

Notes on the breeding of high-Andean birds in northern Ecuador

by Harold F. Greeney, Paul R. Martin, Rudy A. Gelis,
Alejandro Solano-Ugalde, Fran Bonier, Ben Freeman & Eliot T. Miller

Received 10 May 2010

SUMMARY.—The breeding biology of tropical birds is poorly known, especially in the high Andes. We present observations on the nesting of 76 species of birds from the Ecuadorian highlands (above 2,700 m). For many of these species this is the first breeding information available for Ecuador. We present detailed accounts for several species, including the first described nests of Plain-capped Ground Tyrant *Muscisaxicola alpina* and Chestnut-winged Cinclodes *Cinclodes albidiventris*.

The studies of Marchant (1959, 1960) then Best *et al.* (1993, 1996), Rasmussen *et al.* (1996) and Greeney *et al.* (2010) in southern Ecuador, and other recent papers focusing on the north-west (e.g. Marín & Carrión 1991, 1994, Greeney & Nunnery 2006, Solano-Ugalde *et al.* 2007), east (Greeney *et al.* 2004, Greeney & Gelis 2007, 2008, Greeney & Merino 2007), and elsewhere (Kiff *et al.* 1989), have begun the monumental task of documenting breeding seasons at a national level. Much work remains, however, and notably neglected are the Andes above 2,700 m (but see scattered records in Lönnberg & Rendahl 1922, Hilty & Brown 1986, Marín & Carrión 1994, Greeney & Martin 2005, Cisneros-Heredia 2006, Solano-Ugalde 2008).

Here we present 343 observations on the breeding activity of 76 species of birds, collected over the last seven years, predominantly from the vicinity of Papallacta, prov. Napo (00°19'S, 78°12'W) (PP) at various elevations. Also in Napo we studied nests at Guango Lodge (00°22'S, 78°04'W) (GU). In addition we gathered information from the areas in and around Quito, prov. Pichincha (QU), Micacocha, prov. Napo (00°30'S, 78°14'W) (MC), Otavalo, prov. Imbabura (OT), Yanacocha, prov. Pichincha (00°06'S, 78°35'W) (YA) and the slopes of Cotopaxi Volcano, prov. Cotopaxi (00°38'S, 78°27'W) (CO). Observations were made opportunistically during the course of other field work. In conjunction with past and future observations the data presented here comprise a significant contribution to our knowledge of birds from the highlands of Ecuador.

For brevity, we have not exhaustively reviewed the breeding literature for each species, instead we indicate only other Ecuadorian records or particularly relevant works. We use the following abbreviations: (B) building, (I) incubating, (N) nestlings, (F) fledglings, (AN) active nest at unknown stage, (CF) adult carrying food, and (CM) carrying nesting material but nest unseen.

Species accounts

CHESTNUT-WINGED CINCLODES *Cinclodes albidiventris*

We found all nests at PP, at elevations of 3,900 to 4,230 m. We discovered the first nest on 29 May 2003, at which time we noted only that at least one adult was repeatedly entering a nest tunnel. Subsequently, on 22 November 2003, we discovered a single nest with two nestlings. In 2004 we found three active nests. One was incubating two fresh, all-white eggs (26.7 × 20.2 and 26.8 × 20.2 mm) on 22 October. After the adult was flushed from the nest, it returned with fresh moss in its bill, indicating that this species continues to add material

to the nest during incubation. The other two nests contained nestlings on 1 August and 17 October, respectively. At the two nests where we were able to examine the nestlings, there was one in each. At one nest an adult brought the nestling a brown lepidoptera pupa c.3 cm long. In 2005 we observed five nests. The first contained two nestlings on 27 August 2005 and the second a single cold, all-white egg at 06.45 h on 30 September. At 16.45 h on 1 October, there was still only one egg, but a second egg was laid before 07.00 h on 2 October. This indicates that the eggs were laid more 34 hours apart. After 12 days of incubation we found the nest and eggs destroyed in front of the nest entrance. A third nest contained two all-white eggs on 1 October. Eight days later the nest was empty and we found broken eggshells in front of the nest. On 4 October, at 07.30 h, we found a nest with a single cold, all-white egg. Again, at least 35 hours passed before we found a second egg. These eggs were incubated for at least 17 days until we ceased monitoring the nest. On 18 October we found an additional nest with an adult incubating two all-white eggs. In 2006, we observed one individual excavating a nest tunnel on 31 July, nests with two eggs on 23 and 29 September, and nests with nestlings on 29 August, 14 October and 1 November. We subsequently found nests with nestlings on 26 October and 6 December 2007, and 17 January 2008, as well as observing an adult carrying rabbit fur into a freshly excavated tunnel on 26 October 2008. All nests were neat, shallow cups of rootlets lined first with pale green moss and lichens, and then sparsely with feathers. One nest measured 16 cm wide by 5.5 cm tall outside and 6.5 cm wide by 3.5 cm deep inside. Although there are brief mentions of the use of burrows in this species by Taczanowski (1884) and Crawshay (1907), this appears to be the first complete description of the nest for this widespread and common species.

