

*Ixos malaccensis* (Blyth, 1845).

*Hemixos flavala* Blyth, 1845.

*Hemixos castanonotus* Swinhoe, 1870.

*Hypsipetes madagascariensis* (P. L. S. Müller, 1776).

*Hypsipetes crassirostris* E. Newton, 1867.

*Hypsipetes parvirostris* Milne-Edwards & Oustalet, 1885.

*Hypsipetes borbonicus* (J. R. Forster, 1781).

*Hypsipetes olivaceus* Jardine & Selby, 1837.

*Hypsipetes leucocephalus* (Gmelin, 1789).

*Hypsipetes virescens*\* (Blyth, 1845).

*Hypsipetes thompsoni* (Bingham, 1900).

I am grateful to Tim Inskipp for drawing attention to the treatment of this complex in Wolters (1975-1982).

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# Breeding habits and behaviour of Large-tailed Nightjar *Caprimulgus macrurus* in Singapore

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Although the Large-tailed Nightjar *Caprimulgus macrurus* is a common bird in Peninsular Malaysia and Singapore its breeding habits in the region are poorly documented. Little is known about the species, other than that 1-2 eggs are laid in a clutch and that no nest is constructed, the eggs usually being laid on leaf litter on the ground (Wells 1999).

A pair of Large-tailed Nightjars bred during the summer of 1998 on the roof of a carport at Casabella Apartments, Singapore, a low-rise urban development within open grassy areas interspersed with small mature trees. The carport was an open-sided structure with room for four cars parked parallel and was roofed with corrugated asbestos sheets. The roof was about 3 m above the ground and was overhung at one end by a Bushy Cassia *Cassia biflora* which, over a period of time, had deposited a layer of leaves and twigs onto the roof, upon which the eggs were laid. The female was observed from the balcony of a nearby flat and was first seen sitting on eggs on 13 March. The nest site was 3 m below the level of the balcony and 10 m from it, thereby allowing excellent viewing opportunities. Only the female incubated the eggs during the day whilst the male roosted almost directly above in the cassia tree. It was interesting to note that the male roosted crosswise on a branch and rested in a near vertical posture with its head sunk down into its shoulders. This was its normal roosting position and it was seen in this posture on several occasions during daylight hours. The birds were very vocal around sunset giving the typical loud *tchonk* call characteristic of this species.

The first egg was seen to hatch at 11h00 on 2 April followed by the second on 5 April and it was interesting to note that eggs hatch during the day. The young were

covered with very pale beige fluffy down and at dusk they were seen begging food aggressively from their parents. When an adult landed near the breeding site the chicks rushed towards it and begged open-mouthed while giving a wing quivering display and uttering a thin high-pitched call. Their behaviour was so aggressive that they sometimes seemed in danger of falling off the roof. The male was frequently seen feeding a young bird in the evening immediately after dark. The young birds were often moved about the carport roof by their parents during a prolonged period of frequent heavy showers and it was during this time that one of the chicks died. This occurred within seven days of hatching. By 18 April the remaining chick had lost its downy appearance and was showing juvenile plumage which was similar to that of the adult male including white tips to the outer tail feathers. By the evening of 22 April the nest site was empty but a newly fledged nightjar was seen on the ground in the immediate vicinity.

Courtship behaviour was observed at the same site on 12 July and presumed to be by the same pair of birds. The male ran around the female wagging his tail from side to side whilst giving a harsh, grating frog-like call and clearly displaying the white crescent exposed on his puffed-up throat. Two eggs were subsequently laid at the same site as previously used and incubation was noted on 3 August, although there were still no chicks by 25 August when observations ceased. The length of time taken for the two incubations generally agree with the longer incubation times given in published literature (Cleere and Nurney 1998).

