



Figure 2. Mouth pattern of a 1 day old Brown Honeyeater *Lichmera indistincta*.

Only the Brown Honeyeater *Lichmera indistincta* had a mouth pattern — two distinct elongated black spots at the base of the tongue (Figure 2). In older nestlings these spots were sometimes joined in the centre, giving the appearance of a black wedge. This was markedly different to the 'extensive black tongue tip' described by Boles and Longmore (1985). In view of the possible taxonomic significance of such variation within a species it would be of interest to determine whether Brown Honeyeaters from

other regions of Australia are divergent in this character.

More comprehensive data are required to further elucidate the taxonomic or functional significance of natal characters. However, the variation shown here between related genera (e.g. *Amytornis* and *Malurus*) suggests that this line of study may be profitable.

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## SEASONAL VARIATION IN HEAD-BILL LENGTH FOR THE EASTERN SPINEBILL *Acanthorhynchus tenuirostris* AT BARREN GROUNDS NATURE RESERVE, NEW SOUTH WALES

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Head-bill length (HB) was measured for all Eastern Spinebills captured at Barren Grounds Nature Reserve over a 16-month period. HB for adult males was always greater than for adult females at any given time of the year. Mean HB for both males and females showed a seasonal variation. There was a maximum in midwinter and a minimum in midsummer. Four individuals recaptured on several occasions over the same period showed a similar variation in HB.

## INTRODUCTION

The Eastern Spinebill *Acanthorhynchus tenuirostris* is a common bird for most of the year at Barren Grounds Nature Reserve (34°40'S., 150°43'E.) near Jamberoo, New South Wales. More than 300 individuals have been banded\* in the area over a 16-month period commencing in September 1982. The head-bill length (HB) of each bird was measured before release.

## METHODS

The HB was measured with steel vernier calipers graduated to 0.1 mm. The distance was taken from the back of the skull to the tip of the bill (Rooke 1976). All measurements were made by the author. Birds possessing a red eye were classified as adults, and were sexed by the coloration of the crown. The crown of the adult male is glossy-black, and that of the female greyish-olive (Lane 1974).

## RESULTS

Inspection of HB recorded for birds retrapped within a short period showed that values were reproducible within  $\pm 0.2$  mm, whereas measurements taken over a longer term showed variations exceeding 2 mm for some individuals. Mean HB was calculated for 2-monthly periods throughout the year and plotted with the expected range of values at the 95 per cent confidence limits (Figure 1). Both male and female Eastern Spinebills showed significant seasonal variation in HB (ANOVA,  $p < 0.001$ ; Figure 1). Head-bill lengths were longer during winter and shorter during summer. Individual birds that were caught repeatedly during the study showed a similar seasonal variation to the total population in the study (Figure 1).

\*Bands were supplied by the Australian Bird-banding Scheme, CSIRO, Division of Wildlife and Rangelands Research, Canberra.

