

# Wild ecology in domesticated Canterbury

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*Habitat use & phenology of birds, butterflies, & mammals  
in urban & rural Christchurch*

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Presented to the New Zealand Ecological Society annual conference in Dunedin on 23 November 2010.





*"the crushingly boring Canterbury Plains" Shayne Carter*

Shayne Carter, ([Straitjacket Fits](#)/[Dimmer](#))

Living in Christchurch and working in Lincoln is like being stuck in the transit lounge at the air port. It's not quite New Zealand but there are amazing things not far away. Still, there's interesting wild ecology to be understood.





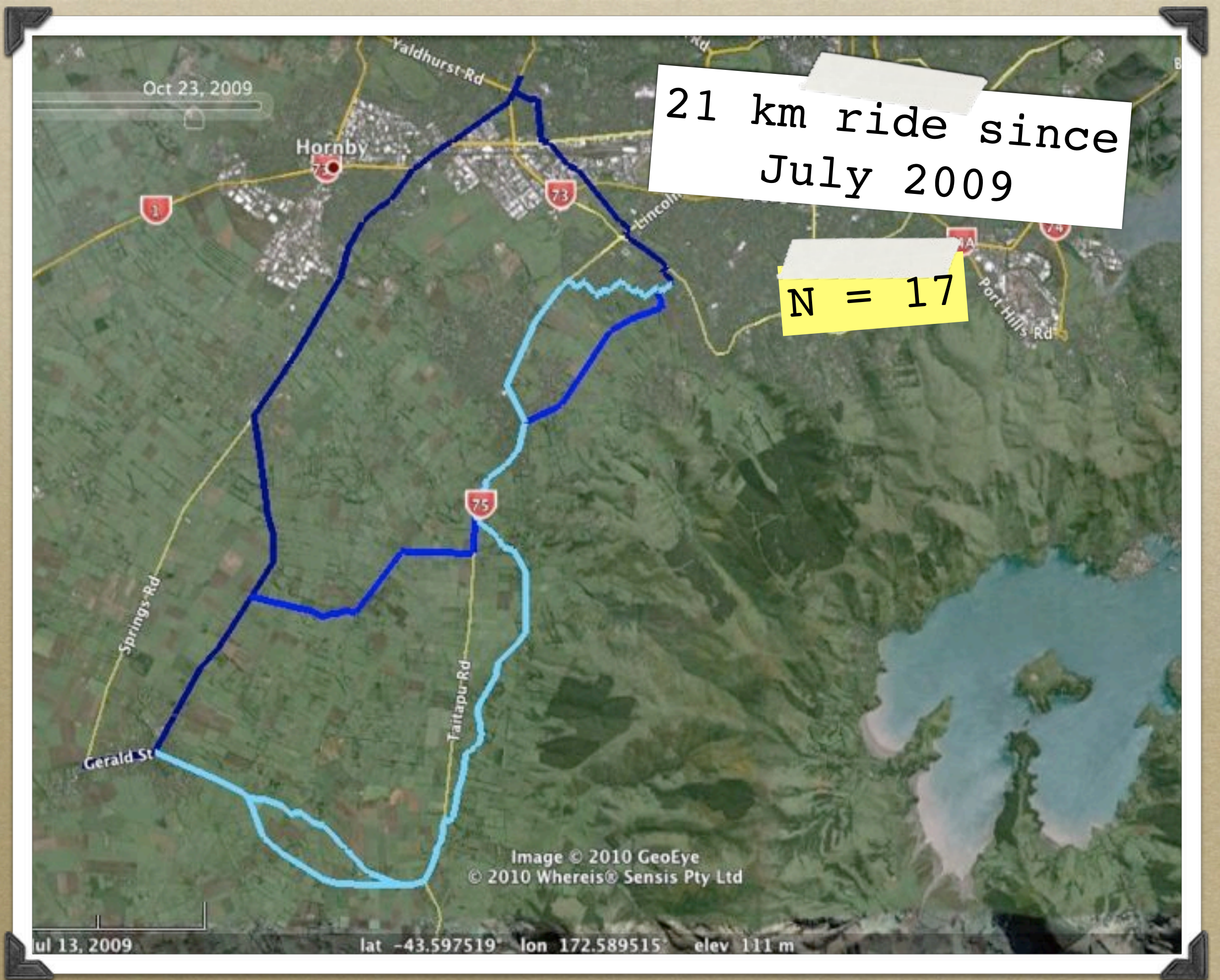
Standard species, standard routes  
17 km ride Hoon Hay–Lincoln via Ladbrooks, most work days since March 2003  
19 km run route through suburban Christchurch, half run each week since July 2008  
All pre-human forest birds, all butterflies, all road-kill, all birds bigger than starlings.





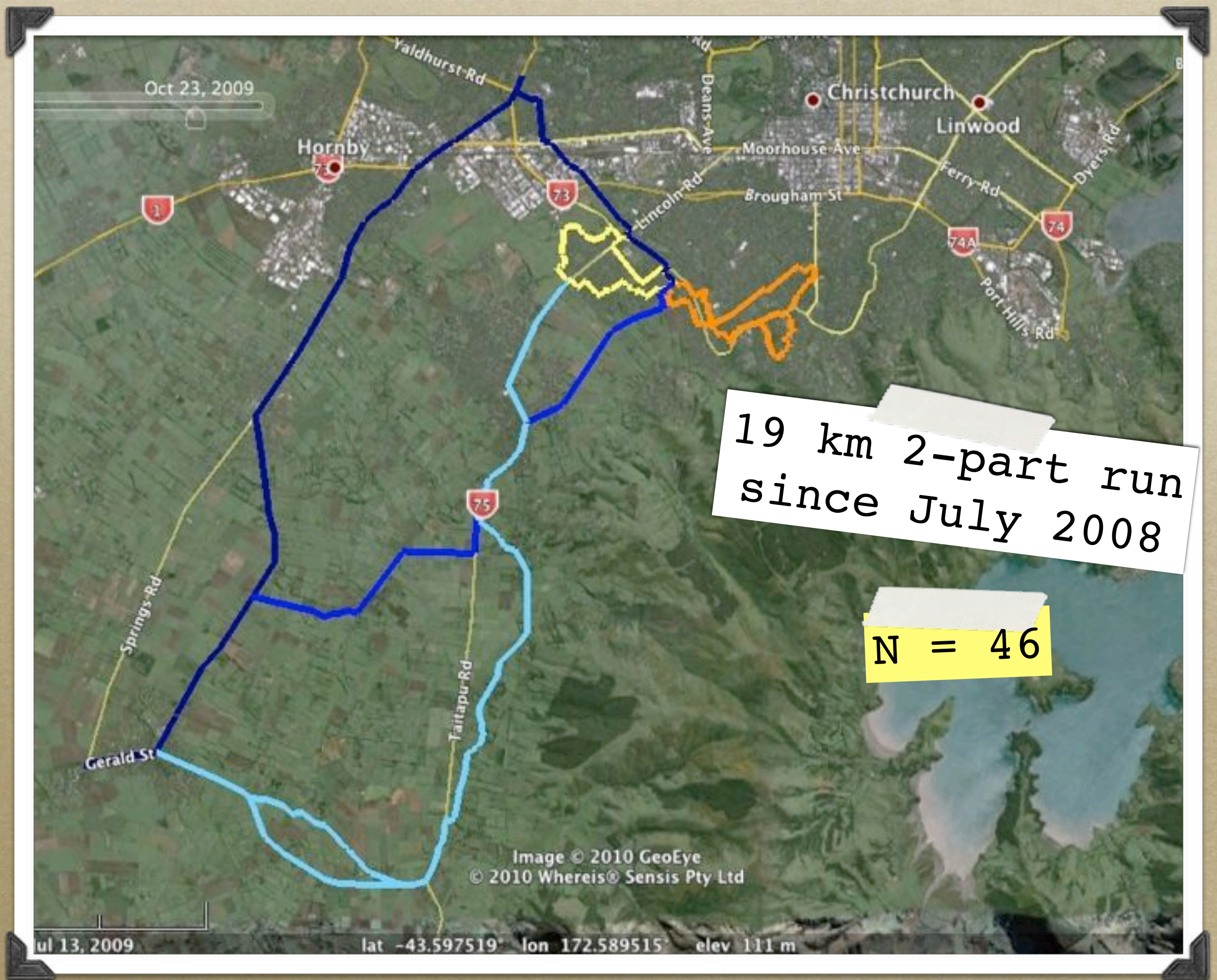
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all pre-human  
forest birds

all wild birds  
bigger than  
starlings

all wild mammals

all car-kills

all butterflies

Car kills initially fresh only.  
Magpie moths since 2005.

