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## History, distribution and origin of Barn Owls *Tyto alba* in the Malay Peninsula

by Graham M. Lenton

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Prior to 1968 the Barn Owl *Tyto alba* was considered an occasional vagrant in the Malay Peninsula, only 4 records being available and of these only 3 can be considered positive. One specimen was taken near Kuala Kangsar, Perak by Kelham in 1881, and 3 from Singapore Island, 1889, 1931 and 1925 (Gibson-Hill 1949 and unpublished information). The 1931 specimen was a purchased skin and therefore of doubtful provenance. The 1925 specimen is in the collection of the British Museum of Natural History, Tring, the other 2 at the Zoology Department Museum, University of Singapore.

In 1968 a pair was discovered roosting in the roof space of an oil palm estate house at Fraser Estate, Kulai (1°40'N, 103°36'E) in the southern state of Johor. The following year, in April 1969, 2 pairs were reported, at the same site, nesting in the roof spaces of 2 adjacent houses (Wells 1972). In February 1970 a Barn Owl was involved in a bird strike with an R.A.F. VC-10 at Changai Airbase, Singapore.

Since then anecdotal reports of Barn Owl sightings and nesting have been increasing, and from 1976 to 1978 these birds were found in oil palm plantations widely throughout the Malay Peninsula with a concentration towards the south and southwest, particularly in Johor State (Lenton 1984).

### *Present distribution*

To ascertain the present distribution of *Tyto alba* in the Malay Peninsula a variety of methods was employed. Questionnaires were sent to all oil palm, rubber and tea estates in the Peninsula and notices and articles were placed in national newspapers and natural science journals requesting information.

Response was limited and biased towards plantation habitats, but by personal follow-up of all replies, further sites were located and over a 2<sup>1</sup>/<sub>2</sub>-year period a

distribution map was drawn up (Fig. 1). It is clear from the map that Barn Owls are more common at low altitudes (below 150 m) and along the southwestern plains of the Peninsula, although other nests and occasional sightings were recorded towards the northwest on Penang Island, together with a personal sighting of 2 birds in the centre of the Peninsula at Gua Musang ( $4^{\circ}50'N$ ,  $101^{\circ}55'E$ ), Ulu Kelantan (100 m elevation). In September 1978 a record of "some" birds at Kuala Terengganu ( $5^{\circ}22'N$ ,  $103^{\circ}08'E$ ), on the east coast, was reported and a photograph of one specimen supported the statement, although no further information for that area was obtained during the study period.

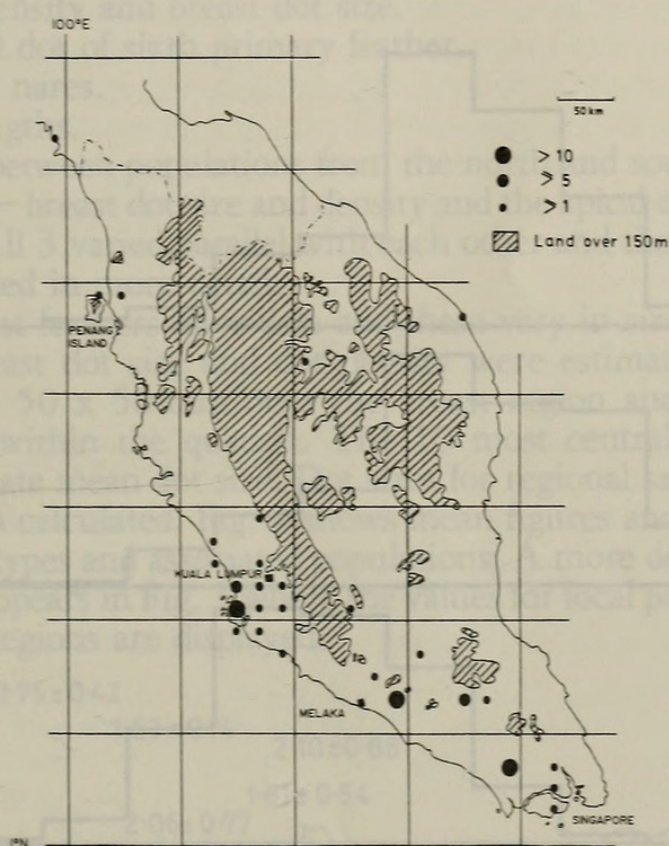


Figure 1. Distribution of nest sites and individual sightings of Barn Owls *Tyto alba* in the Malay Peninsula. Dots are placed in the centre of 20 km squares. The grid is 100 km x 100 km.

