

First documented record of Bartlett's Tinamou *Crypturellus bartletti* (Tinamidae) in Colombia

Primer registro documentado de la panguana de Bartlett *Crypturellus bartletti* (Tinamidae) en Colombia

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Abstract

We report Bartlett's Tinamou *Crypturellus bartletti* in Colombia, the northernmost documented species' record. Based on passive acoustic sampling in the Caquetá-Putumayo (Japurá-Iça) interfluvial region, we detected an individual sound of this tinamou inside flooded forest (Varzéa) within La Paya National Natural Park. Our record adds a new species to the Colombian checklist, summing eighteen (18) species within Tinamidae for the country.

Key words: Amazonia, digital specimen, ground-dweller, new record, sound record

Resumen

Reportamos la panguana de Bartlett *Crypturellus bartletti* en Colombia, el registro documentado más al norte para esta especie. Basados en un muestreo acústico pasivo en la región interfluvial entre los ríos Caquetá-Putumayo (Japurá-Iça), detectamos un individuo de esta especie en un bosque inundable (Varzéa) dentro del Parque Nacional Natural La Paya. Nuestro registro adiciona una especie más al listado de aves de Colombia, sumando dieciocho (18) especies dentro de la familia Tinamidae para el país.

Palabras clave: Amazonia, especímenes digitales, habitante del suelo, nuevo registro, registro acústico

Crypturellus is a genus of birds of the family Tinamidae from the order Tinamiformes. They live in a wide range of habitats in the Neotropics, from dense rainforest to arid dry grasslands and from sea level to high-elevation mountains (Winkler *et al.* 2020). However, they spend most of their time on the ground and are generally secretive and difficult to observe (Hilty & Brown 1986). Often, the only way to detect these animals in the field is by their vocalizations. Acoustic studies strengthen the detection of secretive understory forest dwellers (Brennan *et al.* 2004), and help to understand vocal behavior, including annual phenology and diel activity (Pérez-Granados *et al.* 2019). Furthermore, automated recorders monitor multiple sites without observers (Deichmann *et al.* 2018), and the acoustic records allow the verification of the species by different researchers in case of doubt, thus minimizing false

positives (Arévalo 2014). Eleven species of the genus *Crypturellus* have been recorded in Colombia, among 17 species of the family Tinamidae (Avenidaño *et al.* 2017). Here we provide evidence to include one more species, Bartlett's Tinamou *Crypturellus bartletti*, reported from the extreme south of the country.

Between February and July 2015, we installed 17 stations with acoustic sensors in different habitats of the interfluvial region between the Caquetá (Japurá) and Putumayo (Iça) rivers to understand the effects of deforestation on the acoustic community (Fig. 1.; O. Acevedo-Charry *et al.* Unpublished data). Our study area included vegetation cover of primary forests, forest fragments, open areas, and urban sites (Acevedo-Charry *et al.* 2021). We uploaded all recordings to the Rainforest Connection ARBIMON platform (<https://rfcx.org>), where we manually

reviewed two recordings every hour at each acoustic station, noting detections of different species. During this manual review, we detected an individual of *C. bartletti* on 12 Jun 2015, at 18:10 hrs. in the Várzea forest that accompanies La Peinilla stream (a tributary of the Caucajá River) within La Paya National Natural Park (Fig. 2A; 0°00'54" S, 74°57'21.6" W; 201m). This record corresponds to the first confirmed record of the species in the Colombian Amazon (Fig. 1). We deposited the audio in the 'Mauricio Álvarez-Rebolledo' environmental sounds collection of the Instituto Humboldt (IAvH-CSA-18834, duplicated in [XC779214](#)). With this audio, we made an automated detection model in ARBIMON that did not recover any other detection within the 17 acoustic stations. Such low detectability may be due to the species' rarity or uncommon status in most of its distribution (Mere Roncal *et al.* 2019, Cabot *et al.* 2020), but also to the short sampling window (only two days in that remote site, average for all sites of 4 days).

