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ABUNDANCE AND FORAGING NICHES OF FOREST BIRDS  
IN PART OF THE RUAMAHANGA ECOLOGICAL AREA,  
TARARUA STATE FOREST PARK

A thesis presented in partial  
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ABSTRACT

To test the applicability in New Zealand of ecological theories derived from the study of northern temperate and tropical avifaunas, the bird community in part of the Ruamahanga Ecological Area, Tararua State Forest Park was studied from October 1982 until February 1985. A modified five-minute bird count to determine the relative abundances of each bird species with a near/far ratio proved useful in assessing the distribution of the common bird species but was inadequate for the rarer species. Twenty-nine bird species were seen, twenty-one of which probably bred within the study area. Eleven forest bird species were seen with sufficient frequency to apply the near/far. Bird species diversity was significantly correlated with foliage height diversity, but not with plant species diversity. Principal component analysis was used as a graphical tool to describe the inter-relationships of bird species distribution with plant species and plant structure in greater detail. Bird species composition was related to both the forest structure and the plant species composition. The distributions of ten common bird species were positively correlated with high canopy forest, five species with red beech-dominated forest and five species with podocarp/broadleaf-dominated forest. Many of the bird species were most abundant at the end of the breeding season in February-March. This was not apparent from consideration of the five-minute bird counts alone because of seasonal changes in conspicuousness. The modified five-minute bird counts were useful indicators of bird movement into and out of the study area. Only whiteheads showed consistent seasonal changes in altitudinal distribution, higher in summer than in winter. By determining the relative importance of foliage height, tree species

and substrate bird species foraging niches were examined. Foraging site showed the greatest difference between bird species, followed by tree species and then foraging height. Comparison with other studies showed that there is a large degree of plasticity in foraging niche site between habitats in New Zealand birds. Foraging niches of congeners in Australia and New Zealand were similar. Each bird species preferred different species of trees for foraging. In winter decreased foraging niche overlaps were observed in conjunction with mixed species flocking. Studies of New Zealand birds indicate that foraging niches are sufficiently plastic for forest conservation management strategies be considered on a forest by forest basis. The plasticity of foraging niches may also account for the small proportion of introduced birds in the study area. Competition is probably important in structuring the forest bird community. Both niche breadths and niche overlaps were comparable with studies on much richer bird assemblages. Introduced birds were largely confined to forest margins and to resources which were previously used by extinct native birds, suggesting that the remaining native birds are successfully excluding introduced birds.

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