Emphasize that this is just a preliminary look at the data





\*Individually geotagged since November 2008



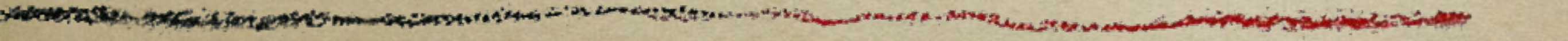


## Live birds

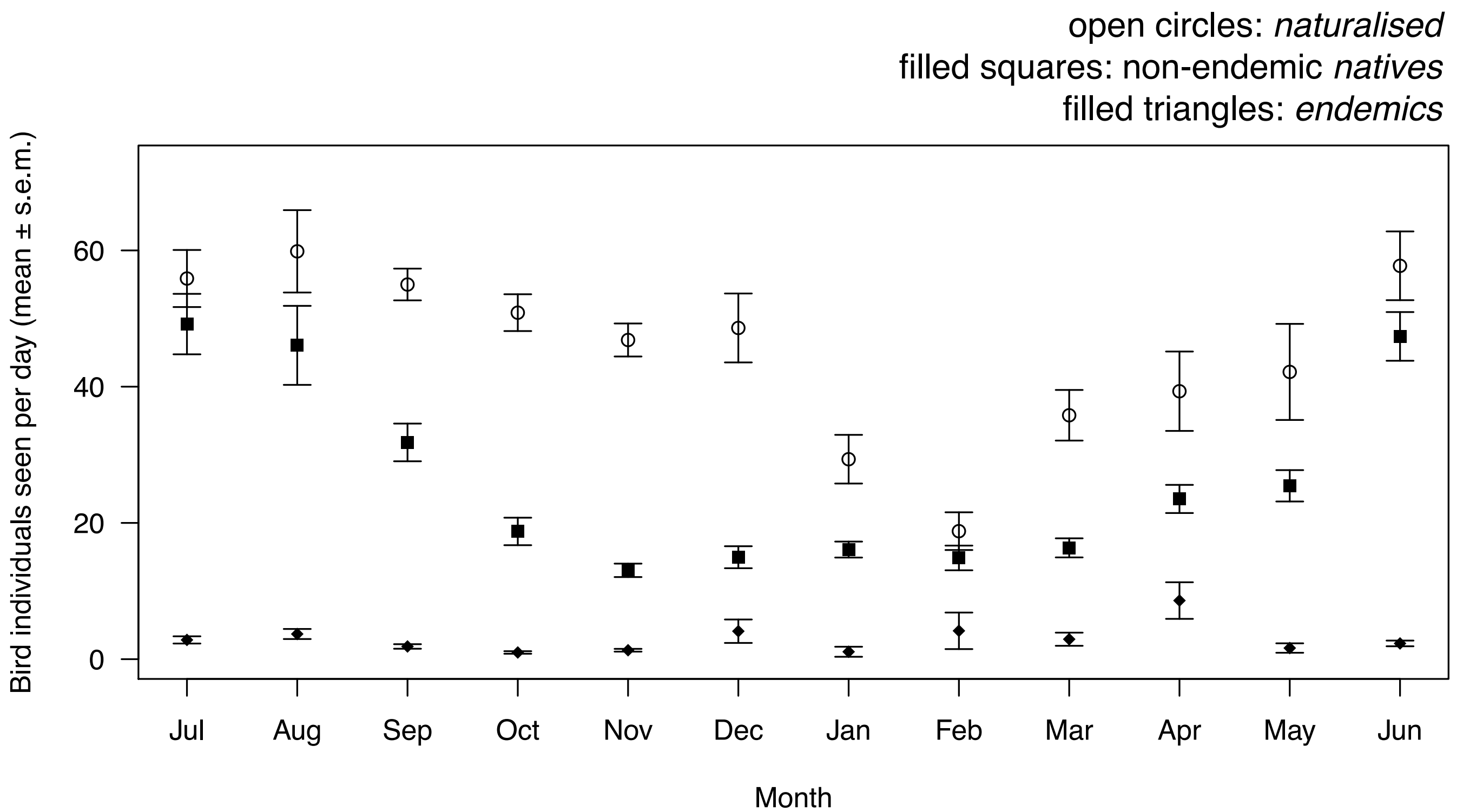
This is a photo of a white-faced heron and a spur-winged plover (rear) feeding in the spray zone of an effluent irrigator on a dairy farm. Wetland birds like irrigated dairy fields.



Which season is best for birds on  
the Plains?



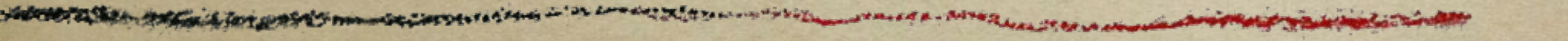




Native birds, especially, peak in winter months when the plains is wet. These include many wetland birds. When the plains dries out in the summer, most birds leave.

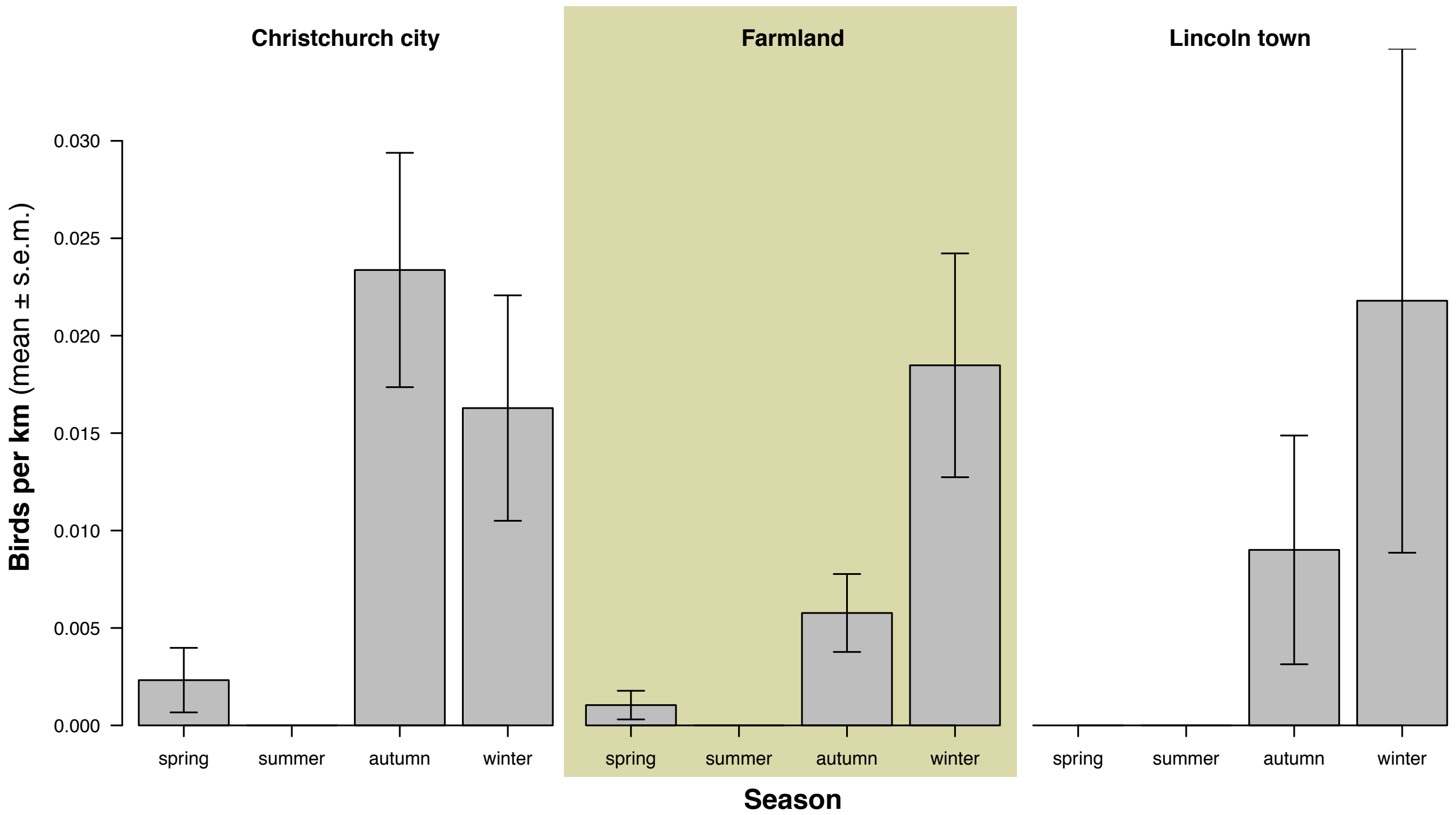


What's better for native birds: city  
or farmland?





# Bellbirds



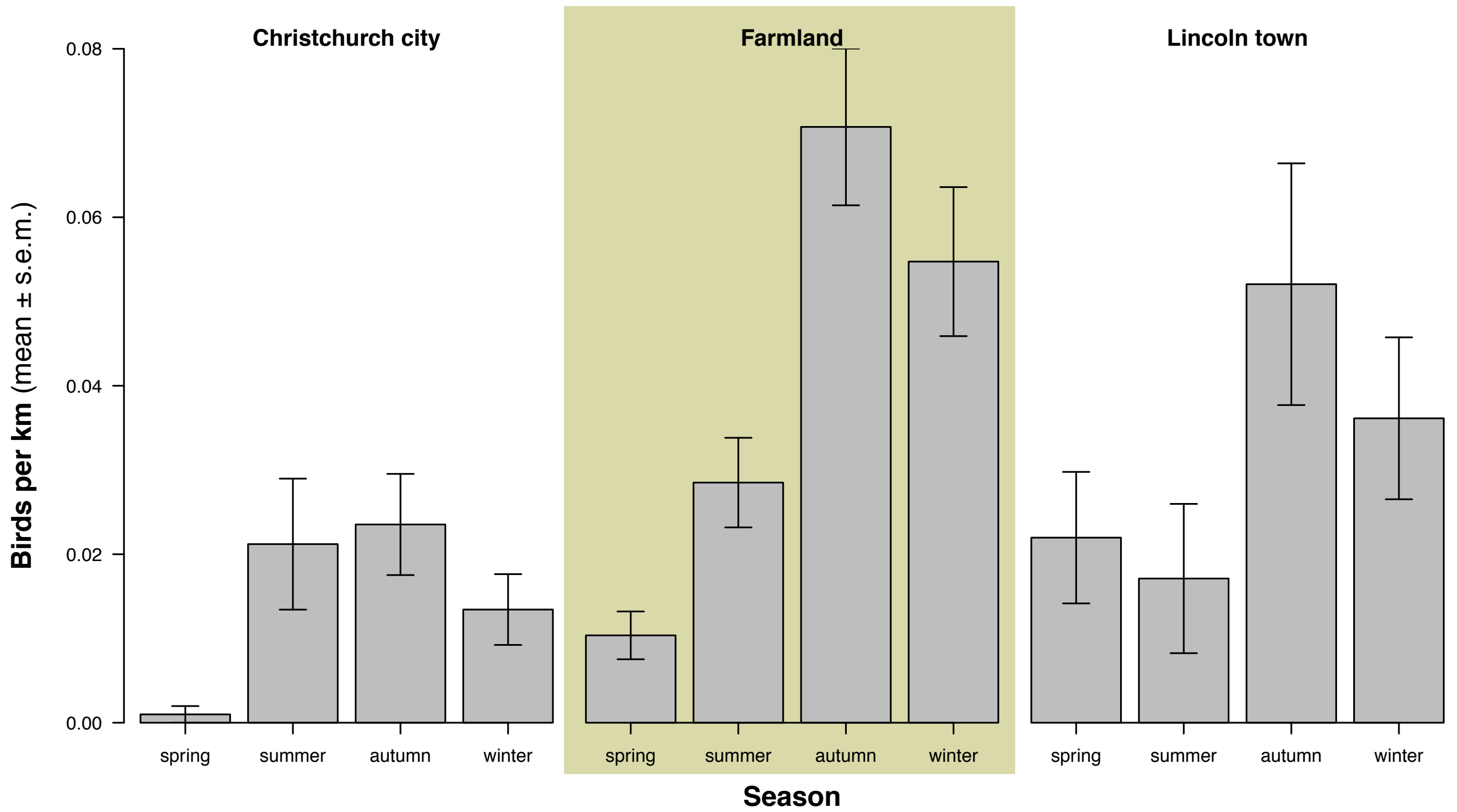
Bellbirds show up where the eucalypt trees are when they flower.

155 bellbird observations on bike route

92 (60%) include “euc” in comments.



