New records of *Pristimantis carrangerorum* (Anura: Craugastoridae) from the Cordillera Oriental of Colombia

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**Abstract.** *Pristimantis carrangerorum* (Lynch, 1994) is a poorly-known species of frog, endemic to the eastern slopes of the Cordillera Oriental of Colombia, which is known only from a few localities in the Boyacá and Casanare departments. Herein, we provide the first records of this species from Cundinamarca Department; these are the southernmost and highest altitude records for this species. We summarize the distribution of this species based on all known records and including additional unreported localities from Boyacá and Cundinamarca departments.

**Key words.** Terrarana; direct-developing frogs; range extension; endemism; Cundinamarca

*Pristimantis carrangerorum* (Lynch, 1994) is a species of direct-developing frog endemic to Colombia. It is categorized as Vulnerable by the Red Book of Colombian Amphibians (*Renifo* 2004) and as Data Deficient by the IUCN Red List (*Castro* et al. 2004). This species was described by *Lynch* (1994) and assigned to the “Eleutherodactylus” (now genus *Pristimantis*) *conspicillatus* species group, in which it has remained to date. Currently, *P. carrangerorum* is known from its original description (*Lynch* 1994), an account in the Red Book of Colombian Amphibians (*Renifo* 2004), and its inclusion in several regional and national checklists (e.g., *Acosta-Galvis* 2000, *Bernal & Lynch* 2008, *Acosta-Galvis & Alfaro-Bejarano* 2011). *Pristimantis carrangerorum* has not been included in any of the published phylogenies of the genus (e.g., *Hedges* et al. 2008, *Pinto-Sánchez* et al. 2012, *Padial* et al. 2014).

*Pristimantis carrangerorum* was described based on specimens from several sites between 1350–2060 m above sea level (a.s.l.) in Pajarito Municipality, Boyacá Department, all located on the eastern flank of the Cordillera Oriental of Colombia. *Acosta-Galvis & Cuestas* (2016) provided a distribution map incorporating several new localities in Boyacá Department, north of the type locality, but without providing any supporting evidence of these new records. In 2011, this species was reported for the first time from Casanare Department by *Acosta-Galvis & Alfaro-Bejarano* (2011), although they also did not specify localities or vouchers that support this range extension. Later, *Pedroza-Banda* et al. (2014) reported this species based on 1 specimen collected in Aguazul municipality, Casanare Department, at 738 m a.s.l., which is the lowest known record of the species.

Between late January and early February 2016, we recorded *P. carrangerorum* at 3 localities during a field trip conducted at Vereda San Antonio, Junín municipality, Cundinamarca Department, between 2650–2802 m a.s.l. (Finca La Cabaña: 04°45’14.5” N, 073°39’52.3” W; Finca El Páramo: 04°45’29.9” N, 073°40’11.9” W; and Finca Peña Colorado: 04°44’43.2” N, 073°39’49” W; Table 1). Fourteen specimens were found near rivulets covered by small remnants of gallery forest. Individuals were found during the day on the leaf litter of forest, whereas at night, specimens were found on leaves at 5–45 cm above the ground. The specimens were collected with the authorization of Autoridad Nacional de Licencias Ambientales (ANLA), Ministerio de Ambiente de Colombia, resolution number 0315, 29 March 2016. These specimens were deposited in the collection of the Laboratorio de Anfibios, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Bogotá, Colombia (ICN) (ICN 55896–55909).

Additionally, 23 specimens of *P. carrangerorum* collected at 5 previously unreported localities in Boyacá and Cundinamarca departments (Table 1, Fig. 1) were also found in ICN.

