

OBSERVATIONS ON PARENTAL CARE OF THE MOUSTACHED ANTPITTA (*GRALLARIA ALLENI*) IN NORTHWESTERN ECUADOR

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Observaciones sobre cuidado parental de la Gralaria Bigotada (*Grallaria alleni*) en el noroeste del Ecuador.

Key words: Nestling diet, feeding rates, fecal sacs, parasite removal, Ecuador, cloud forest, Moustached Antpitta, *Grallaria alleni*.

The Moustached Antpitta (*Grallaria alleni*) is one of 31 species of *Grallaria* antpittas and is currently considered globally threatened (BirdLife International 2004). Only recently rediscovered in Colombia (Renjifo 1999) and more recently reported for the first time in Ecuador (Krabbe & Coopmans 2000), little is known of its breeding biology. Recent studies have begun to rectify this paucity of information with descriptions of the nest, eggs, fledglings, and incubation rhythms from nests in both Colombia and Ecuador (Freile & Renjifo 2003, Londoño *et al.* 2004). To these studies we add observations on parental care of nestlings in a nest found near the Tandayapa Bird Lodge (00°00'N, 78°41'W, 1650 m), Pichincha province, northwestern Ecuador.

The nest was originally found in mid-November 2003 by José Illanes, at which time it contained two all blue eggs similar to previous descriptions for this species (Freile &

Renjifo 2003, Londoño *et al.* 2004). Both eggs reportedly hatched on 28 November, based on unconfirmed observations by various observers. We first observed both nestlings on 5 December at which time the nestlings weighed 33.2 and 32.5 g and had right tarsal measurements of 26.3 and 26.8 mm, respectively. Based on growth rate measurements for Scaled Antpitta (*G. guatemalensis*) from southern Ecuador (Dobbs *et al.* 2001), nestling weights suggest that the nestlings were 7–8 days of age while tarsal measurements reflect an age of nearly 10 days. After videotaping the nest for several days (see below) both nestlings fledged from the nest on the morning of 13 December. Given some uncertainty with observed hatching day we estimate the nestling period to have been 15–17 days, slightly shorter than that reported for other *Grallaria* (Dobbs *et al.* 2001, Martin & Greeney 2006).

Parental care and adult behavior. On 6 December and from 8 to 13 December, the nest was videotaped during daylight hours (05:30–18:30 h EST) from a tripod placed 5 m from the nest (total of 77.6 h). Based on observations at the nests of other antpittas (HFG pers. observ.), we felt that behavior at the nest was unaffected by the presence of the camera. An adult spent the night on the nest each night, including the night before fledging, usually settling down for the night just after 18:15 h and leaving the nest around 05:45 h. We recorded, therefore, all feedings during the days filmed. On no occasion ($n = 6$) did the adult spending the night on the nest bring food on their final return. During these last 7 days of nestling period both adults (combined) fed the nestlings 44 to 65 times per day (mean \pm SD = 53 ± 9). Adults appeared to always bring multiple prey items to the nest and few were visible enough to be identified. On at least 22% of their arrivals ($n = 328$), adults brought one or more earthworms (usually several), which is less than the 42% reported for Scaled Antpitta (Dobbs *et al.* 2001) and the 37% reported for Pale-billed Antpitta (*G. carrikeri*) (Wiedenfeld 1982). On two occasions we observed 3–5 cm katydids (Tettigoniidae) amongst the prey items and once a ca. 4 cm (snout-vent length) frog. Both adults received fecal sacs from the nestlings, 61% of which were carried away while the rest were eaten at the nest ($n = 166$). Fecal sacs were always produced in the presence of adults during the first 5 days of filming but were twice deposited on the rim of the nest in the absence of adults on the day before fledging. Also on this day, we noted a marked deterioration of the integrity of fecal sacs, which often broke when grabbed by the adults, which then spent a good deal of time at the nest cleaning fecal matter from the rim of the nest. Once an adult removed a chunk of the nest rim (with fecal matter on it) and dropped it over the side of the nest. On another occa-

sion the adult fed a small piece of feces to a nestling, which promptly regurgitated it.

Like other antpittas (e.g., Dobbs *et al.* 2003, Greeney & Martin 2005), Moustached Antpittas frequently probed the nest lining with their bills, possibly removing parasites (Haftorn 1994, Greeney 2004). Unlike the “sewing-machine-like” probing described for Scaled Antpitta (Dobbs *et al.* 2003), the Moustached Antpittas’ form of “rapid probing” (Greeney 2004) was much more erratic and included more side to side movements of the bill in a jerky, uncoordinated fashion. In fact, other than the repetitive nature of the action (drawing the bill in and out several times), the rapid probes of Moustached Antpittas more closely resembled the way many *Grallaria* thrust their bill into the leaf litter while foraging (HFG pers. observ.). Adults usually performed these rapid probes before or after several sharp probes (a single thrust), staring into the nest cup in between probing events. Of 188 probing maneuvers (sharp/rapid) observed, 112 (60%) of them were rapid probes.

