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First Breeding Record of Wilson's Plover (*Charadrius wilsonia*) from the Pacific Coast of Colombia

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ABSTRACT.—Wilson's Plover (*Charadrius wilsonia*) occurs year-round along the Caribbean and Pacific coasts of Colombia. The species frequents a variety of coastal habitats including sandy beaches, tidal flats, and small swamps and wetlands. Its breeding range extends from Virginia south through the West Indies to Surinam, and from Baja California to Peru. Here, we report the first nesting record on the Pacific coast of Colombia. *Received 14 June 2003, accepted 10 March 2004.*

All three sub-species of Wilson's Plover (*Charadrius wilsonia wilsonia*, *C. w. beldingi*, and *C. w. cinnamoninus*) have been recorded in Colombia. The first records (*C. w. wilsonia* and *C. w. cinnamoninus*) came from Colombia's Caribbean coast. These observations included breeding displays, but no nests were found (Naranjo 1979). On the Pacific coast, Wilson's Plovers (*C. w. wilsonia* and *C. w. beldingi*) were first reported during a study of chronological distribution and habitat selection of shorebirds at Buenaventura Bay (Naranjo et al. 1987). Although population estimates of resident Wilson's Plovers along Colombia's Pacific coast have ranged into the hundreds (Franke 1986, Naranjo et al. 1987, Aparicio et al. 1996, Naranjo and Mauna 1996) and the species has been considered a coastal breeder from Baja California to Peru (Johnsgard 1981, Hayman et al. 1986, Canevari et al. 2001), there are no breeding records for Colombia's Pacific coast (Hilty and Brown 1986, Salaman et al. 2001).

On 13 May 1993, we participated in a shorebird survey of Punta Soldado Island, Buenaventura Bay (03° 49′ 55″ N, 77° 08′ 40″ W), conducted by the Association for the Study and Conservation of Aquatic Birds in Colombia (CALIDRIS). Punta Soldado beaches are essentially unaffected by tides (possibly flooded once per year), are sparsely vegetated, and serve as roosting and foraging sites for numerous migratory shorebirds and terns (Aparicio et al. 1996, Naranjo and Mauna 1996). We observed two *C. wilsonia* adults (male and female) exhibiting defensive behaviors in the berm zone of the beach. From a distance of approximately 20 m, we observed the male plover perform *head-up* displays accompanied by *tweet* calls while the female plover adopted a *squatting* posture. Subsequently, we observed three Wilson's Plover chicks 0.5 m from the female. As we approached more closely, the male responded with a short *crouch-run* and the female responded with a stationary *broken-wing* display accompanied by a buzzy *distraction* call (see Bergstrom 1988 for description of alarm and distraction displays). These observations confirm breeding of Wilson's Plovers on the Pacific coast of Colombia.

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First Description of the Nest, Eggs, Young, and Breeding Behavior of the Great Antpitta (*Grallaria excelsa*)

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ABSTRACT.—We provide the first description of the nest, eggs, young, and breeding behavior of the Great Antpitta (*Grallaria excelsa*) in Yacambu National Park, Venezuela. The nests ($n = 3$) were large, bulky, open-cup structures composed of a dense assortment of live and dead mosses, rootlets, wet leaves, small stems, detritus, and live and dead fern fronds, and were lined with a thick mesh of black rootlets and rhizomorphs. Nests were built >3.8 m above the ground in live trees where dense clusters of aroid plants, epiphytes, and lianas secured them to either a vertical fork or against the trunk itself. Both adults participated in nest building; incubating two unmarked, turquoise eggs; and feeding nestlings. Mean nest attentiveness (time spent on the nest/total video time when corrected for human disturbance) was 98.8 ± 1.8% SD, and nestling feeding rates were low (one visit by each adult/5 hr total video time). *Received 10 September 2003, accepted 25 March 2004.*

Antpittas (Formicariidae) are a diverse group of terrestrial antbirds inhabiting the Neotropics, yet the breeding biology of many species is unknown due to their secretive habits and preference for dense understory. The Great Antpitta (*Grallaria excelsa*) is a large (218–266 g), rare species endemic to mid-elevation (1,700–2,300 m), wet, humid forests of Venezuela (Gilliard 1939, Ridgely and Tudor 1994, Hilty et al. 2003). While a few aspects of its ecology have been reported (Hilty et al. 2003), its nest and breeding behavior are still unknown. Here, we describe nesting activity and characteristics of three nests found in May and June 2003 in montane, wet, primary forest in Yacambu National Park, Lara State, Venezuela (09° 24′ N, 69° 30′ W; 1,800–2,000 m elevation).

