

EDITORIAL

This issue of MURUK concentrates on bird behaviour, with papers and notes on bird song, displays, nests and feeding behaviour. Please note Andy Mack's request for information on Cassowaries. Observations can be sent direct to Andy or to the PNGBS for publication MURUK. I hope this issue will stimulate further contributions on bird behaviour for MURUK, there must be many observations lurking in note books that are worthy of publication. Please put pen to paper. We also require interesting observations for the last three quarters (Oct - Dec 1989, Jan - Mar 1990 and Apr - Jun 1990). Please submit these to the PNGBS or one of the committee members.

The front cover, drawn by Andy Mack and repeated on page 51, depicts a selection of seeds found in Cassowary droppings. For identification of the seeds see page 51.

We have used all our drawings of Cassowaries for the front cover of MURUK. We would be pleased to receive drawings of any of the three species of MURUKS (pidgin for Cassowary) or related drawings for use on the cover.

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Roger Hicks (editor)

NOTES ON THE DWARF CASSOWARY *CASUARIUS BENNETTI* IN PAPUA NEW GUINEA

ANDREW L. MACK

In the second half of 1987 I began a study of the Dwarf Cassowary *Casuarius bennetti* in PNG. During this period I worked primarily within the Crater Mountain Wildlife Management Area (CMWMA) in the Eastern Highlands and Chimbu Provinces. Other localities in PNG briefly visited during my six month stay included Mt. Missim near Wau, Baiyer River Sanctuary, and Varirata National Park. In CMWMA I worked in the vicinity of the villages of Ubaigubi (c. 75 km SSW of Goroka), Heroana (c. 95 km SSW of Goroka) and Haia (c. 30 km SE of Karimui). The approximate elevations of my camps at these three sites are 1900 m, 1600 m and 800 m, respectively. The forests at Ubaigubi and Heroana are montane, whereas the forest at the Haia camp is pre-montane.

The purpose of this field season was primarily to identify a field site, test different field techniques and collect preliminary data for a three year study of cassowaries. The season was a success, the area around Haia being chosen for the main study which began in 1989. As there is very little published data regarding cassowaries and their biology, I will report some preliminary findings here with the caveat that much more detailed information will be forthcoming later.

Distribution

Dwarf cassowaries were fairly common throughout the CMWMA during my visit, as judged by the numbers of fresh droppings found. Above 1700 m I found few droppings. Local hunters told me the birds move up into the higher forests seasonally and indicated that this movement coincided with the fruiting of a species of Guttiferae on which the birds feed heavily. This upward movement presumably occurs at the beginning of the wet season, in late November or December. I was not at the higher altitudes at this time and so was unable to confirm this assertion.

At 1600 m birds seem to be present year-round and here there was a greater variety and abundance of the large-fruited trees upon which the cassowaries feed. At the 800 m camp droppings were much more numerous as were the large-fruited trees and lianes which are amongst their food plants. I was told by hunters that Southern Cassowary *C. casuarius* was not present at this lower camp but could be found not too far below, at perhaps 300 m. However, I could not go in search of this species while I was in the area. During the main study period I will strive to learn where the two species meet and whether their ranges overlap.

Diet

Although these birds are very difficult to observe in the field, their diet can be readily learned by studying the contents of their conspicuous droppings (see fig 1). I examined several hundred droppings in the course of my preliminary study. The diet of these birds is almost exclusively fruit. Seeds of at least 97 plant species from 33 families were found in droppings (this figure includes some species listed by Pratt (1983) in his examination of cassowary diet on Mt. Missim). It appears these birds will, on occasion, eat any but the smallest fruits they find on the forest floor. By the end of the main study I anticipate identifying over 200 different sorts of fruit in the diet of the Dwarf Cassowary; this would be one of the most diverse diets known for any frugivore. Bracket fungi and mushrooms were also found in droppings fairly often. Occasionally, the remains of shells of land snails (Camaenidae) were also found.

