

# Christchurch District Plan Site of Ecological Significance

## Site Significance Statement

**Site name:** Riccarton Bush  
**Site number:** SES/LP/4  
**Physical address of site:** 16 Kahu Road  
Riccarton  
Christchurch 8440

### Summary of Significance:

The Riccarton Bush SES is significant because it is the last remaining representative remnant of podocarp forest on the low Canterbury Plains and supports a range of native bush birds, threatened plant species and threatened and/or uncommon invertebrates.

### Site Map



## Additional Site Information

**Central point NZTM:** N5180472, E1567304

**Area of SES (ha):** 7.58 ha

## Site Description

Riccarton Bush is the last remaining remnant of podocarp forest in the low Canterbury Plains Ecological District. It is dominated by New Zealand's tallest growing tree, kahikatea (*Dacrycarpus dacrydioides*) and an association of 82 other extant indigenous conifers and flowering plants as recorded by Molloy (1995) and listed in Appendix 1. Kahikatea forests once occurred throughout much of New Zealand's lowland areas, however are now represented by approximately only 2% of their former extent (Norton 1995). Reduced from its former (1849) extent of approximately 22 hectares (Murray 1924), the forested area of Riccarton bush now covers approximately 7.58 hectares and is estimated to be in excess of 600 years old.

Riccarton Bush is of importance in terms of its invertebrate fauna, with Lepidoptera (butterflies and moths) having been collected and studied here since 1859; longer than any other site in New Zealand. Twenty-seven moth species have their type locality as Riccarton Bush. The site boasts up to 260 species of Lepidoptera (moths and butterflies), of which 196 have been confirmed present in recent years. Five of these moth species are listed as endangered (see assessment sections below), and two species (*Grypotherca pertinax* and *Cateristes eustyla*) are endemic to Riccarton Bush and have not been found to occur elsewhere.

In recent years the forest area has been encircled with a pest proof fence that consists of a fine mesh cladding, a partially buried skirt and a pest proof capping to prevent exotic mammalian pest animals from moving through, under and/or over the fence respectively. As a result of this, and the potential for the eradication of mammalian pests from within the fenced area, managers of the forest reserve are able to maintain a pest-free mainland island environment where natural forest processes are able to occur without threat of predation (including seed predation) or herbivory from introduced pest animal species.

## Extent of Site of Ecological Significance

The extent of the SES for Riccarton Bush covers the areal extent of the drip-line of the remnant indigenous forest area, and extends to include the pest proof fence and associated clear-zone/setback which is measured to 4.5 m out from the alignment of the physical structure of the fence. The inclusion of this clear zone/setback within the SES is important as it forms an essential component of the functioning and integrity of the fence as the appropriate management and maintenance of this zone prevents domestic, community and feral cats from leaping the fence and entering the protected refuge.

**Note:** The SES for Riccarton Bush does not include the exotic woodland amenity area and grounds of Riccarton House.

## Assessment Summary

Riccarton Bush has been evaluated against the criteria for determining significant indigenous vegetation and significant habitat of indigenous fauna listed in Appendix 3 of the Canterbury Regional Policy Statement (Environment Canterbury, 2013) (see below), referring also to the Wildland Consultants (2013) Guidelines and advice from the relevant Specialist Ecologist Groups. Under these criteria the site is ecologically significant because it meets the representativeness (criteria 1 & 2), rarity/distinctiveness (criteria 3, 4 & 6), diversity and pattern (criterion 7) and ecological context criteria (criterion 10).

## Assessment against Significance Criteria

### Representativeness

- 1. Indigenous vegetation or habitat of indigenous fauna that is representative, typical or characteristic of the natural diversity of the relevant ecological district. This can include degraded examples where they are some of the best remaining examples of their type, or represent all that remains of indigenous biodiversity in some areas.***

The site is significant under this criterion.

Riccarton Bush contains more than 70 species of native podocarp and flowering plant (Appendix 1; Molloy 1995) and is the best remaining representative example of tall native forest in the Low Plains Ecological District.