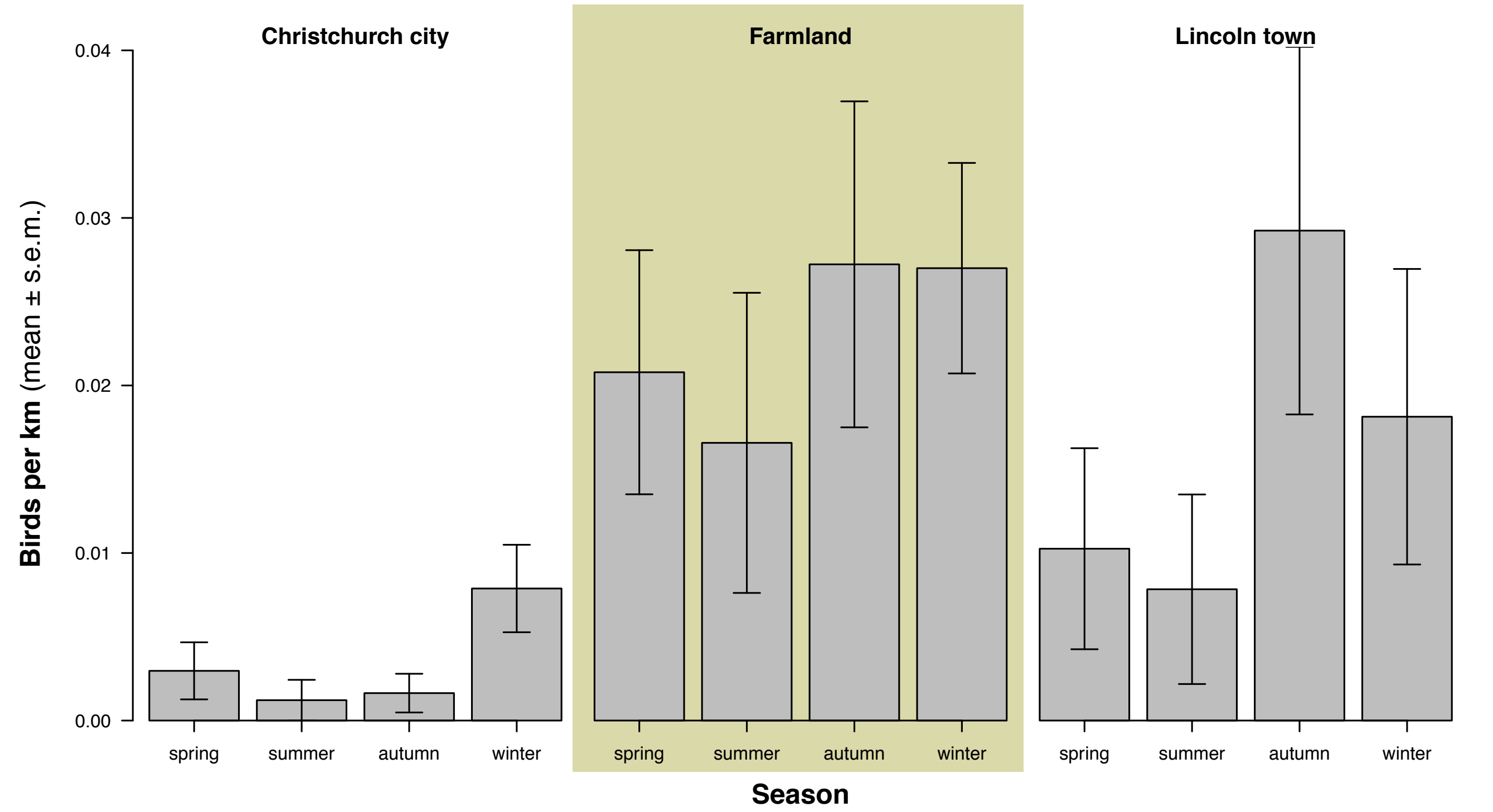
# *Fantails*



Fantails also prefer farmland over suburban houses and gardens.  
The same pattern applies to my other two less frequently biked routes.

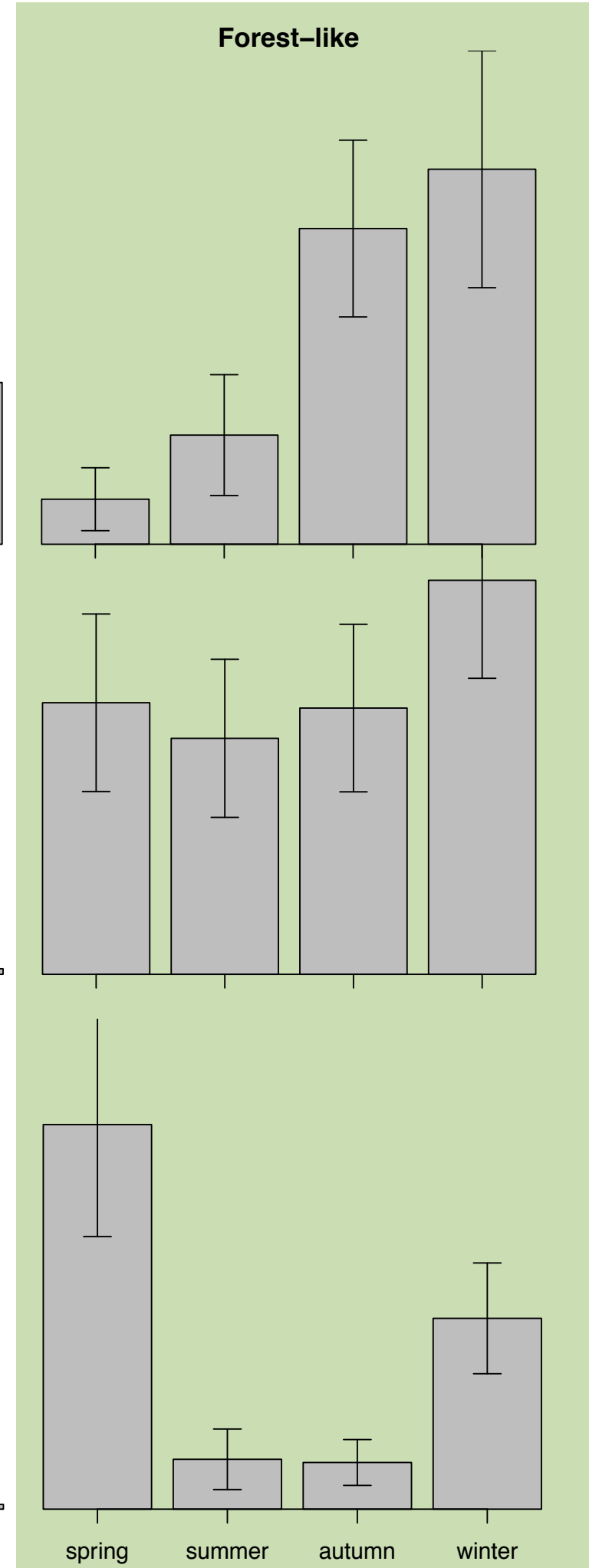
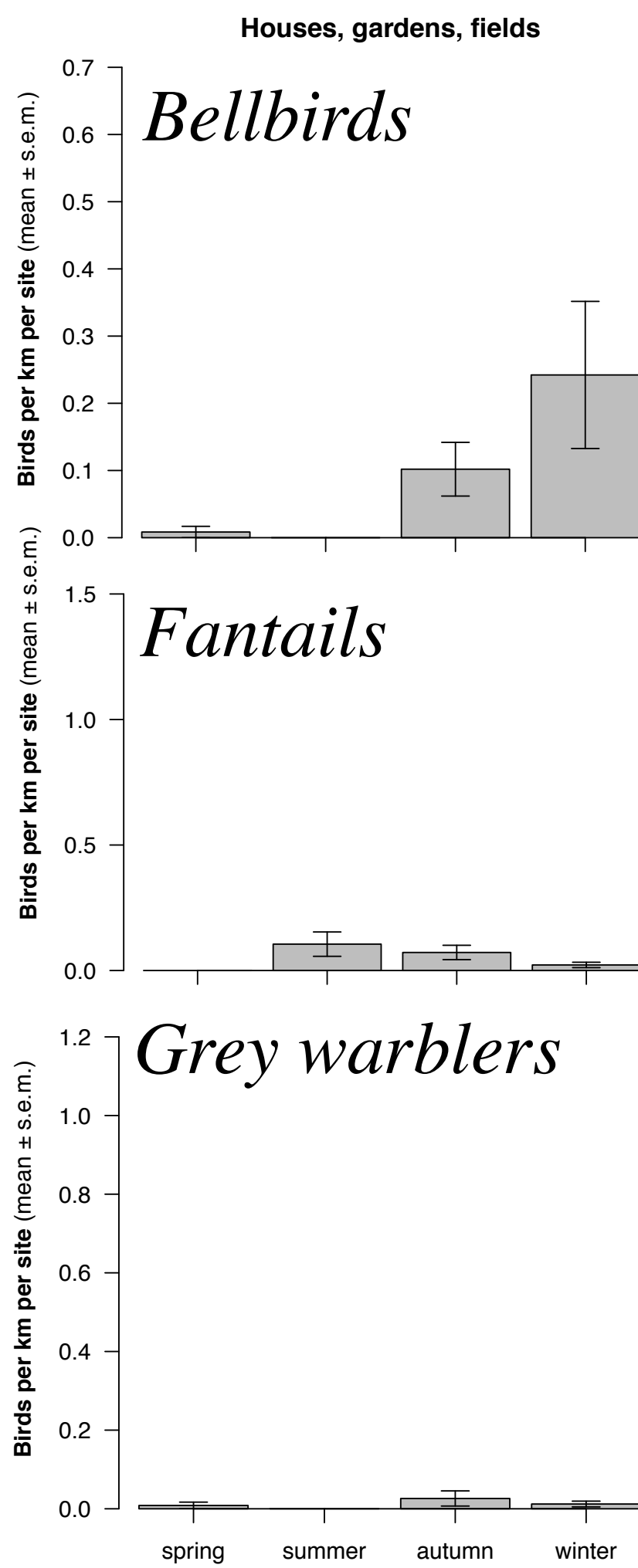


