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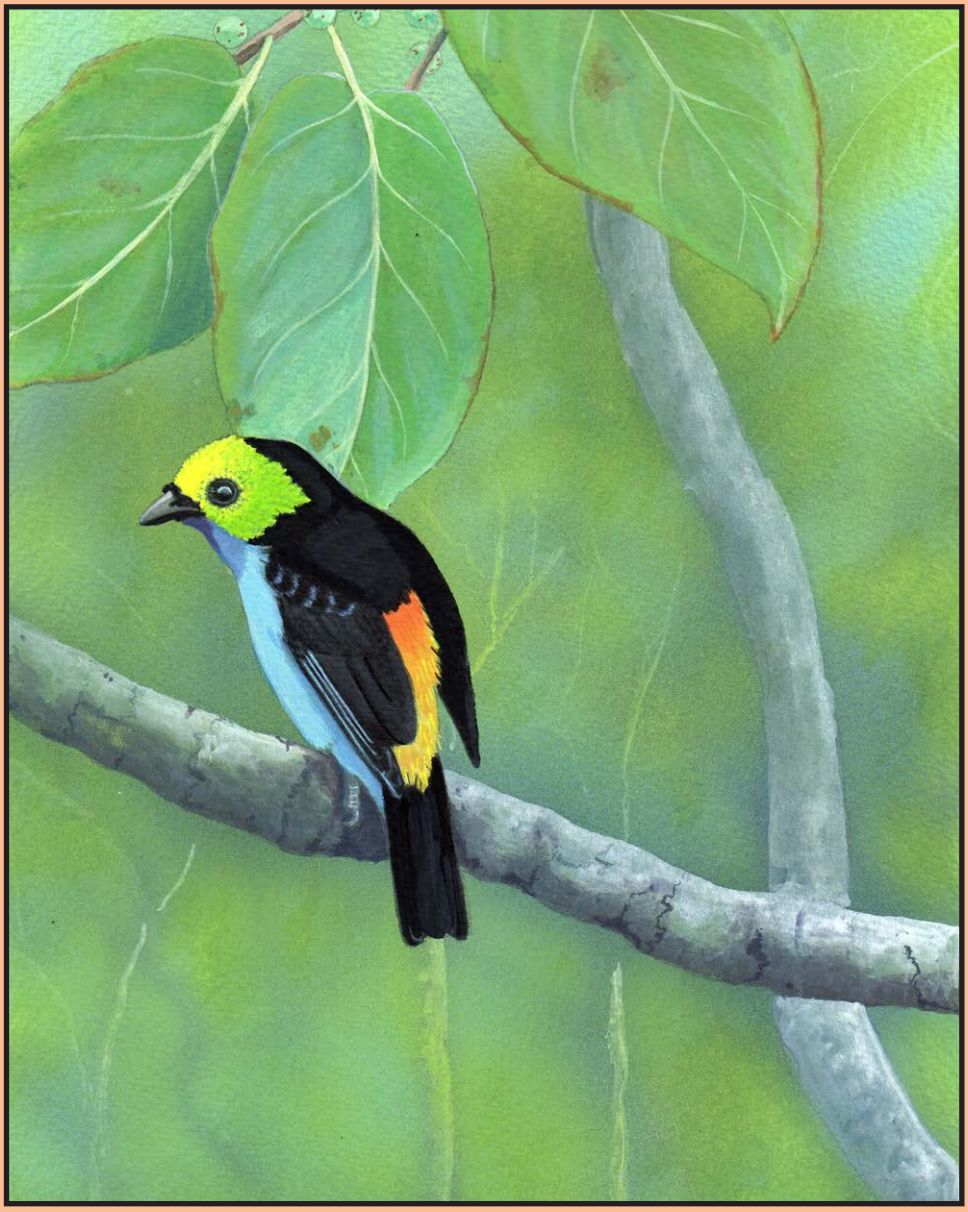

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A new breeding site for Markham's Storm-Petrel *Hydrobates markhami* in northernmost Chile

Heraldo V. Norambuena, Benjamín Gallardo, Ronny Peredo, Pablo Gutiérrez, Katherine Cisterna, Giannira Alvarez, Sarah Saldanha, Ignacio Ramírez and Fernando Medrano

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La Golondrina de Mar Negra *Hydrobates markhami* (Procellariiformes) es un ave marina de tamaño mediano (21–23 cm) distribuida principalmente a lo largo de la corriente de Humboldt entre el norte de Chile y el sur de Ecuador. En Perú y Chile, se conocen 13 sitios de reproducción entre la península de Paracas (Perú; 13˚54'03''S) y Antofagasta (Chile; 23˚47'16,8''S). Estos sitios albergan una población reproductiva de aproximadamente 58.000 parejas. En este trabajo, informamos sobre un nuevo sitio de reproducción de *H. markhami*, ubicado en Pampa Colorada (18˚22'55,2''S 70˚10'51,6''O) en el extremo norte de la región de Arica y Parinacota, cerca del límite de Chile con Perú. El sitio de reproducción se encuentra sobre un sustrato de arena rojiza fina y gruesa con una costra salina parcialmente protuberante creando cavidades naturales en los salares del desierto. Durante tres campañas de monitoreo, registramos 92 nidos; 24 tenían crías, 26 crías y adultos y 42 evidencias indirectas de reproducción. La conservación de este sitio es fundamental para mantener la conectividad genética de las poblaciones del norte de Chile y las presentes en el sur de Perú.

Markham's Storm-Petrel *Hydrobates markhami* is a medium-sized (21–23 cm) pelagic tubenose (Procellariiformes) found mainly in tropical waters of the Pacific Ocean, between 5˚N and 29˚54'S, and 71˚W and 118˚W[7,14,20]. It breeds in 13 colonies grouped in four dispersed sites in the Sechura and Atacama Deserts (southern Peru and northern Chile), nesting in fissures and holes created by saltpetre deposits in saline areas[1,9–11,17,21]. The northernmost colony is in Paracas, Ica, Peru, where the species breeds at small, dispersed sites on sloping ground, up to 5 km from the sea[9,10]. There are two additional colonies in Peru: Isla La Vieja (Ica)[5] and Pampa Pie de Candela (Tacna)[4]. The 10 other known colonies are all in Chile located in the Atacama Desert, up to 50 km inland[1,11,12]. From north to south, these are Arica, Chiza, Jarza, Quiuña, Caleta Buena, Carmen Norte, Salar Grande, Pampa Hermosa, Loa and Salar Navidad[11,12].

Throughout the species' range, reproduction is asynchronous[1,12]. In the northern colonies of Paracas and Arica, most pairs lay eggs between May and August, and birds attend nestlings between July and January[1,10,12]. In the colonies of Caleta Buena, Salar Grande and Salar Navidad, however, breeding pairs lay eggs between November and January, and adults attend nestlings between January and April[1,12]. The species' population size is estimated at 2,305–4,362 breeding pairs in Peru[9,10] and 55,308–55,733 breeding pairs in Chile[1,12]. Markham's Storm-Petrel is currently classified as Near Threatened globally and Endangered in Chile[13], mainly due to its declining population and extended threats across all breeding colonies[1,12]. Here, we report a new breeding site for Markham's Storm-Petrel in northernmost Chile, near the border with Peru.

Methods

The study area corresponds to road A-135 Sector de Acceso Central – Coronel Alcérreca, in Arica y Parinacota region, northern Chile. This road is north of the Río Lluta basin, north of Arica, and in the extreme southwest of General Lagos (Fig. 1). Focussed searches for storm-petrels (Hydrobatidae and Oceanitidae) were conducted during 14–19 June, 30 September and 28 October 2023. Searches for reproduction clues within potential cavities (i.e., tracks, scents, faeces, feathers and bones) were conducted within the areas identified as possible breeding sites, following guidelines described by Barros *et al.*[1,2].

In addition, because adults usually respond to vocalisations[1], recordings of conspecific calls (Macaulay Library ML83166671) were played at the entrance of cavities to confirm activity in nests. Storm-petrel calls were also recorded using an autonomous AudioMoth v1.2 recorder[6]. This was installed at a potential ground-level breeding site during 14–19 June. Acoustic monitoring comprised four 1-minute recording sessions per hour, each followed by a 14-minute pause, for 24 hours per day: this generated 96 1-minute recordings on each of four days. The sampling frequency ranged from 4–96 kHz, which is adequate for bat and bird recording. Fine-scale measurements were taken, and sonograms were prepared using the Raven Pro 1.5 program[3].

We used digital elevation models (DEM-ALOS PALSAR) with geological maps[18], slope, orientation and contour lines to delimit the breeding site.

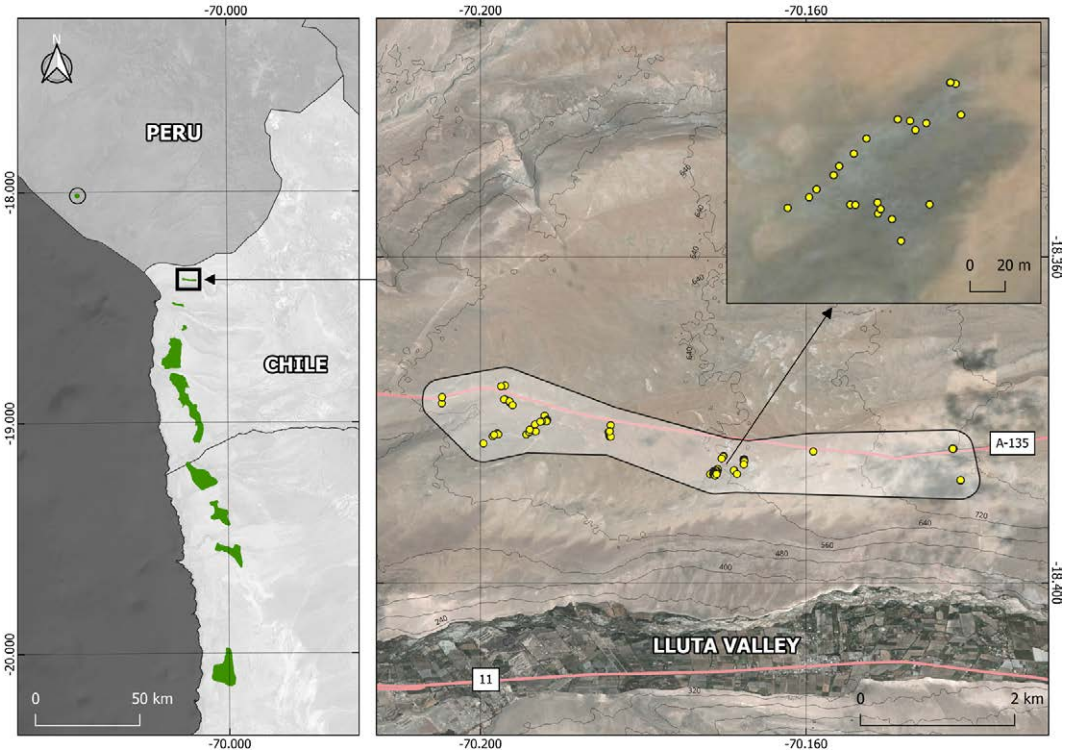

Figure 1. Location of the newly discovered Markham's Storm-Petrel *Hydrobates markhami* breeding site and the distribution of nests at Pampa Colorada, Arica y Parinacota region, Chile. In the left-hand map, the 12 known colonies in northern Chile and southern Peru are marked in green. In the right-hand map, nest sites are indicated with yellow dots and the colony boundary is outlined in black. Main roads are marked in pink; contours are marked at 80 m elevational intervals. The inset (top right) shows the detailed location of nests in one of the densest parts of the colony, superimposed upon the saline substrate (coloured greyish). The map was produced using the spatial data management software QGIS.

Information was also gathered on the location of streams and basins in the region[8]. Breeding-site limits were established with a buffer distance of 250 m from each nest, following the guidelines in ROC (2022)[16], and the potential edges of the site were identified in the field.

Results

We found a new breeding site for Markham's Storm-Petrel located at c.550–800 m elevation, either side of the A-135 road, in a desert plain called Pampa Colorada, which rises between the Concordia ravine to the north and the Río Lluta valley to the south. It is located 14–22 km from the coast, just 7 km from the border with Peru, around 18˚22'55.2''S, 70˚10'51.6''W (Fig. 1). In this area, cavities were found on the salt-flat coast that extends from the dune system (Fig. 2A–C). Across the three monitoring campaigns, we recorded 92 potential nests: 24 contained hatchlings; 26 contained hatchlings and adults (Fig. 2E/F); and 42 showed indirect signs of reproduction, such as bird tracks, odour, old eggs/eggshells and feathers. The nests were found in desert pavement characterised by saline crusting of the geological formations known as 'quaternary eolian deposits' (n = 44) and 'sedimentary sequences of alluvial fans' (n = 48).

The surface area where active and potential nests were recorded covered a polygon of 6.14 km^2 (Fig. 1). The actual colony area is probably larger since there is additional terrain to the north of the road within inaccessible military property (Fig. 1) that could potentially hold an important number of nests, given the extent of the salt crust where the nests of Markham's Storm-Petrel are usually recorded[1,12]. Thus, our area estimate should be interpreted as a minimum polygon for this colony. The timing of reproductive activity recorded at Pampa Colorada matches that described for the colonies of Arica and southern Peru[1,4,12]. We recorded seven *H. markhami* calls from nests during 18h00–21h00 on 14–19 June 2023; a sample recording was deposited with the Macaulay Library (ML589117151).

Figure 2. Photographic evidence confirming Pampa Colorada as a breeding site for Markham's Storm-Petrel *Hydrobates markhami*, Arica y Parinacota region, Chile (Benjamín Gallardo). **A** Habitat at Pampa Colorada, 30 September 2023; **B** nest cavity, 30 September 2023; **C** nest inspection with an endoscopic camera, 28 October 2023; **D** Markham's Storm-Petrel egg, 28 October 2023; **E** Markham's Storm-Petrel nestling, 28 October 2023; **F** Markham's Storm-Petrel adult and nestling, 28 October 2023.

Discussion

Considering the high fidelity of this species to its breeding sites[9,10,12] and the strong population genetic structure[15], this newly discovered colony is critical for the conservation of this globally Near Threatened species. Potential threats to this site are vehicular traffic along the A-135 road, which borders the area and will soon incorporate lighting into its improvement plan; the risk of collisions between storm-petrels and power lines; and garbage thrown out of vehicles. Management measures should be considered to prevent impacts on this breeding site (see Silva et al.[19]). Some effective practices include installing warm-toned lighting and placing lighting near the ground to reduce birds' attraction to lamps.

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First record of Scaled Antpitta *Grallaria guatimalensis* in Belize

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El Hormiguero Cholino Escamoso *Grallaria guatimalensis* es una especie ampliamente distribuida en Centroamérica y Sudamérica, desde el sur de México hasta el centro de Bolivia, con una población aislada en el sur de Venezuela, norte de Brasil y oeste de Guyana. Aquí presentamos el primer registro de esta especie en Belice, confirmado mediante observación directa, captura en red de niebla y en cámara trampa, en marzo de 2024, en la Estación de Investigación Las Cuevas, Reserva Forestal Chiquibul, Cayo, en el oeste de las montañas Mayas. Analizamos brevemente las posibles razones de este descubrimiento y la distribución potencial más amplia y el estatus de la especie en Belice.

Scaled Antpitta *Grallaria guatimalensis* is a ground-dwelling invertivore that inhabits a range of forest types from 200 to 2,800 m elevation in Central and South America[6,15]. Listed as globally Least Concern[2], it has a large geographic range, recorded from southern Mexico to Bolivia, with a disjunct population in southern Venezuela, northern Brazil and western Guyana[8]. Until now, it has not been reported from Belize[3,10,13], with the previous nearest record being c.140 km south at Cerro San Gil, Izabal department, Guatemala[3,9]. In this note we present the first record for Belize and briefly discuss possible reasons for this discovery and the species' potential wider distribution and status in Belize.

Study area and methods

In March 2024, we led a University of South Wales student field expedition at Las Cuevas Research Station (LCRS; 16˚43'59.2''N, 88˚59'9.3''W; 590 m elevation) in the Chiquibul Forest Reserve (CFR) of the western Maya Mountains, Cayo, Belize. The CFR is designated for the sustainable extraction of timber and comprises 59,882 ha of lowland, hill and submontane evergreen tropical forest on calcareous soils[18]. It receives 2,500–4,000 mm annual rainfall, and its dry season runs from February to May[16].

