of the colour morph of all New Zealand fantails (pīwakawaka, *Rhipidura fuliginosa*) that were seen (pied vs black), to allow comparison with previous island-wide estimates of the proportion of black fantails (Craig 1972; Atkinson & Briskie 2007). Black morph fantails are rarely encountered in the North Island (Higgins *et al*. 2006; Heather & Robertson 2015).

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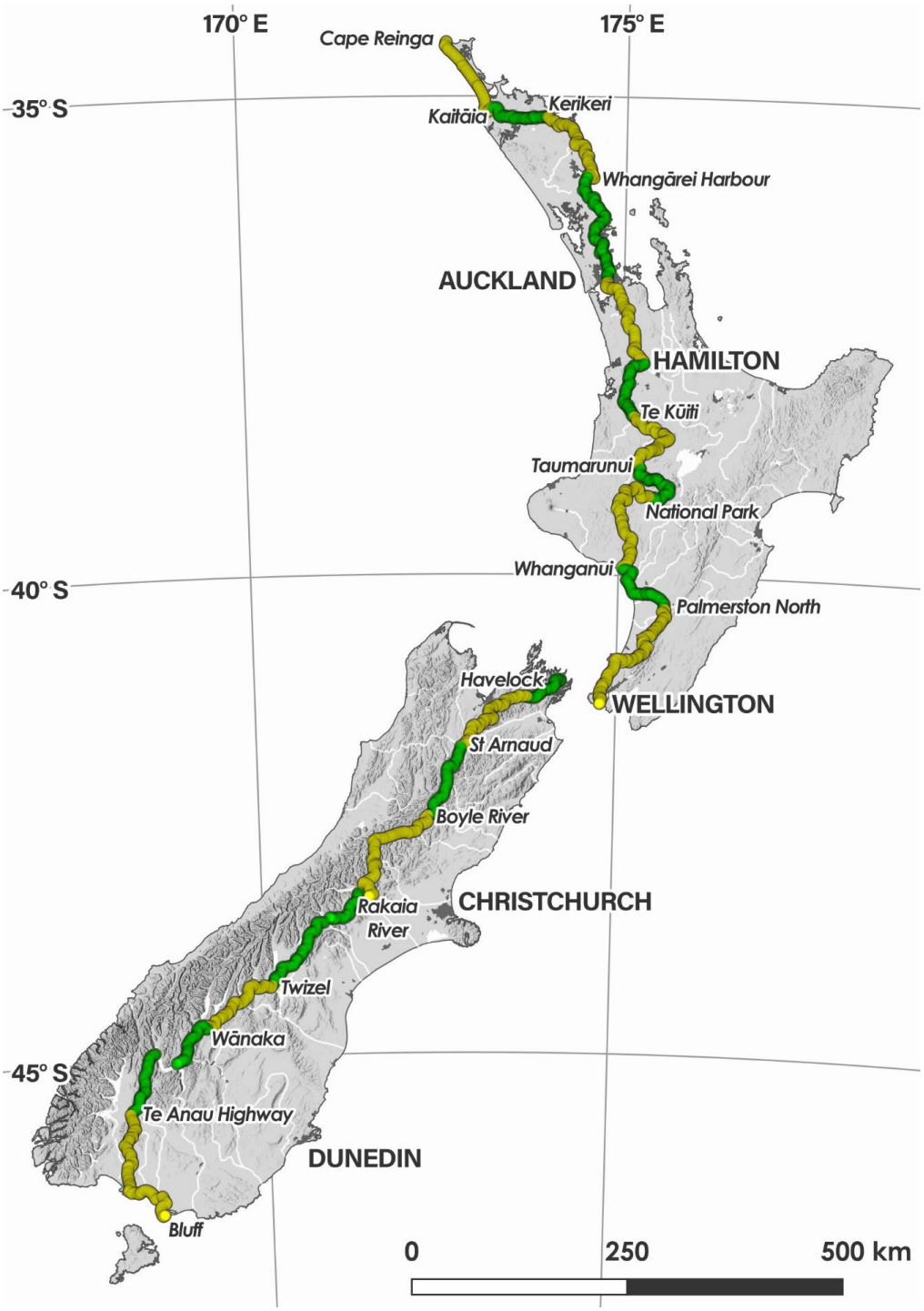

Figure 1. Te Araroa Trail, based on 1,720 mid-transect waypoints (most transects were 2 km in length). Alternating bands of yellow and green waypoints are used to separate the 19 trail sections referred to in the text, with labelled place names showing start and end points for each section (plus an additional two major cities). Map created in QGIS, with data from the LINZ Data Service, under CC BY 4.0 licence.

In addition to describing bird communities likely to be encountered on different sections of Te Araroa Trail, and the differences between them, this account (and the dataset it is based on) provides a baseline for comparing New Zealand bird communities over time and space.

METHODS

Count methodology

All birds seen or heard while walking Te Araroa Trail were recorded as unbounded counts (Hartley & Greene 2012) in contiguous transects that were mainly 2 km long (84.7% of transects), as measured with a GPS-enabled Garmin Instinct wristwatch that was programmed to give an alert at every kilometre. A new transect was started at any major habitat boundary (Table 1) and counts were terminated before dusk, with a new transect initiated the following morning. Mid-transect waypoints (1 km from the start) were recorded for each transect. Any count data from transects less than 0.5 km in length were added to the previous transect, and so transects were 0.5–2.4 km in length. The first transect each day was started at least 30 minutes after daybreak to avoid counting birds calling during the dawn chorus (the earliest counts were initiated at 06:25

Table 1. Cumulative lengths (km) of broad habitat categories along 19 contiguous sections of Te Araroa Trail. See Methods for definitions of habitat categories Coast and Open.

	Length (km)	Habitat (km)				
Section		**Coast**	**Farm**	**Forest**	**Open**	**Urban**
Cape Reinga to Kaitāia	127.3	98.1	13.0	0	12.8	3.4
Kaitāia to Kerikeri	117.2	0	58.4	57.8	0	1.0
Kerikeri to Whangārei Harbour	183.7	31.3	113.2	37.7	0	1.5
Whangārei Harbour to Auckland	225.7	68.7	95.8	31.0	0	30.2
Auckland to Hamilton	185.6	10.0	137.5	15.7	0	22.4
Hamilton to Te Kūiti	115.0	0	76.9	36.9	0	1.2
Te Kūiti to Taumarunui	170.1	0	85.0	78.9	0	6.2
Taumarunui to National Park	129.0	0	36.7	65.7	24.6	2.0
National Park to Whanganui*	213.1	0	120.8	58.4	0	1.4
Whanganui to Palmerston North	121.0	19.5	85.7	4.1	0	11.7
Palmerston North to Wellington	254.7	19.4	71.2	132.7	15.1	16.3
Cook Strait to Havelock	96.1	9.5	5.8	80.8	0	0
Havelock to St Arnaud	181.2	2.0	37.6	116.7	23.7	1.2
St Arnaud to Boyle River	126.9	0	0	74.9	52.0	0
Boyle River to Rakaia River	208.2	0	34.6	95.7	77.9	0
Rakaia River to Twizel	209.0	0	12.0	1.0	195.0	1.0
Twizel to Wānaka	151.1	0	0	20.6	129.0	1.5
Wānaka to Te Anau Highway	200.9	0	8.0	45.7	147.2	0
Te Anau Highway to Bluff	240.9	47.8	51.6	83.8	57.7	0
Total	3256.7	306.3	1043.8	1038.1	735.0	101.0

*Plus 32.5 km of River

New Zealand Daylight Saving Time in late December, with incremental changes from 06:50 in early November to 07:20 in early March). Binoculars (8 x magnification) were used to aid identification when required when walking, but were not generally used to detect birds. The exception to this was at lakes and estuaries with large numbers of wetland birds, where binoculars were used to locate, identify and count birds.

No attempt was made to separate birds seen from those heard, with the exception of New Zealand fantails in the South Island, where birds seen were recorded separately by colour morph (pied fantail vs black fantail), and birds that were heard only were recorded as 'fantail' without further qualification.

Trail sections and major habitat types

Counts were grouped into 19 sections to facilitate comparisons of bird communities between different parts of Te Araroa Trail (Fig. 1 and Table 1). The dominant habitat for each transect was recorded, using six broad habitat categories: Coast, Farm, Forest, Open (not intensively farmed, vegetation <2 m tall), River, and Urban (Table 1). 'Coast' was used only when the tideline was visible and less than 200 m from the trail. 'Open' included high country farms with low stocking rates, where the vegetation was dominated by tussock grasses. The only transects that were dominated by 'River' were 17 contiguous transects (32.5 km) that were transited by canoe on the Whanganui River, between Mangapurua and Pipiriki. None of the 2-km long transects were dominated by horticulture or lakes. Urban trail section ends were generally at the point of the trail closest to the town centre (exceptions were the 'Auckland' break at Onehunga, and the 'Palmerston North' break at Massey University campus).

Comparisons of bird communities between sections and habitats

Birds recorded in each of the 19 sections were converted into encounter rates (birds per kilometre = birds/km) to facilitate comparisons between sections. The full list of 107 species and their encounter rates were compared between all sections using Bray-Curtis dissimilarity indices (Bray & Curtis 1957) in order to determine overall similarities between bird communities throughout the country, and to identify any sections with strongly distinct bird communities. Bray-Curtis indices were also used to compare bird communities between islands and habitats. In these comparisons, North Island robin (toutouwai, *Petroica longipes*) and South Island robin (kakaruai, *P. australis*) were treated as if they were the same species, meaning that encounter rates for 106 'species' were compared.

Encounter rates of endemic forest birds in the presence or absence of predator trapping

Kill-traps targeting mustelids (*Mustela* spp, principally stoat *M. erminea*) and rats (*Rattus* spp, principally ship rat *R. rattus*) were encountered frequently in forested sections of Te Araroa Trail, typically spaced about 200 m apart. The two main stoat and rat trap types along Te Araroa were DOC200 traps inside wooden boxes, and Goodnature A24 resetting traps. Any transect with four or more recently-maintained, set traps was recorded as 'Trapped', allowing comparison of bird encounter rates along Trapped vs Untrapped forest sections. As some endemic forest birds are rare or absent in parts of the country (e.g. long-tailed cuckoo | koekoeā, kākā, yellow-crowned parakeet | kākāriki, rifleman | tītitipounamu, bellbird | korimako, whitehead | pōpokotea, and North Island robin north of Hamilton), comparisons for each species were limited to sections where the target species was recorded in three or more transects within the section.

Scientific names
Scientific names for all bird species encountered along Te Araroa Trail (including those mentioned in the text and tables) are provided in Appendix 1.

