



1925-5-8-1: f; collected 14.12.1924; Tsangpo Gorge (Po Tsangpo confluence), Tibet (c.2,725 m); F. Kingdon Ward (P). NHM 1925-5-8-2: Immature m; collected 14.12.1924; Po Tsangpo, Tibet (c.2,725 m); F. Kingdon Ward. NHM 1928-7-14-3: m; collected October 1925; Myitkyina district, Upper Burma; Mrs. M. West (P). NHM 1928-7-14-4: m; collected October 1925; Myitkyina district, Upper Burma; Mrs. M. West (P). NHM 1933-11-13-25: m; collected Jan–Feb 1931; Koi Tou Tengyueh, N.W. Yunnan, China; G. Forrest. NHM 1933-11-13-26: f; collected Jan–Feb 1931; Koi Tou Tengyueh, N.W. Yunnan; G. Forrest. NHM 1938-12-13-454: f; collected 14.5.1938; Lo La (South) Pachakshiri, S.E. Tibet (c.3,480 m); F. Ludlow & G. Sherriff. NHM 1938-12-13-455: m; collected 15.5.1938; Lo La (South) Pachakshiri, S.E. Tibet (c.3,480 m.); F. Ludlow & G. Sherriff. NHM 1938-12-13-456: m; collected 14.5.1938; Lo La (South) Pachakshiri, S.E. Tibet (c.3,480 m); F. Ludlow & G. Sherriff. NHM 1938-12-13-457: m; collected 15.5.1938; Lo La (South) Pachakshiri, S.E. Tibet (c.3,480 m); F. Ludlow & G. Sherriff. NHM 1938-12-13-463: f; collected 15.5.1938; Lo La (South) Pachakshiri, S.E. Tibet (3,485 m); F. Ludlow & G. Sherriff. NHM 1938-12-13-605: m; collected 14.5.1938; Lo La (South) Pachakshiri, S.E. Tibet (c.3,480m); F. Ludlow & G. Sherriff. NHM 1941-12-1-673: m; collected May 1934; 18 miles ENE of Hpinaw, Myitkyina-Yunnan border, Upper Burma (c.3,780–3,940 m); G. W. Whittall. NHM 1948-27-18: m; collected 20.2.1947; Trulung, Po Tsangpo Valley, S.E. Tibet (c. 2,880 m); F. Ludlow (P). NHM 1948-34-1: m; collected 28.3.1948; Chimli Pass, Burma (c.3,180 m); B.E. Smythies (P). NHM 1948-34-2: f; collected 29.3.1948; Chimli Pass, Burma (c.3,180 m); B.E. Smythies (P).

© British Ornithologists' Club 2004

Notes on breeding birds from an Ecuadorian lowland forest

Harold F. Greeney, Rudolphe A. Gelis & Richard White

Received 12 February 2003

The lowlands of eastern Ecuador are popular for birdwatching tours as well as ornithological research. Despite this, and the increased interest in the Ecuadorian avifauna in the past 15 years (e.g. Krabbe 1992, Best *et al.* 1993, Rasmussen *et al.* 1996, Ridgely & Greenfield 2001), little has been written concerning the breeding biology of birds in the area (but see Greeney 1999, Hill & Greeney 2000, Greeney *et al.* 2000). As a whole, the natural history, ecology and breeding biology of tropical birds remains poorly understood (Hilty 1994). Here we present data on 32 species, collected over recent years, from two adjacent field sites in the Sucumbios province of eastern Ecuador. Observations were made opportunistically, during the course of other activities, and on their own are not useful for accessing patterns of seasonality. Nonetheless, in conjunction with past and future observations, the data presented here make a significant contribution to our knowledge of birds from this poorly studied area of Ecuador.