The overarching purpose of the expedition was to introduce our students to a range of field research skills in a tropical forest. We employed a nested sampling design within which we used different field methods appropriate for a rapid assessment survey of a range of biodiversity. For birds, we set two 12-m mist-nets at ground level at six separate locations around LCRS. We surveyed each location for one day with nets open from 05h30–c.11h00 and 15h00–17h00. In these same locations we positioned 1–2 unpaired camera traps c.40 cm from the ground to survey terrestrial mammals and birds. All cameras were situated on forest trails and left in place for 4–6 days.

Results

On 14 March 2024, between 06h30 and 08h00, we observed intermittently a single Scaled Antpitta hopping and foraging in the leaf litter, tossing and flicking leaves, along a forest trail at 610 m elevation (16˚43'55.4"N 88˚58'57.9"W). At 09h20 we captured a Scaled Antpitta in a mist-net set c.60 m from the initial observation (Fig. 1). The bird weighed 75 g, which appears at the lower end of its recorded weights (69.5–98 g)[15]. Unfortunately, the bird escaped during processing, so no further morphological data were collected. On 20 March 2024, at 07h52, a single bird was captured on a camera trap (Fig. 2) positioned c.400 m from the original visual observation and along the same forest trail.

Figure 1. Scaled Antpitta *Grallaria guatimalensis* caught in mist-net, Las Cuevas Research Station, Chiquibul Forest Reserve, Belize, 14 March 2024 (Anne Høydal).

Figure 2. Scaled Antpitta *Grallaria guatimalensis* captured on camera trap, Las Cuevas Research Station, Chiquibul Forest Reserve, Belize, 20 March 2024 (University of South Wales, UK).

Discussion

Our observations provide the first record of Scaled Antpitta in Belize and extend the species' known range by c.140 km north of the nearest records in Guatemala[3,9]. Based on current understanding of subspecies taxonomy and distribution[6,15], and plumage variation[8], we assume this record is of the nominate *G. g. guatimalensis*, which ranges from south Mexico to north Nicaragua[8].

This record is particularly interesting considering that the CFR is a relatively well-studied area. For example, since 1995, 290 species have been reported from 589 eBird checklists at LCRS alone[3]. Although this visually inconspicuous species[8] may have been overlooked, its sudden appearance might be explained by post-natal dispersal[6]—the breeding season for Scaled Antpitta appears to be during wetter periods[7] (June–January in the western Maya Mountains)—which can be driven by several ecological factors[17]. This may explain a previous lack of aural detection for this vocal species.

If assumed overlooked, however, then Scaled Antpitta may prove to have a similar, disjunct distributional pattern in Belize to a small number of other local submontane and montane forest species of the Maya Mountains and Vaca Plateau, e.g., Slaty Antwren *Myrmotherula schisticolor*, Tawny-throated Leaftosser *Sclerurus mexicanus*, Scaly-throated Foliage-gleaner *Anabacerthia variegaticeps* and Common Chlorospingus *Chlorospingus flavopectus*[23]. These species are all reported in the CFR—three of them at LCRS (Slaty Antwren, Scaly-throated Foliage-gleaner, and Tawny-throated Leaftosser)—as well as south at the Maya Mountain divide and in the Columbia Forest Reserve (Cayo district)[3]. Tawny-throated Leaftosser, Common Chlorospingus and Scaly-throated Foliage-gleaner are also recorded east in Cockscomb Basin Wildlife Sanctuary (Stann Creek), Sittee River Reserve (Stann Creek) and Sibun Forest Reserve (Cayo), although Slaty Antwren is more widely recorded in Belize[3]. In time, a similar distribution may be revealed for Scaled Antpitta.

Although listed as globally Least Concern, Scaled Antpitta is experiencing large declines within its range[1], which are thought to be driven by habitat loss[21]. Considered a species of high concern[1], it is threatened in Mexico[19] and El Salvador[14] due to habitat modification. Although reported in fragmented habitats[4], it could become nationally Endangered in Mexico due to ongoing habitat degradation and associated population declines[1], especially when continuing fragmentation may affect breeding success and population dynamics[20].

The species' marginal distribution in Belize precludes it from assessment for assigning a national threat category[11]. If there are further records of Scaled Antpitta in Belize, the species would benefit from an evaluation of its national conservation status, especially given that national declines are reported elsewhere[14,19] and 13% of the nation's humid primary forest has been lost in the last 20 years[22]: overall forest cover has declined from 78% to c.56% in that time[5]. Until there is a full understanding of the species' national population, including breeding status, distribution and threats, and possible evaluation against extinction-risk criteria[12], we propose listing the species as Not Evaluated in Belize.

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Aves del Parque Nacional Natural Sumapaz, Colombia

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In Colombia, protected areas are the main strategy for nature conservation, and their rate of designation and expansion have increased since the 1960s. However, the creation and management of protected areas need to be supported by basic scientific data on their biodiversity. Large information gaps still prevail in most Colombian protected areas. To address the need for biodiversity information in protected areas, we present a comprehensive bird inventory for Parque Nacional Natural Sumapaz, which spans the departments of Cundinamarca, Meta and Huila, in the eastern Andes of Colombia. Our paper integrates previously unpublished inventory data, spanning 15 years, and secondary sources. We reveal a rich avifauna of 442 species, 317 of which correspond to our field observations. We highlight the presence of 5 species endemic to Colombia, 29 near-endemics, 8 threatened at the national level and 18 at global scale, and 45 boreal migrant species. This dataset holds critical significance for the effective planning and management of Parque Nacional Natural Sumapaz, aligning with its long-term conservation objectives. Lastly, we stress the urgent need for expanded sampling across various localities within the national park, particularly those with limited data. Information enhancement is vital for facilitating ongoing research efforts and advancing conservation initiatives within Parque Nacional Natural Sumapaz.

La declaración y expansión de áreas protegidas son estrategias de conservación importantes para evitar la pérdida de biodiversidad[30]. A nivel mundial, la cobertura de áreas terrestres protegidas ha aumentado del 14,1% al 15,3% en la última década, y se espera que esta tendencia continúe[24,35]. Colombia es uno de los países con mayor extensión de áreas protegidas en Latinoamérica. Su Sistema Nacional de Áreas Protegidas (SINAP) abarca el 16,4% de su territorio terrestre y 17,09% del territorio marino (c.49.875.957 ha)[42,55]. Dentro del SINAP, los Parques Nacionales Naturales (PNN) son las áreas protegidas de mayor restricción en cuanto a conservación (categorías I y II de UICN)[30], y juntos cubren más de 12 millones de hectáreas declaradas. Los PNN presentan un papel fundamental en la conservación de la biodiversidad en múltiples escalas y comunidades bióticas, regiones fisiográficas, unidades biogeográficas, recursos genéticos y especies de fauna y flora, algunas de ellas amenazadas de extinción[20].

A escala regional, en la cordillera Oriental de Colombia la declaratoria de áreas protegidas ha sido una de las principales estrategias de conservación desde la segunda mitad del siglo XX[50]. Esta región es un centro de diversidad de avifauna con altos niveles de endemismo, recambio de especies y áreas de importancia para aves residentes, migratorias y en riesgo de extinción[13,14,16,21,23,53]. Sin embargo, en esta región aún persisten vacíos de información respecto a los patrones de riqueza de la avifauna en varias localidades, entre ellas las áreas protegidas del SINAP. El PNN Sumapaz, declarado como área protegida en 1977, abarca las áreas potenciales de distribución de gran parte de la avifauna de montaña de la cordillera Oriental de Colombia. Presenta ecosistemas que van desde el páramo hasta los bosques altoandinos y subandinos, así como todo un sistema de lagunas altoandinas de importancia en la región[32,37]. Pese a esta alta diversidad potencial, son pocas las localidades dentro del área protegida o de su zona amortiguadora que cuentan con información detallada de su avifauna. Esto se debe, principalmente, a problemas de conflicto armado histórico en la región, sumado a la dificultad de acceso a diferentes áreas por su complejidad topográfica[32].

Las áreas protegidas, de manera general, conservan la biodiversidad a escalas espaciales gruesas como biomas, paisajes o ecosistemas[3]. Sin embargo, son pocos los estudios que emplean medidas directas de biodiversidad a una escala más fina como comunidades y/o poblaciones[7,12], por lo que es prioritaria la recolección de información primaria y la actualización de listados de especies. El presente estudio pretende aportar al conocimiento de la avifauna del PNN Sumapaz a través de una lista consolidada de su avifauna generada a partir de datos inéditos de inventarios realizados en los últimos 15 años, y una recopilación de registros secundarios. Esperamos que la información compilada ayude a llenar vacíos de información, y que estos registros actualizados de la avifauna sean insumos para la planificación y manejo del área protegida. También buscamos invitar a la comunidad científica a desarrollar trabajos de investigación que permitan comprenden la distribución, composición y estructura de la avifauna a lo largo de esta área protegida.

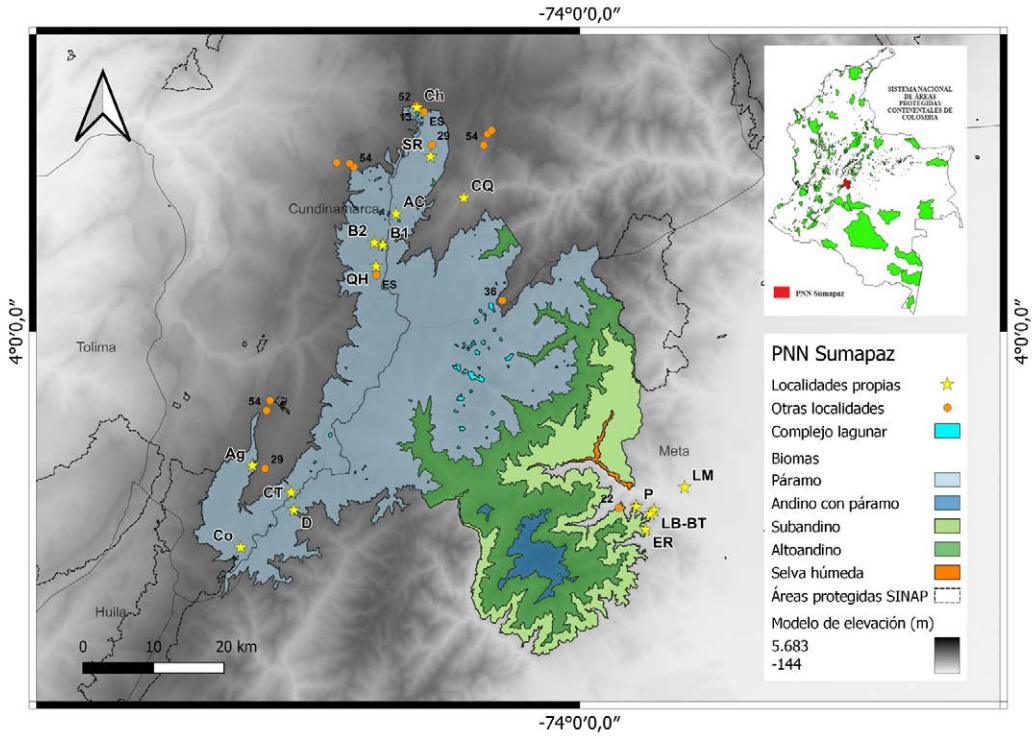

Figura 1. Ubicación, biomas y sistema lagunar del Parque Nacional Natural Sumapaz, Andes Orientales de Colombia. Las estrellas amarillas indican las localidades de muestreo (ver Tabla 1) Chisacá y alrededores (Ch), Santa Rosa (SR), Parque Chaquén (CQ), Alto Caicedo (AC), Pantano Andabobos (B), Quebrada Honda (QH), Laguna Cerro Tuste (CT), Las Águilas (Ag), Colombia (Co), El Duda (D), Palomas (P), La Libertad Baja-Brisas del Tonoa (LB-BT), La Libertad Alta (LA), El Retiro (ER), Las Mirlas (LM). Los puntos naranja indican localidades de fuentes secundarias; el número corresponde a la fuente, ver sección Referencias): Chaparro-Herrera *et al.*[13], eBird[22], IAvH[29], Mayorga & Melo[36], Sierra[52], UDFJC & IAvH[54], Espejo (ES; datos no publicados). Parte superior derecha: mapa de Colombia con las áreas protegidas dentro del Sistema Nacional de Áreas Protegidas a nivel continental (SINAP).

Área de estudio

El PNN Sumapaz se encuentra en la cordillera Oriental de Colombia, en el complejo de páramo Cruz Verde-Sumapaz, con jurisdicción en 12 municipios de tres departamentos (Cundinamarca, Meta y Huila) y dos localidades de Bogotá Distrito Capital (Usme y Sumapaz)[32] (Fig. 1). También hace parte, junto con los PNN Tinigua, Cordillera de Los Picachos y Sierra de la Macarena, del Área de Manejo Especial La Macarena (AMEM) que, a su vez, es un Área Importante para la Conservación de las Aves (IBA, por sus siglas en inglés)[6]. El PNN Sumapaz presenta una superficie de 221.749 ha, entre 700–4250 m de altitud, y comprende tres biomas principales: páramo (135.532 ha), bosque altoandino (75.234 ha) y bosque subandino (12.097 ha), y un sistema de lagunas altoandinas con más de 50 cuerpos de agua, todos ellos en lechos de origen glacial[27,32] (Fig. 1).

Métodos

Realizamos la caracterización de la avifauna mediante recorridos libres no sistemáticos de uno o varios observadores, censos por transectos de distancia variable, puntos estacionales por carretera y recorridos a caballo, entre enero de 2008 y diciembre de 2023. Las observaciones se realizaron entre 05h50–11h00 y, ocasionalmente, entre 15h00–18h00, con la ayuda de binoculares 8x42 y una grabadora Zoom H4n para el registro de vocalizaciones. Caracterizamos 14 localidades al interior el parque, 10 en el bioma páramo y 4 en el bioma subandino (Tabla 1; Figs. 1–2). También realizamos una caracterización complementaria mediante recorridos libres en dos zonas amortiguadoras del PNN Sumapaz: (1) vereda Nazareth de la ciudad de Bogotá, en el Parque Temático Chaquén (bioma altoandino) y (2) Las Mirlas, municipio de Cubarral, departamento de Meta (bioma subandino) (Tabla 1; Fig. 1).

Para la identificación de la avifauna empleamos las guías de Hilty & Brown[28], Restall *et al.*[48],

Tabla 1. Localidades caracterizadas en el Parque Nacional Natural Sumapaz, entre enero de 2008 y diciembre de 2023. Las localidades marcadas con un asterisco corresponden a la zona amortiguadora.

Localidades caracterizadas, departamento	Siglas	Coordenadas	Bioma
Chisacá y alrededores, Cundinamarca	Ch	04°17'10,7"N, 74°12'29,2"O	Páramo
Santa Rosa, Cundinamarca	SR	04°13'25,0"N, 74°11'26,9"O	Páramo
Parque Chaquén*, Cundinamarca	CQ	04°10'15,6"N, 74°08'53,2"O	Altoandino
Alto Caicedo, Cundinamarca	AC	04°09'01,1"N, 74°14'04,9"O	Páramo
Pantano Andabobos 1, Cundinamarca	B1	04°06'38,2"N, 74°15'06,1"O	Páramo
Pantano Andabobos 2, Cundinamarca	B2	04°06'49,0"N, 74°15'45,0"O	Páramo
Quebrada Honda, Cundinamarca	QH	04°05'00,2"N, 74°15'37,1"O	Páramo
Laguna Cerro Tuste, Cundinamarca	CT	03°47'38,8"N, 74°22'08,4"O	Páramo
Las Águilas, Cundinamarca	Ag	03°49'43,0"N, 74°25'05,5"O	Páramo
Colombia, Cundinamarca	Co	03°43'26,0"N, 74°25'59,9"O	Páramo
El Duda, Meta	D	03°46'18,1"N, 74°21'55,1"O	Páramo
Palomas, Meta	P	03°46'35,0"N, 73°55'40,1"O	Subandino
La Libertad Baja, Brisas del Tonoa, Meta	LB-BT	03°46'16,0"N, 73°54'19,1"O	Subandino
La Libertad Alta, Meta	LA	03°45'59,8"N, 73°54'35,6"O	Subandino
El Retiro, Meta	ER	03°44'48,8"N, 73°54'58,0"O	Subandino
Las Mirlas*, Meta	LM	03°48'02,5"N, 73°51'57,6"O	Subandino

Alderfer & Dunn[1] y Ayerbe-Quiñones[4]. Para la identificación de los registros auditivos utilizamos la guía sonora de Boesman[8] y la base de datos del repositorio en línea xeno-canto (http://www.xeno-canto.org). Clasificamos las especies de acuerdo con su categoría de endemismo según Chaparro-Herrera *et al.*[16], amenaza global según IUCN[31], amenaza nacional según Renjifo *et al.*[46,47], tipo de migración según Naranjo *et al.*[38] y migración altitudinal según Barçante *et al.*[5]. Seguimos la nomenclatura a nivel de familias y especies de Remsen *et al.*[45] (diciembre de 2023).

