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First Description of the Nest of Jocotoco Antpitta (*Grallaria ridgelyi*)

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ABSTRACT.—The Jocotoco Antpitta (*Grallaria ridgelyi*) is an endangered and poorly studied inhabitant of montane bamboo (*Chusquea* spp.) thickets of extreme southeastern Ecuador. There is nothing known of the breeding biology of Jocotoco Antpitta apart from a single record of a dependent juvenile, and we describe a nest of this species for the first time. The nest was a bulky cup composed primarily of dead plant materials and firmly supported by a large clump of epiphytes on the side of a dead trunk. The single nestling was provisioned at a rate of 1.96 feedings/hr during the final 5 days prior to fledging. Two adults brought food to the nestling, often delivering prey from a nearby worm-feeding station created by the Jocotoco Foundation. The pair we studied may breed twice a year, but this may have been facilitated by their proximity to the artificial feeder. Received 1 May 2009. Accepted 17 September 2009.

The Jocotoco Antpitta (*Grallaria ridgelyi*) is one of the rarest species of this poorly known genus that encompasses 31 species in the family Grallariidae (Remsen et al. 2009). Despite its large size and distinctive plumage, the Jocotoco Antpitta was only described 10 years ago (Krabbe et al. 1999), having been overlooked due to its propensity to forage in the thick undergrowth of *Chusquea* bamboo-covered slopes (Krabbe et al. 1999, Ridgely and Greenfield 2001, Heinz et al. 2005, Freile et al. 2010). The Jocotoco Antpitta is apparently confined to southeastern Ecuador and is considered Endangered by BirdLife International (2009). The breeding biology of the Jocotoco Antpitta remains undocumented with only a single description of a juvenile accompanying two adults (Greeney and Gelis 2005b). We describe the first nest of Jocotoco Antpitta from

the Tapichalaca Biological Reserve in southeastern Ecuador.

METHODS

We made all observations at the Tapichalaca Biological Reserve (04° 30' S, 79° 10' W) near Valladolid in extreme southeastern Ecuador. The terrain is typically steep for this elevation in the Andes (~ 2,500 m) with vegetation characterized by high epiphyte density, a canopy height of 15–30 m, and a dense understory comprised largely of *Chusquea* bamboo (Krabbe et al. 1999). We made nest measurements to the nearest 0.5 cm and behavioral observations at the nest using a tripod-mounted video camera placed ~ 5 m from the nest. We recorded 16.3 hrs of video from 1030 to 1800 hrs on 10 November 2008 (5 days prior to fledging) and from 0700 to 1715 hrs the day before fledging.

RESULTS

We observed two adult Jocotoco Antpittas on the morning of 5 November 2008 gathering food items at the worm feeder and black-light trap adjacent to the Tapichalaca Lodge (~ 2,500 m asl). Adults carried multiple invertebrates from this feeding area, leaving in the direction of the subsequently discovered nest. We again observed adults carrying prey in the same direction on 6 November.

On 8 November 2008 at 1000 hrs MEJ found the nest, 30 m from the feeders, which contained a single large nestling. The nestling was well feathered at the time of discovery, cinnamon on the back, chestnut on the crown and upper breast, and finely barred with black on all visible areas (Fig. 1). Most of the ocular area was still bare with just a faint hint of the white malar pattern of adults. The upper mandible was dark with a pale orange tip while the lower mandible was mostly dull orange. The gape was orange but we did not examine the mouth lining or remove the nestling for closer inspection of plumage patterns. The nest was 3.6 m above the ground on the side of a vertical, rotting tree trunk that was 4.1 m tall

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FIG. 1. Nestling Jocotoco Antpitta (*Grallaria ridgelyi*) in southeastern Ecuador, 3 days prior to fledging (Photograph by M. E. Juiña).



FIG. 2. Nesting site of Jocotoco Antpitta (*Grallaria ridgelyi*) in southeastern Ecuador. The white arrow points to the nest itself (Photograph by M. E. Juiña).

(56 cm dbh) (Fig. 2). The nest was placed flush against the trunk and was supported primarily by a cluster of *Tillandsia* bromeliads and secondarily by a 4-cm diameter, horizontal branch crossing under the nest. The nest was a large cup comprised predominantly of dead plant materials, mostly dicot and bromeliad leaves. The cup was lined internally with a thick layer of fine black rootlets and bare fern rachises.