Sacha Lodge Research Station (SLRS) (00°26'S, 76°27'W) is located near the community of Añangu, c.65 km east-southeast of Coca along the Napo River at an elevation of 250 m. La Selva Biological Station (LSBS) (00°29'S, 76°22'W) is located only 10 km further downriver from SLRS. Both of these sites are located on



the north bank of the Napo River, but nests were found on both sides. As the Napo River is thought to be the limit of distribution for some species (Ridgely & Greenfield 2001), the specific side is given with each observation as N (North) or S (South). Nesting records are given in taxonomic order following Ridgely & Greenfield (2001).

Species accounts

RUFESCENT TIGER-HERON *Tigrisoma lineatum*

10 March 1998, LSBS (N). The nest, typical of this species, was a loose stick platform located 3 m up in a mangrove tree over the edge of an oxbow lake. Whilst the contents of the nest were not seen, adult behaviour suggests the bird was incubating. Breeding information from Colombia includes breeding condition birds from March to November (Hilty & Brown 1986, Olivares 1974). Stiles & Skutch (1989) described an egg from Suriname and nests have been recorded in Venezuela from July to September (Thomas 1979).

BLACK VULTURE *Coragyps atratus*

1 April 1998, LSBS (N). An adult was found incubating two pale blue eggs with dark brown splotches. The nest was a shallow depression located at the base of a large *Ceiba* (Bombacaceae) tree, between two large buttressing roots. This species nests from January to May in Panama (Wetmore 1965) and November to February or March in Costa Rica (Stiles & Skutch 1989). Nests with young have been reported from Colombia in April (Hilty & Brown 1986) and at LSBS in June (Hill & Greeney 2000). Whilst this observation, and all the nesting records cited above, reported nests on the ground in similar sheltered positions, Howell & Webb (1995) reported this species breeding communally in tall trees.

SLENDER-BILLED KITE *Rostrhamus hamatus*

25 July 2001, SLRS (N). The nest was located c.25 m up in the outer mid-crown of a large tree in floodplain forest. Both adults were present and vocal around the nest but the contents of the nest were unobservable. Similar nests were described from Suriname (Haverschmidt 1968) and Venezuela (Hilty & Brown 1986, Mader 1981) in July and August to September respectively.

DOUBLE-TOOTHED KITE *Harpagus bidentatus*

24 April 2001, SLRS (N). On this date an adult bird was first seen building a loose stick platform in the horizontal fork of a *Ceiba* sp. (Bombacaceae) tree c.35 m above the ground in the swampy clearing in *terra firme* forest. On 23 August 2001 an adult was seen sitting for long periods on the nest, presumably incubating. During subsequent visits, until 6 September 2001, the birds were continuing to incubate. On one occasion the adult repeatedly called whilst sitting on the nest. The other adult flew in and displaced several Boat-billed Flycatchers *Megarhynchus pitangua* that were perching in the nest tree. Double-toothed Kites have been reported nesting



during June in Panama (Laughlin 1952), building during April in Costa Rica (Stiles & Skutch 1989), and in breeding condition from January to April in Colombia (Hilty & Brown 1986, Olivares 1962).

ORNATE HAWK-EAGLE *Spizaetus ornatus*

18 March 2001, SLRS (N). A single nest was found *c.*30 m above the ground in a *Ceiba* sp. (Bombacaceae) tree growing in *terra firme* forest. The nest was a loosely constructed stick platform *c.*1 m in diameter. An adult was sitting on the nest at 1200 h and was presumed to be incubating. On 18 April an adult was seen bringing food and at least one nestling could be seen. This species is known to breed from November or December to May in Panama (Brown & Amadon 1968), from March to June in Guatemala (Lyon & Kuhnigk 1985), and from April to May in Costa Rica (Stiles & Skutch 1989).

MARbled WOOD-QUAIL *Odontophorus gujanensis*

24 December 1997, LSBS (N). One adult was seen inside *terra firme* forest with at least two dependent chicks. When approached, the chicks quickly nestled into the leaf litter and froze. The adult ran just out of sight and circled around calling continuously. In Colombia, breeding condition birds have been recorded from February to May, a nest with eggs from March, and chicks from April (Blake 1955, Hilty & Brown 1986). In Costa Rica this species breeds from January to August (Skutch 1947, Stiles & Skutch 1989).

