REPTILES & AMPHIBIANS

New Amphibian Records for the Serranía de San Jacinto, Bolívar Department, Colombia

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Abstract.—The San Jacinto Highlands are a mountainous formation that is part of the Montes de María in the Colombian Caribbean Region. It harbors remnants of Tropical Dry Forest, which is rapidly disappearing due to development for agriculture and livestock. This loss impacts amphibian diversity by fragmenting habitat, creating homogeneous landscapes, and reducing environmental complexity. Despite its ecological importance, information on the herpetofauna in this region is limited due to access and security issues. We herein present five new amphibian records (*Rhinella alata*, *Hyalinobatrachium tatayoi, Colostethus inguinalis, Boana rosenbergi,* and *Dendropsophus ebraccatus*) for the Bolívar Department, which extend the distributions of these species.

The San Jacinto Highlands is a mountainous formation that is part of the Montes de María, which is one of the ecoregions of the Colombian Caribbean that includes one of the best-preserved remnants of Tropical Dry Forest (TDF) in the region. Despite this, these forests are experiencing a rapid rate of vegetation cover loss, to the extent that less than 4% of the original coverage remains (Urbina-Cardona et al. 2014). This disappearance is driven by anthropogenic agents such as agriculture and livestock farming, which pose a significant constraint to the development of species richness of amphibians and reptiles due to the low connectivity between fragments and their high sensitivity to environmental changes generated by habitat fragmentation and loss (Urbina-Cardona et al. 2014). Isolating forest fragments creates homogeneous landscapes, reduces habitat complexity, and diminishes the presence of various microhabitats used by the herpetofauna, thus becoming one of the main factors in the decline and extinction of species at a regional level (Urbina-Cardona et al. 2014; Carvajal-Cogollo et al. 2019).

Most of the knowledge about the diversity of amphibians in the dry forests of Colombia has been documented in the Caribbean region with records dating back to the first half of the 20th century and documenting the presence of about 82 species, which is a very modest figure when compared to the adjacent Andean and Chocó wet ecosystems (Lynch et al. 1997; Acosta-Galvis 2007; Romero-Martínez et al. 2008; Galván-Guevara and De la Ossa 2009; Angarita-M. et al. 2015; Montes-Correa et al. 2015; Acuña-Vargas 2016). The Montes de María stand out for having one of the largest information gaps regarding the current state of its herpetofauna. This is due to various factors, including the difficulty of accessing the region and the security issues that have persisted in the area for decades, which have prevented the implementation of systematic inventories in this part of the country (Gómez 2020).

We herein report five new anuran distribution records for the San Jacinto Highlands in the Montes de María, which extend the distributions of *Boana rosenbergi*, *Colostethus inguinalis*, *Hyalinobatrachium tatayoi*, and *Rhinella alata*, and fill a gap in the known distribution of *Dendropsophus ebraccatus*.

Methods

We collected individuals of these five species between September 2017 and June 2023 using visual encounter surveys (VES) conducted from 0800–1200 h and 1800–2200 h (Rueda-Almonacid et al. 2006). Surveys were conducted in the following areas: Brasilar Local Peasant Reserve (9.900747, -75.186908; elev. 435 m asl), a community-based protected area that safeguards remnants of tropical dry forest in the foothills of the Cerro de Maco (San Jacinto Municipality,

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Bolívar Department), the national reserve of the civil society "Los Tities de San Juan" (9.934325, -75.149456; elev. 270 m asl) in the buffer zone of Los Colorados Flora and Fauna Sanctuary (SFFLC) (San Juan Nepomuceno Municipality, Bolívar Department), and Vereda Media Luna (9.968419, -75.137681; elev. 390 m asl, San Juan Nepomuceno Municipality, Bolívar Department). Vegetative formations correspond predominantly to Tropical Dry Forest. Collected specimens were photographed and deposited in the herpetology collection of the University of Atlántico (UARC-AN), Barranquilla Department, Colombia, with collection numbers 60 to 187.

