

Evaluation of bird survey methods and estimators for species inventory in dry sclerophyll forest

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A species inventory aims to list all of the species present in an area over some period of time. Complete results are rarely practical and estimators can be applied to predict total species richness. In this study four survey methods were compared in a northern New South Wales dry sclerophyll forest: standardised search, two-hectare search, transects and point counts. Total sampling time was equal (560 minutes) for all methods. Three non-parametric estimators were evaluated: Chao2, first-order jackknife and second-order jackknife.

The quality of inventories and estimates was strongly affected by search method and sampling effort. True species richness was approximately 42 species. The standardised search recorded 35 species, transects 34, point counts 32 and the two-hectare search 27 species. Estimates of total species richness were more accurate at high completeness (when more than 75 per cent of species present were recorded) and when there were few unique records. The first-order jackknife was most accurate at high completeness and the second-order jackknife at low completeness. Large area, active search methods, patch-scale sampling, results-based stopping rules and species richness estimation are recommended to improve bird species inventories.