

non-endemic, indigenous, passerine genera, *Rhipidura* and *Anthus* are represented by single species in New Zealand. *Petroica* has two species on the mainland, but different arrivals of the ancestral forms indicate no contemporary differentiation of the two species (Fleming, 1950). Among Psittaciformes the endemic genus *Strigops* is represented by one species while non-endemic (though distribution limited) *Nestor* is represented by two and *Cyanoramphus* by three species on the mainland. Among Ratites of New Zealand, there are three species of *Apteryx* still surviving and at least 20 species belonging to 6 genera of Dinornithiformes, now extinct, differentiated before the Pliocene (Archey, 1941). These facts suggest that in both new and old elements of the land avifauna of New Zealand there was no effective isolation of populations during the Pleistocene that resulted in speciation of closely related species on the mainland. The ancestors of "young Australian elements" (Mayr, 1939) such as *Petroica macrocephala* probably arrived in New Zealand in early Pleistocene, and their subsequent subspeciation through geographical isolation in the New Zealand region has occurred only in the Recent era (cf. Fleming, 1950).

Thus, highly endemic passerine species which form older elements of the fauna must have undergone specialization at an earlier time in New Zealand with no predation pressure from mammals, and in most passerine birds such specialization has not involved radiation of the group. The deduction that such species are vulnerable to modification of the habitat stems from their disappearance from settled areas at an early stage and has led Myers (1923) to generalize that "the tendency of a species to disappear under the combined influence of introduced conditions is directly proportional to the degree of specific endemism which it exhibits".

Quite contrary to the statements made by early workers, the present results show that some endemic species can survive and maintain even higher population densities in settled areas than in unmodified habitats.

Among introduced influences on indigenous birds, possibilities of competition with naturalized species were discussed by Turbott (1961), but so far such competition has not been demonstrated. As we have seen the broad spectrum of feeding habitats and nest-sites used by common species suggests that these are in most cases not limiting the population size. Therefore competition resulting from the utilization of common resources is unlikely. Two closely related naturalized species, the Blackbird and Song Thrush, share the same food and the same nest-sites, and yet they maintain high densities in low hardwood forest of settled areas. They have nesting territories and common feeding grounds in which only individual distance is maintained, sometimes developing into a feeding territory. In Botanic Gardens, Dunedin (Area 16), there was no part of the wooded areas where both species did not occupy territories. This suggests that the breeding density of one species is not affected by that of the other. In other words their breeding densities are not resource-limited though competition may occur in winter. Territorial behaviour within the species is the only factor likely to determine the density of breeding populations. However, some functions of territoriality (and other social behaviour) liable to natural selection in their original habitat may have been lost or modified in the new habitat in which the density level or controlling factors of population differ. The greater breeding capacity of the Song Thrush was offset by greater predation upon them and the two species had about the same rate of recruitment each year. In the indigenous habitats studied, the densities of these two species were nowhere as high as in low hardwood forest of settled areas and, although they may still be increasing in number, territories were not contiguous where they occurred and there were vast, apparently suitable areas in which they still did not occur. Apart from Kiwi and Weka, the only possible