For birds, this site supports a high proportion of the “an association of indigenous species that is distinctive” and of “restricted occurrence”. Specifically, this site supports a high proportion of the “Lowland Plains Native Bush Species assemblage” for Christchurch (see appendix 2).

- 2. Indigenous vegetation or habitat of indigenous fauna that is a relatively large example of its type within the relevant ecological district.***

The site is significant under this criterion.

Riccarton Bush (7.58 ha) is one of only two examples of tall native forest in the Low Plains Ecological District, with the second patch (Arowhenua Bush) occurring at Temuka (Harding 2009). Riccarton Bush is therefore a relatively large example of its type within the Low Plains Ecological District.

## Rarity/Distinctiveness

### **3. Indigenous vegetation or habitat of indigenous fauna that has been reduced to less than 20% of its former extent in the Region, or relevant land environment, ecological district, or freshwater environment.**

The site is significant under this criterion.

Podocarp-hardwood forests have been substantially depleted throughout the Canterbury Region and are a high priority for protection (Harding 2009). Kahikatea forest is estimated to have covered between 1 and 5% of the extent of Low Plains Ecological District, and is now represented by less than 20% of its former extent. Riccarton Bush therefore represents indigenous vegetation AND habitat of indigenous fauna that has been reduced to less than 20% of its former extent in the Low Plains Ecological District (an acutely threatened land environment). The Threatened Environment Classification reports that less than 10% of indigenous cover remains in the Low Plains Ecological District (See Walker *et al.* 2007; Lloyd *et al.* 2013).

### **4. Indigenous vegetation or habitat of indigenous fauna that supports an indigenous species that is threatened, at risk, or uncommon, nationally or within the relevant ecological district.**

The site is significant under this criterion.

Of the moth fauna known from Riccarton Bush, one is listed as Threatened – Nationally Vulnerable, three are listed as At Risk, and two are listed as Data Deficient (Stringer *et al.* 2012):

- *Zelleria sphenota* (At Risk/Declining)
- *Cateristes eustyla* (Data Deficient)
- *Gymnobathra ambigua* (Data Deficient)
- *Asaphotes obarata* (Nationally Vulnerable)
- *Tatosoma agrionata* (At Risk/Declining)
- *Circoxena ditrocha* (At Risk/Naturally Uncommon)

In addition, the site contains four species of moth that are considered uncommon in the Low Canterbury Plains Ecological District (B. Patrick pers. comm. 2014), including:

- *Grypotheca pertinax*
- *Mallobathra metrosema*
- *Reductoderces microphanes*

The site hosts the At Risk (Relict) moth *Hierodoris torrida* listed by Hoare (2005), and the At Risk (Relict) six-eyed spider (*Periegops suterii*) (C. Vink Pers. Comm. 2014).

Among the plant species, Riccarton Bush hosts the At Risk/Declining white mistletoe (*Tuperia antarctica*), and the Nationally Threatened/Vulnerable NZ wind grass (*Anemanthele lessoniana*).

Thus in total, two Threatened, seven At Risk, two Data Deficient, and three locally uncommon taxa are known from Riccarton Bush.

**5. The site contains indigenous vegetation or an indigenous species at its distribution limit within Canterbury Region or nationally.**

The site is significant under this criterion.

The Site supports a population of the moth *Stigmella kaimanua* which occurs at its northern limit in Riccarton Bush (B. Patrick pers. comm. 2014).

The site contains hinau (*Elaeocarpus dentatus*) which reaches its southern distributional limit in Riccarton Bush (Lloyd *et al.* 2013)

**6. Indigenous vegetation or an association of indigenous species that is distinctive, of restricted occurrence, occurs within an originally rare ecosystem, or has developed as a result of an unusual environmental factor or combinations of factors.**

The site is significant under this criterion.

