

Moult, Plumage and Banding of the Regent Bower-bird

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Information is given of the number of Regent Bower-birds *Sericulus chrysocephalus* banded, and of the "oldest" for the species. Plumage, moult and colour of the soft parts are discussed. Not only immature males but some females have yellow feathers on the nape and crown or eyes partly yellow and bills paling. The adult male probably takes about five years to achieve full adult plumage.

So far the banding of Regent Bower-birds has been carried out only as opportunity offered and unfortunately, no bander has yet been in a position to concentrate on the species as has been done by Mrs Reta Vellenga with the more common Satin Bower-bird *Ptilonorhynchus violaceus*.

Banding

Up to 30 June 1970, 141 Regent Bower-birds had been banded at 13 localities in New South Wales and one in Queensland. Two locations in N.S.W., Iluka (74) and Tumbi Umbi (26), have accounted for over 70 per cent of those banded. Figures for other locations are Wooli 9, Boor-ganna (near Comboyne) 8, Kincumber 8, Woolgoolga 4, and one at each of seven other places; five were banded at Mooloolah River in Queensland.

No recoveries have been reported although movement certainly occurs. K. A. Hindwood (1970) summarised occurrences near Sydney and most of the sites are some 20 or 30 miles from areas regularly inhabited by these birds. Some individuals have been retrapped at the banding place, four of these on two occasions each. One of them (060-36940, adult male when banded) is the "oldest" for the species, the elapsed time between banding date and date of last catching being over 6 years and 11 months.

It is hoped that the "Bird in the Hand" on page 14 will enable bander to sex, and in many cases age Regent Bower-birds. More precise information is required on plumage changes and the age at which they commence breeding.

Plumage and Soft Parts

Like the Satin Bower-bird the fully plumaged male Regent Bower-bird is brightly coloured and the female is drab by comparison.

Until a few years ago banders thought that the occasional small yellow feathers on the nape and crown of brown plumaged birds indicated young males starting to attain the yellow neck of the adult male; also yellow-eyed birds were assumed to be young males acquiring the eye colour of the adult male. Probably these assumptions were based on A. J. North's description (1904) of the adult female "Bill blackish brown . . . Iris brown.", as his book is still the only one most readily available which gives a full description of all the Australian birds. G. M. Mathews (1926) described the adult female similarly but later in the text quoted from S. W. Jackson's notes on the label of a breeding female which he collected for H. L. White—now in the H. L. White Collection in the National Museum of Victoria (Reg. No. 6406). On the label Jackson wrote "Eyes gold yellow mottled with brown. Bill black. Skin at gape of mouth rich gold yellow". A. J. Marshall (1954) in his monograph on the bower-birds gave the same description, perhaps also based on Jackson's detail.

The bird depicted on the cover had a yellow eye mottled with brown, a blackish bill and bright yellow skin at the gape. The author of this excellent photograph, Mr Norman Chaffer, stated that from his observation the bird concerned was apparently the only one attending the nestlings during his visit; he considered it to be a female. (A number of photographs was taken and the

plumage and "soft part" colours are identical).

Although "helpers" at the nest are common with many Australian species, there is no evidence to indicate that this occurs with bower-birds. As a further check, the red berries being fed to the nestlings were identified as *Rivina humilis* L., Phytolaccaceae and a sample of these from the same place was measured. Allowing for maximum error, the colour slide was projected to life size of the berries, and the bird's measurements indicated a large female. Other photographs such as that by Mr Jack Purnell on this page, clearly indicate that females with dark eyes breed.

It seems that much of the behaviour at the bower is similar to that of the Satin Bower-bird. Mrs Vellenga (1970) stated that immature male Satin Bower-birds display to females at the bower. The photograph on page 13, from another colour transparency by Mr Purnell shows a "brown" Regent Bower-bird with a yellow eye and bill displaying to a dark-eyed "brown" bird at the bower. Almost certainly this bird was an immature male displaying to a female. In another colour reproduction (*Gould League Notes*, 32, 1966) also by Mr Purnell, an adult male is shown at the bower displaying to a "brown" bird with a yellow eye and yellow bill. All "brown" birds with yellow bills which have been examined and sexed have been found to be males.