RESULTS

Most abundant and most frequently observed bird species

A total of 106,207 birds of 107 species were counted during 3,256.7 km of daylight transects along the length of Te Araroa Trail, at a mean encounter rate of 32.6 birds/km. The full data set is provided in Supplementary materials, with data for the ten most abundant and most frequently observed species (overall, and separately by island) summarised in Tables 2 & 3.

House sparrow | tiu was the most abundant species counted (particularly in the North Island), followed by chaffinch |pahirini, red-billed gull | tarāpunga, and silvereye | tauhou (Table 2). House sparrow, chaffinch, and silvereye were the only species that were among the 'top ten' species by total count for both islands (Table 2B & C). Birds were nearly twice as abundant along North Island sections of Te Araroa Trail (41.3 birds/km vs 21.3 birds/km in the South Island), with five species recorded there at more than 1.87 birds/km (this was the maximum encounter rate for any species averaged across the South Island; Table 2B & C). Six of the species listed in Table 2 were recorded in flocks or colonies exceeding 500 individuals, with single-transect counts of 2,500 for bar-tailed godwit | kuaka and red-billed gull, 2,100 for southern black-backed gull | karoro, 1,452 for Canada goose | kuihi, 1,400 for grey teal | tētē-moroiti, and 733 and 576 for South Island pied oystercatcher | tōrea.

Chaffinch was the most frequently encountered species (62.3% of checklists), followed by silvereye and Eurasian blackbird | manu pango (Table 3). Eurasian blackbird was the most frequently encountered species in the North Island (74.4% of checklists), and silvereye was the most frequent in the South Island (54.6% of checklists). These three species plus New Zealand fantail and grey warbler | riroriro were among the top ten species by frequency of occurrence in both islands (Table 3), with fantail the most frequently encountered endemic species (47.2% of checklists).

Table 2. The ten most abundant bird species along Te Araroa Trail. A. The entire trail (3256.7 km). B. North Island (1842.4 km). C. South Island (1414.3 km).

A. Entire Te Araroa Trail	Count	Birds/km
House sparrow	12,517	3.84
Chaffinch	5,806	1.78
Red-billed gull	5,427	1.67
Silvereye	5,381	1.65
Southern black-backed gull	4,589	1.41
Common starling	4,467	1.37
European goldfinch	4,256	1.31
Eurasian blackbird	4,019	1.23
Common myna	3,406	1.05
Bar-tailed godwit	3,245	1.00
B. North Island	**Count**	**Birds/km**
House sparrow	10,921	5.93
Red-billed gull	4,865	2.64
Chaffinch	4,115	2.23
Southern black-backed gull	4,054	2.20
Common starling	3,599	1.95
European goldfinch	3,437	1.87
Common myna	3,406	1.85
Eurasian blackbird	3,389	1.84
Bar-tailed godwit	3,215	1.75
Silvereye	2,740	1.49
C. South Island	**Count**	**Birds/km**
Silvereye	2,641	1.87
Grey teal	1,981	1.40
Canada goose	1,956	1.38
Chaffinch	1,691	1.20
Bellbird	1,619	1.14
House sparrow	1,596	1.13
Tomtit	1,287	0.91
Mallard	1,126	0.80
Common redpoll	1,124	0.79
South Island pied oystercatcher	1,108	0.78

Table 3. The ten most frequently observed bird species along Te Araroa Trail, expressed as the number and percentage of diurnal transects where the species was recorded. A. The entire trail (3256.7 km, 1720 transects). B. North Island (1842.4 km, 976 transects). C. South Island (1414.3 km, 744 transects).

A. Entire Te Araroa Trail	Present	%
Chaffinch	1,071	62.3
Silvereye	1,007	58.5
Eurasian blackbird	976	56.7
New Zealand fantail	811	47.2
Grey warbler	705	41.0
House sparrow	693	40.3
Song thrush	674	39.2
Bellbird	650	37.8
European goldfinch	646	37.6
Tūī	644	37.4
B. North Island	**Present**	**%**
Eurasian blackbird	726	74.4
Chaffinch	704	72.1
Silvereye	601	61.6
Tūī	592	60.7
New Zealand fantail	590	60.5
House sparrow	552	56.6
Grey warbler	518	53.1
Song thrush	506	51.8
Goldfinch	494	50.6
Welcome swallow	480	49.2
C. South Island	**Present**	**%**
Silvereye	406	54.6
Chaffinch	367	49.3
Bellbird	344	46.2
Tomtit	260	34.9
Eurasian blackbird	250	33.6
Common redpoll	221	29.7
New Zealand fantail	221	29.7
Dunnock	218	29.3
Yellowhammer	204	27.4
Grey warbler	187	25.1

Bellbird (37.8% of checklists) and tūī (37.4%) were the most frequently recorded members of endemic genera (Table 3), and whitehead (a North Island endemic species) was the most frequently recorded member of a New Zealand endemic family (15.1% of North Island transects, and 8.5% overall).

Bird communities of different major habitats

The major habitats for the most part had distinct bird communities, with just two species occurring among the 'top ten' by abundance in four of the five habitats (house sparrow and silvereye), and another three species featuring in three habitats (chaffinch, common starling | tāringi, and Eurasian blackbird; Table 4). Coastal habitat was most distinct, with six species that were not shared with the 'top ten' of any other habitat (Table 4).

Habitats were more similar based on the bird species observed most frequently, with Eurasian blackbird featuring in the 'top ten' for all five habitats, three species featuring in four habitats (chaffinch, European goldfinch | kōurarini, and silvereye), and another three species featuring in three habitats (house sparrow, song thrush | manu-kai-hua-rakau, and welcome swallow | warou; Table 4). Farm and Urban habitats both featured all seven of these shared most-frequent species, with Coast, Forest, and Open all featuring four of them.

Urban	0.72			
Farm	0.73	0.47		
Open	0.81	0.77	0.61	
Forest	0.91	0.82	0.65	0.60
	Coast	Urban	Farm	Open

Figure 2. Bray-Curtis index comparison of bird communities in the five main habitats along Te Araroa Trail. A lower score indicates greater similarity between bird communities.

The distinctiveness of coastal habitat was also apparent when all 106 species' encounter rates were compared across habitats using Bray-Curtis indices (average score of 0.79 for Coast, cf. 0.62 to 0.75 for the four other habitats; Fig. 2). Farm and Urban were the most similar habitats, with seven 'top ten' species by both frequency and abundance in common and a Bray-Curtis index of 0.47 (Table 4 and Fig. 2).

Bird communities in the same habitat compared between North Island and South Island were more similar, particularly for Farm (Bray-Curtis index of 0.39) and Forest (0.41). Remaining between-island Bray-Curtis indices were 0.60 for Open and 0.67 for Coast, and 0.56 for all habitats combined (Urban was not compared, as Te Araroa Trail passed through only 3.7 km of Urban habitat in the South Island; Table 1).

Bird communities of each section

Refer to Table 1 for the extent of major habitats in each section.

Cape Reinga to Kaitāia (127.3 km, 69 transects)

The northernmost section was the most distinct in terms of landscapes and habitats, as it was dominated by coast (77%; Table 1) and had no forest. This was reflected in its bird community, which differed markedly from other sections (mean Bray-Curtis index = 0.76; Fig. 3). The most abundant species were white-fronted tern | tara, red-billed gull, and southern black-backed gull, and the most frequent species were southern black-backed gull, Eurasian skylark | kairaka, and yellowhammer | hurukōwhai (Appendix 2, Table 2.01). Prominent headlands at Cape Reinga and Maunganui Bluff provided sightings of three seabird species that were not encountered elsewhere on Te Araroa Trail (fluttering shearwater | pakahā, Buller's shearwater | rako, and flesh-footed shearwater | toanui), plus a single vagrant common tern was seen north of Maunganui Bluff (accepted Unusual Bird Report 2024/059). In addition,

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2	0.691																	
3	0.656	0.258																
4	0.670	0.427	0.177															
5	0.811	0.627	0.226	0.270														
6	0.743	0.281	0.270	0.364	0.394													
7	0.803	0.411	0.160	0.266	0.300	0.215												
8	0.779	0.410	0.270	0.370	0.408	0.145	0.151											
9	0.789	0.394	0.172	0.165	0.294	0.301	0.141	0.240										
10	0.811	0.660	0.401	0.438	0.344	0.283	0.364	0.326	0.416									
11	0.540	0.460	0.231	0.158	0.322	0.377	0.251	0.344	0.157	0.441								
12	0.732	0.518	0.377	0.477	0.489	0.259	0.352	0.264	0.401	0.415	0.474							
13	0.759	0.546	0.156	0.259	0.306	0.307	0.129	0.222	0.148	0.418	0.242	0.326						
14	0.901	0.702	0.321	0.426	0.456	0.221	0.250	0.127	0.314	0.370	0.399	0.243	0.211					
15	0.857	0.635	0.194	0.210	0.329	0.359	0.181	0.275	0.090	0.460	0.191	0.390	0.098	0.238				
16	0.771	0.634	0.189	0.199	0.315	0.374	0.215	0.319	0.114	0.452	0.198	0.414	0.134	0.289	0.074			
17	0.744	0.543	0.231	0.323	0.342	0.251	0.172	0.182	0.242	0.347	0.314	0.306	0.156	0.176	0.215	0.211		
18	0.769	0.541	0.168	0.209	0.309	0.340	0.176	0.277	0.112	0.439	0.199	0.386	0.105	0.270	0.076	0.066	0.177	
19	0.758	0.729	0.284	0.228	0.345	0.462	0.316	0.411	0.217	0.509	0.168	0.469	0.268	0.408	0.213	0.186	0.324	0.211

Figure 3. Bray-Curtis dissimilarity index comparison of bird communities in 19 contiguous sections along Te Araroa Trail, arranged from north (1) to south. A hypothetical score of 0 would indicate two sections having identical communities (both species composition and encounter rates); a score of 1 would indicate no overlap in species composition. Lighter colours indicate greater similarity. Cells above the line are comparisons between North Island sections; cells to the right of the line are comparisons between South Island sections; cells within the rectangle are comparisons between North Island and South Island sections. 1 = Cape Reinga to Kaitāia, 2 = Kaitāia to Kerikeri, 3 = Kerikeri to Whangārei Harbour, 4 = Whangārei Harbour to Auckland, 5 = Auckland to Hamilton, 6 = Hamilton to Te Kūiti, 7 = Te Kūiti to Taumarunui, 8 = Taumarunui to National Park, 9 = National Park to Whanganui, 10= Whanganui to Palmerston North, 11 = Palmerston North to Wellington, 12 = Meretoto / Ship Cove to Havelock, 13 = Havelock to St Arnaud, 14 = St Arnaud to Boyle River, 15 = Boyle River to Rakaia River, 16 = Rakaia River to Twizel, 17 = Twizel to Wānaka, 18 = Wānaka to Te Anau highway (SH94), 19 = Te Anau highway to Bluff.

