

A CENSUS OF BULLER'S ALBATROSS *DIOMEDEA BULLERI* AT THE SNARES ISLANDS, NEW ZEALAND¹

Buller's Albatross *Diomedea bulleri* breeds only in New Zealand. There are colonies at the Snares Islands (48°S, 166°E), on the Solander Islands (46°S, 167°E), and on the Sisters and Forty Fours Islets in the Chathams Group (44°S, 176°E).

Despite extensive banding at the Snares Islands since 1948, recoveries give no evidence for any interchange between members of the above populations. Indeed, sightings of marked birds at the Snares Islands show that these are very sedentary, with no switch of nesting birds between the colonies there. The Chathams and Snares populations are also segregated by their breeding timetables, the Chathams birds nesting nearly three months earlier. At the Snares Islands this albatross lays in late summer during about eight weeks from the beginning of January, the chicks being reared during the autumn and winter and flying from late August to mid-October. Checks of banded pairs between 1961 and 1977 showed that this species usually lays annually, unlike the related *D. chrysostoma* which, at South Georgia at least, nests biennially (Tickell & Pinder 1967).

Buller's Albatrosses breed on Main and Broughton Islands (Fig. 1) which are well vegetated, each having a central forest of *Olearia lyallii* surrounded by meadows of heavy tussock grasses - *Poa astonii* and *P. tennantiana*. The coast mostly consists of cliffs or of very steep slopes and the albatrosses site their pedestal nests among the vegetation on narrow terraces overlooking the sea or inland on the more level forest floor (photographs in Richdale 1949).

The main part of the census was done (by SLB) on Main Island from 11-19 February 1969. By 11 February ninety-five eggs had appeared at one intensively studied group where ninety-eight eggs were laid that year. In the following year all the eggs in this sub-group were laid by 10 February. We have no reason to suppose that this group was atypical of the population as a whole. A source of under-estimation would have been the few eggs laid after the search of a particular area and the few pairs that had already lost their egg and left before counting began. In 1969, seven of the ninety-eight eggs in the study colony were lost during the census period: the birds concerned left soon after.

We counted 'occupied nests' - nests with sitting birds and those where single birds or pairs were standing at completed nests and obviously attached to them. Unoccupied nests were also recorded.

The ground was searched systematically in sections,

binoculars being used to examine distant sites, and the location of each nest marked on a large-scale map. Some nests could not be examined to see whether a sitting bird had an egg, but incubating Albatrosses were easily detected by their relaxed posture and inactivity.

Estimates were also made of the numbers of active nest sites that could not be reached because of difficulties of terrain - many of the cliffs and gullies were heavily fissured and broken up by outcrops and hazards often hidden in deep but shallow-rooted tussock grass. Such slopes are dangerous and had to be surveyed from vantage points nearby. Some such sites were hidden from view, yet the activities of birds flying around and of others calling showed that breeding was taken place: attempts were made to estimate the number of nests involved from the activity levels and calling. Such hidden sites were believed to number about 5% of those directly observed. Notes were also made of the numbers of birds clearly unattached to any nest or colony.

We did not visit Broughton Island. Counts for that island are based on reports from members of our later expeditions who did land there. Many of the small offshore stacks also support a few nesting pairs which are visible from Main Island. Of these the most important is Alert Stack. The counts for that place and for Daption Rocks were made by P.M. Sagar during landings there in 1976 and 1977. None breeds on islets of the Western Chain, 4.5 km to the south-west, which provide nesting places for an allied species, *D. cauta*.

A total of 3,934 occupied nests was counted with a further 820 scored as being occupied but not closely examined, an estimated total of 4750 pairs with nests. We believe that our count is accurate to $\pm 10\%$. There were 760 unoccupied nests. This is only 16% of the occupied number and is additional evidence for annual breeding, as most nest mounds persist from year to year. Most unoccupied nests were back from the cliff tops and just within the forest margins.

The number of birds scored as not breeding was low, only about 5% of the total of 9,500 birds with nests. Such non-breeders were mostly away from the colonies themselves, few were seen among nests under the *Olearia* forest, and most were on open grassy slopes, particularly along the north side of the South West Promontory. They tended to be in groups and were presumably young birds assembling in 'gams' while pursuing pre-breeding activities. However, some of the nests with birds standing by them, scored by us as 'occupied', would have belonged to older birds still not ful-

¹ University of Canterbury Snares Islands Expeditions Paper 23.