Para complementar los datos de campo, consultamos en Google Académico (https://scholar.google.com/) con palabras clave como: 'páramo Sumapaz', 'aves Sumapaz', 'avifauna Sumapaz', 'complejo Sumapaz', 'biodiversidad Sumapaz' y 'delimitación Sumapaz', para estudios realizados al interior del PNN Sumapaz y en su zona de amortiguación. Finalmente, descargamos los datos de eBird[22] de toda Colombia y extrajimos los datos de presencia en el PNN Sumapaz mediante la intersección de estos con el polígono de los límites del área protegida empleando el sofware QGIS (https://qgis.org/). En todos los casos, revisamos detalladamente los registros, y excluimos aquellos dudosos (por estar lejos de su distribución conocida o en casos de especies de difícil diferenciación) o con falta de evidencia (fotografías, audio o descripciones detalladas).

Resultados

Reportamos 442 especies pertenecientes a 56 familias; 317 especies fueron registradas mediante observaciones directas de los autores, de las cuales 80 especies son los únicos registros existentes en la zona, y 363 especies fueron reportadas en fuentes secundarias (Apéndice 1). Las familias más representativas fueron Thraupidae y Tyrannidae, con 64 y 61 especies, respectivamente, mientras que 11 familias estuvieron representadas por una especie (Apéndice 1). Algunas especies representativas se presentan en las Figs. 3–8.

De las 16 localidades que muestreamos, La Libertad Alta presentó mayor riqueza (100 especies), seguida de La Libertad Baja-Brisas del Tonoa (91 especies), Palomas (85 especies) y Las Mirlas (82 especies). Todas estas localidades corresponden al bioma subandino del departamento de Meta. Por su parte, las de menor riqueza fueron El Duda, Alto Caicedo y Santa Rosa (13, 16 y 17 especies, respectivamente), todas localidades del bioma páramo en los departamentos de Cundinamarca y Meta.

En cuanto a la revisión de información secundaria, encontramos un estudio realizado

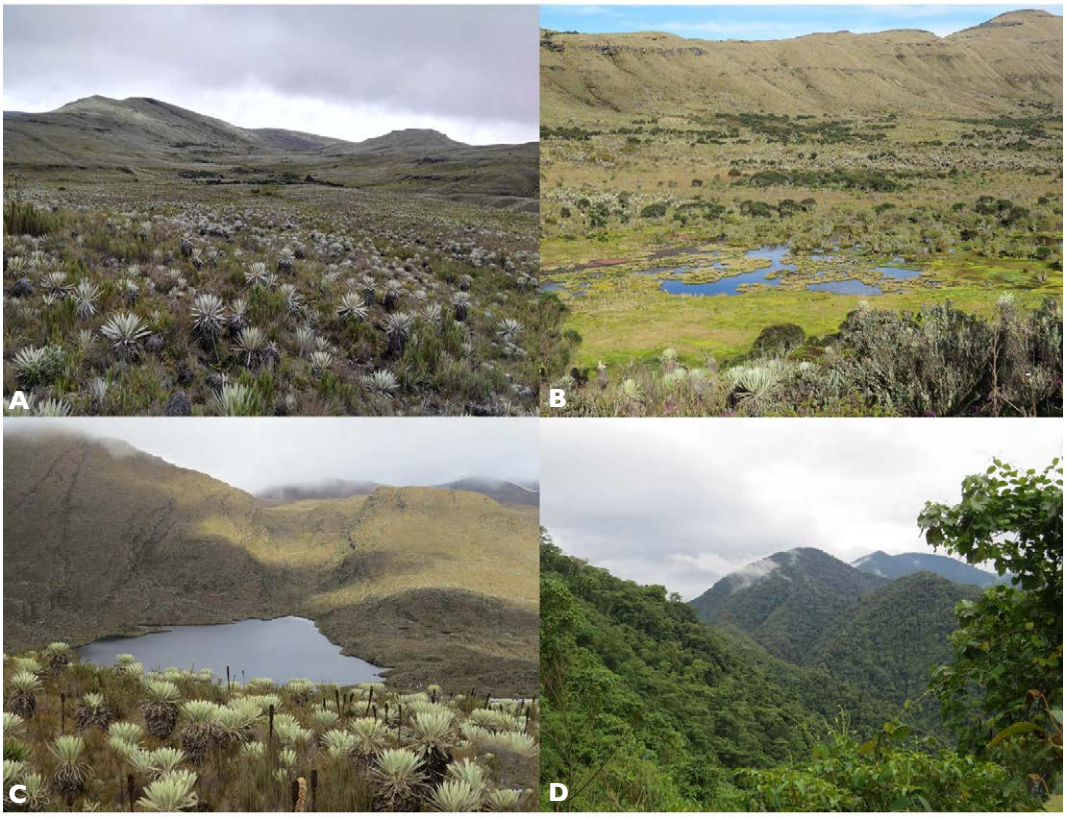

Figura 2. Algunos de los hábitats presentes en el Parque Nacional Natural Sumapaz (Sergio Chaparro-Herrera): **A** páramo; **B** páramo y pantanos; **C** lagunas; y **D** bosque subandino.

en el denominado Transecto Sumapaz[44], algunas caracterizaciones realizadas en la laguna de Chisacá y áreas aledañas[13,52], el conjunto de datos "Aves del páramo de Sumapaz, Cundinamarca" publicados en el portal SIB Colombia[29], un estudio biótico en el complejo de páramos Cruz Verde-Sumapaz[54] y el conjunto de datos de eBird[22]. Para las zonas de amortiguación, encontramos un estudio realizado en el municipio de Gutiérrez, departamento de Cundinamarca[36], y obtuvimos datos no publicados en la laguna de Chisacá y pantano de Andabobos (Espejo 2020, datos no publicados).

Del total de las especies reportadas, resaltamos la presencia de cinco especies endémicas de Colombia: Tingua Bogotana *Rallus semiplumbeus* (Fig. 4), Barbudito Paramuno *Oxypogon guerinii* (Fig. 7), Periquito Aliamarillo *Pyrrhura calliptera,* Cucarachero de Apolinar *Cistothorus apolinari* (Fig. 8) y Chango Colombiano *Hypopyrrhus pyrohypogaster*. Además, 29 casi endémicas de Colombia; 18 especies amenazadas a escala global (2 En Peligro [EN], 8 Vulnerable [VU] y 8 Casi Amenazadas [NT]) y 8 en distintas categorías de riesgo a escala nacional: 3 EN, 4 VU, 1 en Peligro Crítico (CR) (Apéndice 1). También resaltamos la presencia de 2 especies migratorias australes, 45 migratorias boreales, 4 migratorias (2 australes, 2 boreales) que también tienen poblaciones residentes en el país, 14 migratorias altitudinales y 88 que posiblemente presentan migración altitudinal (Apéndice 1).

Figura 3. Guacharaca Variable *Ortalis guttata*, La Libertad Baja-Brisas del Tonoa, Meta, Colombia, octubre de 2017 (Sergio Chaparro-Herrera).

Figura 4. Tingua Bogotana *Rallus semiplumbeus*, Chisacá, Cundinamarca, Colombia, octubre de 2013 (Sergio Chaparro-Herrera).

Figura 5. Bienparado Mayor *Nyctibius grandis*, La Libertad Baja-Brisas del Tonoa, Meta, Colombia, noviembre de 2016 (Sergio Chaparro-Herrera).

Figura 6. Pichí Pechiamarillo *Pteroglossus inscriptus*, La Libertad Baja-Brisas del Tonoa, Meta, Colombia, noviembre de 2016 (Sergio Chaparro-Herrera).

Figura 7. Barbudito Paramuno *Oxypogon guerinii*, hembra, Pantano Andabobos, Cundinamarca, Colombia, noviembre de 2014 (Sergio Chaparro-Herrera).

Discusión

El PNN Sumapaz es la tercera área protegida de mayor extensión en la cordillera Oriental de Colombia, después del PNN El Cocuy y el PNN Cordillera de los Picachos[57]. Por su ubicación geográfica dentro del AMEM, tiene una importancia significativa en la conectividad ecosistémica a lo largo del gradiente altitudinal entre el páramo y la zona basal amazónica y orinocense[32]. El PNN Sumapaz es una zona poco estudiada en términos biológicos, con un sesgo hacia estudios botánicos[11,34,40,43,56]. Factores asociados al conflicto armado en el que ha estado inmersa la región[32,41], que ha dejado secuelas hasta hoy —como la presencia de minas antipersonales[32]— hacen que aún sea difícil la exploración y toma de información en varios sectores del área protegida y zonas colindantes. Por ejemplo, el cerro Nevado de Sumapaz, punto más alto del departamento de Cundinamarca (4250 m de altitud), solo ha sido explorado en términos botánicos en las décadas de 1970 y 1980[17]. En la hoya del río Nevado-Puerta de las Dantas (3400 m de altitud) existe una única exploración botánica de 1973[19]. Incluso existen áreas inexploradas en su totalidad como la saliente del río Guape, bioma andino con páramo, de gran interés biológico al ser un páramo aislado ubicado al suroriente del área protegida.

A pesar de las dificultades de acceso a varias zonas del PNN Sumapaz, se resalta la expedición realizada en 1981 en el denominado Transecto Sumapaz, en donde se realizaron catálogos de fauna, flora y estudios geomorfológicos; esta es, hasta la fecha, la información más robusta para algunos sectores del PNN Sumapaz[56]. No obstante, esta expedición no contó con un muestreo en campo de aves, y la información consignada para avifauna (se reportan 823 especies) corresponde a información

secundaria inferida por rangos de distribución en un gradiente montañoso[44,56]. Así, la mayor parte de la información primaria que se conoce sobre la avifauna del PNN Sumapaz proviene de pocas localidades con buena accesibilidad, como la laguna de Chisacá[13,22,52].

La plataforma eBird[22] aportó la única evidencia de la presencia en el área protegida de tres especies: (1) Faloropo Tricolor *Phalaropus tricolor*, un individuo registrado en la laguna de Chisacá por R. Williams y P. Berrigan (https://ebird.org/checklist/S33402315); esta es una especie migratoria boreal registrada en Colombia principalmente en las costas Caribe y Pacífica, con reportes ocasionales al interior del país en los Andes[22,28]; (2) Búho Real *Bubo virginianus*, un individuo registrado por N. Bayly en las cercanías de la laguna de Chisacá (https://ebird.org/checklist/S24630798) es el único registro en el parque y el primero en las zonas altas de la cordillera Oriental[15,22]; y (3) Frutero Escamado *Ampelioides tschudii*, un individuo registrado y fotografiado por A. Rivera en La Libertad Alta (https://ebird.org/checklist/S135138954), es el único registro en el parque y uno de los pocos en las estribaciones de la cordillera Oriental al este de los Andes[4,22,28,51].

También encontramos localidades exploradas en la zona amortiguadora del PNN Sumapaz; la primera de ellas localizada en los municipios de Pasca, Cabrera y Une, departamento de Cundinamarca, en donde se registraron 100 especies[54]. De esta caracterización eliminamos o excluimos seis especies luego de una revisión exhaustiva, ya que presentaban posibles errores de identificación; por ejemplo, el Colibrí Picolezna *Opisthoprora euryptera*, colectado pero erróneamente identificado porque se trata de una hembra de Colibrí Piquicorto Común *Ramphomicron microrhynchum* (re-identificada por Socorro Sierra de la colección de aves del Instituto de Investigación de Recursos Biológicos Alexander von Humboldt). Otra caracterización se llevó a cabo en el municipio de Gutiérrez[36], registrando 81 especies, entre las que desatacan el Alcaraván Americano *Hesperoburhinus bistriatus* (se amplía el rango de elevación conocido[4] hasta 3200 m) y el Águila Crestada *Spizaetus isidori,* por su grado de amenaza (En Peligro)[46].

La información que presentamos en este artículo, a pesar de que no cubre de manera representativa todos los ecosistemas y sectores del PNN Sumapaz, se convierte en un insumo para el desarrollo de políticas para la conservación de la biodiversidad y para la selección de especies objeto de conservación y monitoreo, particularmente de aquellas endémicas, amenazadas, restringidas, carismáticas, simbólicas, especies sombrilla, especies paisaje o restringidas a un tipo de

Figura 8. Cucarachero de Apolinar *Cistothorus apolinari*, Chisacá, Cundinamarca, Colombia, octubre de 2013 (Sergio Chaparro-Herrera).

ecosistema como el páramo, un bioma considerado como centro de diversificación y endemismo con características físico-bióticas únicas[9,25,33,49]. El monitoreo biológico es necesario debido a que ha existido en los últimos años un aumento significativo en la tasa de deforestación en la mayoría de las áreas protegidas de Colombia y sus zonas amortiguadoras asociado a dinámicas de posconflicto[18]. Puntualmente, el PNN Sumapaz presenta una preocupante tasa de pérdida de cobertura vegetal/boscosa del 68,3% al interior y 198,5% en su zona amortiguadora[18]. Es importante, por tanto, evaluar el estado poblacional de especies en algún grado de amenaza, su uso de hábitat, su ecología, así como su vinculación a análisis de integridad ecológica funcional como instrumento para medir la efectividad de manejo del área protegida y para evaluar el cumplimiento de sus objetivos de conservación[2,26,39].

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Apéndice 1. Aves registradas en el Parque Nacional Natural Sumapaz entre enero de 2008 y diciembre de 2023 a partir de nuestras localidades de muestreo (ver Tabla 1): Chisacá y alrededores (Ch), Santa Rosa (SR), Parque Chaquén (CQ), Alto Caicedo (AC), Pantano Andabobos (B), Quebrada Honda (QH), Laguna Cerro Tuste (CT), Las Águilas (Ag), Colombia (Co), El Duda (D), Palomas (P), La Libertad Baja-Brisas del Tonoa (LB-BT), La Libertad Alta (LA), El Retiro (ER), Las Mirlas (LM). Registro: visual (V), grabación (G), fotografía (F); y fuentes secundarias (ver Métodos): Callejas & Chaparro-Herrera[10], Chaparro-Herrera *et al.*[13], eBird[22], IAvH[29], Mayorga & Melo[36], Sierra[52], UDFJC & IAvH[54], Espejo (datos no publicados) (ES). Endemismo: E (endémica), CE (casi endémica). Estatus de conservación global: NT (Casi Amenazada), VU (Vulnerable), EN (En Peligro), CR (Peligro Crítico), en paréntesis la categoría nacional. Migración: Mb (boreal), Ma (austral), R (con poblaciones residentes), Al (altitudinal), P (probablemente presenta migración altitudinal). Empleamos la taxonomía de Remsen *et al.*[45] (diciembre de 2023).