During the dry months of March and April 2003, we observed *G. excelsa* foraging in canyons, on ridges, and in swampy areas throughout the forest (approximate canopy height = 25 m). Later in the season (May and June), individuals were observed exclusively in close

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proximity to the junctions of ephemeral creeks created during periods of greater precipitation. Often we located adults by their song—a single phrase, repeated at regular intervals (10-sec pauses between phrases), and characterized as a resonant, hollow, *Otus*-like tone that increased in frequency (710–820 Hz; 4–5 sec phrases; 22 notes/sec; all measurements made with Raven software; spectrograms made with a 200-Hz bandwidth and Hann window function). Most birds sang from a fallen tree or perch <4 m in height. More frequently, we located adults as they foraged silently—alone or in pairs—along creeks, on the edges of treefall gaps, and near large, fallen trees. They foraged exclusively on the ground, moving in quick, short starts, and usually hopping on both legs. Numerous times we also observed adults foraging opportunistically at the edge of an antswarm.

All three nests were located approximately 50 m from the junctions of different ephemeral creeks. The first nest was 3.8 m above ground and built against the trunk of a spiny tree-fern (Cyatheaceae; height = 14 m; dbh = 24 cm; located on a 21° slope). The second nest was located 4.8 m above ground in the fork of a *Pseudobombax* spp. (height = 7.9 m). The third nest was 12 m above ground where two thick branches forked from the trunk of a large, unidentified tree (30 m in height). All three nests were supported by dense clusters of aroid plants, epiphytes, and lianas that offered considerable concealment. Nest, tree, and canopy heights were made using a clinometer.

Nests were large, bulky, open-cup structures with a shallow cup. The first nest had an outside diameter of 40.0 cm, external height of 18.0 cm, cup diameter of 14.0 cm, and a cup depth of 8.0 cm. The second nest had an outside diameter of 35.0 cm, external height of 27.0 cm, cup diameter of 12.0 cm, and a cup depth of 7.0 cm. Nests were composed of a dense amalgamation of live and dead mosses, thin dark-colored rhizomorphs, and dead leaves; pieces of live and dead ferns, palm fronds, and thin sticks were scattered throughout but less numerous. The nest cups were uniformly lined with a tight mesh of thin black and brown rootlets and rhizomorphs that merged with differently colored live and dead mosses on the cup rim.

The first nest was found on 25 May and monitored for 13 days during the incubation period until it was depredated. The nest contained two turquoise, unmarked, slightly glossy, oval-shaped eggs. One egg weighed 17.09 g and measured 38.0 × 30.0 mm. The second weighed 17.64 g and measured 37.4 × 30.0 mm. We videotaped the nest three times during monitoring for 5–8 hr per recording episode (28 May, 10:10–17:40 AST; 30 May, 08:20–16:30; 05 June, 08:00–13:16). Videotapes showed that both the male and female participated in incubation; exchange of incubating parents occurred simultaneously in 2 of 11 instances. Mean on-bout duration was 92.3 ± 41.5 min SD (n = 12 on-bouts; range: 36–160 min; 1,207 min total video time; 3 days of filming). Mean nest attentiveness (percent total video time parents were observed incubating) was 91.0 ± 1.0% (n = 3 days of filming; 1,207 min total video time; 12 on-bouts). The nest was never left unattended for more than 7 min, except following human disturbance. After correcting for those times when the adult was flushed from the nest during video initiation and tape changes, mean nest attentiveness was 98.8 ± 1.8% (n = 3 days of filming; 1,108 min total video time; 12 on-bouts).

Incubation videos revealed that vocal communication around the nest occurred in the form of repeated songs and muted trills, usually just before or following an incubation exchange. Muted trill-songs heard on tape were less common, and it is unclear whether the songs were from the incubating bird or its mate. *G. guatimalensis* has also been reported to sing muted trills from the nest (Dobbs et al. 2003).

The second nest was found on 5 June and monitored during the nestling period until 7 June, when the nest was found empty and undisturbed. On 5 June the nest contained only one nestling and was found on the day before the nestling's primaries emerged from the feather shafts. On that same day and after 1 hr of observation, an adult approached the nest quietly, fed the nestling, and left shortly thereafter. While at the nest, the adult was wary, pausing before, during, and after feeding the nestling to survey the nest area.

