

Bird monitoring on Banks Peninsula: Annual report for 2011

August 2012

This report will be included in *Monitoring the effects biodiversity pest control in high value environmental areas* report to be published in late 2012

Phillip Cochrane
Land Resources Officer (ecology)
Environmental Quality and Hazards
Calling within Christchurch: (03) 353 9007
Calling from any other area: 0800 324 636
DDI: 027 705 8528
email: phillip.cochrane@ecan.govt.nz

Environment Canterbury
P.O. Box 345
Christchurch
Office location: 10 Kyle Street Riccarton (NIWA)

Executive summary

Environment Canterbury and local community groups have established a network of five-minute bird count sites on Banks Peninsula to monitor the effectiveness of pest control programs in increasing native bush bird numbers. This is the fourth annual report on bird densities on Banks Peninsula, and includes monitoring for 2011.

A total of 31 sites (comprising 70 count stations) across Banks Peninsula were monitored in 2011; 63 counts were conducted by ten observers over the reporting period. The counts were spread out over the calendar year, however most counts conducted during the breeding season (Oct/Nov).

Fourteen native bird (bush), and 16 introduced species were recorded across all the sites, plus six native and two introduced open/coastal species. Of the native bush birds, grey warbler and bellbird were most often detected; and likewise blackbird and chaffinch were the most detected introduced bird. Over the whole year, bellbird and silvereye (waxeye) were the most abundant of the native species (3.4 & 2.8 birds per site, respectively). Again, bellbird was the most abundant species detected during the breeding season (3.7 birds per site). Maps of the distribution of native species are appended to this report.

To achieve more realistic estimates of the distributions of rare species, future monitoring should be increased in habitat suitable for rifleman, tomtit and tūī. This is likely to be centred on Hinewai Reserve and the south-eastern bush reserves. Increased efforts should not detract from current five-minute bird monitoring, which should continue, with special focus on counting in the breeding (Oct/Nov), post-breeding (Jan/Feb) and winter (Jun/Jul) seasons. Analysing bird densities along with pest control data may inform us on whether pest control is achieving biodiversity gains, but specific monitoring programmes will have to be implemented alongside current monitoring to help answer this question.

Table of contents

Executive summary	1
1 Introduction	4
2 Methods	4
2.1 Study sites	4
3 Results and discussion	4
3.1 Stations and sites.....	4
3.2 Bird counts	5
3.2.1 Changes between 2010 and 2011	5
3.2.2 Native birds.....	5
3.2.3 Native species-richness.....	5
3.2.4 Introduced birds	5
4 Conclusions	15
5 Recommendations.....	15
6 References	16
7 Appendix 1 – Distribution maps for native species.....	17
8 Appendix 2 – Distribution maps for introduced species	23
9 Appendix 3 – Five-minute bird count method instruction sheet	26

List of Figures

Figure 1: Locations of five-minute bird count stations for 2011.....	6
--	---

List of Tables

Table 1. Observer, count site and number of stations per site for 2011 (FS = Frances Schmechel, PC = Phillip Cochrane).	7
Table 2 Timing of counts for 2012 sites by season.	7
Table 3: Number and timing of counts by key season. Sites with two years of counts are highlighted in yellow, those with three years in green and four years in orange.....	8
Table 5: In 2011 there were fewer silver eyes and brown creepers than in 2010. Alternately, there was a greater abundance of grey warblers, song thrush, blackbird and dunnocks in 2011 than in 2010. No differences were found for the remaining recorded species. The average is calculated from only the sites where a species was recorded.....	8
Table 6: Complete list of recorded species in 2011. *The average number of individuals per count does not include sites where the species was not recorded.	10
Table 7: Average numbers of native forest birds recorded at count sites over the whole of 2011. Number of species detected per site is given in grey.....	11
Table 8: Average numbers of native forest birds recorded at count sites in the 2011 breeding season (Oct/Nov). Number of species detected per site is given in grey.....	12
Table 9: Average numbers of introduced birds recorded at count sites over the whole of 2011. Number of species detected per site is given in grey.....	13
Table 10: Average numbers of introduced birds recorded at count sites in the 2011 breeding season (Oct/Nov). Number of species detected per site is given in grey.....	14

1 Introduction

This is the fourth annual report on bird count monitoring for Banks Peninsula. This report includes the analyses of all data received by March 2012, for the 2011 calendar year. Results from previous years are presented in prior annual reports (see Schmechel 2008 & 2009; Cochrane and Schmechel 2011). These analyses of bird counts, as reported on here, are useful in two ways: (1) provide recent information on Banks Peninsula birds, which allow general comparisons to be made for species between years (2) provide feedback to the community on monitoring work.

2 Methods

For philosophy and a full description of methodology for this project, refer to the 2009 annual report (Schmechel 2010) and references contained within.

2.1 Study sites

The number of stations where bird counts were carried out has greatly increased from 2010. These counts were carried out at 70 stations within 31 sites (Figure 1 & Table 1). Each site contains between one and eight stations, depending on the size of the bush patch. The stations are a minimum of 200 metres apart, in a variety of habitat types including native and exotic forest and private gardens.

Data received by Environment Canterbury prior to 01 March 2012 were entered into a copy of the NZ Department of Conservation standard five-minute bird count spreadsheet. Any records received after this date will be included in the dataset, but not in this report. Copies of this dataset are held at Environment Canterbury and records will be uploaded to the New Zealand Biodiversity Recording Network website¹. Any data are available by request to Environment Canterbury and electronic copies of this report are kept on the Environment Canterbury website².

2.2 Calculating the standard error of the mean

Calculating the standard error of the mean allows us to account for the variation in counts that make up the mean. For example, if there was low variation (e.g. usually record 8-10 birds with a mean of 9 birds), then there would be a low standard error; conversely, if there is high variation (e.g. usually record 3-10 birds with a mean of 9), then the standard error would be large. For this reason a mean is usually accompanied by a measure of the variance; in this report the average number of counts \pm one standard error are reported. For example, if the mean for one species was 3.6 ± 1.2 one year and 3.7 ± 1.2 the next, we cannot say that the average number of birds differs between years (the standard errors overlap). Therefore, if a mean has a large standard error, then it is difficult to detect changes over time. One way to reduce the standard error (or increase certainty in our estimations) is to collect many counts.

3 Results and discussion

3.1 Stations and sites

A total of 70 stations were monitored by ten observers at 31 sites, at least once in the 2011 calendar year (Table 1). Count data were collected from 63 counting events, with the majority of counts conducted during the breeding season (Table 2). A counting event is defined as an occasion where an observer conducted a count at a site. The key seasons have been defined as: breeding (Oct/Nov), post breeding (Jan/Feb), and winter (Jun/Jul) (Table 2 & Table 3).

¹ <http://www.nzbrn.org.nz/birds/default.asp>

² <http://ecan.govt.nz/advice/biodiversity/area/banks-peninsula/Pages/reports.aspx>

3.2 Bird counts

3.2.1 Changes between 2010 and 2011

Species vary in their behaviours; therefore, some species will be more easily detected than other species (detectability). The most robust comparisons can be made within a species and between years. There were fewer silvereyes and brown creepers than in 2010. In contrast, there was a greater abundance of grey warblers, song thrushes, blackbirds and dunnocks in 2011 than in 2010 (Table 4). No differences in abundances between years were found for the remaining recorded species.

3.2.2 Native birds

Bellbirds were recorded as the most prevalent species, being present at 61 of 70 stations (87%, Table 5). Bellbirds were also the most detected species, representing 20% of recorded birds. Grey warblers were the second most detected native species (present at 73% of sites). Where brown creepers were present, an average of 2.6 individuals were recorded per count (Table 6). Tomtits, riflemen and tūī remain scarce and limited in distribution.

3.2.3 Native species-richness

Some sites were more species-rich than others, with sites in Hinewai Reserve or Akaroa harbour recording the greatest diversity of native bush birds (Table 6 & Table 7). Reporting on species diversity may be confounded by the experience of the observer; however, on Banks Peninsula, the rarer species are present in the large forest patches in the south-eastern bays region (tomtit, rifleman) with some spill-over into the Akaroa Township (tūī). Furthermore, compared with other areas on Banks Peninsula, Akaroa has an abundance of suitable plant species for tūī to feed on. Tūī records in the Akaroa Township may also be biased by supplementary feeding of sugar water to attract them to the area.

3.2.4 Introduced birds

Of the introduced species, blackbirds were once again the most detected and prevalent species: 154 birds were recorded at 52 of 70 stations (74%). Chaffinches were the second most detected and prevalent species, being recorded at 69% of the stations. Song thrushes were more prevalent, but less detected than goldfinches (Table 5). Species-richness for introduced birds was similar to native birds (Table 8 & Table 9), and variations in species-richness may be due to differences in type and size of habitat patches, time of year sampled or observer ability.



Figure 1: Locations of five-minute bird count stations for 2011

Table 1. Observer, count site and number of stations per site for 2011 (FS = Frances Schmechel, PC = Phillip Cochrane).