Crypturellus bartletti is sometimes considered a subspecies of *Crypturellus brevirostris*, and these two species among other novelties in the group require more fieldwork to understand their taxonomic status (Olmos *et al.* 2011, Cabot *et al.* 2020). Bartlett's Tinamou is a species with many variations in its plumage, with colorations from dull brown to bright buff. Their vocalization provides a mere glimpse of their presence. Bartlett's songs consist of a rising and accelerating series of clean, flat whistles that occasionally change in rhythm (Figs. 2A-D). These characteristics might distinguish Bartlett's from other tinamous in the genus *Crypturellus*. Nonetheless, *C. bartletti* could be confused in the field with the similar vocalization of *C. brevirostris* (Fig. 2K), but Rusty Tinamou song includes several well-spaced pure whistles notes at the beginning of its song and then an accelerated series of notes, or spaced trill. Similarly, *Crypturellus variegatus* also include single sweet notes and then an accelerated trill (Fig. 2J). Bartlett's voices

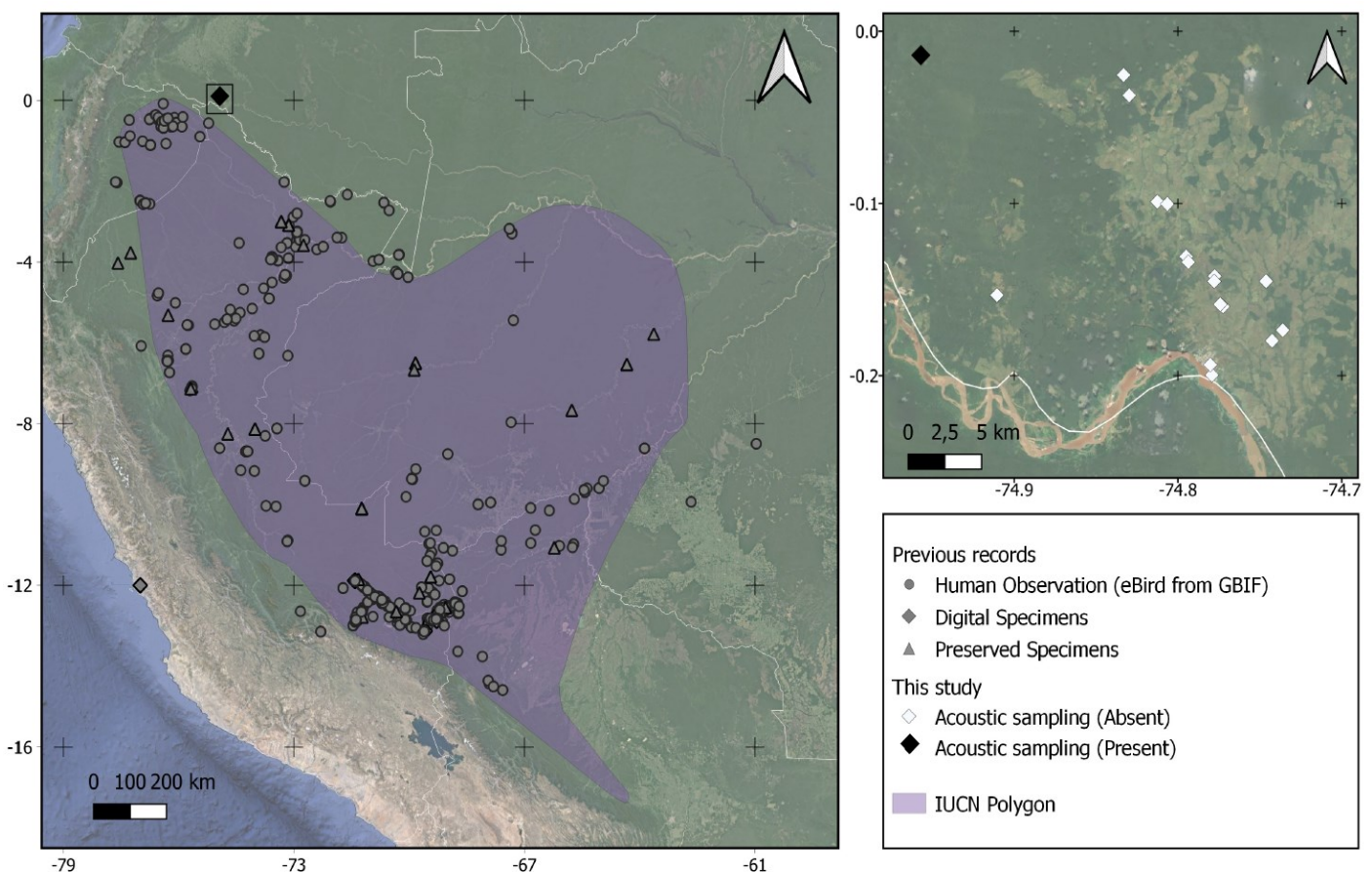


Figure 1. Distribution map and records of Bartlett's Tinamou *Crypturellus bartletti*. The large map on the left shows the distribution by Birdlife International (2022), available through IUCN Red List, and the previous records including observations, preserved and digital (photo or audio) specimens. The black rectangle in the south of Colombia represents the inset map, which presents the study design with passive acoustic monitoring north of the Putumayo River (in Colombia); 1 out of 17 acoustic sensors detect the species (black diamond).

can be confused with the single notes of *Crypturellus cinereus* vocalization (Fig. 2E); however, Bartlett's song does not maintain a balance for a long time and makes periodic pauses with an irregular rhythm between its closely spaced notes. The first notes at the beginning of the vocalization of *C. bartletti* are tremulous and descending, like *Crypturellus soui* (Fig. 2F), but Little Tinamou vocalize at higher pitch and not rising or acceleration as in *C. bartletti*. Another coexisting congener, Undulated Tinamou (*Crypturellus undulatus*), has distinctive 3-note vocalizations at lower (1.15 to 1.35 kHz) pitch 'who, whu-who?' (Pérez-Granados *et al.