According also to Mrs Vellenga (p. 6), early in the season the adult male Satin Bower-bird will tolerate and display to immature males at the bower. She stated further (per. com.) that the base of the bill of the female turns pale cream at certain times of the year but later resumes its dark colour. While no female Regent Bower-bird has been positively recorded with a yellow bill, sometimes the upper mandible may show a pale area as though turning yellow.

Ageing

Regent Bower-birds were kept in aviaries in England at the beginning of the century by R. Phillipps. He considered (Phillipps, 1905) that the male attained full plumage at four or possibly five years of age and that it normally took two annual moults to attain this plumage (Phillipps, 1907). Examination of specimens indicates that the birds must usually take five or even six moults to change from juvenile plumage to adult plumage.

The sequence commences with a very rapid moult from the juvenile body plumage to first



• *Regent Bower-bird (female) at nest.*

Photo: J. A. Purnell

year plumage, with a dark bill and iris but retaining the juvenile flight feathers and the pointed juvenile tail feathers. At the end of the first year the second year moult occurs; it is a complete moult of all feathers into the second year plumage. This is similar to the previous plumage, with the dark bill and dark iris, but the tail feathers have squarish ends (not pointed as previously). At the end of the third moult the plumage is still the same, and in this (third) year the male apparently starts getting a yellow iris and bill. How long this colour change takes is not known and probably it varies, but according to Phillipps (1907) it can be quite rapid. In the fourth moult the male attains partial adult plumage, the full black and gold plumage being attained at the fifth moult. However, Phillipps (1907) also stated that the adult plumage with the yellow bill and iris may sometimes be acquired in a single moult.

The females in their third year or later retain their brown plumage, dark bill and dark iris and may breed in this plumage (see photograph above). Probably at the end of the fourth year or later the iris also starts to turn yellow; when the female is "full grown" the iris is yellow with some brown mottling but not the clear yellow of the adult male.

Examination of skulls of female birds has shown that breeding females with dark eyes had incomplete pneumatization (ossification) of the skull; it was complete in those with yellow in the iris.



- *Regent Bower-birds; an immature male displaying to another 'brown' bird at the bower. Although not obvious in this picture, the yellow eye and yellow bill of the immature male is clearly seen in the original colour transparency.*

Photo: J. A. Purnell

Non breeding "brown" males and females can be distinguished from breeding females. At the time most breeding birds have eggs the non breeding birds, particularly first year birds, show very heavy wear of the flight feathers and moult of the inner primaries and tail has started. The breeding females still show comparatively little wear and no moult. Both breeding females and non breeding females may have bright orange yellow at the gape in the breeding season.

Measurements

Weights and measurements show that "brown" males are smaller than females, mostly in all measurements at all ages. If there is a slight overlap anywhere, one or more measurements usually clearly separates the sexes. The adult males are smaller than the young males although there is overlap occasionally, usually in wing length. The range of 17 adult males measured was: wing 124-136 mm; tail 79-95 mm; bill length 23-25 mm; bill depth 6.3-7.5 mm; bill width 5.4-6.6 mm; (see "Bird in the Hand", page 14, for method of measurements and other data).

These adult measurements do not completely confirm the findings of E. Mayr and K. Jennings (1952) who said that the black and gold males

have shorter wings and tails than immatures. There is an overlap in wing length although it is generally shorter in the adults. However the tails of adults are always short—not over 100 mm and usually less than 90 mm while the tails of immature males are usually about 100 mm; they are shorter only if worn. Mayr and Jennings stated that "adult females and immature birds (of both sexes) have approximately the same measurements of wing and tail". This does not agree with our findings (see "Bird in the Hand") and it appears that they may have based their statement on measurements from too small a sample.

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