Observer	Site name	No. of stations
Ann Sherlock	145 Port Levy Road	2
Ann Sherlock	Jollie's Bush	1
Ann Sherlock	Living Springs (Allendale)	2
Ben Kennard	Hay Reserve	2
Ben Kennard	Montgomery Park Scenic Reserve	1
Ben Kennard	Twyneham Bush	2
ECan (FS)	Ikoraki Bay / Hutchinsons	2
ECan (FS)	Kaituna Valley / Packhorse track	2
ECan (FS)	Kaituna Valley Scenic Reserve	1
ECan (FS)	Kaituna Valley Upper	1
ECan (FS)	Long Bay Scenic Reserve	2
ECan (FS)	Manaia	1
ECan (FS)	Okuti Valley Scenic Reserve	1
ECan (FS)	Prices Valley	1
ECan (PC)	Fraser's Road	1
ECan (PC)	Kakanui	2
ECan (PC)	Montgomery Park Scenic Reserve	2
ECan (PC)	Onawe	4
ECan (PC)	Shadboldt Road	1
ECan (PC)	Whatarangi Totara Scenic Reserve	1
Eric Spurr	48 Onuku Road	1
Eric Spurr	Garden of Tane	2
Eric Spurr	Kaik Hill	8
James Mortimer	Haren	5
James Mortimer	Okains Bay Road	3
John McIlroy	38 Hempleman Drive	1
Paddy Stronach	Round Hill	1
Patsy Dart	35 Rue Noyer	1
Patsy Dart	Cherry Farm	6
Tricia Hewlett	Hinewai Lower	5
Tricia Hewlett	Hinewai Upper	5

Table 2 Timing of counts for 2012 sites by season.

Season	Months	No. of counts	Proportion
post-breed	Jan/Feb	5	8%
pre-winter	Mar/Apr/May	6	10%
Winter	Jun/Jul	7	11%
pre-breeding	Aug/Sept	4	6%
breeding	Oct/Nov	34	54%
late-breeding	Dec	7	11%

Table 3: Number and timing of counts by key season. Sites with two years of counts are highlighted in yellow, those with three years in green and four years in orange

Season	Site name	Year				
		2007	2008	2009	2010	2011
Breeding Oct/Nov	145 Port Levy Road				1	1
	38 Hempleman Drive		3	3	3	3
	48 Onuku Road				1	4
	Cherry Farm		1	1	1	2
	Garden of Tane				1	4
	Haren					1
	Hay Reserve		1	1	1	1
	Hinewai Lower		1	1	1	1
	Hinewai Upper		1	1	1	1
	J. Thom's	3	3			
	Jollie's Bush			1	1	
	Kaik Hill					3
	Kaituna Valley/Packhorse track					1
	Kaituna Valley Scenic Reserve					1
	Living Springs					1
	Matua Gardens Retreat	2				
	Montgomery Park Scenic Reserve		1	1	1	2
	Okains Bay Road					1
	Onawe	3	1	1		1
	Prices Valley					1
	Round Hill					2
	School Rd Reserve			1		
	Twyneham Bush		1	1	2	1
Whatarangi Totara Scenic Reserve					1	
Post breeding Jan/Feb	145 Port levy Road				1	1
	Cherry Farm			1		
	Hay Reserve			1		
	Hinewai Lower				1	
	Hinewai Upper				1	
	Jollie's Bush			1	1	1
	Matua Gardens Retreat	2				
	Montgomery Park Scenic Reserve			1		
	Onawe	1				
	Round Hill	3	5	3	3	
	Telf'N'Al	6				
	The Garden at French Farm	3				
	Turners'	1				
Twyneham Bush			1			
Winter Jun/Jul	35 Rue Noyer					1
	145 Port Levy Road				1	1
	38 Hempleman Drive	3	2	3		
	Cherry Farm				1	1
	Church Gully			1		
	Hay Reserve	1	1	2	1	
	Hinewai Lower			1		1
	Hinewai Upper			1		1
	J. Thom's	3	2			
	Jollie's Bush			1	1	1
	Matua Gardens Retreat	1				
	Montgomery Park Scenic Reserve	1	1	1	1	1
	Onawe	2	1			
	Round Hill			6	2	3
Twyneham Bush	1	1				

Table 4: In 2011 there were fewer silver eyes and brown creepers than in 2010. In contrast, there was a greater abundance of grey warblers, song thrush, blackbird and dunnocks in 2011 than in 2010 (grey fill). No differences were found for the remaining recorded species. The average is calculated from only the sites where a species was recorded.

Forest species	Species name	Average Number of birds per count +/- SE	
		2010	2011
Native	Bellbird, (mainland)	3.6 +/- 0.25	3.4 +/- 0.15
	Warbler, Grey	1.5 +/- 0.1	1.8 +/- 0.11
	Silvereye	4.9 +/- 1.02	2.8 +/- 0.23
	Fantail, Sth Is	1.4 +/- 0.11	1.3 +/- 0.11
	Creepers, Brown	3.9 +/- 0.46	2.6 +/- 0.28
	Pigeon, NZ/Kereru	1.4 +/- 0.14	1.5 +/- 0.14
	Cuckoo, Shining	1.0 +/- 0	1.2 +/- 0.15
	Rifleman, South Is	1.2 +/- 0.15	1.1 +/- 0.13
	Kingfisher, NZ	1.0 +/- 0	1.1 +/- 0.14
	Tomtit, Sth Is	1.7 +/- 0.3	2.0 +/- 0.24
	Tūī	1.1 +/- 0.1	1.2 +/- 0.17
	Harrier, Australasian	1.0 +/- 0	1.0 +/- 0
	Pipit, NZ	0	1.0
	Cuckoo, Long-tailed	0	1.0
Introduced	Blackbird	1.4 +/- 0.1	1.7 +/- 0.1
	Chaffinch	2.1 +/- 0.28	2.0 +/- 0.17
	Thrush, Song	1.3 +/- 0.14	1.8 +/- 0.14
	Goldfinch	2.6 +/- 0.43	2.6 +/- 0.38
	Magpie, Australian	1.7 +/- 0.21	1.5 +/- 0.13
	Redpoll	3.0 +/- 0.38	2.4 +/- 0.36
	Greenfinch	1.5 +/- 0.21	1.7 +/- 0.17
	Quail, California	2.1 +/- 0.48	2.6 +/- 0.68
	Dunnock	1.1 +/- 0.08	1.4 +/- 0.12
	Starling	2.5 +/- 0.42	2.2 +/- 0.33
	Sparrow, House	2.0 +/- 0.25	1.6 +/- 0.19
	Skylark	0	1.3 +/- 0.14
	Yellowhammer	4.2 +/- 2.08	1.8 +/- 0.37
	Cockatoo, Sulphur-crested	0	1.5 +/- 0.5
	Pigeon, Rock	0	1 +/-0
	Bunting, Cirl	0	2 +/-0
Open or coastal species			
Native	Plover, Spur-winged	1.5 +/- 0.5	1.3 +/- 0.25
	Swallow, Welcome	4.5 +/- 2.5	2.0 +/- 0.71
	Gull, Southern Black-backed	1.6 +/- 0.38	1.3 +/- 0.33
	Shelduck, Paradise	1.3 +/- 0.33	1.7 +/- 0.33
	Oystercatcher, Variable	0	2.3 +/- 0.95
	Gull, Red-billed	1.0 +/- 0	1.7 +/- 0.33
Introduced	Goose, Canada	1.8 +/- 0.25	1.4 +/- 0.3
	Pheasant	0	1
	Unknown	2.4 +/- 0.52	2.0 +/- 0.18
Total		2.3 +/- 0.1	2.1 +/- 0.05

Table 5: Complete list of recorded species in 2011. *The average number of individuals per count does not include sites where the species was not recorded.

Forest species	Species name	Proportion of stations detected at	Total number of individuals recorded	Proportion of all individuals (when present)
Native	Bellbird, (mainland)	87%	372	20.32%
	Warbler, Grey	73%	142	7.76%
	Silvereye	66%	196	10.70%
	Fantail, Sth Is	36%	40	2.18%
	Creeper, Brown	34%	91	4.97%
	Pigeon, NZ/Kereru	31%	44	2.40%
	Cuckoo, Shining	13%	11	0.60%
	Rifleman, South Is	11%	9	0.49%
	Kingfisher, NZ	11%	8	0.44%
	Tomtit, Sth Is	10%	18	0.98%
	Tūī	7%	7	0.38%
	Harrier, Australasian	6%	3	0.16%
	Pipit, NZ	3%	1	0.05%
	Cuckoo, Long-tailed	3%	1	0.05%
Introduced	Blackbird	74%	154	8.41%
	Chaffinch	69%	132	7.21%
	Thrush, Song	39%	77	4.21%
	Goldfinch	36%	99	5.41%
	Magpie, Australian	30%	43	2.35%
	Redpoll	30%	58	3.17%
	Greenfinch	27%	33	1.80%
	Quail, California	23%	47	2.57%
	Dunnock	21%	23	1.26%
	Starling	19%	47	2.57%
	Sparrow, House	13%	19	1.04%
	Skylark	13%	14	0.76%
	Yellowhammer	6%	9	0.49%
	Cockatoo, Sulphur-crested	4%	3	0.16%
	Pigeon, Rock	4%	2	0.11%
	Bunting, Cirl	3%	4	0.22%
Open or coastal species				
Native	Plover, Spur-winged	7%	5	0.27%
	Swallow, Welcome	6%	8	0.44%
	Gull, Southern Black-backed	6%	4	0.22%
	Shelduck, Paradise	6%	5	0.27%
	Oystercatcher, Variable	4%	9	0.49%
	Gull, Red-billed	3%	5	0.27%
Introduced	Goose, Canada	6%	10	0.55%
	Pheasant	3%	1	0.05%
	Unknown	41%	77	4.21%
Total			1831	100%