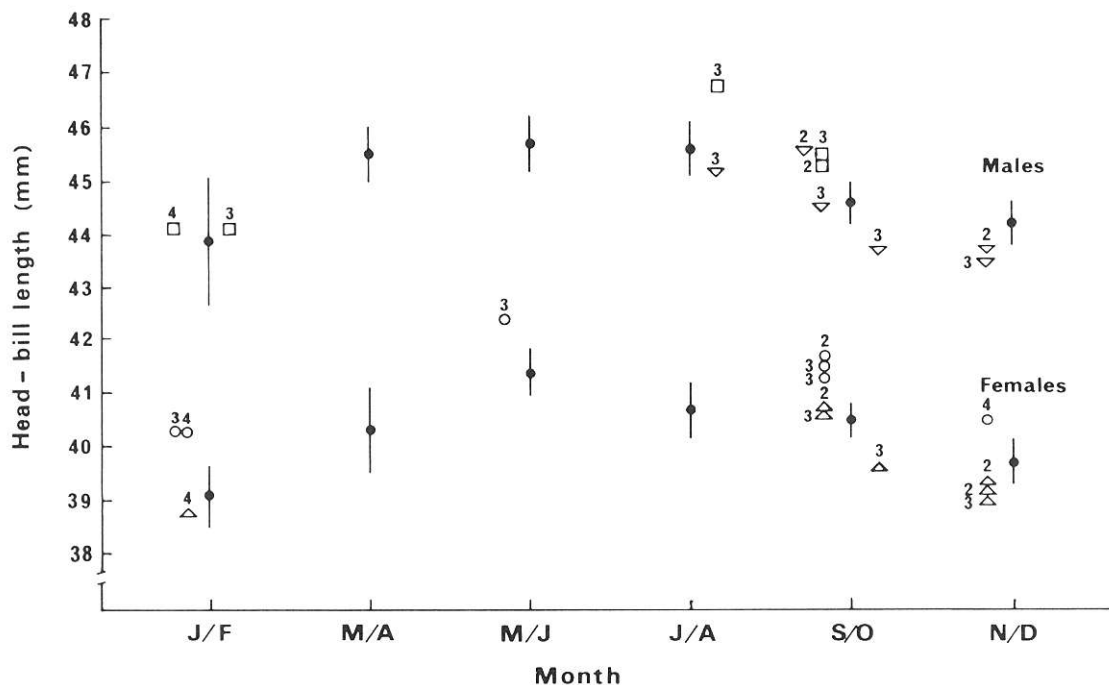


Figure 1. Seasonal variation in head-bill length of Eastern Spinebills caught at Barren Grounds, NSW. Solid symbols — means, vertical lines — 95% confidence limits. Data from all individuals and all years pooled.

Open symbols represents two individual males and two individual females trapped on a number of occasions during study (Males: 014-37720 — □, 014-37723 — ▽; females: 014-37703 — O, 014-37713 — △). Numbers adjacent to symbols refer to year e.g. 2 — 1982; 3 — 1983; 4 — 1984.

## DISCUSSION

The summer minimum in HB was less than the winter maximum by a factor of 5 and 6 per cent for both males and females respectively. Seasonal variation in HB is likely to be the result of changes in bill length. Changes in skull dimensions or bill curvature seem less likely. The Eastern Spinebill has a long, narrow bill tapering to a fine point, making it vulnerable to the abrasive effects of foraging activities. If the growth rate of the bill is greater than the rate of abrasive wear there will be a net increase in bill length. A growth rate less than the rate of wear will lead to a net decrease in bill length. The most obvious reason for the observed seasonal change in bill length is a stable growth rate coupled to a varying rate of abrasive wear. This could result from the use of different foraging strategies at different times of the year (particularly when feeding the young) and involvement in activities such as nest building. The alternative proposal, a relatively stable rate of abrasive wear coupled to a variable growth rate, seems less likely.

The Eastern Spinebill in Barren Grounds Nature Reserve utilises the abundant nectar supply from three *Banksia* species in winter (*Banksia ericifolia*, *B. paludosa* and *B. spinulosa*). This is a time of low insect abundance. It may be that nectar-feeding is less abrasive to the bill tip than insect-feeding, which is probably more common in summer. Whether the obvious decrease in HB in September/October can be correlated with a peak in nest building activity has not been corroborated. Further research is needed before any conclusions can be reached.

This phenomenon has also been noted for the Eastern Spinebill in the Myall Lakes region of New South Wales (A. E. Cam, pers. comm.) and in South Australia (D. C. Paton, pers. comm.). It would be interesting to note whether it extends to other species. Banders will need to be cautious about using HB lengths as a means of sexing birds until the effect of seasonal changes has been analysed at their banding site.

Measurement of HB for Eastern Spinebills in juvenile plumage can often be used as a means of sexing them (data not shown), possibly in conjunction with measurements of wing span (Lane 1974). In the case of Barren Grounds birds with a  $hb \geq 43$  mm would indicate a male. However, very young juvenile males have been measured with HB lengths within the female range ( $\leq 41.7$  mm).

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