

Speckled Crakes usually inhabit dense vegetation and are glimpsed only when bursting into flight, as when frightened by a person or a harvesting machine. On such occasions they fly as high as 6 m and drop back into the vegetation after traveling about 70 m. Despite their contrastingly patterned plumage, they are difficult to see in the field, being obscured in the dim light of their habitat.

Two specimens have been obtained in our study area. An adult male was collected on 14 May 1976 by Herculano Alvarenga and is now in his private collection. Its testes were well-developed and its stomach contained small (about 1 mm) seeds of Graminae (80%), pieces of small arthropods (15%), and fine gravel (1–3 mm; 5%). The second bird, captured on 21 August 1982, is still alive in captivity with us as of this writing, and we have learned some details of behavior by watching it.

When alarmed, many rails flick the erect tail, in some cases showing contrasting spots on the crissum and under tail coverts. Our captive Speckled Crane, however, seems to show alarm by remaining motionless in a horizontal position, with the tail held downward and fully opened. The wings are folded but held obliquely upward, showing the whitish tips of some secondaries and exposing the profusely white-spotted underparts.

The Speckled Crane is diurnal, retiring to roost at dusk. As do some other rails (e.g., *Aramides cajanea* and *A. ypecaha*, Teixeira 1981), our captive roosts on a perch up to 2 m above the ground. It sleeps with its head under its wings and with one foot retracted into the belly plumage.

The bird also calls frequently at night from its perch, at least in captivity. Unlike other rails, its vocalizations are inconspicuous and easily confused with or masked by other marsh sounds. When giving its distinct two-syllable call, the crane stands upright with neck erect. In this call, "koowee-cack," the "koowee" is high and brief, and the "cack" is louder and drier, ending abruptly. We have also heard a whistling "keeee" in an alarm situation and a single high "kyu."

This species has been thought to be rare, occurring locally over a large region (Blake 1977). Although it is not common at our study area, our experience indicates that it is not so much scarce as difficult to find. The same is true of other small, timid, and supposedly rare crakes such as *Laterallus xenopterus* and *Micropygia schomburgkii*, which inhabit dense vegetation.

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### THE WHITE BELLBIRD (*PROCNIAS ALBA*) IN THE SERRA DOS CARAJÁS, SOUTHEASTERN PARÁ, BRAZIL

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The known geographical distribution of the White Bellbird (*Procnias alba*) encompasses eastern Venezuela, the Guianas, and Brazil north of the Amazon, including the lower and middle Rio Negro (Novaes, Ann. Soc. Sul-Rio-grandense Ornitol. 1:5–7, 1980; Snow, D., The cotingas. Cornell Univ. Press, Ithaca, NY, 1982). Here we report a population of White Bellbirds south of the Amazon River in the Serra dos Carajás, southeastern Pará, Brazil. This extends the range of the species some 1,000 km south and

helps explain certain records of the species distant from previously known populations.

The Serra dos Carajás, a region of about 18,000 km<sup>2</sup> between the Araguaia/Tocantins and Xingu rivers, is centered at approximately 6°00'S, 50°30'W. The serra is of Cretaceous age and reaches over 800 m at its highest points. The region is exceptionally rich in minerals, including iron, manganese, copper and gold. The vegetation of the slopes is high Amazonian rain forest in most places, while a rupicolous scrub known as "canga" or "campo rupestre" covers exposed iron ore deposits on some of the high plateaus. The observations reported here were made during six visits to the Carajás region in 1983: January (FCN), July (PR), August (DCO), and May, June and September (Goeldi Museum technicians). The specimens reported were collected in August and September 1983. We thank Helmut Sick for sharing information he obtained during a visit to Carajás in May 1969.

In the Carajás region, White Bellbirds occur in montane forest at altitudes of 500 to 750 m. Much of the high Amazonian rain forest on the slopes is especially luxuriant with a canopy over 35 m high, while in other places it is more open with many emergents. White Bellbirds are locally common, at least seasonally, but with a patchy distribution. The males' loud calls were conspicuous from June to September, but they were not noted during visits in January and May. It is unclear whether this indicates migration away from Carajás outside the breeding season,

or only the inconspicuous nature of the birds when they are not calling. During July and August, White Bellbirds were common in most valleys along a 60-km west-east transect through the highest parts of the serra. They were absent at the two ends of the transect ("Pojuca" in the west and near the airport in the east), and at several intermediate places that appeared to have appropriate habitat. Strong dependence on fruits from species of arborescent Lauraceae is thought to influence local distribution of bellbirds (Snow, D. W., Bull. Br. Mus. Nat. Hist. (Zool.) 25:367-391, 1973), but we have no data on tree species composition in the valleys. The observed population density ranged from 2 calling males within hearing range in some valleys, to at least 10 calling males in others.