Table 6: Average numbers of native forest birds recorded at count sites over the whole of 2011. Number of species detected per site is given in grey. Averages for species/site are rounded to the nearest whole bird (see table 4)

Species	145 Port Levy Road	35 Rue Noyer	38 Hempleman Drive	48 Onuku Road	Cherry Farm	Fraser's Road	Garden of Tane	Haren	Hay Reserve	Hinewai Lower	Hinewai Upper	Ikoraki Bay / Hutchinsons	Kaik Hill	Kaituna Valley / Packhorse track	Kaituna Valley Scenic Reserve	Kaituna Valley Upper	Kakanui	Living Springs	Long Bay Scenic Reserve	Manaia	Montgomery Park Scenic Reserve	Okains Bay Road	Okuti Valley Scenic Reserve	Onawe	Prices Valley	Round Hill	Shadboldt Road	Twynham Bush	Whatarangi Totara Scenic Reserve	Overall Average
Bellbird, (mainland)	3	4	4	6	3	4	5	0	4	2	2	1	4	4	3	1	3	5	1	7	4	5	5	3	2	1	3	3	4	3.4
Creeper, Brown	0	0	1	0	1	0	1	0	0	3	4	0	2	0	0	0	4	0	0	0	1	0	0	2	0	3	0	2	0	2.6
Cuckoo, Long-tailed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1.0
Cuckoo, Shining	1	0	1	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	1	0	0	0	0	0	0	0	0	1	0	1.2
Fantail, Sth Is	1	1	1	0	1	0	1	0	1	1	0	1	1	0	0	0	2	0	0	0	2	0	0	0	0	2	0	3	0	1.3
Pigeon, NZ/Kereru	0	3	1	1	2	0	2	0	0	0	2	0	1	1	0	0	0	2	1	0	1	0	0	0	0	0	0	2	0	1.5
Pipit, NZ	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0
Rifleman, South Is	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1
Silvereeye	3	0	6	4	1	0	2	3	4	2	2	2	2	1	0	1	0	0	1	1	3	4	5	2	0	3	0	4	3	2.8
Tomtit, Sth Is	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0
Tūt	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2
Warbler, grey	2	2	1	0	1	0	1	2	3	2	2	1	2	3	0	1	1	1	3	0	2	3	6	1	2	2	3	3	0	1.8
Number of species	5	5	8	3	8	1	7	3	4	7	8	4	6	4	2	3	4	4	5	2	6	3	3	4	2	6	2	7	2	

Table 7: Average numbers of native forest birds recorded at count sites in the 2011 breeding season (Oct/Nov). Number of species detected per site is given in grey. Averages for species/site are rounded to the nearest whole bird

Species	145 Port Levy Road	38 Hempleman Drive	48 Onuku Road	Cherry Farm	Garden of Tane	Haren	Hay Reserve	Hinewai Lower	Hinewai Upper	Kaik Hill	Kaituna Valley / Packhorse track	Kaituna Valley Scenic Reserve	Living Springs	Montgomery Park Scenic Reserve	Okains Bay Road	Okuti Valley Scenic Reserve	Onawe	Prices Valley	Round Hill	Twyneham Bush	Whatarangi Totara Scenic Reserve	Overall Average
Bellbird, (mainland)	3	4	6	3	5	0	3	2	2	4	4	3	5	3	5	5	3	2	1	3	4	3.7
Creeper, Brown	0	1	0	1	1	0	0	4	4	2	0	0	0	0	0	0	2	0	3	2	0	2.4
Cuckoo, Shining	1	1	0	1	0	1	0	0	0	0	0	2	2	0	0	0	0	0	0	1	0	1.3
Fantail, Sth Is	0	1	0	1	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1.0
Pigeon, NZ/Kereru	0	1	1	2	2	0	0	0	2	1	1	0	2	1	0	0	0	0	0	0	0	1.4
Rifleman, South Is	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1.2
Silvereye	3	5	3	2	2	3	6	0	0	2	1	0	0	2	4	5	2	0	3	2	3	2.7
Tomtit, Sth Is	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2.3
Tūī	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3
Warbler, grey	2	1	0	1	1	2	3	2	2	2	3	0	1	2	3	6	1	2	2	2	0	1.9
Number of species	4	8	3	8	6	3	4	5	6	6	4	2	4	4	3	3	4	2	4	5	2	

Table 8: Average numbers of introduced birds recorded at count sites over the whole of 2011. Number of species detected per site is given in grey. Averages for species/site are rounded to the nearest whole bird (see table 4)

Species	145 Port Levy Road	35 Rue Noyer	38 Hempleman Drive	48 Onuku Road	Cherry Farm	Fraser's Road	Garden of Tane	Haren	Hay Reserve	Hinewai Lower	Hinewai Upper	Ikoraki Bay / Hutchinsons	Jollie's Bush	Kaik Hill	Kaituna Valley / Packhorse track	Kaituna Valley Scenic Reserve	Kaituna Valley Upper	Kakanui	Living Springs	Long Bay Scenic Reserve	Manaia	Montgomery Park Scenic Reserve	Okains Bay Road	Okuti Valley Scenic Reserve	Onawe	Prices Valley	Round Hill	Shadboldt Road	Twyneham Bush	Whatarangi Totara Scenic Reserve	Overall Average
Blackbird	1	0	2	2	2	1	3	1	1	1	1	2	0	2	0	2	0	1	2	1	0	1	1	1	1	0	2	1	1	1	1.7
Chaffinch	3	1	2	2	1	4	2	3	0	1	1	3	0	2	5	4	1	2	3	3	1	1	1	0	1	3	4	0	0	2	2.0
Dunnock	0	0	1	0	1	0	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	0	0	0	1	0	0	0	1.4
Goldfinch	6	0	3	1	0	1	3	4	0	0	0	0	0	1	3	2	0	1	1	0	0	0	1	0	1	2	4	2	0	0	2.6
Greenfinch	1	0	2	2	1	2	2	3	0	0	1	0	0	1	0	0	0	2	2	0	0	0	1	0	0	0	0	0	0	0	1.7
Magpie	2	0	1	0	1	2	0	0	0	0	1	0	0	2	1	1	0	0	1	0	0	0	2	0	0	0	2	0	0	2	1.5
Pheasant	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0
Pigeon, Rock	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0
Quail, California	0	0	8	0	2	0	0	2	0	1	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5	0	0	0	2.6
Redpoll	3	0	0	0	0	0	0	2	0	0	0	3	3	2	0	0	0	0	2	1	8	1	3	1	0	0	4	0	0	0	2.4
Sparrow, House	2	0	2	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1.6
Starling	0	0	3	3	0	0	0	0	0	1	0	0	0	1	0	4	0	2	0	0	0	1	0	0	0	0	1	0	0	1	2.2
Thrush, Song	1	0	2	1	0	0	2	2	0	1	1	0	0	2	0	0	4	0	1	3	0	0	3	0	0	0	1	0	0	0	1.8
Yellowhammer	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1.8
Number of species	8	1	10	8	7	5	5	8	2	6	7	5	1	9	3	6	2	6	8	4	3	4	8	2	3	2	9	2	1	4	

Table 9: Average numbers of introduced birds recorded at count sites in the 2011 breeding season (Oct/Nov). Number of species detected per site is given in grey. Averages for species/site are rounded to the nearest whole bird

Species	145 Port Levy Road	38 Hempleman Drive	48 Onuku Road	Cherry Farm	Garden of Tane	Haren	Hay Reserve	Hinewai Lower	Hinewai Upper	Kaik Hill	Kaituna Valley / Packhorse track	Kaituna Valley Secnic Reserve	Living Springs	Montgomery Park Secnic Reserve	Okains Bay Road	Okuti Valley Secnic Reserve	Onawe	Prices Valley	Round Hill	Twyneham Bush	Whatarangi Totara Secnic Reserve	Overall Average
Blackbird	2	2	2	2	3	1	1	1	2	3	0	2	2	1	1	1	1	0	1	2	1	1.9
Chaffinch	5	2	2	1	2	3	0	1	1	2	5	4	3	1	1	0	1	3	2	0	2	2.0
Dunnock	0	1	0	1	0	2	0	0	0	1	0	1	0	0	2	0	0	0	0	0	0	1.4
Goldfinch	0	2	1	0	3	4	0	0	0	1	3	2	1	0	1	0	1	2	5	0	0	2.4
Greenfinch	1	2	2	1	2	3	0	0	1	1	0	0	2	0	1	0	0	0	0	0	0	1.6
Magpie	1	0	0	1	0	0	0	0	1	1	1	1	1	0	2	0	0	0	3	0	2	1.4
Pheasant	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0
Pigeon, Rock	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0
Quail, California	0	0	0	2	0	2	0	1	1	0	0	0	0	0	0	0	0	0	3	0	0	1.7
Redpoll	2	0	0	0	0	2	0	0	0	2	0	0	2	1	3	1	0	0	5	0	0	2.1
Sparrow, House	2	1	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1.3
Starling	0	3	2	0	0	0	0	0	0	0	0	4	0	1	0	0	0	0	0	0	1	2.3
Thrush, Song	1	2	1	0	2	2	0	1	1	2	0	0	1	0	3	0	0	0	1	0	0	1.8
Yellowhammer	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0
Number of species	7	8	7	6	5	8	2	5	7	8	3	6	8	4	8	2	3	2	7	1	4	

4 Conclusions

The collection of bird counts relies on volunteer effort, which is greatly appreciated and crucial to understanding bird distributions on Banks Peninsula. The re-inclusion of many Environment Canterbury monitored sites has helped increase the sample size, which will help with future analyses. Within the south-eastern bays, tomtit, rifleman and tūī population densities are lower than expected; however, their distributions are limited to suitable habitat. More intense sampling may give a more precise snap shot of bird numbers; however, as five-minute bird counts indicate relative densities, trends over time will be evident. These species rely on integrated predator control for them to maintain their populations. The rate of population increase is low for these rare species, and without proactive control predation might outweigh recruitment and they may go locally extinct.

