Fiordland: Lake McKerrow–Martins Bay (1) 17–29 January 1959. Lake Manapouri–Doubtful Sound (2) 12–24 February 1959. Lake Monk–Long Sound (3) 16–28 January 1960.

Stewart Island (4) 13–24 November 1959.

Inland Nelson: Lake Rotoroa (6) 29 January–5 February 1961.

For these less known areas full accounts of birds were given in relation to the environment. Population counts were also made in the following areas (Fig. 1).

East Coast: Hook Bush (7, Waimate), 26–28 December 1958, 24–26 October 1959, 27 December 1960. Papatowai (5, Catlins), 10–12 February 1961. Sullivan Dam (8, Dunedin), July 1958–February 1961. Botanic Gardens (8, Dunedin), July 1958–February 1961.

In all the above areas avian habitats were classified according to the vegetation type and in each habitat the breeding bird populations were estimated by censuses in sample areas. In selecting the census area physiognomic uniformity of the vegetation was the most important criterion used, but steep slopes were avoided. Prior to the census a map of the area was made, indicating conspicuous features to facilitate the plotting of birds. In order to minimize observational errors due to the different conspicuousness of birds according to species, light intensity, density of vegetation, and their activity which may be affected by the time of day, weather, etc., in most areas field observations on the breeding population density were made on early morning counts in fair weather. However, as the weather was not always favourable, some counts had to be made in rain in the morning or late in the afternoon. In each count all portions of the area were visited and all individuals seen or heard were plotted on the map together with records of their activities (e.g., singing, feeding, nest building). Whenever possible the count was repeated in the same area at different times of the day. Most naturalized species stop singing in January (late in the breeding season), and some become very inconspicuous (e.g., Song Thrush). In such species, if the counts were made later than January, the number of breeding birds was estimated from the count of the adults and the number of nests found in the area. In the present report all census results are given by the standard expression of the number of pairs per 100 acres (40 hectares).

Fortunately the number of forest species in New Zealand is very limited and field marks of both indigenous and naturalized species are very distinct, even juveniles being readily distinguishable by either plumage or call notes. In addition, most species have fairly uniform distribution in each habitat and have relatively small territories during the breeding season. Thus estimation of the density was possible from small sample areas of various sizes and the short period of time spent in most areas, sometimes under the trying conditions of bad weather during the expedition. Inclusion or exclusion of birds recorded at the border of the census area influences the estimation of the density according to the size of the area selected. If the nest was found within the area or if such birds were recorded more frequently within the area than outside, the birds were included in the final count. In order to obtain a sufficient number of pairs in each sample, if not many birds were encountered in the initial mapping survey, a larger area was selected wherever the habitat was uniform. The result is that many larger areas sampled support smaller densities than smaller areas sampled.

In each census area small samples of invertebrates were collected from forest litter (30cm x 30cm), foliage (50 sweeps), and bark (30cm x 30cm), where birds were seen to search for food. A very sketchy description of the components of the habitat thus obtained was compared with actual food taken by birds (wherever such data were available). The specimens of invertebrates were preserved in the Otago Museum for taxonomic studies. Earthworms in the surface layer of soil were collected from $1m^2$ with 4gms of potassium permanganate dissolved in 4 litres of water.