

THE SHARPBILL IN THE SERRA DOS CARAJÁS, PARÁ, BRAZIL, WITH COMMENTS ON ALTITUDINAL MIGRATION IN THE AMAZON REGION

JOSÉ MARIA CARDOSO DA SILVA

University of Copenhagen
Zoologisk Museum
DK-2100 Copenhagen, Denmark

Abstract.—New sight records confirm the existence of a population of the Sharpbill (*Oxyruncus cristatus*) in the Serra dos Carajás, Pará, Brazil. Records of this species in the lower Amazon can now be interpreted as altitudinal migrants from this newly described southern population. *O. c. tocantinsi*, a poorly-known Amazonian subspecies, is synonymous with *O. c. hypoglaucus*, of the Venezuelan-Guianan highlands. Additional commentaries on other species that seem to exhibit similar altitudinal movements are also presented.

PRESENCIA DE *OXYRUNCUS CRISTATUS* EN LA SIERRA DOS CARAJAS, PARÁ, DE BRAZIL, CON COMENTARIOS SOBRE MIGRACIÓN ALTITUDINAL EN LA REGIÓN AMAZÓNICA

Sínpsis.—Registros visuales confirman la existencia de una población de *Oxyruncus cristatus* en la Sierra dos Carajás, Pará, de Brazil. La presencia de esta especie en la región baja amazónica puede ser interpretada como migración altitudinal de esta nueva población de *O. c. tocantinsi*, subespecie amazónica poco conocida y sinonimizada como *O. c. hypoglaucus* de las tierras altas de Venezuela y la Guyana. Se presentan además, comentarios adicionales sobre otras especies que parecen realizar movimientos migratorios altitudinales.

O BICO AGUDO (*OXYRUNCUS CRISTATUS*) NA SERRA DOS CARAJÁS, PARÁ, BRASIL, COM COMENTÁRIOS SOBRE MIGRAÇÕES ALTITUDINAIS NA REGIÃO AMAZÔNICA

Sínpse.—Novos registros visuais confirmam a existência de uma população do bico agudo (*Oxyruncus cristatus*) na Serra dos Carajás, Pará, Brasil. Os registros desta espécie na região do Baixo-Amazonas podem ser agora interpretados como migrantes altitudinais desta nova população. *O. c. tocantinsi*, uma subespécie amazônica pouco conhecida, é sinonimizada com *O. c. hypoglaucus*, das terras altas da Venezuela e Guianas. Comentários adicionais sobre outras espécies que parecem realizar movimentos altitudinais semelhantes são também apresentados.

Although the phylogenetic relationships of *Oxyruncus cristatus* are still unresolved (Prum and Lanyon 1989, Sibley et al. 1985), information on the species' geographic variation and distribution have remained without important changes since the comprehensive reviews of Hellmayr (1929) and Chapman (1939). Recent studies in the Andes (Parker et al. 1982) and in the Amazon basin (Scott 1988) have recorded *O. cristatus* in some unexpected sites, changing considerably the previously described distributional pattern. Here I review the evidence supporting the existence of a newly discovered population of the Sharpbill in the Serra dos Carajás, southeastern Pará, Brazil, reevaluate the taxonomic status of *O. c. tocantinsi*, and propose that the records of the species at lower altitudes in the Amazon basin should be interpreted as altitudinal migrants of this southern population.

STUDY AREA

The Serra dos Carajás is a small mountain range located between the Araguaia and Tocantins Rivers in southeastern Pará, Brazil, centered around 6°00'S, 50°30'W. The serra is of Cretaceous age and is characterized by a series of discontinuous mountains separated by broad valleys. The altitude varies from 300 to 800 m. The vegetation of the slopes is high Amazonian rain forest, whereas open scrub known as "canga" covers exposed iron ore deposits on some of the high plateaus (see Silva et al. 1986 for a review of the vegetation of this region).