We are all eager to determine if predator control, habitat restoration and habitat protection have led to the increase in native bird abundance on Banks Peninsula, but at this stage it is too early to tell from these analyses alone. For the meantime a precautionary approach should be taken.

Thanks again to all people involved in monitoring.

5 Recommendations

Monitoring and management

- Increase bird monitoring in habitat suitable for rifleman, tomtit and tūī
- Continue five-minute bird monitoring, especially in the breeding, post-breeding and winter seasons
- Aim for winter and post-breeding monitoring effort to match breeding-season effort
- Prioritise future counts to maximise the number of sites which have repeat counts every year at the same sites, in the same season, by the same observer

To bird counters (as in previous years)

- Continue using the full 5mbc form to record counts, however, those who want to can use either form (see appendices 3 & 4)
- At the end of the count check that all boxes have been filled in (e.g. temperature, precipitation)
- For unknown species, include in the columns with the actual count (treat the unknowns just like other species)
- Record numbers for all species identified
- Don't count a bird more than once (knowingly)
- If interested in tracking kereru specifically, extend the counts to 10 minutes, but make sure the five minute bird count is still valid, i.e. record the data from the first 5 minutes separately from the second
- If no birds at all are detected at a station be sure and still write down the details for that station
- If particular species are not monitored (e.g., observer does not know its call) then list as not monitored, as there is a difference between not present and not recorded

6 References

Schmechel FA. 2009: Bird monitoring on Banks Peninsula: Annual report for 2007 & 2008. *Environment Canterbury Report R09/24*, 29 p.

Schmechel FA. 2010: Bird monitoring on Banks Peninsula: Annual report for 2009. *Environment Canterbury Report R10/48*, 28 p.

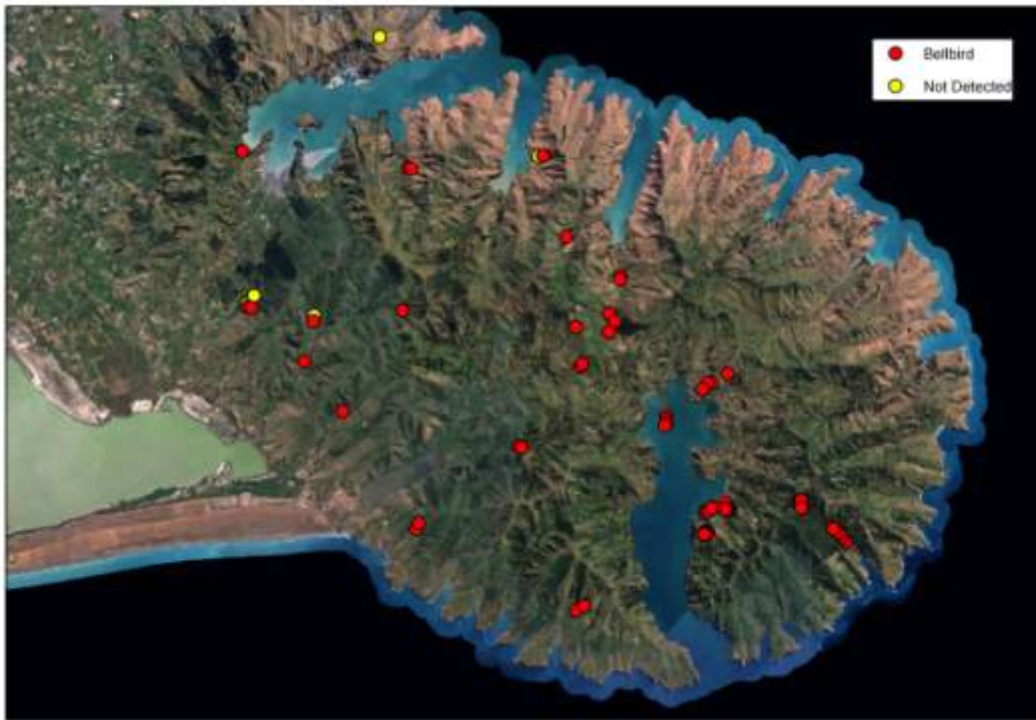
Cochrane PJ, Schmechel FA. 2011: Bird monitoring on Banks Peninsula: Annual report for 2010. *Environment Canterbury Report R11/102*, 28 p.

DRAFT

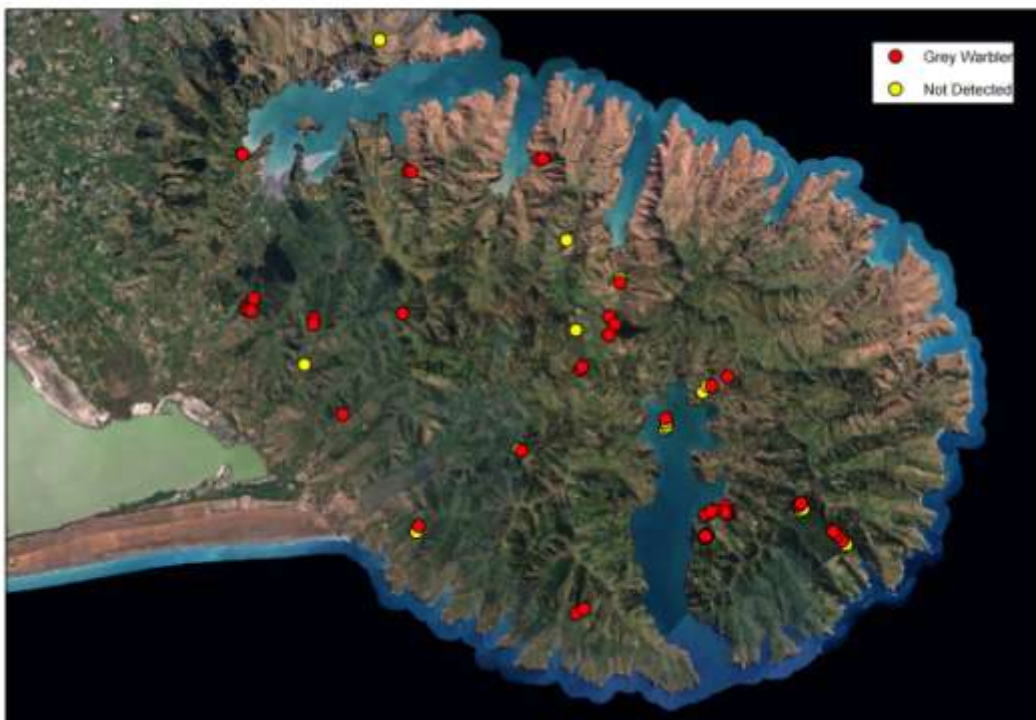
7 Appendix 1 – Distribution maps for native species