STOUT-BILLED CINCLODES *Cinclodes excelsior*

We found most nests at PP, at elevations of 3,950 to 4,300 m. On 17 October and 5 December 2004 we found two nests with two nestlings each. We found three nests in 2005. On 22 August we found a nest at which an adult was adding material to the empty nest cup. Eventually, two all-white eggs (29.6 × 21.8 and 29.6 × 22.4 mm) were laid before 2 September. Both eggs hatched before 24 September and the nest was empty 14 days later. While the nest contained nestlings, we observed an adult arriving with material to add to the nest. On 4 October we found a nest with an adult incubating two all-white eggs. They were incubated for at least 17 days before we ceased monitoring. Finally, on 16 October we found a second nest with an adult incubating two all-white eggs.

At PP we found two additional nests during incubation on 10 November 2006, and nests with nestlings on 18 October 2006, 26 October 2007 and 24 and 26 October 2008, an active nest on 13 December 2009, and an adult feeding a young fledgling on 6 December 2007. We found three additional nests with nestlings at MC on 30 December 2007 (two nests) and 6 December 2009. All nests were built inside earthen tunnels in road cuts. They were all constructed entirely of pale yellow straw-like material. Two nests measured 15 cm and 22 cm wide by 7.5 cm and 7 cm tall outside, with unlined egg cups measuring 8.0 cm and 9.5 cm in diameter by 5 cm and 4 cm deep, respectively. One was built atop an older, partially decomposing nest, probably of the same species. Our nest and egg descriptions match those from the only other study of the nesting of this species (Graves & Arango 1988).

ANDEAN TIT-SPINETAIL *Leptasthenura andicola*

We found all nests at PP, at elevations of 3,900–4,230 m. The first contained two nestlings (9.7 g and 9.4 g) on 5 December 2004. On 13 December the nest contained only a single nestling which weighed 16.6 g. This nest was nestled into a cavity at the top of a road cut 2.3 m up. The cavity was formed by a cushion plant (Asteraceae) overhanging the bank, with

the top, front and bottom composed of the plant and the back composed of bare dirt. The nest was an incomplete ball, with the top and back not completely formed, relying instead on the bank and cushion plant. The outside of the ball was composed of an estimated 90% grass stems and small sticks, and 10% moss. Inside, the nest was densely lined with c.70% mammal fur, 20% *Puya* sp. (Bromeliaceae) seed down and 10% feathers. The lining also included a long piece of blue plastic string. Outside dimensions of the ball were 14.5 cm tall by 11.5 cm wide, by 11 cm front to back. Inside, the chamber was 7.5 cm tall overall, with a cup 4.5 cm wide by 3 cm deep. All other nests seemed similar to this one, but we did not examine them closely. Of nine nests, two were built inside earthen tunnels, presumably excavated by other species, with their entrances <10 cm from the exterior of the hole. The remaining seven nests were built inside natural cavities created by overhanging vegetation beside a rock or dirt bank. In 2005, we found four nests under construction on 22 August, 24 and 26 September, and 12 October. Additionally, we found two nests with incubation underway on 26 September, one on 29 September and one on 20 October. All eggs we examined were immaculate white and seven eggs had mean measurements of 20.1 ± 0.8 by 15.4 ± 0.6 mm (range = $19.4\text{--}21.8 \times 14.9\text{--}16.6$ mm). At 13 nests clutch size was two. At three nests we observed both adults were building, and at two nests both adults provisioned the nestlings. At one nest the second egg was laid between 06.15 h and 12.15 h. At two nests eggs were laid at least 72 hours apart and at one at least 48 hours apart. Eggs at two nests were incubated for at least 16 days before we ceased monitoring them or they hatched. At one nest, on the day the second egg was laid, we later found it broken on the ground in front of the nest. The adult, however, continued to incubate the remaining egg, which proved infertile. At three nests, both nestlings hatched on the same day. At six nests where we determined their fate, one fledged two young and five failed (four with eggs, one with nestlings).

