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THE NEST AND EGG OF THE SLATE-CROWNED ANTPITTA (*GRALLARICULA NANA*), WITH OBSERVATIONS ON INCUBATION BEHAVIOR IN SOUTHERN ECUADOR

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El nido y huevo de la Gralarita coronipizarrosa (*Grallaricula nana*) y observaciones sobre su comportamiento de incubación en el sur del Ecuador.

Key words: Egg, nest, incubation, behavior, parasite removal, Andes, cloud forest, Slate-crowned Antpitta, *Grallaricula nana*.

The Slate-crowned Antpitta (*Grallaricula nana*) occurs from northern Venezuela to northern Peru, where it is uncommon to locally fairly common in the undergrowth of montane forests, usually associated with stands of *Chusquea* bamboo (Ridgely & Tudor 1994). In Ecuador, where only the nominate *nana* race is found, it ranges from elevations of 2000 to 2900 m (Ridgely & Greenfield 2001). While Schönwetter (1979) provides a description of the egg, there is apparently little else published on its breeding biology. Here we provide observations on two nests found at the Tapichalaca Biological Reserve (04º30'S, 79º10'W), located north of Valladolid in the southeastern Zamora-Chinchipe Province of Ecuador.

The first nest was found on 8 September 2003 by F. Sornoza. It was located beside an old trail, which had worn down into a steep-sided gully, and was surrounded by dense *Chusquea* bamboo. The nest was 2 m above the ground and supported by a loose, hanging cluster of vines and dead (leafless) vegetation. Brief observations indicated incubation of a single egg. The second nest was discovered on 25 November 2003, at which time it contained a single egg. An adult was present on the nest, and did not flush until the observer's hand was 50 cm from the nest. This nest (Fig. 1) was 2.4 m above the ground, supported by several horizontally crossed bamboo stems, and was also adjacent to a trail running through a dense stand of *Chusquea* bamboo. The substrate supporting both nests was very unstable, and it was difficult to check the contents of the nests without fear of dislodging them. Both eggs were pale brownish white

FIG 1. Nest of Slate-crowned Antpitta (*Grallaricula nana*) with complete clutch of one egg. Inset: detail of egg.

with heavy red-brown spots and flecks distributed fairly evenly, but slightly thicker around the large end. The egg at the second nest measured 22.6 by 18.9 mm (Fig. 1). Both nests were sparse, shallow, fungal rhizomorph and dark fiber cups built into substantial, but loose, platforms of sticks and leaf petioles. Measurements were taken at the second nest and were: egg cup inside 7 cm wide by 2 cm deep; overall nest outside roughly 12 cm wide and 4 cm tall.

The second nest was videotaped on 25 November from 12:15 to 15:00, on 26 November from 05:30 to 07:30 and 11:30 to 18:00, and on 28 November from 06:00 to 18:00. The camera was placed 5 m from the nest, partially concealed by bamboo. Adults did not flush from the nest during activity at the camera, and appeared unaffected by its presence. Both adults incubated the egg for 14.8 h (65%) of the observation period (total of 22.7 daylight hours from 06:00 to 18:00 h.). For 26 and 28 November, uninterrupted periods of attendance (n = 17) averaged (± SD) 53.8 ± 44.3 min and periods of absence (n = 17) averaged 10.6 ± 15.7 min. The longest observed off bout was 136 min from 12:15 to 14:30 on 25 November. While incubating, both adults frequently (8.1 times per hour) stood and peered at the nest and egg. They then engaged in one or several different behaviors. On 58 out of 120 times they leaned into the cup and rapidly thrust their bill in and out of the lining, vibrating both their entire body and the nest. This behavior was observed an average of 1.2 times per stand-

ing/peering bout and was likely a means of parasite removal (Halfton 1994, Dobbs *et al.* 2003, Greeney 2004). Additionally, on several occasions, this behavior was performed with the bird leaning over the egg and the bill angled below it. In these instances at least, the egg appeared to be turned by the rapid movement of the bill. Adults also engaged in "sharp probing" (Greeney 2004), where they thrust their bill sharply into the nest, appearing to eat something small. This means of parasite removal was performed during only 6 peering bouts. Adults performed nest maintenance by arranging stray fibers or sticks in the nest during 11 peering bouts, spending an average of 4 s each time. Additionally, on 41 occasions they leaned forward, pressed their breast into the egg cup, with wings slightly raised and slightly touching across the back, and shuffled or vibrated their body. Such nest-shaping behavior is common during building in many passerines (Greeney pers. observ.). Totaling these behaviors, during 14.8 h of observed incubation, adults spent 2.4% of their time moving about in the nest. The rest of the time they sat quietly, peering about with sharp movements of their head.

The nests of the Slate-crowned Antpitta were similar, in their poorly supported positions, to those described for the Peruvian Antpitta (*G. peruviana*) (Greeney *et al.* 2004a, 2004b), and differed from the well supported nests of the Ochre-breasted Antpitta (*G. flavirostris*) (Holley *et al.* 2001). The nests of the Slate-crowned Antpitta also differed from those previously described for the genus in containing little or no moss. Considering their placement in stands of bamboo, this made them quite cryptic, while the inclusion of moss would have made them more obvious. The propensity of Slate-crowned Antpittas to favor stands of *Chusquea* bamboo (Ridgely & Tudor 1994, Ridgely & Greenfield 2001), in combination with nests cryptic in bamboo, suggests a possible specialization on such habitat. The eggs were similar in coloration to those previously described for this species, but that of the second nest was considerably larger (19.3–20.8 by 15.9–16.1; Schönwetter 1979). Their appearance was also similar to those of Peruvian, Hooded (*G. cucullata*), and Ochre-breasted Antpittas (Schönwetter 1979, Holley *et al.* 2001, Greeney *et al.* 2004a), but differed from the pale green or gray background described for eggs of the Rusty-breasted Antpitta (*G. ferrugineipectus*) (Schwartz 1957). While nests of Peruvian Antpittas in Ecuador contained only a single egg or nestling (Greeney *et al.* 2004a, 2004b), a clutch size of one in the Slate-crowned Antpitta differs from the clutch of at least two seen in other antpittas (e.g., Wiedenfeld 1982, Robinson *et al.* 2000, Holley *et al.* 2001; Dobbs *et al.* 2001; 2003, Barber & Robbins 2002, Freile & Renjifo 2003, Price 2003, Martin & Dobbs 2004, but see Whitney 1992).

Using an estimated 20-day incubation period for the genus (Schwartz 1957, Holley *et al.* 2001, Greeney *et al.* 2004a), and an estimated 15-day nestling period (Holley *et al.* 2001), we estimate the breeding season to extend at least from September to early January. While this corresponds with the dryer season in the area, the Peruvian Antpitta has been found breeding in both wet and dry seasons (Greeney *et al.* 2004a, 2004b), and this may prove to be the case for the Slate-crowned Antpitta. The detailed quantification of adult behaviors on the nest given here are interesting and, as we work with the nesting biology of more species, we feel that important patterns may emerge that could influence ideas on parasite loads, predation rates, and other aspects of avian biology. We encourage others to present similar observations in the hopes that useful patterns may emerge.

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