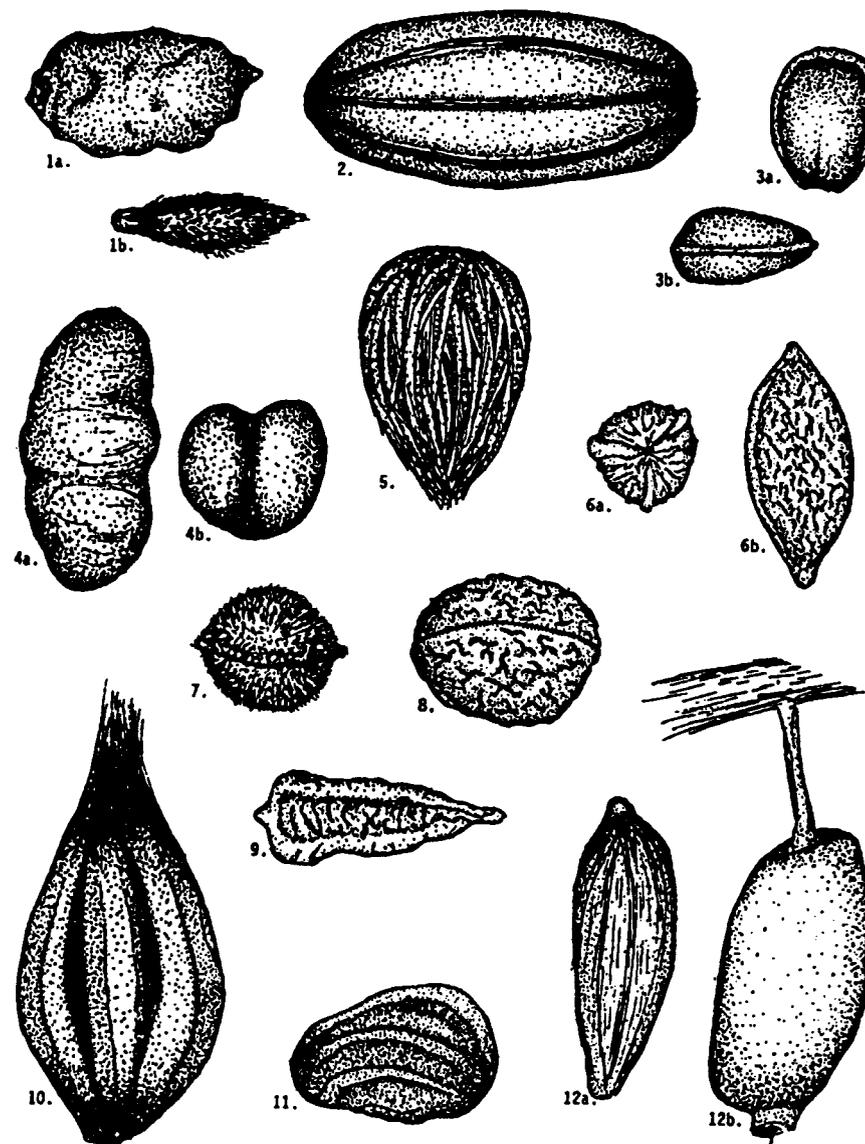
Although the diet is diverse, clearly the fruits of certain species are preferred. Generally, the birds prefer the larger fruits available in the forest. Of particular importance are species of the plant families Combretaceae, Elaeocarpaceae, Guttiferae, Lauraceae, and Menispermaceae. All of these have species producing large fruits which most other frugivorous birds in PNG would have difficulty swallowing (with the possible exception of Blyth's Hornbill, *Rhyticeros plicatus*).

Seeds of from one to seventeen species could be found in a single dropping. The number of seeds varied widely, depending on the number of seeds per fruit of the species consumed. A dropping produced after consuming figs *Ficus* spp. could have thousands of seeds, whereas a dropping after a meal of large fruits of *Pandanus* spp., might only have a few seeds.

In experimental feedings of captive Dwarf and Southern Cassowaries in the CMWMA and at Baiyer River, I observed a gut passage rate of 1-5 hours. This, in conjunction with the observations of dropping contents, suggests these birds forage fairly actively, visiting at least two - four fruiting trees per hour. They do not, apparently, visit a fruiting tree, fill up on fruits of one species, then move to another tree and fill up on fruits of another species. Droppings typically had small numbers of seeds from a variety of different fruits. In the study area many trees had large numbers of fruits on the ground. Presumably, the birds could just stay and fill up several times at one tree if they desired. Clearly, more study is required before we can understand their foraging habits.

Habits

During my visit I had few chances to observe these birds for longer than a fleeting glimpse. They are heavily hunted by highlanders and survive because of their retiring habits.



1. *Neuburgia corynocarpa* (Loganiaceae). a. Fruit lateral view, b. seed lateral view. 2. *Endiandra* sp. (Lauraceae) seed lateral view. 3. *Rhyticarium* sp. (Icacinaceae) seed dorsal view, b. seed lateral view. 4. *Dysoxylum* sp. (Meliaceae). a. seed lateral view, b. seed anterior view. 5. *Microcos* sp. (Tiliaceae) seed lateral view. 6. *Elaeocarpus* sp. (Elaeocarpaceae) a. seed anterior view, b. seed lateral view. 7. *Macrocochulus* sp. (Menispermaceae) seed lateral view. 8. *Elaeocarpus* sp. (Elaeocarpaceae) seed lateral view. 9. Unidentified, AM #130, seed dorsal view. 10. *Pandanus* sp. (Pandanaeae) seed lateral view. 11. Unidentified, AM #124, seed lateral view. 12. *Barringtonia* sp. (Barringtonaceae). a. seed lateral view, b. Fruit.

