Noteworthy bird records from the Araracuara area, Amazonas and Caquetá, Colombia

Registros notables de aves de los alrededores de Araracuara, Amazonas y Caquetá, Colombia

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Abstract

We surveyed birds near Araracuara (Caquetá Department) and Puerto Santander (Amazonas Department), Colombia in August 2019 and January/February 2021. Our records included substantial range extensions for *Nyctibius leucopterus*, *Crypturellus brevirostris*, *Polioptila facilis* and *Geothlypis aequinoctialis*. We also encountered numerous species characteristic of poor-soil and rock-outcrop habitats that were previously documented further north on the Chiribiquete massif but never so far south, and we report that many of these species reach the south bank of the Caquetá River. Additionally, we encountered several savanna-associated species on cattle pastures near Puerto Santander, of which two are shared with nearby rock-scrub habitats and three are apparently colonists from elsewhere. We discuss the distribution of the Guianan avifauna in the western Amazon, and we suggest areas where further observations could help to resolve outstanding questions.

Key words: white sands, poor soil, *Crypturellus brevirostris*, *Nyctibius leucopterus*, *Chlorostilbon olivaresi*

Resumen

Observamos aves por los alrededores de Araracuara (Departamento Caquetá) y Puerto Santander (Departamento Amazonas), Colombia, en agosto 2019 y enero/febrero 2021. Nuestros registros incluyen extensiones de distribución para *Nyctibius leucopterus*, *Crypturellus brevirostris*, *Polioptila facilis* y *Geothlypis aequinoctialis*. También encontramos varias especies características de bosques de suelo pobre y tepuyes rocosos que habían sido documentadas previamente más hacia el norte en el macizo Chiribiquete, pero nunca tan hacia el sur, y reportamos que muchas de estas especies llegan hasta la orilla sur del río Caquetá. Encontramos algunas especies asociadas con sabanas en potreros cerca de Puerto Santander; entre ellas dos se comparten con los tepuyes cercanos y al parecer tres han colonizado desde más lejos. Discutimos la distribución de la avifauna con afiliación guianense en la Amazonía occidental, y sugerimos áreas donde observaciones adicionales podrían ayudar a resolver preguntas pendientes.

Palabras clave: arena blanca, varillal, suelo pobre, *Crypturellus brevirostris*, *Nyctibius leucopterus*, *Chlorostilbon olivaresi*

Introduction

In the central Colombian Amazon, a series of rock outcrops and mesas extends from southern Guaviare department southwards to Araracuara (Caquetá department) and barely across the rio Caquetá into Amazonas department (Galvis Vergara 1994, Figure 1). Here, we use the term "Araracuara formation" to encompass the entire region of rock outcrops and nearby forests, including the Sierra de Chiribiquete, which comprises the northernmost and tallest rock outcrops as well as the lower mesas further south. Beginning in the 1990s, a series of biological expeditions documented three salient features of the avifauna of the Sierra de Chiribiquete and adjacent areas (Stiles *et al*. 1995, Stiles 1996, Álvarez *et al*. 2003, Stiles and Naranjo

