ORNITOLOGIA NEOTROPICAL 20: 305–310, 2009

DESCRIPTION OF THE NEST AND PARENTAL CARE OF THE CHESTNUT-NAPED ANTPITTA (*GRALLARIA NUCHALIS*) FROM SOUTHERN ECUADOR

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Descripción del nido y cuidado parental de la Gralaria Nuquicastaña (*Grallaria nuchalis*) del sur del Ecuador.

Key words: Nest, nestling, Chestnut-naped Antpitta, *Grallaria nuchalis*, Ecuador, bamboo, Andes.

The Chestnut-naped Antpitta (*Grallaria nuchalis*; Fig. 1) is among the largest of the ground-antbirds (Grallariidae *sensu* Remsen *et al.* 2008). Locally fairly common, it is frequently associated with stands of *Chusquea* sp. bamboo in montane forest on both slopes of the Andes from southern Colombia to northern Peru (Ridgely & Tudor 1994, Krabbe & Schulenberg 2003). In Ecuador, nominate ssp. *nuchalis* is found on the east slope of the Andes mostly from 2000–3000 m a.s.l., while ssp. *obsoleta* occurs only on the west slope (Ridgely & Greenfield 2001). Like most antpittas (Greeney *et al.* 2008a), very little is known about the reproductive biology of the Chestnut-naped Antpitta. Schönwetter (1979) describes a clutch of two pale blue eggs from Colombia (ssp. *ruficeps*), but provides no information on the nest. Here we provide the first description of the nest, nest location, and parental care of *G. n. nuchalis* from southeastern Ecuador.

Chronology and study area. On 11 November 2006, MEJJ located a Chestnut-naped Antpitta nest with two young nestlings at 2500 m a.s.l. in the Tapichalaca Biological Reserve (4°29'S, 79°07'W) in Zamora-Chinchipe province, Ecuador. The Tapichalaca Biological Reserve is a protected area administered by Fundación de Conservación Jocotoco, and is located above the town of Valladolid. The forest in this area, characterized as upper subtropical forest, has an average canopy height

FIG. 1. Adult Chestnut-naped Antpitta (*Grallaria nuchalis*) at Tapichalaca Biological Reserve, Zamora-Chinchipe, Ecuador (photo by Murray Cooper.)

of approximately 10 m, with 20 m tall emergent crowns, and receives c. 4000 mm of rainfall annually (Krabbe *et al.* 1999). The canopy is characterized by trees in the families Rubiaceae, Euphorbiaceae, and Lauraceae, and the understory is largely composed of *Chusquea* sp. bamboo, Piperaceae, and Melastomataceae. Most vegetation at the site is thickly covered in mosses, liverworts, and vascular epiphytes (Krabbe *et al.* 1999).

From 14–20 November (estimated nestling ages 6–12 days old), the nest was filmed periodically for a total of 21.3 h. Of this time, roughly 6 h were during the afternoon, while the rest was in the morning. The nest was filmed with a tripod-mounted video camera 8 m from the nest.

Nest. The nest was located in a *Chusquea* sp. bamboo thicket in forest on a steep slope that was naturally disturbed by landslides. It was located c. 3 m above the ground, supported by three bamboo stems 3–4 cm in diameter. The nest was a large, irregular cup composed primarily of *Chusquea* bamboo leaves, but also incorporated a few small sticks and moss filaments (Fig. 2). The nest cup was very sparsely lined with dark, flexible plant fibers, and was partially obscured by bamboo leaves which appeared to have fallen into the nest and subsequently had been pressed flat by the nestlings or adult. The nest was built into, and to a large degree was composed of similar material to, a large mat of leaves and debris trapped naturally by the supporting branches. Therefore, the exact dimensions of the nest were difficult to measure with confidence. Overall, the supporting clump was c. 25–35 cm in diameter. The nest itself was c. 17–20 cm in external diameter, and 17 cm tall overall. Inside, the egg cup was roughly circular, 14 cm in diameter, and 10 cm deep.

