

NESTS AND NESTING BEHAVIOR OF SOME LITTLE KNOWN PANAMANIAN BIRDS

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Resumen. – Nidos y comportamiento de anidación para unas especies de aves poco conocidas de Panamá. – Se observaron por primera vez los comportamientos de anidación para ocho especies de aves en Panamá y Perú y se compararon con los comportamientos previamente reportados para las especies taxo-nómicamente mas cercanas. Seis de éstas especies son endémicas de la costa Pacífica comprendida entre Panamá y Ecuador. *Xenornis setifrons* construyó un nido pendiente en forma de taza, similar a los reportados en otros géneros de los Thamnophilidae. *Scytalopus chocoensis* construyó un nido esférico que consistía de raíces finas y briófitas, de manera muy similar a los nidos construídos por otras especies dentro del género. *Phyllomyias zeledoni* construyó un nido con forma de taza a 12 m de altura sobre una rama externa al tronco principal, de manera similar a lo descrito para los otros nidos del género. *Sapayoa aenigma* construyó un nido pendiente en forma de pera, similar a los de algunos géneros de los Tyrannidae y a todos los conocidos para las especies de Eurylaimidae. *Chloropipo holochlora* construyó un nido con forma de taza y textura lisa, parecido a los descritos para 11 géneros de los Pipridae, *sensu* Prum (1992). *Thryothorus leucopogon* mostró comportamientos de anidación similares a otros descritos para el género. *Tangara fucosa* construyó un nido con forma de bóveda, diferente de los otros conocidos para el género. *Chlorospingus tacarcunae* construyó su nido en una cavidad escondida en una planta de la familia Bromeliaceae, similar a como se ha reportado en otras especies del género.

Abstract. – I observed the first known nesting behavior of eight bird species from Panamá and Perú, and compared their nests and nesting behavior to their closest taxonomic relatives. Six of the species described are endemic to the Chocó region from eastern Panamá to Ecuador. *Xenornis setifrons* built a suspended cup-shaped nest similar to that of other genera in the Thamnophilidae. *Scytalopus chocoensis* built a spherical nest made of fine roots and moss, very similar to other known nests in the genus. *Phyllomyias zeledoni* built a cup-shaped nest 12 meters up on an outer limb of a tree, similar to the two other nests described in the genus. *Sapayoa aenigma* built a pear-shaped, suspended nest, similar to that of some genera in the Tyrannidae and to that of all known nests in the Eurylaimidae. *Chloropipo holochlora* built a suspended, shallow cup nest, which conformed to the nest descriptions of 11 genera in the Pipridae, *sensu* Prum (1992). *Thryothorus leucopogon* displayed nest building behavior similar to that of other species in the genus. *Tangara fucosa* built a domed nest which differ from other known nests in the genus. *Chlorospingus tacarcunae* concealed its nest in a cavity created by bromeliads, consistent with the nesting behavior of other species in the genus. Accepted 27 September 2000.

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INTRODUCTION

Even in some of the most-studied Neotropical countries such as Panamá, with established field guides and extensive literature (e.g., Wet-

more 1972, Wetmore *et al.* 1984, Robbins *et al.* 1985, Ridgely & Gwynne 1989), the breeding biology of numerous species of birds remains virtually unknown. This is particularly true for species endemic to the region extending from eastern Panamá down the Pacific coast to northern Ecuador. Chapman (1917, 1926) recognized the high numbers of endemic species in this area and named the fauna “the Colombian-Pacific fauna”. Haffer (1967a, 1967b) referred to the fauna endemic to the Pacific coast lowlands of Colombia as being from the “Chocó” region, after the Chocó province of Colombia. The fauna from this area, *sensu* Chapman (1917, 1926), has been subsequently referred to as endemic to the “Chocó” region by several authors (e.g., Cracraft & Prum 1988, Bates *et al.* 1998). In this paper, I present the first published descriptions of the nests and nesting behavior of eight little-known bird species found in Panamá and Peru: Speckled Antshrike (*Xenornis setifrons*), Choco Tapaculo (*Scytolopus chocoensis*), White-fronted Tyrannulet (*Phyllomyias zeledoni*), Broad-billed Sapayoa (*Sapayoa aenigma*), Green Manakin (*Chloropipo holochlora*), Stripe-throated Wren (*Thryothorus leucopogon*), Green-naped Tanager (*Tangara fucosa*), and Tacarcuna Bush-Tanager (*Chlorospingus tacarcunae*). Six of them, found in eastern Panamá, are endemic to the “Chocó” region.