Results

Family Bufonidae: *Rhinella alata* (Thominot 1884).—In October and November 2017, we found four individuals (UARC-AN-171) (Fig. 1) in the Local Peasant Reserve of Brasilar, San Jacinto. Three of the individuals were under cover in the morning, whereas the fourth was vocalizing at night in the dry leaf litter of the gallery forest surrounding a stream. This species is distributed from Ecuador to Panama (Fig. 1). In Colombia, it has been found in tropical humid forests and sub-Andean forests of the Pacific region in the Antioquia, Cauca, Chocó, Nariño, Risaralda, Tolima, Sucre, and Valle del Cauca Departments (Acosta-Galvis 2023). We herein record it for the first time in Bolívar Department, extending its distribution by 57 linear kilometers northward; the closest previously documented locality is Coloso, Sucre, Sucre Department (Acosta-Galvis 2012).

Family Centrolenidae: *Hyalinobatrachium tatayoi* Castroviejo-Fisher, Ayarzagüena, and Vilà 2007.—At 1900–2200 h on 20 May 2021, we found 20 individuals (UARC-AN-187) (Fig. 2) vocalizing along streams 2 m above the ground in the Local Peasant Reserve of Brasilar,

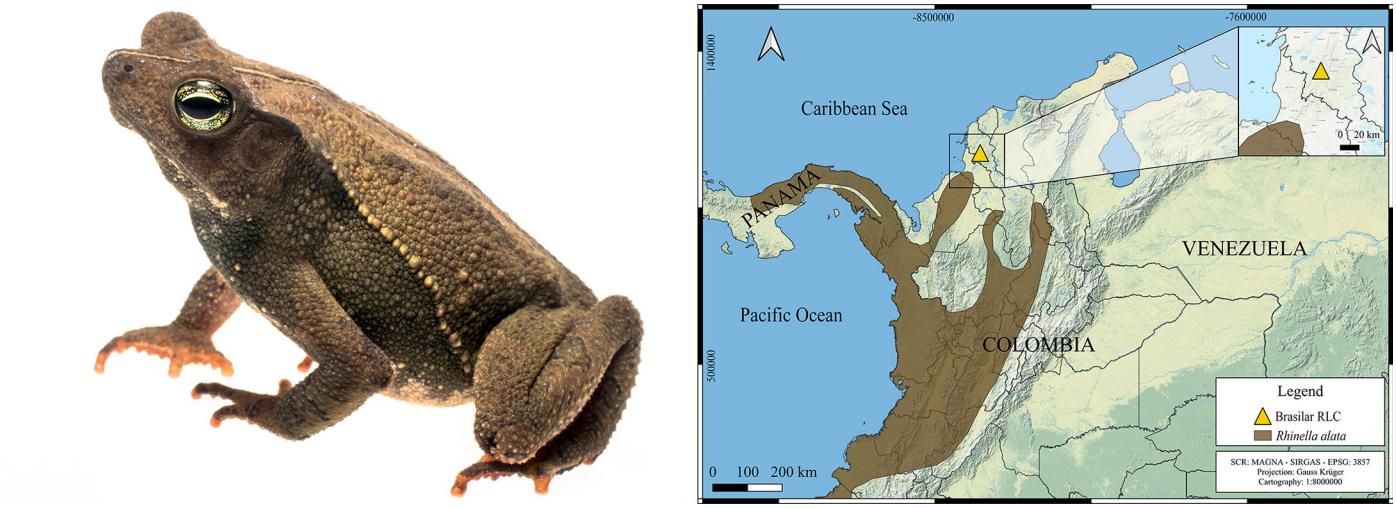

Figure 1. *Rhinella alata* from the Local Peasant Reserve, Brasilar, San Jacinto, Colombia (left), and the distribution of the species based on data in GBIF (2023a) showing the extent of occurrence (EOO) and the new record from the Brasilar RLC (right). Photograph by Andrés Montes-Correa; map by Juan David Jiménez-Bolaño.