In 2006 we found ten additional nests. We observed nests under construction on 23 September and 14 October. We found nests with incubation underway on 14, 18 ($n=2$) and 23 October, as well as two nests on 10 November. On 10 November we also found two nests, each with two nestlings. We found an additional nest with eggs on 26 October 2007, nests with nestlings on 24 October 2008 and 9 December 2009, and one active nest of unknown stage on 13 December 2009.

PLAIN-CAPPED GROUND TYRANT *Muscisaxicola alpina*

Near PP, at 4,275 m, on 23 September 2006 we flushed an adult from a nest containing two eggs. The eggs were white with cinnamon flecking heaviest at the larger end. They measured 27.6×18.8 mm and 27.1×18.7 mm, and weighed 4.69 g and 4.71 g, respectively. Six days later we weighed the eggs again, at which time they had lost weight reflecting a daily mass-loss of 1.3% and 1.1%, respectively. On 11 October the nest was empty but intact. The nest was an open cup on a thin, well-sheltered rock ledge 1.4 m above ground and 2.1 m below the top of the cliff. The cup consisted of three layers, an outer layer of loose moss and thin rootlets, a dense inner lining (3 cm) of dark, fibre-like lichens, and a thin, innermost layer of hair and feathers. Internally the cup was round and measured 7.0 cm in diameter by 5.5 cm deep. Externally the nest was slightly elongated parallel to the cliff and measured 15 cm wide by 13 cm front to back. Supporting the cup on the slightly irregular rock ledge was a 10-cm lip of moss extending forward from the nest to the edge of the ledge. In addition to this nest, on 11 October 2008 at MC (3,960 m) we observed two adults carrying material into the eaves of an abandoned house. This appears to be the first nest description for this species.

PLUMBEOUS SIERRA FINCH *Phrygilus unicolor*

On 17–18 October 2004, we found two nests, one with one egg and one with two, at PP, at 4,100 m, and MC, respectively. In 2005 we found a nest with two eggs on 24 October at PP, at 4,000 m. In 2006 we found two nests on 3 August at CO, both at 3,800 m. One contained a single undeveloped egg and the second contained two partially developed eggs. At PP in 2006, at elevations of 4,000–4,200 m, we found nests with eggs on 14 October, 18 October ($n=3$) and 1 November, and nests with nestlings on 18 October and 1 November. In 2007 we observed an adult carrying food on 26 October at PP (4,000 m), and found a nest with nestlings on 30 December at MC (4,000 m).

All eggs were blue with dark red-brown flecking and speckling, heaviest at the larger end and usually forming a ring. Mean (\pm SD) measurements of six eggs were $24.7 \pm 0.7 \times 16.6 \pm 0.8$ mm (range = $24.0\text{--}25.8 \times 15.7\text{--}17.5$ mm). All nests were bulky open cups comprising short twigs and grass stems mixed with moss. All were densely lined with varied soft materials including feathers, *Puya* sp. seed down, mammal fur, sheep wool and horse hair. Four nests were nestled into bunch grass clumps, and one was in a multiple fork of an unidentified Asteraceae. Mean nest height was 0.9 ± 0.4 m. Mean measurements for four nests were: outside width 13.6 ± 2.2 cm; outside height 9.8 ± 0.5 cm; inside diameter 6.3 ± 0.3 cm; inner cup depth 4.4 ± 0.3 cm. One nest was built atop an old nest, seemingly of the same species, causing the entire structure to be 17 cm tall. This species' nest and eggs were first described by Armani (1985) but few other data are available on its breeding behaviour.