# Grey warblers



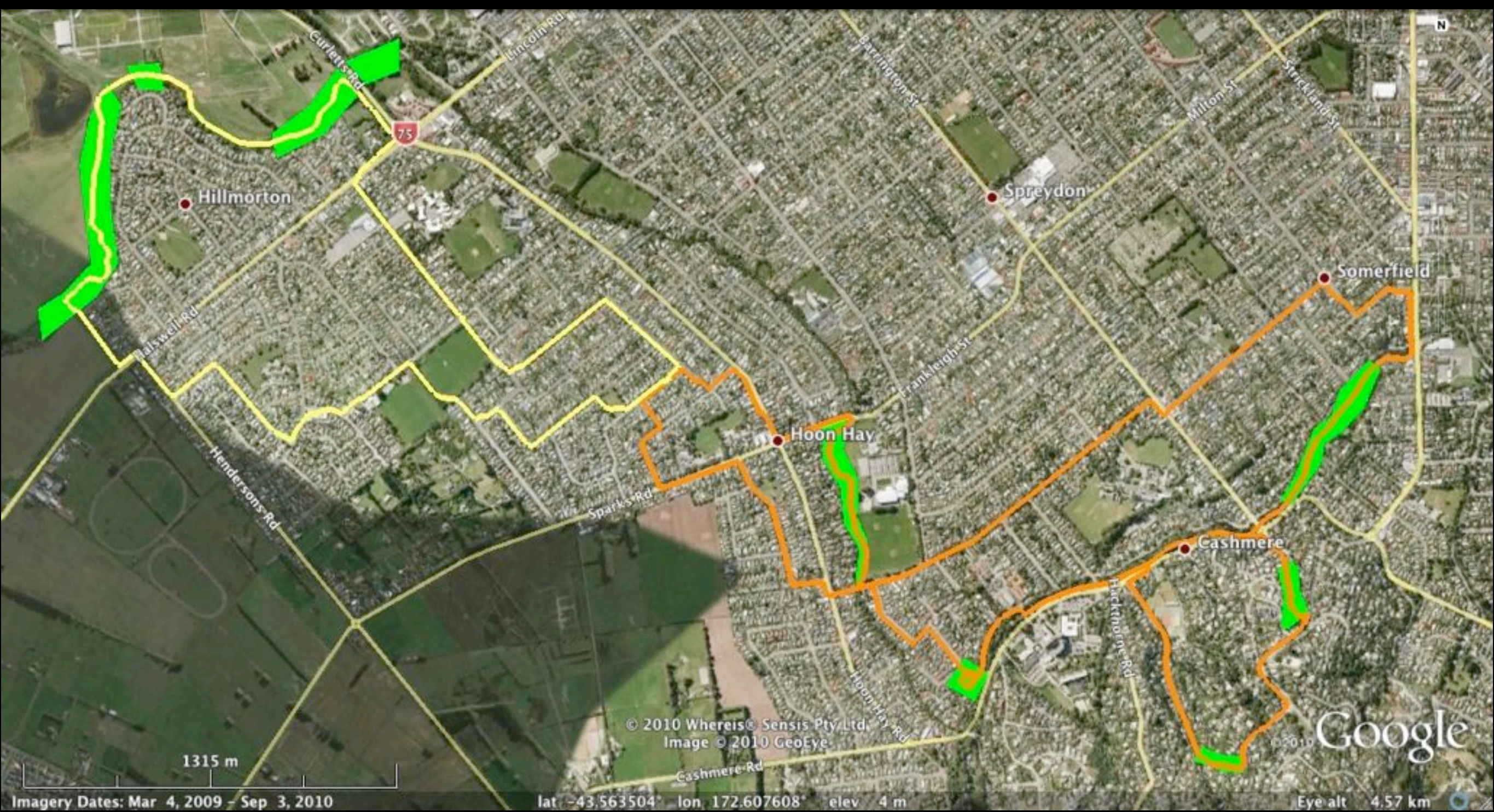
Grey warblers prefer farmland over suburban houses and gardens.  
The same pattern applies to my other two less frequently biked routes.



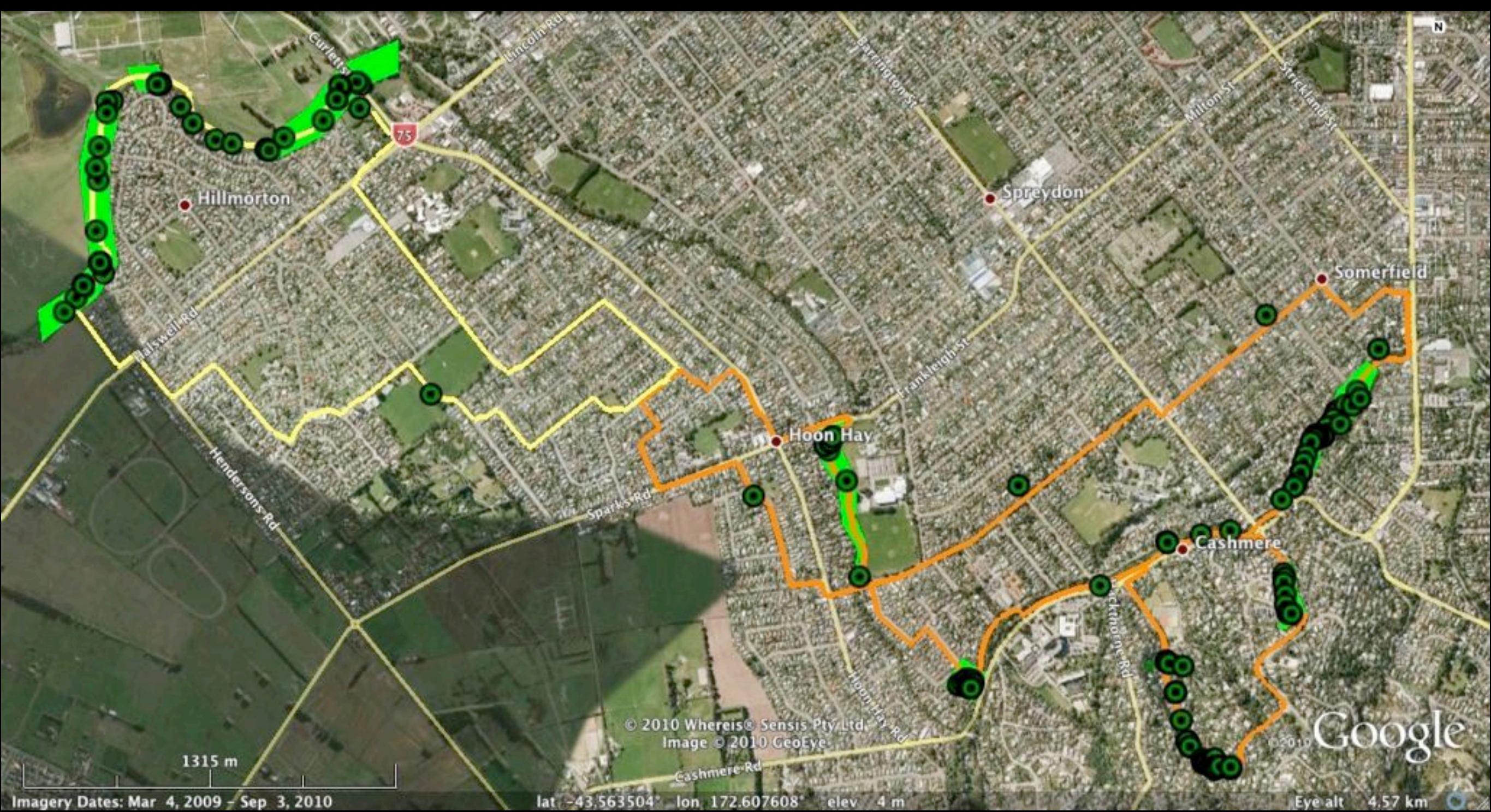


Note that the farmland numbers on the previous slide were similar to the numbers on the left of this graph. Farmland is far worse as a habitat than these forest areas in Christchurch,