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
TINAMIDAE					
Nothocercus bonapartei	Highland Tinamou	ER	A		
Crypturellus cinereus	Cinereous Tinamou	ER,LB-BT,LM	V,A		
Crypturellus soui	Little Tinamou	LM	V,A		
ANATIDAE					
Dendrocygna viduata	White-faced Whistling-Duck		V	36	
Spatula discors	Blue-winged Teal	Ch	V,A,F	22,52,ES	Mb-R
Anas andium	Andean Teal	B,Ch,CT	V,A,F	13,22,29,36,52,ES	CE
Aythya affinis	Lesser Scaup		V	22	Mb
Nomonyx dominicus	Masked Duck		V	22	
Oxyura jamaicensis	Ruddy Duck	Ch	V,F	13,22,36,52,ES	(EN), Al
CRACIDAE					
Penelope argyrotis	Band-tailed Guan		V	22	
Penelope montagnii	Andean Guan	CQ	V,A,F	22,36,54	
Aburria aburri	Wattled Guan	ER	V,A		
Ortalis guttata	Speckled Chachalaca	LA,LB-BT,LM	V,A,F	22	
ODONTOPHORIDAE					
Colinus cristatus	Crested Bobwhite	LM,P	V,A	22	
Odontophorus gujanensis	Marbled Wood-Quail	LM	A		
PODICIPEDIDAE					
Tachybaptus dominicus	Least Grebe		V	22	
Podilymbus podiceps	Pied-billed Grebe		V	22	

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
COLUMBIDAE					
Patagioenas speciosa	Scaled Pigeon	LM	V		
Patagioenas fasciata	Band-tailed Pigeon	CQ	V,A,F	22,36,54	P
Patagioenas cayennensis	Pale-vented Pigeon	ER,LB-BT,LM,P	V,A,F		
Patagioenas plumbea	Plumbeous Pigeon	LB-BT	V		Al
Patagioenas subvinacea	Ruddy Pigeon	ER,LA	V,A	22	P
Geotrygon montana	Ruddy Quail-Dove	ER	V,A		
Leptotila verreauxi	White-tipped Dove		V	22	
Zentrygon linearis	Lined Quail-Dove		V	22	CE
Zenaida auriculata	Eared Dove	Ag,CT,LM	V,A,F	22	
Columbina talpacoti	Ruddy Ground Dove	LB-BT,P	V,A,F		
Columbina squammata	Scaled Dove	LB-BT	V,A,F		
CUCULIDAE					
Crotophaga major	Greater Ani	LM	V,A,F		
Crotophaga ani	Smooth-billed Ani	ER,LA,LB-BT,LM,P	V,A,F	22	
Piaya cayana	Squirrel Cuckoo	ER,LA,LB-BT,LM,P	V,A	22	
Coccyzus americanus	Yellow-billed Cuckoo	LB-BT	V	22	Mb
NYCTIBIIDAE					
Nyctibius grandis	Great Potoo	LB-BT	V,A,F		
CAPRIMULGIDAE					
Systellura longirostris	Band-winged Nightjar		V	22	
Nyctidromus albicollis	Common Pauraque	LM	V,A		
APODIDAE					
Streptoprocne rutila	Chestnut-collared Swift	LB-BT,LM,P	V	22	P
Streptoprocne zonaris	White-collared Swift	ER	V	22,54	
Chaetura cinereiventris	Grey-rumped Swift	ER	V		P
Chaetura pelagica	Chimney Swift	Ch	V	13,22	VU, Mb
TROCHILIDAE					
Phaethornis atrimentalis	Black-throated Hermit	P	V		
Phaethornis griseogularis	Grey-chinned Hermit		V	22	
Phaethornis augusti	Sooty-capped Hermit	LB-BT,LM,P	V,A	22	
Phaethornis guy	Green Hermit	P	V,A	22	P
Doryfera ludovicae	Green-fronted Lancebill	CQ,ER	V		P
Doryfera johannae	Blue-fronted Lancebill		V	22	P
Colibri cyanotus	Lesser Violetear		V	22	P
Colibri coruscans	Sparkling Violetear	Ch,CQ,D	V,A,F	13,22,29,36,54	P
Heliangelus amethysticollis	Amethyst-throated Sunangel	CQ	V,A	22	
Heliangelus exortis	Tourmaline Sunangel		V	36,54	CE, P
Adelomyia melanogenys	Speckled Hummingbird	ER,LA	V,F	22,36	P
Aglaiocercus kingii	Long-tailed Sylph	CQ,LA	V,F	22,36	Al
Lesbia victoriae	Black-tailed Trainbearer	Ag,Ch,Co,CQ,QH	V	13,22,29,36,54,ES	
Lesbia nuna	Green-tailed Trainbearer	B,Ch,CQ		22	P

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Ramphomicron microrhynchum	Purple-backed Thornbill	Ag,Ch,Co,QH,SR	V,F	13,22,29,54	
Oxypogon guerinii	Green-bearded Helmetcrest	AC,Ag,B,Ch,Co, CT,D,QH	V,F	13,22,29,52,54,ES	E, P
Chalcostigma heteropogon	Bronze-tailed Thornbill	AC,Ag,Ch,Co,CT, D,QH,SR	V,F	13,22,29,36,52,54,ES	CE, P
Metallura tyrianthina	Tyrian Metaltail	Ch,CQ	V,A,F	22,29,36,52,54,ES	P
Haplophaedia aureliae	Greenish Puffleg		V	22	CE, P
Eriocnemis vestita	Glowing Puffleg	Ag	V	22,29,36,52,54	
Eriocnemis cupreoventris	Coppery-bellied Puffleg		V	22,29,54	CE
Aglaeactis cupripennis	Shining Sunbeam	AC,Ag,Ch,Co,CT, D,QH	V	13,22,29,52,54,ES	AI
Coeligena torquata	Collared Inca		V	36,54	P
Coeligena bonapartei	Golden-bellied Starfrontlet		V	54	CE, P
Coeligena helianthea	Blue-throated Starfrontlet	CQ	V	22,36,54	CE, P
Lafresnaya lafresnayi	Mountain Velvetbreast	CQ	V	22,36,54	P
Ensifera ensifera	Sword-billed Hummingbird	CQ	V	22	
Pterophanes cyanopterus	Great Sapphirewing	Ch,QH,SR	V,F	13,22,54	
Ocreatus underwoodii	Booted Racket-tail	ER,LA	V,A	22	AI
Heliodoxa leadbeateri	Violet-fronted Brilliant	ER	V		P
Chaetocercus mulsant	White-bellied Woodstar	Ch,CQ	V	13,22	
Chlorostilbon poortmani	Short-tailed Emerald	CQ	V	22,36	CE
Chalybura buffonii	White-vented Plumeleteer	P	V,F	22	
Saucerottia viridigaster	Green-bellied Hummingbird	LA	V	22	
Chrysuronia oenone	Golden-tailed Sapphire	ER,LA,LB-BT,P	V	22	
Chionomesa fimbriata	Glittering-throated Emerald	LB-BT	V,F		
OPISTHOCOMIDAE					
Opisthocomus hoazin	Hoatzin	LB-BT,LM	V,F		
RALLIDAE					
Rallus semiplumbeus	Bogota Rail	Ch	V,A,F	13,22,52,ES	E, VU(EN)
Porphyrio martinica	Purple Gallinule		V	22	
Aramides cajaneus	Grey-cowled Wood-Rail	LM	V,A	22	
Porzana carolina	Sora		V	22,52	Mb
Gallinula galeata	Common Gallinule		V	22	AI
Fulica americana	American Coot	Ch	V,F	13,22,29,52,ES	AI
CHARADRIIDAE					
Pluvialis dominica	American Golden-Plover	Ch	V	22	Mb
Pluvialis squatarola	Black-bellied Plover		V	13	VU, Mb
Vanellus chilensis	Southern Lapwing	Ch,ER,LA,LB-BT,LM,P	V,A,F	22,29	
BURHINIDAE					
Hesperoburhinus bistriatus	Double-striped Thick-knee	LM	V	36	
SCOLOPACIDAE					
Calidris bairdii	Baird's Sandpiper	Ch	V,F	13,22	Mb
Calidris minutilla	Least Sandpiper		V	22	NT, Mb

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Calidris fuscicollis	White-rumped Sandpiper		V	22	VU, Mb
Calidris melanotos	Pectoral Sandpiper		V	22	Mb
Gallinago jamesoni	Jameson's Snipe		V	22	
Gallinago nobilis	Noble Snipe	AC,B,Ch,QH	V,F	13,22,29,52,54,ES	CE, NT
Gallinago delicata	Wilson's Snipe		V	22,52	Mb
Phalaropus tricolor	Wilson's Phalarope		V	22	Mb
Actitis macularius	Spotted Sandpiper	Ch	V,F	13,22,52	Mb
Tringa solitaria	Solitary Sandpiper		V	22,52,ES	Mb
Tringa melanoleuca	Greater Yellowlegs	B,Ch	V,F	13,22,29,52,ES	NT, Mb
Tringa flavipes	Lesser Yellowlegs		V	22,52	VU, Mb
JACANIDAE					
Jacana jacana	Wattled Jacana	LB-BT	V		
LARIDAE					
Leucophaeus atricilla	Laughing Gull		V	22	Mb
Phaetusa simplex	Large-billed Tern		V	22	
PHALACROCORACIDAE					
Phalacrocorax brasilianus	Neotropic Cormorant		V	22	P
ARDEIDAE					
Tigrisoma fasciatum	Fasciated Tiger-Heron	P	V	36	
Butorides striata	Striated Heron		V	22	
Bubulcus ibis	Cattle Egret	ER,LB-BT,LM,P	V,F	22	P
Ardea alba	Great Egret		V	22	
Syrigma sibilatrix	Whistling Heron	LM	V,A,F		
Egretta caerulea	Little Blue Heron	Ch	V,F	22	Mb
THRESKIORNITHIDAE					
Mesembrinibis cayennensis	Green Ibis	LB-BT	V,A		
Phimosus infuscatus	Bare-faced Ibis	LB-BT,LM	V,A,F	22	
Theristicus caudatus	Buff-necked Ibis	LM	V,A		
CATHARTIDAE					
Coragyps atratus	Black Vulture	CQ,ER,LB-BT,LM,P	V,F	22,36	P
Cathartes aura	Turkey Vulture	Ch,LB-BT,LM,P	V	22	
PANDIONIDAE					
Pandion haliaetus	Osprey		V	22	Mb
ACCIPITRIDAE					
Elanus leucurus	White-tailed Kite		V	22,54	
Chondrohierax uncinatus	Hook-billed Kite		V	22	P
Elanoides forficatus	Swallow-tailed Kite	ER	V	22	P
Spizaetus isidori	Black-and-chestnut Eagle		V	36	EN(EN)
Ictinia plumbea	Plumbeous Kite	LB-BT,P	V		P
Accipiter striatus	Sharp-shinned Hawk	Ch	V	13,22	P
Rupornis magnirostris	Roadside Hawk	ER,LA,LB-BT,LM,P	V,A,F	22,36,54	
Parabuteo leucorrhous	White-rumped Hawk		V	54	

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Geranoaetus albicaudatus	White-tailed Hawk		V	22,ES	
Geranoaetus melanoleucus	Black-chested Buzzard-Eagle	AC,Ag,B,Ch,Co,QH	V,F	13,22,29,36,52,54	
Buteo nitidus	Grey-lined Hawk	P	V,A		
Buteo platypterus	Broad-winged Hawk	LA	V	22	Mb
Buteo swainsoni	Swainson's Hawk		V	22	Mb
TYTONIDAE					
Tyto furcata	American Barn-Owl	LM	V		
STRIGIDAE					
Megascops choliba	Tropical Screech-Owl	LA,LM	V,A	22	
Megascops ingens	Rufescent Screech-Owl	LA	A		
Bubo virginianus	Great Horned Owl		V	22	
Glaucidium jardinii	Andean Pygmy-Owl		V	22	
Asio stygius	Stygian Owl	Ch	V	22	
Asio flammeus	Short-eared Owl		V	22	
TROGONIDAE					
Pharomachrus auriceps	Golden-headed Quetzal		V	36	
Trogon collaris	Collared Trogon	LA	V,A	22	P
Trogon personatus	Masked Trogon		V	54	
BUCCONIDAE					
Malacoptila fulvogularis	Black-streaked Puffbird		V	22	
CAPITONIDAE					
Capito auratus	Gilded Barbet	LB-BT	V,A	22	
Eubucco bourcierii	Red-headed Barbet	ER,LA,P	V,A,F	22	P
RAMPHASTIDAE					
Ramphastos ambiguus	Yellow-throated Toucan	ER	V,A		
Ramphastos tucanus	White-throated Toucan	LM	V,A	22	
Ramphastos vitellinus	Channel-billed Toucan	LB-BT	V,A		
Aulacorhynchus albivitta	Southern Emerald-Toucanet		V	36	P
Aulacorhynchus haematopygus	Crimson-rumped Toucanet	LA	V,A	22	CE
Andigena nigrirostris	Black-billed Mountain-Toucan		V	22,36,54	CE
Pteroglossus inscriptus	Lettered Aracari	LB-BT	V,A		
Pteroglossus castanotis	Chestnut-eared Aracari	LB-BT,LM,P	V,A	22	
Pteroglossus pluricinctus	Many-banded Aracari	LB-BT	V,A	22	
PICIDAE					
Picumnus squamulatus	Scaled Piculet		V	22	
Melanerpes formicivorus	Acorn Woodpecker		V	22	
Melanerpes cruentatus	Yellow-tufted Woodpecker	LA,LB-BT	V,A,F	22	
Dryobates fumigatus	Smoky-brown Woodpecker		V	22,36	
Dryobates dignus	Yellow-vented Woodpecker		V	22	CE
Campephilus melanoleucos	Crimson-crested Woodpecker	LM	V,A		
Dryocopus lineatus	Lineated Woodpecker	LA,LB-BT,P	V,A,F	22	

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Colaptes rubiginosus	Golden-olive Woodpecker		V	22	
Colaptes rivolii	Crimson-mantled Woodpecker	CQ	V,A	22,36,54	
FALCONIDAE					
Herpetotheres cachinnans	Laughing Falcon	LB-BT,P	V,A,F		
Caracara plancus	Crested Caracara	P	V,A,F		
Milvago chimachima	Yellow-headed Caracara	ER,LB-BT,LM,P	V,A,F	22	
Falco sparverius	American Kestrel	ER,LM,P	V,F	22,36	
Falco columbarius	Merlin	Ch	V	22,ES	Mb, P
Falco rufigularis	Bat Falcon	LM	V		
Falco peregrinus	Peregrine Falcon		V	22	Mb
PSITTACIDAE					
Hapalopsittaca amazonina	Rusty-faced Parrot		V	54	CE, NT(VU)
Pionus menstruus	Blue-headed Parrot	LA	V,A	22	
Pionus chalcopterus	Bronze-winged Parrot	LA,LB-BT,P	V,A	22	CE
Amazona amazonica	Orange-winged Amazon	LM	V,A		
Amazona mercenarius	Scaly-naped Amazon		V	36	P
Forpus conspicillatus	Spectacled Parrotlet	LB-BT,P	V,A,F		CE
Pyrrhura calliptera	Brown-breasted Parakeet		V	36	E, VU(VU)
Ara severus	Chestnut-fronted Macaw	LB-BT	V,A		
THAMNOPHILIDAE					
Thamnophilus punctatus	Northern Slaty-Antshrike	LA	V,A	22	
Dysithamnus mentalis	Plain Antvireo	P	V,A	22	P
Myrmotherula schisticolor	Slaty Antwren	ER	V,A		
Cercomacroides tyrannina	Dusky Antbird		V	22	
Cercomacra nigricans	Jet Antbird	P	V,A		
Myrmoborus myotherinus	Black-faced Antbird		V	22	
GRALLARIIDAE					
Grallaria ruficapilla	Chestnut-crowned Antpitta	CQ	V,A,F	13,22	
Grallaria hypoleuca	White-bellied Antpitta	ER,LA	V,A	22	
Grallaria rufula	Muisca Antpitta		V	13,22,29,54	CE
Grallaria quitensis	Tawny Antpitta	AC,Ag,B,Ch, Co,CT,D,QH	V,A,F	13,22,29,52,ES	
RHINOCRYPTIDAE					
Scytalopus atratus	White-crowned Tapaculo	ER,LA	V,A	22	
Scytalopus latrans	Blackish Tapaculo		V	22,54	
Scytalopus griseicollis	Pale-bellied Tapaculo	Ag,B,Ch,Co, CQ,CT,SR	V,A	13,22,29,36,52,54,ES	CE
FORMICARIIDAE					
Chamaeza campanisona	Short-tailed Antthrush	P	A		
Chamaeza turdina	Schwartz's Antthrush	LA	V,A	22	CE
FURNARIIDAE					