In addition, we recorded the following information: **Silvery Grebe** *Podiceps occipitalis*, 22 July 2008 MC 3,900 m (AN), five nests with adults sitting, 17 November 2008 MC 3,900 m (F); **Torrent Duck** *Merganetta armata*, 22 December 2007 GU 2,750 m (F), female sheltering young chick under wing; **Andean Teal** *Anas andium*, 23 September 2006 PP 3,275 m (F), three chicks following adults, 26 December 2008, MC 4,000 m (F), five recently hatched chicks, 7 February 2009 MC (F); **Carunculated Caracara** *Phalacrocorax carunculatus*, 18 October 2004 MC (I), two eggs, pale red-brown with dark red-brown flecking and sparse white spots, 55.5×44.0 mm and 58.6×44.9 mm, 6 December 2009, MC (AN, two nests); **Black-chested Buzzard-Eagle** *Geranoaetus melanoleucus*, 1 August 2004, PP 3,900 m (N), 24 May 2009 PP 3,300 m (B) and (N); **Variable Hawk** *Buteo polyosoma*, 23 July 2004 PP 4,100 m (AN); **Black-and-chestnut Eagle** *Oroaetus isidori*, 15 November 2008 GU 2,700 m (B), nest 15 m up in 20-m tree on horizontal branch between bromeliad clumps, adults bringing branches; **Andean Coot** *Fulica ardesiaca*, 17 February 2004 MC (F), adult with four chicks, 17 November 2008 MC (F), three pairs of adults with dependent young, 26 January 2009 YA (F); **Andean Lapwing** *Vanellus resplendens*, 4 December 2007 CO (F), five adults with dependent young, two with two young, three with one, 5 November 2008 MC (F), adult with two young; **Andean Gull** *Larus serranus*, late July 2005 PP 3,275 m (CM), 15 September 2005 PP 3,275 m (AN), on small island in lake, 9 October 2006 PP 3,275 m (F), two fledged young on island in lake, 17 January 2008 PP 3,400 m (N), two older nestlings near fledging on island in lake; **Rock Pigeon** *Columba livia*, 16 June 2005 CO 3,000 m (I), clutch two, in urban area; **Eared Dove** *Zenaida auriculata*, 17 December 2003 QU (B), 3 m up, only one adult building, 19 January 2004 QU (N), 30 January 2004 QU (B), 10 m up, 28 March 2005 QU (B), 3 m up, 31 May 2005 QU 2,900 m (I) clutch two, 15 June 2005 QU 2,850 m (I) clutch two, 11 January 2007 QU (N), 9 December 2008 QU 2,850 m (AN), 5 February 2009 QU (N), 8 August 2009 QU (N), adult carried eggshell and dropped it 30 m from nest; **Black-winged Ground Dove** *Metriopelia melanoptera*, 18 February 2007 MC 3,960 m (I), two all-white eggs, 28.1×20.5 mm and 26.7×20.7 mm; **Barn Owl** *Tyto alba*, 16 June 2005, CO 3,000 m (F), recently fledged young, 15 February 2007 MC 3,960 m (F); **Band-winged Nightjar** *Caprimulgus longirostris*, 7 October 2008 YA 3,400 m (F); **Sparkling Violetear** *Colibri coruscans*, 14 June 2004 QU 2,700 m