COLLARED PLOVER *Charadrius collaris*

15 March 2001, SLRS. A simple scrape nest was found on an island in the Napo River. It was *c.*20 m from the river edge, *c.*5 cm deep, and located at the base of a small tuft of grass. There was a single egg. When the nest was approached, the adult engaged in a broken-wing display. This species breeds from March to June in Costa Rica (Stiles & Skutch 1989). Chicks have been reported in January from Venezuela (Friedmann 1948) and a summary of their breeding in Chile was given by Johnson (1965).

RUDDY QUAIL-DOVE *Geotrygon montana*

27 November 2000, SLRS (N). An adult was found incubating two buff-coloured eggs, measuring 24.7 mm x 20.7 mm and 26.3 mm x 20.7 mm respectively. The nest was a loose stick and leaf platform on the top of a 60-cm-high stump in *terra firme* forest. It measured roughly 19 cm across on the outside, with the 2-cm-deep cup being 8 cm wide. 25 March 2001, SLRS (N). An adult was seen near a nest with two nestlings at 1000 h. The nest was as previously described, located 2 m up in the U of a liana against the side of a large tree in *terra firme* forest. In Colombia, breeding-condition birds were reported from January to June and a nest with eggs in March (Hilty & Brown 1986, Olivares 1964). Greeney (1999) reported two nests with eggs at LSBS in January.

**COBALT-WINGED PARAKEET** *Brotogeris cyanoptera*

30 April 1998, LSBS (N). A single adult was observed inside *terra firme* forest excavating a small hole in the side of an arboreal termite (*Nasutitermes* sp.) nest c.5 m above the ground. 29 July 1998, LSBS (N). A second nest hole, located 6 m up, and also in a termite nest, was seen being entered by a single adult. Nestling begging could be heard but the contents were not seen. Hilty & Brown (1986) reported breeding-condition females in early June from Colombia, but little else seems to have been published on the breeding of this species.

COMMON POTOO *Nyctibius griseus*

2 September 2001, SLRS. A nest was found on a river island c.2.5 m above the ground at the end of a broken *Cecropia* sp. (Moraceae) stump. At least one nestling was seen. It was sparsely feathered with white down. The breeding of this species is fairly well known (del Hoyo *et al.* 1999).

RUFOUS-BREASTED HERMIT *Glaucis hirsuta*

28 July 2001, SLRS (S). Both sexes were seen building a nest attached to the back of an epiphytic fern leaf hanging 1.5 m over a small river. The nest, similar to those of other Phaethorninae, was a small, inverted cone-shaped nest attached with spider webs. This species appears to nest year-round in Colombia (Hilty & Brown 1986) and accounts of breeding behaviour in Colombia have been presented by Todd & Carriker (1922) and Darlington (1931). Snow & Snow (1973) described the breeding of this species in Trinidad.

GREAT-BILLED HERMIT *Phaethornis malaris*

5 August 1998, LSBS (S). An unsexed adult was found incubating two all-white eggs. The nest was an inverted-cone cup fastened to the underside of an understorey palm frond in typical *Phaethornis* fashion. We have found no other breeding records for this species but the Ecuadorian population has previously been considered a subspecies of Long-tailed Hermit *P. superciliosus* (Meyer de Schauensee 1970) and is now considered separate (Hinkelmann 1996, Hinkelmann & Schuchmann 1997). For *P. superciliosus*, breeding data have been reported from Colombia, Costa Rica and Panama (Hilty & Brown 1986, Skutch 1964, Stiles & Skutch 1989, Wetmore 1968, Willis & Eisenmann 1979).