Table 4. The ten most abundant and ten most frequent bird species in each of the five main habitats along Te Araroa Trail. '%' is the percentage of diurnal transects where the species was recorded for each habitat, '% rank' is the frequency of occurrence ranking for each species within each habitat. A. Coast (306.3 km, 168 transects). B. Farm (1043.8 km, 548 transects). C. Urban (101.0 km, 59 transects). D. Forest (1042.9 km, 551 transects). E. Open (735.0 km, 383 transects).

A. Coast	Birds/ km	Rank	%	% rank
Red-billed gull	15.40	1	53.0	2
Southern black-backed gull	11.78	2	82.1	1
Bar-tailed godwit	10.51	3	11.9	30
Grey teal	6.40	4	3.0	45
South Island pied oystercatcher	5.35	5	19.6	16
House sparrow	4.21	6	46.4	4
White-fronted tern	3.92	7	17.9	19
Black swan	2.62	8	8.9	36
Black-billed gull	2.14	9	7.7	37
Variable oystercatcher	1.95	10	51.2	3
Common starling	1.56	11	31.0	8
European goldfinch	0.79	15	28.6	9
Eurasian blackbird	0.66	17	32.7	7
Eurasian skylark	0.56	21	39.9	5
Welcome swallow	0.50	23	33.3	6
Caspian tern	0.26	34	28.0	10

B. Farm	Birds/ km	Rank	%	% rank
House sparrow	7.50	1	80.7	2
European goldfinch	3.11	2	75.2	4
Chaffinch	3.03	3	85.4	1
Common starling	2.67	4	56.8	11
Common myna	2.53	5	46.9	16
Eurasian blackbird	2.04	6	76.6	3
Silvereye	1.79	7	68.8	6
Mallard	1.59	8	29.4	22
Yellowhammer	1.38	9	59.1	9
Welcome swallow	1.30	10	63.9	8
Australian magpie	1.29	11	57.3	10
Song thrush	1.23	13	69.0	5
New Zealand fantail	1.02	15	65.9	7

C. Urban	Birds/ km	Rank	%	% rank
House sparrow	22.73	1	100.0	1
Common starling	6.03	2	83.1	3
Red-billed gull	4.63	3	28.8	15
Eurasian blackbird	4.50	4	89.8	2
Common myna	3.57	5	67.8	4
Mallard	2.45	6	22.0	16
Rock pigeon	2.24	7	42.4	12
Tūī	2.01	8	66.1	6
European goldfinch	1.36	9	55.9	8
Silvereye	1.09	10	59.3	7
Welcome swallow	0.98	11	55.9	9
Chaffinch	0.95	12	47.5	10
Song thrush	0.94	13	67.8	5

Table 4. *continued*

D. Forest	Birds/ km	Rank	%	% rank
Silvereye	2.14	1	73.1	1
Tomtit	1.74	2	69.7	2
Bellbird	1.74	3	67.2	3
Chaffinch	1.55	4	66.1	4
New Zealand fantail	1.00	5	64.2	5
Grey warbler	0.94	6	62.8	6
Whitehead	0.88	7	21.4	12
Eurasian blackbird	0.87	8	59.0	7
Tūī	0.72	9	42.1	8
Robin (two species combined)	0.49	10	27.8	10
Song thrush	0.28	12	26.9	9

E. Open	Birds/ km	Rank	%	% rank
Canada goose	2.46	1	7.8	27
Silvereye	1.42	2	42.8	2
Chaffinch	1.14	3	45.2	1
House sparrow	1.08	4	17.2	16
Common redpoll	0.87	5	33.2	5
Southern black-backed gull	0.77	6	21.4	10
Black-billed gull	0.75	7	3.4	31
Common starling	0.73	8	10.7	23
European greenfinch	0.66	9	22.2	9
Yellowhammer	0.64	10	37.6	4
European goldfinch	0.56	13	22.7	8
Dunnock	0.53	14	41.8	3
Bellbird	0.50	16	27.4	7
Eurasian blackbird	0.41	17	30.0	6

white-fronted tern, Caspian tern | taranui, and Australasian gannet | tākapu, were observed at higher densities than in other sections.

Kaitāia to Kerikeri (117.2 km, 60 transects)
The second-most northerly section had a bird community that differed markedly from all South Island sections (Fig. 3) due to the abundance of a range of species that are rare or absent in the South Island (including common myna | maina, eastern rosella | kākā uhi whero, common pheasant, wild turkey | korukoru, peafowl | pīkao, Barbary dove, brown quail | kuera, and spotted dove; Table 5). The most abundant species were house sparrow, common myna, and paradise shelduck | pūtangitangi, and the most frequent species were grey warbler, Eurasian blackbird, and New Zealand fantail (Appendix 2, Table 2.02). Paradise shelduck and greylag goose | kuihi were observed at higher densities than in other sections. The section produced the northernmost observations for wild turkey, peafowl, Barbary dove, spotted dove, and North Island robin (Table 5).

Kerikeri to Whangārei Harbour (183.7 km, 103 transects)
The most abundant species were common myna, house sparrow, and red-billed gull, and the most frequent species were chaffinch, Eurasian blackbird, and sacred kingfisher | kōtare (Appendix 2, Table 2.03). Pūkeko, grey warbler,

Table 5. Northern and/or southern limits for 30 bird species with restricted distributions observed on Te Araroa Trail. Latitudinal limits (N limit, S limit) are given in decimal degrees south. Additional species with restricted distributions were omitted from the table due to low encounter rates and/or if Te Araroa Trail didn't traverse suitable habitat near known limits of their distributions (e.g. kiwi species, whio, New Zealand dotterel, and spotted shag).

Species	N limit	Northernmost observation	S limit	Southernmost observation
Brown quail	–	[Occurs at or near Cape Reinga]	35.21	Puhoi
Common myna	–	[Occurs at or near Cape Reinga]	39.95	No. 2 Line, E of Whanganui
Common pheasant	–	[Occurs at or near Cape Reinga]	40.96	Queen Elizabeth Park, Raumati
Shining cuckoo[1]	–	[Occurs at or near Cape Reinga]	41.16	Spicer Forest, Porirua (10 January)
Eastern rosella	–	[Occurs at or near Cape Reinga]	41.28	Wellington Botanic Gardens
California quail	–	[Occurs at or near Cape Reinga]	45.01	Lake Hayes, Arrowtown
Wild turkey	35.18	Takahue, south-east of Kaitaia	38.97	Hikumutu Road , south of Taumarunui
Barbary dove	35.22	Kerikeri River	37.06	Porchester Road, Takanini
Spotted dove	35.22	Kerikeri River	38.27	SE of Waitomo
Peafowl	35.23	Upper Puketotara Track, W of Kerikeri	40.49	Gordon Kear Forest, S of Palmerston North
Brown teal	35.51	Whananaki, Northland	37.52	Waikato River north of Huntly
Fairy tern	36.13	Mangawhai estuary	36.24	Pakiri River mouth
Black-billed gull	36.96	Ambury Farm Park, Manukau Harbour	–	[Occurs on Rakiura / Stewart Island]
Bellbird	37.98	Mt Pirongia	–	[Occurs on Rakiura / Stewart Island]
Long-tailed cuckoo[1]	38.01	Mt Pirongia	42.72	East of Harper Pass (5 February)
Whitehead	38.12	Te Kauri Forest, west of Otorohanga	41.16	Spicer Forest, Porirua
North Island robin[2]	38.46	Mangaokewa Gorge, south of Te Kuiti	39.72	Whanganui River Road, near Atene
New Zealand falcon	38.46	Mangaokewa Gorge, south of Te Kuiti	45.88	Mt Linton Station, S of Takitimu Range
Common redpoll	38.48	Mangaokewa Road, N of Benneydale	–	[Occurs on Rakiura / Stewart Island]
Kākā[3]	38.51	Ngaherenga campsite, Pureora	45.32	South of South Mavora Lake
Yellow-crowned parakeet	38.51	Ngaherenga campsite, Pureora	45.71	SW of Aparima Hut, Takitimu Range
Rifleman	38.55	Mt Pureora	46.29	Turnbulls Track, Longwood Range
Black-fronted dotterel	39.79	Whanganui River, south of Parikino	40.07	Manawatu River, Palmerston North
Weka[4]	41.10	Ship Cove, Queen Charlotte Track	42.83	Lower Deception River, Otira
Brown creeper	41.10	Ship Cove, Queen Charlotte Track	–	[Occurs on Rakiura / Stewart Island]
Black-fronted tern	41.27	Lower Pelorus River, west of Havelock	–	[Occurs on Rakiura / Stewart Island]
South Island robin	41.36	Pelorus River, near Captain Creek	45.36	Kiwi Burn Hut, Mavora Valley
Kea	41.99	Upper Travers River, Nelson Lakes NP	43.62	Crooked Spur Hut, Two Thumb Range[5]
Cirl bunting	43.22	Harper Road, NW of Lake Henrietta	43.47	East of Lake Heron
Australasian crested grebe	43.24	Lake Selfe	45.04	Queenstown waterfront, Lake Wakatipu

[1]Both cuckoo species regularly occur much further south, but rarely call after the end of the breeding season.
[2]A single North Island robin seen off Blackbridge Road, Omahuta Forest (35.24°S) was likely derived from a 2009–10 translocation to adjacent Puketi Forest.
[3]Six kākā seen or heard along Te Whara Track, Bream Head (35.85°S) had likely colonised from Taranga / Hen Island.
[4]Ten weka seen or heard at Orongo Bay (35.29°S), south-east of Russell, were descendants of birds released nearby in 2002.
[5]Reported by several other Te Araroa walkers.

sacred kingfisher, New Zealand fantail, California quail | tikaokao, eastern rosella, brown teal | pāteke, Barbary dove, and shining cuckoo | pīpīwharauroa were observed at higher densities than in other sections. This was the only section where an Australasian bittern | matuku-hūrepo was seen (on a wetland behind the southern end of Ocean Beach), plus there was a vagrant wandering tattler on the adjacent coast (accepted Unusual Bird Report 2023/114). The section produced the northernmost observation of brown teal, weka, and kākā (Table 5).

Whangārei Harbour to Auckland (225.7 km, 130 transects)
While dominated by farmland (42%) and coast (30%), this was the most urban section (13%). The bird count was dominated by a red-billed gull colony estimated at 2,500 birds at Marsden Point, Whangārei Harbour. The most abundant species were red-billed gull, house sparrow, and common myna, and the most frequent species were Eurasian blackbird, common myna and house sparrow (Appendix 2, Table 2.04). Red-billed gull, tūī, variable oystercatcher | tōrea pango, New Zealand dotterel | tūturiwhatu, pied shag | kāruhiruhi, brown quail, and banded rail | moho pererū were observed at higher densities than in other sections, plus this was the only section where fairy tern | tara iti (two each at Mangawhai estuary and Pakiri River mouth) and a little egret (at Mangawhai estuary) were seen. The section produced the southernmost observation of brown quail (Table 5).