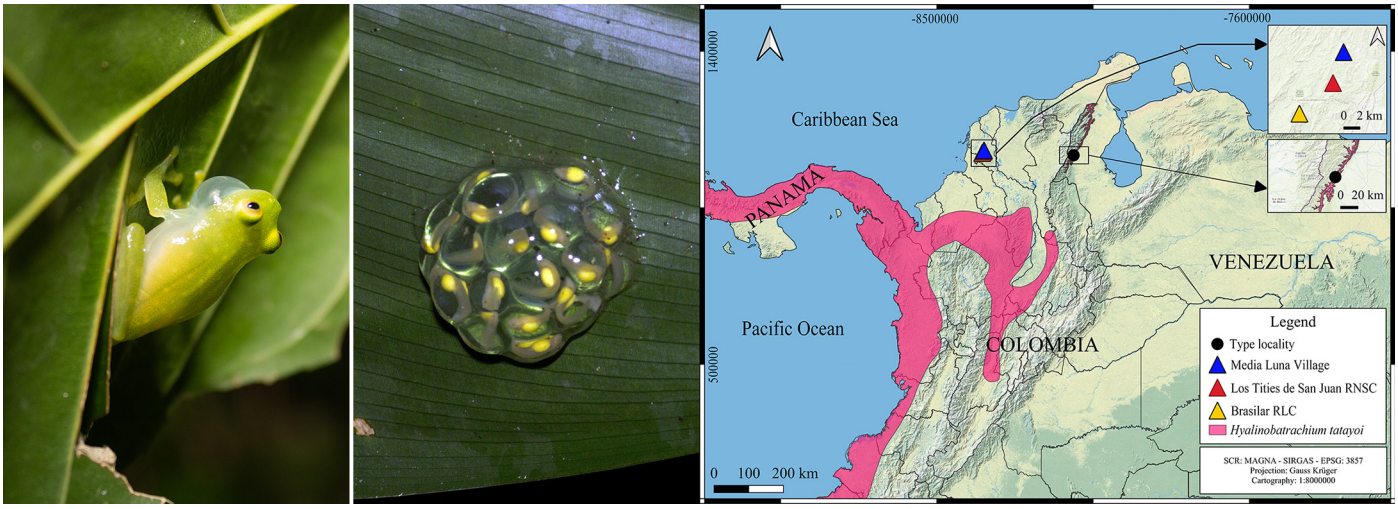

Figure 2. *Hyalinobatrachium tatayoi* from the Local Peasant Reserve, Brasilar, San Jacinto, Colombia (left), egg clutch (center-left), and the distribution of the species based on data in GBIF (2023b) showing the extent of occurrence (EOO) and the new record from the Brasilar RLC (right). Photographs by Hernán Darío Granda-Rodríguez; map by Juan David Jiménez-Bolaño.

San Jacinto. At night in June 2023, we encountered this species in the Titíes Reserve and Vereda Media Luna, also vocalizing along streams 2 m or more above the ground; at the latter sites we also found egg clutches (Fig. 2). This species is distributed from Costa Rica to northern Ecuador (Fig. 2). In Colombia, it has been found in tropical humid forests and sub-Andean forests of the Pacific region in the Antioquia, Boyacá, Cauca, Valle del Cauca, Cundinamarca, Tolima, and Chocó Departments (Acosta-Galvis 2023), and in the Colombian Caribbean, it has been recorded in the Departments of Córdoba (Romero-Martínez et al. 2008) and Sucre (Acosta-Galvis 2012). We herein record it for the first time in the Bolívar Department, extending its distribution 57 km northward; the closest previously documented locality is Tolú Viejo, Sucre Department (Acosta-Galvis 2012).