(I), two eggs, both hatched, one nestling eaten by Great Thrush *Turdus fuscater*, 30 May 2005 QU 2,850 m (N), 30 December 2006 PP 3,300 m (B), 1 January 2007 PP central valley slope 3,300 m (I), 27 December 2009 QU near Cumbaya 2,300 m (I), clutch two; **Ecuadorian Hillstar** *Oreotrochilus chimborazo*, 13 September 2004 PP 4,050 m (I), 22 September 2004 PP 4,050 m (B and I), 17 October 2004 PP 4,000 m (I), 5 December 2004 PP 4,050 m (N), 24 September 2005 PP 4,000 m (B), 26 September 2005 PP 4,000 m (B, two nests), 14 October 2006 PP 4,000 m (B), 1 November 2006 PP 4,050 m (I, two nests) and 3,900 m (N), 10 November 2006 PP 3,950 m (B), 18 February 2007 MC 3,960 m (I), 26 October 2007 PP 4,000 m (N), 17 November 2008 MC 3,960 m (B, two nests) and (I), (N) and (AN), 26 December 2008 MC 4,000 m (N, four nests), 2 November 2009 PP 3,850 m (B), 6 December 2009 MC 3,900 m (B) and (I, three nests) and (N, two nests); **Giant Hummingbird** *Patagonia gigas*, 23 October 2008 PP 4,000 m (CM); **Shining Sunbeam** *Aglaeactis cupripennis*, 23 May 2009 PP 3,300 m (B); **Mountain Velvetbreast** *Lafresnaya lafresnayi*, 22 October 2006 PP 3,350 m (I), two fresh eggs, nest 2 m up; **Great Sapphirewing** *Pterophanes cyanopterus*, YA 3,500 m (AN); **Buff-winged Starfrontlet** *Coeligena lutetiae*, 19 December 2006 YA 3,400 m (AN); **Glowing Puffleg** *Erocnemis vestitus*, 5 November 2006 PP 3,300 m (I), clutch two; **Purple-backed Thornbill** *Ramphomichron microrhynchum*, 12 October 2008 PP 3,800 m (N); **Viridian Metaltail** *Metallura williami*, 11 October 2006 PP 3,300 m (I), 22 October 2006 PP 3,300 m (I), 6 November 2006 PP 3,300 m (N); **Tyrian Metaltail** *M. tyrianthina*, 31 October 2006 PP 3,800 m (B), 2 November 2006 PP 3,300 m (B), 6 November 2006 PP 3,800 m (N), two nestlings; **Rainbow-bearded Thornbill** *Chalcostigma herrani*, 21 December 2006 YA 3,400 m (F), young bird foraging alone, 27 April 2009 YA 3,550 m (CM); **Blue-mantled Thornbill** *Chalcostigma stanleyi*, 23 July 2004 PP 4,100 m (B), 4 August 2004 PP 4,000 m (B) and (I), 11 August 2004 PP 4,000 m (N), 13 September 2004 PP 3,900 m (I), 16 September 2004 PP 3,900 m (I) and 4,050 m (N), 22 September 2004 PP 4,250 m (F), 22 August 2005 PP 4,000 m (I), 27 August 2005 PP 3,900 m (N, two nests), 26 September 2005 PP 4,000 m (N), 11 October 2006 PP 4,000 m (I), and 1 November 2006 PP 4,000 m (I); **Grey-breasted Mountain Toucan** *Andigena hypoglauca*, GU 2,750 m (F); **Bar-bellied Woodpecker** *Veniliornis nigriceps*, 19 November 2006 PP 3,300 m (I), adult entering cavity and remaining for long periods; **White-browed Spinetail** *Hellmayrea gularis*, 22 October 2006 PP 3,340 m (B), this nest described in detail by Greeney & Zyskowski (2008), 7 February 2009 YA 3,500 m (N), two nestlings; **Tawny Antpitta** *Grallaria quitensis*, 7 December 2003 YA 3,400 m (CM), 16 September 2004 PP 4,100 m (I), two eggs, 17 October 2004 PP 4,200 m (N), 22 October 2004 PP 4,150 m (N), 26 September 2005 PP 4,100 m (I, two nests), 28 September 2005 PP 4,250 m (B, two nests), 7 October 2005 PP 4,200 m (N), 29 August 2006 PP 4,000 m (B), 27 October 2006 PP 4,000 m (I), 2 February 2009 YA 3,500 m (I) two eggs, and 3,600 m (N, two nests), one nest with two older nestlings, one with two younger nestlings, 5 January 2010 YA 3,500 m (N), two young nestlings; **Ash-coloured Tapaculo** *Myiornis senilis*, 26 January 2009 YA 3,400 m (F); **Blackish Tapaculo** *Scytalopus latrans*, 26 December 2006 YA 3,400 m (F); **White-crested Elaenia** *Elaenia albiceps*, 16 June 2005 CO 3,000 m (B); **Tufted Tit-Tyrant** *Anairetes parulus*, 10 December 2006 PP 3,300 m (N), 26 April 2009 QU 2,900 m (B); **Cinnamon Flycatcher** *Pyrrhomyias cinnamomea* 2 November 2008 GU 2,700 m (B and F), 14 November 2008 GU 2,750 m (F); **Black Phoebe** *Sayornis nigricans*, 30 September 2003 GU 2,700 m (B); **Rufous-breasted Chat-Tyrant** *Ochthoeca rufipectoralis* 20 November 2006 GU 2,750 m (AN); **Black-billed Shrike-Tyrant** *Agriornis montana*, 27 December 2007 MC 3,960 m (CF), 6 December 2009, MC 3,700 m (N), one addled egg and one older nestling; **Barred Becard** *Pachyramphus versicolor*, 2 November 2008 GU 2,700 m (B); **Red-crested Cotinga** *Ampelion rubrocristatus*, 23 May 2009 PP 3,350 m (N); **Turquoise Jay** *Cyanolyca turcosa*, 20 July 2008 GU 2,750 m (F); **Great Thrush** *Turdus fuscater*, 27 November 2003 QU (N), 17 December 2003 QU (F), 23 September 2004 QU (B), 5 m up, using living sticks with leaves on them, 21 October 2004 PP