Site contains three species of moth that are endemic to, and therefore restricted to Riccarton Bush (Muir *et al.* 1995), including:

- *Grypotherca pertinax*
- *Mallobathra metrosema*
- *Reductoderces microphanes*

## **Diversity and Pattern**

**7. Indigenous vegetation or habitat of indigenous fauna that contains a high diversity of indigenous ecosystem or habitat types, indigenous taxa, or has changes in species composition reflecting the existence of diverse natural features or ecological gradients.**

The site is significant under this criterion.

Twenty-seven of the 39 families (approximately 70%) of Lepidoptera (moths & butterflies) occurring in New Zealand have been recorded from Riccarton Bush. These include 260 species of which 190 species were recorded by Muir *et al.* (1995), who also identified that 35 species not re-recorded during their survey were likely to still be present as they were known to occur in the immediate surroundings.

Riccarton Bush contains more than 70 species of extant indigenous conifer and flowering plants (Appendix 1; Molloy 1995).

## Ecological Context

8. *Vegetation or habitat of indigenous fauna that provides or contributes to an important ecological linkage or network, or provides an important buffering function.*

Site does not meet this criteria

9. *A wetland which plays an important hydrological, biological or ecological role in the natural functioning of a river or coastal system.*

Site does not meet this criteria

- 10. Indigenous vegetation or habitat of indigenous fauna that provides important habitat (including refuges from predation, or key habitat for feeding, breeding, or resting) for indigenous species, either seasonally or permanently.**

The site is significant under this criterion.

Effective pest proof fencing is in place around the perimeter of the forested area and provides an effective refuge from mammalian predation for indigenous fauna and flora.

Furthermore, this site provides important feeding, breeding and nesting habitat for indigenous forest birds, both seasonally (e.g. Shining Cuckoo and Kereru) and permanently for other forest bird species; see Appendix 3.

## Site Management

### Existing Protection Status

Protected under the Riccarton Bush Act 1914

Threats and risks	Management recommendations	Support package options
<ul style="list-style-type: none"> <li>Pest plant incursion</li> </ul>	<ul style="list-style-type: none"> <li>Monitor pest plant infestations and implement control as required.</li> <li>Assess new pest plant incursions and implement control as required</li> </ul>	<ul style="list-style-type: none"> <li>Information packages for neighbouring properties (e.g. 'Plant Me Instead')</li> </ul>
<ul style="list-style-type: none"> <li>Animal Pest Incursion</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of possible animal pest incursions and trapping as necessary.</li> <li>Regular inspection and maintenance of pest proof fence</li> <li>Maintenance of effective clear-zone around perimeter of pest proof fence</li> </ul>	<ul style="list-style-type: none"> <li>Provide advice and guidance on pest animal monitoring</li> <li>Supply traps and related training as necessary</li> </ul>
<ul style="list-style-type: none"> <li>Erosion of genetic purity through hybridisation with non-local native plant species</li> </ul>	<ul style="list-style-type: none"> <li>Ensure any plant introductions to Riccarton Bush are sourced from the nearest natural plant populations</li> <li>Monitoring and eradication of problem non-local native plant species.</li> </ul>	<ul style="list-style-type: none"> <li>Information packages for neighbouring properties (e.g. 'Plant Me Instead')</li> </ul>
<ul style="list-style-type: none"> <li>Biodiversity Loss</li> </ul>	<ul style="list-style-type: none"> <li>Reintroduction of appropriate locally extinct plant and animal species based on historic records</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<ul style="list-style-type: none"> <li>Fire</li> </ul>	<ul style="list-style-type: none"> <li>Consider limiting entry to reserve during times of drought</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>

