

FIRST DESCRIPTION OF THE NEST, NEST SITE, EGG, AND YOUNG OF THE GIANT ANTPITTA (*GRALLARIA GIGANTEA*)

Alejandro Solano-Ugalde^{1,3}, Ángel Paz², & Wilson Paz²

¹Fundación Imaymana, Lincoln 199 y San Ignacio, Quito, Ecuador. *E-mail:* fimaymana@gmail.com, jhalezion@gmail.com

²Reserva Refugio Paz de las Aves, Nanegalito, Ecuador.

³Natural History of Ecuadorian Mainland Avifauna Group, 721 Foch y Amazonas, Quito, Ecuador.

Primera descripción del nido, sitio de anidación, huevos y jóvenes del Tororoi Gigante (*Grallaria gigantea*).

Key words: Giant Antpitta, *Grallaria gigantea*, nest description, eggs, young, parental care.

INTRODUCTION

The Giant Antpitta *Grallaria gigantea* is confined to the northern Andes of South America (Colombia and Ecuador) (Fjeldsø & Krabbe 1990, Krabbe & Schulenberg 2003). Within its range, three subspecies have been described. In Colombia the species is poorly known and has been recorded on both slopes of the central Andes (old records in Cauca and Huila, subspecies *lehmanni*), on the floor of humid montane forest at 2300–3000 m a.s.l. (Hilty & Brown 1986, Birdlife International 2004). Only recently, the species was found farther south and in the western Andes of Colombia (at La Planada, Nariño, Soye *et al.* 1997).

The species is better known in Ecuador, with records on both western (mainly northwest, subspecies *hylodroma*) and eastern slopes

of the Andes (nominate *gigantea*), where it favors montane forest, on slopes covered with subtropical cloud forest at altitudes between 1400–2400 m a.s.l. (Krabbe *et al.* 1994, Ridgely & Greenfield 2001, 2006). Until its vocalizations were known, the Giant Antpitta was thought to be a remarkably rare species (Krabbe *et al.* 1994). Although overall abundance may be higher than previously thought, under natural circumstances the species is seldom seen and therefore information regarding the natural history continues to be very scarce (Krabbe & Schulenberg 2003). To date, the only direct breeding information involves an adult observed feeding a fledgling an earthworm on 19 April 2001 in northwest Ecuador (Greeney & Nunnery 2006). In this manuscript we provide the first description of the nest, nest site, egg, and young of *G. gigantea hylodroma*.

STUDY SITE AND METHODS

We observed a nest of Giant Antpitta from late November 2007 to the end of January 2008 at the private reserve "Refugio Paz de las Aves" (c. 1950 m a.s.l., 00°00'N, 78°42'W). During this period, we visited the nest every 2–3 days and video-taped the nest for three days during incubation and during nestling care.

This reserve protects 60-ha of partly intervened subtropical cloud forest with blackberry and tree tomato crops on its higher grounds. The area is located between the Tandayapa and Mindo valleys, c. 12 km SW of Nanegalito, Pichincha province, Ecuador. Of special mention is the fact that AP and WP have habituated three different individuals of Giant Antpitta to earthworm offerings at the study site, which greatly facilitated locating the nest.

RESULTS

The first evidence of breeding was observed on 28 November 2007, when AP and WP found two Giant Antpittas carrying nesting material to a small tree inside the forest. For a total of 13 days (until 11 December), two individuals were observed there, mainly between 06:00–10:30 (EST), bringing small dead branches, mosses, lianas, ferns, *Sellaginella* sp., dark rootlets, fibers from petioles and leaflets of wax palms (*Ceroxylon* sp.), and other undetermined material to the same location. The nest was placed c. 7 m above the ground. Materials were arranged on top of a fairly thick tangle of fine vines. Bulkier matter was placed first (dead branches and larger fibers). Later, on day 5 and 6 of building, the arranging of medium size materials (ferns, *Sellaginella* sp. and rootlets), and shaping of the cup was begun. During the last days, mostly moss and thin lianas were added. At all stages, one individual seemed to be

more dedicated to the gathering, while the other predominantly arranged material. In order to incorporate material and during shaping of the cup, the birds used their long tarsi, heavy bill and interestingly with wings being push forward while standing on the nest, helping themselves pushing materials to form the walls. The bulky cup of moss was anchored on opposite sides to the trunk of a thin (18 cm Bhd) Myrtacean tree with a broken tip, with foundations built on top a tangle of vines and rootlets suspended between the main trunk and the distal portion of the broken tree top (Fig. 1). The nest was partially hidden by the overhanging foliage of surrounding epiphytes, and had the following measurements: outer diameter 27.5 cm; height 24 cm with 3 cm of hanging fibers and moss; inner diameter 13 cm; depth 8.2 cm.

Dominant plants of the dense surrounding understory were small Urticaceae, Piperaceae, Araceae, and Rubiaceae shrubs as well as numerous unidentified saplings. The middle story had plants of the same families but Arecaceae, Melastomataceae, and Rubiaceae were better represented and averaged 12 m in height. The canopy was 25 m high and dominated by Cecropiaceae, Chloranthaceae, Lauraceae, Melastomataceae, and Rubiaceae. In all three strata, most branches were heavily covered with moss, and a heavy load of epiphytes was present, mainly in the canopy and subcanopy. The slope of the terrain at the base of the nest tree was 65° and the nest was located 12–15 m away from a 2–3 m wide creek.

On 20 December 2007, we made the first approach to the nest in order to confirm activity. Upon inspection we found an adult incubating (Fig. 2). We determined that the bird was incubating as it stood on the nest and moved its bill as if turning eggs; however, the angle did not allow documentation of any further information at the time. On 22 December, however, we filmed the nest for



FIG. 1. Nest (as indicated by arrow) and nesting site of Giant Antpitta *Grallaria gigantea*, 22 December 2007, Refugio Paz de las Aves, Pichincha, Ecuador. (Photo by AS-U).