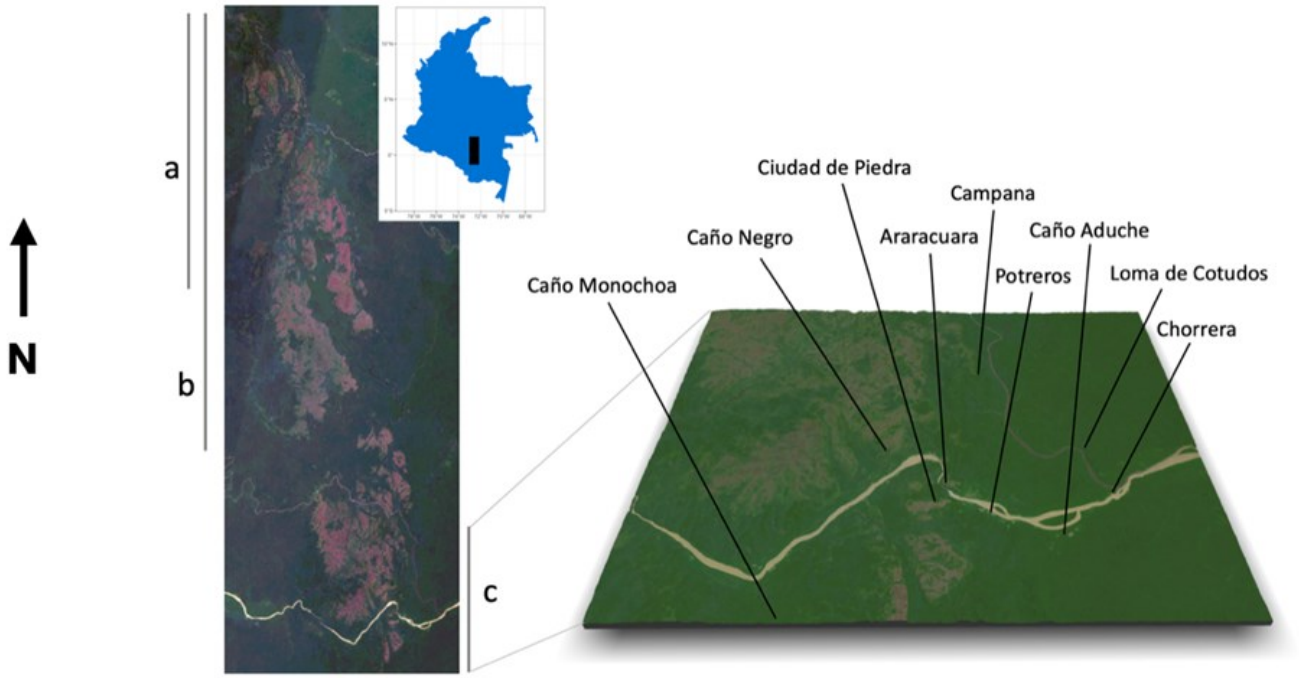

Figure 1. The rock outcrops of the Araracuara formation. Forest habitats are greenish; rock-scrub habitats are pinkish. (A) (B) The study regions of Stiles 1996 and Alvarez *et al.* 2003 (C) The study region of the current study, with key localities labeled at right. On the right-hand image, the rio Caquetá is the bright pale river crossing the panel from east to west, while the rio Yarí is the darker river that meets the Caquetá near the point labeled "Chorrera".

2017). First, open scrubby habitats atop the outcrops share ornithological affinities with non-forest habitats of the llanos, Magdalena valley, and white-sand savannas of far eastern Colombia. Second, adjacent forests, growing on localized sandy podzols derived from in situ weathering of outcropping sandstone or on more widespread nutrient-poor ultisols (Duivenvoorden 1994), support an avifauna typical of Amazonian white-sand forests. And third, the physical rock outcrops support species that nest and forage at cliff faces or river rapids.

Previous expeditions have focused primarily on the northern and central parts of the Araracuara formation (*i.e.* the Sierra de Chiribiquete). The southernmost part of the formation reaches the Caquetá River at Araracuara and extends barely south into Amazonas department at Puerto Santander. At Araracuara, the Caquetá River is only *ca.* 100 meters wide as it flows through a spectacular canyon flanked on both sides by low-stature forest. Thus, the river is unlikely to pose a biogeographic barrier for the poor-soil and scrub -associated birds of the Chiribiquete. Although Araracuara is accessible by regular airplane flights and has served as a point of entry for expeditions to the central Araracuara formation, the outcrops and forests immediately around Araracuara and Puerto Santander have received almost no ornithological attention since the collections of H. Romero in 1977 (Stiles 1996). We surveyed birds near Araracuara and Puerto Santander during three expeditions in August 2019, January 2021, and February 2021.

Localities visited.- We obtained noteworthy records at 9 localities (Figure 1, Table 1) as follows: 1) Ciudad de Piedra is one of several rock outcrops south of the Caquetá River at Puerto

Table 1. Localities visited

Site name	Coordinates
Ciudad de Piedra	-0.63°, -72.41°
Caño Negro	-0.55°, -72.46°
Campana	-0.44°, -74.34°
Loma de Cotudos	-0.56°, -72.27°
Caño Monochoa	-0.77°, -72.54°
Caño Aduche	-0.66°, -72.31°
Araracuara	-0.60°, -72.40°
Potreros	-0.63°, -72.37°
Chorrera	-0.61°, -72.25°