## References

- Cockayne, L. (1924) *The history and importance of the bush*. In Chilton. C. (ed) *Riccarton Bush; a remnant of the kahikatea swamp forest formerly existing in the neighbourhood of Christchurch, New Zealand*. Canterbury Publishing Company, Christchurch, New Zealand. Pp 11 – 13.
- Crossland , A. C. (2007) *Biodiversity situational analysis RE bird life in Riccarton Bush*. Unpublished data, Christchurch City Council (TRIM 10/96932)
- Crossland, A. C. (2013) *Bush Bird Monitoring Programme Riccarton Bush*. Unpublished Christchurch City Council datasheet (TRIM 13/187988).
- Environment Canterbury. (2013). *Canterbury Regional Policy Statement 2013*. Environment Canterbury.
- Harding, M. A. (2009) *Canterbury land protection strategy; a report to the nature Heritage Fund committee*. Nature Heritage Fund, Wellington, New Zealand.
- Lloyd, K., McClellan, R., Hutchison, M., Patrick, B., and Shaw, W. (2013) *Guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna in Canterbury Region*. Wildland Consultants Contract Report No. 2289i, prepared for Environment Canterbury.
- Molloy, B. (1995) *Records of native conifers and flowering plants*. In Molloy, B. (Ed) *Riccarton Bush: Putaringamotu*. Riccarton Bush Trust, Christchurch, New Zealand. Pp 116 – 143.
- Muir, C., Dugdale, J., and Emberson, R. (1995) *Moths and Butterflies*. In Molloy, B. (Ed) *Riccarton Bush: Putaringamotu*. Riccarton Bush Trust, Christchurch, New Zealand. Pp 263 – 278.
- Murray, B. (1924) *The botany of Riccarton Bush*. In Chilton. C. (Ed) *Riccarton Bush; a remnant of the kahikatea swamp forest formerly existing in the neighbourhood of Christchurch, New Zealand*. Canterbury Publishing Company, Christchurch, New Zealand. Pp 11 – 13.
- Norton, D. (1995) *Forest structure and processes*. In Molloy, B. (Ed) *Riccarton Bush: Putaringamotu*. Riccarton Bush Trust, Christchurch, New Zealand. Pp 116 – 143.
- Stringer, I. A. N., Hitchmough, R. A., Dugdale, J. S., Edwards, E., Hoare, R. J. B. & Patrick, B. H. (2012) *The conservation status of New Zealand Lepidoptera*. *New Zealand Entomologist* 35(2): 120-127.
- Walker, S., Cieraad, E., Grove, P., Lloyd, K., Myers, S., and Porteous, T. (2007) *Guide to users of the threatened environment classification*. Landcare Research, Lincoln, New Zealand.



**Assessment completed by:** Dr Antony B. Shadbolt  
**Date:** 23<sup>rd</sup> September 2014

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**Date:** 23<sup>rd</sup> September 2014

**Statement updated by:** XXX  
**Date:** XXX

Please note this statement is based on information available at the time of writing. Due to the dynamic nature of ecosystems, future reassessment of the site may be necessary to reflect any changes in knowledge of its ecological significance.

## Appendix 1: Conifers & Flowering Plants

List of native conifers and flowering plants recorded from Riccarton Bush. Species in gray type indicate species that were recorded from previous surveys (See Molly 1995) of Riccarton Bush, but were not recorded by Molloy in 1993, and are no longer thought to be present. Species marked with an asterisk (\*) are non-local native species.