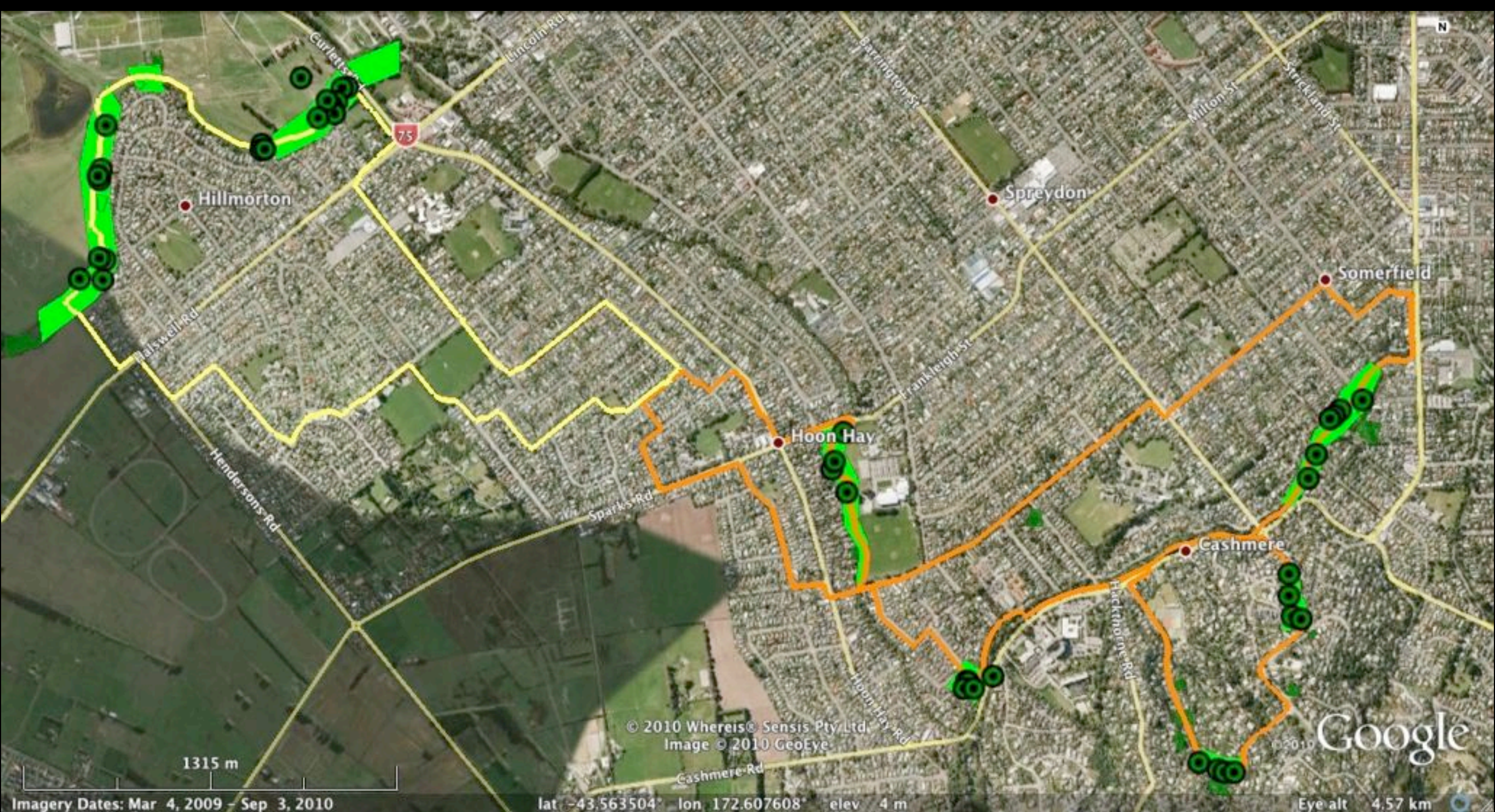






*Fantail*



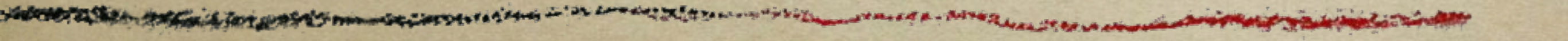


## *Grey warblers*

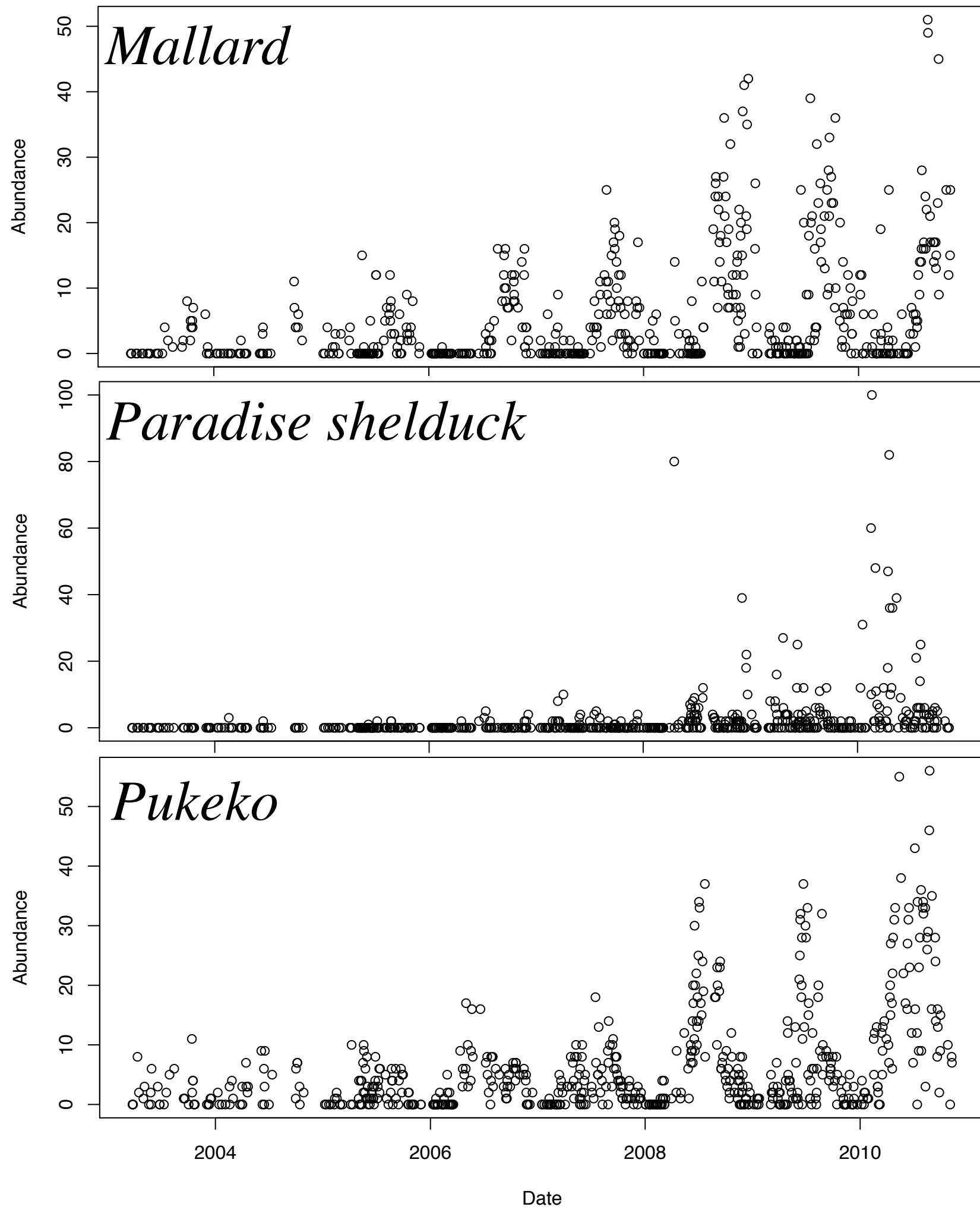
Mention Yolanda and colleagues from Otago  
van Heezik, Y., Smyth, A., and Mathieu, R. 2008. Diversity of native and exotic birds across an urban gradient in a New Zealand city. *Landscape and Urban Planning*, 87:223–232.



How stable are populations across  
years?







Wetland birds are on the increase. The ratio of thrushes:blackbirds has also increased from ~12% to ~20% (except for 2003 which was similar to the past three years for some reason). Resident birds like harriers and magpies are largely unchanged. Point out the seasonal pulses.





Butterflies (& magpie moth)

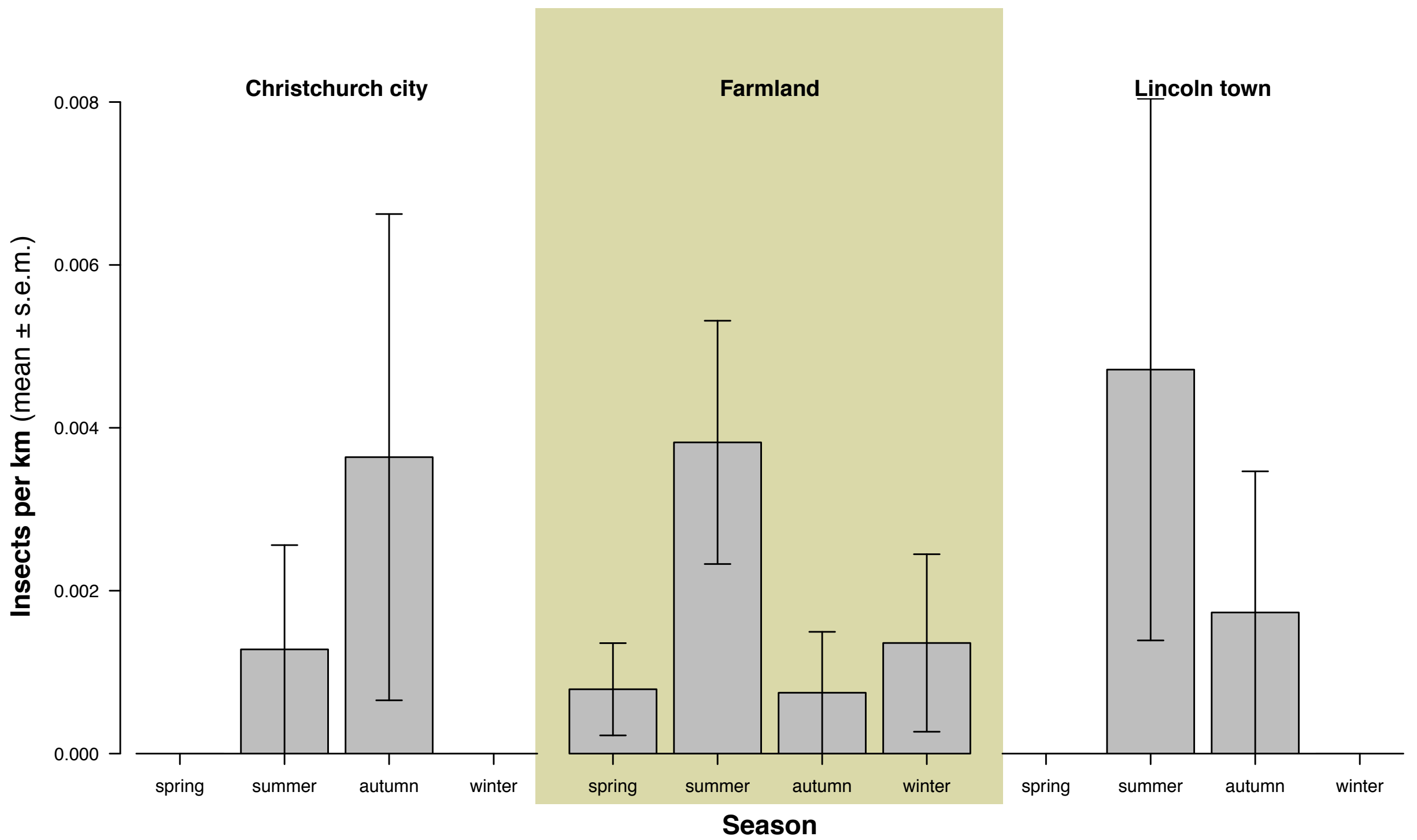


# What's better for native butterflies: city or farmland?

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Very little discernible habitat structure in where native butterflies show up.