FIG. 2. Adult Giant Antpitta *Grallaria gigantea* incubating, 22 December 2007, Refugio Paz de las Aves, Pichincha, Ecuador. (Photo by AS-U).

the first time, and, attested that the nest contained two subelliptical eggs of uniform turquoise color. The eggs were not measured, as we feared the activity might cause the birds to abandon the nest. Using videos transcribed at a later date, we were able to document the following breeding behavior: vocalizing at the nest (both full song and short phrases), “napping,” nest maintenance, preening, egg turning, incubation swap, “rapid probing,” “yawning,” and food offering (between adults and to chick). Based on observed behavior, we suggest that at least one egg was present on either 13 or 14 December (when one bird was observed sitting on the nest for prolonged periods of time), and that incubation lasted until 31 December, when we found a single recently hatched chick in the nest. The second egg did not hatch on the following day, and was absent from the nest five days later. On the day of hatching, the nestling’s eyes were closed and its skin showed of a grayish tone partially obscure by fine blackish gray down. On 19 January, the chick downy feathers remaining on the head, but most contour feathers were fully expanded. The contour feathers, however, differed from those of typical adults in having buffy edges, and on the head in particular, gave the appearance of a downy brown cap. The mandible was mostly dusky with a paler base and cutting edge, while the maxilla was dusky with a paler tip. The rictal falanges were enlarged and pinkish orange, and the mouth linings orange. The back feathers had broad dark edges while the underparts were slightly more rufescent, with thin black borders, giving a scaled pattern. The chin and throat feathers were slightly paler. Flight feathers were almost fully emerged from their sheaths, differing little from those of the adults, and there were only a few sparse downy feathers present on the wings. The last check of the nest on January 23 revealed an empty nest; the chick was last seen in the nest on 21 January when

observed stretching wings on the rim of the nest. On 25 January the chick was observed in the dense understory in the vicinity of the nest, and was fed large pieces of earthworms (*Oligochaeta*) by the two adults.

DISCUSSION

It is generally accepted that the Formicariidae (antpittas & anttrushes) is one of the least known endemic families of Neotropical birds. Despite their very secretive habits, however, recent years have seen an important number of studies, which have increased our knowledge of different aspects of the family. A good example is the recent publication of Greeney *et al.* (2008), in which an exhaustive review of the breeding biology of *Grallaria* and *Grallaricula* is provided. According to Greeney *et al.* (2008), the nest of *G. gigantea* here described falls into the category of “well-supported sites against tree trunks, fallen logs, or broken stumps;” however, we would like to remark that following Simon & Pacheco (2005), our nest is rather surprising as the classification suggests a “low cup/pensile” nest which apparently do not occur among Neotropical birds. Further observations at the study site have proven that in at least three other nest locations, nests were well supported against different substrates (Solano-Ugalde pers. obs.), but specific measurements were not secure, however, we feel that these most likely are better assigned to “high cup/pensile” (Simon & Pacheco 2005). We encourage all authors to use the proposal provided by Simon & Pacheco (2005), and if necessary to propose modifications, as only with more standardization of data, better and sounder analysis would be achieved.

Nest construction behavior is very poorly documented in *Grallaria*, limited data available only for Great Antpitta *G. excelsa* (building observed on a single day, Kofod & Auer 2004). The observations of nest building by

two adults of *Grallaria gigantea* support the inference that most species of *Grallaria* built their nests in pairs (Greeney *et al.* 2008). Our observations suggest that *G. gigantea* takes 13 to 14 days to construct its nest.

The eggs of *G. gigantea* are turquoise-blue and unmarked as in other species of *Grallaria* (turquoise to blue-green in Greeney *et al.* 2008); however, species with large sample sizes have shown there to be some variation (see Greeney & Martin 2005). A clutch size of two eggs is also consistent with other *Grallaria* (Table 3 in Greeney *et al.* 2008). Incubation period, if considered from the first date of believed egg presence at the nest (20 December), would result in a total of 11 days; however, as the nest was apparently finished on 13–14 December, it is possible that the period lasted 15–18 days as in some of the largest species in the genus (*G. guatemalensis*, Dobbs *et al.* 2001, 2003; *G. varia*, Kofoed & Auer 2004). The appearance of the nestling is also congruent with the rest of *Grallaria* species (see a summary in Greeney *et al.* 2008). According to our observations the nestling period was 22 days, which is longer than in the best known species, *G. guatemalensis* (19 days, Dobbs *et al.* 2001). The longer period of *G. gigantea* may be due to its large size and the fact that the nest is placed quite high above the ground, which could prevent undeveloped young from leaving the nest at a young age.

The Giant Antpitta is considered a threatened species and given the status Endangered (BirdLife International 2004). The species (nominate *gigantea*) is included in Endemic Bird Area-042 Northern Central Andes; although not considered threatened by BirdLife International (2004), the race *hylodroma* is also included as part of the range restricted species of the Choco-West Slope of the Andes in Ridgely & Greenfield (2001), with the suggestion of considering it as a distinct taxon (Pichincha Antpitta, *G. hylodroma*). Most of the Choco habitat has been heavily

affected by different anthropogenic activities, and today the protection of this habitat is of critical priority (BirdLife International 2003). According to the comprehensive overview of distribution and conservation of *Grallaria* and *Grallaricula* species in Ecuador by Freile *et al.* (in press), *G. gigantea* should rank as Endangered at a national scale, and it is likely that a review at a larger geographical scale is necessary.

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