### TREES & SHRUBS

BOTANICAL NAME	COMMON NAME(S)
<i>Alectryon excelsus</i>	titoki/NZ ash
<i>Aristotelia serrata</i>	wineberry/makomako
<i>Carmichaelia robusta</i>	NZ broom/makaka
<i>Carpodetus serratus</i>	marbleleaf/putaputaweta
<i>Coprosma areolata</i>	thin leaved coprosma
<i>Coprosma crassifolia</i>	stiff-stemmed coprosma
<i>Coprosma lucida</i>	karamu
<i>Coprosma propinqua</i>	mingimingi
<i>Coprosma robusta</i>	karamu
<i>Coprosma rotundifolia</i>	round leaved coprosma
<i>Coprosma propinqua</i> x <i>C. robusta</i>	hybrid coprosma
<i>Cordyline australis</i>	cabbage tree/ti kouka
<i>Coriaria sementosa</i>	tutu
<i>Corokia cotoneaster</i>	korokio
<i>Dacrycarpus dacrydioides</i>	kahikatea/white pine
<i>Elaeocarpus dentatus</i>	hinau
<i>Elaeocarpus hookerianus</i>	pokaka
<i>Elaeocarpus dentatus</i> x <i>E. hookerianus</i>	hybrid
<i>Fuchsia excorticata</i>	tree fuchsia/kotukutuku
<i>Fuchsia excorticata</i> x <i>F. perscandens</i>	hybrid fuchsia
<i>Griselinia littoralis</i>	broadleaf/kapuka
<i>Hebe salicifolia</i>	koromiko
<i>Hoheria angustifolia</i>	narrow leaved lacebark/houhere
<i>Hoheria sextylosa</i> *	North Island lacebark
<i>Hoheria angustifolia</i> x <i>H. sextylosa</i> *	hybrid lacebark
<i>Kunzea ericoides</i>	white tea tree
<i>Lophomyrtus obcordata</i>	NZ myrtle/rohutu
<i>Melicope simplex</i>	poataniwha
<i>Melicytus micranthus</i>	manakura/shrubby whiteywood
<i>Melicytus ramiflorus</i>	mahoe/whiteywood
<i>Melicytus micranthus</i> x <i>M. ramiflorus</i>	hybrid whiteywood
<i>Myoporum laetum</i>	ngaio
<i>Myrsine australis</i>	red matipo
<i>Neomyrtus pedunculata</i>	NZ myrtle/rohutu
<i>Pennantia corymbosa</i>	kaikomako
<i>Pittosporum eugenioides</i>	lemonwood/tarata
<i>Pittosporum tenuifolium</i>	kohuhu/black matipo
<i>Plagianthus regius</i>	ribbonwood/manatu

<i>Podocarpus totara</i>	totara
<i>Prumnopitys ferruginea</i>	miro/brown pine
<i>Prumnopitys taxifolia</i>	matai/black pine
<i>Pseudopanax arboreus</i>	five-finger/pauhou
<i>Pseudopanax crassifolius</i>	lancewood/horoeka
<i>Pseudowintera colorata</i>	pepper tree/horopito
<i>Schefflera digitata</i>	seven-finger/pate
<i>Solanum laciniatum</i>	poroporo
<i>Sophora microphylla</i>	South Island kowhai
<i>Streblus heterophyllus</i>	milk tree/turepo
<i>Urtica ferox</i>	tree nettle/ongaonga

### CLIMBING PLANTS

BOTANICAL NAME	COMMON NAME(S)
<i>Calystegia turguriorum</i>	NZ bindweed/powhiwhi
<i>Clematis paniculata</i>	NZ clematis/puawananga
<i>Clematis fosteri</i>	yellow clematis
<i>Fuchsia perscandens</i>	climbing fuchsia
<i>Metrosideros diffusa</i>	white rata/climbing rata
<i>Muehlenbeckia australis</i>	pohuehue/Maori vine
<i>Muehlenbeckia complexa</i>	shrubby puhuehue
<i>Muehlenbeckia australis x M. complexa</i>	hybrid pohue
<i>Parsonsia capsularis</i>	NZ jasmine/kaiwhiria
<i>Parsonsia heterophylla</i>	NZ jasmine/kaiwhiria
<i>Passiflora tetandra</i>	Kohia/NZ passion flower
<i>Ripogonum scandens</i>	supplejack/kareao
<i>Rubus australis</i>	bush lawyer/taramoa
<i>Rubus schmidelioides</i>	bush lawyer/taramoa
<i>Rubus squarrosus</i>	bush lawyer/taramoa
<i>Rubus australis x R. squarrosus</i>	hybrid lawyer
<i>Rubus australis x R. schmidelioides</i>	hybrid lawyer
<i>Rubus schmidelioides x R. squarrosus</i>	hybrid lawyer

### MISTLETOES

BOTANICAL NAME	COMMON NAME(S)
<i>Ileostylus micranthus</i>	common mistletoe
<i>Korthalsella lindsayi</i>	dwarf mistletoe
<i>Tupera antarctica</i>	white mistletoe/pirita