## *Red admirals*

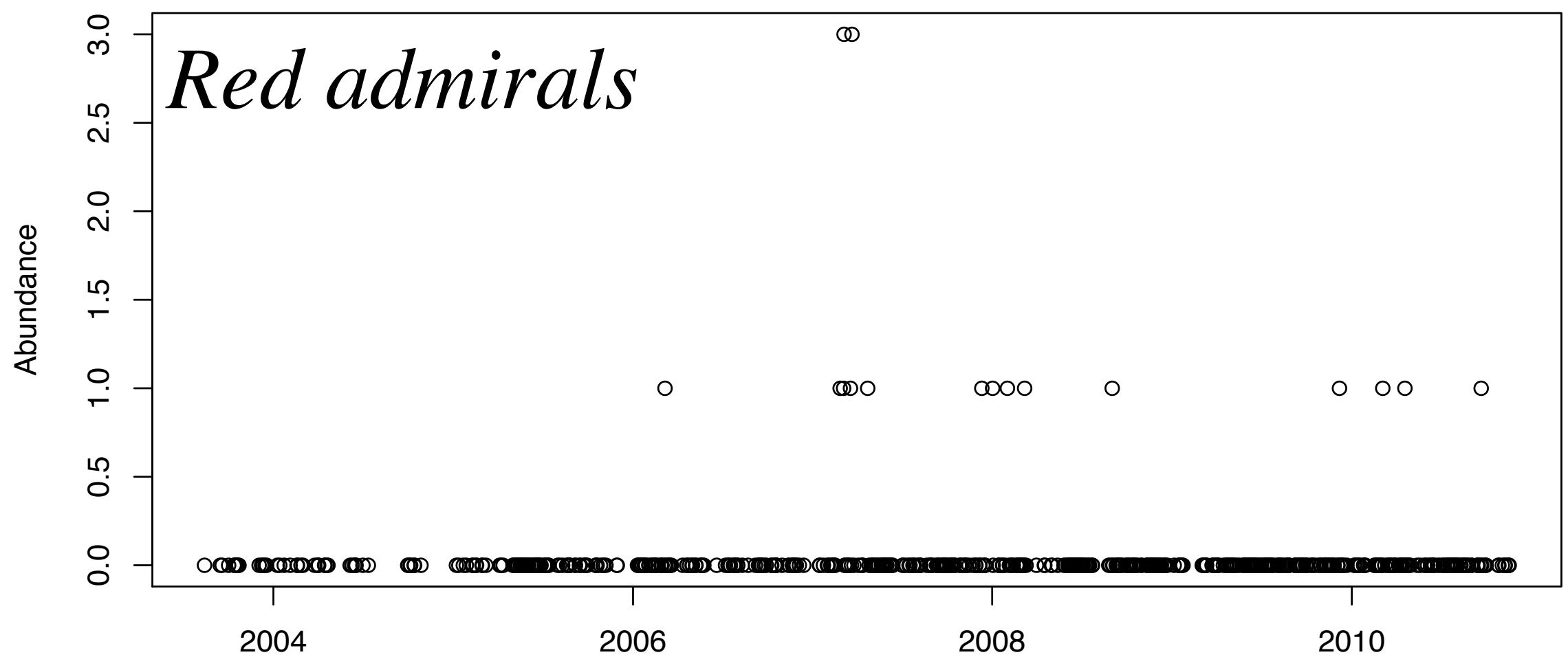
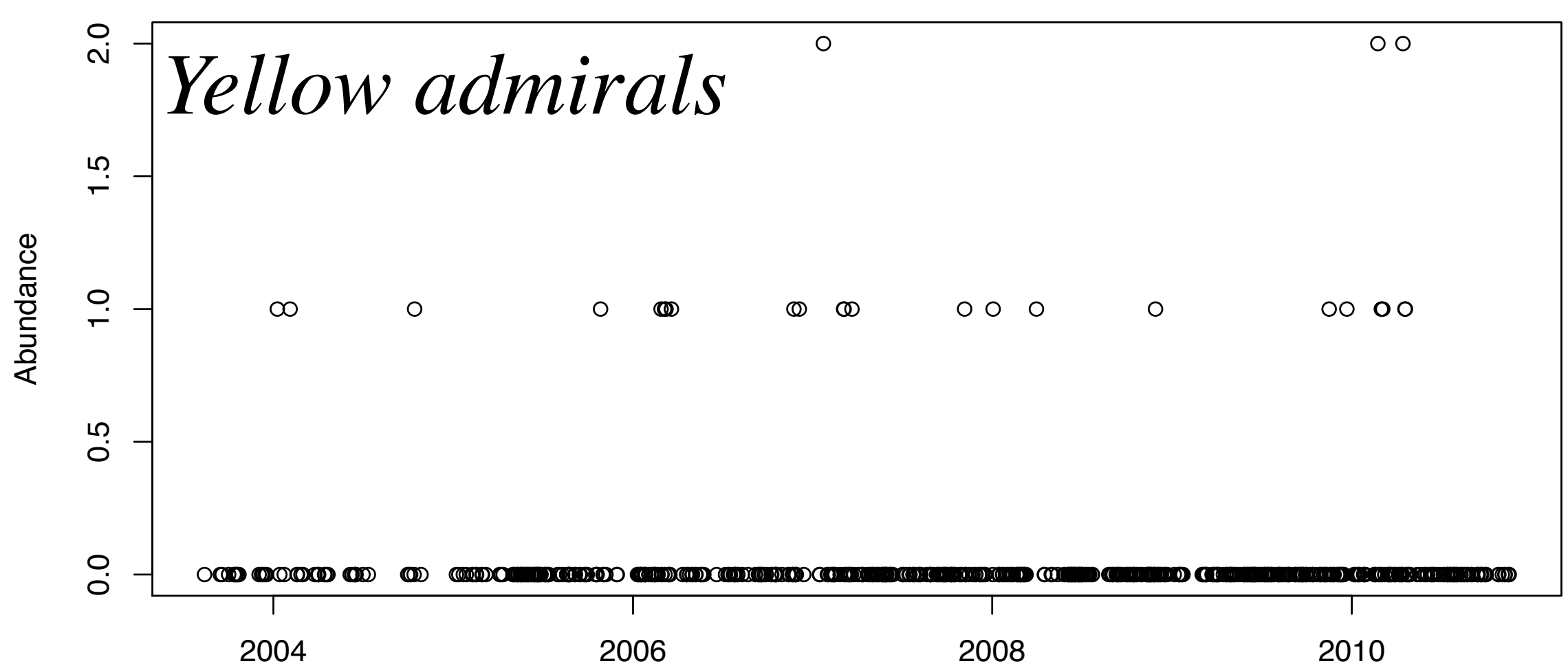
Very little discernible habitat structure in where native butterflies show up.  
Yellow admirals show the same pattern as shown here for reds.  
Nyctemera and cabbage whites more common in the farmland.  
Monarchs more common in the towns.



Are native butterflies in decline?

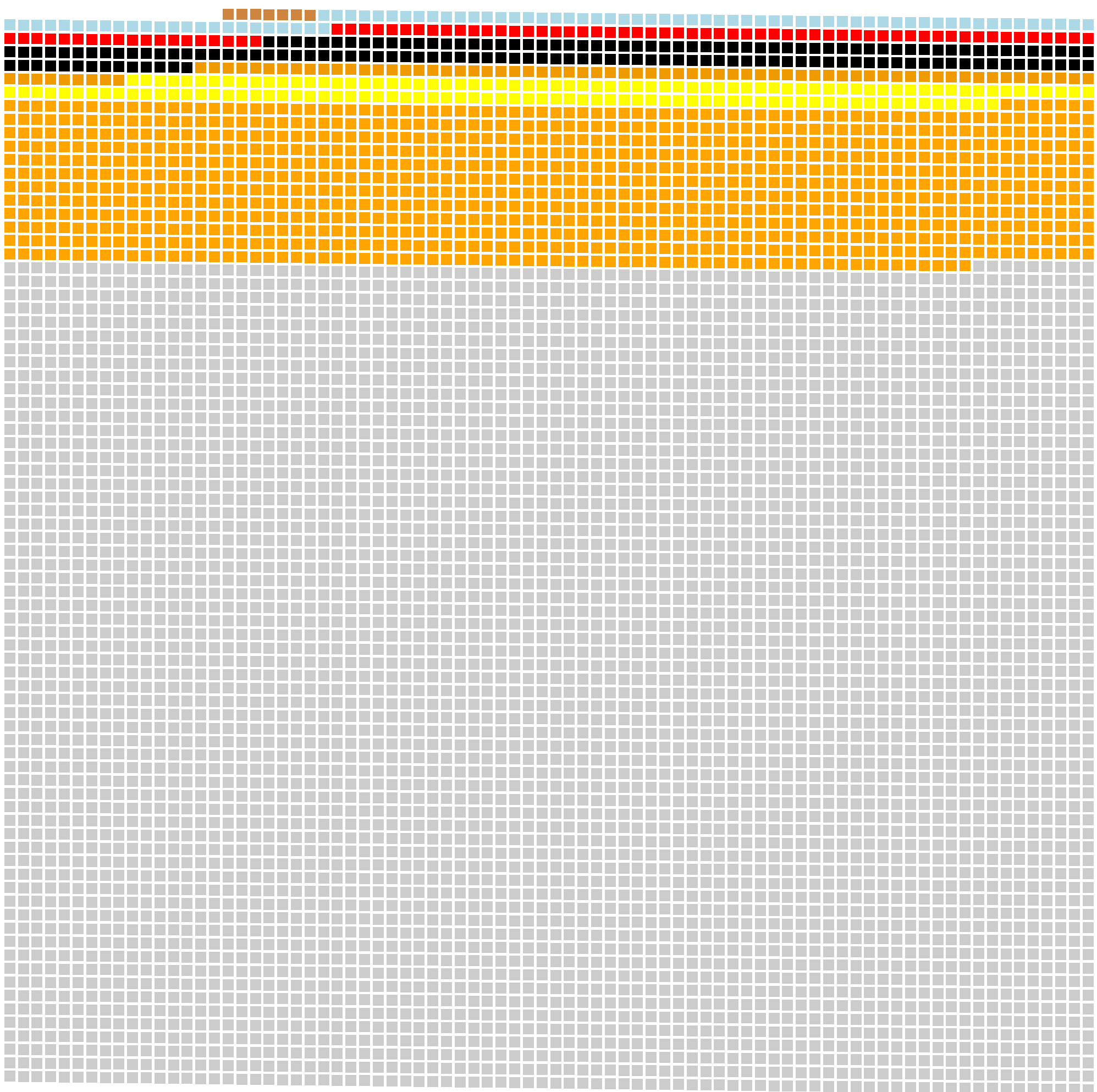






No, but there could hardly be fewer of them to start with. I've seen fewer admirals in total over 650 rides since 2003 than I see cabbage white butterflies in one summer ride. Red admirals and yellow admirals show a strongly significant seasonal effect but not a year effect. Same for monarchs (although also significant season:year interaction which I haven't explored). Same for cabbage whites, which, if anything, show a slight decrease. Nyctemera shows slight significant increase.





Each square represents one butterfly. This is all the butterflies I've seen in and between Christchurch and Lincoln. The light grey are cabbage whites, the orange monarchs, the yellow are yellow admirals, the dark orange are admirals (species unknown), the black are magpie moths, the red are red admirals, the blue are Southern Blues, and the browns are coppers.

Naturalised cabbage white and monarch, the latter solely dependent in Christchurch on planted garden plants, vastly outnumber wild native butterflies. This would be easy to turn around.



## TUNDRA By Chad Carpenter



What we know from Bob Brockie:  
>90% carcasses are mammals.  
Bridges are blackspots.  
Hedgehogs in North Island have declined steeply.

Brockie, R. E., Sadleir, R. M. F. S., and Linklater, W. L. 2009. Long-term wildlife road-kill counts in New Zealand. *New Zealand Journal of Zoology*, 36:123-134.  
Results of the 1984, 1994 and 2005 road-kill counts are summarised in Table 2. The three most frequent road casualties were possums, hedgehogs and rabbits, plus lesser numbers of cats, hares, rats, ferrets, stoats and a dog. Far fewer birds were counted, of which only mynas, pukekos, harriers and magpies were found frequently. corpses of other bird species were seen only once.

Hedgehogs 1660 km route in February: 1984 (112), 1994 (115), 2005 (21)



How old?



Point out that static counts can be misleading because half-lives vary dramatically across taxa.

