ABERRANT PLUMAGES IN BIRDS OF PARADISE (PARADISAEIDAE)

CLIFFORD B. FRITH AND DAWN W. FRITH

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More than 6,000 bird of paradise (Paradisaeidae) skins were examined in museum collections. Aberrant plumage was recorded in 12 of the 42 species, and less than 1% of the total sample. Most aberrant individuals exhibited partial albinism in showing a few white feathers, or a patch of them, in otherwise normal plumage. Two specimens were predominantly white. Two specimens of *Cnemophilus macgregorii*, two of *Ptiloris magnificus*, and one of *Cicinnurus respublica* showed other aberrant plumage. All aberrancies are described and discussed, and several of these are illustrated. □ *Paradisaeidae, aberrant plumage, partial albinism.*

Clifford B. Frith and Dawn W. Frith, Honorary Research Fellows of the Queensland Museum, 'Prionodura', P.O. Box 581, Malanda, Queensland 4885, Australia; 10 December 1997.

During recent visits to the majority of world museums (see acknowledgements, and Frith & Frith, 1997b) holding significant numbers of birds of paradise, we examined all specimens of the Paradisaeidae. One of us (CBF), measured 5,677 of the sexed skins. Studies resulting from this work to date include the description of some previously unknown plumages (Frith, 1987, 1996; Frith & Harrison, 1989), reassessment of some taxa (Frith & Frith, 1996a,b, 1997b), a review and summary of biometrics (Frith & Frith, 1997a; Frith, 1997) and a review of a classification of the phylogeny and systematics of the family (Frith & Beehler, in press). In addition to these more quantitative studies, note was made of specimens exhibiting aberrant plumage of any kind. The most commonly found type of aberrant plumage was partial albinism; which may involve some, to most, of the otherwise normally-pigmented plumage of a bird being white (whole or part feathers may be white).

This paper describes and discusses bird of paradise specimens showing visually noticeable aberrant plumage characters. Where registration or catalogue numbers include a prefix on the specimen label these are included but in remaining cases only the number appears. In the following, capitalised and/or numbered colours are those of Smithe (1975) while uncapatilised ones are those we consider more helpful than other options. The sequence of genera and species and names used below are those presented in a forthcoming review of the systematics of the family (in Frith & Beehler, in press).

CRESTED BIRD OF PARADISE *Cnemophilus macgregorii* DeVis, 1890. ♀ and immature ♂ plumages of this species and of congeneric Loria's Bird of Paradise *C. loriae* were known to be generally olive-green until a distinctive grey juvenile plumage was found in both species (Frith, 1987; Frith & Harrison, 1989). Two specimens of *C. macgregorii* were subsequently found to be in a previously unrecorded, aberrant 'fawn' plumage (see Frith, 1996). As the fawn plumage in this taxon has not been illustrated, an unsexed specimen CG1898 1381 from the Astrolabe Mts, Papua New Guinea (Muséum National d'Histoire Naturelle, Paris) is shown here (Plate 1A). The pale bill (normally black or blackish) of this specimen strongly supports the conclusion that the plumage is aberrant and not merely faded or foxed. It is best described as non-eumelanic schizochroism (Harrison, 1985). Two of 183 specimens examined (1.1%) had aberrant plumage.

MACGREGOR'S BIRD OF PARADISE *Macgregoria pulchra* DeVis, 1897. Specimen 1305 in the Staatliches Museum für Naturkunde, Stuttgart shows partial albinism in having a few white feathers in its abdomen plumage. It is labelled as ♂ but is quite possibly a ♀ in view of its small size (see Frith & Frith, 1997b). One of 76 specimens examined (1.3%) had aberrant plumage.

PARADISE CROW *Lycocorax pyrrhopterus* (Bonaparte, 1851). Specimen 60787, an adult ♀ in the Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt is a partial albino. It displays typical plumage except for a single pure white feather in its mantle. Specimen 6921, an adult ♀ in the Museum Zoologicum Bogoriense, Bogor is a partial albino. It has a large patch of

A

B

C

D

E

F

white feathers in its central abdomen plumage. Two of 224 specimens examined (0.9%) had aberrant plumage.

CURL-CRESTED MANUCODE *Manucodia comrii* Sclater, 1876. Specimen 784692, an adult ♀ in the American Museum of Natural History, New York has several white feathers in its throat, chest and abdomen plumage. One of 79 specimens examined (1.3%) had aberrant plumage.