Auckland to Hamilton (185.6 km, 95 transects)
This section had the highest proportion of farmland (74%) and was the second-most urban section (12%). The most abundant species were house sparrow, bar-tailed godwit, and South Island pied oystercatcher, and the most frequent species were house sparrow, common myna, and Eurasian blackbird (Appendix 2, Table 2.05). The bird count included

large flocks of waders at Ambury Farm Park on the Manukau Harbour, which was the only site on Te Araroa Trail where red knot | huahou (300), wrybill | ngutu pare (30), and grey-tailed tattler (1) were recorded. In addition to these species, house sparrow, bar-tailed godwit, South Island pied oystercatcher, common myna, Eurasian blackbird, mallard | rakiraki, rock pigeon | kererū aropari, European greenfinch, song thrush, pied stilt | poaka, black shag | māpunga, spotted dove, little shag | kawaupaka, and little black shag | kawau tūī were observed at higher densities than in other sections, and a single vagrant chestnut-breasted shelduck was seen beside the Waikato River south of Meremere (accepted Unusual Bird Report 2024/058). The section produced the northernmost observation of black-billed gull | tarāpuka, and the southernmost observations for Barbary dove and brown teal (Table 5).

Hamilton to Te Kūiti (115 km, 62 transects)
The most abundant species were house sparrow, chaffinch, and common starling, and the most frequent species were chaffinch, Eurasian blackbird, tūī, grey warbler, and New Zealand fantail (Appendix 2, Table 2.06). Australian magpie | makipai, common pheasant, and wild turkey were observed at higher densities than in other sections. The section produced the northernmost observations for bellbird, long-tailed cuckoo, and whitehead, and the southernmost observation of spotted dove (Table 5).

Te Kūiti to Taumarunui (170.1 km, 88 transects)
The most abundant species were chaffinch, whitehead, and European goldfinch, and the most frequent species were chaffinch, Eurasian blackbird, and grey warbler (Appendix 2, Table 2.07). Chaffinch, whitehead, yellowhammer, and kākā were observed at higher densities than in other sections. The section produced the northernmost observations for New Zealand falcon | kārearea, common redpoll, yellow-crowned parakeet, and rifleman, and the southernmost observation of wild turkey (Table 5). The section also produced the second-most northern observations for North Island robin (after one in Omahuta forest west of Kerikeri) and kākā (after six at Bream Head, Whangārei).

Taumarunui to National Park (132.8 km, 67 transects)
The most abundant species were chaffinch, silvereye, and house sparrow, and the most frequent species were chaffinch, Eurasian blackbird, and silvereye (Appendix 2, Table 2.08). Long-tailed cuckoo, fernbird | mātātā, and whio | blue duck were observed at higher densities than in other sections.

National Park to Whanganui (213.1 km, 112 transects)
The most abundant species were chaffinch, silvereye, and house sparrow, and the most frequent species were chaffinch, Eurasian blackbird, and bellbird (Appendix 2, Table 2.09). This was the only section where nankeen night herons | Umu kotuku were seen (at Jerusalem and Upokongaro), plus welcome swallow, North Island robin, peafowl, and grey duck | pārera were observed at higher densities than in other sections. The section produced the northernmost observation of black-fronted dotterel, and the southernmost observation of North Island robin (Table 5).

Whanganui to Palmerston North (121 km, 63 transects)
The most abundant species were southern black-backed gull, house sparrow, and common starling, and the most frequent species were house sparrow, European goldfinch, common starling, chaffinch, and Eurasian skylark (Appendix 2, Table 2.10). There was a large southern black-backed gull breeding colony on the coast west of Koitiata (2,100 birds estimated), plus common starling, European goldfinch, Eurasian skylark, spur-winged plover, swamp harrier | kāhu, and black-fronted dotterel were also observed at higher densities than in other sections. The section produced the southernmost observations for common myna and black-fronted dotterel (Table 5).

Palmerston North to Wellington (259.5 km, 132 transects)
The most abundant species were house sparrow, red-billed gull, and southern black-backed gull, and the most frequent species were Eurasian blackbird, chaffinch, and tūī (Appendix 2, Table 2.11). This was the only section where a red-crowned parakeet | kakariki was recorded (in Wellington Botanic Garden, likely from the nearby Zealandia fenced sanctuary), plus kererū | New Zealand pigeon were observed at higher densities than in other sections. The section produced the southernmost observations for peafowl, common pheasant, shining cuckoo, whitehead, and eastern rosella (Table 5).

Meretoto / Ship Cove to Havelock (96.1 km, 51 transects)
This was the most-forested section (81%), plus there were many birds using estuarine habitat at Okiwa Bay, Mahakipawa Arm, and near Havelock. The most abundant species were silvereye, bellbird, and house sparrow, and the most frequent species were silvereye, bellbird, and Eurasian blackbird (Appendix 2, Table 2.12). Bellbird, white-faced heron | matuku moana, royal spoonbill | kōtuku ngutupapa, weka, and brown creeper | pīpipi were observed at higher densities than in other sections. The section produced the northernmost observations of brown creeper, and the second-most northerly observations of weka (after ten at Orongo Bay, south-east of Russell; Table 5).

Havelock to St Arnaud (181.2 km, 99 transects)
The most abundant species were silvereye, bellbird, and tomtit, and the most frequent species were silvereye, bellbird, and New Zealand fantail (Appendix 2, Table 2.13). Silvereye was observed at a higher density than in other sections. The section produced the northernmost observations for black-fronted tern and South Island robin (Table 5).

St Arnaud to Boyle River (127.9 km, 65 transects)
The most abundant species were silvereye, chaffinch, and bellbird, and the most frequent species were silvereye, tomtit | miromiro, and bellbird (Appendix 2, Table 2.14). Tomtit and rifleman were observed at higher densities than in other sections. The section produced the northernmost observation of kea (Table 5).

Boyle River to Rakaia River (209.2 km, 110 transects)
The most abundant species were silvereye, chaffinch, and bellbird, and the most frequent species were chaffinch, silvereye, and bellbird (Appendix 2, Table 2.15). This was the only section where a kōtuku | white heron was seen (at the head of Lake Sumner), plus South Island robin and kea were observed at higher densities than in other sections. The section produced the southernmost observations for long-tailed-cuckoo and weka, and the northernmost observation of Australasian crested grebe | pūteketeke (Table 5).

Rakaia River to Twizel (209.0 km, 108 transects)
From Rakaia River south, the next three sections were predominantly open country (73 to 93%; Table 1) and had similar bird communities to each other (Bray-Curtis indices as low as 0.066; Fig. 3). The most abundant species for this section were Canada goose, yellowhammer, and paradise shelduck, and the most frequent species were yellowhammer, dunnock, common redpoll, and Eurasian skylark (Appendix 2, Table 2.16). It was the only section where cirl buntings were recorded (4 individuals), plus New Zealand pipit | pīhoihoi was observed at a higher density than in other sections. The section produced the southernmost observation of kea (Table 5).

Twizel to Wānaka (151.1 km, 79 transects)
The most abundant species were silvereye, black-billed gull, and European greenfinch, and the most frequent species were chaffinch, silvereye, and dunnock (Appendix 2, Table 2.17). This was the only section where a kakī | black stilt was seen (on the Ohau River), plus black-billed gull, dunnock, banded dotterel | pohowera, and New Zealand falcon were observed at higher densities than in other sections.

Wānaka to Te Anau highway (200.9 km, 105 transects)
The most abundant species were New Zealand scaup | pāpango, silvereye, and house sparrow, and the most frequent species were chaffinch, silvereye, dunnock, and Eurasian blackbird (Appendix 2, Table 2.18). New Zealand scaup, Australasian crested grebe, yellow-crowned parakeet, and Australian coot were observed at higher densities than in other sections. The section produced the southernmost observations for California quail, Australasian crested grebe, kākā, and South Island robin (Table 5).

Te Anau highway to Bluff (240.9 km, 129 transects)
The most abundant species were grey teal, Canada goose, and South Island pied oystercatcher, and the most frequent species were bellbird, tomtit, chaffinch, Eurasian blackbird, dunnock, and grey warbler (Appendix 2, Table 2.19). The counts were dominated by large numbers of waterfowl and waders on the New River and Aparima River estuaries and at the western end of Oreti Beach. This was the only section where sooty shearwater | tītī (154), spotted shag | kawau tikitiki (2), Foveaux shag | mapo (1), and little owl | ruru nohinohi (1) were recorded, plus grey teal, Canada goose, black swan | kakīanau, common redpoll, Australasian shoveler | kuruwhengi, ruddy turnstone, and black-fronted tern | tarapirohe, were observed at higher densities than in other sections. The section produced the southernmost observations for yellow-crowned parakeet, New Zealand falcon, and rifleman (Table 5).

Apparent responses to predator trapping
The presence or absence of predator traps along forested sections of Te Araroa Trail made little apparent difference to encounter rates for most species of native forest bird species (Table 6). The only species that showed an apparent positive response to predator trapping were tūī, kererū, and New Zealand fantail. Tūī had 90% higher counts at trapped sites (P <0.001), kererū counts were 68% higher (P=0.025), and New Zealand fantail counts were 27% higher (P=0.048).

Two species showed an apparent negative response to predator trapping (Table 6), with bellbird counts 20% lower at trapped sites (P=0.043), and weka counts 83% lower (P=0.011). Eleven other native forest bird species showed no significant difference in encounter rates between trapped and untrapped sections of Te Araroa Trail (Table 6). Encounter rates for kiwi and whio were too low to be included in analyses.

Fantail colour morphs
A total of 359 New Zealand fantails were seen in the South Island, of which 20 (5.6%) were of the black morph (Table 7). The highest proportions of black morph fantails were encountered in the final section (Te Anau Highway to Bluff, 11.8%) and along the Queen Charlotte Walkway and on to Havelock (10.0%). There were very few black morph fantails in inland Canterbury and Otago, with just 2 (1.7%) seen along 568 km of Te Araroa Trail between Boyle River and Wānaka (Table 7).

Table 6. Encounter rates of endemic forest birds (birds/km) at forested sites with or without predator trapping along Te Araroa Trail. Survey lengths differ for each species dependent on whether the species was recorded in three or more transects within each section (see Methods). Species are arranged in descending order of the extent of their apparent benefit (or not) from predator trapping.