Santander and reaches a maximum elevation of *c.* 330 m. The approach to the outcrop features stunted white-sands forest that gives way to patchy scrub growing between areas of exposed bedrock, with abundant flowering *Decagonocarpus cornutus*. 2) Caño Negro is an indigenous community on the north bank of the Caquetá River that includes a rock outcrop similar to Ciudad de Piedra. Unlike Ciudad de Piedra, the outcrop at Caño Negro is connected to a large complex of near-contiguous outcrops stretching north to the Mesay River. 3) Campana, on the right bank of the lower Yarí River, supports tall forest on gently sloping terrain that gradually ascends from the bank of the Yarí at *c.* 100 m to the flank of a mesa at *c.* 280 m. At the highest elevations, the tall forest gives way to progressively more stunted forest and eventually to scrub growing on peat at least 70 cm (one machete length) deep, with trees 2-5 meters tall interspersed with sedges. Compared to Ciudad de Piedra, the scrub at Campana is floristically poor, with just 1-2 dominant woody species and no flowering *Decagonocarpus cornutus*. 4) Loma de Cotudos, on the left bank of the lower Yarí River, supports extensive medium-stature poor-soil forest on flat terraces dissected by small forest streams. Based on Duivenvoorden (1994) we believe the soils here to be weathered ultisols. 5) Caño Monochoa is a south-bank tributary of the Caquetá River upstream from Puerto Arturo, featuring poor-soil forest. We visited several additional south-bank sites upstream from Puerto Arturo, but did not obtain any noteworthy records for inclusion here. 5) Caño Aduche is a small blackwater tributary on the south bank of the Caquetá River downstream from Puerto Santander, home to an Andoke community of the same name. 7) Araracuara is a military base and airstrip with access to disturbed areas, stunted white-sands forest, and an overlook over the spectacular canyon of the Caquetá River as it flows through a water gap in the Araracuara formation. 8) Potreros is a series of pastures carved out of hilly forest on the right bank of the Caquetá River, downstream from Puerto Santander. 9) Chorrera (not to be confused with the town of La Chorrera, Amazonas), is a set of navigable rapids on the Caquetá River near the mouth of the rio Yarí.

Our survey effort was uneven across these sites. We visited Ciudad de Piedra on four separate days, but never during the early morning. We spent three days at Caño Negro, with one day focused on the rock outcrop. We conducted standardized point-count surveys for four days at Loma de Cotudos, four days at Campana, and three days at Potreros. We spent one morning birding at Caño Monochoa. We visited Araracuara on five days, but often during the heat of the day and without a strong focus on bird surveys. We observed birds incidentally at Caño Aduche during a visit to meet with the indigenous Andoke community there. We passed through Chorrera repeatedly as we traveled between Puerto Santander and the Yarí River, but we observed birds only from the moving boat.

Documentation.- Most of the records mentioned here are supported by photographs (archived at the Macaulay Library) or audio recordings (archived at Xeno-Canto). In the following

accounts, numbers preceded by the letters XC are Xeno Canto catalog numbers. All audio documentation, including documentation mentioned in Tables 2 and 3, is collated in a curated collection at https://www.xeno-canto.org/article/260.

Range extensions.- *Crypturellus brevirostris* (Rusty Tinamou) We voice-recorded multiple individuals of a *Crypturellus* tinamou at Campana on 15 and 16 August 2019 (XC585282). By voice, these recordings clearly involve either *C. brevirostris* or *C. bartletti*, neither of which is known from the vicinity. Bret Whitney identified the recordings as *Crypturellus brevirostris* based on subtle vocal characters. In addition, the habitat (poor-soil terra firme forest) is more typical for *C. brevirostris* than for *C. bartletti*. The nearest previous localities for *C. brevirostris* are in Brazil along the rio Uaupes (Hilty & Brown 1986). The only previous Colombian record is a sight-record from the Serranía de Naquen roughtly 540 km to the northeast (Newman 2008). Thus, this record is the first for Caquetá department and is the first documented record for Colombia.

Chlorostilbon olivaresi (Chiribiquete Emerald) We voice-recorded and photographed this species on rock outcrops on both sides of the Caquetá River. These records will be detailed in a forthcoming manuscript.

