

The "Wing-stripe" as an Indication of Sex and Maturity in the Australian Broad-tailed Parrots (Family *Platycercidae*).

By Alan Lendon.

Many past workers in Australian ornithology have devoted much time to the description of sub-species based on minor differences in size and plumage, while at the same time overlooking the more obvious plumage differences between the sexes and between the plumages of maturity and immaturity. Perhaps the height of absurdity is reached when a rare form is rediscovered after a lapse of years and promptly dubbed a sub-species, an example of this being the rediscovery after many years of the Golden-shouldered Parrot (*Psephotus chrysopterygius*). On the other hand, a glaring example of an obvious sexual difference being overlooked, was perpetrated by John Gould in his monumental "Birds of Australia" when he figured two male Turquoise Parrots (*Neophema pulchella*) at that time, in his own words, a plentiful bird, and stated that the sexes were figured and were alike.

In the past it has not been generally realized what a large contribution scientifically conducted aviculture can make to the study of plumage variations and it needs to be stressed that accurate observations of changes in plumage and the times and ages at which adult plumage is assumed and so on, can only be ascertained with certainty when birds are kept and bred in captivity.

The Australian members of the order Psittaciformes have never received due attention from ornithologists, and the writer will attempt in this essay to draw the attention to an interesting feature exhibited by a typically Australian family, the *Platycercidae*, of which there are found in Australia the six genera, *Platycercus*, *Barnardius*, *Purpureicephalus*, *Psephotus*, *Neophema* and *Lathamus*. In several species the difference in plumage between male and female is very marked, e.g. *Psephotus dissimilis* and *Neophema splendida*, while again in others there is marked dissimilarity between the plumages of mature and immature forms, e.g. *Platycercus elegans* and *Purpureicephalus spurius*.

On the other hand, in some species the similarity between plumage of adult male and female is such as to render it difficult even for the practised eye to distinguish the sexes, e.g. *Platycercus venustus* and *Neophema petrophila*. The same

difficulty does not as a rule occur in distinguishing adults from immatures as even when the plumages are generally similar, the immatures are invariably duller. Speaking generally, and this applies particularly to those species where there is not much difference in plumage between the sexes, the males of this family have a larger, broader and flatter head than the females, and the width of the upper mandible is considerably greater.

There is, however, another feature of the plumage which will be of great assistance in distinguishing males from females and adults from immatures, and that is what, for want of a better name, the writer has designated the "wing-stripe." This consists of a series of white spots, variable in size, on the inner webs of some or most of both primary and secondary flight feathers. If the stripe is extensive it is generally present on all the flight feathers with the exception of the outer two or three primaries; if limited, it is usually confined to the fourth, fifth, sixth and sometimes third or seventh primaries, and it is invariably symmetrical. It is present to some degree in the great majority of immature *Platycercidae* and tends to be better marked, i.e. more extensive, in immature females than in immature males.

At the first moult it is almost always lost by the males and in a great number of cases retained to some degree by the females. In some species, e.g. *Psephotus dissimilis* and *P. varius*, it is invariably retained by the females, and this appears to be associated with marked dissimilarity between the two adult plumages. It is fairly constantly retained by the adult female in those species where the dissimilarity, though less obvious, is still pronounced, e.g. *Barnardius barnardi* and *Purpureicephalus spurius*, while it is comparatively rarely retained by the female in such species as *Platycercus elegans* and *Barnardius zonarius* where there is little difference between the adult plumages. To sum up, it would appear that in adult members of the family *Platycercidae*, i.e. those who have moulted their flight feathers at least once, if the wing-stripe is present the bird in question is almost invariably a female, though if absent it is not necessarily a male. Further, in immatures a marked wing-stripe is a general indication of the female sex, while a slight one or its absence strongly suggests that the specimen is a male.

The writer has considered what can be the possible purpose of such a marking which is only noticeable when a bird in flight is seen from below. It is generally assumed that all such markings in birds are in the nature of a warning signal to other members of the species, and thus it would appear that as warning

signals would be less necessary where the male is much more brightly coloured and noticeable in flight than the female, e.g. *Psephotus dissimilis*, or where the adult is much brighter than the immature, e.g. *Platycercus elegans*, so in the cases referred to will the stripe be lost in the male or adults respectively.

It will now be the writer's task to deal with each species individually and indicate to what extent the above suppositions are borne out.