Family Dendrobatidae: *Colostethus inguinalis* (Cope 1868).—At 2200–2400 h in October and November 2017, we found 30 individuals (UARC-AN-60) (Fig. 3) vocalizing on rocky substrates of streams in the Local Peasant Reserve of Brasilar, San Jacinto. This species is endemic to Colombia (Fig. 3), inhabiting lowland forests of the northwestern Pacific versant and central-northern Andean ranges at elevations to 400 m asl in the Departments of Antioquia, Caldas, Córdoba, Chocó, Boyacá, and Santander (Acosta-Galvis 2023). We herein record it for the first time in Bolívar Department, extending its range 259 km northward; the closest previously documented locality is Tierralta, Córdoba Department (Grant 2004; Romero-Martínez and Lynch 2012).

Family Hylidae: *Boana rosenbergi* (Boulenger 1898).—At 1900–2200 h in October and November 2017, we found eight individuals (UARC-AN-169), including a pair in amplexus (Fig. 4); most were vocalizing on rocky ledges of the streams, or in the surrounding vegetation, and palm groves at a maximum height of 3 m above the ground in the

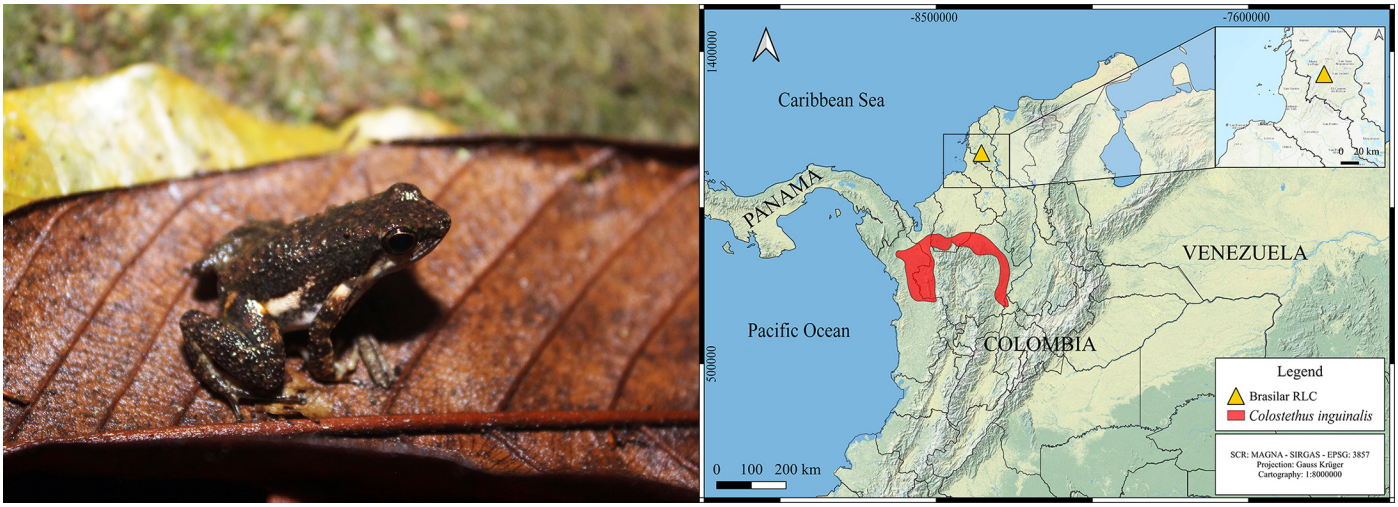

Figure 3. *Colostethus inguinalis* from the Local Peasant Reserve, Brasilar, San Jacinto, Colombia (left), and the distribution of the species based on data in GBIF (2023c) showing the extent of occurrence (EOO) and the new record from the Brasilar RLC (right). Photograph by Hernán Darío Granda-Rodríguez; map by Juan David Jiménez-Bolaño.