Species	Distance (km)		Encounter rate			
	Trapped	Untrapped	Trapped	Untrapped	t	P
Tūī	182.2	671.5	1.38 ± 1.52	0.72 ± 1.31	3.81	<0.01
Kererū	164.4	727.4	0.36 ± 0.55	0.21 ± 0.49	2.26	0.03
New Zealand fantail	232.5	800.5	1.21 ± 1.28	0.95 ± 1.20	1.99	0.05
Kākā	66.7	153.6	0.66 ± 1.47	0.21 ± 0.73	1.71	NS
Whitehead	90.5	282.1	3.27 ± 4.07	2.12 ± 3.57	1.71	NS
North Island robin	71.5	131.5	1.73 ± 1.85	1.50 ± 2.04	0.59	NS
Yellow-crowned parakeet	66.7	153.6	0.32 ± 0.72	0.27 ± 0.87	0.34	NS
Grey warbler	232.5	800.5	0.99 ± 1.16	0.96 ± 1.22	0.24	NS
Rifleman	109.1	461.0	0.25 ± 0.93	0.20 ± 0.62	0.32	NS
South Island robin	80.6	252.4	0.54 ± 0.67	0.54 ± 0.86	0.06	NS
Shining cuckoo	141.4	373.4	0.13 ± 0.26	0.15 ± 0.36	-0.36	NS
Long-tailed cuckoo	130.3	398.0	0.25 ± 0.55	0.28 ± 0.54	-0.37	NS
Brown creeper	91.1	427.1	0.22 ± 0.54	0.26 ± 0.72	-0.41	NS
Tomtit	232.5	800.5	1.57 ± 1.53	1.78 ± 2.12	-1.23	NS
Bellbird	181.6	709.2	1.67 ± 1.72	2.09 ± 2.09	-2.04	0.04
Weka	57.2	194.2	0.03 ± 0.13	0.21 ± 0.63	-2.58	0.01

Table 7. Encounter rates and colour morphs of New Zealand fantails along South Island sections of Te Araroa Trail, January to March 2024. '% black' was calculated from the number of birds that were seen and identified to colour morph.

Section	Heard	Pied	Black	% black
Cook Strait to Havelock	15	27	3	10.0
Havelock to St Arnaud	24	52	4	7.1
St Arnaud to Boyle River	10	47	2	4.1
Boyle River to Rakaia River	34	63	1	1.6
Rakaia River to Twizel	1	4	0	0
Twizel to Wānaka	10	51	1	1.9
Wānaka to Te Anau Highway	14	50	3	5.7
Te Anau Highway to Bluff	14	45	6	11.8
Total	122	339	20	5.6

DISCUSSION

Characteristic bird species and communities of Te Araroa Trail

The primary purpose of this account is to provide a resource for Te Araroa Trail walkers with an interest in birds. While full details of species encountered on the trail during the 2023–24 season can be explored in Supplementary materials, the tables in Appendix 2 (summarising the ten most abundant and ten most frequently observed species for each of 19 sections of the trail) identify 43 species that are readily encountered along Te Araroa Trail, and their relative numbers and frequency of occurrence. Summaries of where the highest densities for each species were encountered (in the individual section accounts) provide information on where an additional 41 bird species are most likely to be encountered.

In addition to describing birds likely to be encountered along Te Araroa Trail, this account provides a semi-quantified description of bird communities along the full length of Aotearoa New Zealand's two main islands. Previous attempts to describe birds of the entire country were based on multi-observer atlas schemes, which presented maps based on individual species' presence or absence in submitted checklists (Bull *et al.* 1985; Robertson *et al.* 2007). These atlas scheme reports provided spatial representations of species' distributions that greatly expand on the data captured by a single observer along a linear transect. However, they were limited in their ability to present data on relative abundance within or between species. Bull *et al.* (1985) used simple presence versus absence in 10,000 yard grid squares, while Robertson *et al.* (2007) used dots of four different sizes to show how frequently each species was reported from each 10,000 metre grid square. Neither of these first two atlas schemes presented data on species abundance by time, distance or area, although Robertson *et al.* (2007: 391–404) included maps of species richness, based on the number of bird taxa per grid square.

Bird count data collected from Te Araroa Trail were submitted to the third Birds New Zealand atlas scheme (2019–2024) via eBird (Sullivan *et al*. 2009). The third atlas protocols encouraged participants to record search effort data (Crowe & Bell 2019), which will allow "heat maps" to be produced showing both distribution and abundance for each species (Fink *et al.* 2023; Birds New Zealand website, NZ Birds Atlas Scheme, viewed 24 Jul 2024). However, there is no easy way to convert raster layers from heat maps back into 'birds per km' or to compare relative densities between species from heat maps in order to compare bird communities between sites.

Frequency data (cf. abundance data) are more readily extracted from the first two New Zealand bird atlas schemes (Table 8). Bull *et al.* (1985) and Robertson *et al.* (2007) reported the same top 8 species for the entire country when ranked by frequency of observation (Table 8). These 8 species were among the 14 most-frequently observed species on Te Araroa Trail, which traversed a higher proportion of forest (32%) than is typical for New Zealand as a whole (23%; Robertson *et al.* 2007). Silvereye, New Zealand fantail, bellbird, and tūī (which are primarily forest-dwelling species) all ranked higher along Te Araroa Trail compared to the two atlases (Table 8). Chaffinch was the most frequently observed species on Te Araroa Trail (62.3% of checklists) and the first atlas (92.6% of squares; Bull *et al.* 1985), and was the second-most frequently observed species in the second atlas (89.5% of squares, cf. 89.7% for Eurasian blackbird; Robertson *et al.* 2007). Note that squares in the atlas schemes received more search effort than the individual checklists from Te Araroa Trail, with a mean of 5.5 checklists per square during 1969–79 (Bull *et al.* 1985), and a mean of 10.3 checklists per square during 1999–2004 (Robertson *et al.* 2007).

Table 8. The ten most frequently observed bird species in Atlas 1 (Bull *et al.* 1985) and Atlas 2 (Robertson *et al.* 2007) compared to Te Araroa Trail (this study).

	Frequency rank		
Species	Atlas 1	Atlas 2	Te Araroa
Chaffinch	1	2	1
Eurasian blackbird	2	1	3
Grey warbler	3	3	5
Song thrush	4	5	7
Silvereye	5	4	2
Yellowhammer	6	7	12
New Zealand fantail	7	6	4
Common starling	8	8	14
Dunnock	9	13	18
Southern black-backed gull	10	12	20
European goldfinch	12	9	9
Welcome swallow	17	10	11
House sparrow	11	11	6
Bellbird	14	14	8
Tūī	15	16	10

Apparent responses to predator trapping

Bird count data in relation to the presence or absence of predator traps along Te Araroa Trail must be interpreted cautiously in the absence of information on the history and effectiveness of pest control at each site, and trend information indicating whether bird species were increasing or decreasing. However, the overall pattern of most forest bird species not being significantly more abundant at trapped sites, when data is pooled for the full length of their Te Araroa Trail distributions, suggests that existing trapping programmes along the trail generally do not suppress predator populations sufficiently to produce a measurable change in populations of most arboreal forest birds (cf. Fea *et al*. 2020; Binny *et al.* 2021).

The ship rat is the most widespread and abundant predator affecting New Zealand forest birds (Innes *et al.* 2010; Walker *et al.* 2019a & b). Ship rats in New Zealand forests have home ranges as small as 0.3 ha (Innes & Skipworth 1983; Dowding & Murphy 1994; Hooker & Innes 1995), requiring trap-spacing as dense as a 50 x 100 m grid in order to maintain low rat numbers (Predator Free NZ website, viewed 26 Jul 2024). Trap spacings encountered

on Te Araroa Trail were typically about 200 m, which is the recommended spacing for stoat control (Predator Free NZ *ibid*.). Stoat control alone allows recovery of some large-bodied forest birds (particularly kiwi *Apteryx* spp; McLennan *et al.* 1996; Robertson & de Monchy 2012); however, this wide trap spacing is unlikely to benefit species that are vulnerable to ship rat predation.

Tūī and kererū were the species that showed the strongest evidence of a positive response to predator trapping along Te Araroa Trail. Both species are unusual in being members of endemic genera that have remained widespread on the mainland, including in some cities (Robertson *et al.* 2007; van Heezik *et al.* 2008; Brockie & Duncan 2012). Tūī, in particular, have recovered strongly in response to predator control at some unfenced sites (Miskelly 2018; Fitzgerald *et al*. 2019, 2021), as have kererū around Wellington city (Brockie & Duncan 2012; Miskelly 2018; McArthur *et al*. 2023). These studies support evidence from Te Araroa that tūī and kererū are less vulnerable to ship rat predation than smaller-bodied forest bird species, and are more likely to respond to wide-spaced predator trapping regimes than other diurnal forest bird species.

The apparent strong negative effect of predator trapping on weka is likely an artefact of weka having recently recolonised Nelson Lakes National Park (Peter Gaze and Erin Drummond *pers. comms*, 11 Jul & 4 Aug 2024), where traplines were already present. Two weka were recorded along 39.8 km of trapped transects in Nelson Lakes National Park (0.05 birds/km), which comprised 70% of trapped habitat for weka along Te Araroa Trail. A longer time series of counts is required to determine weka population trends at this site, and their response to predator trapping.

Fantail colour morphs

The proportion of black fantails observed along South Island sections of Te Araroa Trail (5.6% of 359 birds) was similar to the 4.9% of 470 birds that Atkinson & Briskie (2007) reported from 33 sites across the South Island in 2002. These two data points 22 years apart indicate that the proportion of black morph birds in the South Island population has stabilised after declining from *c*.12–13% reported by three studies based on field work undertaken between the late 1960s and 1978 (Caughley 1969; Craig 1972; Powlesland 1982). These proportions are much lower than those given in two recent field guides ("12–25%", Heather & Robertson 2015; and "Up to 25%", Scofield & Stephenson 2015).

Setting a baseline over time and space

Te Araroa Trail is recognised internationally as a highly regarded long-distance walking trail that samples an extraordinary diversity of habitats along a well-defined route (Chapple 2017; Zierold 2019; La Vigne 2020). This snapshot of the birds recorded on a 3,257 km transect along the length of the North and South Islands is intended as a baseline for future Te Araroa Trail walkers to assess changes in bird distribution and abundance along the entire trail or portions of it. The data presented in Appendix 2 and Supplementary materials could also provide a baseline for describing and comparing bird communities at other mainland sites.

The true value of this baseline may not become apparent for decades, until others repeat the counts, and interpret their findings in relation to environmental changes. Repeated surveys over long time scales have the potential to reveal changes in bird community structure and abundance in response to climate change, changes in human land use, or changes in predator communities (Russell *et al*. 2015; Iknayan & Beissinger 2020; Riddell *et al*. 2021).