Videotapes on 6 June, from 07:00 to 12:00, showed that both parents fed the nestling in-

frequently (one visit each in 5 hr), but delivered large amounts of what appeared to be earthworms (Annelida) and arthropods. One parent brooded the nestling from 07:00 to 07:35, after which time the nestling was left unattended. One adult returned to the nest 1 hr later with food, fed the nestling, and carefully surveyed the nest area before leaving. Its mate arrived 2 sec later, fed the nestling, ate a fecal sac, and then departed. No other visits to the nest were made for the remainder of recording.

On 6 June, the day its primary feathers emerged, the nestling weighed 98 g, lacked tail feathers, and had tarsus and wing chord lengths of 35.80 mm and 50.06 mm, respectively. Its plumage was similar to that of the adults: the breast feathers were scalloped, and its down and emerging tail and wing feathers were light olive-brown. The bill was bright orange, whereas the gape was a striking, bright-red hue.

The third nest was found on 18 June, also in close proximity (<40 m) to a creek junction. This nest was approximately 40 m from the second nest where the nestling had disappeared approximately 11 days earlier, and was likely the renest of that same pair. Both adults were observed building the nest. One adult collected nest material while the other sang repeatedly near the base of the nest tree. The pair also brought nesting material to the nest site together, taking turns adding their material while the mate perched close by.

Consistent with observations of other *Grallaria*, both adults of *G. excelsa* participated in nest building, incubation, and feeding nestlings (Wiedenfeld 1982, Dobbs et al. 2003, Freile and Renjifo 2003, Price 2003). Mate feeding at the nest was not observed during building, incubation, or the nestling period, but may occur away from the nest as it does in other Formicariidae (Skutch 1969, Dobbs et al. 2003, Price 2003). Also, low rates of nestling feeding have been found in *G. carrikeri* and *G. guatimalensis* (Wiedenfeld 1982, Dobbs et al. 2003). Because plumages of males and females are similar, we could not determine gender differences in parental care. Clutch size in *G. excelsa* may range from one to two eggs; it is unclear whether the single nestling of the second nest described above originated from a clutch of one or two eggs. Other members of *Grallaria* are reported to incubate only one egg (Whitney 1992), or fledge only one young from an initial clutch of two eggs (Dobbs et al. 2003; P. R. Martin pers. comm.).

Egg color and shape were similar to those of all other *Grallaria* described to date (Wiedenfeld 1982, Quintela 1987, Whitney 1992, Dobbs et al. 2003, Freile and Renjifo 2003, Price 2003). In addition, nest composition, structure, and placement were similar to those of most other *Grallaria*; however, these traits vary over a species' range and among individuals, as a variety of substrates and building materials have been reported within a single species (Wiedenfeld 1982, Quintela 1987, Whitney 1992, Dobbs et al. 2003, Freile and Renjifo 2003, Price 2003). Nests of *G. excelsa* were located in the forest interior, close to the confluence of ephemeral waterways, and were found during the rainy season. Other reports of *Grallaria* nesting habits indicate that all members of the genus may breed during the wet season (Dobbs et al. 2003, Freile and Renjifo 2003).

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Blue-crowned Motmot (*Momotus momota*) Predation on a Long-tongued Bat (Glossophaginae)

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ABSTRACT.—We report the first record of a Blue-crowned Motmot (*Momotus momota*) feeding on a long-tongued bat (Glossophaginae) in a secondary forest in southwestern Costa Rica. The motmot incapacitated the bat, then swallowed it alive, head first. Motmots and bats are found in close proximity along river banks where the former nests and the latter roosts *Received 16 October 2003, accepted 26 March 2004.*

Bats are regular food items in the diet of some Neotropical birds (Rodríguez-Duran and Lewis 1985, Lee and Kuo 2001). For example, in the Neotropics some raptors (e.g., Bat Falcon; *Falco rufigularis*) and owls (e.g., Barn Owl; *Tyto alba*) often prey on bats (Table 1), and the Great Potoo (*Nyctibius grandis*) regularly preys on bats on the wing (Boinski and Timm 1985, Fleming 1988, Stiles and Skutch 1989, Braker and Greene 1994). Nevertheless, bat predation is relatively uncommon in the Neotropics. Here, we report the first account of a Blue-crowned Motmot (*Momotus momota*) consuming a long-tongued bat (Glossophaginae).