FORK-TAILED WOODNYMPH *Thalurania furcata*

25 July 2001, SLRS (S). An adult female was flushed from the nest and was found to be incubating two all-white eggs. Subsequently, on 9 August, the nest contained two nestlings and the female was observed brooding. The nest was a small cup located 2.5 m up in an epiphytic fern on a small tree. Little has been published on the breeding of this species, but Hilty & Brown (1986) reported breeding-condition birds from Colombia in June.

**BLACK-FRONTED NUNBIRD** *Monasa nigrifrons*

15 August 2001, SLRS (N). One adult was seen excavating a nest cavity c.35 cm up in a c.50-cm-high sandy bank in heavily disturbed flooded forest beside the Napo River. In Colombia, breeding condition birds have been reported in June and a stub-tailed juvenile in November (Hilty & Brown 1986). O'Neill (1974, in Hilty & Brown 1986) reported this species breeding during the dry season in south-eastern Peru. At LSBS this species was previously reported nesting in April (Hill & Greeney 2000).

YELLOW-TUFTED WOODPECKER *Melanerpes cruentatus*

2 April 1998, LSBS (N). Both adults were seen bringing food to nestlings in a cavity inside a dead palm (*Mauritia* sp.) beside an oxbow lake. Nests and the breeding activity of this species have been described from Peru (Short 1970). Olivares (1962) reported a bird in breeding condition from Colombia in March.

ORANGE-FRONTED PLUSHCROWN *Metopothrix aurantiacus*

27 July 1998, LSBS (N). On this date, at least five individuals were seen following each other into and out of two different nests located in the same tree. A third nest was also located in this same tree. The nests were large bulky balls of sticks, located c.30 m above the ground in open floodplain forest along the Napo River. There is apparently very little known concerning the breeding biology of this species, although the nest was generally described in Ridgely & Greenfield (2001).

TAWNY-THROATED LEAFTOSSER *Sclerurus mexicanus*

1 August 1998, LSBS (N). An adult was seen bringing pale, skeletonised leaves to an excavated hole in the soil surrounding the roots of an upturned tree. The nest burrow was 1 m up and, beyond a 4-cm tunnel, opened into a cavity roughly 20 cm in diameter. The cavity was lined entirely with skeletonised leaves. This species nests from December to April in Costa Rica (Stiles & Skutch 1989) and breeding condition birds have been reported in Colombia from April and May (Hilty & Brown 1986). The nests described by Stiles & Skutch (1989) from Costa Rica had smaller chambers and longer entrance tunnels than the nest observed here. That described here, however, is similar to the nests of Black-tailed Leaf Tosser *S. caudacutus* and Short-billed Leaf Tosser *S. rufigularis*, which both nest in burrows built in upturned roots in French Guiana (P.R. Martin, pers. comm.).

FASCIATED ANTSHRIKE *Cymbilaimus lineatus*

26 June 2001, SLRS (N). In an area of flooded forest, both sexes were seen bringing material to a nest located 1.5 m up in a tangle of vines and undergrowth. The nest was fairly unformed at this time. Adults were seen carrying spider silk, bark strips and a small vine with green leaves. Both sexes alternated weaving material into the nest whilst giving muted calls. On 12 July they were still building. On 20 July the male was flushed from the nest and found to be incubating one egg. The egg was white with large brown blotches. At the time of the last observation, on 29 July, the



male was still incubating a single egg. This species has been reported to breed from April to June in Costa Rica (Stiles & Skutch 1989) and birds in breeding condition were reported in Colombia from March to May (Hilty & Brown 1986). Previous nest descriptions, loosely woven cups of dark fibers, suspended by their rims in a horizontal fork, resemble the nest found here (Skutch 1972, Stiles & Skutch 1989, Wetmore 1972) and those seen in French Guiana (P.R. Martin pers. comm.).