3,300 m (I), clutch one, 23 January 2005 PP 3,300 m (B), 10 February 2005 GU 2,750 m (N), 21 September 2006 PP 3,300 m (N), 10 October 2006 PP (B), 12 October 2006 PP 3,300 m (N) fledged two young, 14 October 2006 PP 3,300 m (N), fledged two young, 19 October 2006 PP 3,300 m (AN), destroyed by predator, 20 October 2006 PP 3,300 m (F) male feeding fledgling, 23 October 2006 PP 3,300 m (B), clutch two, 25 October 2006 PP 3,300 m (B), 26 October 2006 PP 3,800 m (B), bringing dry grass to nest, 9 November 2006 PP 3,300 m (B), lining nest with fine grass, 11 November 2006 PP 3,300 m (N), 11 January 2007 QU (CM), 7 May 2009 PP 3,300 m (AN), 23 May 2009 PP 3,350 m (N); **White-capped Dipper** *Cinclus leucocephalus*, 25 December 2009 GU 2,750 m (F); **Brown-bellied Swallow** *Notiochelidon murina*, 15 January 2006 PP 3,300 m (N), three nestlings, 22 September 2006 PP 3,300 m (B), fledged, laid first egg on 23 September, 23 September 2006 PP 4,000 m (CM) and (AN, six nests), adults entering and exiting holes in banks, 29 September 2006 PP 4,000 m (B, four nests), 10 October 2006 PP 3,325 m (I), clutch three, 25 October 2006 PP 4,000 m (B) and (I), fresh all-white egg, 19.9×12.7 mm, 27 October 2006 PP 3,800 m (I), two well-developed eggs, 5 November 2006 PP 2,700 m (N), two nestlings, 8 November 2006 PP 3,300 m (N), two nestlings, pin-feathers broken sheaths $c.3/4$, 10 November 2006 PP 4,150 m (N), 13 November 2006 PP 3,300 m (N), 14 November 2006 PP 3,300 m (N), three nestlings, pin feathers broken sheaths $c.3/4$, 18 November 2006 PP 3,300 m (N) and (F), three fledglings sitting near nest, 12 October 2009 GU 2,700 m (N), in eaves of house; 13 December 2009 PP 4,000 m (AN); **Blue-and-white Swallow** *Notiochelidon cyanoleuca*, all 2 August 2006 OT, three pairs (F), two nests with older nestlings (N); **Rufous Wren** *Cinnycerthia unirufa*, 31 January 2004 GU 2,800 m (N), 3 m up; **Grass Wren** *Cistothorus platensis*, 12 October 2006 PP 3,300 m (B), 18 October 2006 PP 4,050 m (F), 23 December 2006 PP 3,950 m (N); **Mountain Wren** *Troglodytes solstitialis*, 22 September 2006 PP 3,300 m (B), 12 October 2006 PP 3,300 m (N), 14 November 2008 GU 2,750 m (CM); **Páramo Pipit** *Anthus bogotensis*, MC 3,960 m (CF); **Spectacled Whitestart** *Myioborus melanocephalus*, 8 October 2006 PP 3,800 m (B), lining nest, 25 October 2006 PP 3,300 m (B), 26 October 2006 PP 3,800 m (N), two nestlings with pin feathers broken sheaths 1 cm, 27 October 2006 PP 3,800 m (N), two nestlings near to fledging, 17 November 2006 PP 3,300 m (B), 19 November 2006 PP 3,300 m (N), two older nestlings, 12 December 2006 PP 3,300 m (B), lining nest, 13 December 2006 PP 3,300 m (F), 14 December 2006 PP 3,300 m (F), two older fledglings, 2 January 2007 PP 3,375 m (N), two nestlings with pin feathers not broken sheaths, 18 January 2007 PP 3,600 m (F), 17 December 2007 GU 2,800 m (F), 19 October 2008 YA 3,400 m (F), 2 November 2008 GU 2,700 m (F); **Black-crested Warbler** *Basileuterus nigrocristatus*, 9 October 2006 PP 3,275 m (B), clutch two, first laid 18 October, 16 October 2006 PP 3,275 m (N) nest on ground in *Chusquea* sp. bamboo, two nestlings, 13 December 2006 PP 3,300 m (F) pair with older fledgling foraging on own but still being fed, second pair with very young fledglings; **Cinereous Conebill** *Conirostrum cinereum*, 13 October 2006 PP 3,275 m (N), two unfeathered nestlings, 14 October 2006 PP 3,300 m (B), 25 October 2006 PP 3,300 m (CF), 18 January 2007 PP 3,600 m (F); **Blue-backed Conebill** *Conirostrum sitticolor*, 19 October 2008 YA 3,400 m (F); **Masked Flowerpiercer** *Diglossopsis cyanea*, 19 November 2006 PP 3,300 m (I), clutch two, 17 December 2007 GU 2,750 m (F), 20 July 2008 GU 2,750 m (F), two young visiting hummingbird feeders, 19 October 2008 YA 3,400 m (F); **Glossy Flowerpiercer** *Diglossa lafresnayii*, 21 July 2008 GU 2,750 m (F), foraging on its own; **Black Flowerpiercer** *D. humeralis*, 21 October 2006 PP 3,350 m (N) nest 2.5 m up in branch tangle, 25 October 2006 PP 3,300 m (B), 2 November 2006 PP 3,300 m (B); **Scrub Tanager** *Tangara vitriolina*, 22 November 2008 QU 2,850 m (B) adult carrying lichens, nest 9 m above ground; **Hooded Mountain Tanager** *Buthraupis montana*, 26 October 2006 Verdecocha, Pichincha 3,320 m (F); **Black-chested Mountain Tanager** *B. eximia*, 1 January 2007 PP 3,300 m (F); **Buff-breasted Mountain Tanager** *Dubusia taeniata*, 14 November 2008 PP 3,400 m (CF); **Black-capped Hemispingus** *Hemispingus*