RESULTS

Sight records.—I observed a pair of *O. cristatus* at the site of the Carajás Manganese mine, for 3 min on 12 Jul. 1984. The birds were immobile, with the body feathers fluffed, in the canopy of a 45 m tree in rain forest border. Scott (1988) recorded two *O. cristatus* in the Carajás region on some date between 2 and 5 Dec. 1984, at site N5. On 16 Jul. 1986, I observed an individual of *O. cristatus* singing for 2 min on an exposed perch 25 m high in a forested site located near the right margin of the Itacaíunas River (Caldeirão site). The bird had its neck stretched forward, and its head and body feathers fluffed. The song heard was quite similar to description of more conspicuous vocalization, a descending trill, recorded from Costa Rican and southeastern Brazilian Sharpbills by Stiles and Whitney (1983) and Sick (1985), respectively. On 13 Jul. 1990, I observed an individual of *O. cristatus* for 5 min at the Tapirapé-Aquiri Biological Reserve, also within the Serra dos Carajás. The bird was in the canopy of a 10 m *Cassia* sp. tree, participating in a mixed flock composed of *Tachyphonus luctuosus*, *Ramphocelus carbo*, *Myiodynastes maculatus*, *Euphonia violacea*, *Hemithraupis guira*, *Picus flavigula* and *Tityra semifasciata*. The only kind of foraging behavior observed in this situation was some short clumsy sallies to capture flying insects. After 3 min foraging together with the mixed-flock, the Sharpbill perched in a thinly foliated branch and sang until the end of my observation period.

Taxonomy.—It was impossible to determine the belly color of the pair observed in 1984. The height and lighting were not adequate to observe this detail. The observations made in 1986 and 1990, however, were certainly of the white-bellied individuals. The observation conditions were good and I had already had enough experience with Sharpbill in both field and collections. With this characteristic as the basis, the individuals were tentatively identified as *O. c. tocantinsi*, a subspecies described by Chapman (1939) based on five specimens collected by the Olalla brothers at Baião, Pará, Brazil (Fig. 1), on 16 Dec. 1931. The Olalla brothers collected two more specimens of *O. cristatus* at Belém, Pará (Fig. 1), but they were identified as *O. c. hypoglaucus* by Griscom & Greenway (1941) without some reference to *O. c. tocantinsi*. The validity of Olalla specimens has been questioned. Based on the altitudinal preferences of the species in Surinam and on the many label errors made by the Olallas, Mees (1974) proposed that the specimens of *O. c. tocantinsi* were collected at

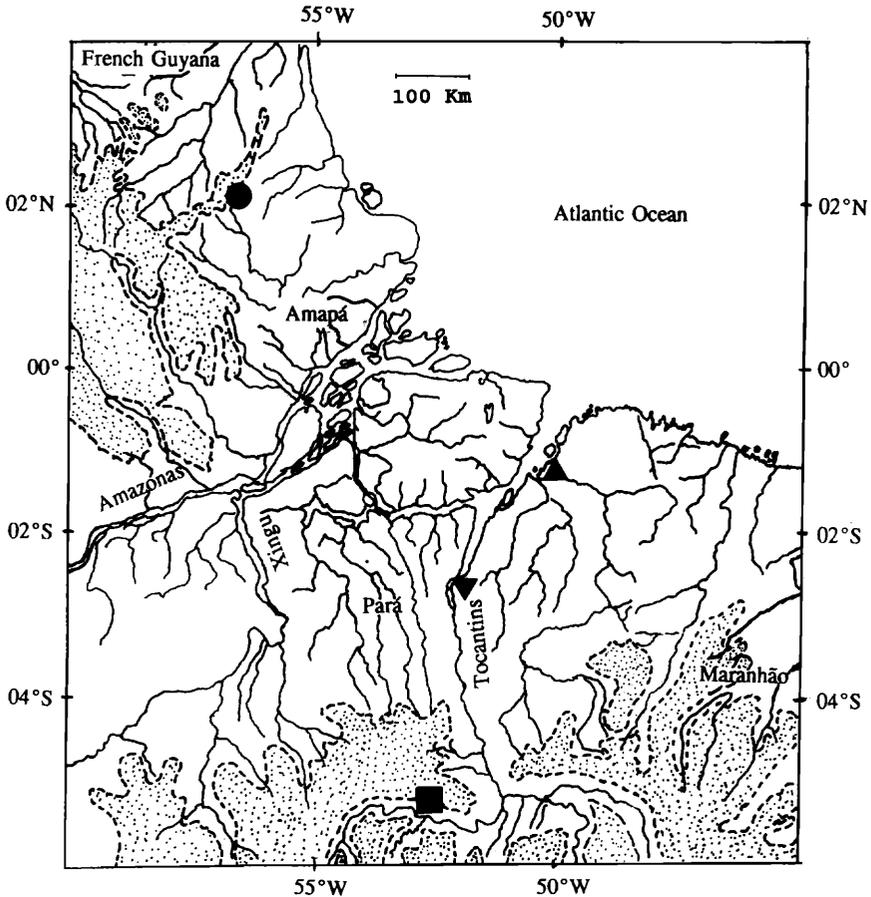


FIGURE 1. Distribution of the Sharpbill (*Oxyruncus cristatus*) in Amazon basin. (●) *O. c. hypoglaucus*, (▲) Belém, (▼) Baião, and (■) Serra dos Carajás. Dotted regions (200 m above sea level).