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Sclerurus albigularis	Grey-throated Leaftosser	LA	V,A		
Dendrocincla tyrannina	Tyrannine Woodcreeper		V	36	
Dendrocincla fuliginosa	Plain-brown Woodcreeper	LA	V,A	22	
Xiphorhynchus guttatus	Buff-throated Woodcreeper	ER	V,A		
Dendroplex picus	Straight-billed Woodcreeper	P	V,A		
Xenops minutus	Plain Xenops	LA	V	22	
Xenops rutilans	Streaked Xenops	ER,P	V,A	22	
Pseudocolaptes boissonneautii	Streaked Tuftedcheek		V	54	
Cinclodes albidiventris	Chestnut-winged Cinclodes	AC,Ag,B,Ch, Co,CT,D,QH	V,A,F	13,22,29,36,52,ES	CE
Margarornis squamiger	Pearled Treerunner	Ch,CQ	V,A	13,22,36,54	P
Leptasthenura andicola	Andean Tit-Spinetail	AC,Ag,B,Ch, Co,D,QH	V,A,F	13,22,52,ES	
Hellmayrea gularis	White-browed Spinetail	Ch	V,A	13,22,54	
Asthenes flammulata	Many-striped Canastero	AC,Ag,B,Ch, Co,CT,D,QH	V,A,F	13,22,29,36,52,54,ES	
Asthenes fuliginosa	White-chinned Thistletail	Ag,B,Ch,Co,CT	V	13,22,29,54	
Cranioleuca subcristata	Crested Spinetail		V	22	
Cranioleuca curtata	Ash-browed Spinetail		V	22	
Synallaxis gujanensis	Plain-crowned Spinetail	LA,LB-BT	V,A	22	
Synallaxis albescens	Pale-breasted Spinetail	ER,LM,P	V,A	22	
Synallaxis azarae	Azara's Spinetail	CQ	V,A	22	
Synallaxis unirufa	Rufous Spinetail	Ch	V,A	13,22,54	
PIPRIDAE					
Cryptopipo holochlora	Green Manakin	LA	V		
Masius chrysopterus	Golden-winged Manakin	LA	V	22	
Manacus manacus	White-bearded Manakin	ER,LM	V,A		
Machaeropterus striolatus	Striolated Manakin	LA	V	22	
COTINGIDAE					
Pipreola riefferii	Green-and-black Fruiteater		V	36	
Pipreola arcuata	Barred Fruiteater		V	36	
Ampelioides tschudii	Scaled Fruiteater		V	22	P
Ampelion rubrocristatus	Red-crested Cotinga	B,Ch,CQ,SR	V,A,F	13,22,29,36,54	
Rupicola peruvianus	Andean Cock-of-the-rock	ER,LA	V,A	22	
TITYRIDAE					
Tityra inquisitor	Black-crowned Tityra		V	22	
Tityra cayana	Black-tailed Tityra	LM	V		
Tityra semifasciata	Masked Tityra	P	V,F	22	P
Pachyramphus versicolor	Barred Becard	CQ	V	22	
Pachyramphus rufus	Cinereous Becard		V	22	
Pachyramphus polychopterus	White-winged Becard	LA,LB-BT,LM,P	V,A	22	
Pachyramphus albogriseus	Black-and-white Becard	LA	V,A	22	
TYRANNIDAE					

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Piprites chloris	Wing-barred Piprites	LA	V	22	
Pseudotriccus ruficeps	Rufous-headed Pygmy-Tyrant		V	36,54	
Mionectes striaticollis	Streak-necked Flycatcher	LA	V	22	AI
Mionectes oleagineus	Ochre-bellied Flycatcher	ER,LB-BT,P	V,A		P
Leptopogon amaurocephalus	Sepia-capped Flycatcher	LA	V,A	22	P
Leptopogon superciliaris	Slaty-capped Flycatcher	ER,P	V,A	22	
Rhynchocyclus fulvipectus	Fulvous-breasted Flatbill		V	22	
Tolmomyias sulphurescens	Yellow-olive Flycatcher	ER	V,A	22	
Lophotriccus pileatus	Scale-crested Pygmy-Tyrant		V	22	
Atalotriccus pilaris	Pale-eyed Pygmy-Tyrant	LM	V,A		
Hemitriccus granadensis	Black-throated Tody-Tyrant		V	54	
Poecilotriccus ruficeps	Rufous-crowned Tody-Flycatcher	ER	V		
Todirostrum cinereum	Common Tody-Flycatcher	ER,LA,LB-BT, LM,P	V,A,F	22	
Todirostrum chrysocrotaphum	Yellow-browed Tody-Flycatcher	LA	V,A	22	
Pyrrhomyias cinnamomeus	Cinnamon Flycatcher	CQ,LA	V,A,F	22,36,54	
Zimmerius chrysops	Golden-faced Tyrannulet	ER,LA,P	V,A,F	22	
Elaenia flavogaster	Yellow-bellied Elaenia	LM	V,A,F		
Elaenia parvirostris	Small-billed Elaenia		V	22	Ma
Elaenia chiriquensis	Lesser Elaenia	LM	V		
Elaenia frantzii	Mountain Elaenia	CQ	V,A	22,54	P
Tyrannulus elatus	Yellow-crowned Tyrannulet	ER,LB-BT	V,A		
Phyllomyias nigrocapillus	Black-capped Tyrannulet		V	22,54	
Phyllomyias uropygialis	Tawny-rumped Tyrannulet	Ch,CQ	V,A	22	P
Phaeomyias murina	Mouse-coloured Tyrannulet	ER	V,A		
Mecocerculus poecilocercus	White-tailed Tyrannulet		V	54	
Mecocerculus stictopterus	White-banded Tyrannulet		V	22,54	
Mecocerculus leucophrys	White-throated Tyrannulet	Ag,Ch,Co,CQ, D,QH,SR	V,A,F	13,22,29,36,54	P
Serpophaga cinerea	Torrent Tyrannulet		V	22,36	
Uromyias agilis	Agile Tit-Tyrant		V	22,54	CE
Legatus leucophaius	Piratic Flycatcher	LB-BT,LM,P	V,A,F		
Pitangus sulphuratus	Great Kiskadee	LA,LM,P	V,A,F	22	
Megarynchus pitangua	Boat-billed Flycatcher	ER,LB-BT,LM	V,A,F	22	
Myiodynastes hemichrysus	Golden-crowned Flycatcher		V	22	
Myiodynastes maculatus	Streaked Flycatcher	ER	V,A	22	
Myiozetetes cayanensis	Rusty-margined Flycatcher	ER,LA,LB-BT,LM,P	V,A	22	
Myiozetetes similis	Social Flycatcher	LA,LB-BT,LM,P	V,A	22	
Conopias cinchoneti	Lemon-browed Flycatcher	LA	V	22	
Empidonomus varius	Variegated Flycatcher	LM	V		Ma

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Tyrannus melancholicus	Tropical Kingbird	Ag,ER,LA,LB-BT, LM,P	V,A,F	22,36,ES	
Tyrannus savana	Fork-tailed Flycatcher		V	22	Ma-R
Tyrannus tyrannus	Eastern Kingbird		V	22	Mb
Myiarchus tuberculifer	Dusky-capped Flycatcher	LB-BT,LM,P	V,A	22	Al
Myiarchus ferox	Short-crested Flycatcher	LB-BT	V,A		
Myiarchus cephalotes	Pale-edged Flycatcher	ER,LA	V,A	22	
Silvicultrix frontalis	Crowned Chat-Tyrant		V	22,54	P
Ochthoeca diadema	Yellow-bellied Chat-Tyrant		V	54	
Ochthoeca cinnamomeiventris	Slaty-backed Chat-Tyrant		V	36	
Ochthoeca rufipectoralis	Rufous-breasted Chat-Tyrant	Ch	V,A	22,36,54	
Ochthoeca fumicolor	Brown-backed Chat-Tyrant	AC,Ag,B,Ch,Co, CT,D,QH,SR	V,A,F	13,22,29,36,52,54,ES	P
Knipolegus poecilurus	Rufous-tailed Tyrant		V	22	
Muscisaxicola alpinus	Plain-capped Ground-Tyrant	Ag,Ch,Co	V	13,22,54,ES	CE, P
Cnemarchus erythropygius	Red-rumped Bush-Tyrant	Ag,Ch,Co,QH	V,A,F	22,29,52,54	
Myiotheretes striaticollis	Streak-throated Bush-Tyrant	Ag,Ch,CQ,CT,SR	V,A	13,22,29,36,54,ES	P
Myiotheretes fumigatus	Smoky Bush-Tyrant		V	22,54	
Sayornis nigricans	Black Phoebe		V	22	Al
Empidonax virescens	Acadian Flycatcher		V	22	Mb
Contopus cooperi	Olive-sided Flycatcher	LA	V	22	NT, Mb
Contopus fumigatus	Smoke-coloured Pewee	CQ	V	22,36	
Contopus sordidulus	Western Wood-Pewee		V	22	Mb
Contopus virens	Eastern Wood-Pewee	LA,LB-BT	V,A	22,52	Mb
Contopus cinereus	Tropical Pewee	ER,P	V,A		
VIREONIDAE					
Cyclarhis gujanensis	Rufous-browed Peppershrike	ER,LB-BT,LM,P	V,A	22	
Hylophilus flavipes	Scrub Greenlet	LB-BT	V,A		
Vireo leucophrys	Brown-capped Vireo	ER,LA	V,A	22	
Vireo olivaceus	Red-eyed Vireo	B,LA,LB-BT,LM	V	22	Mb-R, P
Vireo flavoviridis	Yellow-green Vireo		V	22	Mb
CORVIDAE					
Cyanolyca armillata	Black-collared Jay		V	36	CE
Cyanocorax violaceus	Violaceous Jay	ER,LA,LB-BT,LM,P	V,A,F	22	
Cyanocorax yncas	Green Jay	ER	V,A,F	22,36	
HIRUNDINIDAE					
Pygochelidon cyanoleuca	Blue-and-white Swallow	Co,LA,P	V	22,36	
Orochelidon murina	Brown-bellied Swallow	Ag,B,Ch,Co, CQ,QH,SR	V	13,22,29,52,54,ES	
Atticora tibialis	White-thighed Swallow		V	22	
Stelgidopteryx ruficollis	Southern Rough-winged Swallow	ER,P	V,A	22	

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Progne tapera	Brown-chested Martin		V	22	Ma-R
Progne chalybea	Grey-breasted Martin		V	22	
Riparia riparia	Bank Swallow	B,Ch	V	13,22	Mb
Hirundo rustica	Barn Swallow	Ch	V	13,22	Mb
Petrochelidon pyrrhonota	Cliff Swallow	Ch	V	13,22	Mb
TROGLODYTIDAE					
Troglodytes aedon	House Wren	Ag,B,Ch,CQ,CT, D,ER,LA,B-BT,LM,P	V,A,F	13,22,29,36,52,54,ES	P
Troglodytes solstitialis	Mountain Wren		V	22,36	
Cistothorus platensis	Grass Wren		V	22,54	
Cistothorus apolinari	Apolinar's Wren	Ag,B,Ch,CT	V,A,F	13,22,29,52,ES	E, EN(CR)
Campylorhynchus turdinus	Thrush-like Wren	LA,LB-BT	V,A	22	
Pheugopedius mystacalis	Whiskered Wren	ER,LA	V,A	22	CE
Pheugopedius rutilus	Rufous-breasted Wren	LA,P	V,A	22	
Thryophilus rufalbus	Rufous-and-white Wren	LB-BT	V,A		P
Cantorchilus leucotis	Buff-breasted Wren	P	V,A		
Cinnycerthia unirufa	Rufous Wren		V	22,36,54	CE
Henicorhina leucosticta	White-breasted Wood-Wren	LB-BT,P	V,A	22	
Henicorhina leucophrys	Grey-breasted Wood-Wren	CQ,ER,LA	V,A	22,54	P
CINCLIDAE					
Cinclus leucocephalus	White-capped Dipper		V	22	P
TURDIDAE					
Myadestes ralloides	Andean Solitaire	LA	V,A	22	
Catharus minimus	Grey-cheeked Thrush	LB-BT,LM	V		Mb
Catharus ustulatus	Swainson's Thrush	LA,LB-BT	V	22	Mb, P
Turdus leucops	Pale-eyed Thrush		V	22	P
Turdus leucomelas	Pale-breasted Thrush	ER,LM	V,A	22	P
Turdus nudigenis	Spectacled Thrush	ER,LA,LB-BT,LM	V,A	22	
Turdus ignobilis	Black-billed Thrush	LA,LB-BT,LM	V,A	22	P
Turdus fuscater	Great Thrush	AC,Ag,B,Ch,Co, CQ,CT,D,QH,SR	V,A,F	13,22,29,36,52,54,ES	
Turdus serranus	Glossy-black Thrush		V	36	P
MIMIDAE					
Mimus gilvus	Tropical Mockingbird	LA,LB-BT,LM,P	V,A	22	
MOTACILLIDAE					
Anthus bogotensis	Paramo Pipit	Ch	V,A,F	13,22,52,ES	P
FRINGILLIDAE					
Spinus spinescens	Andean Siskin	AC,Ag,B,Ch,CQ	V,A	13,22,29,52,54,ES	CE
Spinus xanthogastrus	Yellow-bellied Siskin	LA	V,A	22,36	P
Spinus psaltria	Lesser Goldfinch	CQ	V,A	22	P
Chlorophonia cyanocephala	Golden-rumped Euphonia	P	V	22	P

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Chlorophonia cyanea	Blue-naped Chlorophonia	LA	V	22	P
Euphonia chlorotica	Purple-throated Euphonia	LA	V,A	22	P
Euphonia chrysopasta	Golden-bellied Euphonia	LB-BT	V,A		
Euphonia minuta	White-vented Euphonia	LB-BT	V		P
Euphonia laniirostris	Thick-billed Euphonia	LB-BT,LM,P	V,A,F	22	
Euphonia xanthogaster	Orange-bellied Euphonia	LA,P	V,A	22	
Euphonia mesochrysa	Bronze-green Euphonia		V	22	P
PASSERELLIDAE					
Chlorospingus parvirostris	Short-billed Chlorospingus	ER	V		
Arremon assimilis	Grey-browed Brushfinch		V	22,36,54	
Arremon brunneinucha	Chestnut-capped Brushfinch		V	22,36	P
Zonotrichia capensis	Rufous-collared Sparrow	AC,Ag,B,Ch,CQ,CT, R,LA,P,QH,SR	V,A,F	13,22,29,36,52,54	P
Atlapetes albinucha	White-naped Brushfinch	ER	V,A	22	
Atlapetes semirufus	Ochre-breasted Brushfinch	CQ,ER,LA	V,A	22,36	
Atlapetes schistaceus	Slaty Brushfinch	Ch	V,A	13,22,52,54	
Atlapetes pallidinucha	Pale-naped Brushfinch	Ch,CQ	V,A	13,22,29,36,54,ES	CE
ICTERIDAE					
Sturnella magna	Eastern Meadowlark	Ag,B,Ch,LB-BT,SR	V,A,F	13,22,29,36,52,54	NT
Psarocolius angustifrons	Russet-backed Oropendola	ER,LA,LB-BT,LM,P	V,A,F	22	
Psarocolius decumanus	Crested Oropendola	LA,LB-BT,LM	V,A,F	22	
Cacicus cela	Yellow-rumped Cacique	LB-BT,P	V,A,F		
Cacicus chrysonotus	Mountain Cacique	CQ	V,A	36	
Icterus cayanensis	Epaulet Oriole	LB-BT	V	22	
Icterus chrysater	Yellow-backed Oriole	ER,LA,LB-BT,P	V,A	22	P
Molothrus oryzivorus	Giant Cowbird	LB-BT,LM	V		
Molothrus bonariensis	Shiny Cowbird		V	22	AI
Quiscalus lugubris	Carib Grackle	P	V,A		
Hypopyrrhus pyrohypogaster	Red-bellied Grackle		V	22,10	E, VU(VU)
Gymnomystax mexicanus	Oriole Blackbird	LM	V		
PARULIDAE					
Mniotilta varia	Black-and-white Warbler	LA	V	22	Mb
Leiothlypis peregrina	Tennessee Warbler	LA,LB-BT,LM	V	22	Mb
Geothlypis philadelphia	Mourning Warbler	LA	V	22	Mb
Setophaga ruticilla	American Redstart	LA,LB-BT,LM	V	22	Mb
Setophaga cerulea	Cerulean Warbler	LA,LM	V	22	NT(VU), Mb
Setophaga pitiayumi	Tropical Parula	ER,P	V,A	22	P
Setophaga fusca	Blackburnian Warbler	LA	V	22,36	Mb
Setophaga striata	Blackpoll Warbler	LB-BT,LM	V,A	22	NT, Mb
Myiothlypis nigrocristata	Black-crested Warbler	Ch,CQ	V	13,22,36,54	P
Myiothlypis coronata	Russet-crowned Warbler		V	22	P
Basileuterus culicivorus	Golden-crowned Warbler	P	V	22	