Genus *Platycercus*.—In this genus immature birds almost invariably exhibit the wing-stripe to a marked degree, *P. venustus* being an occasional exception. The retention of the stripe by the adult female varies, being generally absent or slight in those species where the adult plumage differs markedly from the immature, e.g. *P. elegans*, *P. adelaidae*, *P. flaveolus* and *P. caledonicus*, and being markedly retained in those where the immatures are merely duller editions of the adults, e.g. *P. eximius*, *P. adscitus* and to a lesser degree, *P. venustus*. In the eighth species, *P. icterotis*, there is a well marked plumage difference between the adult male and female, and the adult female retains the stripe to a marked degree also. The plumage of the immature in this species does not differ very greatly from that of the adult female.

P. elegans, Crimson Rosella.—Wing-stripe invariably present in immatures and tends to be more pronounced in immature females. The stripe is lost at the first moult by practically all males and only retained to a slight degree by a few females.

P. adelaidae, Adelaide Rosella.—As would be expected in species so closely related, the same holds good as in the preceding, namely, immatures—invariably present, adults—absent in males and absent or slight in females.

P. flaveolus, Yellow Rosella.—Another closely allied species in which immatures invariably possess the stripe, but here there seems to be more tendency for it to be retained to a greater degree in the adult females than in either of the two preceding species. In adult males it is absent.

P. caledonicus, Green Rosella.—Here again, invariably present in immatures, invariably absent in adult males, and, if present, only to a slight degree in mature females.

P. adscitus, Pale-headed Rosella.—In this species where the immature plumage is but a duller edition of the adult, the stripe is still invariably present in the immatures, tending to be more

pronounced in the females. In the adults it is invariably absent in the males and practically always present to a marked degree in the females.

P. eximius, Eastern Rosella.—Again the immature plumage is a dull edition of the adult and wing-stripe is always present, and more pronounced in the females. In the adults the male loses the spots at the first moult and the female retains hers to a marked degree.

P. venustus, Northern Rosella.—Although the immature plumage once again is but a duller edition of the adult, here one finds that the wing-stripe is by no means constant in the immatures, even in the females, and as would be expected it is, therefore, comparatively uncommon in the adult females and absent in the adult males.

P. icterotis, Western Rosella.—In this species the immature plumage is a somewhat duller edition of that of the adult female both exhibiting the wing-stripe to a marked degree. The adult male, although with a very much brighter plumage than that of the adult female, does exhibit the stripe to some extent in quite a number of instances.

Genus *Barnardius*.—In this genus the wing-stripe is not invariably present in the immatures of some species; particularly is this so in the young males. The retention of the stripe by the adult female is variable also and is particularly marked in *B. barnardi*, the species which exhibits the most difference generally between the plumage of the adult male and female.

B. barnardi, Ringneck Parrot.—The wing-stripe here appears to be present in almost all immatures of both sexes and, as just stated, to be present in the majority of adult females. It appears to be absent in adult males.

B. macgillivrayi, Cloncurry Parrot.—The writer has not had the opportunity of examining many specimens of this species, but the available material suggests a close correspondence with the preceding species in that immatures exhibit the stripe and that it is retained to some degree in most adult females.

B. zonarius, Port Lincoln Parrot.—In this species the stripe is by no means constant in immatures; in fact, the majority of immature males show a complete absence, although it is present in all immature females. Adult males, as would be expected, do not exhibit it and only a small proportion of adult females appear to retain it.

B. semitorquatus, Twenty-eight Parrot.—As would be expected in a species so closely allied to the preceding, there is close

correspondence in the presence or absence of the stripe, but there appears to be a tendency for it to be more constantly present in immatures of both sexes and for a larger proportion of adult females to retain it than in the case of the preceding species.

Genus *Purpureicephalus*. *P. spurius*, Red-capped Parrot.—As would be expected in this species where the immature plumage differs so markedly from that of the adult, the wing-stripe in the immatures is constant. Again, as the adult female is considerably duller than the adult male, so there is the corresponding practically invariable retention of the stripe in the female and its loss in the male at the first moult.

Genus *Psephotus*.—It will be convenient to consider the members of this genus by regarding them as constituting three subgenera:—

Subgenus *Psephotus*.—In this subgenus the marked difference in plumage between the adult male and adult female is quite apparent, though to a slightly lesser extent in the immatures.

P. varius, Mulga Parrot.—Immatures of both sexes, although immediately differentiated by the brighter plumage of the males, exhibit a marked wing-stripe. This is invariably retained by the adult female and equally invariably lost by the adult male.

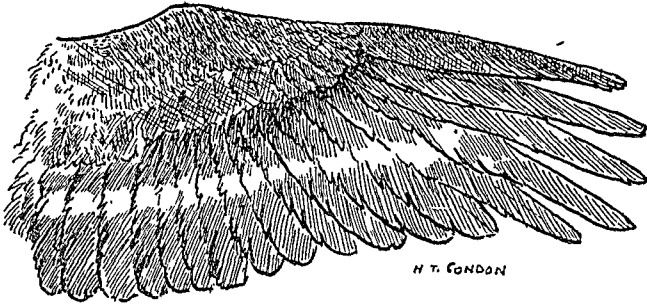


Fig I.

