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Have woodland birds declined in the Bungawalbin Creek catchment? Comments on Gosper and Gosper (*Corella* 40, 2016)

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Interest in Australian woodland bird conservation has grown rapidly since the 1990s and "declining woodland birds" is a popular theme today (Rayner *et al.* 2014). Gosper and Gosper (2016) estimated spatial variation and temporal changes in forest bird communities of the Bungawalbin Creek catchment, northern New South Wales. Their headline result was lower reporting rates for six woodland species in 2004–2006 compared to 1977–1980. This finding is challenged here because lower search effort in 2004–2006 acts to lower reporting rates and overall reporting rates average results from dissimilar communities. If appropriate comparisons are to be made for the two resampled sites and equal effort, problems of limited spatial and temporal coverage and small sample sizes are noted.

Gosper (1992) surveyed two fixed-route sites in the Bungawalbin Creek catchment, one in Myrtle State Forest (SF) and one in Royal Camp SF. Each site was visited 29 times, once a month, between August 1977 and January 1980. Search duration was 150–180 minutes. For each bird species within each site, reporting rates were calculated as the percentage of visits in which that species was present. Gosper and Gosper (2016) surveyed 41 fixed-route sites in eight SFs in the Bungawalbin Creek catchment. Each site was visited four times, once in each season, over 30 months between February 2004 and July 2006. Search duration was 60 minutes. The two 1977–1980 sites in Gosper (1992) were divided in half and resampled in 2004–2006 as four sites. Overall reporting rates for all 41 sites were reported.

Search methods should be standardised for comparisons of reporting rates (Verner 1984). Smaller search areas and shorter search durations result in fewer records and lower reporting rates (e.g. Totterman 2012). Figure 1 shows that overall reporting rates for 60 minute searches in 2004–2006 (Gosper and Gosper 2016) were broadly lower than those for 150–180 minute searches in 1977–1980 (Gosper 1992).

Ordination of species reporting rates in Figure 2 of Gosper and Gosper (2016) separated bird communities in 23 "core" sites from those in 18 peripheral sites. Myrtle SF was a core site and Royal Camp SF was peripheral. Peripheral forests were moister than central forests, with more understorey shrubbery. Overall reporting rates for all 41 sites average spatial variation and are not equivalent to those from core or peripheral sites. For example, the 43 per cent overall reporting rate for the Red-backed Fairy-wren *Malurus melanocephalus* was lower than the 66 per cent mean for core sites and higher than the 13 per cent mean for peripheral sites (Table 5 in Gosper and Gosper 2016):

$$RR_{overall} = \frac{23}{41} \times 0.66 + \frac{18}{41} \times 0.13 = 0.43$$

Replicate sites, multiple repeat visits, standardised methods and consistent sampling effort are recommended for estimating population change over time (Rayner *et al.* 2014). For Gosper and Gosper (2016), it is more appropriate to compare reporting rates for the two resampled 1977–1980 sites in Myrtle and Royal Camp SFs. To standardise methods, the two pairs of 2004–2006 "half-sites" could be merged into two sites (120 minutes search duration and the same route lengths as 1977–1980). With two replicate sites, catchment-scale inferences are not possible. Ordination results in Figure 2 of Gosper and Gosper (2016) showed spatial variation in bird assemblages among sites, and Myrtle and Royal Camp SFs did not plot near the centroids of their respective core and peripheral groups. It is not reasonable to assume that changes at one site from Myrtle SF and one site from Royal Camp SF are uniform across respective core and peripheral forests. With one repeat survey after 27 years (i.e. no continuous survey data), it is not possible to disentangle changes in population size from shorter term natural and error-driven variability (Rayner *et al.* 2014). For example, the 2001–2009 "Millenium Drought" (van Dijk *et al.* 2013) has been associated with declines in woodland bird reporting rates in other regions of Australia (e.g. Bennett *et al.* 2014). With four visits in 2004–2006, recent reporting rates and changes in reporting rates compared to 1977–1980 are imprecise. For example, if two additional visits were made to a site, a 25% reporting rate for a species recorded once in four visits potentially could double to 50% (3/6) or decrease to 17% (1/6).

Alternative explanations for lower recent reporting rates in Gosper and Gosper (2016) are lower search effort in recent surveys and averaging reporting rates across dissimilar communities. The authors should present a new table of 2004–2006 reporting rates for 120 minutes search duration for each of the two resampled sites in Myrtle and Royal Camp SFs, together with the 1977–1980 results, and review the differences.

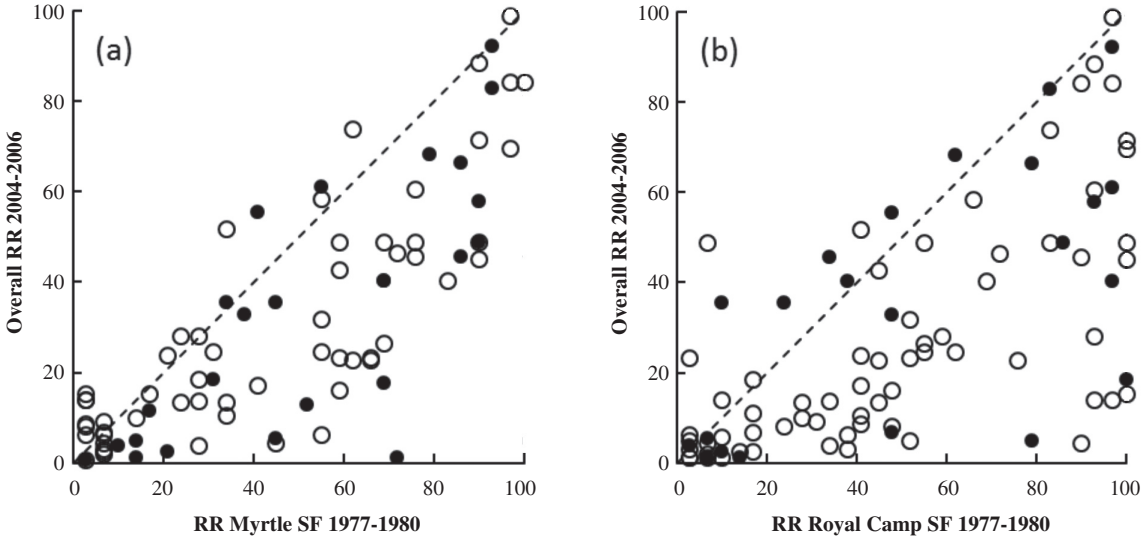

Figure 1. *Lower 2004–2006 overall reporting rates (RR) (Table 2 in Gosper and Gosper 2016) compared to 1977–1980 reporting rates (Table 2 in Gosper 1992) for Myrtle SF (a) and Royal Camp SF (b). Filled circles are threatened species and declining woodland birds (Table 3 in Gosper and Gosper 2016). The dashed line is the 1:1 line of agreement.*

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