Nyctibius leucopterus (White-winged Potoo) We voice-recorded one individual at Campana that sang spontaneously at 1755h on 15 August 2019 and then vocalized twice more in response to whistled imitation (Fig. 2, XC585020, XC585021). The habitat was tall forest less than 1 km from extremely stunted forest. This species went unrecorded between its description in 1821 and its rediscovery in 1985 (Cohn Haft 1993), but subsequent discoveries have clarified that it is widespread in poor-soil habitats across Amazonia

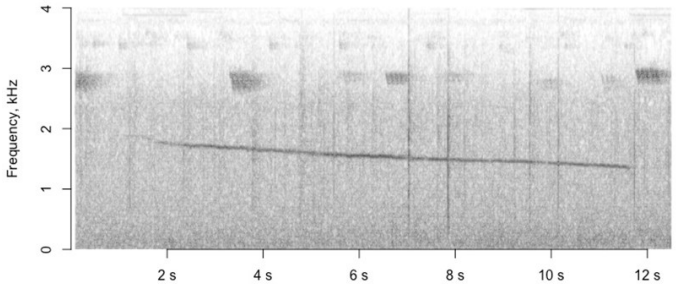

Figure 2. Spectrogram of a vocalization of White-winged Potoo (clear descending tone between 2 and 1 kHz), recorded after whistled imitation at 1755h on 15 August 2019 at Campana. Prepared using the soundgen package in R (Anikin 2019).

(Alvarez Alonso & Whitney 2003, Socolar *et al.* 2018). The nearest known locality is the Algodoncillo River in Peru, roughly 260 km to the south (Socolar *et al.* 2018). The song, if not the bird itself, is apparently familiar to members of nearby Andoke communities, and so our claim to the first documented record in Colombia must be viewed narrowly.

Polioptila facilis (Río Negro Gnatcatcher) We observed 1-2 *Polioptila* with a large canopy mixed flock in the interior of tall forest at Campana on 13 and 16 August 2019. The birds remained high in the canopy where they were backlit against an overcast sky, but they appeared to lack the extensively white breast and throat of *P. plumbea*. Moreover, *P. plumbea* would not be expected to occur with canopy flocks in tall primary forest interior. Still, confirmation via physical documentation would be desirable. To our knowledge, the nearest records are at Mitú, roughly 300 km to the northeast (Janni *et al.* 2013), and physical documentation does not yet exist for this species in Colombia.

Geothlypis aequinoctialis (Masked Yellowthroat) We observed two individuals, one of which was singing, at Ciudad de Piedra on 23 January 2021. This species is not known from elsewhere on the Araracuara formation (Alvarez *et al.* 2003) and few records exist from the western Amazon away

Table 2. Species of poor-soil forest

Species	Site			
	Loma de Cotudos	Caño Negro	Campana	South-bank[1]
Crypturellus brevirostris			A	
Crypturellus duidae	A			
Topaza pyra				X
Nyctiprogne leucopyga[2]				X
Nyctibius leucoptera			A	
Trogon rufus	A		A	
Galbula leucogastra	A			
Selenidera nattereri	X			
Notharchus ordii			X	X
Sclerurus rufigularis	X		A	
Megastictus margaritatus	A		A	
Myrmotherula ambigua	A		A	
Herpsilochmus dorsimaculatus	A		A	A
Hypocnemis flavescens	A	X	A	
Hypocnemis hypoxantha				X
Rhegmatorhina cristata	A			
Percnostola rufifrons	A		A	
Lophotriccus galeatus			A	
Conopias parvus	A		A	
Platyrinchus platyrhynchos	A		X	
Rhytipterna immunda			X	
Neopelma chrysocephalum	A	X	X	
Heterocercus flavivertex				X
Xipholena punicea	A		X	
Dixiphia pipra	A			
Polioptila facilis			X	
Caryothraustes canadensis	A			

P: Photo documentation, archived at Macaulay Library.
A: Audio documentation, archived at Xeno Canto; curated at https://www.xeno-canto.org/article/260
X: Sight or sound record without documentation.
1: Although *Rupicola* is a forest bird, we group it with the non-forest species because its presence is related to the physical rock outcrops, which it requires for nesting, rather than the poor soils.

from extensive savannas, large rivers and lakes, or large-scale deforestation.