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Basileuterus tristriatus	Three-striped Warbler	ER	V,A	22,36,54	P
Cardellina canadensis	Canada Warbler	LA	V	22	Mb
Myioborus miniatus	Slate-throated Redstart	ER,LA	V,A	22	Al
Myioborus ornatus	Golden-fronted Redstart	CQ	V,A,F	22,36,54	CE
CARDINALIDAE					
Piranga flava	Hepatic Tanager	P	V		Al
Piranga rubra	Summer Tanager	Ch,LA,LB-BT,LM	V	13,22,52	Mb
Piranga olivacea	Scarlet Tanager	LA,LB-BT,LM	V	22	Mb
Piranga leucoptera	White-winged Tanager		V	22	
Pheucticus aureoventris	Black-backed Grosbeak		V	22,36	
Pheucticus ludovicianus	Rose-breasted Grosbeak	LA,LB-BT	V	22	Mb
THRAUPIDAE					
Sericossypha albocristata	White-capped Tanager		V	54	VU
Catamblyrhynchus diadema	Plushcap		V	22,54	
Chlorophanes spiza	Green Honeycreeper	P	V	22	
Iridophanes pulcherrimus	Golden-collared Honeycreeper	LA	V	22	P
Conirostrum sitticolor	Blue-backed Conebill	Ch	V	13,22,54	
Conirostrum rufum	Rufous-browed Conebill	Ch,CQ,SR	V,F	13,22,29,54,ES	CE
Sicalis flaveola	Saffron Finch	LB-BT,LM,P	V,A,F	22	
Geospizopsis unicolor	Plumbeous Sierra Finch	AC,Ag,B,Ch, Co,CT,D,QH	V,A,F	13,22,29,52,54,ES	
Catamenia analis	Band-tailed Seedeater	Ch	V,F	22	P
Catamenia inornata	Plain-coloured Seedeater	Ch	V,F	13,22,29,54,ES	
Catamenia homochroa	Paramo Seedeater		V	22,36	
Diglossa lafresnayii	Glossy Flowerpiercer	AC,Ag,Ch,Co, CT,SR	V,F	13,22,29,36,52,54,ES	P
Diglossa humeralis	Black Flowerpiercer	Ag,Ch,CQ,CT	V,F	13,22,29,52,54	
Diglossa albilatera	White-sided Flowerpiercer	Ch,CQ	V,A	13,22,54	P
Diglossa sittoides	Rusty Flowerpiercer	CQ	V,A	22,54	P
Diglossa caerulescens	Bluish Flowerpiercer	Ch,SR	V,A	13,22,36,54	P
Diglossa cyanea	Masked Flowerpiercer	Ch,CQ,SR	V,A,F	13,22,29,36,54	P
Haplospiza rustica	Slaty Finch	Ch,CQ	V	13,22,54	
Volatinia jacarina	Blue-black Grassquit	LA,P	V,A	22	P
Loriotus luctuosus	White-shouldered Tanager	ER,LM,P	V,A		
Tachyphonus rufus	White-lined Tanager	LA,LM,P	V,A	22	
Ramphocelus carbo	Silver-beaked Tanager	ER,LA,LB-BT, LM,P	V,A,F	22	
Cyanerpes caeruleus	Purple Honeycreeper	ER,LB-BT	V	22	P
Tersina viridis	Swallow Tanager	LB-BT	V,A		P
Dacnis cayana	Blue Dacnis	LB-BT,LM	V		P
Sporophila minuta	Ruddy-breasted Seedeater	LM	V		
Sporophila angolensis	Chestnut-bellied Seed-Finch	P	V		

Nombre científico	Nombre en inglés	Localidades exploradas	Registro	Fuente secundaria	Endemismo, Estatus, Migración
Sporophila intermedia	Grey Seedeater	LB-BT	V		
Sporophila luctuosa	Black-and-white Seedeater	CQ	V	36	P
Sporophila nigricollis	Yellow-bellied Seedeater	ER,P	V,F	22	
Saltator maximus	Buff-throated Saltator	LB-BT,LM,P	V,A	22	
Pseudospingus verticalis	Black-headed Hemispingus	B,Ch	V	13,22,36,54	
Cnemoscopus rubrirostris	Grey-hooded Bush Tanager		V	54	
Kleinothraupis atropileus	Black-capped Hemispingus		V	54	
Sphenopsis frontalis	Oleaginous Hemispingus		V	22	
Thlypopsis superciliaris	Superciliaried Hemispingus	Ch,CQ	V,A	13,22,54	
Coereba flaveola	Bananaquit	LB-BT,LM,P	V,A,F		
Tiaris olivaceus	Yellow-faced Grassquit		V	22	
Chlorochrysa calliparaea	Orange-eared Tanager	ER	V		
Schistochlamys melanopis	Black-faced Tanager	LM	V		
Cissopis leverianus	Magpie Tanager	ER,LA,LB-BT,P	V,F	22	
Iridosornis rufivertex	Golden-crowned Tanager		V	22,36,54	
Pipraeidea melanonota	Fawn-breasted Tanager		V	22	P
Dubusia taeniata	Buff-breasted Mountain-Tanager	B,Ch,CQ	V,A	13,22,54,ES	
Anisognathus igniventris	Scarlet-bellied Mountain-Tanager	AC,Ag,Ch,CQ,SR	V,A,F	13,22,36,52,54,ES	
Buthraupis montana	Hooded Mountain-Tanager		V	22,36,54	
Sporathraupis cyanocephala	Blue-capped Tanager	CQ	V,A,F	22,54	P
Chlorornis riefferii	Grass-green Tanager		V	54	
Cnemathraupis eximia	Black-chested Mountain-Tanager		V	22,54	
Chalcothraupis ruficervix	Golden-naped Tanager	LA	V	22	
Stilpnia heinei	Black-capped Tanager	LA	V,A	22	P
Stilpnia cayana	Burnished-buff Tanager	ER,LA,LB-BT,LM,P	V	22	
Stilpnia cyanicollis	Blue-necked Tanager	ER,LA,P	V,A,F	22	
Tangara vassorii	Blue-and-black Tanager		V	22,54	P
Tangara nigroviridis	Beryl-spangled Tanager	LA	V	22,36	P
Tangara cyanotis	Blue-browed Tanager		V	22	
Tangara mexicana	Turquoise Tanager	LB-BT,P	V		
Tangara gyrola	Bay-headed Tanager	ER,LA,P	V	22	P
Tangara xanthocephala	Saffron-crowned Tanager	LA	V	22	P
Tangara parzudakii	Flame-faced Tanager	LA	V	22	
Tangara arthus	Golden Tanager	LA	V	22	
Thraupis episcopus	Blue-grey Tanager	ER,LA,LB-BT,LM,P	V,A,F	22	
Thraupis palmarum	Palm Tanager	ER,LB-BT,LM,P	V,A,F	22	
Ixothraupis guttata	Speckled Tanager	ER,LA,P	V,A	22	

Notes on the nests of Spotted Antpitta *Hylopezus macularius* and Alta Floresta Antpitta *Hylopezus whittakeri* in Brazil

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Os Grallariidae são uma diversa família de suboscinos sujeitos a mudanças taxonômicas constantes, com até 70 espécies sendo reconhecidas atualmente por diferentes abordagens taxonômicas. A história de vida da maioria das espécies de *Hylopezus* amazônicos é pouco conhecida, especialmente a sua ecologia reprodutiva – aqui fornecemos descrições dos ninhos de dois dos quatro taxa no complexo torom-carijó *Hylopezus macularius*: *H. macularius* e o torom-de-alta-floresta *H. whittakeri*. Apenas o ninho de *H. macularius* do Escudo das Guianas foi descrito anteriormente e com base num único ninho. Neste trabalho, fornecemos detalhes de um segundo ninho de *H. macularius* além de uma breve descrição do primeiro ninho documentado do recentemente descrito *H. whittakeri* do sul da Amazônia a partir de uma imagem histórica publicada.

The Grallariidae are a speciose family of suboscine passerines subject to constant taxonomic splits and shuffles, with up to 70 species currently recognised by the various taxonomic approaches. The life history of most Amazonian *Hylopezus* species is poorly known, especially their reproductive ecology[3]. Here we provide descriptions of the nests of two of the four taxa in the Spotted Antpitta *Hylopezus macularius* complex, namely *H. macularius* and *H. whittakeri*. Only the nest of *H. macularius* from the Guiana Shield has been previously described, and then based only on a single nest[8]. Here, we provide details of a second *H. macularius* nest and provide a brief description of the first documented nest of the recently described[2] Alta Floresta Antpitta *H. whittakeri* from a published historical image.

Spotted Antpitta *Hylopezus macularius* nest

On 5 February 2024, OCM and CAN were obtaining sound-recordings of *H. macularius* in an area of continuous *terra firme* rainforest at the research farm ('Fazenda Experimental') of the Universidade Federal do Amazonas (UFAM), Amazonas, Brazil (2°38'20.3'' S, 60°03'28.6''W; 80 m elevation) for an ecoacoustic project. We obtained good views of a single bird at 07h38, observing it singing while standing on a nest platform built on a low leaf of an *Attalea* sp. palm (Fig. 1). After singing continuously for c.10 min without interruption, the bird moved to a new location and resumed singing; this allowed us to obtain measurements of the temporarily vacated nest.

The nest consisted of a low cup supported from the base (following Simon & Pacheco[6]). It comprised a loose amalgamation of sticks and broad leaves along the central leaf rachis, which formed an outer structural layer (terminology hereafter as per Hansell & Overhill[4]), with a tighter cup woven from fine woody stems forming an unlined, inner structural layer in the middle (Fig. 2A). An unusually high number of broad, dry leaves from a range of plant species were positioned both along the palm rachis and under some of the nest sticks, leading us to believe that they were deliberately placed as a decorative outer layer.

The nest diameter was 32 cm, although we departed slightly from the Hansell & Overhill guidelines by measuring from what we considered to be the interlinked elements of the nest that were farthest apart, discounting loose leaves. The cup diameter was 9.7 cm at its widest and 8.7 cm at its narrowest. Depth was not measured due to the nest's fragile placement on the palm frond (Fig. 2A). The nest was 82 cm from the ground. These measurements match closely those of the only previously described nest, found near Saül, French Guiana, on 16 April 1983[8], which was built on a young *Astrocaryum paramaca* palm leaf, 76 cm from the ground, with a nest-cup diameter of 7 cm and an outer nest diameter of 30 cm (the latter including protruding twigs).

We assume we recorded the same *H. macularius* within this territory on three separate dates (2, 5 and 7 February 2024), as we only ever observed and heard a single individual each time. Singing continued until late morning (up until 10h45 on 5 February 2024; on this occasion unprompted by playback). This was in contrast to a pair of *H. macularius* in a neighbouring territory exactly 2 km distant; at 08h30 on 7 February 2024, these birds rapidly responded in unison to playback, albeit only by giving calls rather than responding

Figure 1. Spotted Antpitta *Hylopezus macularius* singing from the nest, Universidade Federal do Amazonas Fazenda Experimental, Amazonas, Brazil, 5 February 2024 (ML 614845986; Oliver Metcalf).

with loud song. This led us to postulate that the bird associated with the nest could be an unpaired individual holding a territory.

Alta Floresta Antpitta *Hylopezus whittakeri* nest

On 15 December 2009, while undertaking nocturnal anuran surveys at Fazenda São Nicolau, Cotriguaçu, Mato Grosso, Brazil (9°49'09.0"S, 58°15'31.1"W; 240 m), DJR encountered and photographed a passerine sitting tight on a nest close to plot 6 of the trail system in continuous *terra firme* rainforest (Fig. 3). The image was subsequently published as Figure 2j in Oliveira *et al.*[5] and captioned as a juvenile Black-spotted Bare-eye *Phlegopsis nigromaculata*, but was subsequently reidentified as Alta Floresta Antpitta *H. whittakeri* by ACL. DJR's series of six similar images taken on 15 December represent the only information on the breeding biology of the species as, per Greeney[3], "nest and egg undescribed, along with all other aspects of the reproductive biology". As with *H. macularius,* the nest appears to be a low cup supported from the base, with the cup formed of a robust stick platform built between two tree saplings of an undetermined species of Moraceae, and intertwined with lianas. It is difficult to assess many details from the images, but there appears to be fewer leaves present than in the nest described above for *H. macularius*. The nest was approximately 60 cm off the ground.

Discussion

It is impossible to draw many conclusions regarding inter- or intraspecific variation in nest construction among members of the *H. macularius* complex based on just three nests, and the similarities and differences presented here, although intriguing, likely reflect variation in the bioabundance of different understorey plant species available as nesting substrate at their respective locations. This latter conclusion is reinforced by our knowledge of the breeding biology of the congeneric Masked Antpitta *H. auricularis,* a micro-endemic taxon from Bolivia. Aponte *et al.*[1] located eight *H. auricularis* nests at two sites that were "somewhat irregularly shaped, fairly loose platforms of sticks (⩽40 cm long, ⩽1 cm diameter) supported by (but not attached to) horizontally crossing vines, branches or palm fronds". This description captures variation in the three known nests of the *H. macularius* complex, including the nests described herein, and suggests that species in the group likely have a plastic choice of nesting substrate. Both the Brazilian nests and the one from French Guiana were also active in the regional rainy seasons, which is when breeding activity peaks for members of the Grallariidae[7].

Figure 2. **A** Nest of Spotted Antpitta *Hylopezus macularius* and **B** nest location on a palm leaf. Universidade Federal do Amazonas Fazenda Experimental, Amazonas, Brazil, 5 February 2024 (Oliver Metcalf).

Figure 3. Alta Floresta Antpitta *Hylopezus whittakeri* sitting tight on a nest at night, Fazenda São Nicolau, Mato Grosso, Brazil, 15 December 2009 (Domingos de Jesus Rodrigues). Previously published as Figure 2j in Oliveira *et al.*[6].

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Observations of nest-building by Crimson Fruitcrow *Haematoderus militaris* in the central Amazon, Brazil

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Apresento novas informações sobre a reprodução do anambé-militar *Haematoderus militaris*. Entre 28 de junho e 10 de julho de 2015 uma fêmea da espécie foi observada por 13 dias em Manaus, Amazonas, Brasil, coletando teias de aranhas coloniais *Anelosimus eximius* (Theridiidae) e levando para um ninho em construção, porém abandonando o ninho sem concluir a reprodução. As informações apresentadas complementam o pouco conhecimento sobre a biologia reprodutiva dessa espécie.

Crimson Fruitcrow *Haematoderus militaris* is a large, bright red cotinga with obvious sexual dimorphism[6]. The male has crimson in the head, underparts and rump, and dark brown wings and tail; the female has duskier, dark brown upperparts[6]. This rare species is most easily detected by its vocalisation: a low-pitched *bock*, repeated at irregular intervals[9]. It has been recorded in Guyana, French Guiana, Suriname, Venezuela, Colombia and Brazil[2-4,6]. In Brazil, it occurs mainly north of the Rio Amazonas in the states of Amapá, Pará, Maranhão and Amazonas[6,8], and west of the Rio Negro and south of the Rio Amazonas in Rondônia[9]. As is typical among cotingas, Crimson Fruitcrow is a canopy-dweller. It inhabits the upper levels of *terra firme* forests with an average height of 35 m (and emergent trees over 50 m), growing on nutrient-poor soils. It also occurs in forests along rivers and savannas, and may be found in fragmented landscapes[1,3,8].

The breeding behaviour of Crimson Fruitcrow is poorly known, like that of many large cotingids. Bigger members of the family are mainly polygynous, with nesting duties performed exclusively by the female[6]. The reproductive biology, feeding behaviour and displays of the Crimson Fruitcrow have been unveiled only during the last two decades[3]. Previous information about the species' foraging behaviour and display flights has been obtained from canopy towers, due to the species preference for the upper strata of forests[1,3,8].

Figure 1. Female Crimson Fruitcrow *Haematoderus militaris*, near Manaus, Amazonas, Brazil, 5 July 2015 (Tomaz Nascimento de Melo): inspecting the surroundings before collecting spiderweb for the nest.

So far, little is known about its breeding biology and social behaviour. In Brazil, males perform flight displays in July, September and November[1,8], a behaviour recorded during October in Guyana[3]. Crimson Fruitcrow is mostly observed on its own, although up to five individuals have been seen together in Brazil and up to six or eight in Guyana[3,9]. These occasional flocks tend to comprise one male and a few females, and it is believed that males defend a territory[1,8,9]. Just one nest has been found, in Manaus, Brazil, during September 1991[8]. It was built on a fork of a horizontal branch 20 m above ground. A female was observed carrying nesting material and arranging it in the nest, which was described as apparently built with fine roots and mud[8]. The only additional breeding data refer to a female with large ovaries collected in Rondônia, Brazil, during March 1988, and a juvenile observed in Manaus during late March 1983[1,3,7].