DRAFT

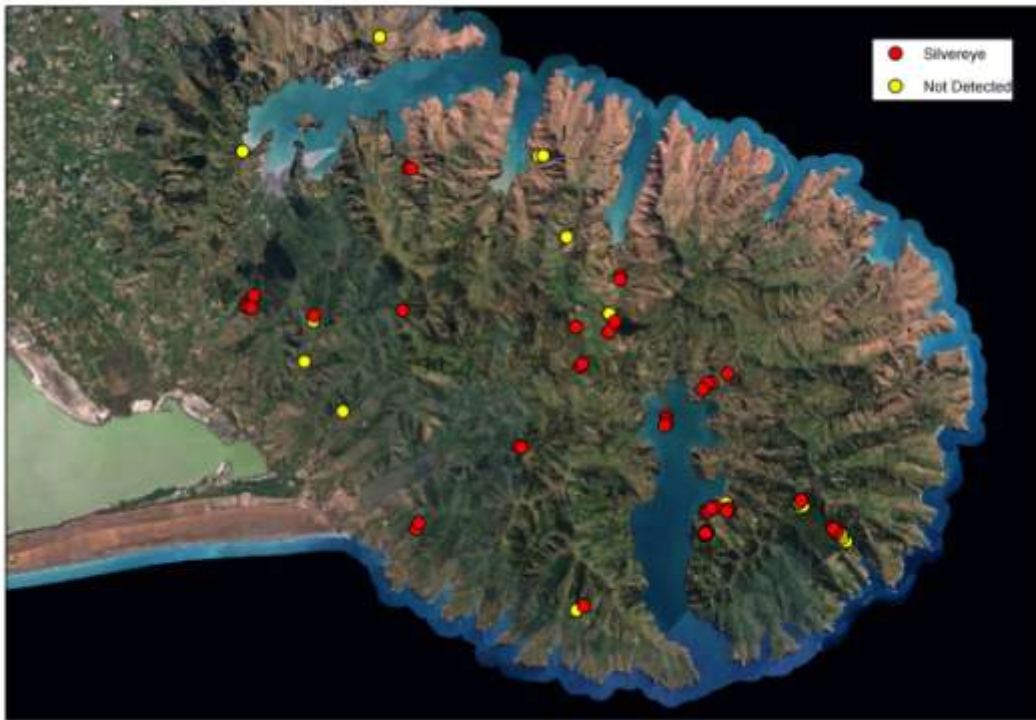
Bellbird



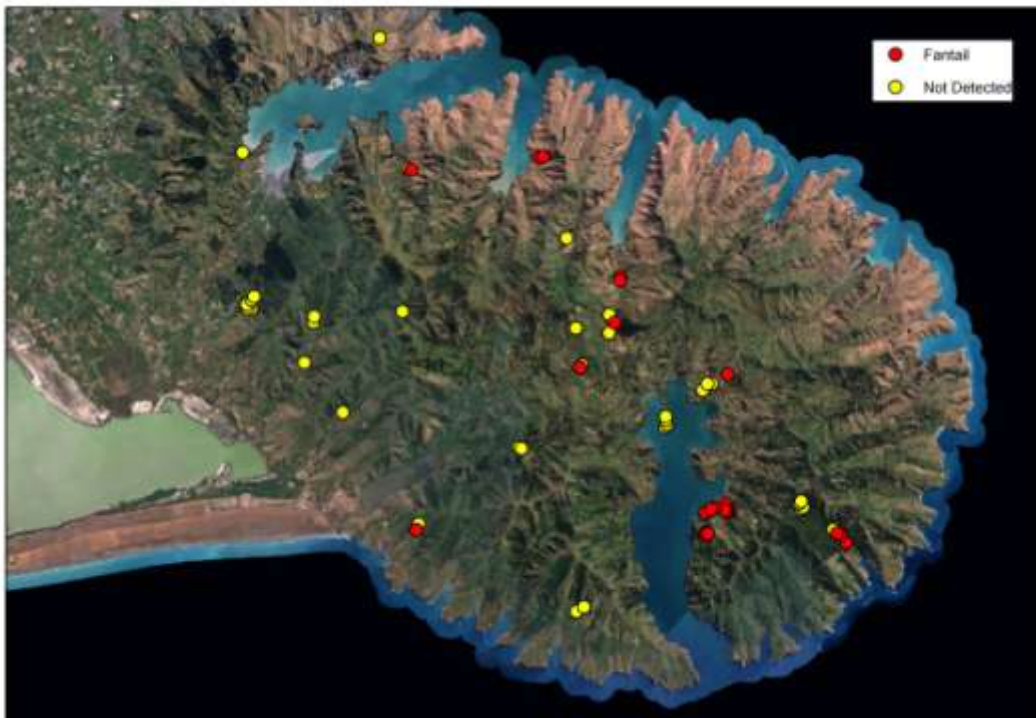
Grey Warbler



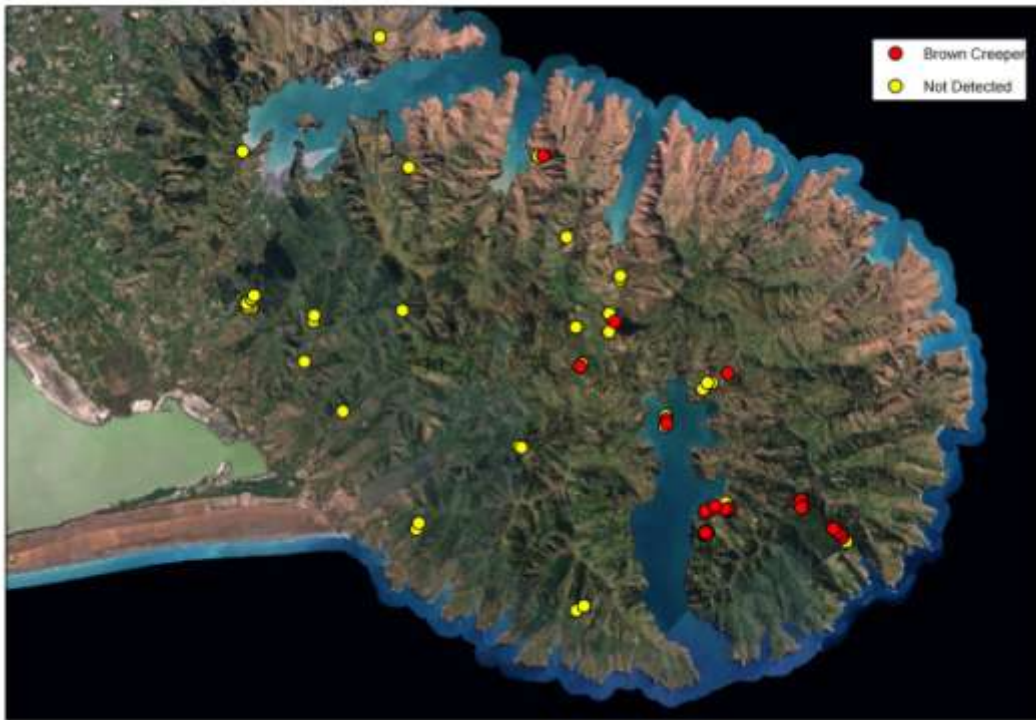
Silvereye



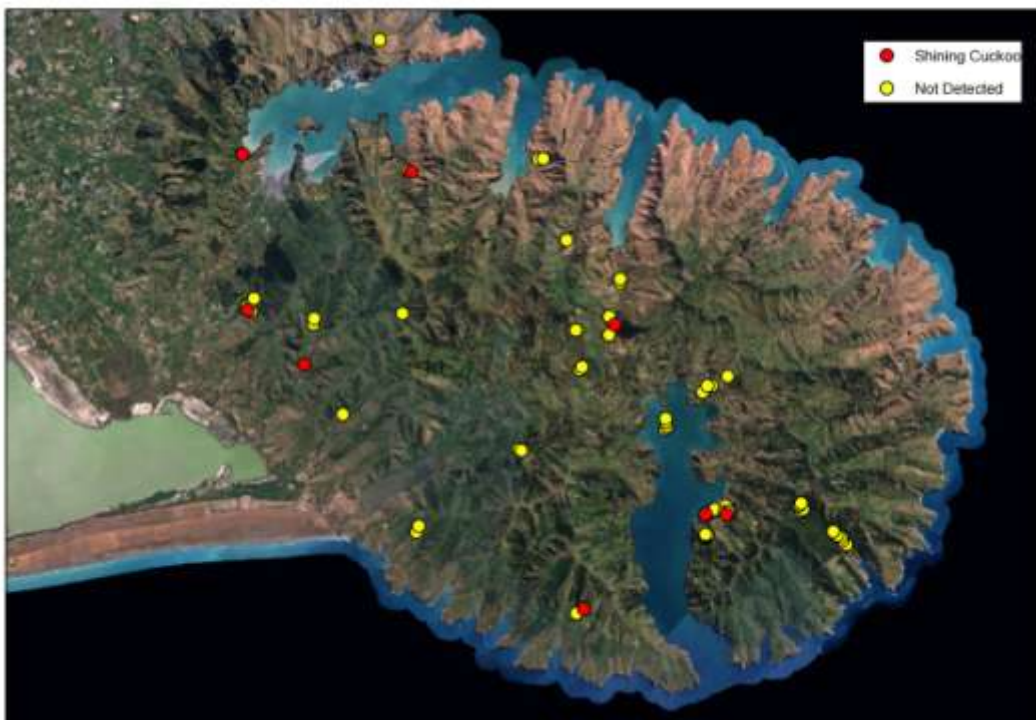
Fantail



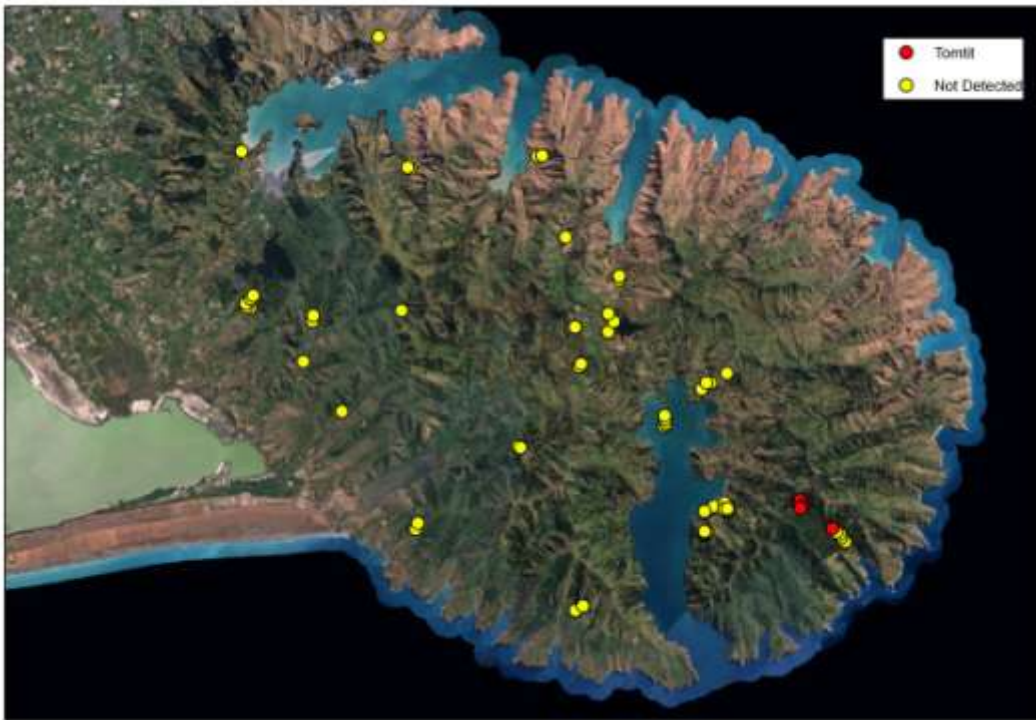
Brown Creeper



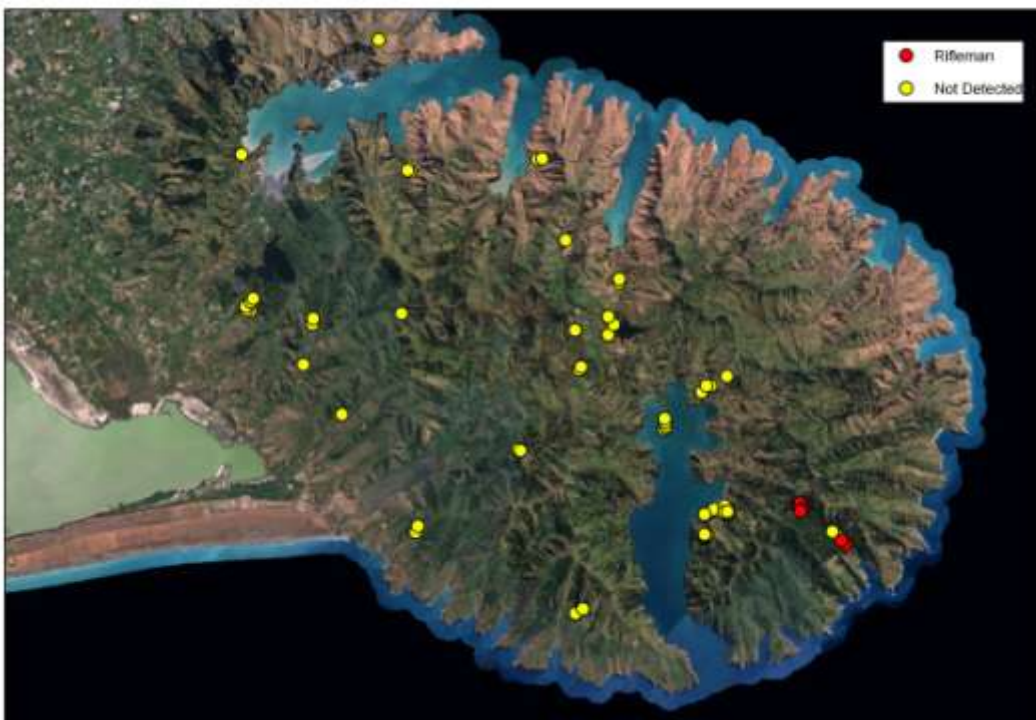
Shining Cuckoo



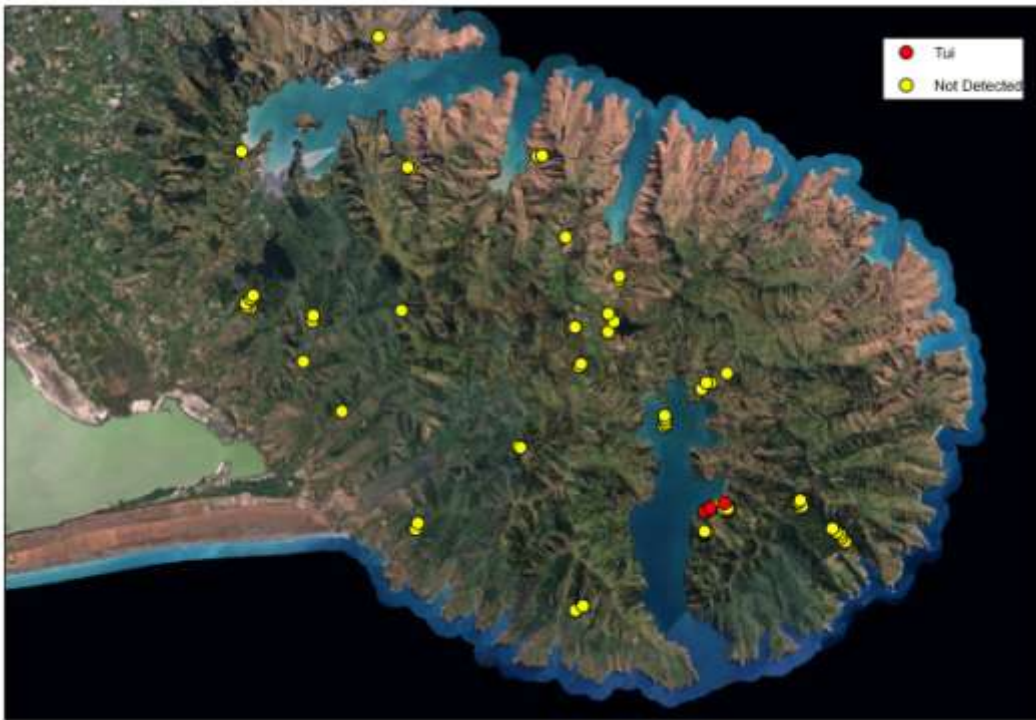
Tomtit



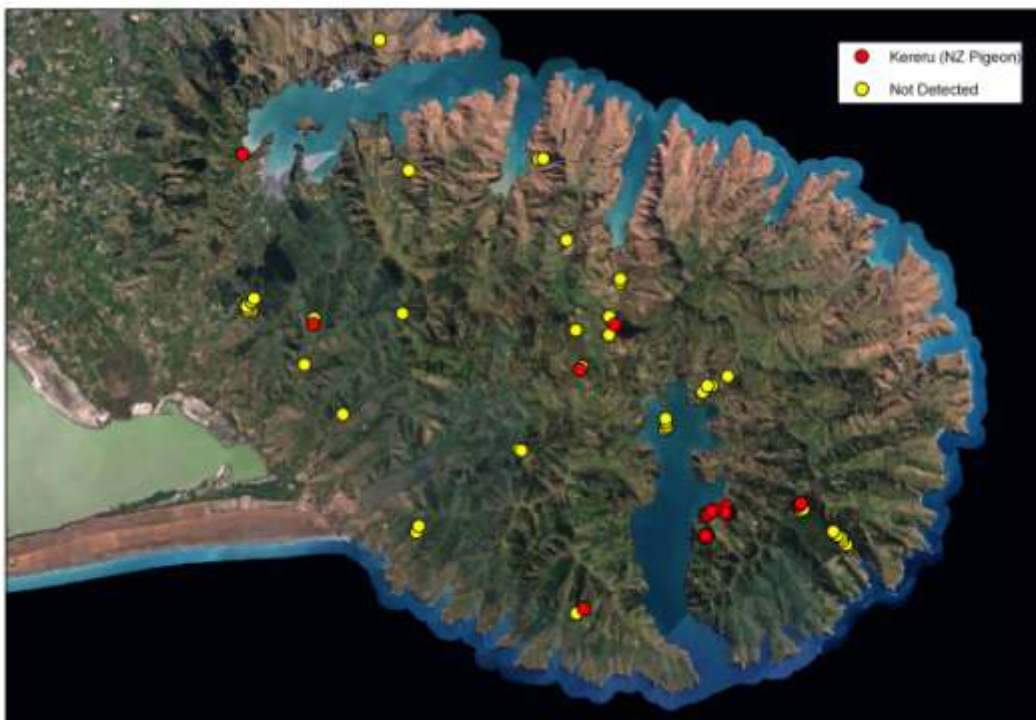
Rifleman



Tūī



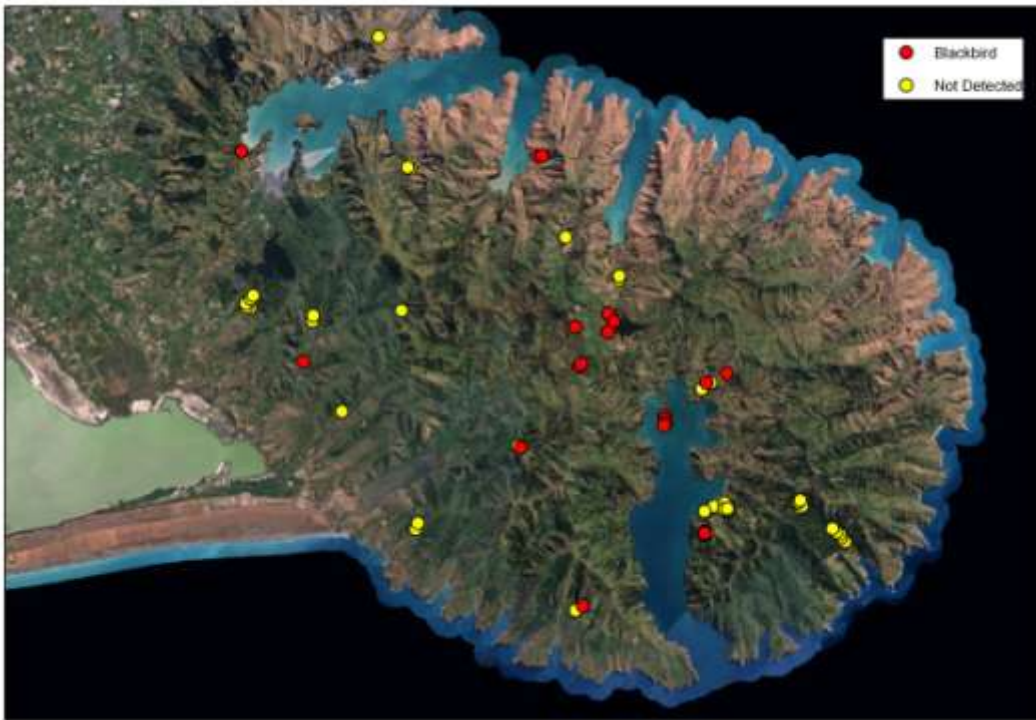
Kereru



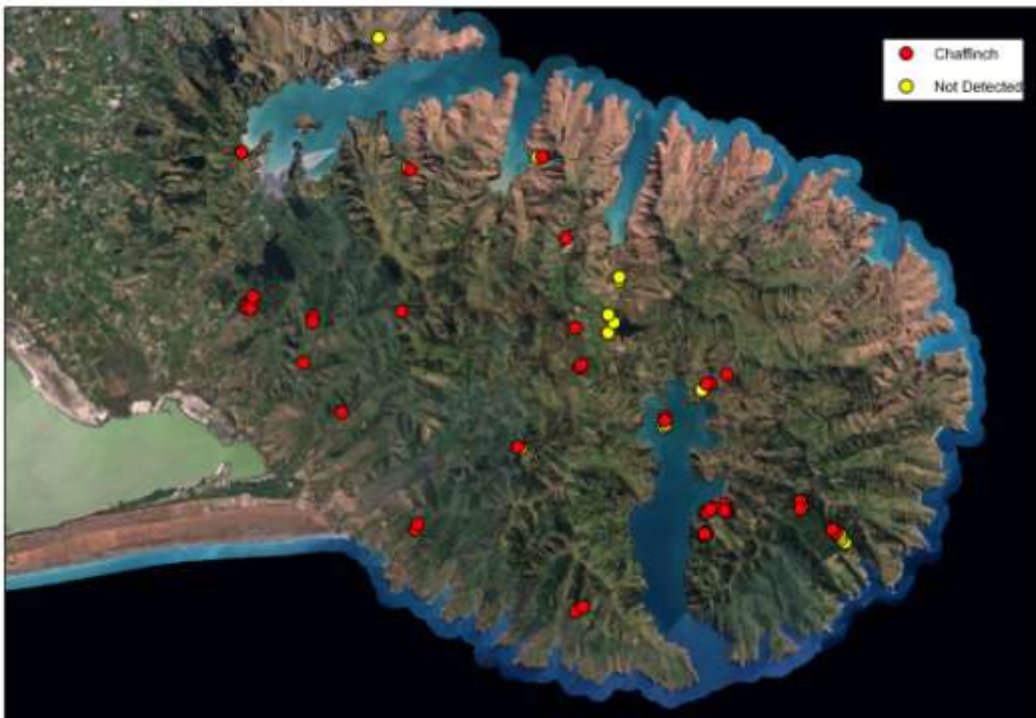
8 Appendix 2 – Distribution maps for introduced species

DRAFT

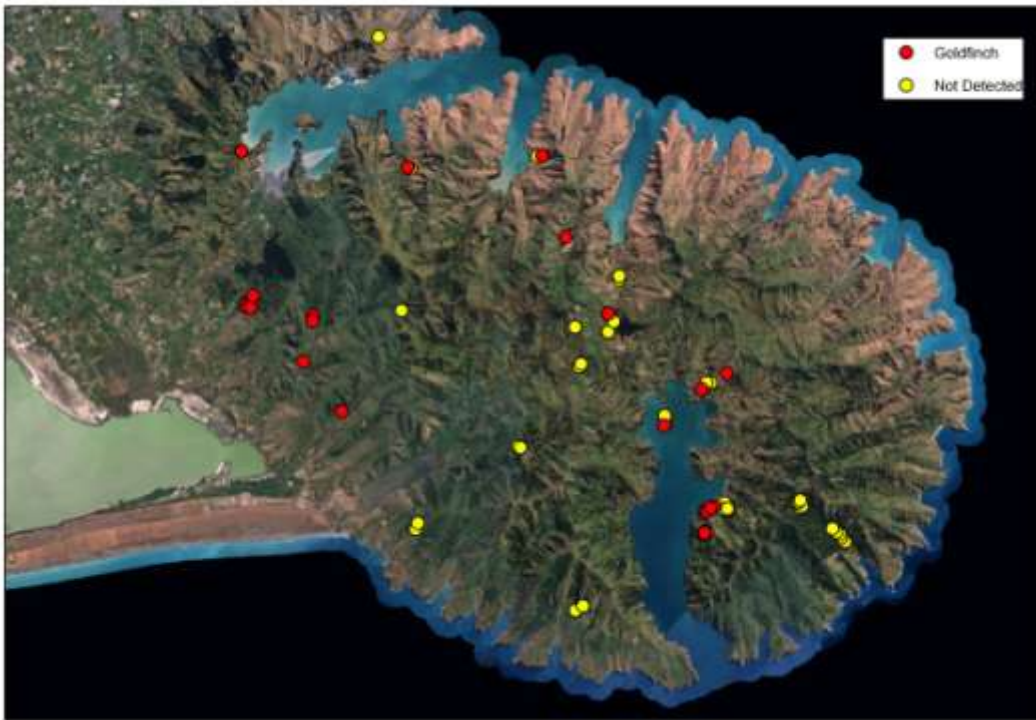
Blackbird



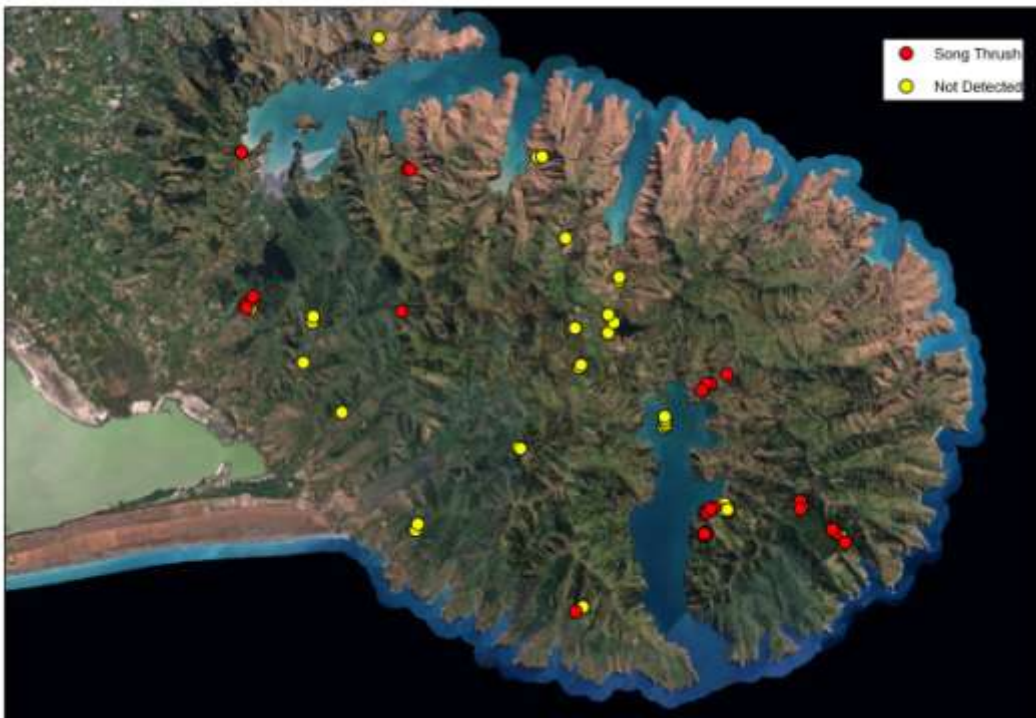
Chaffinch



Goldfinch



Song Thrush



9 Appendix 3 – Five-minute bird count method instruction sheet

BANKS PENINSULA CONSERVATION TRUST
Five-Minute Bird Count Method Instruction Sheet