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LITERATURE CITED

Atkinson, K.; Briskie, J.V. 2007. Frequency distribution and environmental correlates of plumage polymorphism in the grey fantail *Rhipidura fuliginosa*. *New Zealand Journal of Zoology 34*: 273–281. https://doi.org/10.1080/03014220709510085

Binny, R.N.; Innes, J.; Fitzgerald, N.; Pech, R.; James, A.; Price, R.; Gillies, C.; Byrom, A.E. 2021. Long-term biodiversity trajectories for pest-managed ecological restorations: eradication vs. suppression. *Ecological Monographs 91*: e01439. https://doi.org/10.1002/ecm.1439

Bray, J.R.; Curtis, J.T. 1957. An ordination of upland forest communities of southern Wisconsin. *Ecological Monographs 27*: 325–349. https://doi.org/10.2307/1942268

Brockie, R.E.; Duncan, C. 2012. Long term trends in Wellington City bird counts: 1969–2006. *Notornis* 59: 1–6.

Bull, P.C.; Gaze, P.D.; Robertson, C.J.R. 1985. *The atlas of bird distribution in New Zealand*. Wellington, Ornithological Society of New Zealand. 296 pp.

Caughley, G. 1969. Genetics of melanism in the fantail, *Rhipidura fuliginosa*. *Notornis 16*: 237–240.

Chapple, G. 2017. *A walking guide to New Zealand's long trail: Te Araroa*. Revised and updated 2017. New Zealand, Random House. 280 pp.

Checklist Committee (C.M. Miskelly, convenor). 2024. *Checklist of the Birds of New Zealand* (6th edition). Wellington, Ornithological Society of New Zealand. https://www.birdsnz.org.nz/society-publications/checklist/ (viewed 19 Feb 2025).

Craig, J.L. 1972. Investigation of the mechanism maintaining polymorphism in the New Zealand fantail, *Rhipidura fuliginosa* (Sparrman). *Notornis 19*: 42–55.

Crowe, P.; Bell, M. 2019. New Zealand Bird Atlas launched. *Birds New Zealand 22*: 10–11.

Dowding, J.E.; Murphy, E.C. 1994. Ecology of ship rats (*Rattus rattus*) in a kauri (*Agathis australis*) forest in Northland, New Zealand. *New Zealand Journal of Ecology 18*: 19–28.

Fea, N.; Linklater, W.; Hartley, S. 2020. Responses of New Zealand forest birds to management of introduced mammals. *Conservation Biology 35*: 35–49. https://doi.org/10.1111/cobi.13456

Fink, D.; Auer, T.; Johnston, A.; Strimas-Mackey, M.; Ligocki, S.; Robinson, O.; Hochachka, W.; Jaromczyk, L.; Crowley, C.; Dunham, K.; Stillman, A.; Davies, I.; Rodewald, A.; Ruiz-Gutierrez, V.; Wood, C. 2023. eBird Status and Trends, Data Version: 2022; released 2023. Cornell Lab of Ornithology, Ithaca, New York. https://doi.org/10.2173/ebirdst.2022 (viewed 29 Jul 2024).

Fitzgerald, N.; Innes, J.; Mason, N.W.H. 2019. Pest mammal eradication leads to landscape-scale spillover of tūī (*Prosthemadera novaeseelandiae*) from a New Zealand mainland biodiversity sanctuary. *Notornis 66*: 181–191.

Fitzgerald, N.; Innes, J.; Watts, C.; Thornburrow, D.; Bartlam, S.; Collins, K.; Byers, D.; Burns, B. 2021. Increasing urban abundance of tūī (*Prosthemadera novaeseelandiae*) by pest mammal control in surrounding forests. *Notornis 68*: 93–107.

Hartley, L.; Greene, T. 2012. Incomplete counts: Five minute bird counts (version 1.0). DOC inventory and monitoring toolbox (DOCDM-534972). Wellington, Department of Conservation. http://www.doc.govt.nz/Documents/science-and-technical/inventory-monitoring/im-toolbox-birds-incomplete-five-min counts.pdf (viewed 8 Jul 2024).

Heather, B.D.; Robertson, H.A. 2015. *The field guide to the birds of New Zealand*. 4th edn. New Zealand, Penguin. 464 pp.

Higgins, P.J.; Peter, J.M.; Cowling, S.J. (eds) 1999. *Handbook of Australian, New Zealand and Antarctic birds*. Vol 7: Boatbill to starlings. Melbourne, Oxford University Press. 1984 pp.

Hooker, S.; Innes, J. 1995. Ranging behaviour of forest-dwelling ship rats *Rattus rattus* and effects of poisoning with brodifacoum. *New Zealand Journal of Zoology 22*: 291–304. https://doi.org/10.1080/03014223.1995.9518044

Iknayan, K.J.; Beissinger, S.R. 2020. In transition: avian biogeographic responses to a century of climate change across desert biomes. *Global Change Biology 26*: 3268–3284. https://doi.org/10.1111/gcb.15030

Innes, J.; Kelly, D.; Overton, J.M.; Gillies, C. 2010. Predation and other factors currently limiting New Zealand forest birds. *New Zealand Journal of Ecology 34*: 86–114.

Innes, J.; Skipworth, J.P. 1983. Home ranges of ship rats in a small New Zealand forest as revealed by trapping and tracking. *New Zealand Journal of Zoology 10*: 99–110. https://doi.org/10.1080/03014223.1983.10423895

La Vigne, P. 2020. *Between each step: a married couple's thru hike on New Zealand's Te Araroa*. Austin, Texas, Atmosphere Press. 258 pp.

McArthur, N.; Flux, I.; Harvey, A. 2023. State and trends in the diversity, abundance and distribution of birds in Wellington City. Client report prepared for Greater Wellington Regional Council, Wellington. 82 pp.

McLennan, J.A.; Potter, M.A.; Robertson, H.A.; Wake, G.C.; Colbourne, R.; Dew, L.; Joyce, L.; McCann, A.J.; Miles, J.; Miller, P.J.; Reid, J. 1996. Role of predation in the decline of kiwi *Apteryx* spp., in New Zealand. *New Zealand Journal of Ecology 20*: 27–35.

Miskelly, C.M. 2018. Changes in the forest bird community of an urban sanctuary in response to pest mammal eradications and endemic bird reintroductions. *Notornis 65*: 132–151.

Powlesland, M.H. 1982. A breeding study of the South Island fantail (*Rhipidura fuliginosa fuliginosa*). *Notornis 29*: 181–195.

Riddell, E.A.; Iknayan, K.J.; Hargrove, L.; Tremor, S.; Patton, J.L.; Ramirez, R.; Wolf, B.O.; Beissinger, S.R. 2021. Exposure to climate change drives stability or collapse of desert mammal and bird communities. *Science 371*: 633–636. https://doi.org/10.1126/science.abd4605

Robertson, C.J.R.; Hyvönen, P.; Fraser, M.J.; Pickard, C.R. 2007. *Atlas of bird distribution in New Zealand 1999–2004*. Wellington, Ornithological Society of New Zealand. 533 pp.

Robertson, H.A.; de Monchy, P.J.M. 2012. Varied success from the landscape-scale management of kiwi (*Apteryx* spp.) in five sanctuaries in New Zealand. *Bird Conservation International 22*: 429–444. https://doi.org/10.1017/S0959270912000044

Russell, J.C.; Innes, J.G.; Brown, P.H.; Byrom, A.E. 2015. Predator-free New Zealand: conservation country. *BioScience 65*: 520–525. https://doi.org/10.1093/biosci/biv012

Scofield, P.; Stephenson, B. 2015. *Birds of New Zealand; a photographic guide*. Second edition. Auckland: Auckland University Press. 522 pp.

Sullivan, B.L.; Wood, C.L.; Iliff, M.J.; Bonney, R.E.; Fink, D.; Kelling, S. 2009. eBird: a citizen-based bird observation network in the biological sciences. *Biological Conservation* 142: 2282–2292. https://doi.org/10.1016/j.biocon.2009.05.006

van Heezik, Y.; Smyth, A.; Mathieu, R. 2008. Diversity of native and exotic birds across an urban gradient in a New Zealand city. *Landscape and Urban Planning 87*: 223–232. https://doi.org/10.1016/j.landurbplan.2008.06.004

Walker, S.; Kemp, J.R.; Elliott, G.P.; Mosen, C.C.; Innes, J.G. 2019. Spatial patterns and drivers of invasive rodent dynamics in New Zealand forests. *Biological Invasions 21*: 1627–1642. https://doi.org/10.1007/s10530-019-01922-0

Walker, S.; Monks, A.; Innes, J. 2019. Thermal squeeze will exacerbate declines in New Zealand's endemic forest birds. *Biological Conservation 237*: 166–174. https://doi.org/10.1016/j.biocon.2019.07.004

Zierold, C. 2019. *Te Araroa Trail - der ultimative vorbereitungsguide für den Te Araroa Trail in Neuseeland*. Independently published. 63 pp.

Appendix 1

Names and summary counts of all 111 bird species encountered on Te Araroa Trail, listed alphabetically by common name (following Checklist Committee 2024). Numbers in parentheses are the number of checklists where the species was recorded, followed by the total count (combining diurnal, nocturnal, transect and stationary counts).