DUSKY-THROATED ANTSHRIKE *Thamnomanes ardesiacus*

16 August 2001, SLRS (N). At 1445 h, an unsexed adult was flushed from the nest and found to be incubating two eggs. The eggs were pale reddish-cream with even, dark red-brown speckling, except for a distinctly heavier wreath around the larger end. They measured 22 x 16 mm. The nest, at the top of a small hill inside primary forest, was located c.1.75 m up in a small, semi-herbaceous tree (Rubiaceae), suspended between the horizontal petioles of two large leaves. It was an open cup-type nest constructed of dark fibres, leaves and small sticks. The cup was slightly 'squashed' and measured 5.5 x 7.0 cm on the inside and 7.0 x 9.0 cm on the outside. The cup was 5.5 cm deep and the nest 9.0 cm tall overall. The nest was visited a total of eight times up to 29 August, when the eggs still had not hatched. Of the occasions when the sex of the incubating adult was determined, the female was seen five times and the male once. On 3 September the nest contained two unfeathered nestlings and on 6 September the chicks were seen to be well covered with down. The nest and eggs described in Hilty & Brown (1986) from Peru appear to match the description given here.

WHITE-SHOULDERED ANTBIRD *Myrmeciza melanoceps*

4 March 1998, LSBS (N). The female was encountered incubating two creamy-buff eggs with red-brown speckling, heaviest at the larger end. They measured 28 x 19 mm and 28 x 18 mm respectively. The nest was a globular ball with a round side entrance and constructed from strips of palm fronds and other dead leaves. Outside dimensions were roughly 16 cm high x 24 cm wide. The entrance was 6 cm high x 9 cm wide with a broad lip extending out 10 cm and 13 cm wide. The nest was located 30 cm above the ground, nestled into the base of a palm seedling in an area of *várzea* forest, c.750 m from the edge of the Napo River. During subsequent visits to the nest, until 31 March 1998 when the nest was found destroyed, both the male and female were noted to incubate. On one occasion, the male showed a broken-wing display when flushed from the nest. Little is known of the breeding habits for this species but Hilty & Brown (1986) reported breeding-condition birds in June from Colombia.

PYGMY ANTWREN *Myrmotherula brachyura*

26 July 1998 LSBS (N). Both adults were seen building a hanging cup nest c.12 m up in the outer branch of a large tree growing in open floodplain forest. The nest was mostly hidden by the leaves of the tree in which it was constructed. Hilty & Brown



(1986) reported a single breeding condition bird in April from Colombia and a nest being built 6 m up in flooded forest in Brazil at the end of August.

DWARF TYRANT-MANAKIN *Tyrannetes stolzmanni*

15 April 2001, SLRS (S). One nestling was discovered in a tiny, sparse black rootlet cup suspended from a horizontal fork 1.5 m up in a small sapling inside *terra firme* forest. The nest was 5 cm in diameter on the outside with a 3 cm deep x 3.5 cm diameter cup. Previously reported breeding data included breeding condition birds from Colombia in May and March (Olivares 1962, 1964).

CHESTNUT-CROWNED BECARD *Pachyramphus castaneus*

15 March 1998, LSBS (N). Adults were seen entering a nest with food. The ball nest was wedged in the branches of a tall *Ceiba* sp. (Bombacaceae) tree, c.35 m above the ground. Breeding condition birds and a juvenile were reported from Colombia in May (Olivares 1964) and two similar nests were described from eastern Ecuador in July (Hilty & Brown 1986).

WHITE-WINGED BECARD *Pachyramphus polycopterus*

27 July 1998 LSBS (N). An adult female was seen feeding a juvenile a katydid (Tettigoniidae) in an open floodplain forest along the Napo River. 24 August 2001, SLRS. Both sexes were seen around a globular ball nest c.15 cm diameter. The nest was located in a tree, 8 m above the ground, along the Napo River in an area of second growth. The male was seen going to the nest later that afternoon, but we do not know what stage the nest was in. Breeding condition adults have been recorded from May to August in Colombia, as well as nest-building activity in March and June (Hilty & Brown 1986). Breeding in Costa Rica occurs from April to August (Stiles & Skutch 1989).