METHODS

I took notes on nesting behavior in four sites east of the Panamá Canal, and one area in the Chiriquí mountains of western Panamá. Additional information on one species was included from notes taken during fieldwork in Peru.

The four eastern Panamá sites are as follows: The first site Nusagundi is an area of humid forest at 390 m elevation in the PEMASKY Reserve. This site was about 70 km ENE of Panamá city, along the road

between El Llano and Carti, in the western San Blas province, Comarca Kuna Yala (c. 9°20'N, 79°03'W). A detailed description of the area and habitat was given in Whitney and Rosenberg (1993). A second site was located in the foothills forest of Cerro Jefe, in the province of Panamá (c. 8°37'W, 9°15'N). The third and fourth sites were located in the Río Sambú drainage of the Darién province: at a lowland site near the river (c. 7°48'N, 78°03'W), and at a foothills site on the ridge of the Sierra de Jungurudó (07°37'N, 78°00'W). At the first two sites, notes were taken on nesting birds incidentally during an avifaunal survey of the area. At the last two sites, the principle goal of the fieldwork was to observe nesting behavior.

The site in western Panamá was located in the Fortuna forest reserve, about 45 km NNW of David along the road to the coastal town of Chiriquí Grande, in the Chiriquí province (c. 8°44'N, 82°14'W). At this site, the principle goal of the fieldwork was to observe nesting behavior. The Peru site was located in the Camisea River drainage on the east slope of the Andes in southeastern Peru (11°53'S, 72°39'W). At this site, notes were taken on nesting birds incidentally during an avifaunal survey of the area.

Observations of nesting behavior were taken with 10 × 42 binoculars unless otherwise noted. Coordinates for latitude and longitude were obtained using a Magellan 2000 GPS unit. Nomenclature follows Ridgely & Tudor (1989, 1994) unless otherwise noted.

SPECIES ACCOUNTS

Speckled Antshrike. No known nest description exists for this monotypic genus (Wetmore 1972, Hilty & Brown 1986). Part of my account below was cited by Adsett & Wege (1998).

I found the first of two *X. setifrons* nests on 2 May 1996 at the Nusagundi site (Fig. 1).



FIG. 1. Nest of the Speckled Antshike (*Xenornis setifrons*).

The nest was in the wet edge of a slowly flowing stream in a ravine between two ridges. Nearby was a steep slope covered with low, dense, tangled vegetation, apparently the result of landslides. The nest was easily visible from the nearby trail and was 2.8 m above the ground, suspended from a fork off the main branch of a 3.5-m tall tree (*Simira maxonii*; Rubiaceae). It was composed entirely of fine, dark rootlets woven together to form a cup. External dimensions were 12 cm deep by 14 cm wide; the inner cup was 9 cm deep. The walls were as thick as 3 cm. I was unable to check the contents of the nest that day.

I returned on 9 May to find two tiny, dark nestlings that appeared to be only one or two days old. I observed the nest from 12:09 to 14:52 h (EST) from c. 20 m. The female fed the nestlings four times and the fifth time she brooded them for less than 1 min. The male came in to feed the nestlings once. The only recognizable food item was a small green lepidopteran larva; all other items were too small

to identify.

The two nestlings were developing their primary and secondary shafts on 16 May. The pin feathers were dark gray, giving the nestlings an overall slaty color. The fleshy parts of their bills were yellow and there was some pinkish orange flesh visible on the body. That same day, I observed the nest from 11:15 to 14:00 h, during which time the female fed the nestlings twice. After her first visit, she left with a fecal sac, and on the second visit, she brooded for 11 min. The male also fed the nestlings twice; on a third visit, the male approached the nest but seemed too disturbed by my presence to feed. The male was always more wary and gave alarm calls, a low scold consisting of “shrik” notes repeated rapidly in succession. During both observation periods, the adults would approach from almost directly below the nest in the low vegetation and then fly up to the nest.

On 23 May the nest was found partly pulled off the limb (by a mammal?), and I

found no signs of the nestlings or adults nearby. Later that day I found a different *X. setifrons* nest, presumably of a different pair. This second nest was at the edge of a larger stream, approximately 2 km from the first, in a relatively flat area formed by the confluence of two streams. The vegetation nearby was low, dense, and tangled. The second nest was similar in form to the first, but was slightly smaller (11 cm deep by 14 cm wide) with an internal cup 7 cm deep. It was placed 3 m up in the fork of a lower branch of a 9-m tall tree (*Perebea* sp.; Moraceae) with a 10 cm dbh. Like the first nest, it was entirely composed of fine dark rootlets woven together. The nest appeared complete but was empty.