Here I present new observations on the breeding behaviour of Crimson Fruitcrow on the forest edge along a secondary road 22 km north of Manaus (02°48'S, 60°05'W), in Amazonas, Brazil, at a site where the species had been recorded regularly since 2014. All observations described here were made unsystematically, while watching birds in the area, which I did almost daily from 07h00–11h00 and occasionally from 15h00–18h00. The vegetation in the area was at different stages of regeneration, corresponding to a transition between *terra firme* forest and savanna in white-sand soil, interspersed with anthropogenic pastures and disturbed areas. The average canopy height was c.25 m, with some emergent trees.

From 28 June to 10 July 2015, I observed an adult female Crimson Fruitcrow visiting a nest-site. I observed the bird in the forest canopy almost daily from 07h30–09h00 and occasionally around 16h00. On 28 June, I initially saw the female perched on branches of a tree beside the dirt road that runs through the site (Fig. 1). After inspecting the area, the bird descended cautiously, staying hidden among foliage. Then it perched on an exposed branch c.2 m above the ground, before flying to a new perch at the same height c.2.5 m away where the bird collected the web made by the social spider *Anelosimus eximius* (Theridiidae; Fig. 2). I observed the bird collect spider-web in a similar manner three or four times daily until 6 July, getting her body (particularly bill, head, tail and tarsi; Fig. 3) covered in the material, and emitting occasional *bock* calls. Once finished, the bird flew c.50 m away to an unidentified tree about 30 m tall, where I discovered a nest under construction. After taking spider-web to the nest, the female usually returned to collect more material until this ran out (usually after the day's second visit). Each morning, I noticed that the spiders had rebuilt the

Figure 2. Social spiders *Anelosimus eximius* (Theridiidae), near Manaus, Amazonas, Brazil, 1 July 2015 (Tomaz Nascimento de Melo): their webs were collected by the female Crimson Fruitcrow *Haematoderus militaris*.

Figure 3. Female Crimson Fruitcrow *Haematoderus militaris*, near Manaus, Brazil, 6 July 2015 (Tomaz Nascimento de Melo): showing body covered with spider-web collected as nest material.

Figure 4. Female Crimson Fruitcrow *Haematoderus militaris* on the nest, near Manaus, Amazonas, Brazil, 10 July 2015 (Tomaz Nascimento de Melo).

web depleted by the fruitcrow the previous day. The female continued collecting spider-web until 6 July only, subsequently flying directly to the nest from the initial arrival point.

The nest (Fig. 4) was located 20 m up in a 30-m-tall tree, and was built in a fork of a branch at an angle of 45°. From the ground I could see only part of the nest, which seemed to be coated externally with what looked like lichens and other undetermined materials. The nest was fully exposed, with no cover from above or from the sides, but difficult to watch because it was well camouflaged and became evident only when the female was on it. Once at the nest, the female remained calm, allowing approach to within c.5 m. The bird sometimes stood up and inserted the bill into the side of the nest, probably adding spider-web, which was likely used to attach the nest to the fork. Occasionally, the female seemed to regurgitate something into the nest. The female remained at the nest for periods of 20–60 minutes, usually gaping due to the intense heat, vocalising at irregular intervals, regularly shifting position, turning around in the nest (as if rearranging materials) and at times ruffling feathers.

When leaving the nest, the female flew directly towards the forest and returned to the nest after c.30 minutes; during the rest of the day, the bird visited the nest-site only occasionally around 16h00 and left the area around 17h00. The bird was last observed at the nest during the morning and afternoon of 10 July; there were no sightings across four subsequent visits, each of roughly two hours, up to 10 August.

The nest I observed was two months earlier than the only described nest[8], whilst the juveniles observed in Manaus in March[3] may have hatched in September–October. Nest characteristics were similar to those previously reported, specifically in its height above ground, placement in a tree-fork and location on the edge of a forest fragment[8]. The latter echoes previous thoughts that the species tolerates some degree of disturbance[1,8]. It seems plausible that mud, which is mentioned as a nest material[8], is what I observed the female regurgitating into the nest. Although fine roots have been described as nest material[8], it was not possible to accurately identify any material other than spider-webs and perhaps lichens.

The behaviour of the female in the nest was similar to that previously described[8]. Although male Crimson Fruitcrows were also occasionally observed in the same area as the female (one of which probably shared a territory with the female), I did not see any interaction between the female and conspecifics, or indeed with any other species. I hope that further observations of Crimson Fruitcrow in this site could provide additional information about the species' biology and ecology.

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Oligoryzomys sp. (Cricetidae) em cavidade de nidificação do pato–mergulhão *Mergus octosetaceus* no Rio Novo, região do Jalapão, Tocantins, Brasil

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The Critically Endangered Brazilian Merganser *Mergus octosetaceus* is currently found at only three locations in Brazil. For nest-sites, it depends on pre-existing natural cavities, including tree holes, terrestrial crevices or crevices in rocky outcrops. During the 2023 and 2024 breeding seasons, we used a camera trap to monitor breeding behaviour at one nest on the Rio Novo, Jalapão, Tocantins. In 2023, the cavity was unoccupied; in 2024, the female visited the cavity but selected another one for nesting. Nevertheless, in both years we obtained photographic documentation of a pygmy rice rat *Oligoryzomys* sp. inside the unused nest cavity. The rodent was seen gnawing on the heartwood of the tree, thereby providing maintenance of the cavity interior. Physical, mechanical and biological agents contribute to the emergence of cavities suitable for Brazilian Merganser nesting. The behaviour of this rodent makes it a potential agent for maintaining or increasing the size of cavities, although it might also be a potential nest predator. Further observations and data obtained from tree cavities used by nesting Brazilian Mergansers could help us to understand the importance of this behaviour and to learn about other effects these rodents might have on the duck's reproduction.

O pato–mergulhão *Mergus octosetaceus,* listado na categoria de espécie Criticamente Ameaçada de extinção[11,17,21], ocorre atualmente apenas no Brasil, nos estados de Minas Gerais[9,14,19,20], Goiás[10,23] e Tocantins[3,6,7,13]. Neste último estado, a espécie é conhecida por ocupar o Rio Novo, região do Jalapão, apresentando um único registro transitório em 2009 em seu tributário Rio Preto[2]. Essa espécie se reproduz durante a estação seca no bioma Cerrado. No Jalapão e região da Serra da Canastra, o mês de julho marca o início ou o pico da eclosão dos ovos e nascimento dos filhotes[3,14,18,19]. A espécie depende de cavidades naturais pré-existentes para sua nidificação, utilizando cavidades arbóreas[1,5,8,15], rochosas[14,16] e no solo[18] encontradas diretamente ou próximas às margens dos rios e riachos para a instalação dos ninhos, tornando-se notória a necessidade da preservação dos ambientes marginais dos rios e riachos, indispensáveis à conservação da espécie[1]. No Rio Novo já foram publicadas descrições de sete ninhos, todos em cavidades arbóreas[1,5,8].

Com o intuito de acompanhar o comportamento reprodutivo da espécie, instalamos uma armadilha fotográfica (Bushnell Morphy Cam HD) com sensor de presença, programada para gravação de três fotos em sequência e intervalo de disparo de 30 s, um vídeo de 15 s de imagem e áudio. A armadilha fotográfica ficou posicionada acerca de 0,50 m frontalmente à entrada de um ninho de pato-mergulhão, fixada em uma base de madeira previamente instalada. Ficou instalada entre 14 de junho–5 de julho de 2023 e entre 25 de maio–9 de julho de 2024, com o sensor ativo programado para 24 h em ambos períodos. A cavidade/ninho está localizada nas margens do Rio Novo, acerca de 2 m do curso d'água (estação seca) e na Área de Proteção Ambiental do Jalapão. A entrada da cavidade estava situada próximo à base de uma canjerana (*Vochysia pyramidalis*; Vochysiaceae), cuja entrada foi manejada em 2022[1,4], com histórico de uso pelo pato-mergulhão para reprodução em anos anteriores (2015, 2018 e 2022), possivelmente pelo mesmo casal, já que a espécie pode usar a mesma cavidade por anos consecutivos[4,18].

Não houve ocupação dessa cavidade para nidificação na estação reprodutiva de 2023. Em 2024, a fêmea fez visitas a essa cavidade (registros nas proximidades da entrada ou entrando na cavidade) nos dias 6 (oito registros), 7 (dois registros) e 8 de junho de 2024 (um registro) sem uso efetivo da mesma para postura de ovos. O áudio dos vídeos obtidos pela armadilha fotográfica revelou a presença do macho na companhia da fêmea, mas fora da visão da câmera. O casal conhecido por ocupar esse trecho do rio e usar o ninho monitorado usou outra cavidade para reprodução situada a 2 km a jusante. Apesar da curta distância entre os ninhos sugerir que o mesmo casal tenha usado os dois ninhos, não foi possível confirmar.

Os registros obtidos pela câmera na entrada da cavidade ou em suas proximidades foram aves (juriti-pupu *Leptotila rufaxilla*, ariramba-de-cauda-ruiva *Galbula ruficauda,* andorinha-serradora *Stelgidopteryx ruficollis*, garrinchão-de-barriga-vermelha *Cantorchilus leucotis*), lagarto (*Ameiva* sp.) e capivara (*Hydrochoerus hydrochaeris*), bem como de um

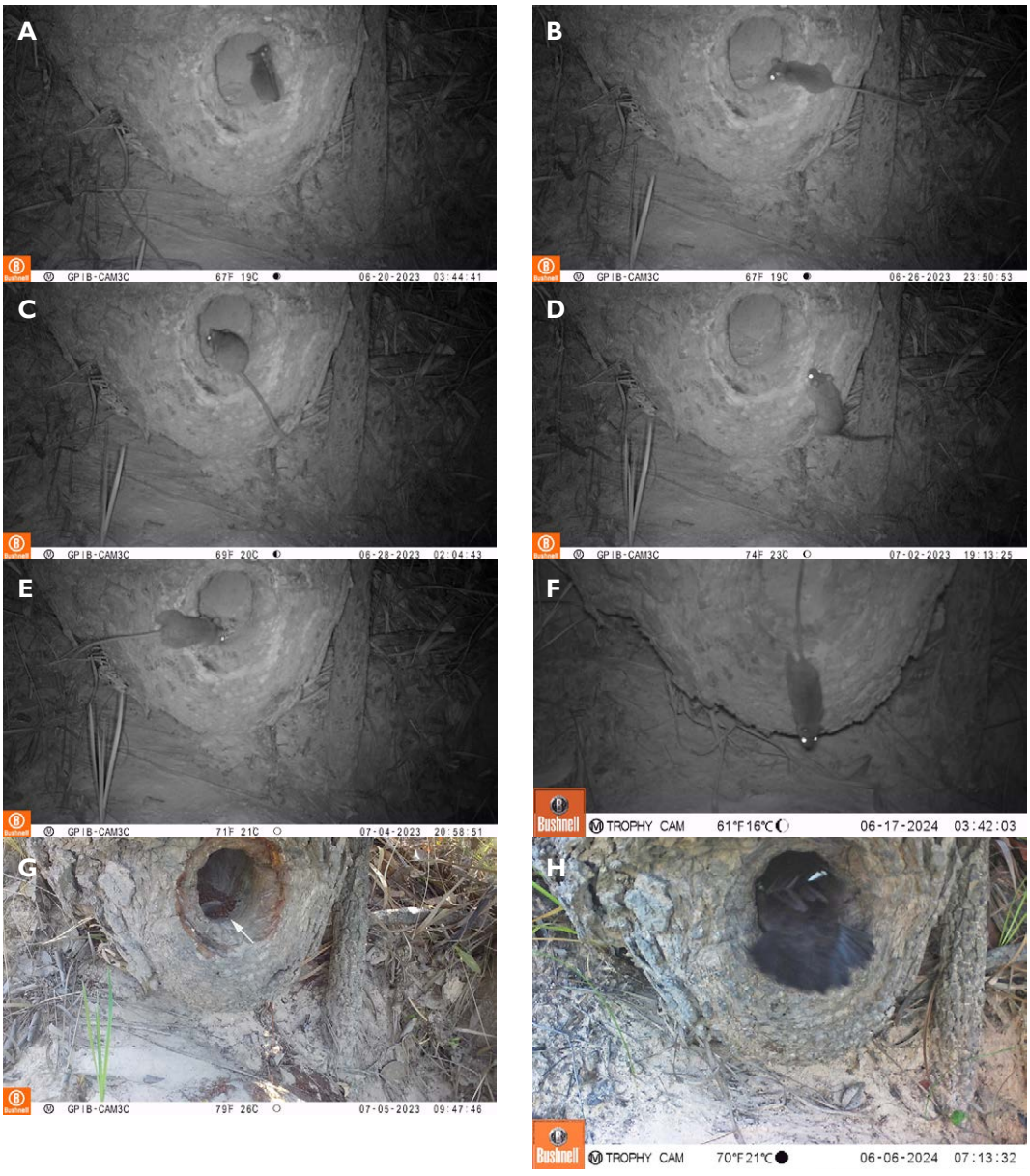

Figura 1. Visão frontal do ninho de pato-mergulhão *Mergus octosetaceus* no Rio Novo, Jalapão, Tocantins, mostrando: **A**–**F** o roedor (Cricetidae) do gênero *Oligoryzomys* frequentando a cavidade no período noturno; **G** o acúmulo de lascas de madeira deixadas no interior da cavidade/ninho obtidas pela armadilha fotográfica; e **H** a entrada da fêmea pato-mergulhão à cavidade. A seta indica o acúmulo de lascas de madeira. Os rodapés das imagens mostram ainda a temperatura local, data e horário dos registros (Marcelo Barbosa).

roedor (Cricetidae) com características físicas externas compatíveis com o gênero *Oligoryzomys* sp. (Fig. 1A–F). Os registros do roedor no interior ou na entrada da cavidade ocorreram, sempre no período noturno, em 26 e 28 de junho, em 2 e 4 de julho de 2023 e em 31 de maio e 17 de junho de 2024. Na retirada da armadilha fotográfica (5 de julho de 2023) e em vistoria posterior (2 de setembro de 2023), foi possível verificar o interior da cavidade e constatar o acúmulo de serragem de madeira roída (Figs. 1G, 2A) e de fezes de roedor. Ainda em setembro de 2023, logo no solo abaixo da entrada, havia mais serragem (Fig. 2B). Nenhuma

Figura 2. Fotos da área interna e externa (solo) mostrando: **A** o acúmulo de lascas de madeira deixadas pelo roedor; e **B** o acúmulo de suas fezes e mais lascas no solo logo abaixo da entrada da cavidade/ninho. A seta indica o acúmulo de fezes. (Marcelo Barbosa).

casca de ovo ou outro indício de reprodução do pato-mergulhão foi observado.

Esse mesmo ninho foi usado pelo pato-mergulhão na estação reprodutiva de 2022 e monitorado via armadilha fotográfica[4]. A câmera, porém, estava programada para obtenção apenas de registros diurnos, impossibilitando documentar a presença ou não de qualquer roedor naquele ano durante o processo de postura e incubação dos ovos pelo pato-mergulhão. Em 2024, a armadilha fotográfica foi novamente instalada no mesmo ninho (programada para 24 h) e duas visitas do Cricetidae foram documentadas, sendo uma delas na parte interna da cavidade (Fig. 1H). As visitas do roedor ocorreram em período anterior e posterior à visita da fêmea de pato-mergulhão à cavidade, não sendo possível avaliar se tal presença interferiu na escolha da fêmea por outra cavidade localizada a 2 km a jusante. Não foi constatado o acúmulo de serragem na cavidade ou abaixo dela conforme observado no ano anterior, muito em função da fêmea ter entrado na cavidade.

A partir de 2023, foi possível verificar que o roedor atuou na manutenção da cavidade, principalmente no seu interior, roendo o cerne da árvore, conforme testemunha o acúmulo de lascas da madeira roídas deixadas no interior e os vestígios de fezes depositados no solo logo abaixo da cavidade/ninho. Cavidades-ninho roídas ou alargadas suas entradas por roedores podem potencialmente diminuir a atratividade dessas cavidades por outros usuários do que as que se degradam naturalmente[22]. Necessário comprovar, porém, se esse papel do roedor potencialmente o torna um agente na manutenção ou aumento das dimensões das cavidades e também no surgimento de cavidades arbóreas para nidificação do pato-mergulhão na região do Jalapão ou em outras áreas de ocorrência da espécie.