Birds of poor-soil forests.- The forests at Loma de Cotudos, Campana, and Caño Negro supported numerous additional poor-soil specialists that were previously reported further north on the Chiribiquete massif (Table 2). Despite spending

little time in forest habitats south of the Caquetá River, we also encountered several poor-soil specialist birds at Ciudad de Piedra, Potreros, Caño Monochoa, and Caño Aduche, and we suspect that most or all of the poor-soil avifauna of the Araracuara formation and adjacent areas will eventually be found to occur to the south bank of the Caquetá in Amazonas Department.

Birds of non-forest habitats.- The rock-scrub habitats at Ciudad de Piedra and Caño Negro and the low scrub at Campana supported numerous regionally noteworthy species that were previously reported further north on the Chiribiquete massif (Table 3). Of these, the pastures at Potreros harbored only *Amazilia versicolor* and *Schistochlamys melanopis* even though these pastures are separated from the rock-scrub of Ciudad de Piedra by just 3 km of heavily degraded forest. On the other hand, the pastures at Potreros support at least three open-country species (*Vanellus chilensis*, *Columbina minuta*, and *Leistes militaris*) that are not known from natural scrub on the Araracuara formation and probably reflect the ongoing colonization of western Amazonia by open-country birds in response to deforestation (Socolar *et al.* 2018, Acevedo-Charry *et al.* 2021). One further species, *Cercomacroides tyrannina*, was found in a very small forest fragment surrounded by pasture; Alvarez *et al.* (2003) report it from forest habitats further north near the Chiribiquete massif, but the species is often associated with nonforest habitats (*e.g.* savanna edges) and is absent from dense forests further south. Finally, two additional species occurred in habitats related directly to the rock outcrops: *Hirundinea ferruginea* on the cliffs at Araracuara, and *Pygochelidon melanoleuca* around the rapids at Chorrera.

Additional noteworthy species.- In addition to birds with known poor-soil affinities, we encountered a handful of species that we consider to be locally or regionally noteworthy. These include *Buteo nitidus* at Potreros, *Neomorphus* sp. at Campana (detected by bill clapping; the species might have been any of *geoffroyi*, *pucheranii*, or *rufipennis*), *Geotrygon saphirina* at Loma de Cotudos, and *Dromococcyx phasianellus* at Loma de Cotudos and Potreros.

Discussion

The distribution of white-sand and other poor-soil specialist birds remains poorly understood across much of the western Amazon. In the 1990s two series of spectacular finds extended the known range of white-sand species south and west from previous records in the rio Negro drainage: a nearly full complement of these species was recorded from Chiribiquete (Álvarez *et al.* 2003), and a subset was discovered in isolated white-sands masses near Iquitos, Peru (Alvarez Alonso & Whitney 2003). Many of these species ultimately proved to be relatively widespread across weathered poor-soil terraces even far from known white-sand masses (Díaz-Alván *et al.* 2017, Socolar *et al.* 2018). We show that an important group of core Guianan species penetrate further southwest into the Colombian Amazon than was previously known, and we suggest that many or all of them cross the Caquetá River. As their distributions come into sharper focus, a set of key questions remains.

First, where is the limit for the core Guianan species that are as-yet unknown from Ecuador and Peru? Recent discoveries have extended a few of these species, such as *Hypocnemis flavescens* and *Myrmotherula ambigua* to the north bank of the Putumayo River (Janni *et al.* 2018, Acevedo-Charry *et al.* 2021). Perhaps many of the remaining species drop out of the avifauna somewhere in the Caquetá/Putumayo interfluve. This is particularly likely to be the case for the rock-scrub associated avifauna, because the rock-