On 2 occasions in 1973 and 1974 Holmes & Wells (1975) sighted Barn Owls just over the Perlis border in the Satun Province of Thailand (c.  $6^{\circ}40'N$ ,  $99^{\circ}55'E$ ).

At present Barn Owls have a nesting and roosting preference for oil palm, and only 6% of birds were found in other habitats. The bias towards oil palm is almost certainly due to the superabundance of rats infesting the plantations and is reflected in the analysis of the oral pellets showing that 98% of the diet consisted of the rat species which exploit this habitat (Lenton 1984).

#### Origin

The previous virtual absence of *Tyto alba* from the equatorial zone of South East Asia poses the question whether the present population of the Malay Peninsula has a northern or southern hemisphere origin, or whether both elements are involved.

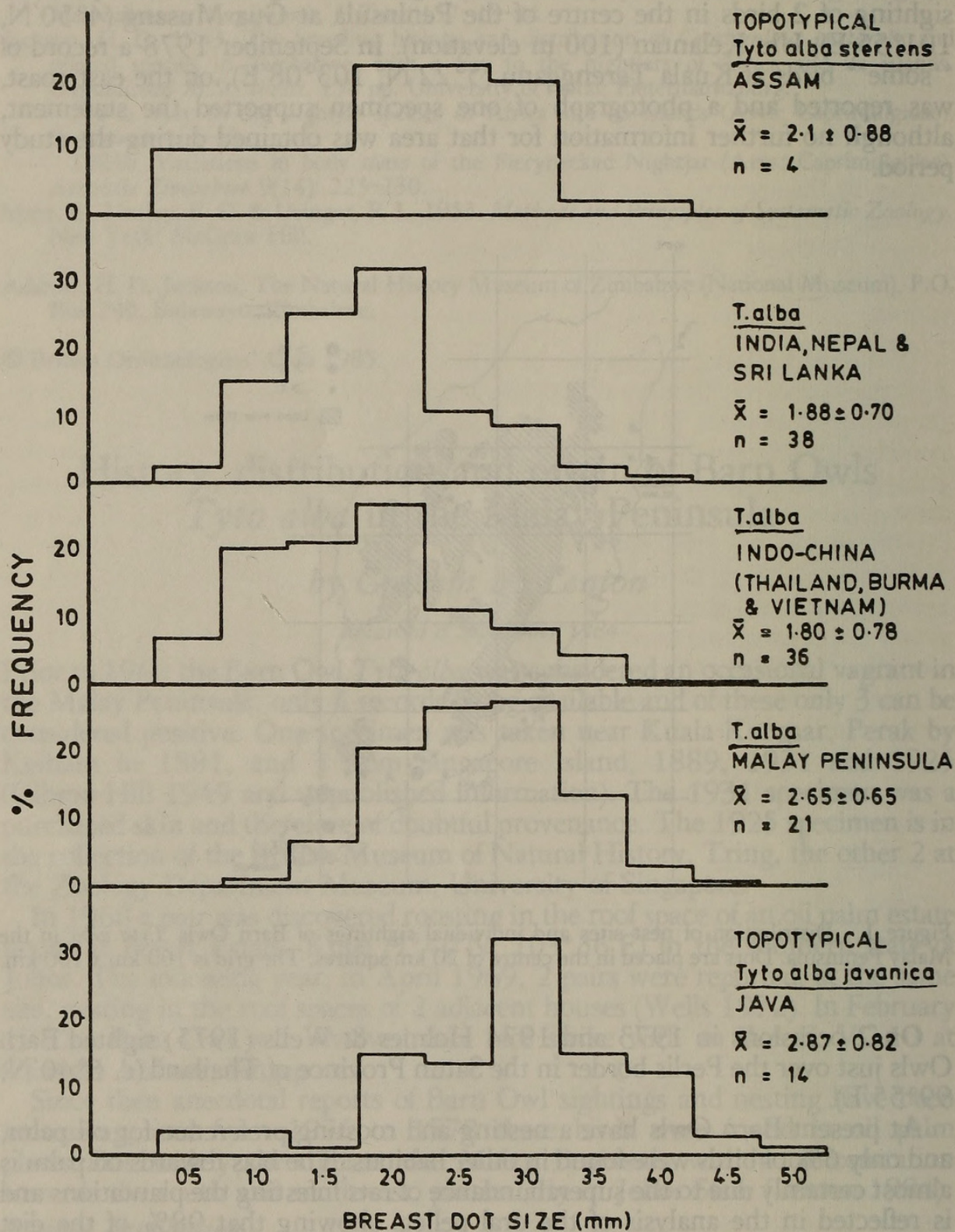


Figure 2. Frequency distribution of breast dot size in *Tyto alba* for 5 regions of Asia. Confidence limits are given to one standard deviation.

113 skins from India, Nepal, Sri Lanka, Burma, Thailand, Vietnam, Java and the Malay Peninsula were analysed for taxonomic evidence. 4 topotypes of *Tyto alba stertens* from lowland Assam, plus 38 others from all parts of India, Nepal and Sri Lanka were examined. Similarly 14 topotypes of *T.a. javanica* from Java were compared with 21 specimens from the Malay Peninsula, 20 from Thailand, 8 from Burma and 8 from Vietnam. The following parameters were measured:

1. Wing length – maximum flattened chord.
2. Tail length – maximum flattened length.
3. Number of dark bars on central tail feathers and distance between centre points of bars.
4. Breast dot density and breast dot size.
5. Size of apical dot of sixth primary feather.
6. Bill width at nares.
7. Left claw lengths.

Differentiation between populations from the north and south was apparent with 3 parameters – breast dot size and density and the apical dot size of the 6th primary feather. All 3 varied parallel with each other and the mean breast dot size was investigated in more detail.

Only some breast feathers have dots and these vary in size from feather to feather. Mean breast dot size and dot density were estimated by curving a cardboard quadrat 50 x 50 mm onto the breast region and making a total count of all dots within the quadrat. The 10 most central dots were then measured to estimate mean dot size. Dot sizes for regional samples were then pooled and a mean calculated. Fig. 2 shows mean figures and variation in dot size for the 2 topotypes and associated populations. A more detailed exposition of breast dot size appears in Fig. 3 where the values for local populations within the main sample regions are displayed.