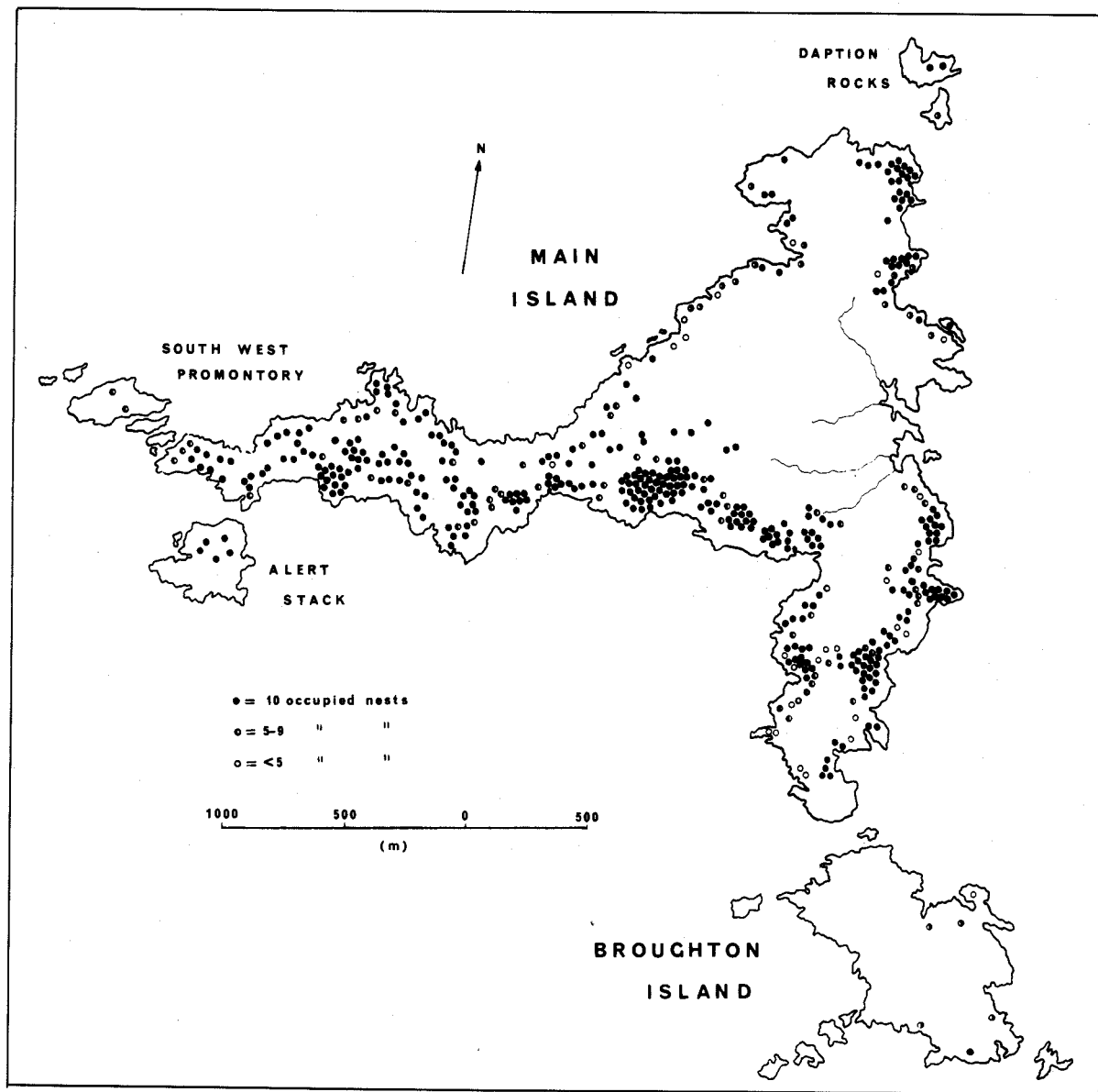


Figure 1. Distribution of Buller's Albatross nests at the Snares Islands. Filled circles = 10 occupied nests; half-filled circles = 5-9 occupied nests; open circles = < 5 occupied nests.

ly mature and without eggs that year.