On 30 May the second nest contained large fragments of broken eggshells inside it, large enough to reconstruct the pattern of coloration. The eggs were lilac throughout, marked heavily with fine dark purple scrawls, and the wider end had a broad ring of deep purple. While I was photographing the nest, a male *X. setifrons* appeared and gave the same type of alarm call that the male at the previous nest had given as well as a quiet “mewling” call. After calling for approximately two minutes, he preened nearby for approximately three minutes and then flew out of sight.

Both nests of *X. setifrons* were near streams in relatively flat areas directly adjacent to steep ravines. Each also had an area of low tangled “gap” vegetation immediately nearby. No collecting was allowed in this locality. Photos of the two nests were taken and archived at VIREO (v06/35/001, v06/35/002). Like *X. setifrons*, many genera in the family *Thamnophilidae* build a cup nest suspended from a fork in branch, and have biparental care of the young (Skutch 1996). Some genera, like *Thamnophilus* and *Cymbilaimus*, which nest in Panamá, make a cup nest of dark fibers suspended from a fork similar to *X. setifrons* but with thinner walls (Wetmore

1972, Stiles & Skutch 1989, Skutch 1996).

Choco Tapaculo. No known nest description exists for this species (sensu Krabbe & Schulenberg 1997) or the species from which it was split, *Scytalopus vicini* (Hilty & Brown 1986, Fjeldsà & Krabbe 1990, Ridgely & Tudor 1994, Krabbe & Schulenberg 1997).

I found a nest of *S. chocoensis* on 15 August 1997 at the Serrania de Jungurudó site at c. 840 m. The male was flushed from the ground near the nest entrance, which was set back under overhanging dead palm leaves, levelled with the surrounding forest debris, and which could only be seen with the aid of a flashlight. The palm leaves could have been part of the leaf litter, or the birds could have arranged them to cover the nest. No part of the main nest was visible from the outside; it appeared to be part of the forest floor. The nest resided in an earthen cavity. It was a spherical ball of fine dark brown rootlets with a smaller amount of moss woven together with the rootlets, with one entrance hole about 4 cm in diameter. The fibers lining the inside of the nest were even finer than the outside, especially where the nestlings sat. The inside diameter of the spherical nest was c. 8.5 cm and the outside diameter 12 cm. The walls were c. 3.5 cm thick. The entrance hole faced south and was on a south-facing slope. The immediate nest area was a steep 50° slope surrounded by the even steeper 70–80° main slope. Both the male and the female visited the nest with food. The male sang within 10 m of the nest at least twice a day. The nest contained two nestlings, which will be deposited at the Museum of Natural Science at Louisiana State University. The pair of adults will be deposited at the American Museum of Natural History, and descriptions will be published in a paper on the avifauna of this area by Angehr *et al.* (in prep.). A photo taken of the nest was archived at VIREO (v06/35/010).

The nests of several species in the genus *Scytalopus* are described as ball-shaped structures, made of moss and a mixture of roots and or other fibers, concealed in various kinds of cavities or dense vegetation (Belton 1985, Hilty & Brown 1986, Fjelds  & Krabbe 1990, Sick 1993, Ridgley & Tudor 1994). The nest of *S. choacoensis* conforms very closely to the description of these nests of other species in the genus *Scytalopus*.

White-fronted Tyrannulet. No known nest description exists for this species (Wetmore 1972, Meyer de Schauensee & Phelps 1978, Hilty & Brown 1986, Stiles & Skutch 1989). On 8 August 1996, a pair of this species was observed building a nest in cloud forest in the Fortuna Dam area at approximately 1100 m elevation. The nest was 12 m from the ground on a canopy branch of a living tree. The cup-shaped nest rested on top of a horizontal branch, in a mossy area just before the spot from which the branch forked, and about 1 m from the end of the branch. I observed the nest-building behavior from 07:55 to 08:37 h using a 20–45X Bushnell scope 30 m away. During that period, the adults brought strands of moss to the nest 11 times. On at least two occasions, the adults sat in the nest while working on it. The adults were observed within 30 cm of each other on the nest branch on 2 occasions. Only one adult worked on the nest at any given time. At least one of the adults was singing near the nest, but not actually on it, throughout the observation period. One adult was seen hover-gleaning a strand of moss for the nest. The adults were seen and heard only in the canopy of the trees. On 10 August, the nest was observed again from 06:58 to 07:18 h. The adults were still actively building and singing at this date. The nest appeared unchanged from my angle.