SPLENDID ASTRAPIA *Astrapia splendidissima* Rothschild, 1895. Specimen 342102, a ♀ in the American Museum of Natural History shows partial albinism. Its head, nape, throat and upper chest are white with a few black flecks. The upperwing (i.e., greater coverts) is white as are the inner primaries and secondaries plus a tertial on one side. There are a few odd white feathers in the breast, abdomen and vent. The legs and feet are conspicuously piebald with all of the claws pale.

Specimen 302958, an undoubted ♀ (its oocytes being drawn on the label) in the American Museum of Natural History has a single iridescent magenta (2) adult ♂-like feather in upper breast - also several larger lower back feathers have half the vane white. Two of 204 specimens examined (1%) had aberrant plumage.

STEPHANIE'S ASTRAPIA *Astrapia stephaniae* (Finsch & Meyer, 1885). Specimen 1900.2.19.16, an adult ♂ in the Natural History Museum, Tring is a partial albino in showing several white feathers in the lower green throat and crown plumage, plus one white feather in the nape. Specimen 12.478, an adult ♂ in the Zoologische Staatssammlung, Munchen is in normal plumage, save a single white feather in its crown. Two of 291 specimens examined (0.7%) had aberrant plumage.

MAGNIFICENT RIFLEBIRD *Ptiloris magnificus* (Vieillot, 1819). An unnumbered adult ♂ in the Rijksmuseum van Natuurlijke Historie, Leiden is aberrant. It lacks almost all colour, there being a mere trace of iridescent purple-blue between its fore-eyes and nostrils only. This bird is a washed-out matte, pale-smoky, brownish-grey above (somewhat reminiscent of *Semioptera*). The wings and tail are paler (see Plate 1B). There is a single teardrop-sized, and shaped, spot of typically normal iridescence on one central tail feather (12mm above its tip). The crown feathering is typically scale-like, but is matte, smoky, brownish-grey and is soft in texture. The breast shield is normal in shape and structural stiffness. It is slightly glossy, brownish-grey with no iridescence. The tract of feathers between the sides of the breast shield and mantle are near velvet black, being dark brownish-grey. Remaining under parts are blackish-brown (closest to 121), with no sign of the usual claret red or green sheens. Quill shafts of primaries, secondaries and rectrices are white, clearly emphasizing this abnormal plumage. A Dutch publication noted the bird had certainly not been preserved in fluid (Büttikofer, 1895) and in any event, iridescence becomes evident in fluid-preserved specimens when dried out (M. LeCroy, in litt.). This specimen is most appropriately described as demonstrating dilution or leucism (C.J.O. Harrison, in litt.).

Specimen CG1930 No. 440, an adult ♂ in the Muséum National D'Histoire Naturelle, Paris has the rear chin and throat feathers of its otherwise typically iridescent breast shield glossy-blackish each with a pale, off-whitish or very pale buff, centre and broad outer edging (see Plate 1C). Two of 524 specimens examined (0.4%) had aberrant plumage.

PALE-BILLED SICKLEBILL *Drepanornis bruijnii* Oustalet, 1880. Specimen 10239, an immature ♂ in the Staatliches Museum für Naturkunde, Stuttgart shows partial albinism. The terminal two thirds of the second outermost primary of its right wing are pure white save that its central shaft is darkly pigmented. One of 151 specimens examined (0.7%) had aberrant plumage.

MAGNIFICENT BIRD OF PARADISE *Cicinnurus* (*Diphyllodes*) *magnificus* (Pennant, 1781). Specimen C11289, III, 174, an adult ♂ in the Staatliches Museum für Tierkunde, Dresden is a

FIG. 1. A, unsexed and mounted *Cnemophilus macgregorii* Muséum National d'Histoire Naturelle specimen CG1898 1381. B, adult ♂ *Ptiloris magnificus* Rijksmuseum van Natuurlijke Historie unnumbered specimen. C, throat and breast detail of adult ♂ *P. magnificus* Muséum National d'Histoire Naturelle CG1930 No. 440. D, dorsal view of adult ♂ ♂ Staatliches Museum für Tierkunde C17848 *Paradisaea minor* (left) SMTC11289, III, 174 *Cicinnurus* (*Diphyllodes*) *magnificus* (right). E, dorsal view, and F, ventral view, of (left) adult ♂ Staatliches Museum für Naturkunde SNHM15522 *Cicinnurus* (*Diphyllodes*) *respublica* and (right) a typically normally-plumaged adult ♂ (SNHM 44502) of that species in the same collection.

partial albino. It is white throughout except that its underparts (chin and throat excluded) are normal iridescent green and it has a few brownish back and wing feathers and one or two mustard yellow tertials (Plate 1D).

