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PLUMAGES OF THE AUSTRALIAN PYGMY GOOSE
(NETTAPUS COROMANDELIANUS ALBIPENNIS
GOULD)

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SUMMARY

The plumages assumed by each sex, age class and reproductive state of the Australian form of the cotton teal (*Nettapus coromandelianus* (Gmelin)) are described.

In the course of ecological studies of waterfowl in north Queensland, the opportunity was taken to examine aspects of the biology of the Australian pygmy goose (*Nettapus coromandelianus albipennis* Gould), which is found in comparatively small numbers only in that region.

Sixty-seven specimens taken in the field and now housed at North Queensland Fauna Centre, Department of Primary Industries, Townsville, Queensland Museum, Brisbane, National Museum of Victoria, Melbourne, and C.S.I.R.O. Division of Wildlife Research, Canberra, were examined in detail for plumage pattern and moult state relative to sex, age class (after Hochbaum 1942) and breeding condition. An additional 5 specimens housed in the Queensland Museum, 4 specimens in the Australian Museum and 5 specimens in National Museum of Victoria (including "H. L. White Collection") were studied. Numerous individuals also were observed in the field throughout the species' range in all months of the year from 1958 to 1971.

Plumage type A

Dark brown crown, forehead and narrow orbital ring, and glossy dark green (upper) to dark brown (lower) *nuchal collar*, *outstanding* against the white to off-white of rest of head, neck and underparts; contour feathers of mantle, scapulars, rump, upper and under wing-coverts and bases of remiges and rectrices glossy dark green and dark brown, with some royal blue patches interspersed towards ends of upper wing-coverts and some remiges; axillaries, flanks and upper tail-coverts white with fine dark brown vermiculations; under tail-coverts occasionally with brown margins; tips of primary quills brown with broad sub-terminal white band becoming terminal on secondaries; moulting feathers in any tract except primary and secondary wing quills and coverts of these; irises orange to deep red; bill and legs black, sometimes paler yellowish grey below; claws dark brown: *Males each possessing a large rough phallus, usually no bursa of Fabricius, mature gonads in breeding or non-breeding condition* (33 specimens).

Plumage appearance, and the characteristics of corresponding individuals, are described below, with chief differentiating features given in *italics*.

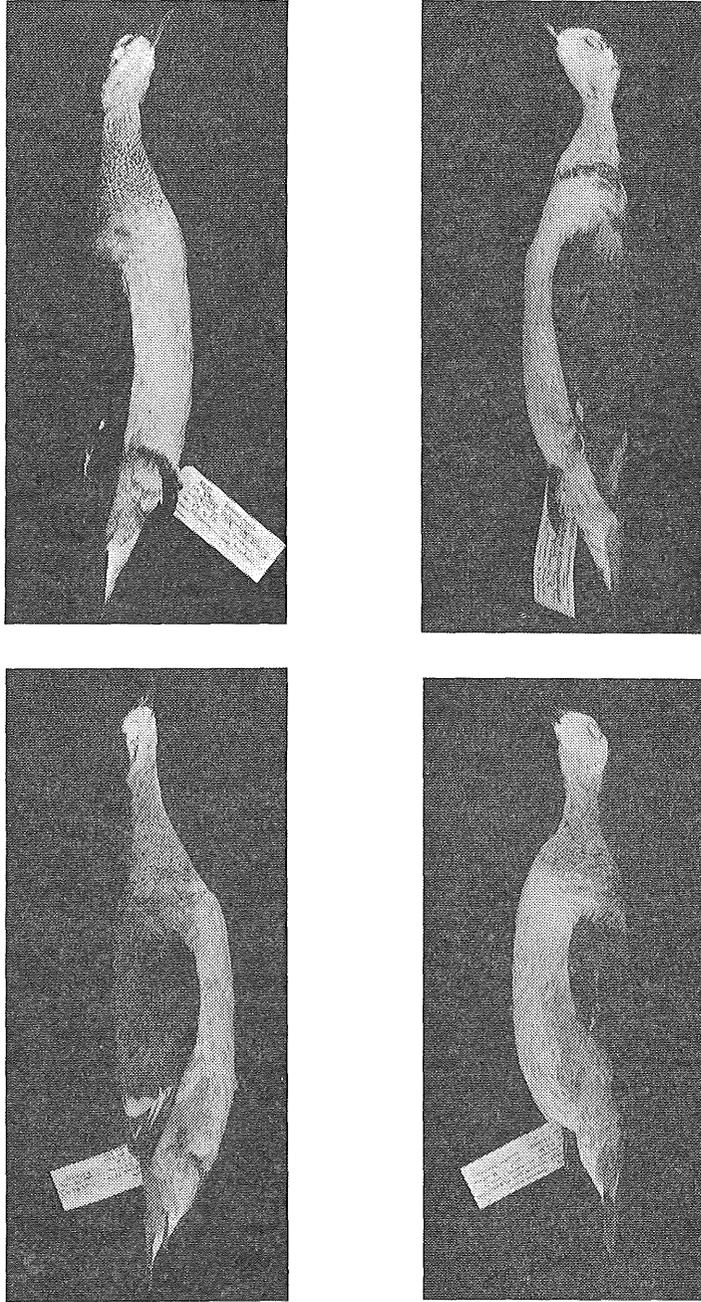


Fig. 1.—Australian pygmy goose plumage appearance for (a) immature male (type D), (b) sub-adult male (type B), (c) adult male in eclipse (type B), (d) adult male in eclipse and flightless (type B). (Photographs by Queensland Museum).