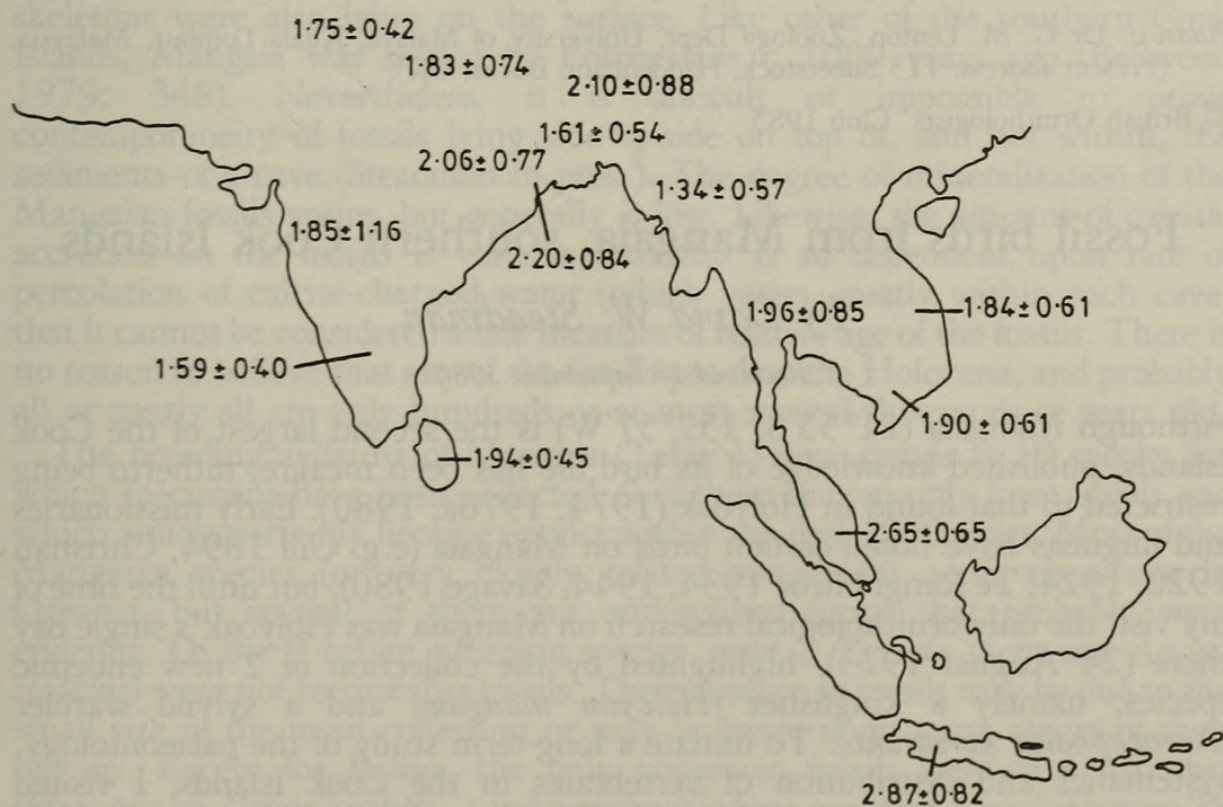


Figure 3. Detail of breast dot size in *Tyto alba* for various regions of Asia. Confidence limits are given to one standard deviation.

It is clear from Fig. 2 that mean breast dot sizes for the Indian and Indo-Chinese subregions are smaller ( $x = 1.88 \pm 0.70$ ,  $x = 1.80 \pm 0.78$ ) than those for Java ( $x = 2.1 \pm 0.82$ ) although the Assam topotype is somewhat larger ( $x = 2.1 \pm 0.88$ ) than the rest of India. However, the sample available for Assam was small and shows wide variation in breast dot size (range 0.5–4.0 mm). The values for India, including Assam, and Java were compared using a 't' test and were shown to be significantly different ( $p < 0.001$ ). The mean dot size of the Malay Peninsula birds ( $x = 2.65 \pm 0.65$ ) falls much closer to the Javan sample and is significantly different from both the Indian and the Indo-Chinese samples ( $p < 0.001$ ).

Thus the population of *Tyto alba* in the Malay Peninsula more closely resembles birds from Java, in terms of breast dot size, than those from the north in the Indian and Indo-Chinese subregions. It is suggested therefore that the present population of *Tyto alba* in the Malay Peninsula has originated from Java, a probability that is supported by the southern distribution of these owls in the Peninsula.

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## Fossil birds from Mangaia, southern Cook Islands

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Although Mangaia (21°55'S, 157°57'W) is the second largest of the Cook Islands, published knowledge of its bird life has been meagre, hitherto being restricted to that found in Holyoak (1974, 1976a, 1980). Early missionaries and linguists have noted certain birds on Mangaia (e.g. Gill 1894, Christian 1920, 1924, Te Rangi Hiroa 1934, 1944, Savage 1980), but until the time of my visit the only ornithological research on Mangaia was Holyoak's single day there (24 August 1973), highlighted by the collection of 2 new endemic species, namely a kingfisher (*Halcyon mangaia*) and a sylviid warbler (*Acrocephalus kerearako*). To initiate a long-term study of the palaeontology, systematics and distribution of vertebrates in the Cook Islands, I visited Mangaia from 26 March to 18 April 1984. An account more detailed than the present awaits further field work.



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