Blue-crowned Motmots consume a large variety of items, including invertebrates (e.g., earthworms, large spiders, mollusks, and insects), fruits, and small vertebrates (e.g., fish, frogs, lizards, snakes, small mammals, small birds, and nestlings) (Orejuela 1980, Stiles and Skutch 1989, Remsen et al. 1993, Master 1999, Snow 2001). Bats, however, have not been reported as a part of their diet.

At 15:30 hr CST on 12 April 2003, in old secondary forest at Dos Brazos de Río Tigre (08° 31′ N, 83° 24′ W), Península de Osa (elevation 100 m), Costa Rica, we observed (from a distance of 6 m, using binoculars) a Blue-crowned Motmot feeding on a long-tongued bat. The bat was identified on the basis of its noseleaf, body size, and the long tongue that hung from its partially open mouth. The bat could have been a species of *Glossophaga*, or *Hylonycteris underwoodi*, the two Glossophaginae species with characteristics that match those of the individual observed. The former—represented by two species in the Península de Osa—is more common.

When first observed, the motmot was perched on a horizontal branch 1.5 m above the ground, holding the neck of the live bat in its bill. During the next 2–3 min the bird shook the bat up and down violently while grasping it tightly in its bill. It did not strike the bat against the perch as motmots usually do with large larvae and other insects. The motmot then swallowed the bat whole, head first. This behavior suggests that the violent shaking was probably used to immobilize the prey before swallowing it. The motmot remained on the same perch for approximately

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TABLE 1. Costa Rican bird species reported to feed on bats (Boinski and Timm 1985, Fleming 1988, Stiles and Skutch 1989, Braker and Greene 1994, Michalak 1997, Lee and Kuo 2001). Measurements (mean ± SD) were taken from specimens deposited in the Museo Nacional de Costa Rica and Museo de Zoología, Universidad de Costa Rica.

Common name	Species	Gape (mm)	Weight (g)	*n*
Double-toothed Kite	*Harpagus bidentatus*	21.3 ± 2.0	175.2 ± 8.5	4
Crane Hawk	*Geranospiza caerulescens*	22.6	345	1
Sharp-shinned Hawk	*Accipiter striatus*	17.2 ± 1.6	na[a]	3
Red-tailed Hawk	*Buteo jamaicensis*	33.5	800.5	1
Collared Forest-Falcon	*Micrastur semitorquatus*	24.9 ± 2.1	772.0 ± 69.3	2
Bat Falcon	*Falco rufigularis*	20.9 ± 1.3	214.6	2
Peregrine Falcon	*Falco peregrinus*	29.8 ± 4.7	na[a]	2
Barn Owl	*Tyto alba*	24.4 ± 2.1	449.0 ± 49.9	3
Tropical Screech-Owl	*Megascops choliba*	18.4 ± 0.2	163.5 ± 25.6	3
Spectacled Owl	*Pulsatrix perspicillata*	38.9 ± 1.3	765.7 ± 84.6	3
Mottled Owl	*Ciccaba virgata*	27.7 ± 0.1	250.8 ± 13.2	2
Black-and-white Owl	*Ciccaba nigrolineata*	30.7 ± 0.6	336.0 ± 55.2	2
Great Potoo	*Nyctibius grandis*	59.6	500.0	1
Blue-crowned Motmot	*Momotus momota*	21.1 ± 2.3	114.8 ± 16.1	6

[a] na: data not available from specimens.

30 min after swallowing the bat and then flew away.

In Dos Brazos de Río Tigre, long-tongued bats roost in tree cavities and banks along rivers (LaVal and Rodriguez-H 2002). Because motmots also construct their nests in banks and frequently perch along rivers and streams, it is possible that the motmot captured the bat from a bank roost. The ability to swallow such a large prey item is surprising, considering that the gape width of a Blue-crowned Motmot is relatively small (21.1 mm), compared to the gape of several raptors that prey on bats (Table 1). The Great Potoo, which also feeds on bats, has a much wider gape (59.6 mm). Ingesting the bat by swallowing it whole was quite different from the way small raptors tear pieces from prey items (Thiollay 1994). It is likely that bats make up part of the diet of other bird species; however, predation on bats is probably infrequent, making it difficult to document.

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