PINK-THROATED BECARD *Platypsaris minor*

26 June 2001, SLRS (N). An adult male was observed bringing material to a bulky, suspended, mossy ball nest. The female was nearby and both adults were vocal. The nest was located in primary forest near a recently fallen tree, c.20 m up on a dead snag. 23 August 2001, SLRS. Another nest was observed under construction. Both adults were seen going to the nest and the male was observed carrying soft plant fibres. The nest was being built 10 m above the ground inside the infructescence of an unidentified palm tree in *várzea* forest. On 3 September the nest was found to be torn down but both adults were in the area. There is apparently little published on any aspect of the breeding ecology of this species.

BLACK-TAILED TITYRA *Tityra cayana*

21 July 2001, SLRS (N). An adult female was seen bringing food to an unknown number of nestlings. The nest was located c.5 m up in the cavity of a dead tree located in an area of cow pasture near the Napo River. In Colombia, breeding



condition birds have been reported from June and active nests in March, July and November (Hilty & Brown 1986). At LSBS, an active nest was previously reported in March (Hill & Greeney 2000).

DOUBLE-BANDED PYGMY-TYRANT *Lophotriccus vitosus*

24 August 2001, SLRS (S). An adult was flushed from a nest with two eggs. The eggs were pale buff with sparse brown flecking. The nest was a hanging ball of thin fibres and moss with a side entrance. It was located c.1 m above the ground in a small *Piper* sp. (Piperaceae) tree, in an area of second growth. Nests were previously reported in September in Suriname and building birds in August from Brazil (Hilty & Brown 1986).

YELLOW-BROWED TODY-FLYCATCHER *Todirostrum chrysocrotaphum*

22 July 1998, LSBS (N). An adult was seen lining a hanging globular nest with soft kapok seed down (*Ceiba* sp.). The nest was c.35 m up in a large *Ceiba* sp. tree. 10 September 2000, SLRS. One adult was seen bringing kapok down to a hanging globular ball nest located c.40 m up in the *Ceiba* sp. tree where the lodge has built a canopy observation tower. 4 April 2001, SLRS (N). Both sexes were seen building a different nest located in the same tree. On 10 April, presumably the same pair had abandoned that nest and begun construction of another on the opposite side of the tree's crown. The second site chosen was c.1 m away from a paper wasp (Vespidae) nest. This pair constructed until at least 20 April. Then, on 29 May one adult was seen bringing food to the nest. 22 July 2001, SLRS (N). Yet another nest was seen being built in the same tree. This nest was being constructed only 30 cm from the same paper wasp nest. Only one adult was seen building, intermittently pausing to sing. Hilty & Brown (1986) reported a nest in a similar situation from eastern Ecuador in July and a Colombian nest in June was only 4–5 m up in an area of second growth. Proximity to wasp nests was not noted for either of these nests.

AMAZONIAN SCRUB FLYCATCHER *Sublegatus obscurior*

26 July 1998, LSBS (N). Both adults were seen around a nest under construction, but only one was seen to bring material. The nest was an open cup, suspended in the fork of a horizontal branch, c.8 m above the ground in an area of floodplain forest along the Napo River. A stub-tailed juvenile was reported in August and breeding condition birds from January and March in Colombia (Hilty & Brown 1986). Cherrie (1916) reported an active nest in April and French (1973) described the nest and eggs from Trinidad.

WHITE-NECKED THRUSH *Turdus albicollis*

20 March 2001, SLRS (N). An adult was seen incubating two eggs in a cup nest located 2 m up in a small tree. Accounts of Colombian and Trinidad nests can be found in Todd & Carriker (1922) and Snow & Snow (1963).

