Notornis, 2021, Vol. 68: 89-91
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SHORT NOTE

First description of the egg of the enigmatic pied cuckoo-dove, with a literature review on the breeding biology of the congeneric crested and great cuckoo-dove

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The poorly known genus *Reinwardtoena* compromises three taxa of Old World Columbiformes with a distribution range restricted to the central Indo-Pacific region around the main and offshore islands of New Guinea, including several islands within the Bismarck, Moluccas, and Solomon Archipelagos (Gibbs *et al.* 2001; del Hoyo & Collar 2014). The widely distributed great cuckoo-dove (*R. reinwardtii)* is the only polytypic member of this genus with three subspecies ranging from the nominate of the Moluccas to Biak (*brevis*) and New Guinea (*griseotincta*), with the largest subpopulation known to occur on the main island of New Guinea. The pied cuckoo-dove (*R. browni)* and crested cuckoo-dove (*R. crassirostris)* are two allopatric congenerics that are geographically confined to some islands in the Northern Melanesia region. The crested cuckoo-dove is native only to the islands of the Solomon Archipelago (Gibbs *et al.* 2001; del Hoyo & Collar 2014).

The pied cuckoo-dove is endemic to the Bismarck Archipelago and found on various islands; inter alia on New Britain, Duke of York, Djaul, New Ireland, New Hanover, Lihir, Lolobau, Tabar, Umboi, Bipi, and Watom (del Hoyo & Collar 2014; Dippo & Cowton 2016). Furthermore, the species also occurs on the Admiralty Island group (Manus, Rambutyo, and Nauna), which geographically belong to Papua New Guinea (BirdLife International 2020). This presumably frugivorous species inhabits the primary lowland and hill forest up to 1,000 m (BirdLife International 2020).

The pied cuckoo-dove is considered globally Near-Threatened (NT), with the global population estimated to consist of 15,000–30,000 individuals (BirdLife International 2020). This species is threatened by the ongoing loss of suitable habitat and hunting pressure (BirdLife International 2020). It is suspected to be undergoing a moderate decline in some areas due to the excessive logging of the lowland forest, while remaining common in areas with suitable habitats (BirdLife International 2020). A recent survey indicates that the species is more tolerant of degraded forest, but avoids severely degraded forest areas (Davis *et al.* 2018). Based on these observations Davis (*et al.* 2018) recommended to recategorizing the species status to Least Concern (LC). Courtship displays were observed during July on Djaul, between March–May on New Hanover, and August on New Britain (Leavesley & Leavesley 2000; Gibbs *et. al.* 2001). Nothing else has been

Received 1 September 2020; accepted 9 October 2020
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published about the breeding biology, with eggs and nest remaining undescribed.

Our descriptions are based on a single preserved egg set that is deposited in the American Museum of Natural History (AMNH). A single-egg clutch of *R. browni* was collected by W.F. Coultas on New Britain during the Whitney South Sea Expedition (see Figure 1). The active nest was discovered on the 30 May 1930 at a locality known at that time under the name of "Katomic". The coordinates and current name of the original locality are not known and not given in the original label.

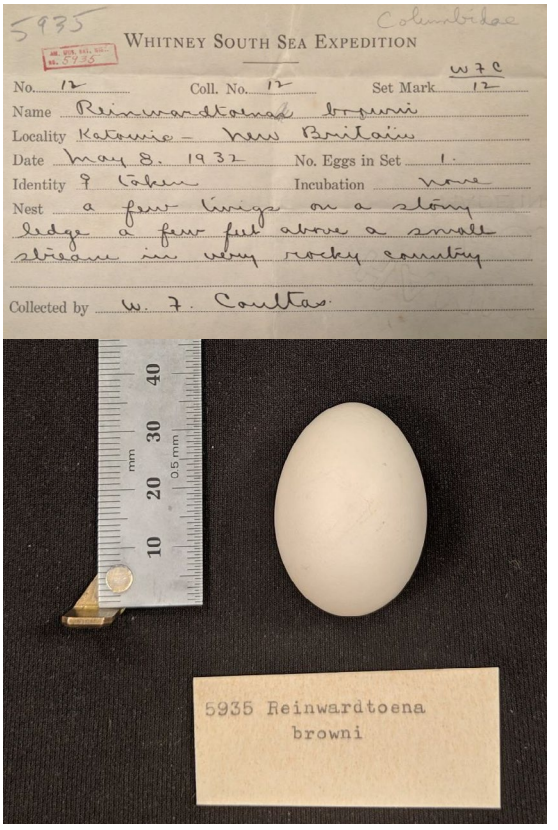

Figure 1. Original data card associated with the pied cuckoo-dove egg set in the American Museum of Natural History (catalog number: AMNH EN 5935), and egg of the pied cuckoo-dove deposited in the American Museum of Natural History (catalog number: AMNH EN 5935). Photographs: Bentley Bird © AMNH.

