

The desertion of eggs and chicks by adult Sooty Terns in 1973, and the failure to re-occupy this deserted area in 1974, appears to have been due to the heavy infestation of *O. capensis* ticks in that part of the colony, either due to the birds contracting a virus infection or perhaps simply due to irritation following tick bites.

The unexplained night desertion of Common Terns observed by Marshall (1942) followed a pattern similar to that observed on Bird Island, and ticks may be implicated there. Similarly, Evans (1970) noted that Puffin *Fratercula arctica* burrows in south-west Ireland were heavily infested with ticks and mites following a sharp decline in the breeding colonies of auks in that area.

I am grateful to Drs H. Hoogstraal and J. D. Converse, of NAMRU-3 Cairo, and Dr W. R. P. Bourne, Aberdeen University, for their helpful comments on an early draft of this paper. These observations were made during the tenure of a Research Fellowship at Aberdeen University, supported by a Natural Environment Research Council grant to Prof. G. M. Dunnet. Field assistance from my wife in 1974 was made possible by a grant from NAMRU-3.

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Culterty Field Station,  
Newburgh, Ellon,  
Aberdeenshire AB4 0AA<sup>1</sup>

C. J. FEARE

5 October 1974

<sup>1</sup> Present address: Field Research Station, Tangley Place, Worplesdon, Guildford, Surrey GU3 3LQ.

#### LACK OF A 'DESERTION PERIOD' IN THE NESTLING LIFE OF THE PUFFIN *FRATERCULA ARCTICA*

Lockley (1934) described how the young Puffin *Fratercula arctica* was deserted by its parents when it was about 40 days old, but remained in the burrow and completed its growth on fat reserves for a further 7-10 days before fledging at night. Although based on only three young, this fitted well with his (1930) findings that the Manx Shearwater

*Puffinus puffinus* young was deserted. However, his Puffin results were queried by Perry (1948) who noted that the adults regularly visited, but did not feed the young right up to the night of fledging, and were sometimes seen near the burrows after the young had left. Myrberget (1962) weighed 19 young throughout their development and found that, on average, young gained weight steadily until day 33–34, remained at roughly the same weight until day 41–42, but then declined by some 50 g during the following 5–11 days before fledging. It appeared that there was a desertion period, though in one case a bird brought fish to a burrow after the young had fledged. The observations of Perry have been overlooked and it is normally accepted that the young Puffin does fast before fledging (e.g. Sealy 1973, Cramp, Bourne & Saunders 1974).

In 1973 and 1974 I followed the growth and feeding of young Puffins on the Isle of May (Fife) by direct observations and regular weighings of young. Most young lost weight prior to fledging; of 44 young which were weighed every four days, 41 reached peak weight many days before fledging. The mean peak weight of these 41 young was  $321 \pm \text{s.d. } 22.4$  g and the last weight before fledging was  $289 \pm 27.9$  g with a mean loss of  $9.8 \pm 6.4\%$ . If the three young whose last weighings were also their peak weights are included, the mean peak and last weights were 320 g and 290 g respectively. However, there was no desertion period—not even the day prior to the night on which the young fledged.

Evidence came from several sources. Firstly, 13 young weighed every two hours were all fed on the day prior to fledging. It is difficult to be sure how many feeds were involved, but 23 increases in weight (average 1.8 per day) were recorded. Nineteen young not near fledging weighed on the same dates averaged 2.0 increases per day. These two sets of increases are not significantly different from each other, indicating that young were being fed at about normal frequency right up to fledging. Secondly, some other young weighed daily continued to gain weight in the few days prior to fledging. Thirdly, the parents of young near fledging were sometimes caught in burrows and, as noted by Perry (1948), these young sometimes left the burrows to join the adults just outside. Finally, on the Isle of May adults frequented the breeding colonies for up to three weeks after their young had fledged and sometimes brought fish to the burrow the day after their young had fledged. This behaviour also occurs in the Pigeon Guillemot *Cephus columba* (Drent 1965). Apparently young Puffins fledge when ready, and desert their parents rather than the reverse. A similar situation occurs in the Gannet *Sula bassana* (Nelson 1964). The only auks where a desertion period may occur are Tufted Puffin *Lunda cirrhata* and Rhinoceros Auklet *Cerorhinca monocerata* where 'the young remain in burrows until they attain as much as 80% of adult weight after which they receive only a little attention from the parents' (Cody 1971: 472). These species would repay further study.

The weight reduction in young auks prior to fledging may be due to water loss by maturing tissues and/or to increased activity prior to departure (Ricklefs 1968, Sealy 1973). In 1974, a deserted Puffin egg was hatched artificially and the young reared indoors on natural food (small fish) given *ad lib*. Prior to fledging it consumed about 20% of its own weight in food per day (Table 1) but this was far less than its intake before it reached peak weight. The bird was kept in a darkened box  $0.5 \times 0.25$  m which allowed more room for exercising than a normal burrow. It did not use this extra space until two days prior to fledging when it became very active and difficult to keep in the box. Then, it may have utilized some food for exercise but, as there was an excess of food, it was still voluntarily restricting its feeding.