### MONOCOT HERBS

BOTANICAL NAME	COMMON NAME(S)
<i>Anemanthele lessoniana</i>	hunangamoho/NZ wind grass
<i>Astelia fragrans</i>	bush flax/kahaka
<i>Astelia grandia</i>	bush flax/kahaka
<i>Carax coriacea</i>	sedge/rautahi
<i>Carex flagemifera</i>	shining sedge/mania
<i>Carex lambertiana</i>	sedge
<i>Carex raoulii</i>	sedge

<i>Carex secta</i>	sedge/purei
<i>Carex solandri</i>	sedge
<i>Carex virgata</i>	swamp sedge
<i>Carex lambertiana x C. solandri</i>	sedge
<i>Cortaderia richardii</i>	toetoe
<i>Gahnia xanthocarpa</i>	giant gahnia
<i>Hierochloa redolens</i>	holy grass/karetu
<i>Juncus distegus</i>	rush
<i>Juncus gregiflorus</i>	rush
<i>Libertia ixioides</i>	NZ iris/mikoikoi
<i>Liuzula picta var. limosa</i>	woodrush
<i>Luzula rufa</i>	woodrush
<i>Microlaena avenacea</i>	bush rice grass
<i>Phormium tenax</i>	NZ flax/harakeke
<i>Poa imbecilla</i>	weak poa
<i>Rytidosperma gracile</i>	danthonia/bush danthonia
<i>Uncinia leptostachya</i>	hooked sedge/matau
<i>Uncinia uncinata</i>	hooked sedge/kamu

#### DICOT HERBS

BOTANICAL NAME	COMMON NAME(S)
<i>Acaena anserinifolia</i>	piripiri/bidibidi
<i>Cardamine debilis</i>	NZ cress/panapana
<i>Epilobium billardieraenum</i>	willowherb
<i>Epilobium komarovianum</i>	willowherb
<i>Epilobium macropus</i>	willowherb
<i>Epilobium nummulariifolium</i>	willowherb
<i>Epilobium pallidiflorum</i>	willowherb
<i>Epilobium pictum</i>	willowherb
<i>Epilobium rotundifolium</i>	willowherb
<i>Geranium solenderi</i>	cranesbill/cut-leaved geranium
<i>Gnaphalium involucreatum</i>	creeping cudweed
<i>Hydrocotyle heteromeria</i>	NZ waxweed/hydrocotyle
<i>Hydrocotyle moschata</i>	hydrocotyle/marsh pennywort
<i>Microseris scapigera</i>	-
<i>Oxalis corniculata</i>	creeping oxalis
<i>Nertera depressa</i>	nertera
<i>Parietaria debilis</i>	NZ pellitory
<i>Pseudognaphalium luteoalbum</i>	common cudweed
<i>Ranunculus glabifolius</i>	NZ buttercup
<i>Ranunculus reflexus</i>	NZ buttercup
<i>Rumex flexuosus</i>	Maori dock/nuna
<i>Scenecio minimus</i>	fireweed
<i>Stellaria parviflora</i>	NZ stichwort
<i>Urtica incisa</i>	dwarf nettle/forest nettle
<i>Wahlenbergia gracilis</i>	NZ harebell

## Appendix 2: Bush Bird Assemblage

Comparison of bush bird species recorded at Riccarton Bush compared to the Lowland Plains Native bush Bird Species Assemblage for Christchurch. Species recorded at the study site are marked with a tick (✓); species considered to be breeding on site are underlined; species not recorded at site but part of the above assemblage are shown in grey font (Crossland 2007).