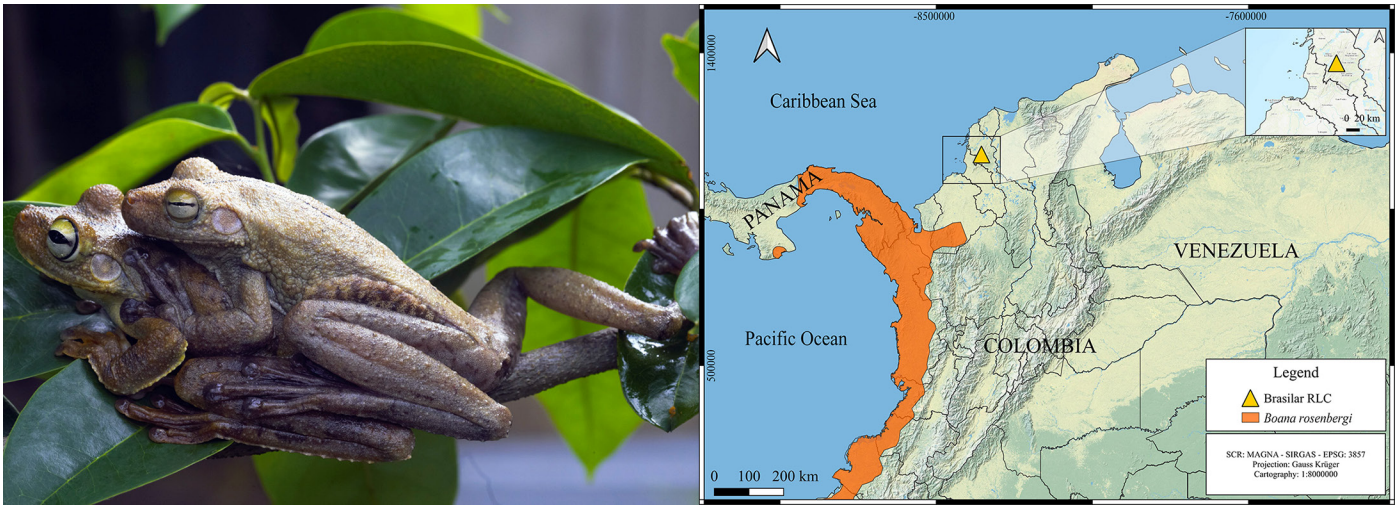

Figure 4. Mating pair of *Boana rosenbergi* from the Local Peasant Reserve, Brasilar, San Jacinto, Colombia (left), and the distribution of the species based on data in GBIF (2023d) showing the extent of occurrence (EOO) and the new record from the Brasilar RLC (right). Photograph by José Gabriel Julio-Guzmán; map by Juan David Jiménez-Bolaño.