No Rio Novo, até o momento, todos os ninhos conhecidos são em cavidades arbóreas[1,4,8]. Localmente, como agentes responsáveis pelo surgimento de cavidades de nidificação do pato-mergulhão, atuam inicialmente a dinâmica do fluxo da água e a força cinética do rio, que atuam na quebra de galhos durante o período chuvoso com as cheias do rio ou ainda pela ação do vento[3]. Posteriormente, a atuação de outros agentes físicos ou biológicos acarretam a decomposição natural do interior do cerne ou retirada de lascas de madeira. As fases finais destes processos naturais contribuem para que a cavidade alcance o formato necessário ao uso do pato-mergulhão para sua nidificação. Configuram-se, portanto, como importantes fatores para a existência de cavidades arbóreas com as dimensões internas adequadas para a reprodução do pato-mergulhão, inclusive na manutenção do diâmetro da entrada.

Por outro lado, roedores também são considerados importantes predadores de ninhegos de pombas[12]. Entretanto, o fato de a fêmea de pato-mergulhão permanecer incubando os ovos por várias horas em sequência[4], tem o potencial de reduzir a possibilidade de interferência do roedor no processo de incubação e eventual predação de ovos do pato-mergulhão. Há poucos argumentos de que roedores sejam capazes de reduzir o sucesso na nidificação de aves atacando os ovos e que a capacidade do roedor de predar é limitada pelo tamanho dos ovos[12]. Após a eclosão, os filhotes de pato-mergulhão permanecem 24 h ou um pouco mais no ninho, abandonando-o juntamente com a fêmea[4]. Durante a permanência dos filhotes no interior do ninho, a fêmea mantém-se na cavidade a maior parte do tempo e poderia, potencialmente, atuar na proteção dos filhotes do pato-mergulhão contra uma eventual tentativa de predação por parte de um roedor do porte de um *Oligoryzomys* sp.

Portanto, concluímos que o hábito do roedor de retirar continuamente lascas da madeira na região da entrada e interior do oco da árvore poderia ter o efeito potencial de beneficiar o pato-mergulhão com a manutenção das dimensões necessárias para a cavidade ser utilizada pela espécie para sua reprodução. Adicionalmente, novos registros obtidos em cavidades arbóreas usadas como ninho pela espécie, bem como observações diretas sobre este uso por roedores, poderão ajudar a dimensionar a importância desse comportamento e conhecer outros efeitos desses roedores no processo de nidificação do pato-mergulhão.

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Short Communications

Rediscovery of Crested Eagle *Morphnus guianensis* in the state of Paraná, Brazil, with a record of predation on a Southern Black-eared Opossum *Didelphis aurita*

Crested Eagle *Morphnus guianensis* is one of the largest birds of prey in the Neotropics. Considered rare and locally distributed[21], it is classified as globally Near Threatened, mainly due to habitat fragmentation[3]. In the Brazilian Atlantic Forest, the species has already been included in regional threatened species lists, being considered Critically Endangered in the states of Minas Gerais[12], Espírito Santo[5], Rio de Janeiro[1], São Paulo[4] and Bahia[17], and as regionally Extinct in the states of Paraná[14] and Rio Grande do Sul[16]. Recently, however, it was rediscovered in the latter state, at Parque Estadual do Turvo[13]. Here, we document the rediscovery of the species in the state of Paraná and present novel information on its feeding ecology.

Figure 1. Female Crested Eagle *Morphnus guianensis* preying on Southern Black-eared Opossum *Didelphis aurita* at Parque Nacional do Iguaçu, Paraná, Brazil, 25 December 2022 (Matheus Cataneo).

On the morning of 25 December 2022, during a birdwatching trip on the Trilha da Onça (25°27'05.44''S 54°02'21.52''W) at Parque Nacional do Iguaçu, Serranópolis do Iguaçu, Paraná, we observed and photographed an adult *M. guianensis* (a female, based on its size) with prey in its claws (Fig. 1). Tree height and distance between perches used by the eagle were calculated on a return visit in January 2023. It was perched on a broken trunk c.12 m high, in a forested area with mean tree height of 24–25 m, but emergent trees up to 38 m, and 500 m from the forest edge (where it borders a soybean plantation). The eagle remained perched for 2 minutes, then flew and landed 40 m away, where it remained for 7 minutes on a branch 14.6 m high, allowing for photographs to be taken. Five minutes later, it was observed flying with its prey towards the interior of the park. In total, we watched the bird for 16 minutes. Prey was identified from photographs as an adult Southern Black-eared (Big-eared) Opossum *Didelphis aurita*.

There are few feeding records of *M. guianensis* across its range, which means that its feeding ecology is poorly known[6,7,10,11,21]. The known diet of *M. guianensis* mainly comprises small- and medium-sized mammals, including rodents, marsupials, small to medium-sized primates, sloths and Kinkajou *Potos flavus*, but also lizards, birds, snakes and occasionally amphibians[2,7,10,11,19,21]. Many prey species have nocturnal and arboreal or scansorial habits, with the majority using daytime refuges[8,18]. Predation on opossums of the genus *Didelphis* has been reported from the Amazon, including a recent report of Guianan White-eared Opossum *D. imperfecta*[11]. However, predation upon *D. aurita* by *M. guianensis* has not been reported before.

The warning call of Plush-crested Jay *Cyanocorax chrysops* is a good indicator of the presence of raptors in the vicinity, as was also reported by Meller *et al.*[13] when the species was rediscovered in Rio Grande do Sul. An audio recording of warning calls of Plush-crested Jay, likely given in response to the presence of *M. guianensis* during our observations at Iguaçu was deposited on the WikiAves platform (www.wikiaves.com.br/5636617).

Although the occurrence of *M. guianensis* in Paraná has been suspected previously[9], the only prior documented record came 58 years earlier: a specimen collected at Pato Bragado in 1964 and deposited at the Museu Sete Quedas, Guaira[20]. Furthermore, it underlines the connectivity of forest habitats with those in Misiones, Argentina, where the species was most recently observed in 1999[15], and with Parque Estadual do Turvo (c.195 km south of Paruqe Nacional do Iguaçu) in Rio Grande do Sul[13]. Finally, we highlight the importance of carefully reported observations, since knowledge of predator–prey interactions can support management actions and biodiversity-conservation strategies.

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Northernmost coastal records of Andean Flamingo *Phoenicoparrus andinus* for Peru and South America

Categorized as globally Vulnerable, the Andean Flamingo *Phoenicoparrus andinus* is the rarest and most threatened flamingo species in the world[3], with an estimated population of almost 78,000 individuals across its range in the high Andes of southern Peru, Bolivia, Chile and northern Argentina[13], and the lowlands of central Argentina[1]. The species breeds regularly in high Andean alkaline lakes around the tri-border area of Argentina, Bolivia and Chile[16], and occasionally in the lowlands and Andean foothills of Argentina[21,22]. However, movements away from the breeding grounds can be irregular and unpredictable, but are largely confined to areas of the altiplano, including highland lakes in the Peruvian departments of Ayacucho, Arequipa and Puno. Much less frequently, individuals visit lowland wetlands during the austral winter[4,17,18], with records from coastal areas of southern Brazil[6,8,9], Uruguay[6], northern Argentina[6,11], northern Chile[6,7] and southern Peru[6,10]; exceptionally, it has been recorded in the northwest Brazilian Amazon[2].

In Peru, records from the coast are scarce. Previous reports come from Ite (department Tacna)[10], Mejía (Arequipa)[10], Laguna de Pucchun (Arequipa)[6,15], and Rancherío in Laguna Grande (department Ica), which is in the central part of the coastal Reserva Nacional de Paracas in south-central Peru. At the latter locality, a flock of 11 flamingos was observed on 15 June 1998, which were banded (ringed) in 1995 in the Salar de Huasco, northern Chile, some 1,030 km southeast of Paracas[15].

On 14 July 2023, we encountered a single Andean Flamingo at Bahía La Aguada (13˚51'39.0''S 76˚16'17.8''W), Reserva Nacional de Paracas, Ica, Peru. We aged this individual as a juvenile by its grey plumage, bill base and legs (Fig. 1). We identified the bird as Andean Flamingo on the basis of the extensive black wedge formed by the folded primary feathers, the black eyes and the prominent (and extensively black) lower mandible[16].

On 8 September 2023, in a different part of Bahía La Aguada (13˚51'47.0''S 76˚15'58.0''W), we also observed a single juvenile Andean Flamingo, identified using the same characteristics as the July bird. This bird appeared very similar to the original individual but showed some pink-toned covert and underwing feathers, similar to those on the flanks (Fig. 2).

Finally, from 4–11 May 2024, we recorded a typical adult Andean Flamingo in non-breeding plumage in an area close to the previous observations (13˚51'41.7''S 76˚16'16.9''W). We identified the bird on the basis of its uniformly pale pink plumage with clearly visible black primaries, largely yellow bill and legs, and black eyes (Fig. 3). Given that other *Phoenicoparrus* progress from juvenile to adult over four moult cycles across 3.5 years [5,12,14,19,20], this adult is clearly a different individual to the juvenile(s) recorded the previous year.

Figure 1. Juvenile Andean Flamingo *Phoenicoparrus andinus*, aged by grey plumage and bare parts, together with seven adult Chilean Flamingo *Phoenicopterus chilensis*. Bahía La Aguada, Reserva Nacional de Paracas, Ica, Peru, 14 July 2023 (Cristina Siguas-Gonzáles).

Figure 2. Juvenile Andean Flamingo *Phoenicoparrus andinus* and two adult Chilean Flamingos *Phoenicopterus chilensis* at Bahía La Aguada, Reserva Nacional de Paracas, Ica, Peru, 8 September 2023 (Cristina Siguas-Gonzáles).

Our records were c.33 km north of the 1998 sighting and represent the northernmost observations to date on either the Pacific or Atlantic coast of South America[6]. Other records from the southern Peruvian coast[10,15,23] suggest that Andean Flamingo is a vagrant species during the non-breeding season. Although these new records support the vagrancy hypothesis, we nevertheless recommend increasing monitoring efforts and periodically evaluating records from new areas in eBird[5] and other online platforms.

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Figure 3. Adult Andean Flamingo *Phoenicoparrus andinus* in typical non-breeding plumage, Bahía La Aguada, Reserva Nacional de Paracas, Ica, Peru, 5 May 2024 (Enver Ortiz).

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Boat-billed Flycatcher *Megarynchus pitangua* preying upon Nashville Warbler *Leiothlypis ruficapilla*

The tyrant flycatcher family (Tyrannidae) is a large group containing, according to IOC[4] at least, more than 440 species. Tyrant flycatcher diet usually consists of insects and fruits, but also small vertebrates, in particular lizards, depending on the species' body masses[1,2]. There are only a few observations of the larger tyrant flycatcher species feeding on nestlings, and in particular, on adults of smaller birds[2].

On 13 March 2023, ZS, Diane Lashley Tan and Alejandro Martínez were birdwatching in the Mexican state of Jalisco, specifically on the road from Puerto Vallarta to El Tuito, leading to Cabañas (c.20°21'36.23N 105°16'28.90W). The location is at the northern end of the range of Boat-billed Flycatcher *Megarynchus pitangua*[7]; Nashville Warbler *Leiothlypis ruficapilla* is a common transient and winter visitor in the area[7].

ZS observed a Boat-billed Flycatcher sitting on a small branch in open pine forest at c.1,000 m altitude. Approximately 4 m away from it were a male and female Nashville Warbler. The male was very much engaged in approaching and contacting the female. This reminded ZS of the species' courtship behaviour, which was unexpected away from its breeding area in the northern United States and southern Canada[9]. The male warbler took no notice of the Boat-billed Flycatcher. As the male Nashville Warbler came within 1 m of the Boat-billed Flycatcher, the flycatcher sallied and captured the warbler with its bill. The flycatcher returned to former perch (Figs. 1A–B), holding the warbler by its flank, then hit it numerous times against the perch. The warbler lost many feathers (Fig. 1C) and—after c.15 minutes—was swallowed whole by the flycatcher, head first (Fig. 1D).

Feeding on small vertebrates, including nestlings of other birds, is apparently limited to the largest tyrant flycatchers[2] such as Giant Kingbird *Tyrannus cubensis*[6]. Some large flycatchers—e.g., Brown-crested Flycatcher *Myiarchus tyrannulus*[3] and Great Shrike-Tyrant *Agriornis lividus*[2,8]—have been observed to attack and feed on small adult birds. However, we found only one published record of Boat-billed Flycatcher feeding on adult birds, specifically hummingbirds in Amazonian Peru, which Gary R. Graves attributed to John O'Neill[5]. Additionally, Alejandro Martínez (pers. comm.) observed Boat-billed Flycatcher predating an unidentified hummingbird near El Tuito, Jalisco, Mexico, in about 2014. Our observation may thus be the first documented record of Boat-billed Flycatcher preying upon a warbler.

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Figure 1. Boat-billed Flycatcher *Megarynchus pitangua* with a male Nashville Warbler *Leiothlypis ruficapilla* that it had caught and killed, near El Tuito, Jalisco, Mexico, 13 March 2023 (Zygmund Smietanka). **A–B** The flycatcher held the dead warbler by its flank. **C** After being knocked repeatedly against a branch, the warbler lost many feathers. **D** After c.15 minutes, the flycatcher swallowed the warbler whole.

The nest and eggs of Band-tailed Antbird *Hypocnemoides maculicauda* in Bolivia

The reproductive biology of most of the 31 species of antbirds that occur in Bolivia is poorly known. The genus *Hypocnemoides* has two species (Black-chinned *H. melanopogon* and Band-tailed Antbird *H. maculicauda*): both inhabit humid forests generally near water[1] but only *H. maculicauda* occurs in Bolivia[2]. To date, the only published breeding data for *H. maculicauda* comprise a record of adults feeding fledged juveniles in western Amazonia[5] and the description of multiple nests, eggs and nestlings in the Pantanal[3], both in Brazil.

On 26 January 2024, at 13h50, we found a nest (Fig. 1) in the understorey of an Amazonian seasonal evergreen forest (14°14'36.0'S 61°37'24.3'W; 210 m elevation), 0.8 km north-west of Picaflor, Área Protegida Municipal Bajo Paraguá de San Ignacio de Velasco, Santa Cruz, Bolivia. The canopy height reached 15 m and the undergrowth was dense in the vicinity of the nest. When we first approached the nest, we saw no adult birds in the area. We waited c.10 minutes nearby until we observed and photographed a female *H. maculicauda* moving among the branches and vines of the undergrowth (Fig. 2). We approached to measure and photograph the nest and eggs, before returning the latter to the nest. We waited another 15 minutes at a distance of 5 m until we observed the female entering the nest.

The nest was located in an open area of seasonally flooded forest close to a path used by local residents. Using the standard terminology proposed by Simon & Pacheco[4], the nest was closed/long/pensile[3], was suspended from a very narrow branch of a bush 1.2 m above the ground, and was constructed of dark plant fibres and fine roots (Fig. 1). The bush was c.1.45 m tall. The nest was 7.8 cm in diameter on the outside, with an external height of 16.4 cm and an entrance of 5 cm diameter.

The nest contained two oval-shaped, smooth-textured eggs that were uniform dull dark purple, with no visible spots, lines or patterns (Fig. 3). This coloration differs from those described from Brazil, which were dark pinkish with violaceous marbling, especially at the thicker end[3]. One egg measured 20.0 × 14.0 mm, the other 19.0 × 14.0 mm.

Except for egg coloration, our data on nest-site, nest and egg size for this species were similar to previous descriptions from Brazil[3]. Our record represents the first information on the breeding biology of *H. maculicauda* in Bolivia.

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Figure 1. Nest of Band-tailed Antbird *Hypocnemoides maculicauda*, near Picaflor, Área Protegida Municipal Bajo Paraguá de San Ignacio de Velasco, Santa Cruz, Bolivia, 26 January 2024 (Oswaldo Maillard).

Figure 2. Adult female Band-tailed Antbird *Hypocnemoides maculicauda* that visited the nest in Figure 1, near Picaflor, Área Protegida Municipal Bajo Paraguá de San Ignacio de Velasco, Santa Cruz, Bolivia, 26 January 2024 (Sebastian Gutiérrez).

Figure 3. Eggs of Band-tailed Antbird *Hypocnemoides maculicauda* from the nest in Figure 1, near Picaflor, Área Protegida Municipal Bajo Paraguá de San Ignacio de Velasco, Santa Cruz, Bolivia, 26 January 2024 (Oswaldo Maillard).

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