Table 3. Species of non-forest habitats

Species	Site					
	Ciudad de Piedra	Caño Negro	Campana (scrub)	Potreros	Araracuara	Rapids
Chlorostilbon olivaresi	A, P	P			P	
Amazilia versicolor	A		A	X	X	
Polytmus theresiae	X					
Nyctipolus nigrescens	X		X			
Vanellus chilensis				A		
Columbina minuta				A		
Galbula leucogastra	A, P					
Picumnus pumilus	A					
Formicivora grisea	A					
Cercomacroides tyrannina				A		
Elaenia cristata	A, P					
Elaenia ruficeps	X		X			
Hemitriccus margaritaceiventer	A					
Hirundinea ferruginea					X	
Rupicola rupicola[1]	P					
Pygochelidon melanoleuca	X					X
Hylophilus brunneiceps	A					
Turdus arthuri	A	X	A			
Schistochlamys melanopis	X			X	X	
Zonotrichia capensis	A	X				
Geothlypis aequinoctialis	X					
Stilpnia cayana	X					
Tachyphonus phoeniceus	X	X				
Leistes militaris				A		
Euphonia plumbea		X				

scrub habitat is clearly visible on satellite imagery and extends only a short distance south of the rio Caquetá. The range-limits of the forest-associated Guianan species are much less clear. While they too might drop out somewhere in the Caquetá/ Putumayo interfluve, it is also possible that they are limited by the Putumayo itself. If so, the Putumayo plays a much larger role than is currently recognized as a biogeographic barrier for the poor-soil avifauna of upper Amazonia. Finally, it is possible that some of these species will ultimately be found in poor-soil enclaves of northern Peru.

A particular conundrum is the status of *Herpsilochmus dorsimaculatus* vis-à-vis a vocally similar undescribed *Herpsilochmus* taxon that occurs in northern Peru (Pomara 2009). We tentatively identified the birds of the southern Araracuara formation, including south of the Caquetá River, as *H. dorsimaculatus* based primarily on the clear Guianan affinities of the

regional avifauna, which contains numerous species that are not known to reach Peru (Alvarez Alonso & Whitney 2003, Álvarez *et al.* 2003). It remains to be seen whether *H. dorsimaculatus* and the Peruvian taxon replace one another across the Putumayo River or whether they are in contact somewhere in northern Peru, southern Colombia, and/or western Brazil. Peruvian observers have reported the undescribed taxon northwards to the Putumayo River whereas Colombian and Brazilian observers have reported *H. dorsimaculatus* south to the Amazon River (eBird 2021), but in our view none of these records sufficiently excludes the other taxon.

Second, to what extent are populations of forest-based poor-soil specialists on the Araracuara formation and in northern Perú disjunct from large populations on the Guiana shield? One view holds that nutrient-rich sediments of the Pebas formation, which have been re-exposed over much of northern Peru, isolate populations of poor-soil specialists from one another (Higgins *et al.* 2011, Socolar *et al.* 2018). However, recent discoveries of poor-soil specialists on weathered terraces and in peatland formations across northern Peru suggest that populations of Amazonian white-sand birds are more widespread and interconnected than has previously been appreciated (Lähteenoja *et al.* 2009, Díaz-Alván *et al.* 2017, Socolar *et al.* 2018, Vásquez-Arévalo *et al.* 2020). Our observations of a classically Guianan avifauna on weathered ultisols east of the lower Yarí River suggests that populations on the Araracuara formation might be contiguous with populations further east.

Third, to what extent will ongoing forest loss in upper Amazonia rearrange these biogeographic patterns? Forest clearing might provide opportunities for range expansion to the specialists of white-sand savanna and rock-scrub habitats, but our records suggest that these species may be unable to utilize cleared habitats, even when those habitats are directly adjacent to occupied rock-scrub landscapes. Even *Zonotrichia capensis*, which is commensal with humans elsewhere in its range, is absent from the town of Puerto Santander, a mere 1.5 km from Ciudad de Piedra. Forest-based poor-soil specialists are known to be uniquely sensitive to forest clearing (Socolar *et al.* 2019, Socolar & Wilcove 2019), and if previously unappreciated connectivity is important to the maintenance of their sparse populations then large-scale clearing and fragmentation in upper Amazonia could spell severe trouble for this component of the avifauna.

Ultimately, answers to these questions will require more fieldwork. We suggest that Colombian observers might prioritize searches for poor-soil assemblages in central and southern Amazonas Department, including near the town of La Chorrera. Peruvian observers would do well to arm themselves with knowledge of the vocalizations of several species not yet known to reach Peru, such as *Selenidera nattereri*, *Myrmotherula ambigua*, *Hypocnemis flavescens*, *Rhytipterna immunda*, and *Caryothraustes canadensis*, and to search for them in the hinterlands of the Putumayo drainage as well as in peatlands on the Putumayo floodplain.

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