

Ornithological research on Marion Island, 1974-75

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Marion Island (46° 54' S, 37° 45' E) has a tundra-type biome, and the terrestrial ecosystem depends to a large extent on the productivity of the surrounding sub-Antarctic ocean. Seabirds are major transporters of essential plant nutrients to the nutrient-poor soils of the island. A long-term study of the nutrient and energy status of the biological communities on Marion Island was organized in 1972 by the South African Scientific Committee for Antarctic Research and sponsored financially by the South African Department of Transport (*van Zinderen Bakker*, 1973). The avian community is being studied by personnel of the Percy FitzPatrick Institute, University of Cape Town, under the direction of Professor W.R. Siegfried.

The aims of the ornithological research programme are to determine the mineral and energy contributions of birds to the terrestrial ecosystem of Marion Island, and to assess ecological adaptations and energy requirements of birds breeding in the maritime sub-Antarctic. This paper is a preliminary report on general progress made during the initial expedition (January 1974 - April 1975) to Marion Island.

Bird populations

Twenty-six species of birds breed on Marion Island. To begin with research concentrated on 13 species which are active diurnally and which breed above ground at sites readily accessible to observers from the base station and laboratory. These birds are among the largest and most prolific species, and together comprise more than half of the avian biomass on the island. The species are: King Penguin *Aptenodytes patagonica*, Gentoo Penguin *Pygoscelis papua*, Macaroni Penguin *Eudyptes chrysolophus*, Rockhopper Penguin *E. chrysocome*, Wandering Albatross *Diomedea exulans*, Sooty Albatross *Phoebastria fusca*, Light-mantled Sooty Albatross *P. palpebrata*, Northern Giant Petrel *Macronectes halli*, Southern Giant Petrel *M. giganteus*, King Shag *Phalacrocorax albiventer*, Great Skua *Stercorarius skua*, Kelp Gull *Larus dominicanus*, and Lesser Shearwater *Chionis minor*.

Almost all the surface-nesting birds on Marion Island are found at the coast and on the immediately adjacent vegetated flats. During January - March 1974

Table 1

Birds counts on Marion and Prince Edward Islands. The 1952 census covered only Marion Island (*Rand*, 1954), but *Van Zinderen Bakker's* (1971) figures for the 1965-66 census appear to be for both islands.

Species	1952	1965-66	1974	
			Marion	Prince Edward
<i>Sphenisciformes</i>				
King Penguin	—	2 million	—	5 000
Gentoo Penguin	—	2-3 000	1 603	318
Macaroni Penguin	—	2 million	—	—
Rockhopper Penguin	—	1 million	424 600	—
<i>Procellariiformes</i>				
Wandering Albatross	1 400	6 000	3 114	1 694
Grey-headed Albatross	82	300	4 406	1 756
Yellow-nosed Albatross	—	4 000	—	—
Sooty Albatross	—	2 000	2 253	480
Light-mantled Sooty Albatross	—	100	92	—
Northern Giant Petrel	—	500	130	28
Southern Giant Petrel	—	1 500	1 169	205
<i>Pelecaniformes</i>				
King Shag	400	—	647	119
<i>Charadriiformes</i>				
Skua	—	4 000	2 005	511
Kelp Gull	100	500	923	343
Lesser Shearwater	—	—	3 157	1 174

temporal and spatial changes in avian biomass and standing crops will be available, and also assessments of minerals contributed by way of guano, dead birds and eggs. Field work for this part of the ornithological research programme will be completed at the end of 1977. Thereafter, similar work will be undertaken for the nocturnal burrowing petrels, which feature importantly in the ecosystem on Marion Island.

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Bird ringing on Marion Island

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This paper summarizes bird ringing operations on Marion and Prince Edward islands between 1951 and 1975. During this period 2 535 birds of 19 species were ringed (Table 1). Ringing performed by seven individuals or groups of ringers is recorded in Table 2.

Thirty-four birds — 32 Wandering Albatrosses and two Southern Giant Petrels — were recovered or controlled (i.e. released alive) one year or more after ringing. One Wandering Albatross ringed as a chick was found breeding 20 years later.

Only 10 birds ringed on Marion Island have been recovered elsewhere (Table 3). Thirteen birds with foreign rings have been recovered on Marion and Prince Edward: five Wandering Albatrosses ringed off Australia, and four ringed on the Crozet islands, and

four King Penguins also ringed on the Crozets (Table 4).

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