some other locality of higher altitude than Baião (35 m) and that *O. c. tocaninsi* should be synonymous with *O. c. hypoglaucus*, a subspecies whose distribution encompasses the highlands of southern Venezuela, Guyana and Surinam (Dickermann and Phelps 1982, Mees 1974). Novaes (1978) commented that one specimen of the Sharpbill collected in Amapá should be identified as *O. c. tocaninsi*, the basis being its measurements. The diagnostic characters pointed out by Chapman (1939) to separate *O. c. tocaninsi* from *O. c. hypoglaucus* were: a) smaller measurements; b) underparts slightly paler; c) the black marks on the breast less pronounced and more rounded.

To evaluate the Mees's proposal, I examined the type-series of *O. c. tocaninsi* and compared it with the series of *O. c. hypoglaucus* housed at the American Museum of Natural History. Due to the great individual

TABLE 1. Minimum–maximum of selected measurements (mm) of *Oxyruncus cristatus hypoglaucus* and “*O. c. tocantinsi*.”

	<i>hypoglaucus</i>	“ <i>tocantinsi</i> ”
Wing (flattened)	83.0–94.0	85.5–89.0
Mean	90.0	86.3
SD	2.8	1.5
<i>n</i>	15	5
Tail	56.0–64.5	55.5–60.0
Mean	59.9	57.4
SD	2.5	1.7
<i>n</i>	15	5
Bill culmen	16.0–20.5	17.0–18.0
Mean	19.1	17.3
SD	1.1	0.4
<i>n</i>	14	5
Tarsus	16.5–20.0	15.5–18.0
Mean	18.5	17.7
SD	1.1	1.3
<i>n</i>	15	5

variation in underparts color and the size and shape of black marks on the breast, I find no plumage characters that would differentiate the two series. I also measured all specimens. As the males and females measurements in the Sharpbill are similar (Dickermann and Phelps 1982), they are combined in Table 1. The series of *O. c. tocantinsi* has a significantly shorter wing (Student's *t*-test bicaudal, $t = 2.7$; $df = 18$; $P < 0.05$), and bill ($t = 3.35$, $df = 17$; $P < 0.01$). As all measurement variation of *O. c. tocantinsi* is within of the variation of *O. c. hypoglaucus* (Table 1) it is impossible to allocate individual specimens to either subspecies. On the basis of these observations, I agree with Mees's hypothesis and propose that *O. c. tocantinsi* be synonymized with *O. c. hypoglaucus*.

DISCUSSION

The records reported above are the only ones of the Sharpbill during 5 yr (1984–1989) of intensive ornithological inventory in the Serra dos Carajás region. These observations indicate that the species has either a very low density or a very patchy distribution in the forests of this region. Such a distribution has been suggested for the more vocal and conspicuous *Procnias alba* (Roth et al. 1984). The records of *O. cristatus* in the Carajás region are also limited to July and December. I made observations in the same points where I recorded *O. cristatus* in Carajás, with the exception of the Tapirapé-Aquiri site, in February 1984 and was unable to find the species. As the Sharpbill's singing season is almost certainly synonymous with the breeding season (Stiles and Whitney 1983), I propose there is a breeding population of *O. cristatus* in the Serra dos Carajás and that this population may exhibit some type of altitudinal movement between the middle of December and June, as apparently does *Procnias alba* (Roth et al. 1984).

The discovery of a population in Carajás introduces new light on the riddle of the Sharpbill; the type series of *tocantinsi* and the specimens of *O. cristatus* in Belém (14 m) can now be interpreted as altitudinal migrants from the Carajás population. The Sharpbill's altitudinal movements have been recorded in different regions, such as Costa Rica (Stiles and Skutch 1989) and southeastern Brazil (Sick 1985), and it could be a general behavior for all remaining populations. There still is the possibility that these records are not true or, if true, they could indicate the existence of a breeding population of the Sharpbill in the lower Amazon. However, the latter hypothesis disagrees with all available information on the Sharpbill's breeding altitudinal preference (Sick 1985, Stiles and Whitney 1983). In the Carajás region, there are at least two other species whose altitudinal patterns are quite similar to that of the Sharpbill: *Procnias alba* and *Contopus nigrescens*.

P. alba is represented in the Carajás region by a slightly differentiated subspecies (Oren and Novaes 1985) that apparently reproduces between June and September and afterwards exhibits some type of migration, probably altitudinal (Roth et al. 1984).