This carcass is in the middle of a busy Halswell Road, between Sparks Road and Halswell School. It was killed in September 2009, over 11 months old at the time of the photo. It's still there at 15 months old. And that's after one of the wettest winters in Christchurch in the past 30 years.



# Lots of little birds.

	<i>Brockie, Feb. 1984,1994,2005 3 × 1660 km</i>	<i>Sullivan 2003–2010 665 × 17 km</i>
<i>Mammals Carcass per km per trip</i>	<i>0.29 (94.3%)</i>	<i>0.035 (Feb: 0.041) (26%)</i>
<i>Birds Carcass per km per trip</i>	<i>0.017 (5.7%)</i>	<i>0.10 (Feb: 0.055) (74%)</i>

I’ve now surveyed a twice the distance that Bob did.

Point out that lots of roadkill are in the grass on the roadside, hard to see from a car. Even from a bike, undoubtedly some carcasses stick to cars, get scraped away or scavenged immediately, or injured birds die nearby in shelter.

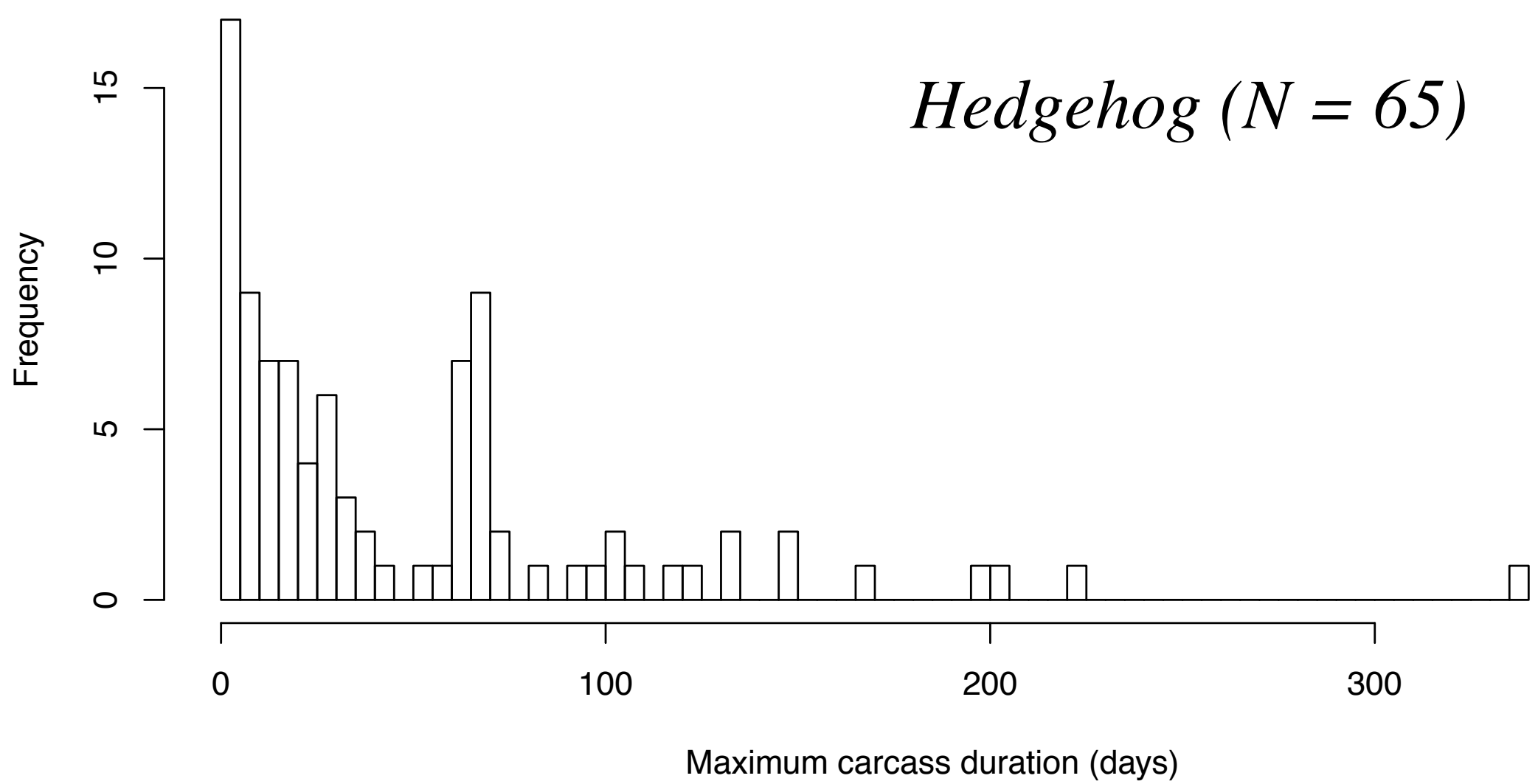
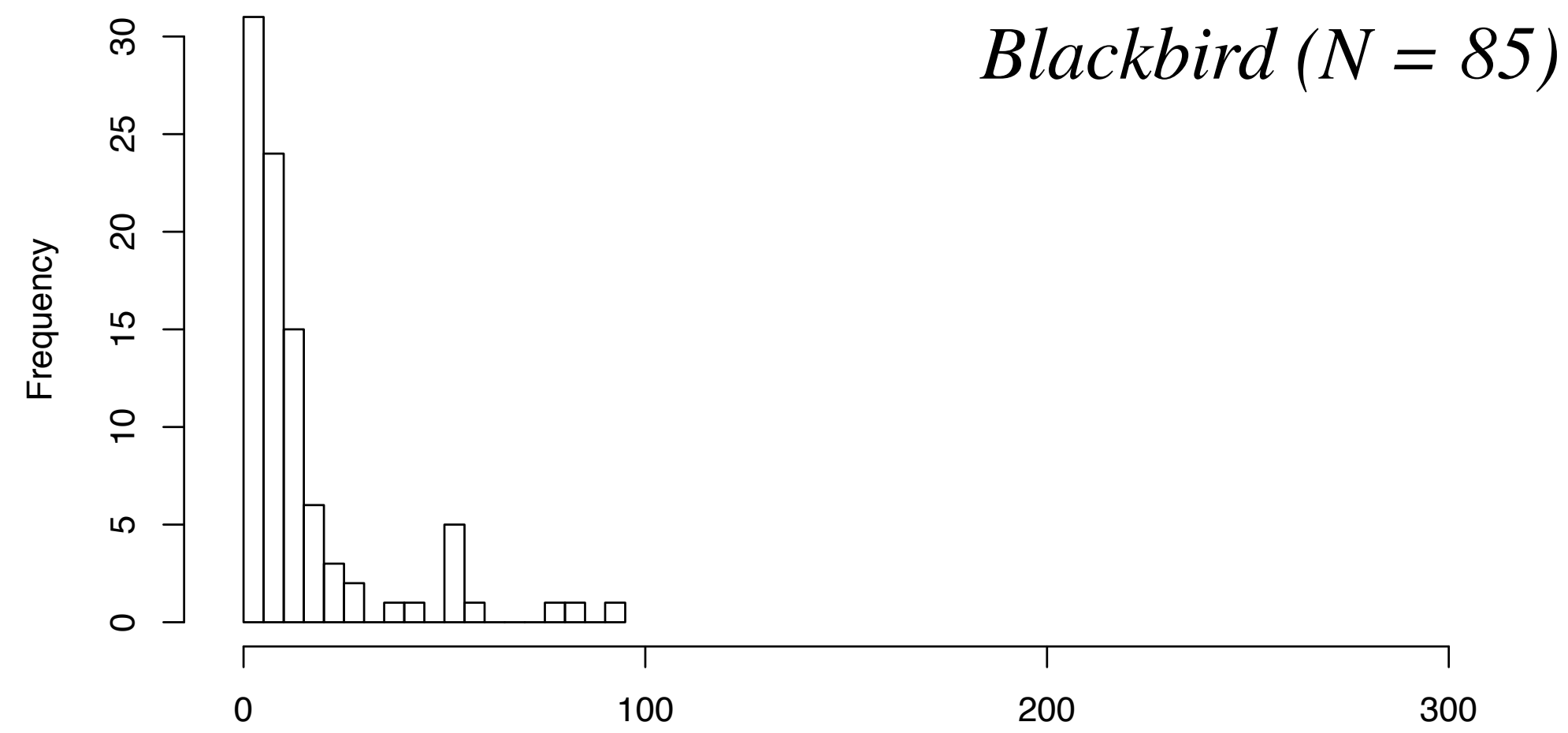
Bob also counted all roadkill, regardless of age. This strongly biases counts towards the longest persisting carcasses (mammals, especially hedgehogs).

Also, by surveying in February, Bob missed the spring peak in bird kills.

My data (bike rides, 626 (Ladbrooks) + 17 (Prebbleton) + 23 (Tai Tapu) N = 665):  
1129 birds  
396 mammals