### **COMMON RESIDENT**

- |   |                     |                                      |
|---|---------------------|--------------------------------------|
| ✓ | <u>Grey Warbler</u> | <i>Gerygone igata</i>                |
| ✓ | <u>Silvereye</u>    | <i>Zosterops lateralis lateralis</i> |

### **LESS COMMON BREEDING RESIDENT**

- |   |                             |  |
|---|-----------------------------|--|
| ✓ | <u>Bellbird</u>             | <i>Anthornis melanura melanura</i>     |
| ✓ | <u>South Island Fantail</u> | <i>Rhipidura fuliginosa fuliginosa</i> |

### **SCARCE BREEDING RESIDENT**

- |   |                               |  |
|---|-------------------------------|--|
| ✓ | <u>New Zealand Kingfisher</u> | <i>Halcyon sancta vagans</i>                     |
| ✓ | <u>New Zealand Pigeon</u>     | <i>Hemiphaga novaeseelandiae novaeseelandiae</i> |

### Seasonal/Regular Visitor

- |   |                        |                                     |
|---|------------------------|-------------------------------------|
| ✓ | <u>Shining Cuckoo</u>  | <i>Chrysococcyx lucidus lucidus</i> |
| ✓ | <u>Welcome Swallow</u> | <i>Hirundo neoxena neoxena</i>      |

### **IRREGULAR VISITOR**

- |   |                            |  |
|---|----------------------------|--|
|   | Tui                        | <i>Prosthemadera novaeseelandiae novaeseelandiae</i> |
| ✓ | <u>South Island Tomtit</u> | <i>Petroica macrocephala macrocephala</i>            |

## Appendix 3: Bush Bird Monitoring

### Bush Bird Monitoring Programme Riccarton Bush (TRIM 13/187988)

Table 1: Bush bird monitoring at Riccarton Bush 2004 – 2005; Observers A. Crossland & J, Moore.  
Transect length 810 m

Species	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Welcome Swallow	0	0	0	0	0	0	2	0	0	0	0	0
Grey Warbler	2	3	6	5	9	6	7	4	2	3	3	7
Fantail	10	6	6	5	4	4	3	3	6	4	10	12
Silvereye	35	10	54	14	41	18	37	44	37	11	65	43
Bellbird	0	0	0	1	1	1	0	0	0	0	1	0
Kereru	1	0	0	0	0	0	0	0	0	2	0	0
Chaffinch	2	1	4	3	10	7	8	4	6	8	5	1
Greenfinch	3	0	0	0	2	1	1	17	3	4	6	2
Goldfinch	4	0	0	0	0	1	1	1	1	0	2	0
Redpoll	3	4	3	0	1	3	1	16	6	7	10	0
House Sparrow	2	0	0	1	2	1	6	0	0	0	0	0
Dunnock	5	5	5	6	11	7	8	9	5	8	9	7
Blackbird	17	17	15	10	11	17	15	18	10	7	9	16
Song Thrush	3	5	8	7	2	3	7	2	3	3	4	2
Starling	13	78	12	0	2	2	12	4	0	0	0	4
Magpie	0	1	0	0	0	0	0	0	0	0	0	0

Table 2: Bush bird monitoring at Riccarton Bush 2008 – 2009; Observers A. Crossland & J, Moore.  
Transect length 810 m.

Species	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Grey Warbler	5	9	9	12	14	8	7	8	10	5	3	5
Fantail	7	9	13	6	4	5	9	7	13	12	5	10
Silvereye	56	18	21	26	47	32	41	35	29	29	59	20
Bellbird	2	2	2	2	1	2	4	2	2	1	2	1
Kereru	3	0	1	1	1	1	0	0	0	1	2	0
Rock Pigeon	0	0	0	0	0	0	0	0	0	1	0	0
Chaffinch	1	1	4	2	1	6	8	5	6	3	3	2
Greenfinch	0	0	1	0	0	4	14	19	23	28	20	4
Goldfinch	0	1	0	1	2	2	2	1	6	5	0	1
Redpoll	1	0	0	0	0	2	25	19	30	26	7	0
House Sparrow	2	3	1	3	4	4	0	1	2	2	4	0
Dunnock	2	8	7	6	5	5	4	6	9	7	4	3
Blackbird	16	16	16	12	9	13	9	10	0	12	14	4
Song Thrush	3	5	5	2	1	3	7	8	0	4	3	2
Starling	51	1	3	9	11	0	3	2	1	1	9	5
Magpie	0	0	0	1	1	1	1	0	1	1	0	0
California Quail	0	0	0	0	1	0	1	0	0	0	0	0