Nestlings. When discovered, the two nestlings had dark grayish skin with sparse dark natal down. Their eyes were closed, and they were estimated to be three days old based on previous descriptions of other *Grallaria* nestlings (Dobbs *et al.* 2001, 2003). As they grew older (Fig. 3), they developed buffy underparts (palest on the belly), with distinct, but thin, black barring on the chest. Their upperparts were dark grey to black (especially on the unmarked crown) with buff-tipped feathers giving a barred appearance most apparent on the upper back. Both nestlings had bright orange bills, gapes, and mouth linings.

Parental care. During the approach to the nest, adults hopped from stem to stem, through the dense bamboo around the nest, usually making one longer final movement to the nest from below. Upon arrival, they frequently paused for 5–7 s before delivering food, apparently to survey the area surrounding the

FIG. 2. Nest of *Grallaria nuchalis* at Tapichalaca Biological Reserve, Zamora-Chinchipe, Ecuador (photo by Mery Juiña.)

nest. Most brooding of the nestlings appeared to occur during periods of misting rain. During the first two days of video (6.9 h; nestlings estimated 6–9 days old), an adult brooded for 15.2% of the observation period. We observed no brooding during the second portion of the observation period (14.4 h; 10–12 days old). During the entire observation period, adults would occasionally (n = 13; 0.61 times/h) lean into the nest cup and rapidly vibrate their body, performing what has been termed "rapid probing" in other antpittas (Greeney *et al.* 2008a), and which may function to help rid the nest of parasites (Dobbs *et al.* 2001).

The parents delivered 47 food items during 21.3 hours of filming. The food items consisted of 22 earthworms (Oligochaeta; 47% of food items delivered), 20 unidentifiable arthropods (42.6%), and 5 beetle larvae (Coleoptera; 10.6%). Prey items appeared to be delivered singly or only a few at a time. While the nestlings were estimated to be 6–9 days old, adults brought food at a rate of 0.94 times per nestling/h (n = 13 feeds in 6.9 h). During the latter part of the observation they were fed 1.2 times per nestling/h (n = 34 feeds in 14.4 h). While we were not able to quantify fecal sac production due to the nestlings being hidden below the nest rim, of the five fecal sacs we observed, adults ate three and carried two away from the nest.

Discussion. The nest of Chestnut-naped Antpitta described here is most similar in its location and appearance to that recently described for Chestnut-crowned Antpitta (*G. ruficapilla*; Martin & Greeney 2006). Both were supported by multiple small stems, predominantly of bamboo, and both were apparently built onto a pre-existing clump of material. For both species, this made the nests extremely cryptic, as they blended well with the myriad of similarly trapped vegetation

FIG. 3. Nestlings of of *Grallaria nuchalis* (est. 9 days old) after removal from the nest at Tapichalaca Biological Reserve, Zamora-Chinchipe, Ecuador (photo by Mery Juiña).

commonly seen in bamboo thickets at this elevation (HFG pers. observ.). The construction of nests built predominantly of bamboo parts is seen in other bamboo-nesting species, including Slate-crowned Antpitta (*Grallaricula nana*; Greeney & Sornoza 2005, Greeney & Miller 2008, JBCH pers. observ.) in the Andes, and White-browed Antbird (*Myrmoborus leucophrys*), White-lined Antbird (*Percnostola lophotes*), and Sulphur-bellied Tyrant-Manakin (*Neopelma sulphureiventer*) in Amazonian *Guadua* bamboo thickets (Lebbin *et al.* 2007). This strategy is likely an effective means of camouflage.