**RED-CAPPED CARDINAL** *Paroaria gularis*

24 March 2001, SLRS (N). An adult was seen feeding a fledgling Shiny Cowbird *Molothrus bonariensis* along a small stream. The fledgling, begging continuously, followed the adult while it fed. On 24 August 2001 at SLRS (N), an open cup nest was found 4 m up in the fork of a small tree in an area of heavy human disturbance. From adult behaviour around the nest, it is presumed that they were incubating, but the nest contents were not seen. On 29 August the nest was found torn apart. Hilty & Brown (1986) reported a male in breeding condition and begging fledglings in June from Colombia. Breeding in Venezuela was reported from June to September (Cherrie 1916, Thomas 1979).

Acknowledgements

We are all greatly in debt to the staff and management of Sacha Lodge for their help and support during our field studies. Ruth Ann & John V. Moore have generously supported our investigations. Thank you to Rob Dobbs and Paul Martin for reviewing earlier versions of this manuscript. We gratefully acknowledge the ongoing support of the PBNHS for our field studies and natural history work. This is publication number 8 of the Yanayacu Natural History Research Group.

References:

- 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.
- Blake, E. R. 1955. A collection of Colombian game birds. *Fieldiana Zool.* 37: 9–23.
- Brown, L. & Amadon, D. 1968. *Eagles, hawks, and falcons of the world*, vols. 1 and 2. McGraw Hill, New York.
- Cherrie, G. K. 1916. A contribution to the ornithology of the Orinoco region. *Brooklyn Inst. Arts and Sci. Mus. Bull.* 2: 133–347.
- Darlington, P. J., Jr. 1931. Notes on the birds of the Río Frío (near Santa Marta), Magdalena, Colombia. *Bull. Mus. Comp. Zool., Harvard* 71: 349–421.
- del Hoyo, J., Elliott, A. & Sargatal, J. (eds.) 1999. *Handbook of the birds of the world*, vol. 5. Lynx Edicions, Barcelona.
- ffrench, R. P. 1973. *A guide to the birds of Trinidad and Tobago*. Livingston Publishing, Wynnewood, PA.
- Friedmann, H. 1948. Birds collected by the National Geographic Society's expedition to northern Brazil and southern Venezuela. *Proc. U.S. Nat. Mus.* 97: 373–569.
- Greeney, H. F. 1999. Ecuadorian birds: some nesting records and egg descriptions. *Avicultural Magazine* 105: 127–129.
- Greeney, H. F., Gordon, C. E., Kaplan, M. E. & Chimera, C. 2000. High occurrence of breeding condition of birds mist-netted in a lowland Ecuadorian rainforest. *Avicultural Magazine* 106: 10–11.
- Haverschmidt, F. 1968. *Birds of Surinam*. Oliver & Boyd, Edinburgh and London.
- Hill, R. & Greeney, H. F. 2000. Ecuadorian birds: nesting records and egg descriptions from a lowland rainforest. *Avicultural Magazine* 106: 49–53.
- Hilty, S. 1994. *Birds of tropical America: a watcher's introduction to behavior, breeding and diversity*. Chapters Publishing Ltd, Shelburne, Vermont.
- Hilty, S. L. & Brown, W. L. 1986. *A guide to the birds of Colombia*. Princeton Univ. Press.
- Hinkelmann, C. 1996. Systematics and geographic variation in Long-tailed Hermit hummingbirds, the *Phaethornis superciliosus-malaris-longirostris* species group (Trochilidae) with notes on their biogeography. *Ornitologia Neotropical* 7: 119–148.
- Hinkelmann, C. & Schuchmann, K. L. 1997. Phylogeny of the hermit hummingbirds (Trochilidae: Phaethornithinae). *Studies in Neotropical Fauna and Environment* 32:142–163.