The distribution of the nests is shown in Figure 1. They were concentrated on the peripheries of the islands, but in places the colonies extended from the cliff tops inland for up to 400 m where many nests were

beneath the forest whose canopy height averages about 6 m. Birds at such nests have to walk to the cliff tops before take-off and walk back again after landing. Forty per cent (1893) of the occupied nests were in such forest situations.

Nest densities were highest on the south and south-

west slopes of Main Island. Nests tended to be clumped rather more than the Figure suggests as the dots have been separated a little for clarity and there were often quite distinct sub-groups within a colony. Very few, if any, pairs were nesting in isolation, out of sight and hearing of others.

These results confirm The Snares as a major breeding place for this albatross. More important is the colony on the Forty Fours estimated at 23 - 24,000 pairs by Robertson (1974). The Solander Islands' population has not been counted but appears to be quite small while about 2,000 pairs breed on the Sisters Islets. This gives a world population of about 30,000 breeding pairs.

JOHN WARHAM and S.L. BENNINGTON, *Department of Zoology, University of Canterbury, Christchurch 1, New Zealand.*

16 April 1982

THOUGHTS ON AN ORNITHOLOGICAL MYSTERY FROM BOUGAINVILLE ISLAND, PAPUA NEW GUINEA.

Although ornithological journals are not the place for speculation, in some circumstances partially substantiated notions may promote further scientific inquiry and solutions to biological puzzles. In August 1972, Professor Jared Diamond visited several rain-forest localities on eastern Bougainville Island, North Solomons Province, Papua New Guinea, to study birds. While working on the slopes of Mount Balbi, between 1140 and 1340 m, he heard a bird song "so remarkable as to warrant description, in the hope of alerting some future observer to the problem of its identification" (Diamond 1975, *Condor* 77:21). Diamond said of its voice and habits:

Its author is said by local informants to be confined to the mountains and is called "kopipi" in the native language used at Rotokas, "odedi" in the language of the mountain people inland of Kieta. The most striking features of the song are the beauty and human quality of its pure, whistled tones. The thrush-like pattern consists of two-note and three-note rising phrases at time intervals of a few seconds. The pitch is high, and occasional notes are slightly trilled. In pattern and in quality the song suggests that of the Hermit Thrush of North America (*Catharus guttatus*). I heard the song during the dawn chorus and later during rainy mornings, sometimes from several individuals simultaneously from several directions.

In 1979, at the invitation of Don Hadden, a local ornithologist, I visited eastern Bougainville Island to survey birds in the mountain forest west of Panguna. Hadden had heard odedi on a number of occasions in the hills around Panguna. In addition, he had recently

We are grateful for the help of fellow expedition members and for information, comments and suggestions from M.C. Crawley and P.M. Sagar.

REFERENCES

- RICHDALE, L.E. 1949. Buller's Mollymawk: incubation data. *Bird Banding* 20: 127-141.
ROBERTSON, C.J.R. 1974. Albatrosses of the Chatham Islands. *Wildlife - a review*. 5: 20-22.
TICKELL, W.L.N. & R. PINDER. 1967. Breeding frequency in the albatrosses *Diomedea melanophris* and *D. chrysostoma*. *Nature*, Lond. 213: 315-316.

collected a new thicket warbler in the mountains not far from these localities, and he had speculated that the mystery call might belong to this new bird.

On 14 June I heard odedi while on a steep forested ridge on the way to Hadden's collecting locality on the plateau-like summit area NE of Panguna. I estimated that the bird was more than 100 m away and I did not see it. I would have overlooked the call altogether, if the local guide had not pointed it out to me. We had discussed the bird, and he described it to be small, brown on the breast and darker on the back, with white spotting on tips of wing and tail; my informant also mentioned that it sang from a tree and not from the ground; most importantly, he mentioned that it was a small bird with a big voice.

I spent five days camped in the wet mountain forest at the summit of the plateau where Hadden had collected the new thicket warbler, at c. 1200 m. I never heard odedi at this camp, though Hadden and I captured two more of the thicket warblers, one on a nest, and we took specimens of *Zoothera talasea*, a thrush previously known only from New Britain and Umboi Islands, to the west of Bougainville.

On returning from the field, I read through the work of Cain & Galbraith (1956, *Ibis* 98:262-295) on birds of the eastern Solomon Islands. In it, I noted their description of the voice of the small shade warbler *Vitia parens* (p. 269): "a mellow musical whistle, surprisingly deep