Specimen 454366, an adult ♂ in the American Museum of Natural History is also a partial albino. It has several white feathers in its upperparts, and a few in the underparts. The primaries and secondaries and most of crown, nape and cape is white. Its tarsii and claws are whitish and the toes are piebald. Part of this specimen is illustrated by a colour photograph in Purcell & Gould (1988: 75, pl. 52).

Specimen 454367, an adult ♂ trade skin lacking the central rectrices (from unknown locality) in the American Museum of Natural History, is almost entirely white . It has one almost normally pigmented secondary with scattered blackish feathers (tipped in green) in its ventral plumage, more so in the flanks. Specimen 678406 in the American Museum of Natural History, a flat, legless and distorted adult ♂ trade skin (lacking the central rectrices), has plumage similar to that of 454366, above. Four of 600 specimens examined (0.7%) had aberrant plumage.

WILSON'S BIRD OF PARADISE *Cicinnurus* (*Diphyllodes*) *respublica* (Bonaparte, 1850). Specimen SNHM 15522, an adult ♂ in the Staatliches Museum für Naturkunde, Stuttgart is unique in that all its underparts, and most of the upperparts, are a deep rich fawn colour (27). However, the normal yellow cape and the red of the central back (bordered posteriorly by a black line) and wing patch are present. The back and secondary coverts are, however, less red and more orange than usual. The bare head skin is not black (as in all other dry skin specimens) but dark brown, suggesting it may not have been the usual blue colour in life. The usually dense and plush black head and throat feathers are silvery-buff in this bird. The central tail 'wires' are missing, presumably moulted. This individual's appearance fits that of non-eumelanic schizochroism (Harrison, 1985) (see Plate 1E & F). One of 94 specimens examined (1.1%) had aberrant plumage.

LESSER BIRD OF PARADISE *Paradisaea minor* Shaw, 1809. Specimen SMT C 17848, an adult ♂ in the Staatliches Museum für Tierkunde, Dresden is extensively a partial albino. It is entirely glossy white save for a pale yellow wash on the crown. It is even paler, on mantle and wing-coverts. It has a single pale brown tertial, wing and tail feather (Plate 1D). One of 565 specimens examined (0.2%) had aberrant plumage.

BLUE BIRD OF PARADISE *Paradisaea* (*Paradisornis*) *rudolphi* (Finsch, 1885). Two colour photographs of a live partial albino ♀ *P. rudolphi*, taken under controlled conditions in New Guinea, appear in Gilliard (1953: 441). This bird is in typical plumage but shows a white patch of tertials, a few white primaries, secondaries and lesser upper wing coverts, and a white terminal third to its outer left tail feather. None of the 90 museum specimens examined showed schizochroic characters or those of any other aberrant plumage.

DISCUSSION

Birds of paradise showing even the smallest amount of aberrant plumage are few and represent less than 1% of the above species samples combined. In examining more than 6,000 museum skin specimens (including unsexed individuals) and in reviewing the literature only the above individuals came to our notice. Clearly, most of these examples of aberrant plumage involve individuals showing partial albinism. In most cases there are no more than a few white feathers, or a patch of them, in otherwise typically normal plumage. Given the large sample size, partial albinism is clearly rare, while a true albino (entirely white plumage throughout with associated pale iris) individual remains unrecorded, in the Paradisaeidae. This said, it is possible that such unusual looking individuals were specifically sought or purchased by field collectors and traders because of their greater value as novelties.

The single adult-♂ like feather in an otherwise normally-plumaged ♀ *A. splendidissima* is possibly an example of the well-known phenomenon of an older ♀ individual bird showing some sign of adult ♂ nuptial plumage.

Of the above documented abnormal bird of paradise plumages, those of *Cnemophilus macgregorii, Ptiloris magnificus* and *Cicinnurus respublica* are the most noteworthy. The aberrant plumage of the *P. magnificus* specimen is apparently the result of a reduction in the black pigment eumelanin which results in the bird having a distinctly washed-out or 'faded' appearance but with no tendency toward a 'warming' of appearance by fawn colouration. The above aberrant plumages of both *C. macgregorii* and *C. respublica* are noteworthy, however, as their clearly 'fawn' and 'warm' colouration is generally simi-

lar to the perfectly normal but 'faded' plumage appearance of the Standardwing Bird of Paradise *Semioptera wallacii*. It has been suggested that this odd but perfectly typical plumage morphology of *S. wallacii* may be due to its island isolation in the absence of other polygynous birds of paradise (Graves, 1995). This scenario could also be true of *C. respublica* which shows the most similarly 'fawn' aberration (although it does share its island ranges with the Red Bird of Paradise *Paradisaea rubra*). The authors would be interested to learn of any additional examples of aberrant plumages in the Paradisaeidae.

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