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Egg Composition in the Macaroni Penguin *Eudyptes chrysolophus*

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The *Eudyptes* penguins are unique in laying two-egg clutches in which the first (A egg) is consistently smaller than the second (B egg; Gwynn 1993). This divergence is seen in its most extreme form in the Macaroni Penguin *E. chrysolophus* and Royal Penguins *E. schlegeli*, in which the second egg is about 60% heavier that the first egg (Gwynn 1953 Table 2).

In the course of studies on breeding Macaroni Penguins on Heard Island in 1953 (Downes *et al.* 1959), dissections were made of six laying females (Gwynn 1993). The composition of a series of known first and second eggs was examined to determine whether there was a difference in composition between them, and the status of the 'intermediate' eggs laid by two of the females examined. Elsewhere, Williams *et al.* (1982) have since given the composition of A and B eggs in a series of eight Macaroni Penguin clutches from Marion Island and Grau (1982) has studied egg formation in the fiordland Crested Penguin *Eudyptes pachyrhynchus*.

In the present study the composition of five known clutches was examined. The technique was to separate the yolk from albumen in a saucer, rinse it in water, blot it on filter paper and then weigh it. The shells were washed, dried and weighed, and the weight of albumen calculated by difference (Table 1).

Because the first three appeared to be normal three-egg clutches, these were treated separately from 7541 and 7551, in which the first known egg was unusually large and the birds were subsequently found to have ovulated three times (Gwynn 1993). Table 1 shows that

Table 1 Egg composition of the Macaroni Penguin *E. chrysolophus* in the present study, compared with Williams *et al.* (1982) and with Grau (1982) for the Fiordland Crested Penguin *E. pachyrhynchus*.

	Macaroni Penguin								Fiordland Penguin	
	Normal clutches (this series)		Williams *et al.* (1982)		Abnormal clutches (this series)				Grau (1982)	
					7541		7551			
	A eggs (n=3)	B eggs (n = 3)	A eggs (n = 8)	B eggs (n = 8)	B egg	C egg	B egg	C egg	A eggs (n = 3)	B eggs (n = 3)
Total wt (g)	94.7	149.8	94.2	144.7	116.7	173.8	123.4	152.3	96.8	120.3
Yolk wt (g)	28.8	35.5	—	—	29.9	38.0	34.4	34.8	24.5	28.0
% of total	30.4	23.7	30.8	24.2	25.7	21.9	27.9	22.8	25.3	23.3
Albumen wt (g)	55.6	96.4	—	—	74.4	116.8	78.4	100.0	61.7	78.9
% of total	58.7	64.4	55.4	60.8	63.7	67.2	63.5	65.7	63.8	65.6
Shell wt (g)	10.3	17.9	—	—	12.4	19.0	10.6	17.5	10.5	13.4
% of total	10.9	11.9	13.8	15.0	10.6	10.9	8.6	11.5	10.8	11.1

the mean weights and percentage difference (mean increase 58.2%) of the first three clutches were similar to those of the 14 clutches in Gwynn (1953), whereas the large first known eggs of the other two clutches were quite outside the range of normal A eggs in these respects. It may be noted that both birds which had ovulated three times eventually produced rather larger than average B eggs of normal composition. The figures of Williams *et al.* (1982) from Marion Island agree well with those for normal two-egg clutches in the present study.

These results are compared with those of Grau (1982) for the Fiordland Penguin in Table 1. In the latter species the A egg has a mean weight slightly larger than that of the Macaroni Penguin but the difference between A and B eggs is much less (Table 2). The proportion of yolk in the normal Macaroni eggs (30.8%) is significantly higher than in the A egg of the Fiordland Penguin (25.3%; $P < 0.05$, t-test), but the proportion of yolk in the B egg is the same in both species, as also in the Rockhopper Penguin *E. chrysocome* (Williams *et al.* 1982). This suggests that the relatively smaller size of the Macaroni Penguin's A egg compared with the B egg is mainly due to a reduction in the amount of albumen.

Table 2 Mean weights (g) of first (A) and second (B) eggs and percentage differences in present study and in published series of Macaroni Penguin *E. chrysolophus* and Fiordland Crested Penguin *E. pachyrhynchus* clutches.

	A eggs	n	B eggs	n	% increase
E. CHRYSOLOPHUS:					
Present study:					
Normal clutches [1]	94.4	6	146.7	6	55.4
Clutch no. 7541	116.7	1	173.8	1	48.9
Clutch no. 7551	123.4	1	152.3	1	23.4
Gwynn (1953)	94.0	14	154.5	14	64.4
Williams *et al.* (1982)	94.2	8	144.7	8	53.6
E. PACHYRHYNCHUS:					
Grau (1982)	96.8	8	120.3	8	24.3
Warham (1974)	99.9	66	120.3	52	20.4

[1] Includes three clutches for which composition is not available.

The results of this small study are offered to complement the figures obtained by Williams *et al.* (1982) and as further evidence that the first known eggs of the two birds which had ovulated three times (Gwynn 1993) were not typical A eggs and are therefore shown in Table 1 as B eggs. It seems plain that a thorough study of egg formation in this species, on the lines used by C.R. Grau and his colleagues in the Adelie Penguin *Pygoscelis adeliae* (Astheimer & Grau 1985) and other species, is waiting to be done.

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Notes on Live Night Parrot Sightings in North-western Queensland

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The last authenticated record of a Night Parrot *Geopsittacus occidentalis* was a corpse recovered from a roadside at Boulia in north-western Queensland in 1990 (Boles *et al.* 1991). Before then, by most common definitions of conservation status, the pattern of reports authenticated by specimens indicated that the species was extinct (Garnett 1992; Solow 1993). However, there have been unauthenticated reports of Night Parrots from all states of mainland Australia and the Northern Territory in every decade of the past half-century. Among these have been several reports from people driving late at night from south of Cloncurry, about 150 km north of the area where the corpse was recovered (L. Cresswell pers. comm.; I.A.W. McAllan pers. comm.). The drivers reported a small green parrot that sat on the road and was reluctant to move out of their headlights.

This note reports the circumstances of seven such sightings in the same area over an 18-month period from early 1992 to mid-1993. All sites were visited by the first two authors between 24–29 June 1993. At six of the seven sites the general habitat was described and all plants within 5 m of the place where the birds were seen sitting were identified and their abundance estimated (Table 1).

Sighting 1

Observers: Nigel Baker and Patrick Doherty. Both observers are familiar with all other birds that occur in the region and might conceivably be confused with a Night Parrot, including Spotted Nightjar *Eurostopodus guttatus*, Australian Owlet-nightjar *Aegotheles cristatus* and Budgerigar *Melopsittacus undulatus*, and have spent hundreds of hours spotlighting for pigs in this and other areas in north-western Queensland.

Date and time: March 1992, 0300 hrs.

Circumstances: a single small fat green parrot seen sitting in the middle of a track by the light of a spotlight shining from the roof of a slowly moving vehicle. The plumage, though undoubtedly green, appeared greyish under the glare of the spotlight. The parrot flushed soon after being seen and flew up steeply into the air, showing yellow on the belly. Weather warm, sky clear.

Habitat: open grassland with scattered Gidgee *Acacia cambagei* on reddish-brown soil with scattered gravel. Grass about 20% cover (per cent foliage cover). Spinifex *Triodia* sp. 300 m away, a watercourse, which would have contained water at the time, 50 m away and a bore 200 m away. Evidence of grazing by cattle.