The males called from exposed perches 25 to 40 m high in forest at sites ranging from the bottom of the valleys (approximately 500 m) to the highest forested ridges. We heard calls at all hours of the day from 06:30 to 17:30. They conformed well with those described for the White Bellbird in Guyana by B. K. Snow (Auk 90:743-751, 1973). The most frequently uttered call was the normal sharp bell-like "ding-ding" or "kong-kay" call. Sometimes the vocalization was audibly harsher and louder, which is probably this call accompanied by a rapid swing of the head and body. The birds also emitted the musical "doing-doing" or "dor-ong" call, albeit more rarely than the data indicate for Guyana. The birds' visiting behavior also agreed with that described by B. K. Snow (1973). One of us (PR) once observed two males on the same perch above the canopy. The second male to arrive evidently was the owner of the perch. He performed a "ritualized jumping movement," but without leaving the perch, and then uttered a bell call at the moment when the other male flew off.

Breeding probably takes place in August and September, but may extend into other months as well. Females were observed in association with adult males in August. The testes of two adult males collected in August were approximately the same size ( $10 \times 4$  mm and  $10 \times 5$  mm) as those of a single male taken in September ( $9 \times 5$  mm). According to D. W. Snow (Ibis 118:366-401, 1976), male bellbirds take no part in nest duties and are free to molt during the reproductive season. The onset of molt in male *Procnias* coincides with egg-laying by females. In all three male specimens collected at Carajás (Museu Paraense Emílio Goeldi collection 35042 [25.VIII.83], 35043; [26.VIII.83], and 35302 [10.IX.83]), the first primary was new and the second and/or third were in molt. The middle remiges were the most worn while the outermost appeared practically new. The tail showed no molt, but the inner rectrices were much more worn than the outer ones. This pattern of wear is what might be expected in birds that take 160 days to go through a molt cycle (Snow 1976).

One of the specimens had a few dark patches on three of the innermost secondaries, indicating that it was probably a third-year individual (Snow 1976), while the other two males were completely white. The standard measures

in millimeters are as follows: wing 153-159 ( $\bar{x} = 155.5$ ); tail 93-97 (95); tarsus 29-30 (29.7); bill culmen 18.2-19.9 (19.2); bill, nostril to tip 9-12 (10.7); bill gape 33-36 (34.7).

Compared to Snow's (1973, 1982) data for northern birds, the Carajás males are somewhat smaller in wing and tail measurements, while the tarsus and, especially, the bill are larger. The size of the bill appears to be of adaptive importance because it determines the maximum diameter of exploitable fruits. The White Bellbirds of Carajás have the largest bills of any *Procnias*, and presumably eat larger fruits than those of any other population. It may be significant that the Carajás specimens in life had black upper mandibles and medium gray lower mandibles tipped with black. The lower mandibles turned completely black within a few days after death. Bill color in other populations of bellbirds is described as all black (Snow 1982), so the true color of the lower mandible in life may be another distinguishing feature of the Carajás population.

This southern population of *P. alba* occurs nearer to the closest known populations of the Bearded Bellbird (*P. averano*) in southern Maranhão (about 600 km east) than to the closest known conspecific populations (about 1,000 km north). Following Snow's (1973) interpretation, the Carajás population may have been established by long distance dispersal from the Guiana highlands, sufficiently long ago to have allowed for some differentiation. White Bellbirds frequent lower altitudes than any of their congeners (Snow 1973, 1982), and extensive tracts of lowland forest would not represent an insurmountable barrier to dispersal. Wallace's (A narrative of travels on the Amazon and Rio Negro. Ward, Lock and Co., London, 1853) record of White Bellbirds near the city of Belém in July 1849 now seems less puzzling; those birds may have been wanderers from the southern population. The appearance of vagrants far from their breeding grounds is well-established among the bellbirds. The records for the middle and lower Rio Negro (Novaes 1980, Snow 1982) may be seen in new light. Given the incomplete state of knowledge about Amazonian bird distributions, it seems probable that unidentified populations of *P. alba* exist in montane forest in that region.

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