Plumage type B

Plumage and bare parts as for A except for *diffused to indistinguishable collar* caused by dark brown cross-banded feathers extending to upper neck; also axillaries and flanks broadly pale brown and white; and occasionally dark brown stripe through eyes; all feather tracts may be moulting, to state of flightlessness (Figure 1). *Males possessing usually no bursa of Fabricius, gonads in immature or non-breeding condition* (12 specimens).

Plumage type C

Plumage and bare parts as for B except for off-white forehead; also broad cross-bars of throat extending to become less distinct at crown and eye-stripe, the latter always present; *pale brown under greater-coverts of wing quills broadly tipped pale grey*; moulting may occur in all tracts; irises brown: *Females with usually no bursa of Fabricius, and with mature gonads in non-breeding condition or birds breeding, e.g. with young; some other female birds each with bursa, with oviduct not opening into cloaca and with largest oocytes 0.1 mm in diameter* (26 specimens).

Plumage type D

Plumage as for C; moulting in all tracts; *dark bluish-grey to pale tan-white irises*; also bill, legs and claws pale to dark grey: *Males and females each possessing an open bursa of Fabricius and immature gonads* (4 male and 2 female specimens).

Plumage type E

Plumage and bare parts as for D except for at least some *downy* surface feathers (Lavery 1964) moulting in all tracts: *Males and females each possessing a bursa of Fabricius only as closed sac on dorsal abdominal cavity wall; immature gonads* (2 male and 2 female specimens).

Plumage type E birds were thus flightless young of both sexes, including birds in the postnatal moult; type D birds were immatures of both sexes undergoing either the postjuvenile or the immature moults, which were indistinguishable; type C individuals were sub-adult and adult females in prenuptial and postnuptial moults which were inseparable except in the hand during that part of the postnuptial moult of adults when remiges were being replaced; type B birds were adult males in eclipse plumage undergoing postnuptial moult and sub-adult males undergoing immature and prenuptial moults, possibly simultaneously; and type A birds were adult males in non-eclipse plumage.

No distinctive dark "winter plumage" (after Mathews 1914–1915) could be detected in 17 female specimens taken during May–July; birds with the entire upper body feathers either dark—or paler—coloured were found together at other times, e.g. in September.

Birds usually occurred as flocks rather than discrete pairs and identification of categories was impracticable in the field.

Markedly aberrant forms also occurred occasionally. Thus one adult male, probably in prenuptial moult (September), lacked the white markings on the primary wing feathers.

Table 1 gives the seasonal occurrence of the categories in samples from north-eastern Queensland.

TABLE 1

SEASONAL OCCURRENCE OF PLUMAGE TYPES OF AUSTRALIAN PYGMY GEESE IN NORTH QUEENSLAND, 1958-1972

Plumage Type	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
A. Adult males in breeding plumage		X					X	X	X	X		
B. Adult males in eclipse plumage, in eclipse plumage + flightless (X), and sub-adult males (X)		X	X	X			X		X	X		
C. Adult and adult + sub-adult females (X)			X				X	X	X	X		X
D. Immatures				X		X	X	X	X			
E. Flightless young			X	X								

The occurrence of eclipse plumage in the Australian pygmy goose is intermediate in extent of time, and in numbers of individuals at one time, between the nominate subspecies of Asia, where a distinctive breeding plumage is retained by all adult male birds only for that 5-month season, and the African pygmy goose (*Nettapus auritus* (Boddaert)) where eclipse plumage is reported not to occur (Delacour 1959). Establishment of some pair bonds in Australian pygmy geese at least 2 months prior to nesting indicates a productive use of non-eclipse plumage, hence properly termed breeding plumage, at these other times; the short wet season within its main distribution range would provide little time for moult involving the large number of signal feather tracts. The occurrence in September (1968) of a female bird with some moulting remiges, that is, in otherwise unrecognizable eclipse plumage, is not contrary to this conclusion. It is noteworthy that a male of eclipse appearance was taken in August near Ipswich, southern Queensland, where the wet season is less well defined. Moreover, the green pygmy goose (*Nettapus pulchellus* Gould) of northern Australia also has an inconspicuous eclipse plumage (Frith 1967).

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