June 2010

(Adapted from the Department of Conservation Specification No.10,
with additional modifications June 2010)

Introduction

- The five-minute bird count (5MBC) has been used in NZ for over 30 years, and is the most widely used method for determining *status and trend* in forest bird populations.
- The method involves an observer standing at one place (“point” or “counting station”) and counting all the birds heard and/or seen in exactly 5 minutes
- Counts made at several points in an area provide an estimate of *relative abundance* (or an index of the population) of each bird species detected.
- Repeated counts made in a standardised way over several years provide a measure of *changes* in the relative abundance of birds.
- Note that the counts are not a census or count of the whole population (but an index of the population) because not all birds are detected –an unknown number remain hidden.
- The method is most powerful when counts are repeated annually over long time frames (>10 years), when sample sizes are high (minimum of 10 points), and when variation in observers, times of day, and environmental conditions are minimised.

Establishing counting stations

- Generally it is better to have more counting stations visited less frequently than few counting stations visited more frequently.
- Counting stations should be separated by at least 200 m, so that they are independent.
- Counting stations should be permanently marked (or tagged) so that the same stations can be revisited each time a survey is done.
- Mark the locations of counting stations on a NZMS 260 map, and compile a list of counting stations with their grid references (from map or GPS), altitude (from map or GPS), and habitat type (native forest, exotic forest, open country, or urban).