* 2019). Finally, in northwestern Amazonia some poor-soils specialists include different vocalizations, as pure slow disyllabic whistles in Grey-legged Tinamou (*Crypturellus duidae*; Fig. 2I) or prolonged series of whistles accelerating and gradually deaccelerating in Barred Tinamou (*Crypturellus casiquiare*; Fig. 2L). All in all, Bartlett's Tinamou appear to be mainly active at dusk, dawn, and night, but its behavior and distribution are still poorly understood (Mere Roncal *et al.* 2019, Cabot *et al.* 2020), with few studies focused on its ecology (Schelsky 2003, Schelsky 2004).

To contextualize our record, we searched the Global Biodiversity Information Facility (GBIF) on 16 Aug 2022 (GBIF 2022). This platform included community science observations as well as traditional and digital specimens. Observations came primarily from the eBird platform (Sullivan *et al.* 2019), while preserved specimens from biological collections and digital specimens from the Macaulay Library in the Cornell Laboratory of Ornithology. We also conducted an additional search in the Xeno-Canto collection to supplement the records of digital specimens. Wikiaves, in Brazil, included two photographic records in places reported in Macaulay Library. Ultimately, we unify terminology for previous records as: Human observation, Preserved Specimen (mainly skin), and Digital Specimen (audio or photo). We created the map (Fig. 1) in QGIS (2020), while the spectrograms (Fig. 2) with OceanAudio 3.11.22 (<https://www.oceanaudio.com>). For better visualization (reduce signal-to-noise ratio), we resampled each recording to 6 kHz and conducted lowpass (1.888 kHz) and highpass (1.525 kHz) filtering, then we normalized the

maximum amplitude peak to 0dB and cut 1-min length, which allows visual comparisons. We were not interested in quantitative comparison of songs within the acoustic features of the genus *Crypturellus*, thus we selected a single example per species, that were within the same or close biogeographic region and include over 1 minute of recording (except Barred Tinamou; Fig. 2L). For reference comparisons, we include three examples of Bartlett's Tinamou from Ecuador, Peru and Brazil (Figs. 2B-D).