In conclusion, observations showed that this pair of Large-tailed Nightjars had two broods and that their breeding season extends from at least mid March to

late September in this region. Additionally, the rapid time taken from hatching to fledging, approximately 20 days, must be an adaptation to successful breeding in what is normally a ground nesting species. The recording of the courtship procedure and the male's behaviour at the roost also give new insight into the habits of this species.

As an aside I have a record of a male Large-tailed Nightjar catching a Malaysian Fruit Bat *Cynopterus brachyotis* in mid-air on the evening of 4 November 1995. After carrying the bat some way it released it. Four other birdwatchers also witnessed this event.

I am indebted to John Morgan who alerted me to the breeding birds, allowed me to make use of his notes, and let me use his apartment for observations. I am extremely grateful to Peter Kennerley for his comments and advice on an earlier draft of this paper and to Ng Bee Choo of "Nature's Niche" for access to reference books.

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# Malayan Night Heron *Gorsachius melanolophus* breeding in immature plumage

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Adult plumage, particularly the breeding plumage when applicable, has generally been considered to be the plumage that birds wear when they breed. By contrast, the immature plumage, if different from the adult, is an indication that the birds are not yet ready for breeding or are sexually immature. Although this appears to be true for most birds, it is not absolute, at least, for some birds-of-paradise Paradisaeidae (Harrison and Loxton 1993). It is also possible that the birds may be sexually mature but are excluded from the breeding population by a mate selection mechanism.

The Malayan Night Heron *Gorsachius melanolophus* is generally rare and currently considered near-threatened (Collar *et al.* 1994). Because of its scarcity and secretive behaviour, very little is known of its movements and breeding habits. The Malayan Night Heron ranges from India east to the Philippines and south to the Greater Sundas (Martinez-Vilata and Motis 1992). It inhabits lowland wooded swamps, streams and marshes in tropical and subtropical forest in areas of heavy rainfall. The nesting areas in Taiwan are mostly in low-altitude forests, consisting of tall trees and bamboo, often close to human residences, with suitable open places for feeding. They feed mostly on earthworms and frogs (Shen and Chen 1996) but rarely on fish. It is a spectacle to see them probing for and tugging out big earthworms (10 x 300 mm) from the soil. They usually nip off the worm's head by vigorous shaking and then swallow both parts after a few minutes. A peculiar behaviour pertinent to the ingestion of earthworms involves exaggerated, slowly repeated peristaltic movements of the neck.

Like other night herons, the immature Malayan Night Heron has a plumage very different from that of the adult. Unlike small bitterns *Ixobrychus*, there is no

sexual dimorphism in plumage and size (Wang *et al.* 1991, Martinez-Vilata and Motis 1992).

A normal breeding pair (adult male and female) of Malayan Night Herons nested on a branch, about 12 m up a tall tree in Yuan-Shan Park of Taipei. When found, on 4 June 1998, two young birds were about to fledge, and were perched on branches about 20 m away from the nest. Interestingly, the adult birds were noted copulating on a branch close to the nest, but they disappeared from the park in mid June and it is not known whether they laid a second clutch. This family had a helper bird that was in an immature plumage resembling that of the two young birds, but lacking down. This helper bird occasionally tried to approach the adult birds, but was chased away. After the parent birds disappeared, the helper fed the two young birds and began to show signs of partial moult into the adult brown plumage in early July. The moult was only half-complete in mid August when the bird disappeared from the park, leaving the young that remained until 10 September. It seemed that the parent birds, the young and the helper dispersed independently. On 19 December (during the rainy season in Taipei), an adult Malayan Night Heron, which had a dark bill and dark-bluish grey lores and looked as if it had recently moulted, had returned to the same site in the park, but no breeding pair was found in the 1999 breeding season.

A second breeding pair was found in April 1998, nesting on a branch about 7 m up in a camphor tree, close to an apartment located in a Taipei suburb. The birds were observed without causing disturbance from the third and fourth floor of the apartment and a video camera was used to record the breeding process. The parent birds consisted of one in adult plumage and one in dull brownish-grey plumage, with thin white stripes