The egg was presumably collected during an early incubation stage, as no visible development was noted by W. F. Coultas. The species identity was confirmed by the nest attendance of the incubating female, which was also collected. The nest was briefly described as a simple structure composed of a few twigs, which was placed on a ledge a few feet above a stream in a rocky country. The egg is uniform white and elongated-oval shaped (see Figure 1). The size is 34.71 × 25.03 mm (B. Bird *pers. comm.*).

Details on the nest site, egg, and clutch size are consistent with the available, published descriptions for the congeneric great cuckoo-dove and crested cuckoo-dove. The breeding biology of the widespread great cuckoo-dove is reasonably well known, with several nests documented in the wild (Baptista *et al.* 2020). Nests with single-egg clutches were reported from Boneno (Mt. Simpson, in E Papua New Guinea) in late December (Coates 1985). Two other nests were recorded in the Chimbu Province in mid-August and on Karkar Island, containing a single egg, in late May or late June, respectively (Coates 1985). Recent records include a nest with a single egg, discovered on the 26 July 1990 in a *Pandanus* tree c. 12 m above the ground (Mack 1994). A further three nests were found between April and June, all placed on a cliff ledge and containing either a single egg or single nestling (Symes & Marsden 2005). The nest of the great cuckoo-dove is described in general as a flat or slightly bowl-shaped platform composed in majority of sticks or occasionally moss, roots, sticks, and ferns, lined with fine plant material (Baptista *et al.* 2020). The nest is built usually in a bush or tree 1.2–12 m above the ground or occasionally on a rocky ledge at 2.4–12 m height (Gibbs *et al.* 2001; Baptista *et al.* 2020). The clutch size consists of a single, uniform white egg (Coates 1985; Baptista *et al.* 2020). The egg size range is reported as 37.1–40.0 × 25.0–26.8 mm (Harrison & Frith 1970; Coates 1985; Münst & Wolters 1999). The incubation period at one observed nest site lasted 22 days (Chmel *et al.* 2018). In captivity, the species is recorded to lay multiple clutches if the egg failed to hatch (Münst & Wolters 1999). According to the world first captive breeding of the species, a chick hatched successfully after an incubation period of 16 days. Brooding was documented until a post-natal age of 13 days and the chick left the nest after a total nestling period of 25 days (Münst & Wolters 1999). After 35 days the fledgling started to pick on food items by itself (Münst & Wolters 1999).

By contrast data on the breeding biology of the crested cuckoo-dove is very limited, with only a single nest description published to date (Gibbs *et al.* 2001). The nest was discovered in November 1995 on the Choiseul Island *c.* 20 m up at an inaccessible river cliff. The nest was composed mainly of twigs, and both adults attended whilst the contents were not accessible (Gibbs *et al.* 2001). The species is reported to have a single-egg clutch (French 1957) but nothing else is known about the breeding biology (Gibbs *et al.* 2001).

A single-egg clutch is likely characteristic for this genus. Apart from that, basic details on the breeding biology remain inadequately known and further research is needed on both ecology and breeding biology, with an emphasis on the general biology of the rather poorly known crested and pied cuckoo-dove. Furthermore, an assessment of the population is essential to re-evaluate the current status of the crested cuckoo-dove and establish a long-term conservation plan for this insular species.

ACKNOWLEDGEMENTS

We are indebted to the American Museum of Natural History and AMNH staff for allowing us to use the original label data and image material. We acknowledge the assistance of Bentley Bird for providing us the photographic records and measurement for the egg. We also would like to thank Brian Smith for helping us with the initial request. Lastly, we would like to thank Craig Symes, Michael K. Tarburton, Robert Davis, and Bruce M. Beehler, for their suggestions and comments on the early draft that significantly improved the quality of the manuscript.

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Keywords: cuckoo-dove, *Reinwardtoena*, egg dimensions