The only references to nesting known for the 12 species in genus *Phyllomyias* are of the

Sooty-headed Tyrannulet (*P. griseiceps*) and the Planalto Tyrannulet (*P. fasciatus*) (Wetmore 1972, Meyer de Schauensee & Phelps 1978, Belton 1985, Hilty & Brown 1986, Stiles & Skutch 1989, Fjelds  & Krabbe 1990, Ridgley & Tudor 1994). The Sooty-headed Tyrannulet is described as “a small lichen-encrusted cup on crotch of small, partially shaded dead branch 13 m up” (R. Ridgley *vide* Hilty & Brown 1986). The Planalto Tyrannulet is described as having a cup-shaped nest woven of fungal hyphae, and covered with lichen, placed in the crotch of outer branches of a broadleaf evergreen (Belton 1985). Both male and female *P. fasciatus* participated in incubation (Belton 1985). These observations are consistent with the nesting behavior of *P. zeledoni* described above.

Broad-billed Sapayoa. No known nest description exists for this monotypic genus (Wetmore 1972, Hilty & Brown 1986). On 2 May 1996, a pair of *S. aenigma* were observed foraging together and giving repeated trilling calls 30 m downstream from where the nest was found at the Nusagundi site. The birds foraged primarily by sallying to capture flying insects.

On 23 May 1996, I found the nest of the aforementioned pair. The nest was suspended from a lower branch of a 8-m tall tree (*Perebea* sp.; Moraceae), 2 m above the surface of a permanent stream flowing through a deep ravine, forested on both slopes. The nest was hanging from a twig suspended over the water 2 meters up. The nest was pear shaped, tapered at the top where it attached to the twig, and rounded at the bottom. It was composed entirely of long strips of fibrous outer bark, tan in color. The main body of the nest was 30 cm in (vertical) length from attachment on the twig to the bottom of the nest, and 17 cm wide at the widest part. In addition to the vertical length of the main body of the nest, there were 30 cm of loose fibrous

strands hanging below. The nest entrance was located at the side near the bottom of the nest. This entrance was covered with a hood of fibers such that the birds entered by hovering from below. The entrance hole was 4 cm high by 6 cm wide.

Inspection of nest contents revealed two nestlings. I observed the nest from 12:00 to 15:35 h. At 12:33, one parent brought a white moth/butterfly the size of its bill and possibly other items. At 13:00, both birds brought food to the nest simultaneously. One bird brought 2–3 white moths of slightly larger than bill size. Food items brought by the other parent were dark insect-like items that filled the bill. They entered the nest by hovering from below and remained less than 5 s in the nest (only one adult at a time). These were their only visits during the observation period. Both members gave a trilling call on approach to the nest and, when very near, a more twittering rendition of the call was given (the former described as sounding like *Pipra coronata* by J. Karr in Wetmore 1972). Recordings of these calls were obtained using a Sony TCM-5000 tape recorder and a Sennheiser ME-66 microphone and will be archived at the Library of Natural Sounds, Cornell University, Ithaca, New York.

The nestlings had yellow flanges with a dark tip to the bill. Their eyes were open and were dark. Incoming feather shafts were slate gray. The feather shafts of the retrices (very short), primaries, and secondaries were coming in. Body feather shafts were coming in down the center of the back and on the back of the head. The bare flesh was orange/pink in color. The measurements of the nestlings from this date were as follows: For nestling no. 1 weight 15 g, tarsus 12.4 mm, edge of flange to tip of bill 13.5 mm, outermost primary shaft 6.7 mm); for nestling no. 2 (weight 15 g, tarsus 13.7 mm, edge of flange to tip of bill 14.4 mm, outermost primary shaft 9.3 mm). Photos of the nest and nestlings were

deposited in VIREO (v06/35/004, v06/35/005, v06/35/006).