Nestling appearance, behavior, and fledging. On 5 December, roughly 7–9 days after hatching, the nestlings were well covered in black down. Chestnut spotting was barely visible on the hind-crown, nape, and shoulders, but was more extensive and buffier on the lower belly and flanks. Their skin was pink, blacker on the head, and their legs were dark blue-black. Their upper mandibles were black, becoming orange at the gape, while the lower mandibles were orange, being black only near the tip. The mouth lining was a striking red-orange which contrasted sharply with their black plumage. Primary pin feather sheaths were unbroken but secondaries and tertiaries were broken their sheaths 2–4 mm. Two days later, their appearance was largely unchanged except for a predominance of buffy coloration on the lower belly and flanks, and their

lower breasts and upper bellies appeared scaled with light buffy feather shafts and plume bases. Primary feathers had emerged from their sheaths 3–4 mm. On 9 December, 4 days before fledging, light chestnut speckling was visible across most of the dorsum and primary pin feathers were broken their sheaths 10–15 mm. Their right tarsi measured 31.3 and 31.6 mm, respectively. For color photographs of the nestlings, see Greeney (2005).

During the final 3 days of nestling period, both nestlings often moved around preening themselves and frequently flapped their wings as described for older nestlings of Scaled Antpitta (Dobbs *et al.* 2001). On 13 December, the nestlings were fed 10 times before 07:45 h. At 07:45 h, just after being fed, both nestlings appeared to be watching something on the ground below the nest, roughly in the direction the adult had gone. Fifty seconds after the adult left for the last time, one of the nestlings hopped up onto the rim of the nest, paused for 2 s, and then dropped to the ground. The second nestling followed 18 s later. No vocalizations were heard prior to the first nestling leaving the nest. After the first nestling fledged, however, a few loud, harsh, squawking calls were recorded by the video camera. After the second nestling left, these calls increased in volume and number for several seconds. We are unsure if these calls were made by the adults or the nestlings. Both nestlings were similar in appearance to the description for 9 December (see above), flight feathers were not fully emerged from their sheaths, and we doubt that they were able to fly.

Conclusions. The nest found here was active during the end of the dry season for this area (Greeney & Nunnery 2006). Breeding activity reported from western Colombia and northwestern Ecuador (Freile & Renjifo 2003, Londoño *et al.* 2004) implies most activity during

the wetter months in these areas, and we suggest this nest was an early season attempt for this area. The nestlings observed here left the nest while their plumage was far less developed than the fledgling bird illustrated by Londoño *et al.* (2004). While little is known of the post-fledging period for *Grallaria*, given the relatively undeveloped plumage of birds at fledging, we suggest that it may be fairly extended when compared to other passerines. We urge anyone with observations on young fledglings of any formicariid to report their findings in the hopes of elucidating this mystery.

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REFERENCES

- BirdLife International. 2004. Threatened birds of the world. CD-ROM, BirdLife International, Cambridge, UK.

- Dobbs, R. C., P. R. Martin, C. Batista, H. Montag, & H. F. Greeney. 2003. Notes on egg laying, incubation and nestling care in Scaled Antpitta *Grallaria guatemalensis*. *Cotinga* 19: 65–70.
- Dobbs, R. C., P. R. Martin, & M. J. Kuehn. 2001. On the nest, eggs, nestlings and parental care in the Scaled Antpitta (*Grallaria guatemalensis*). *Ornitol. Neotrop.* 12: 225–233.
- Freile, J. F., & L. M. Renjifo. 2003. First nesting records of the Moustached Antpitta (*Grallaria alleni*). *Wilson Bull.* 115: 11–15.
- Greeney, H. F. 2004. Breeding behavior of the Bicolored Antvireo (*Dysithamnus occidentalis*). *Ornitol. Neotrop.* 15: 349–356.
- Greeney, H. F. 2005. *Grallaria alleni*, Moustached Antpitta. species page in Greeney, H. F., R. C. Dobbs, & P. R. Martin (eds.). Natural history of Ecuador's mainland avifauna. <http://depts.washington.edu/nhrp/nhema.html> (accessed October 2005).
- Greeney, H. F., & P. R. Martin. 2005. High in the Ecuadorian Andes: the nest and eggs of the Tawny Antpitta (*Grallaria quitensis*). *Ornitol. Neotrop.* 16: 567–571.
- Greeney, H. F., & T. Nunnery. 2006. Notes on the breeding of north-west Ecuadorian birds. *Bull. Br. Ornithol. Club* 126: 38–45.
- Haftorn, S. 1994. The act of tremble-thrusting in tit nests, performance and possible functions. *Fauna Norv. Ser. C Cinclus* 17: 55–74.
- Krabbe, N., & P. Coopmans. 2000. Rediscovery of *Grallaria alleni* (Formicariidae) with notes on its range, song and identification. *Ibis* 142: 183–187.
- Londoño, G. A., C. A. Saavedra-R., D. Osorio, & J. Martínez. 2004. Notas sobre la anidación del Tororoi Bigotudo *Grallaria alleni* en la Cordillera Central de Colombia. *Ornitol. Colomb.* 2: 19–24.
- Martin, P. R., & H. F. Greeney. 2006. Description of the nest, eggs and nestling period of the Chestnut-crowned Antpitta *Grallaria ruficapilla* from the eastern Ecuadorian Andes. *Cotinga* 25: in press.
- Renjifo, L. M. 1999. Composition changes in a sub-andean avifauna after long-term forest fragmentation. *Conserv. Biol.* 13: 1124–1139.
- Wiedenfeld, D. A. 1982. A nest of the Pale-billed Antpitta (*Grallaria carikeri*) with comparative remarks on antpitta nests. *Wilson Bull.* 94: 580–582.

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