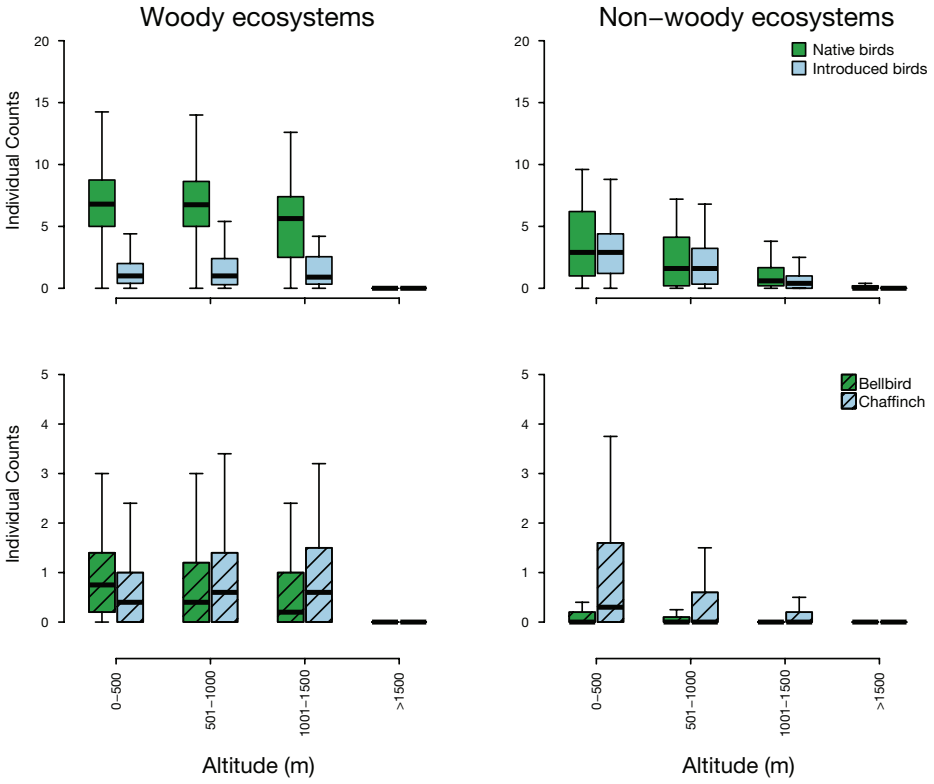
Where are native and introduced birds most abundant across public conservation land?

Summary

Native birds are most abundant (both in number of species and number of birds) in woody ecosystems, especially those at low to mid altitude. In non-woody ecosystems, native birds are 4.1 times less abundant than they are in woody ecosystems and introduced birds are just as abundant as native birds. This highlights the need to focus attention on maintaining and enhancing dominance by native birds in woody ecosystems, and to understand the implications of introduced birds being as abundant as native birds in non-woody ecosystems.

Main findings

- In woody ecosystems (forests and shrublands) across public conservation land, native birds (all species combined) were 4.4 times more numerous than introduced birds (all species combined).
- Native birds in woody ecosystems were more numerous than introduced birds at all altitudes.
- By contrast, in non-woody ecosystems there was no strong evidence for any differences between the abundances of native birds (all species combined) and those of introduced birds (all species combined) at any altitude.
- Overall, native birds (all species combined) were 4.1 times more numerous in woody ecosystems than in non-woody ecosystems across public conservation land whereas introduced birds (all species combined) were only 1.3 times more numerous.
- The abundances of two widespread birds, bellbird (native) and chaffinch (introduced), were not different throughout woody ecosystems or in non-woody ecosystems at any altitude.
- Overall, both bellbirds and chaffinches were more numerous in woody ecosystems than in non-woody ecosystems (5.8× and 3×, respectively).



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Why is this important?

New Zealand' woody ecosystems on public conservation land are mostly native forests and shrublands. Those at low to mid altitude are where native birds are most abundant (as well as being most species-rich) so they should remain a focus for conservation management to maintain and enhance native bird abundances. In non-woody ecosystems we need to understand interactions between native and introduced birds because introduced birds, at all altitudes, are as abundant as native birds. If competitive interactions between introduced and native birds affect the abundances of the latter, in these ecosystems, specific conservation actions may be needed to boost abundances of the native species.

Definitions and methodologies

- This uses information from Measure 5.1.2 ("Demography of widespread animal species – Birds") assessed across all public conservation land (Tier One systematic national sampling).
- Data for the abundance of birds were collected between 2011 and 2014.
- Woody ecosystems were distinguished from non-woody ecosystems using the Land Use Map.
- For woody ecosystems, 210 sample locations were between 0 and 500 m altitude; 199 between 501 and 1000 m altitude, 52 between 1001 and 1500 m altitude, and 1 was at > 1500 m altitude.
- For non-woody ecosystems, 30 sample locations were between 0 and 500 m altitude; 39 between 501 and 1000 m altitude, 117 between 1001 and 1500 m altitude, and 57 were at > 1500 m altitude.
- Each sampled location had five bird count stations where standardised five-minute bird counts were carried out. All species seen and heard were counted and recorded, along with an estimate of approximate distance. Only data within 100 m of the count stations were used in this analysis.
- The counts of each species were summed across the count stations within a location and then divided by the number of count stations where sampling actually occurred to obtain an average count per station for each sampling location.
- Bird count data was obtained from 705 sampling locations, with 72% of those having data from all five count stations, 17% from four, 8% from three, 2% from two, and 1% from 1 count station only.
- The data are observed counts only and do not therefore account or attempt to correct for non-detection (i.e. species being present but not counted.
- The box plots depict the 75% and 25% percentiles as the upper and lower bound of each box respectively, with the heavy scored line within each box representing the median value. The tip of the upper whisker above each box is located at the smaller of either the maximum x value or at 1.5× the value of the box length added to the upper bound of the box. Similarly, the tip of the lower whisker below each box is located at the larger of either the minimum x value or at 1.5× the value of the box length subtracted from the lower bound of the box.

Where can I find more information (links)

http://www.landcareresearch.co.nz/publications/researchpubs/Department_of_Conservation_biodiversity_indicators_2014_assessment.pdf