The most pronounced reduction in weight prior to fledging occurs in shearwaters. The Manx Shearwater chick reaches twice the adult weight and then loses 36% of this peak weight during the 8–9 days before fledging. These large fat reserves which the young shearwater has at its peak weight allow the adults to leave the area earlier than if they had to continue feeding the young, and enable the young to survive even a severe

food shortage (Harris, 1966, 1969). Many, perhaps most, adult Puffins remain on the Isle of May for several weeks after most young have left, which suggests that they are not in any hurry to migrate or moult. Although in the Puffin the peak weight is not much higher than fledging weight, the excess would be important in times of shortage. On the other hand, once development is completed, extra fat might be disadvantageous to a bird

TABLE 1  
*Growth and food intake of an artificially reared young Puffin*

| Age in days | Lowest weighing on any day (g) | Wing length (mm) | Food intake/day <sup>1</sup> (g) |
|-------------|--------------------------------|------------------|----------------------------------|
| 1-5         | 45                             |                  | 11.0                             |
| 6-10        | 76                             |                  | 33.6                             |
| 11-15       | 133                            |                  | 65.0                             |
| 16-20       | 178                            | 51               | 106.9                            |
| 21-25       | 236                            | 76               | 148.7                            |
| 26-30       | 259                            | 93               | 110.4                            |
| 31-35       | 278                            | 112              | 104.7                            |
| 36-40       | 282                            | 124              | 87.7*                            |
| 41          | 303                            | 129              | 112.8                            |
| 42          | 294                            | 132              | 63.0                             |
| 43          | 291                            | 134              | 40.8                             |
| 44          | 281                            |                  | 26.0                             |
| 45          | 276                            | 136              | 14.9                             |
| 46          | 262                            | 138              | 59.9                             |
| 47          | 249                            | 139              | 30.2                             |
| 48          | 297                            | 140              | 49.0                             |
| 49          | 254                            | 141              | 49.3                             |

Note: <sup>1</sup> Except for two days (in the sample marked\*) food was given *ad lib*. Peak weight attained on Day 41.

which has to dive for its food. Probably the fledging weight is a compromise between having to dive and having sufficient fat reserves to carry it over the (presumed) difficulties inherent in learning to fend for itself.

I would like to acknowledge the help of S. Murray, P. Lack, J. Morgan and G. Wiersema for help with the weighing of young Puffins and Dr D. Jenkins for criticizing the manuscript.

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Institute of Terrestrial Ecology,  
Banchory,  
Kincardineshire AB3 4BY

M. P. HARRIS

## FIRST RECORD OF NEST AND EGGS OF JARDINE'S PARROT *POICEPHALUS GULIELMI*

The discovery of the nest of the relatively large and noisy Jardine's Parrot *Poicephalus gulielmi* has hitherto eluded ornithologists. With a distribution almost across the width of tropical Africa, it is not a rare species. On Mt Meru in northern Tanzania, where these observations were made, it occurs at higher levels, about 8000 ft (2440 m) above sea level. In Kenya it has been suspected to breed in June and possibly also in September-November (Mackworth-Praed & Grant 1952). On Mt Meru the breeding starts more or less with the onset of the short rains about November, and continues to February or March. This season is in accord with general observations of the breeding activity of birds of the East African highland evergreen forests (Moreau 1936).

During these months the higher forests on Mt Meru are cold, damp, frequently shrouded in mist and only accessible on foot—in short, unpleasant and frustrating conditions under which to work. In December and January it was only during the brief periods of open sky that useful visual observations were made. The parrots could be heard calling through the mist but their rapid flight and slow, secretive movements when perched, together with their remarkable camouflage, made them difficult subjects to study. Although Jardine's Parrot is normally a noisy species, its activities about the nest were most discreet. This behaviour, together with the adverse prevailing weather conditions, undoubtedly caused a large number of nests to be overlooked.

In total, 18 active sites were investigated. Of these, 13 (72%) were found in *Hagenia abyssinica*; four (22%) in *Podocarpus* and one (6%) in *Juniper*. The average height of the entrance holes from the ground was 30 ft (9 m), ranging from 10 ft (3 m) to 40 ft (12 m), and the passages varied in length from 2-8 ft with a terminal nesting chamber of 3-5 in (7.5-12.5 cm) in diameter. Most sites were natural passages in mature, live trees which, on occasion, had been widened by the birds to permit ease of access or to increase the size of the nesting chamber. A few sites were obvious excavations throughout, probably in origin the work of one or other of the barbets *Lybius* spp. which are common in these forests.

Only two nests were found containing eggs. The first was on 26 November 1971, with two glossy, oval white eggs. An inspection door was made to the nest and at about 17.00 hrs, after this had been closed, the adult birds, who had remained silent all the while, began mating in a nearby tree. For about three minutes the male stood on the female's back swaying rhythmically. There was no fluttering of wings, the only sound being a soft clucking (D.P.). Regrettably, it was not possible to discover if a third egg was subsequently laid.

A second site was investigated on 18 January 1972. It contained a single egg similar in colour, shape and size to the first clutch. Again, an inspection door was constructed. A second egg was laid on 21 January 1972. As no more eggs had been laid by 26 January, it was assumed that the clutch was complete. The two eggs were removed; these measured