LITTLE SHEARWATERS VISITING BURROWS AFTER BREEDING

Little Shearwaters *(Puffinus assimilis)* are winter breeders in New Zealand " occupying the nesting burrows from about April, with eggs in May and June and most of the young on the wing by the end of October " (Falla *et al.* 1981). In October/November 1982, while studying the prebreeding activities of Pycroft's Petrel *(Pterodroma pycrofti)* on Lady Alice Island in the Hen and Chickens Group, I encountered pairs of Little Shearwaters occupying burrows by day on four separate occasions. I inspected about 40 burrows each day for 12 consecutive days between 25 October and 5 November. I suspected that these were all breeding burrows of Pycroft's Petrel, which breeds in the summer, and it is not known how many of them may have been occupied by Little Shearwaters earlier in the year. As little information may be available about Little Shearwaters at this stage of the breeding season, I have given details of all eight birds in Table 1. I saw only one Little Shearwater at night on the surface in the study area during this visit and none in burrows or on the surface during an 11-day visit from 23 November to 3 December or a 5-day visit from 11 to 15 January 1983.

On 28 September we had banded a large downy Little Shearwater chick weighing 216 g with tarsus length 40 mm at Burrow 129. On 29 October the skeleton of this chick, together with its band, was found on the surface above the burrow. One of the birds in Burrow 102 had been banded (X8402) as a breeding adult on Lady Alice Island on 25 August 1981. The others were unbanded when caught and so may or may not have been established breeders. None of the shearwaters in the burrows had an egg or chick.

One of the birds had very worn flight feathers, some primaries with broken tips, and certainly had not moulted recently. Another had primaries that were fresher but not obviously newly grown.

TABLE 1 — Measurements of eight Little Shearwaters

			Wing Length	Bill Length	Bill Depth	Tarsus	Mid-toe & Claw	Weight (g)
29 Oct	Burrow 129	Bird 1	196	26.5	6.8	41.1	-	220
		Bird 2	190	23.4	6.5	40.8	45.9	220
30 Oct	Burrow 133	Bird 1	192	24.4	6.9	39.9	-	230
		Bird 2	196	23.6	6.9	40.0	50.0	227
31 Oct	Burrow 102	Bird 1 (X8402)	199	26.7	6.4	-	-	242
		Bird 2	191	24.9	6.9	-	-	219
2 Nov	Burrow 127	Bird 1 (X8415)	193	26.2	6.9	41.4	49.2	204
		Bird 2 (X8416)	191	25.6	6.3	40.1	48.2	185

No flight feathers were missing, and all were fully grown in the birds handled.

" The Little Shearwater is a non-migratory species throughout its wide range and may be found on its island haunts ten months of the year " (Serventy *et al.* 1971). Other non-migratory shearwaters may also be on the breeding islands outside the breeding season, and Falla (1934: 255) said of the Grey-faced Petrel *(Pterodroma macroptera)* in New Zealand: " within a month of departure of the last of the young from the burrows in January, some few old birds will be found in occupation again, at first only single birds, and usually males. This is so in February and March. From April till June pairs are often found in burrows during the day, but not in all burrows in any one day. Laying takes place at the end of July and early in August . . . ."

When Jouanin (1964) visited Grande Salvage Island in the Atlantic on 13-23 July 1963, about 1-2 months after the young Little Shearwaters had fledged there, he found no sign of adults on land by day, although they were very active at night, when several, all showing primary moult, were captured. In an interesting review, Jouanin went on to consider similar patterns of attendance outside the breeding season in other petrels and in particular referred to the work of Paulian (1953), who found on Kerguelen Island that in the Blue Petrel *(Halobaena caerulea)*, which lays from late October to mid-November and fledges in March, large numbers of adults return from mid-April onwards and are present by day, often in pairs, in the burrows in which they remain, calling, during the night. This activity declines during June, and at the end of June adults disappear from their breeding places until they return to prepare for nesting early in September. For such behaviour, Jouanin proposed the term *protogamique* and considered that its function is to enable prebreeders to become paired and to strengthen the bonds between established pairs of adults.

My observations of Little Shearwaters on Lady Alice Island seem consistent with these ideas of protogamic behaviour, and it is interesting that no burrows contained single shearwaters, that only one adult was seen on the ground at night (on 4 November), and that none was seen during the later visits in November/December and in January.

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