atropileus, 31 March 2008 GU 2,750 m (F); **Superciliaried Hemispingus** *H. superciliaris*, 16 October 2006 PP 3,300 m (B), 1 January 2007 PP 3,300 m (F), 18 January 2007 PP 3,600 m (F), 28 November 2007 YA 3,400 m (F); **Plushcap** *Catamblyrynchus diadema*, 20 November 2008 GU 2,750 m (F); **Plain-coloured Seedeater** *Catamenia inornata*, 8 February 2004 below YA 2,800 m (B); 14 October 2006 PP 3,175 m (I) clutch two, 16 October 2006 PP 3,300 m (B), 17 October 2006 PP 3,300 m (F), 27 October 2006 PP 3,300 m (N), two nestlings fledged upon approach; **Pale-naped Brush Finch** *Atlapetes pallidinucha*, 18 October 2006 PP 3,300 m (F), 25 October 2006 PP 3,900 m (I), 21 October 2008 GU 2,700 m (B), 14 November 2008 PP 3,400 m (B); **Slaty Brush Finch** *A. schistaceus*, 25 December 2009 GU 2,750 m (F); **Rufous-collared Sparrow** *Zonotrichia capensis*, 27 June 2004 QU (CM), 11 January 2007 QU (N), 8 December 2009 QU 2,900 m (B) and PP 3,300 m (B); **Northern Mountain Caciue** *Cacicus leucoramphus*, 21 July 2008 GU 2,750 m (F); **Hooded Siskin** *Carduelis magellanica*, 15 December 2006 PP 3,300 m (F) female with two older fledglings, 22 February 2008 Yaguarcocha, Imbabura (B).

Acknowledgements

We thank Juan Carlos Calvachi, Mitch Lysinger, Caleb Gordon, Nick Athanas and Dušan Brinkhuizen for contributing unpublished observations. For help in the field we thank Inka Harms and Julia Barth. John V. & the late Ruth Ann Moore, as well as Matt Kaplan have generously supported HFG through grants to the Population Biology Foundation. Field work by HFG was further supported in part by a Pamela & Alexander F. Skutch Award, the Maryland Ornithological Society and Field Guides Inc. We are particularly grateful for the ongoing support of the PBNHS, Tim Metz, Jay Peltz and the Humboldt Crew. This is publication no. 222 of the Yanayacu Natural History Research Group.

References:

- Armani, G. C. 1985. *Guide des passereaux granivores: emberizinsés*. Société Nouvelle des Editions Boubée, Paris.
- Best, B. J., Clarke, C. T., Checker, M., Broom, A. L., Thewlis, R. M., Duckworth, W. & McNab, A. 1993. Distributional records, natural history notes, and conservation of some poorly known birds from southwestern Ecuador and northwestern Peru. *Bull. Brit. Orn. Cl.* 113: 108–119, 234–255.
- Best, B. J., Checker, M., Thewlis, R. M., Broom, A. L. & Duckworth, W. 1996. New bird breeding data from southwestern Ecuador. *Orn. Neotrop.* 7: 69–73.
- Cisneros-Heredia, D. F. 2006. Notes on breeding, behaviour and distribution of some birds in Ecuador. *Bull. Brit. Orn. Cl.* 126: 153–164.
- Crawshay, R. 1907. *The birds of Tierra del Fuego*. Quartich, London.
- Graves, G. R. & Arango, G. 1988. Nest-site selection, nest, and eggs of the Stout-billed Cinclodes (*Cinclodes excelsior*), a high Andean furnariid. *Condor* 90: 251–253.
- Greeney, H. F. & Gelis, R. A. 2007. Breeding records from the north-east Andean foothills of Ecuador. *Bull. Brit. Orn. Cl.* 127: 236–241.
- Greeney, H. F. & Gelis, R. A. 2008. Further breeding records from the Ecuadorian Amazonian lowlands. *Cotinga* 29: 62–68.
- Greeney, H. F. & Martin, P. R. 2005. High in the Ecuadorian Andes: the nest and eggs of the Tawny Antpitta (*Grallaria quitensis*). *Orn. Neotrop.* 16: 567–571.
- Greeney, H. F. & Merino M., P. A. 2007. Notes on breeding birds from the Cuyabeno Faunistic Reserve in northeastern Ecuador. *Bol. Soc. Antioqueña Orn.* 16: 46–54.
- Greeney, H. F. & Nunnery, T. 2006. Notes on the breeding of north-west Ecuadorian birds. *Bull. Brit. Orn. Cl.* 126: 38–45.
- Greeney, H. F. & Zyskowski, K. 2008. A novel nest architecture within the Furnariidae: first nests of the White-browed Spinetail. *Condor* 110: 584–588.
- Greeney, H. F., Gelis, R. A. & White, R. 2004. Notes on breeding birds from an Ecuadorian lowland forest. *Bull. Brit. Orn. Cl.* 124: 28–37.
- Greeney, H. F., Juiña J., M. E., Harris, J. B. C., Wickens, M. T., Winger, B., Gelis, R. A., Miller, E. T. & Solano-Ugalde, A. 2010. Observations on the breeding biology of birds in south-east Ecuador. *Bull. Brit. Orn. Cl.* 130: 61–68.
- Hilty, S. L. & Brown, W. L. 1986. *A guide to the birds of Colombia*. Princeton Univ. Press.
- Kiff, L. F., Marín A., M., Sibley, F. C., Matheus, J. C. & Schmitt, N. J. 1989. Notes on the nests and eggs of some Ecuadorian birds. *Bull. Brit. Orn. Cl.* 109: 25–31.
- Lönnberg, E. & Rendahl, H. 1922. A contribution to the ornithology of Ecuador. *Arkiv. Zool.* 25: 1–87.
- Marchant, S. 1959. The breeding season in S. W. Ecuador. *Ibis* 101: 137–187.
- Marchant, S. 1960. The breeding of some southwestern Ecuadorian birds. *Ibis* 102: 349–382, 584–599.
- Marín, M. & Carrión B., J. M. 1991. Nests and eggs of some Ecuadorian birds. *Orn. Neotrop.* 2: 44–46.

- Marín, M. & Carrión B., J. M. 1994. Additional notes on nests and eggs of some Ecuadorian birds. *Orn. Neotrop.* 5: 121–124.
- Rasmussen, J. F., Rahbek, C., Poulsen, B. O., Poulsen, M. K. & Bloch, H. 1996. Distributional records and natural history notes on threatened and little known birds of southern Ecuador. *Bull. Brit. Orn. Cl.* 116: 26–45.
- Ridgely, R. S. & Greenfield, P. J. 2001. *The birds of Ecuador*. Cornell Univ. Press, Ithaca, NY.
- Solano-Ugalde, A. 2008. High in the Andes: colonial nesting of Ecuadorian Hillstar (*Oreotrochilus chimborazo*: Trochilidae) under a bridge. *Orn. Colombiana* 6: 86–88.
- Solano-Ugalde, A., Arcos-Torres, A. & Greeney, H. F. 2007. Additional breeding records for selected avian species in northwest Ecuador. *Bol. Soc. Antioqueña Orn.* 17: 17–25.
- Taczanowski, L. 1884. *Ornithologie du Pérou*, vol. 2. Rennes, Oberthur.

Addresses: Harold F. Greeney, Rudy A. Gelis, Alejandro Solano-Ugalde & Ben Freeman, Yanayacu Biological Station & Center for Creative Studies, Cosanga, Napo, Ecuador, c/o 721 Foch y Amazonas, Quito, Ecuador, e-mail: revmmoss@yahoo.com. Paul R. Martin & Fran Bonier, Dept. of Biology, Queens University, Kingston ON K7L 3N6, Canada. Eliot T. Miller, Harris World Ecology Center, Department of Biology, University of Missouri, St. Louis, Missouri 63121, USA.