

The Genus *Barnardius*

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Forms recognised from series in the Western Australian Museum:—

- (i) *Barnardius zonarius zonarius*.
- (ii) *B. z. semitorquatus*.
- (iii) *B. z. woolundra*.
- (iv) *B. z. dundasi*.
- (v) *B. z. occidentalis*.
- (vi) *B. z. connectens*.

BARNARDIUS ZONARIUS ZONARIUS.

Upper surface dark green; head blackish brown; cheeks dark blue; under wing-coverts dark blue; a conspicuous yellow band across abdomen; yellow collar, usually has a dark border; red frontal mark, generally lacking or indistinct.

Range.—Eastern and interior portions of South-western Australia. Specimens in the collection are from Bullfinch.

B. Z. SEMITORQUATUS.

Larger and darker than *B. z. zonarius*; red frontal band rarely absent; breast usually dark olive green; yellow band on under surface missing or restricted.

Range.—South-western Australia, principally the wet coastal districts. Specimens collected from Darling Ranges, near Perth; Gracefield; Moir Pass, Stirling Ranges; Tone River; King River, and the Mammoth Cave. A specimen of this form from Moora has only a trace of the red frontal band, while numerous green feathers are dispersed over the crown; an indistinct yellow band across the abdomen is also present.

B. Z. WOOLUNDRA.

Red frontal band most prominent in females; chest generally paler than *B. z. semitorquatus*. Yellow band more pronounced than in above. Lower abdomen yellowish green. Back similar to *B. z. semitorquatus*, but rump and upper tail-coverts with less yellow suffusion. Seems very close to *B. z. zonarius*, but is lighter in general colouration.

Range.—Kellerberrin and Northam. Specimens obtained from Woolundra and Kellerberrin. Single specimens resembling this form also obtained from Maddington, Kojonup and Gnowangerup.

B. Z. DUNDASI.

(One specimen, Q.). Smaller than typical *B. zonarius*, back darker, no red frontal mark; in other respects resembles *B. z. woolundra*.

Range.—Lake Dundas. Single specimen from Lake Dundas.

B. Z. OCCIDENTALIS.

Smaller and lighter than *B. z. zonarius* or *B. z. woolundra*. Lower chest and abdomen lemon yellow, the yellow extending right to the vent. Head blackish brown, with blue tinge in several specimens. A specimen from The Gap, Nannine, has an orange tinge in the yellow band, thus approaching closely to *B. z. connectens*. Red frontal mark usually missing, but a trace is evident in some specimens from Nannine and Morrarrie Station. Under wing-coverts pale blue; back, rump and upper tail-coverts pale bluish green.

Range.—The Murchison district. Specimens obtained from Morrarrie Station and The Gap, Nannine.

B. Z. CONNECTENS.

Resembles *B. z. occidentalis*, but band of yellow on the under surface is much deeper in tone, having an orange tinge.

Range.—The Murchison—Robe River (Ashburton). Specimens from Nannine (Murchison) and Robe River (Ashburton).

Mr. Gregory M. Mathews, in his *Birds of Australia*, very wisely divides the genus *Barnardius* into two species only—*B. barnardi*, the eastern representative, and *B. zonarius*, its western relative. These two birds can be clearly distinguished, and although they undoubtedly had a common ancestor in the not very remote past, each is now worthy of specific rank. As much cannot be said, however, for the other numerous species which some ornithologists would recognise.

The six forms of *Barnardius* found in Western Australia form what Bernhard Rensch would call a geographical group, and clear-cut species cannot be recognised, a gradual transition from one form to another being evident from *B. z. semitorquatus* in the south to *B. z. connectens* in the north.

Bernhard Rensch, in his book entitled *Das prinzip geographischer Rassenkreise und das problem der Arbildung*, (*vide Nature*, November 16, 1929, p. 753) states that members of a species are usually considered to be fertile, *inter se*, but that this does not necessarily apply to the more

remotely-situated members of a geographical group. Thus, while the neighbouring forms will inter-breed freely, the extreme races will not do so. This would apply to the forms of *Barnardius* in Western Australia. It seems evident, as Ogilvy-Grant states (*Ibis*, 1910), that where *B. z. zonarius* and *B. z. semitorquatus* meet, as in the vicinity of Beverley, the numerous intermediate forms found there are due to inter-breeding. It is doubtful whether the large *B. z. semitorquatus* from the south could be successfully mated with its northern congener, *B. z. connectens*, although the connecting forms appear to inter-breed freely with their immediate neighbours. Did the intermediate races not exist, however, then *B. z. semitorquatus* and *B. z. connectens* would rightly be regarded as two species, but owing to the evident transition from one form to the other, definite dividing lines cannot be drawn, and I do not think that there are sufficient grounds for the splitting of the western representatives of *Barnardius* into three full species, as some ornithologists would maintain.

Feeding Habits of the Winking Owl.—Whilst mustering cattle in the Bundaberg district (Queensland), I had occasion to ride through a tea-tree swamp, then dry (May 15, 1930). Here I noticed a Winking Owl (*Ninox connivens*) perched in a small, thickly-foliaged tree; clutched in one talon, and resting against the trunk of the tree, was a Tawny Frogmouth (*Podargus strigoides*), which had not long been dead. The Owl appeared ravenous, for it was savagely tearing the flesh from the "Mopoke." On my approaching closer, it attempted to fly away with its prey, but had not flown more than twelve yards before the weight of the *Podargus* forced it to the ground. It then left the partly-eaten bird, and made for a tall eucalypt, where many small birds commenced to harass it. On examining the Frogmouth, I saw that most of the flesh had been torn from the head, neck and breast. The Winking Owl has been known to feed on rabbits and marsupials, although at the time it seemed unusual to me that such a bird should attack and eat a *Podargus*. However, A. J. North (*Nests and Eggs of Australian Birds*, Vol. III, pt. IV, 1912, p. 305) mentions the following incident, taken from a letter sent him by Mr. H. G. Barnard:—" . . . My brother, Mr. C. A. Barnard, lately saw one Winking Owl with the half-eaten body of a *Podargus strigoides*." My own observation was made at about 10 o'clock in the morning.—H. H. INNES, R.A.O.U., Barolin Station, Bundaberg, Queensland.