Internal measurements of the nest cup were 15.5×14.0 cm in width (measured at perpendicular angles) and 12.5 (back) to 17.0 cm (front) deep. Externally, the nest was 23.5 by 26 cm in diameter and 18 cm tall. The area around the nest contained a dense understory and, along with the dense ~ 20 m canopy, provided nearly 90% shading of the nest. The nest was directly shaded, predominantly by *Chusquea* bamboo, as well as epiphytic ferns and orchids. The nest was on the northeast side of the trunk on a northeast facing slope where it received most of its sun in the mornings.

Transcriptions of video at the nest revealed the nestling was brooded for only 7% of daylight hours. We were unable to ascertain if more than one adult brooded, but we confirmed that two adults brought food. Adult feeding visits to the nest were brief (mean \pm SD = 2.2 ± 7.5 min), during which time they frequently probed sharply or rapidly into the nest lining. The nestling was provisioned at a rate of 1.96 feedings/hr with absences from the nest lasting 29.7 ± 24.4 min. The nestling often followed the adults to the rim of the nest as they left after delivering food during the day prior to leaving the nest. In the absence of adults, the nestling frequently stood and stretched its wings or shuffled about inside the nest, occasionally pecking at small invertebrates moving around the nest.

DISCUSSION

The nest of Jocotoco Antpitta is a deep, bulky cup similar in form to the described nests of other *Grallaria* (Greeney et al. 2008). The nest was well supported by bromeliads, against the trunk and branch of a dead tree, most similar to the nest situations of Rufous Antpitta (*G. rufula*) (Greeney

and Gelis 2005a), White-bellied Antpitta (*G. hypoleuca*) (Price 2003), Yellow-breasted Antpitta (*G. flavotinca*) (Greeney et al. 2009), Variegated Antpitta (*G. varia*) (Protomastro 2000), Pale-billed Antpitta (*G. carrikeri*) (Wiedenfeld 1982), Great Antpitta (*G. excelsa*) (Koefed and Auer 2004), and some Scaled Antpitta (*G. guatemalensis*) (Dobbs et al. 2001, 2003). The nest was composed predominantly of dead plant material, most similar to nests of Chestnut-naped Antpitta (*G. nuchalis*) (Juiña et al. 2009), Chestnut-crowned Antpitta (*G. ruficapilla*) (Martin and Greeney 2006), Plain-backed Antpitta (*G. haplonota*) (Greeney et al. 2006), Watkins's Antpitta (*G. watkinsi*) (Martin and Dobbs 2004), Variegated Antpitta (Quintella 1987, Protomastro 2000), Pale-billed Antpitta (Wiedenfeld 1982), and White-bellied Antpitta (Price 2003), as well as some nests of Moustached Antpitta (*G. alleni*) (Freile and Renjifo 2003, Londoño et al. 2004, Greeney and Gelis 2006), and Scaled Antpitta (Miller 1963; Rowley 1966; Dobbs et al. 2001, 2003).

Previous observations of an older, dependent fledgling Jocotoco Antpitta (Greeney and Gelis 2005b) were made on 30 November 2003 (HFG, unpubl. data). We also observed young fledglings accompanying adults to the worm feeder on multiple days in July and November 2007 and in April 2008. Observations of juveniles, with the exception of the previously published report of Greeney and Gelis (2005b), were all near the worm feeder maintained by the Jocotoco Foundation which is presumably visited by only one pair of Jocotoco Antpittas (MEJ, pers. obs.). These records suggest at least two broods a year. The effects of these feeders are unstudied despite the many birding lodges in Ecuador that now use worm feeders for *Grallaria* antpittas. We believe it is possible the year-round surplus of food provided by the feeders in our study area may have encouraged this pair of Jocotoco Antpittas to reproduce throughout the year, a pattern which may not be common for pairs without dietary supplementation. The importance of this possibility and the long-term repercussions on adult longevity and health deserve further study at this site and at others where worm feeders are used.

Clutch size remains undocumented for Jocotoco Antpitta, but repeated sightings of single fledglings (Greeney and Gelis 2005b, this study) combined with our observations of a single nestling, suggest this species may lay a smaller

clutch than most other *Grallaria* (Greeney et al. 2008). Alternatively, single fledglings may reflect brood or clutch reduction from the typical two-egg clutches of the genus (Greeney et al. 2008).

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