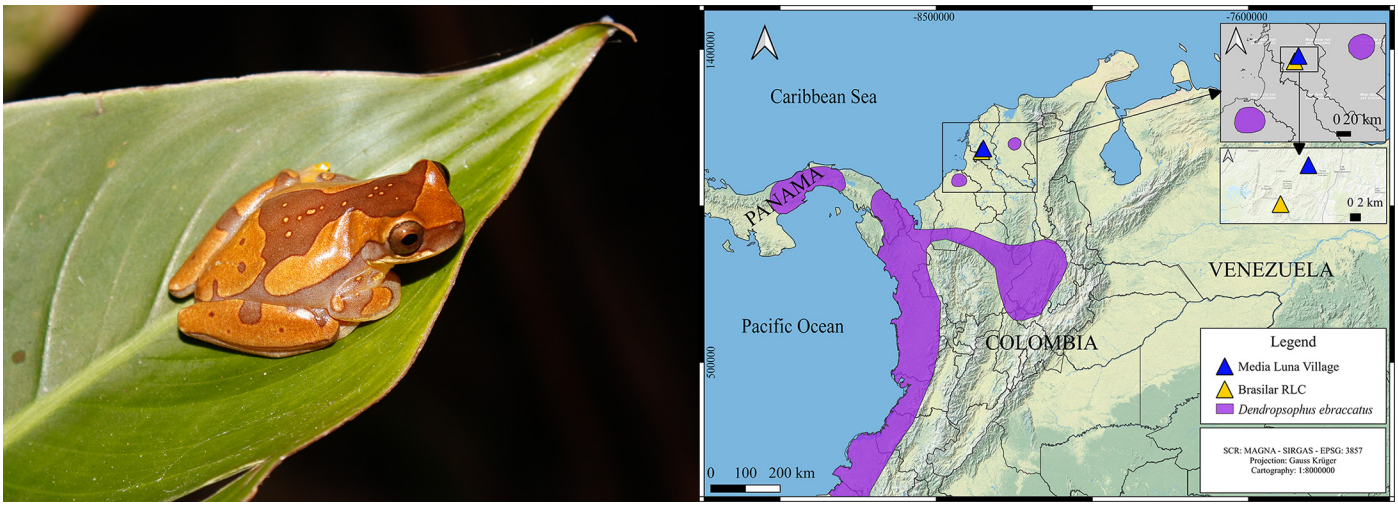

Figure 5. *Dendropsophus ebraccatus* from Vereda Media Luna, San Juan Nepomuceno, Colombia (left), and the distribution of the species based on data in GBIF (2023e) showing the extent of occurrence (EOO) and the new records from Vereda Media Luna and the Brasilar RLC (right). Photograph by Hernán Darío Granda-Rodríguez; map by Juan David Jiménez-Bolaño.

Local Peasant Reserve of Brasilar, San Jacinto. This species is distributed from Ecuador to Panama (Fig. 4). In Colombia, it is found in forested areas of the Pacific region with records in the Departments of Antioquia, Cauca, Chocó, Nariño, Valle del Cauca, and Córdoba (Acosta-Galvis 2023). We herein record it for the first time in Bolívar Department, extending its distribution 213 km northward; the closest previously documented locality is Cerro Murrucucú, Tierra Alta, Córdoba Department (Romero-Martínez et al. 2008).

Dendropsophus ebraccatus (Cope 1874).—At 1900–2200 h in October and November 2017, we found 11 individuals (UARC-AN-172) (Fig. 5) vocalizing along small streams in the Local Peasant Reserve of Brasilar, San Jacinto. On 7 September 2023, we found several individuals along streams, stagnant artificial ponds, and at the edges of pastures in San Juan Nepomuceno (Vereda Media Luna). In Colombia, this species is present in various departments such as Antioquia, Chocó, Santander, Cundinamarca, Risaralda, and Nariño (Acosta-Galvis 2023), and in the Caribbean, it has been reported for the departments of Córdoba and Magdalena. This study reports the species for the first time in the Bolívar Department and extends its distribution range by 95 linear kilometers northward, with the closest locality being Sabanas de San Ángel in the department of Magdalena (Angarita-M. et al. 2015).

Discussion

The Montes de María are of considerable biogeographical relevance as they represent an area of convergence between lowland environments and more humid areas (Romero-Martínez and Lynch 2012). Although it currently contains remnants of well-preserved dry forest, these are becoming increasingly scarce. Consequently, the ecosystem is becoming more fragmented both locally and nationally (Coronado and Dietz 2013). The dry forest serves as an important refuge for biodiversity, particularly for herpetofauna, as many species depend on the specific conditions of this ecosystem for survival (Medina-Rangel et al. 2011). Research on these species not only helps to better understand ecological dynamics but is essential for designing effective conservation strategies. The new records reported herein represent the first sightings for the Montes de María, provide vital information about the distributions of these species, and highlight the need for further studies to better understand not only their distributions, but also other aspects of their biology, conservation statuses, and even phylogenetic relationships.

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