At 3 m above the ground, the placement of the nest observed here is fairly typical of *Grallaria* (Greeney *et al.* 2008a), though it is towards the higher end for most species (but see Kofoed & Auer 2004, Martin & Dobbs 2004). Like Chestnut-crowned (Martin & Greeney 2006), Tawny (*G. quitensis*; Greeney & Martin 2005), Stripe-headed (*G. andicolus*; Fjeldså in Greeney *et al.* 2008a), Watkins's (*G. watkinsi*; Martin & Dobbs 2004), and Plain-backed antpittas (*G. haplonota*; Greeney *et al.* 2006), placement of the nest on top of small supporting structures such as bamboo stems, small tree branches, and vine/epiphyte tangles separates Chestnut-naped Antpitta from other *Grallaria* spp. with currently described nests, which usually choose more well-supported nesting sites (Greeney *et al.* 2008a). Similarly, although some species appear to vary somewhat (e.g., Moustached Antpitta, *G. alleni*; see Freile & Renjifo 2003, Londoño *et al.* 2004), the inclusion of primarily dead material in the nest (as opposed to living mosses) is also similar to most species mentioned above, such as Watkins's, Chestnut-crowned, and Plain-backed antpittas.

The dark skin and down of nestling Chestnut-naped Antpittas are similar to

descriptions of the nestlings of several other species including Scaled (*G. guatemalensis*; Dobbs *et al.* 2001), Variegated (*G. varia*; Protomastro 2000), and Moustached (Freile & Renjifo 2003) antpittas. As this may be an informative character, but is often not reported (Greeney *et al.* 2008a), we encourage others to take careful note of skin and down color in young antpitta nestlings.

The reproductive activity of *G. nuchalis* reported in this study coincides with the end of the dryer period (August–December) in our study area. Similarly, observations of juveniles near the middle and end of the dry season in northwest Ecuador (ssp. *obsoleta*; Fjeldså & Krabbe 1990) suggest this species may regularly breed in the drier months. Interestingly, while many antpitta species may breed year round, or pairs may breed opportunistically (Greeney *et al.* 2008a), breeding by Chestnut-naped Antpitta would coincide with the breeding of Slate-crowned Antpitta (Greeney & Sornoza 2005, Greeney & Miller 2008) and Chestnut-crowned Antpitta (Martin & Greeney 2006) in eastern Ecuador, both also nesting in bamboo. In each of these papers, the authors noted that, at least on the extremely humid eastern slopes of the Ecuadorian Andes, species which often use bamboo as a nesting substrate seem to breed during the drier months. While sample sizes are still very low for most species, nesting reports for these two antpittas, as well as Rufous-crowned Tody-Flycatcher (*Poecilotriccus ruficeps*; Greeney *et al.* 2005a), Long-tailed Antbird (*Drymophila caudata*; Gelis & Greeney 2006), Yellow-billed Cacique (*Amblycercus holosericeus*; Greeney *et al.* 2008b), and Black-crested Warbler (*Basileuterus nigrocristatus*; Greeney *et al.* 2005b), all of which were found nesting in bamboo, have all been during the drier months. Growth rates of *Chusquea* bamboo are likely greatest during the wetter months (HFG pers. observ.). Therefore, by nesting during the dry season when bamboo growth is slowest, birds that attach their nests to bamboo might reduce the risk that their nest becomes dislodged or damaged by the rapidly growing substrate. As we begin to develop a more holistic view of breeding seasonality, with higher sample sizes and additional species, we think it would be interesting to test the prediction that nesting periods will negatively correlate with periods of fastest bamboo growth.

ACKNOWLEDGMENTS

We thank Fundación de Conservación Jocotoco and the World Land Trust for funding and logistical support. We are indebted to Fransisco Sornoza for his assistance in the field. Pete Hosner, Dan Lebbin, and Brett Scheffers provided valuable revisions to earlier versions of this manuscript. We thank the FJ office staff and the Tapichalaca park guards, as well as Pedro Álvarez and Leighton Reid for their support. The writing of this manuscript was supported in part by National Geographic grant no. W38-08. The work of HFG is supported by John V. and the late Ruth Ann Moore, Matt Kaplan, BirdLife International, Field Guides Inc., the Maryland Ornithological Society, and the PBNHS. This is publication no. 143 of the Yanayacu Natural History Research Group.

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Accepted 5 March 2009.