On 30 May 1996, I observed the nest from 07:55 to 11:30. The nestlings received ten feedings in this time. The adults approached the nest simultaneously on four occasions accounting for eight of the ten feedings. The other two feedings were by solitary adults. At one feeding, within a few seconds after the adult had left, a nestling ejected a fecal sac from the opening of the nest into the flowing water below. The adults remained at the nest for only a second or two. The nestlings' heads were visible at the opening and the adults needed only to hover or perch quickly to deliver the food load. The nestlings' feathers were nearly completely unsheathed on this date. Flight feathers and wing coverts were dark brownish olive, edged with bright yellowish olive. The retrices were dark olive. Back feathers and nape and crown were bright olive. The forehead still contained dark gray feather shafts. Underparts were fully feathered and yellow olive in color. The flanges were yellow and the bill tip was dark. The eyes were dark. Their measurements were as follows: For nestling no. 1 [weight 21.8 g, retrices 19.5 mm, tarsus 15.9 mm, edge of flange to tip of bill 17.5 mm, longest primary shaft and feather (feathered portion) 44 mm (21 mm)]; for nestling no. 2 [weight 22.0 g, retrices 15.0 mm, edge of flange to tip of bill 17.3 mm, longest primary shaft and feather (feathered portion) 38 mm (19 mm)]. No collecting was allowed in this locality. Photos of the nestlings were deposited in VIREO (v06/35/007, v06/35/008, v06/35/009).

When perched together (within 20 cm), there was a noticeable size difference in the two adults, otherwise they appeared identical. The adults were seen on a few occasions foraging near the nest. They were seen sallying for insects in the air and hover gleaning. They were also seen foraging with a nearby mixed

species flock of understory birds.

The classification of *Sapayoa aenigma* remains uncertain, but traditional placement in the Pipridae is almost certainly incorrect (Prum 1990). The affinity of *S. aenigma* to Tyrannidae was suggested by R. Prum *vide* Ridgley & Gwynne (1989). Recent evidence indicates that it should be placed outside the tyrannid group (Lanyon 1985, Sibley & Monroe 1990). Sibley & Monroe (1990) suggest that *S. aenigma* is related to the old world Eurylaimidae, and Lanyon (1985) suggests that *S. aenigma* is the sister group of all other Tyrannida. Within the Tyrannida, the nest type of *S. aenigma* is similar to described nests of several genera within the family Tyrannidae. However it is also characteristic of described nests within the non-Tyrannida family Eurylaimidae (Traylor & Fitzpatrick 1981, Lambert & Woodcock 1996). Within the Tyrannidae, the nests of *Cnipodectes subbrunneus* and *Onychorhynchus coronatus* are especially similar to *S. aenigma* in general location (over or near streams) and have long pyriform shape (Wetmore 1972, Hilty & Brown 1986, Stiles & Skutch 1989).

Green Manakin. No known nest description exists for this species (Wetmore 1972, Hilty & Brown 1986). I found a nest on 15 August 1997 in the humid forests at the Sierra de Jungurudó site at 860 m. The area in the immediate vicinity of the nest had a small stream ravine with steep surrounding slopes. The nest contained one small nestling that had dark grayish down but no feather shaft development. An adult was seen brooding the nestling. The nest was 2 m above a small stream on a slender limb of a small tree. It was a shallow cup made of rootlets with moss covering the bottom, suspended from a fork on the branch. The inside diameter was 5.5 cm; the outside diameter was 10 cm where it was attached to the twigs with cobwebs, rootlets, and moss. The width from the crotch of

the fork to the leading edge of the nest was 8 cm. The inside depth was 2 cm and the outside depth of the main body of the nest was 3 cm. The nest had c. 30 cm of moss, rootlets, and dead leaves hanging down from the bottom. The inside cup was composed entirely of fine brown rootlets. The bottom of the nest was coated with a layer of green moss. A photo of the nest was deposited in VIREO (v06/35/003). Information on adult *C. holochlora*, from this area, will be published in a paper on the avifauna of the area by Angehr *et al.* (in prep.).

Additional information on this species was obtained during fieldwork at the Peru site. I located a nest of *C. holochlora* there on 12 November 1997, at 600 m in humid foothills forest. It was a shallow cup made of plant fibers with moss covering the bottom. Moss hung from the bottom of the cup. It was suspended from the fork of a dead sapling 1.6 m up over a very small drainage, and it contained one egg c. 1.5 × 2.0 cm. The egg had a dull olive background color, and was speckled with brown. The broader end was more heavily speckled. One egg still remained on 13 November 1997. The nest was empty and appeared undamaged on 16 November 1997. Collecting was not possible.

