

Given that *A. alba* formed a monospecific stand in a narrow (20–40 m) belt along the edge of the river at this site, the almost exclusive use of this species by the Greater Goldenback may not seem surprising. However, as most of the trees visited during the observation period were about 10–20 m behind this zone, where *Bruguiera parviflora* dominated, the selection of *A. alba* seems to represent a preference for this species. In contrast the Common Goldenback ranged over the full width of the mangrove belt (5 to 300 m from the river edge), and foraged on each of the species available at this site. At another site, 500 m from Tanjung Keramat, the Common Goldenback was repeatedly seen on the seaward edge of the mangroves, where tall (12 m) *Sonneratia alba* predominated, and *A. alba* formed an understorey (<4 m).

These observations suggest that within Malaysian mangroves the Greater Goldenback is both rarer and perhaps more specialized than the Common Goldenback, and may be confined to the innermost zone (river or seaward edge) of the mangroves, where *A. alba* is dominant.

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## Moult and biometrics in five birds endemic to Palawan, Philippines

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Until recently most ornithological research in the Philippines was concerned with describing new species and subspecies, with little regard for the biology of

the birds. The latest account of the avifauna of the islands is du Pont's (1971) book, which gives a limited description of the birds and no more. This paper presents some results from an expedition to Palawan in July and August, 1987, while the authors were members of the University of Newcastle upon Tyne Philippine Expedition (McGowan *et al.* 1989).

Endemic bird species were trapped, measured and examined to determine the stage they had reached in their annual cycle. The breeding and moult periods of birds tend to be separate, with moult following breeding in resident passerines (Keast 1968, Fogden 1972, Diamond 1974, Gaston 1981, Ginn and Melville 1983). Although Foster (1975) describes some species which overlap the two functions, other authors suggest that they are mutually exclusive, probably due to the energetic demands of feeding prohibiting the simultaneous use of proteins to produce replacement feathers. In Sarawak, Fogden (1972) showed that the breeding season was sharply defined, lasting from December to June, with the moult timed to finish before the lean period in November.

On Palawan the rainy season begins in August and increases in severity until December or January, so from the comments of previous authors we would expect the breeding season to begin in December and moult to finish before the lean season (Ward 1969), i.e. before September. This note identifies the period when the breeding season finishes and moult begins, for five species endemic to Palawan, and presents biometric data for those species.

### Methods

Mist-nets were used to trap birds between 25 July and 22 August 1987, at Inagauan, Palawan (9°32'N 118°44'E). All the birds were individually marked with coloured cellulose rings in combination and a series of biometrics were taken. The wing (flattened, longest chord), tail, bill to feathering and tarsus lengths were all taken, as was weight (grams), as shown in Spencer (1983) and Svensson (1984). All birds were examined for moult and, where applicable, British Trust for Ornithology moult cards were completed (see Ginn and Melville 1983). Primary feathers were scored using a scale from 0 (old) to 5 (fully grown and new), giving a primary score of between 0 and 50 for the 10 primaries of a passerine (Newton 1967, Snow 1967, Ginn and Melville 1983). Sex was determined, where possible, by examining a bird for signs of a brood-patch or by checking cloacal shape (Mason 1938, Svensson 1984).

### Results and discussion

A total of 114 birds of 24 species were measured and weighed, and 47 moult cards were completed for 14 species. Five species of endemic birds were trapped: Ashy-crowned Babbler *Trichastoma cinereiceps*, Palawan Tree-Babbler *Malacopteron palawanense*, Palawan Flycatcher *Ficedula platanae*, Blue Paradise-Flycatcher *Terpsiphone cyanescens* and Palawan Flowerpecker *Prionochilus plateni*. The biometrics for these species are given in the Table.

**Table.** Biometric data for five bird species endemic to Palawan. See text for methods of measuring.

SPECIES	WING (mm)	WEIGHT (grams)	TAIL (mm)	BILL (mm)	TARSUS (mm)	n
Ashy-crowned Babbler	61-69	22.1-25.9	20-27	13-17	25-33	14
Palawan Tree-babbler	84-91	28.1-36.7	73-80	16-20	27-29	4
Palawan Flycatcher	59-64	11.2-13.0	39-43	11-12	19-23	4
Blue Paradise-Flycatcher	F 90	23.1	88	18	19	1
	M 95-96	25.7-26.9	99-104	20-22	20-21	2
Palawan Flowerpecker	50-55	8.0-9.0	23-27	10-12	14-16	8

*Ashy-crowned Babbler* Two classes of moulting birds were caught, those in full moult and with well worn old feathers ( $n = 2$ , plus one retrapped five days later), and those in partial moult ( $n = 10$ ), where unmoulted feathers appeared new and the remiges remained unmoulted. This indicates that adults undergo a full post-nuptial moult whereas juveniles go through a partial moult, retaining the remiges.

The primary scores for the birds in full primary moult were 2 and 9 (26 July and 2 August, respectively), with the second bird having the same score when retrapped five days later. This suggests a starting date towards the second half of July for adult, post-nuptial moult; however, one adult caught on 25 July had not started to moult and still showed remains of a brood-patch.

*Palawan Tree-Babbler* All four of the birds that were trapped had well-worn plumage and were therefore aged as adults. Two were just starting a full moult, with primary scores of 1 and 7, on 26 July and 30 July respectively. One of the non-moulting birds was sexed as a male using cloacal examination.

*Palawan Flycatcher* No moult was evident in any of the four birds trapped (between 26 July and 8 August). Three of these birds were in breeding condition, two with brood-patches (female) and one with a cloacal protuberance (male).

*Blue Paradise-Flycatcher* Three birds were trapped, all on 30 July. None of these birds was in breeding condition and only one was in moult (primary score = 6). The two males were larger than the female on all measurements.

*Palawan Flowerpecker* Several juveniles were caught which were in body moult but not in primary moult, indicating that this species undergoes a partial post-juvenile moult. Adults were caught on 16 August both in breeding condition (1 male) and in full moult (primary score = 9).

Although sample sizes are small, the above observations give an indication that these endemics finish breeding, and begin to moult, between the end of July and the beginning of August. This may be variable between years, however, and more data are needed before firm conclusions can be drawn.

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## **Sunda Frogmouth** *Batrachostomus cornutus* carrying its young

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On 29 May 1990 a half-grown, well-feathered chick Sunda Frogmouth *Batrachostomus cornutus* and one of its parents were frightened from their nest when a photographer's hide blew over in the wind and hit the tree close to their nest. This was situated at a height of about 1.5 m in an exotic *Mimosa* tree in a suburban garden near Bandar Seri Begawan, Brunei. After hearing of this incident, I managed to locate the birds, about three hours later, perching overhead, about 2.5 m above ground on a thin branch of a neighbouring tree of the same species. I momentarily glanced away, and when I looked back I saw the adult take flight and cross the narrow road on which I was standing,