Conducting counts

- Equipment needed: Watch with seconds hand or stop-watch (alarm function useful), pen/pencil, recording sheet, clipboard (or similar), binoculars.
- Only one person should count birds. If a second person is present (e.g. for safety) they may time the 5 minutes but must not draw the counter’s attention to any birds.
- On arrival at a counting station, stand quietly and begin counting birds as soon as possible (e.g. stopped breathing heavily, got field recording sheet ready, etc.), normally within 1–2 minutes of arriving.
- Record all birds detected (heard and/or seen) for exactly 5 minutes.
- The majority of birds will be heard first rather than seen first. If you wish, you can record birds first heard and first seen separately, but the total heard and total seen should add up to give the total number of birds detected.
- Any birds that cannot be identified should be recorded as “unknown”, with a description if possible. Identification may be checked after the count is finished.
- Individual birds should not knowingly be counted more than once in any one 5-minute period; i.e. if same bird calls several times it should be counted only once.
- However, if an individual bird was counted at a previous station it should be counted again; i.e. each counting station is treated as a separate entity (independent).

- No birds should be assumed to be present without some visual or auditory clue to their presence (e.g. a flock of silvereyes is noted as the number heard calling rather than the number the observer guesses such a frequency of calling would represent).
- If a bird calls in one place and later one of the same species calls some distance away, they should be recorded as two individuals unless there is evidence that the first bird moved to the second place.
- There is no agreed limit on how far away birds should be recorded. However, DOC recommends that birds calling from a very long way away (e.g. bellbirds calling from across the valley) should *not* be recorded. Birds flying overhead should be recorded.
- Record observations on a standard form so that all relevant information is recorded. At end of count check that all information is recorded and in correct columns and lines.
- If no birds at all are detected at a station be sure and still write down the details for that station.

Standardising conditions and frequency of counts

- Weather: Counts are best made on fine, calm days. Do not count during strong winds or heavy rain because these conditions affect the behaviour of birds and the ability of observers to detect them.
- Time of day: Counts should be made between 1.5 hours after sunrise and 1.5 hours before sunset to avoid changes in conspicuousness associated with sunrise and sunset. In midwinter a suitable counting time is between 9.30 am and 3.30 pm (NZ Standard Time) and in mid-summer it is between 7.30 am and 7.30 pm (NZ Summer Time).
- Time of year: Counts should be made at each station at least once per year, in November/December (i.e. in the breeding season). Ideally, counts should be made monthly. If this is not possible, consider making counts in January/February (late summer) and June/July (winter) as well as October/November.

Data collation

- If more than one person is present during a count at a station, for example during training, only one person's counts should be used for that station.
- Collate survey information and store securely, preferably immediately on return from the field.
- Post field recording sheet to Phillip Cochrane, Environment Canterbury, P O Box 345, Christchurch. Or email Excel spreadsheet to phillip.cochrane@ecan.govt.nz

Mapping

- Mapping bird locations while counting can be a very useful tool and is recommended (Fig A2-1).

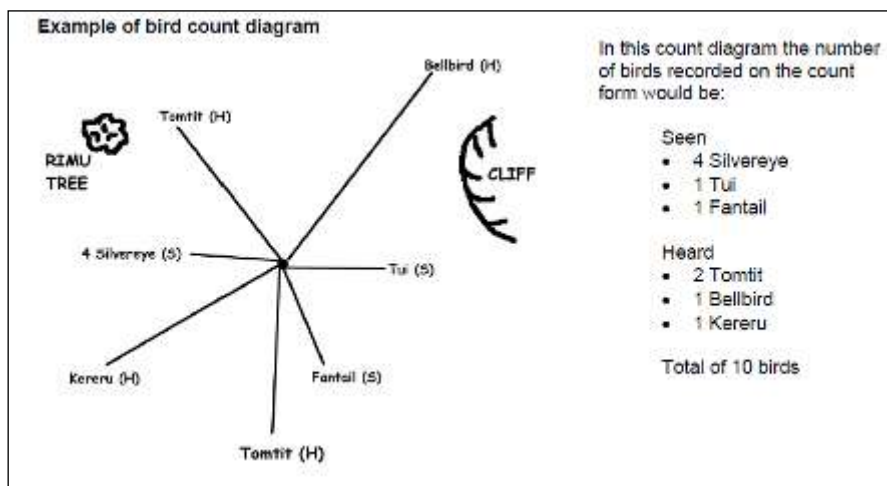


Figure A2-1: Bird count diagram example from the FORMAK monitoring kit developed by Peter Handford, (www.formak.co.nz)

Optional

- After the first 5 minutes stay at station another 5 minutes and record every new species (not numbers, just new species). This will improve the count for species such as kereru which are more difficult to detect. Move around a bit and try to identify any species that caused confusion during the first 5 minutes.
- Record any new species seen or heard when travelling to or from a station to give a complete species list for that site.

For more information:

- Visit the Department of Conservation website for a summary of information on 5MBC: <http://www.doc.govt.nz/templates/page.aspx?id=33083>
- Contact the Banks Peninsula Conservation Trust
For general enquiries: Rachel Barker tel: 03- 962-9555 or rachel.barker@landcare.org.nz
For data enquiries:
Phillip Cochrane, ECan, tel: (03) 372-7060 or phillipcochrane@ecan.govt.nz
Eric Spurr, Landcare Research, tel: (03) 321-9809 or spurre@landcareresearch.co.nz

Useful websites:

What Bird? <http://www.whatbird.co.nz/>
Te Ara - Encyclopaedia of NZ site,
<http://www.teara.govt.nz/TheBush/NativeBirdsAndBats/en>

Five-Minute Bird Count Recording Sheet

Make counts between 1.5 hours after sunrise and 1.5 hours before sunset. Don't count in heavy rain or strong wind.

Observer		Date (day, month, year)			
Specific location		General location			
Count Station Coordinates (and other specific descriptors, e.g. elevation and habitat type)					
Count period	1st 5m	2nd 5	1st 5m	2nd 5	Total sp
Time (at start of count)					
Bellbird					
Blackbird					
Brown Creeper					
California Quail					
Chaffinch					
Dunnock (Hedge Sparrow)					
Fantail					
Goldfinch					
Greenfinch					
Grey Warbler					
Harrier					
House Sparrow					
Kereru (Wood Pigeon)					
Kingfisher					
Magpie					
Pipit					
Redpoll					
Rifleman					
Shining Cuckoo					
Silvereye (Waxeye)					
Skylark					
Song Thrush					
Starling					
Tomtit					
Welcome Swallow					
Yellowhammer					
Species Unknown*					
Temp 1=below 0°C, 2= cold (0-5), 3=cool (6-10), 4=mild (11-15), 5=warm (16-22), 6=hot (>22)					
Sun (minutes of sun overhead during 5-min count)					
Precipitation Type: N=none, M=mist, R=rain, H=hail, S=snow					
Amount: 0=none, 1= dripping foliage, 2=drizzle, 3=light rain, 4=moderate, 5=heavy rain					
Wind 0=leaves still or move without noise, 1=leaves rustle, 2=leaves or branches in constant motion, 3=branches or trees sway					
Noise other than wind (e.g., stream, traffic) 0=not important, 1=moderate, 2=loud					

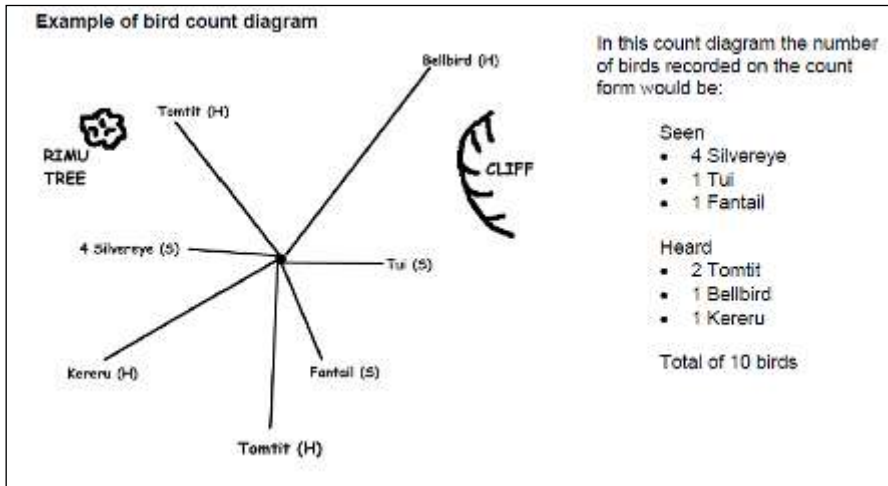
*describe if possible

Other Notes

Key protocol points:

- *All birds that cannot be identified should be recorded (as “unknown”).*
- *Individual birds should not knowingly be counted more than once.*
- *Record time and all the weather and noise boxes.*
- *Record if birds seen vs. heard (as other birds such as bellbird and starling may mimic Tūrcalls)*

Mapping bird locations while counting can be a very useful tool and is recommended.



Map and note space

Thanks for your participation

Send data to: Phillip Cochrane, Environment Canterbury, PO Box 345, Christchurch

Please include your contact details if I don't already have them so we can stay in touch.

Copies of the annual reports from the monitoring will be made available to all participants.