The Pipridae phylogeny proposed by Prum (1992) includes the following 12 genera: *Corapipo*, *Masius*, *Ilicura*, *Machaeropterus*, *Manacus*, *Chiroxiphia*, *Antilophia*, *Lepidothrix*, *Xenopipo*, *Dixiphia*, *Heterocercus*, and *Pipra*. The genus *Xenopipo* includes all species formerly of genus *Chloropipo* (Prum 1992). All of these genera, *sensu* Prum (1992), except *Xenopipo*, have had their nests described. The structure of the described nests of the 11 genera were very similar. They were composed of slender plant, root, or fungal rhizomorph fibers that were woven into a thin, usually shallow, cup suspended from the fork of a slender branch (Willis 1966, Haverschmidt 1968, Wetmore 1972, Oniki & Willis 1982, Orejuela 1982,

Hilty & Brown 1986, Stiles & Skutch 1989, Marini 1992, Sick 1993, Ridgely & Tudor 1994). The nest type of *C. holochlora* described here conforms closely to that of other described nests in the family Pipridae *sensu* Prum (1992).

Stripe-throated Wren. No known description of nest behavior exists for this species (Wetmore *et al.* 1984, Hilty & Brown 1986). On 24 August 1997, a pair of this species was seen nest building in second growth woodland on the edge of the Río Sambú, 80 m elevation. They were bringing rootlets up to a crotch 4 m high formed by a *Philodendron* sp. and a tree. The nest structure was not developed sufficiently to reveal its final shape, but it appeared to be domed. Most species in the genus *Thryothorus* build ball-shaped nests with an extension above the entrance, that hides it, such that the opening points downward (Wetmore *et al.* 1984, Hilty & Brown 1986, Stiles & Skutch 1989, Sick 1993, Howell & Webb 1995). The nest of *T. leucopogon* appeared similar to early stages of construction observed in other species of the genus *Thryothorus* (Skutch 1960, Sick 1993).

Green-naped Tanager. No known nest description exists for *T. fucosa* or *Tangara dowii*, which are considered by some to be conspecific (Hilty & Brown 1986, Isler & Isler 1987, Stiles & Skutch 1989). On 20 August 1997, a pair of *T. fucosa* were seen building their nest at the Sierra de Jungurudó site at c. 940 m. The nest was being built 15 m above the ground, in a pinnately divided palm frond. It was nestled in the protruding leaflets midway out and on top of the main vein of the frond. It was a ball-shaped mass of dead plant material. The exterior appeared to be made mostly of dead palm leaves. Two adults were seen carrying moss and dead palm leaf fragments in their bills to the nest. They disappeared inside with the nest material. The entrance hole was diffi-

cult to see, but appeared to be on the side of the nest and near its base. In seven trips to the nest, the adults only worked on the inside of it. I was unable to collect or photograph the nest.

Of the 47 species in the genus *Tangara* recognized by Isler & Isler (1987), 20 have been observed nesting in natural situations. Nineteen of these species built cup nests placed on limbs or other vegetation, including one in a hanging epiphyte, and were often concealed by dense foliage. One species was observed building its nest in a Monk Parakeet (*Myiopsitta monachus*) nest. Several other species that nest in captivity were found to make cup nests in their breeding attempts (Isler & Isler 1987). Isler & Isler (1987) reported no known nest descriptions for 19 species of *Tangara*. No species of *Tangara* were known to build a ball-shaped nest as has been described here for *T. fucosa* (Isler & Isler 1987). This species may build an enclosed structure due to the exposure to rain and wind that the crown of this palm receives by growing above, and separated from, the other vegetation on the crest of the ridge.

Tacarcuna Bush-Tanager. The only previous reference to nesting behavior known for this species was of a female carrying nesting material in Darién province (Wetmore *et al.* 1984). A pair of this species were seen nest building at 07:40 on 12 April 1997, on Cerro Jefe at 850 m. The nest was in moist forest in a zone between the elfin cloud forest at the peak and the taller foothills forest at a lower elevation. It was in a cavity created by a bromeliad clump growing on top of the main limb of a tree about 6.5 m above the ground. Two individual adults were seen carrying nesting material in their bills to the base of the bromeliad clump. The individual birds flew up and disappeared into the opening at the base of the bromeliad. No part of the nest was visible from the outside. The nesting material was

light tan-colored strips of grass or palm leaves that ranged from 5 to 20 cm long. I was unable to collect the nest. Isler & Isler (1987) report four of eleven species in the genus *Chlorospingus* have had their nest described. These species all had cup nests and most placed their nests on tree limbs, or trunks, hidden inside clumps of mosses, ferns, or epiphytes (Hilty & Brown 1986, Isler & Isler 1987, Stiles & Skutch 1989). The nest placement of *C. tacarcunae* was similar to described nests of species in the genus *Chlorospingus*.

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