

The relative abundance of each species of birds was estimated in various habitats for comparison. For this estimation all the birds seen or heard along any route taken during the expedition were recorded, care being taken to avoid repeated recording of the same individuals. The results are given with an approximate distance covered in each count and the relative abundance of species is indicated by the percentage of the total number of individuals recorded. Because of the different conspicuousness the results will not show the true relative abundance but only serve comparative purposes in discussing differences between different areas or habitats. General observations of birds, and counts to show relative abundance were also made in the following localities (Fig. 1): Arthurs Pass (9), Ashley (13, plantation) and Enys (10) in Canterbury; Trotter's Gorge (11), Evansdale (11), Flagstaff (8), Silverstream (8, plantation), Maungatua (12), and Henley (12) in Otago.

In the course of the study special attention was paid to the feeding habits of birds in the field and stomach contents of some naturalized birds collected from various localities were examined. The indigenous species are strictly protected so that the records available are those based on field observations of the feeding habits and food items.

At the Botanic Gardens in Dunedin a detailed study was made of bird populations between September 1958 and February 1961, covering three breeding seasons. A total of 223 visits was made to this area to record numbers, nesting and feeding activities and to band nestlings and adults of the key species. A summary of the first year's work has been published (Kikkawa, 1960a). From the end of August 1960 the early-morning count of the total populations was reduced from weekly to monthly. The breeding population density was determined by means of territory mapping (Williams, 1936). In order to avoid the disclosure of nests to rats, the nests were not touched until the nestlings were large enough to be banded, and the examination of nests was made by a mirror attached to the end of a pole. For banding young in nests situated in inaccessible places, such as near the end of a branch, a "chick lift" was used to remove nestlings without injury. This is a pair of spring tongs with plastic foam to seize the chick, and is attached under the mirror at the end of a pole. It was manipulated from the ground with a piece of string while holding the pole. Nestlings of Blackbirds and Song Thrushes, about 7 to 9 days old, could be successfully lifted from a height of 15ft. A few individuals of naturalized species were collected not far from the study area to examine the stomach contents. The birds which met accidental deaths in or near the study area were also examined. For some nestlings of naturalized species food samples were collected by forcible regurgitation. A small piece of cotton wool was attached to a thread and suspended in the oesophagus from the beak, and as soon as the young were fed the food material was collected.

General observations of birds and records of breeding were also kept in an adjacent area (2.5 acres in size) where the relatively uniform habitat of regenerating native forest with *Leptospermum* canopy supported somewhat different populations of birds. Similar records were kept for the wooded parts of the Woodhaugh Gardens and the Town Belt of Dunedin.

Nomenclature of native plants follows Allan (1961), and Cheeseman (1925) for monocotyledons.