Australasian bittern | matuku-hūrepo *Botaurus poiciloptilus* (1, 1); Australasian crested grebe | pūteketeke *Podiceps cristatus australis* (13, 82); Australasian gannet | tākapu *Morus serrator* (27, 62); Australasian shoveler | kuruwhengi *Spatula rhynchotis* (8, 168); Australian coot *Fulica atra australis* (8, 24); Australian magpie | makipae *Gymnorhina tibicen* (463, 1,714); banded dotterel | pohowera *Anarhynchus bicinctus* (17, 111); banded rail | moho pererū *Hypotaenidia philippensis* (6, 6); Barbary dove *Streptopelia risoria* (21, 56); bar-tailed godwit | kuaka *Limosa lapponica* (23, 3,245); bellbird | korimako *Anthornis melanura* (650, 2,692); black-billed gull | tarāpuka *Chroicocephalus bulleri* (29, 1,250); black-fronted dotterel *Elseyornis melanops* (4, 8); black-fronted tern | tarapirohe *Chlidonias albostriatus* (16, 149); black shag | māpunga *Phalacrocorax carbo* (85, 186); black swan | kakīānu *Cygnus atratus* (52, 1,161); brown creeper | pīpipi *Mohoua novaeseelandiae* (68, 147); brown quail | kuera *Synoicus ypsilophorus* (8, 12); brown teal | pāteke *Anas chlorotis* (5, 92); Buller's shearwater | rako *Ardenna bulleri* (2, 33); California quail | tikaokao *Callipepla californica* (186, 493); Canada goose | kuihi *Branta canadensis* (69, 2,106); Caspian tern | taranui *Hydroprogne caspia* (54, 108); chaffinch | pahirini *Fringilla coelebs* (1,071, 5,806); chestnut-breasted shelduck *Tadorna tadornoides* (1, 1); cirl bunting *Emberiza cirlus* (4, 4); common myna | maina *Acridotheres tristis* (378, 3,406); common pheasant *Phasianus colchicus* (224, 422); common redpoll *Acanthis flammea* (286, 1,350); common starling | tāringa *Sturnus vulgaris* (473, 4,467); common tern *Sterna hirundo* (1, 1); Cook's petrel | tītī *Pterodroma cookii* (1, 4); dunnock *Prunella modularis* (396, 771); eastern rosella | kākā uhi whero *Platycercus eximius* (213, 423); Eurasian blackbird | manu pango *Turdus merula* (976, 4,019); Eurasian skylark | kairaka *Alauda arvensis* (322, 946); European goldfinch | kōurarini *Carduelis carduelis* (646, 4,256); European greenfinch *Chloris chloris* (454, 1,949); fairy tern | tara iti *Sternula nereis* (2, 4); fernbird | mātātā *Poodytes punctatus* (22, 62); flesh-footed shearwater | toanui *Ardenna carneipes* (1, 6); fluttering shearwater | pakahā *Puffinus gavia* (2, 55); Foveaux shag | mapo *Leucocarbo stewarti* (1, 1); great spotted kiwi | roroa *Apteryx maxima* (3, 6); grey duck | pārera *Anas superciliosa* (10, 49); greylag goose | kuihi *Anser anser* (13, 262); grey-tailed tattler *Tringa brevipes* (1, 1); grey teal | tētē-moroiti *Anas gracilis* (14, 1,995); grey warbler | rirororiro *Gerygone igata* (705, 1,690); helmeted guineafowl *Numida meleagris* (1, 5); house sparrow | tiu *Passer domesticus* (693, 12,517); kākā *Nestor meridionalis* (45, 165); kakariki | parakeet sp. *Cyanoramphus* sp. (1, 1); kakī | black stilt *Himantopus novaezelandiae* (1, 1); kea *Nestor notabilis* (5, 11); kererū | New Zealand pigeon *Hemiphaga novaeseelandiae* (210, 375); kōtuku | white heron *Ardea alba* (1, 1); little black shag | kawau tūī *Phalacrocorax sulcirostris* (2, 2); little egret *Egretta gazetta* (1, 1); little owl | ruru nohinohi *Athene noctua* (1, 1); little shag | kawaupaka *Microcarbo melanoleucos* (88, 166); long-tailed cuckoo | koekoeā *Eudynamys taitensis* (99, 171); mallard | rakiraki *Anas platyrhynchos* (276, 2,896); nankeen night heron | Umu kōtuku *Nycticorax caledonicus* (3, 7); New Zealand dabchick | weweia *Poliocephalus rufopectus* (2, 2); New Zealand dotterel | tūturiwhatu *Anarhynchus obscurus* (31, 133); New Zealand falcon | kārearea *Falco novaeseelandiae* (41, 55); New Zealand fantail | pīwakawaka *Rhipidura fuliginosa* (811, 2,258); New Zealand pipit | pīhoihoi *Anthus novaeseelandiae* (108, 198); New Zealand scaup | pāpango *Aythya novaeseelandiae* (52, 698); North Island brown kiwi | kiwi-nui *Apteryx mantelli* (6, 13); North Island robin | toutouwai *Petroica longipes* (87, 369); paradise shelduck | pūtangitangi *Tadorna variegata* (243, 1,995); peafowl | pīkao *Pavo cristatus* (47, 175); pied shag | kāruhiruhi *Phalacrocorax varius* (56, 174); pied stilt | poaka *Himantopus himantopus leucocephalus* (60, 320); pūkeko *Porphyrio melanotus* (213, 887); red-billed gull | tarāpunga *Chroicocephalus novaehollandiae scopulinus* (139, 5,427); red-crowned parakeet | kākāriki *Cyanoramphus novaezelandiae* (1, 1); red knot | huahou *Calidris canutus* (1, 300); reef heron | matuku moana *Egretta sacra* (2, 2); rifleman | tītitipounamu *Acanthisitta chloris* (49, 132); rock pigeon | kererū aropari *Columba livia* (97, 1,120); royal spoonbill | kōtuku ngutupapa *Platalea regia* (20, 177); ruddy turnstone *Arenaria interpres* (8, 90); ruru | morepork | *Ninox novaeseelandiae* (47, 95); sacred kingfisher | kotare *Todiramphus sanctus* (429, 993); shining cuckoo | pīpīwharauroa *Chrysococcyx lucidus* (153, 226); silvereye | tauhou *Zosterops lateralis* (1,007, 5,381); song thrush | manu-kai-hua-rakau *Turdus philomelos* (674, 1,890); sooty shearwater | tītī *Ardenna grisea* (3, 154); southern black-backed gull | karoro *Larus dominicanus* (341, 4,589); South Island pied oystercatcher | tōrea *Haematopus finschi* (41, 2,245); South Island robin | kakaruai *Petroica australis* (107, 226); spotted dove *Streptopelia chinensis* (70, 153); spotted shag | kawau tikitiki *Phalacrocorax punctatus* (1, 2); spur-winged plover *Vanellus miles* (265, 1,198); swamp harrier | kāhu *Circus approximans* (264, 350); tomtit | miromiro *Petroica macrocephala* (504, 2,130); tūī *Prosthemadera novaeseelandiae* (644, 2,202); variable oystercatcher | tōrea pango *Haematopus unicolor* (110, 680); wandering tattler *Tringa incana* (1, 1); weka *Gallirallus australis* (26, 66); welcome swallow | warou *Hirundo neoxena* (625, 2,157); whio | blue duck *Hymenolaimus malacorhynchus* (3, 7); white-faced heron | matuku moana *Egretta novaehollandiae* (138, 434); white-fronted tern | tara *Sterna striata* (36, 1,224); whitehead | pōpokotea *Mohoua albicilla* (147, 1,004); wild turkey | korukoru *Meleagris gallopavo* (20, 109); wrybill | ngutu pare *Anarhynchus frontalis* (1, 30); yellow-crowned parakeet | kākāriki *Cyanoramphus auriceps* (30, 73); yellowhammer | hurukōwhai *Emberiza citrinella* (572, 2,156).

Appendix 2

The ten most abundant and ten most frequently observed bird species along 19 contiguous sections comprising the entire Te Araroa Trail. '%' is the percentage of transects where a species was recorded in each section, and '% rank' is the ranking order by frequency of occurrence (1 = the most frequently encountered species).

Table 2.01. Cape Reinga to Kaitāia (127.3 km, 69 transects).

Species	Birds/ km	Rank	%	% rank
White-fronted tern	5.66	1	17.4	11
Red-billed gull	3.05	2	23.2	8
Southern black-backed gull	2.51	3	78.3	1
House sparrow	1.76	4	20.3	9=
Common myna	1.34	5	27.5	5=
European goldfinch	0.77	6	24.6	7
Eurasian skylark	0.76	7	50.7	2
Welcome swallow	0.47	8	31.9	4
Common starling	0.44	9	13.0	14
Fluttering shearwater	0.43	10	2.9	30
Yellowhammer	0.35	11	42.0	3
Eurasian blackbird	0.27	12	20.3	9=
Caspian tern	0.24	15	27.5	5=

Table 2.02. Kaitāia to Kerikeri (117.2 km, 60 transects).

Species	Birds/ km	Rank	%	% rank
House sparrow	3.44	1	55.0	9
Common myna	3.11	2	75.0	4
Paradise shelduck	1.72	3	31.7	14
Eurasian blackbird	1.51	4	76.7	2=
Silvereye	1.48	5	71.7	5
New Zealand fantail	1.25	6	76.7	2=
Grey warbler	1.22	7	85.0	1
Chaffinch	1.16	8	65.0	6
European goldfinch	1.07	9	48.3	11
Tūī	1.00	10	63.3	7
Song thrush	0.77	12	50.0	10
Sacred kingfisher	0.64	14	56.7	8

Table 2.03. Kerikeri to Whangārei Harbour (183.7 km, 103 transects).

Species	Birds/ km	Rank	%	% rank
Common myna	4.25	1	72.8	6
House sparrow	3.42	2	62.1	8
Red-billed gull	2.13	3	26.2	20
Chaffinch	2.07	4	79.6	1
Pūkeko	1.68	5	45.6	12
Eurasian blackbird	1.49	6	75.7	2
Tūī	1.48	7	74.8	4=
Grey warbler	1.47	8	74.8	4=
Bar-tailed godwit	1.39	9	4.9	46
Sacred kingfisher	1.32	10	75.7	3
New Zealand fantail	1.26	11	69.9	7
Silvereye	1.13	13	60.2	9
Welcome swallow	0.81	15	58.3	10

Table 2.04. Whangārei Harbour to Auckland (225.7 km, 130 transects).

Species	Birds/ km	Rank	%	% rank
Red-billed gull	13.08	1	38.5	14
House sparrow	6.38	2	66.9	3
Common myna	3.13	3	71.5	2
Eurasian blackbird	2.65	4	77.7	1
Tūī	1.88	5	63.8	4
Bar-tailed godwit	1.84	6	6.2	40
Variable oystercatcher	1.74	7	30.8	16
Chaffinch	1.36	8	54.6	5
Rock pigeon	1.22	9	23.1	21
Common starling	1.19	10	40.8	13
Silvereye	1.03	12	53.1	6
Song thrush	0.93	13	49.2	8
New Zealand fantail	0.92	15=	51.5	7
Welcome swallow	0.92	15=	48.5	9=
Grey warbler	0.73	18	48.5	9=

Table 2.05. Auckland to Hamilton (185.6 km, 95 transects).

Species	Birds/ km	Rank	%	% rank
House sparrow	17.91	1	91.6	1
Bar-tailed godwit	13.62	2	4.2	38
South Island pied oystercatcher	5.81	3	4.2	38
Common myna	5.50	4	85.3	2
Common starling	5.11	5	82.1	4
European goldfinch	3.97	6	78.9	5
Eurasian blackbird	3.42	7	84.2	3
Mallard	3.20	8	33.7	20
Rock pigeon	3.12	9	26.3	25
European greenfinch	2.67	10	73.7	8=
Chaffinch	1.88	11	77.9	6
Silvereye	1.73	13	73.7	8=
Song thrush	1.56	15	74.7	7
Sacred kingfisher	1.02	18	69.5	10

Table 2.06. Hamilton to Te Kūiti (115 km, 62 transects).