Wing of female Mulga Parrot (*Psephotus varius*) from below to show "wing stripe."

P. haematonotus, Red-backed Parrot.—Exactly the same holds good as in the preceding species, namely, immatures of both sexes exhibit the stripe, adult females always retain it and adult males never do so.

Subgenus *Northiella*.—In this subgenus there is not the marked difference in plumage between adult males and females and the immatures are merely duller editions of the adult.

N. haematogaster, Blue Bonnet.—In this species the stripe is fairly constant in immatures with a tendency for it to be less marked in males. Adult males seldom exhibit any trace of a stripe, while a fairly large proportion of adult females retain some trace thereof.

N. narethae, Little Blue Bonnet.—In this species the stripe appears to be almost invariable in the immatures and, as would be expected, corresponding with the more obvious plumage differences between the adult male and female, compared with the preceding species, so the stripe disappears in the male and is retained in the female.

Sub-genus *Psephotellus*.—Here again there is a very marked difference between the adult plumage and correspondence with changes in the stripe.

P. dissimilis, Hooded Parrot.—The stripe is invariably present to a marked degree in the immatures in which there are no very obvious sexual differences. It is retained to an equally marked degree in all adult females and is completely lost in all adult males.

P. chrysopterygius, Golden-shouldered Parrot.—In such a closely related species one would expect absolute correspondence with what occurs in *P. dissimilis* and, although the writer has not seen any living specimens, the few skins examined bear out this conclusion.

P. pulcherrimus, Paradise Parrot.—Although not quite so nearly related as the preceding two species are to one another, yet it is sufficiently close to assume a similar presence or absence of stripe, and again the few skins available support this.

Genus *Neophema*.—In this genus, the wing-stripe is so variable that it is impossible to make any generalisation, and it is best to consider each species individually.

N. bourki, Bourke Parrot.—In the immatures the stripe is a certain guide to sex, being absent or slight in immature males and well marked in immature females. In adults, as would be expected from the foregoing, it is absent in males and practically invariably well-marked in females.

N. chrystoma, Blue-winged Parrot.—In the immatures, the stripe is generally, though not invariably, present; if absent,

the bird is almost certainly a male. In adult males it is always lost, but adult females are variable, quite a large number showing some evidence of it.

N. elegans, Elegant Parrot.—Very inconstant in immatures and when present to any extent it is an indication of the female sex. In adults it is absent in males and it is quite unusual for it to be retained to any marked degree, if at all, in females.

N. petrophila, Rock Parrot.—Fairly constantly present in immatures and tending to be more marked in females. In adults occasional evidence appears to persist in males and there is fairly constant, though usually quite slight, evidence in adult females.

N. chrysogaster, Orange-bellied Parrot.—In the few specimens handled, there appears to be a fairly constant presence in immatures with complete absence in mature males and variability in adult females.

N. pulchella, Turquoise Parrot.—Immatures of both sexes show a practically constant and well-marked stripe which is invariably lost in adult males and almost invariably retained to a marked degree in adult females.

N. splendida, Scarlet-chested Parrot.—The immatures are very variable, some, which appear to be invariably females, exhibiting a marked stripe while in others of both sexes it is absent. Correspondingly it is invariably absent in the adult male and quite inconstant in the adult female, being usually either well marked or entirely absent.

Genus—*Lathamus*. *L. discolor*, Swift Parrot.—This strange honey-feeding parrot reveals its platycercine affinity by the presence of a wing-stripe as well as in other ways. The stripe appears to be present in all immatures and rather inconstant in adults of both sexes, being retained in some males and lost in some females.

Acknowledgments: The writer has to acknowledge his indebtedness to the authorities of the South Australian Museum for permission to examine their collection of skins of the family under review. The remainder of the conclusions have been based largely on observations of living specimens in the writer's aviaries where twenty-five of the twenty-eight species considered are represented by true pairs, the three missing species being *Psephotus chrysopterygius* and *P. pulcherrimus* and *Neophema chrysogaster*; and where during the past four years twelve species have successfully hatched and reared their young and their plumage changes have been accurately recorded until they have reached maturity. Of the species which the writer has not

succeeded in persuading to breed to date, a further nine have been successfully reared either in the Adelaide Zoological Gardens or in the aviaries of fellow aviculturists and the writer is indebted to them for the opportunity of examining the young birds at frequent intervals until they reached maturity.