- Howell, S. N. G. & Webb, S. 1995. *A guide to the birds of Mexico and northern Central America*. Oxford Univ. Press.
- Johnson, A. W. 1965. *The birds of Chile and adjacent regions of Argentina, Bolivia and Peru*, vol. 1. Platt Estab. Gráficos, Buenos Aires.
- Krabbe, N. 1992. Notes on the distribution and natural history of some poorly known Ecuadorian birds. *Bull. Brit. Orn. Cl.* 112: 168–174.
- Laughlin, R. M. 1952. A nesting of the Double-toothed Kite in Panama. *Condor* 54: 137–139.
- Lyon, B. & Kuhnigk, A. 1985. Notes on nesting Ornate Hawk-Eagles in Guatemala. *Wilson Bull.* 97: 141–147.
- Mader, W. J. 1981. Notes on nesting raptors in the llanos of Venezuela. *Condor* 83: 48–51.
- Meyer de Schauensee, R. 1970. *A guide to the birds of South America*. Livingston Publishing, Wynnewood, PA.
- Olivares, A. 1962. Aves de la región sur de la Sierra de la Macarena, Meta, Colombia. *Rev. Acad. Colombiana Ciencias Exactas, Físicas, Naturales* 11: 305–344.
- Olivares, A. 1964. Adiciones a las aves de la Comisaría del Vaupés (Colombia), II. *Caldasia* 9: 150–84.
- Olivares, A. 1974. *Aves de la Orinoquia Colombiana*. Inst. Cienc. Nat. Ornithología Univ. Nac. Colombia.
- 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, New York.
- Short, L. L. 1970. Notes on the habits of some Argentine and Peruvian woodpeckers. *Amer. Mus. Novit.* 2413: 1–37.
- Skutch, A. F. 1947. Life history of the Marbled Wood-Quail. *Condor* 49: 217–232.
- Skutch, A. F. 1964. Life histories of Hermit Hummingbirds. *Auk* 81: 5–25.
- Skutch, A. F. 1972. *Studies of tropical American birds*. Publ. Nuttall Orn. Cl. No. 10, Cambridge Mass.
- Snow, D. W. & Snow, B. K. 1963. Breeding and annual cycle of three Trinidad thrushes. *Wilson Bull.* 75: 27–41.
- Snow, D. W. & Snow, B. K. 1973. The breeding of the Hairy Hermit (*Glaucus hirsuta*) in Trinidad. *Ardea* 61: 106–122.
- Stiles, F. G. & Skutch, A. F. 1989. *A guide to the birds of Costa Rica*. Cornell University Press, Ithaca, New York.
- Thomas, B. T. 1979. The birds of a ranch in the Venezuelan llanos. Pp. 213–232 in Eisenberg, J.F. (ed.) *Vertebrate ecology of the northern Neotropics*. Smithsonian Institution Press, Washington D.C.
- Todd, W. E. C. & Carriker, M. A. Jr. 1922. The birds of the Santa Marta region of Colombia: a study in altitudinal distribution. *Ann. Carnegie Mus.*, vol. 14.
- Wetmore, A. 1965. *Birds of the Republic of Panama. Part 1. Tinamidae (Tinamous) to Rynchopidae (Skimmers)*. Smithsonian Institution Press, Washington, D.C.
- Wetmore, A. 1968. *Birds of the Republic of Panama. Part 2. Columbidae (Pigeons) to Picidae (Woodpeckers)*. Smithsonian Institution Press, Washington, D.C.
- Wetmore, A. 1972. *Birds of the Republic of Panama. Part 3. Dendrocolaptidae (Woodcreepers) to Oxyruncidae (Sharpbills)*. Smithsonian Institution Press, Washington, D.C.
- Willis, E. O. & Eisenmann, E. 1979. A revised list of birds of Barro Colorado Island, Panama. *Smithsonian Contrib. Zool.* 291: 1–31.

Addresses: Harold F. Greeney, Yanayacu Biological Station & Center for Creative Studies, Cosanga, Napo, Ecuador, c/o 721 Foch y Amazonas, Quito, Ecuador, e-mail: yanayacu1@hotmail.com.
Rudolphe A. Gelis and Richard White, Sacha Lodge Research Station, Añangu, Sucumbios, Ecuador, c/o Julio Zaldumbide 375 y Toledo, Quito, Ecuador.

© British Ornithologists' Club 2004