Species	Birds/ km	Rank	%	% rank
House sparrow	4.16	1	51.6	10
Chaffinch	2.96	2	80.6	1
Common starling	2.18	3	38.7	16
European goldfinch	2.17	4	62.9	6=
Common myna	2.15	5	50.0	11
Australian magpie	1.90	6	62.9	6=
Yellowhammer	1.51	7	53.2	9
Eurasian blackbird	1.49	8	77.4	2
Tūī	1.17	9	71.0	3=
Silvereye	1.15	10	62.9	6=
Grey warbler	1.03	12	71.0	3=
New Zealand fantail	0.93	13	71.0	3=

Table 2.07. Te Kūiti to Taumarunui (170.1 km, 88 transects).

Species	Birds/ km	Rank	%	% rank
Chaffinch	3.97	1	92.0	1
Whitehead	2.92	2	46.6	16
European goldfinch	2.39	3	53.4	12=
House sparrow	2.32	4	47.7	15
Silvereye	2.25	5	76.1	4
Yellowhammer	1.70	6	60.2	8
Australian magpie	1.53	7	53.4	12=
Tūī	1.40	8	70.5	6=
Bellbird	1.23	9	70.5	6=
New Zealand fantail	1.22	10	73.9	5
Eurasian blackbird	1.21	11	84.1	2
Grey warbler	1.14	14	81.8	3
Welcome swallow	1.09	15	55.7	10
Song thrush	0.92	17	59.1	9

Table 2.08. Taumarunui to National Park (132.8 km, 67 transects).

Species	Birds/ km	Rank	%	% rank
Chaffinch	3.24	1	89.6	1
Silvereye	2.09	2	76.1	3
House sparrow	1.91	3	28.4	21
Eurasian blackbird	1.73	4	82.1	2
Whitehead	1.57	5	38.8	12
European goldfinch	1.39	6	29.9	18=
Tomtit	1.33	7	50.7	9=
Bellbird	1.26	8	64.2	5=
Common starling	1.11	9	29.9	18=
Common redpoll	1.09	10	41.8	11
Grey warbler	1.07	11	65.7	4
New Zealand fantail	1.05	12	64.2	5=
Song thrush	1.01	13	58.2	7
Tūī	0.81	15	55.2	8
Dunnock	0.47	19	50.7	9=

Table 2.09. National Park to Whanganui (213.1 km, 112 transects).

Species	Birds/ km	Rank	%	% rank
Chaffinch	3.38	1	86.6	1
Silvereye	2.23	2	73.2	5
House sparrow	2.11	3	43.8	14
Eurasian blackbird	2.00	4	83.9	2
Welcome swallow	1.74	5	65.2	7
Bellbird	1.60	6	83.0	3
Song thrush	1.25	7	69.6	6
European goldfinch	1.24	8	53.6	10
Yellowhammer	1.21	9	51.8	11
Australian magpie	1.06	10	54.5	9
Tūī	1.06	11	77.7	4
New Zealand fantail	0.87	12	64.3	8

Table 2.10. Whanganui to Palmerston North (121 km, 63 transects).

Species	Birds/ km	Rank	%	% rank
Southern black-backed gull	22.33	1	46.0	14
House sparrow	15.44	2	95.2	1
Common starling	7.53	3	74.6	3=
European goldfinch	5.90	4	90.5	2
Mallard	2.18	5	31.7	17
Eurasian blackbird	1.96	6	57.1	10
Chaffinch	1.79	7	74.6	3=
European greenfinch	1.64	8	60.3	9
Eurasian skylark	1.47	9	74.6	3=
Welcome swallow	1.45	10	66.7	6=
Australian magpie	1.32	11	66.7	6=
Song thrush	0.79	15	63.5	8

Table 2.11. Palmerston North to Wellington (259.5 km, 132 transects).

Species	Birds/ km	Rank	%	% rank
House sparrow	5.61	1	49.2	7
Red-billed gull	2.99	2	14.4	24
Southern black-backed gull	2.50	3	18.9	20
Chaffinch	2.11	4	73.5	2
Common starling	1.83	5	36.4	10
Eurasian blackbird	1.55	6	75.8	1
Tūī	1.51	7	67.4	3
Silvereye	1.50	8	60.6	5
White-fronted tern	1.44	9	3.0	42
European goldfinch	1.31	10	41.7	9
New Zealand fantail	1.14	11	65.9	4
Bellbird	1.01	12	57.6	6
Grey warbler	0.44	18	44.7	8

Table 2.12. Meretoto / Ship Cove to Havelock (96.1 km, 51 transects).

Species	Birds/ km	Rank	%	% rank
Silvereye	2.85	1	84.3	1=
Bellbird	2.28	2	84.3	1=
House sparrow	1.99	3	25.5	8
South Island pied oystercatcher	1.68	4	5.9	31=
Black swan	1.10	5	7.8	22=
Eurasian blackbird	0.98	6	62.7	3
Paradise shelduck	0.92	7	5.9	31=
White-faced heron	0.85	8	13.7	17
Chaffinch	0.80	9	56.9	4
Mallard	0.79	10	7.8	22=
New Zealand fantail	0.47	14	43.1	5=
Song thrush	0.43	17	37.3	7
European goldfinch	0.40	18	23.5	9=
Weka	0.29	20	23.5	9=
Grey warbler	0.26	22	43.1	5=
Welcome swallow	0.21	23	23.5	9=

Table 2.13. Havelock to St Arnaud (181.2 km, 99 transects).

Species	Birds/ km	Rank	%	% rank
Silvereye	3.80	1	82.8	1
Bellbird	2.12	2	70.7	2
Tomtit	1.49	3	40.4	4
European goldfinch	1.31	4	16.2	15
House sparrow	1.19	5	24.2	9
Mallard	0.88	6	9.1	23
Chaffinch	0.62	7	39.4	5
Common redpoll	0.56	8	31.3	7
Yellowhammer	0.52	9	19.2	13
Eurasian blackbird	0.49	10=	35.4	6
Welcome swallow	0.49	10=	30.3	8
New Zealand fantail	0.44	12	43.4	3
Song thrush	0.44	13	23.2	10

Table 2.14. St Arnaud to Boyle River (127.9 km, 65 transects).

Species	Birds/ km	Rank	%	% rank
Silvereye	2.08	1	75.4	1
Chaffinch	2.05	2	61.5	4
Bellbird	1.96	3	64.6	3
Tomtit	1.85	4	72.3	2
Canada goose	1.27	5	26.2	11
Common redpoll	0.78	6	35.4	7
Yellowhammer	0.56	7	30.8	9
New Zealand fantail	0.48	8	38.5	6
Song thrush	0.40	9	33.8	8
South Island robin	0.38	10	40.0	5
Grey warbler	0.24	15	27.7	10

Table 2.15. Boyle River to Rakaia River (209.2 km, 110 transects).

Species	Birds/ km	Rank	%	% rank
Silvereye	3.04	1	70.0	2=
Chaffinch	2.40	2	81.8	1
Bellbird	1.91	3	70.0	2=
Tomtit	1.85	4	61.8	4
Common redpoll	0.66	5	46.4	5
Mallard	0.61	6	8.2	29
Yellowhammer	0.59	7	33.6	9
Welcome swallow	0.57	8	30.9	10
New Zealand scaup	0.54	9	3.6	35
Eurasian blackbird	0.53	10	41.8	6
South Island robin	0.47	11=	40.9	7
New Zealand fantail	0.47	11=	40.0	8

Table 2.16. Rakaia River to Twizel (209.0 km, 108 transects).

Species	Birds/ km	Rank	%	% rank
Canada goose	1.08	1	9.3	21
Yellowhammer	1.05	2	44.4	1
Paradise shelduck	0.86	3	12.0	17
House sparrow	0.83	4	20.4	8=
Black-billed gull	0.72	5	2.8	31
Silvereye	0.68	6	22.2	7
Australian magpie	0.64	7	25.9	5=
Mallard	0.62	8	14.8	15
Common redpoll	0.60	9	26.9	3=
Eurasian skylark	0.57	10=	26.9	3=
Chaffinch	0.57	10=	25.9	5=
Dunnock	0.40	13	38.0	2
European greenfinch	0.34	14	20.4	8=
New Zealand pipit	0.26	18	19.4	10

Supplementary materials

An Excel spreadsheet of all birds encountered on Te Araroa Trail is available at https://www.birdsnz.org.nz/wp-content/uploads/2025/02/Te-Araroa-supplementary-materials.xlsx

Table 2.17. Twizel to Wānaka (151.1 km, 79 transects).

Species	Birds/ km	Rank	%	% rank
Silvereye	1.87	1=	45.6	2
Black-billed gull	1.87	1=	5.1	32
European greenfinch	1.83	3	32.9	4=
House sparrow	1.58	4	24.1	10
Chaffinch	1.53	5	54.4	1
Mallard	1.47	6	19.0	14
Common starling	1.11	7	17.7	16=
European goldfinch	1.07	8	32.9	4=
New Zealand scaup	0.85	9	17.7	16=
Eurasian blackbird	0.72	10	31.6	6
Common redpoll	0.69	11	25.3	8=
Dunnock	0.66	12	41.8	3
Southern black-backed gull	0.59	13	27.8	7
Yellowhammer	0.46	14	25.3	8=

Table 2.18. Wānaka to Te Anau highway (200.9 km, 105 transects).

Species	Birds/ km	Rank	%	% rank
New Zealand scaup	1.31	1	15.2	16
Silvereye	1.26	2	52.4	2
House sparrow	1.13	3	19.0	14
Chaffinch	0.85	4	54.3	1
Common starling	0.83	5	12.4	22
Paradise shelduck	0.82	6	24.8	10
European goldfinch	0.77	7	22.9	11
Black-billed gull	0.57	8	3.8	33
Tomtit	0.56	9	32.4	7
Dunnock	0.50	10	34.3	3=
Bellbird	0.47	11	33.3	5=
Eurasian blackbird	0.43	12	34.3	3=
Grey warbler	0.39	14	33.3	5=
New Zealand fantail	0.36	15	30.5	8
Yellowhammer	0.32	16	25.7	9

Table 2.19. Te Anau highway to Bluff (240.9 km, 129 transects).

Species	Birds/ km	Rank	%	% rank
Grey teal	8.17	1	3.9	43
Canada goose	6.19	2	4.7	37
South Island pied oystercatcher	3.84	3	15.5	19
Black swan	2.19	4	5.4	33
Common redpoll	2.07	5	29.5	8
House sparrow	2.03	6	21.7	13
Red-billed gull	1.98	7	14.0	20
Black-billed gull	1.67	8	10.1	26
Common starling	1.64	9	25.6	10
Mallard	1.22	10	12.4	22
Southern black-backed gull	1.15	11	28.7	9
Bellbird	1.02	12	46.5	1
Chaffinch	0.90	13	31.8	3=
Tomtit	0.87	15	34.1	2
Silvereye	0.41	21	31.0	7
Eurasian blackbird	0.35	23	31.8	3=
Dunnock	0.34	24	31.8	3=
Grey warbler	0.29	28	31.8	3=