The places where cassowaries spend the night are fairly easy to find. They leave a slight depression where the sternum rested and often the impressions of the tarsi are apparent. Usually two or more droppings are present where the bird defecated during the night. The birds rarely return to the same place to sleep. However, on Mt. Missim I did find one spot where apparently a bird (or birds) slept repeatedly.

Also, on Mt. Missim a place was found where apparently cassowaries dust-bathed. A 1.4 m high excavation in dry soil in the underside of an overhanging bank was found by K. Kristensen who once flushed a cassowary from this "cave".

In mid-October at Haia, villagers showed me chicks, roughly one month old, which they had caught. This would suggest the eggs hatched sometime in September.

As the largest native terrestrial vertebrates in PNG cassowaries are heavily hunted for their meat in many regions. Additionally, the feathers and bones of these birds serve a number of utilitarian and decorative functions for many people in PNG. Among some tribes, the cassowary is a valued item in trade or for conferring prestige upon its owner.

Conservation

Beside the dietary and cultural importance of cassowaries, these birds also serve a vital role in PNG's forest ecosystems. Many of the seeds which cassowaries disperse are too large for most other frugivores to move. Preliminary data indicate that seeds that are not dispersed have a very low chance of surviving and in the prolonged absence of cassowaries some species may become extinct.

It is not clear just how vulnerable these birds are to hunters and loss of habitat. We need to learn more of their biology before we can determine how seriously they are threatened. Without information on cassowary biology it will be impossible to formulate viable plans for their conservation.

I plan to collect a great deal more data on behaviour and movements in the future through the use of radio-telemetry. However, it would be extremely useful to learn of any observations members of the PNG Bird Society have of these birds. When do you see chicks or find nests? When do you hear them calling? etc. If anyone has observations I would like to learn of them. I can receive mail at P.O. Box 1261, Goroka, Eastern Highlands Province, PNG, during 1989 - 1992.

Pratt, T.K. 1983. Diet of the Dwarf Cassowary, *Casuarius bennetti picticollis* at Wau, Papua New Guinea. *Emu* 82: 283-285.

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SOFT SONG VOCAL MIMICRY IN THE BROWN ORIOLE *ORIOLOUS SZALAYI* OF NEW GUINEA

G.E. CLAPP

Summary

Ten instances are cited of soft song mimicry by the Brown Oriole *Oriolus szalayi* observed within an 8 km radius of Popondetta, Oro Province, PNG. Because of the nature of this mimicry a new term - soft song mimicry (SSM) - is suggested to describe it. Brown Oriole SSM consists of low, scratchy warbles and harsh notes interspersed with identifiable mimicry of several lowland bird species; it is usually followed without pause by a normal, full-volume Brown Oriole advertising song. Whether both sexes perform SSM is not known. All the recorded instances occurred in impoverished environments and some in the presence of the avian models or other loud, penetrating songsters.

It is suggested that the SSM/normal volume advertising song units are an attempt at song diversification, to deter inter- and intra-specific competitors and to maximise the Brown Oriole's fitness in impoverished environments.

Distribution

The Brown Oriole is found in the Western Papuan Islands and all New Guinea lowlands, from sea-level up to 1400 m (Beehler *et al.* 1986). However, congeneric oriole species forming a superspecies with *O. szalayi* are found through the Moluccan Islands, Tenimbar, Wetar, Timor, the Lesser Sundas, New Guinea and Australia.

Unusually for an oriole, though in common with some other Australasian oriole species, *O. szalayi* is rather drably coloured; adults being basically brown with a streaked underside and a dark red bill.

Description of SSM

The vocal mimicry of the Brown Oriole as reported here takes the form of scratchy warbles and harsh notes among which may be heard mimicry of the calls of Red-checked Parrot *Geoffroyus geoffroyi*, Spangled Drongo *Dicrurus hottentotus*, Singing Starling *Aplonis cantaroides* and Raggiana Bird of Paradise *Paradisaea raggiana*, also once, incongruously but quite definitely, the song notes of the Northern Fantail *Rhipidura rufiventris*. Particularly in comparison with normal-volume song of the Brown Oriole, these mimicked calls are all given at low absolute volume, but nevertheless they can be heard quite clearly at a distance of c. 80m. This low-volume mimicry is usually followed without pause by a loud, normal-volume, rollicking