Bartlett's Tinamou distribution includes the southwestern Amazon, extending through eastern Ecuador, Peru, northern Bolivia, and western Brazil (Fig. 1; Cabot *et al.* 2020, Hilty 2021). Although it can use the forests accompanying streams in unflooded forests (terra firme), it uses mainly seasonal, or Várzea flooded forests (MacMullan *et al.* 2018, Cabot *et al.* 2020). For several authors (MacMullan *et al.* 2018; Hilty 2021; Ayerbe-Quiñones 2022; Echeverry-Galvis *et al.* 2022), the distribution of Bartlett's Tinamou in Colombia is hypothetical, apparently without documented records confirming the presence of this species in the Colombian Amazon.

Our record confirms the distribution of *C. bartletti* for Colombia, adding a 12th species of the *Crypturellus* genus and 18th species within the Tinamidae family for the Colombian territory (Avendaño *et al.* 2017, Hilty 2021, Ayerbe-Quiñones 2022, Echeverry-Galvis *et al.* 2022). The recording obtained in La Peinilla stream in the municipality of Leguizamo, Putumayo, is the northernmost record of the species outside the known distribution, 67.29 km to the north of the records in Lagartocha, in the Güeppí Nature Reserve (Peru), a locality adjacent to the Cuyabeno Wildlife Reserve (Ecuador). Records along the Colombian border with Peru and some eBird records in the Amazonas department of Colombia (Kelsey 1987, Fajardo 2014, Naranjo *et al.* 2015) indicated that the species occurs in Colombian territory. Our finding confirms its presence but also opens the possibility of continuing collaborative work with regional actors. For example, how common or rare is this species in different places in the Colombian Amazon? How does this species interact and coexist with at least four other species within the same genus in the area (*C. cinereus*, *C. soui*, *C. undulatus*, *C. variegatus*), or with other larger