C. nigrescens is represented in Carajás by the poorly-known subspecies *canescens* (pers. obs.), which is known from Peru and from a single specimen from the Acary mountains of southern Guyana (Blake 1950, Stotz 1990). Stotz (1990) also listed R. Ridgely's sight records of species of Santa Inês, Maranhão, in November 1977 and presented data on a single specimen collected at Itupiranga, Pará at 100 m elevation, on 14 Jun. 1967. This species has been collected in the Carajás region in May and July (specimens in the ornithological collections of the Museu Paraense Emílio Goeldi Belém, Pará, Brazil). In July 1984 and 1986 I observed several pairs of this species beginning reproduction (copulations and nest-building). More data are necessary for the other months, but some preliminary observations indicate that there is migration of at least part of this population. Thus, the records of Santa Inês and Itupiranga can also be interpreted as altitudinal migrants from the Carajás population.

The evidence of an altitudinal migration system within the limits of the Amazonian rain forest was also found during studies carried out in Roraima state, Brazil, at the border of the Amazon basin with Guianan highlands (pers. obs.). More studies are necessary to understand the basic patterns of this special type of movement and its implications to the dynamics of the local bird communities involved.

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LITERATURE CITED

- BLAKE, E. R. 1950. Birds of the Acary mountains. *Fieldiana Zool.* 32:417-474.
- CHAPMAN, F. C. 1939. The riddle of *Oxyruncus*. *Amer. Mus. Nov.* 1047:1-4.
- DICKERMANN, R. W. AND W. H. PHELPS, JR. 1982. An annotated list of the birds of Cerro Urutani on the border of Estado Bolívar, Venezuela, and Território Roraima, Brazil. *Amer. Mus. Nov.* 272:1-20.
- GRISCOM, L., AND J. C. GREENWAY, JR. 1941. Birds of lower Amazon. *Bull. Mus. Comp. Zool.* 88:83-344.
- HELLMAYR, C. E. 1929. Catalogue of birds of the Americas. *Field Mus. Nat. Hist. Publ., Zool. Ser.* 308. Chicago, Illinois. 258 pp.
- MEES, G. F. 1974. Additions to the avifauna of Suriname. *Zool. Meded.* 8:55-67.
- NOVAES, F. C. 1978. Ornitologia do Território do Amapá II. *Publ. Avuls. Museu Goeldi* 29:1-75.
- OREN, D. C., AND F. C. NOVAES. 1985. A new subspecies of White Bellbird *Procnias alba* (Hermann) from southeastern Amazonia. *Bull. Brit. Orn. Cl.* 105:23-25.
- PARKER, T. A. II, S. A. PARKER, AND M. A. PLENGE. 1982. An annotated checklist of Peruvian birds. Buteo Books, Vermilion, South Dakota. 108 pp.
- PRUM, R. O., AND W. E. LANYON. 1989. Monophyly and phylogeny of the *Schiffornis* group (Tyrannoidea). *Condor* 91:444-461.
- ROTH, P., D. C. OREN, AND F. C. NOVAES. 1984. The White Bellbird (*Procnias alba*) in the Serra dos Carajás, southeastern Pará, Brazil. *Condor* 86:343-344.
- SCOTT, D. A. 1988. Preservação a natureza e pesquisa sobre fauna pela CVRD: observações e sugestões. *Espaço, Ambiente e Planejamento* 2(7):1-51.
- SIBLEY, C. G., S. M. LANYON, AND J. E. AHLQUIST. 1985. The relationships of the Sharpbill (*Oxyruncus cristatus*). *Condor* 86:48-52.
- SICK, H. 1985. *Ornitologia Brasileira: uma introdução*. 2 vols. Editora Universidade de Brasília, Brasília, Brazil. 827 pp.
- SILVA, M. F. F., N. L. MENEZES, P. B. CAVALCANTE, AND C. A. JOLY. 1986. Estudos botânicos: histórico, atualidade e perspectivas. Pp. 184-207, in J. M. G. Almeida, Jr., ed. *Carajás: desafio político, ecologia e desenvolvimento*. Editora Brasiliense, São Paulo, Brazil.
- STILES, F. G., AND B. WHITNEY. 1983. Notes on the behavior of the Costa Rican Sharpbill (*Oxyruncus cristatus frater*). *Auk* 100:117-125.
- , AND A. F. SKUTCH. 1989. *A guide to the birds of Costa Rica*. Comstock Publishing Associates, Ithaca, New York. 511 pp.
- STOTZ, D. F. 1990. Corrections and additions to the Brazilian avifauna. *Condor* 92:1078-1079.

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