February only (45 rides):  
42 birds  
32 mammals



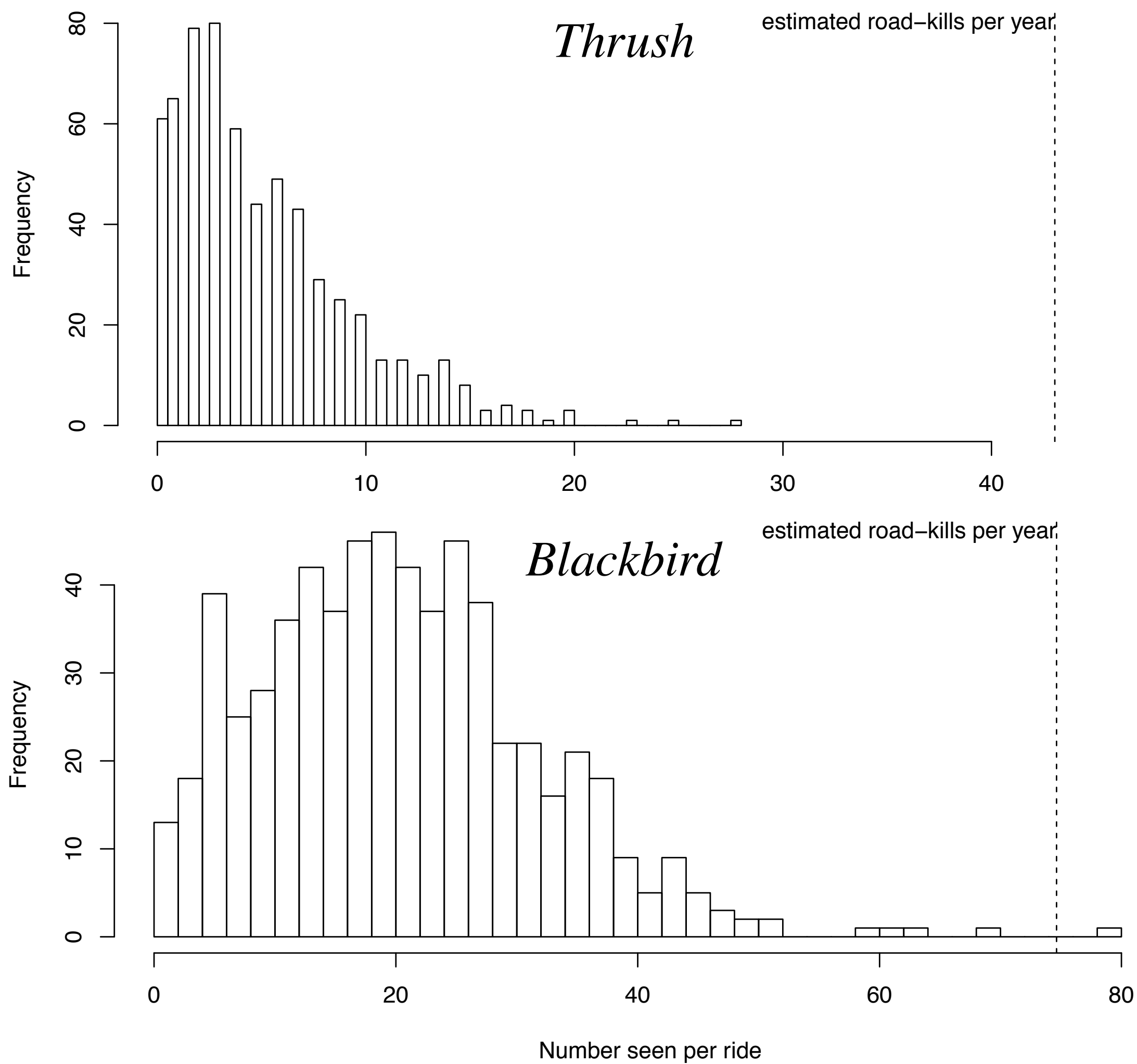




What proportion of birds seen in a  
year are killed by cars?

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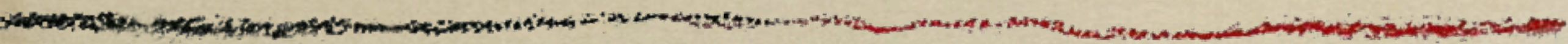




137 fresh blackbird roadkills  
79 fresh thrush roadkills  
in 670 rides



# Ask me and it's yours to play with.

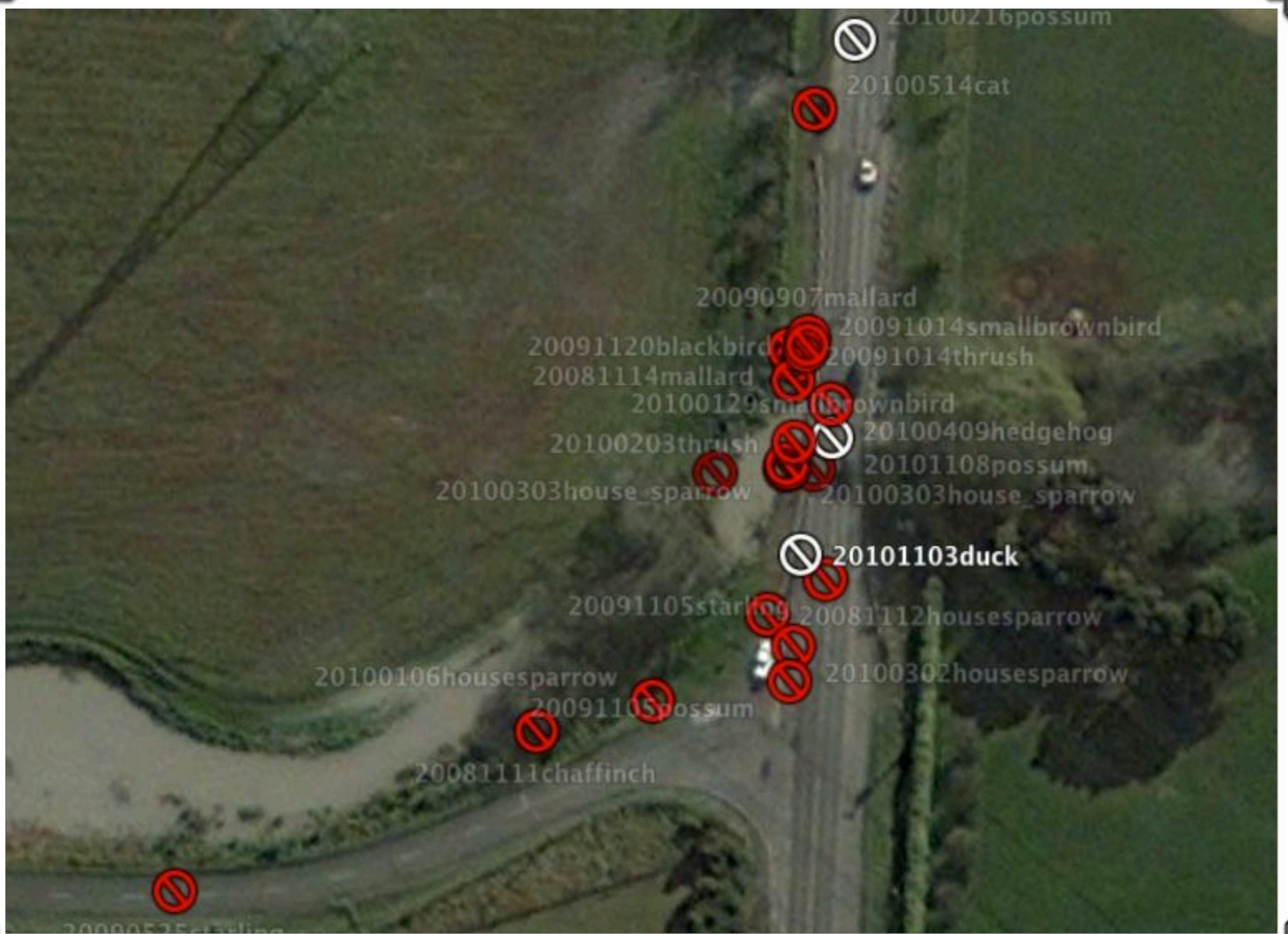


- *Jon.Sullivan@lincoln.ac.nz*

Repeat that this is just a preliminary look at the data. If anyone wants to have a go at it, I'm happy to give it all away in exchange for authorship. Just email me.

> 58000 bird records from bike ride





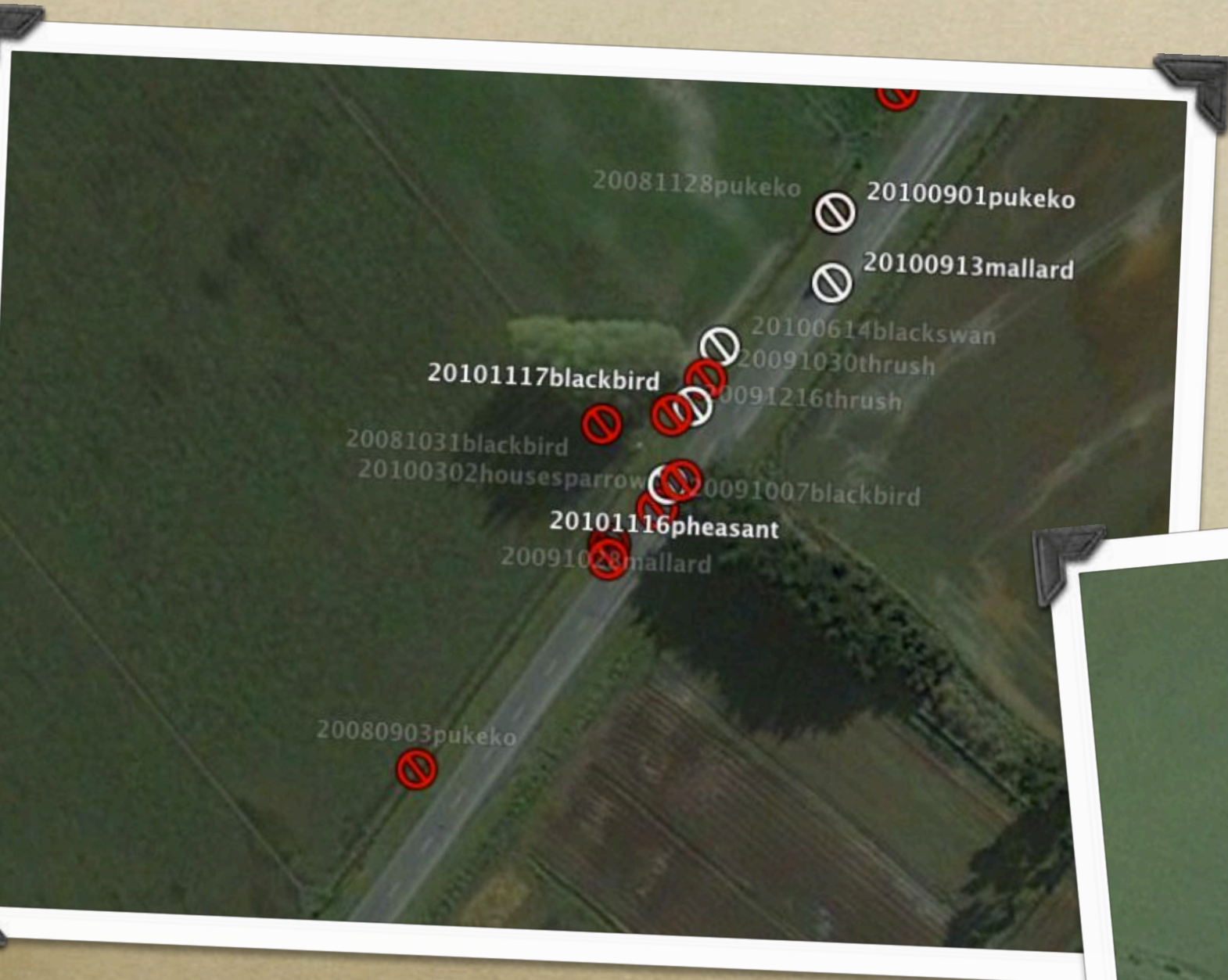
Bob Brockie noted that bridges kill. So do perpendicular shelterbelts and hedgerows. You could argue that birds will cross the road somewhere regardless and so changing hedgerow orientation wouldn't change roadkills. I'd argue that most birds (especially adults) have their wits about them most of the time and would see a car coming if crossing in open space. See if disproportionately more kills are on the down-traffic side of these barriers.





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