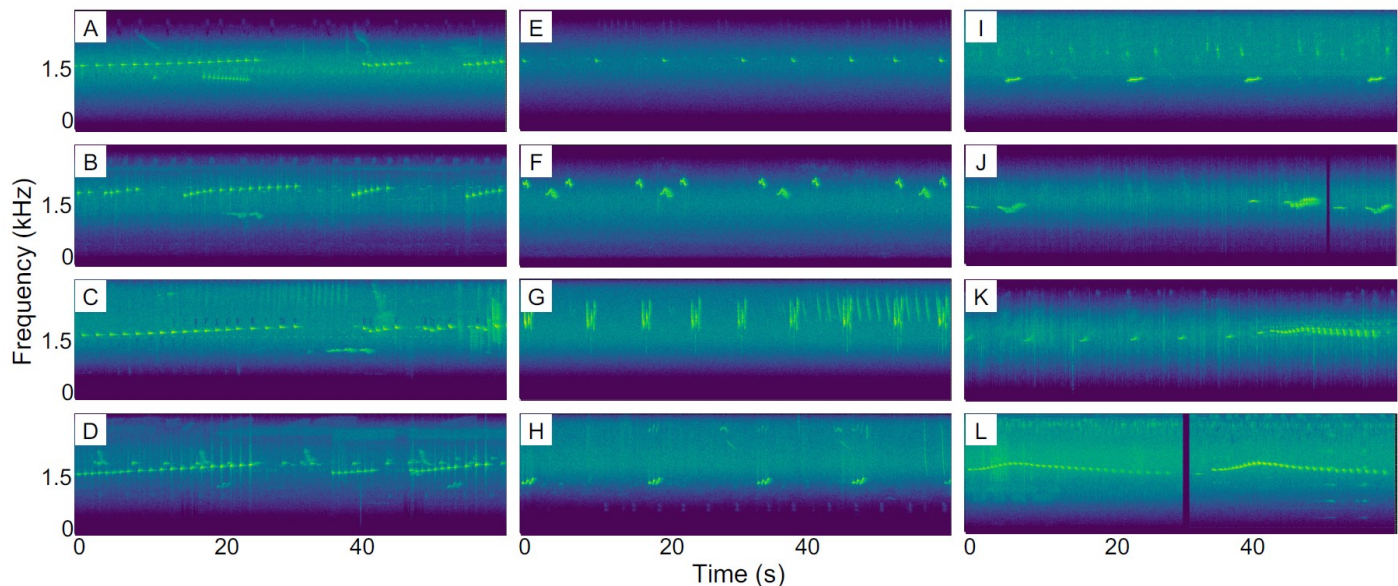


Figure 2. Spectrograms of nine species of tinamou within the genus *Crypturellus* in northwestern Amazonia (A) Bartlett's Tinamou recorded at Leguizamo, Putumayo, Colombia (IAvH-CSA-18834 and [XC779214](#); ARBIMON audio); Rusty-belted Tapaculo, *Liosceles thoracicus* also vocalizes within 10-25 sec (1.250-1.450 Hz) (B) Bartlett's Tinamou recorded at Río Napo, Sucumbíos, Ecuador ([XC238212](#) by N. Krabbe) (C) Bartlett's Tinamou recorded at Pantiacolla Lodge, Madre de Dios, Peru ([XC221804](#) by P. Boesman) (D) Bartlett's Tinamou recorded at Parque Estadual Chandless, Manuel Urbano, Arce, Brazil ([XC484096](#) by D. Buzzetti) (E) Cinereous Tinamou recorded at Orito, Putumayo, Colombia ([XC391377](#) by R. A. Fernández-Gómez) (F) Little Tinamou recorded at Mocoa, Putumayo, Colombia ([XC333567](#) by M. Viganò) (G) Brown Tinamou recorded at Pozuzo Area, Pasco, Peru ([XC221856](#) by P. Boesman) (H) Undulated Tinamou recorded at Centro de Investigaciones Ecológicas La Macarena, Río Duda, Meta, Colombia ([IAvH-CSA-9758](#) and [XC117744](#) by M. Álvarez-Rebolledo) (I) Grey-legged Tinamou recorded at San Carlos del Río Negro, Amazonas, Venezuela ([XC6237](#) by C. Parrish) (J) Variegated Tinamou recorded at São Gabriel da Cachoeira, Amazonas, Brazil ([XC85068](#) by J. Minns) (K) Rusty Tinamou recorded at Rio Yari, Caquetá, Colombia ([XC585282](#) by J. Socolar) (L) Barred Tinamou recorded at Varillal Rompisheo, Pucaurco, Alto Nanay, Maynas, Loreto, Peru ([XC302248](#) and [XC302267](#), both recordings correspond to the same individual recorded by J. Socolar). All the audios were resampled to 6.000 Hz, lowpass (1.888 Hz) and high pass (1.500 Hz) filtered, normalized to 0 dB (max amplitude) and cut for 1-minute temporal window.

understory tinamous (*Tinamus tao*, *T. major*, *T. guttatus*; Acevedo-Charry *et al.* 2021)? Ethno-ornithological work (*i.e.*, inclusion of traditional and local ecological knowledge) can help answer some of these questions (Soares *et al.* 2023). However, the link between long-term monitoring and different study techniques of this group of forest dwelling animals remains needed (Brennan 2004, Mere Roncal *et al.* 2019, Pérez-Granados *et al.* 2019). Collaborative work between stakeholders (*e.g.*, park rangers, local communities, and academic researchers) would facilitate a better understanding of the ecology of this secretive species in Colombia.

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Información suplementaria. Versión en español: Primer registro documentado de la panguana de Bartlett *Crypturellus bartletti* (Tinamidae) en Colombia ([Descargue acá](#)).