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AVIAN BIOLOGY

INCUBATION BEHAVIOUR OF THE WHITE-BROWED SCRUB-ROBIN *CERCOTRICHAS LEUCOPHRYS*

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The White-browed Scrub-robin *Cercotrichas leucophrys* is the most widespread of African robins, occurring throughout much of the low to moderate rainfall savannah woodlands in Africa (Oatley and Arnott 1998). Although common throughout its range, its shy disposition and habit of darting for cover at the least provocation has made this species difficult to observe and, as such, various aspects of its general biology are still poorly known. Details of its incubation behaviour are particularly scant but are known to be performed by the female only, commence upon clutch completion and lasts 12 to 14 days (Van Someren 1956; Chittenden 1989; Oatley and Arnott 1998). Nothing is known about the duration of its incubation shift lengths and nest attendance patterns.

Here I report on the incubation behaviour of the White-browed Scrub-robin observed at a nest (23° 53' 42''S; 29° 44' 29''E) on the campus of the University of Limpopo, South Africa. On 9 November 2016 I observed a bird carrying nesting material. White-browed Scrub-robins are sexually monomorphic and in order to verify the roles of the sexes in the nesting cycle, it was necessary to catch and fit at least one of the pair with a combination of colour rings (Plate 1).



Plate 1 - The colour-marked, female White-browed Scrub-robin perched on the ramp at the access point to the nest.

To determine such aspects as nest attendance and incubation on- and off-bouts, I concealed a Sony HDR-XR160 Handycam near the nest and allowed it to record continuously for 6–8 hours during daytime. The following parameters were recorded: overall nest attendance (total percentage of time spent on the nest during a recording session), mean on-bouts (minutes spent on the nest) and mean off-bouts (minutes spent away from the nest). Furthermore, to exclude activities such as nest maintenance which is not directly related to incubation, on- or off-bouts were only scored if it exceeded 30 seconds. An incubation on-bout lasting less than 30 seconds is unlikely to result in significant changes in the temperature of eggs (Auer *et al.* 2007). All times were rounded to the nearest minute as the incubating bird sometimes left the nest briefly for self-maintenance activities or to perform maintenance to the nest before returning again to incubate.

The nest was located in a grass tussock, virtually at ground-level and was partially concealed by overhanging branches of a *Syringa Melia azedarach*, making it difficult to locate. Although the nest seemed almost completed upon finding it, the first egg was only laid four days later on 13 November 2016. The eggs, nest structure and dimensions fit Oatley's (2005) description of an untidy nest with a deep cup constructed of broad grass blades, grass stems and small twigs, lined with fine rootlets (Plate 2). The nest also had a clear ramp (landing pad) as described by Oatley (2005). The mass (g) and dimensions (l x w, 0.01 mm) of the two eggs were: 2.1 g and 18.99 x 14.74 mm, and 2.1 g and 19.16 x 14.45 mm.

Video footage was obtained for a total of 38.86 hours spanning six days from 14–19 November 2016. The nest was empty, presumably predated, on 20 November 2016. Video footage confirmed that the female was solely responsible for incubation. At no stage was the male observed at the nest although he could be heard singing close-by on many occasions. There was therefore no evidence of the male provisioning the female at the nest in this pair. The female was only observed bringing material to the nest on one occasion. It therefore seems that nest construction is completed, or almost completed, before laying and incubation starts. During incubation, the female typically sat very deep in the nest with just her tail extending above the cup rim (Plate 3). She also sat remarkably still and tight when a potential threat approached, flying off at the last possible moment.



Plate 2 - The White-browed Scrub-robin nest with two eggs. Note the ramp at the bottom of the image (circled in red).

The overall nest attendance was 75.0% which is considerably greater than the mean percentage nest attentiveness of 65.4% exhibited by female-only incubating passerines (Matysioková and Remeš 2014). The mean duration of an incubation on-bout was 62.5 ± 53.9 minutes, median = 67.0, range, 4–199 minutes, $n = 26$, and the duration of off-bouts were 18.0 ± 11.8 minutes, median 16.5, range 4-47 minutes, $n = 28$. Unfortunately there is no data available for other scrub-robins to compare the results of this study with.



Plate 3 - The incubating White-browed Scrub-robin typically sat very deeply in the cup with only the tail extending above the cup rim.

In conclusion, this study presents the first results of the incubation patterns of a scrub-robin and although only based on observations at a single nest, it may prove useful for future inter- and intraspecific studies on the breeding biology of the scrub-robins.

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