The specimens reported in this work are identified as *P. carrangerorum* by the following external morphological characters (*Lynch* 1994): venter nearly smooth to weakly areolate, short dorsolateral folds in scapular region, snout obtuse in dorsal view and rounded in lateral view (Fig. 2; ICN 55897), distinct tubercles on the eyelid absent (Fig. 2) (except in a few juveniles from Junín municipality, Finger I slightly shorter than Finger II, enlarged discs on the Fingers III–IV, fingers and toes with fleshy lateral keels, absence of ulnar tubercles, small non-conical tubercles on heel (Fig. 2), short inner tarsal fold, and a short Toe V that does not reach the distal subarticular...
Coloration of all the specimens reported herein is also similar to the type series of *P. carranguerorum*. The specimens have gray to brown dorsum with darker markings, including dark brown labial and oblique limb bars, as well as a canthal and a supratympanic stripe (Fig. 2). The specimens from Junín municipality and the type locality have a copper iris in life with brown reticle (Fig. 2; Lynch 1994), but the color of the iris from the other known specimens is unknown, as this coloration did not persist after preservation. The Junín vouchers are unusual as they have pale spots in the posterior part of the thighs, whereas the specimens of Santa María municipality

<table>
<thead>
<tr>
<th>Locality no.</th>
<th>Museum voucher</th>
<th>Department</th>
<th>Municipality</th>
<th>Latitude (N)</th>
<th>Longitude (W)</th>
<th>Elevation (m)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ICN 5345-9, 5251-60, 5361-3</td>
<td>Boyacá</td>
<td>Pajarito</td>
<td>05°26'35&quot;</td>
<td>072°43'43&quot;</td>
<td>1600</td>
<td>Lynch 1994</td>
</tr>
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<td>2</td>
<td>ICN 5128, 5130, 5132, 5135, 5139, 5145, 5351-7, 5360-1</td>
<td>Boyacá</td>
<td>Pajarito</td>
<td>05°24'30.0&quot;</td>
<td>072°43'06.8&quot;</td>
<td>1600</td>
<td>Lynch 1994</td>
</tr>
<tr>
<td>3</td>
<td>ICN 5601-3, 7166-71</td>
<td>Boyacá</td>
<td>Pajarito</td>
<td>05°25'54&quot;</td>
<td>072°42'09&quot;</td>
<td>2015–2060</td>
<td>Lynch 1994</td>
</tr>
<tr>
<td>4</td>
<td>ICN 9402-32, 9439-9468, 9470</td>
<td>Boyacá</td>
<td>Pajarito</td>
<td>05°17'00&quot;</td>
<td>072°42'00&quot;</td>
<td>1600–1650</td>
<td>Lynch 1994</td>
</tr>
<tr>
<td>5</td>
<td>ICN 9433-7</td>
<td>Boyacá</td>
<td>Pajarito</td>
<td>05°17'38.4&quot;</td>
<td>072°42'21.6&quot;</td>
<td>1600</td>
<td>Lynch 1994</td>
</tr>
<tr>
<td>6</td>
<td>ICN 44956-7, 44966, 44975, 44977, 44981, 44983, 44985-6, 44995, 45005, 45009</td>
<td>Boyacá</td>
<td>Santa María</td>
<td>04°53'38.8&quot;</td>
<td>073°16'56.5&quot;</td>
<td>1080–1180</td>
<td>This work</td>
</tr>
<tr>
<td>7</td>
<td>ICN 44959, 44989-90, 45013-5, 45024, 45137</td>
<td>Boyacá</td>
<td>Santa María</td>
<td>04°53'37.9&quot;</td>
<td>073°14'57.1&quot;</td>
<td>1200–1380</td>
<td>This work</td>
</tr>
<tr>
<td>8</td>
<td>ICN 45139</td>
<td>Boyacá</td>
<td>Santa María</td>
<td>04°50'53.7&quot;</td>
<td>073°16'20.7&quot;</td>
<td>900</td>
<td>This work</td>
</tr>
<tr>
<td>9</td>
<td>ICN (TAS 894)</td>
<td>Casanare</td>
<td>Aoguazul</td>
<td>05°14'01.6&quot;</td>
<td>072°40'17.9&quot;</td>
<td>738</td>
<td>Pedroza-Banda et al. 2014</td>
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<tr>
<td>10</td>
<td>ICN 40931</td>
<td>Cundinamarca</td>
<td>Ubalá</td>
<td>04°45'19&quot;</td>
<td>073°21'10&quot;</td>
<td>1500</td>
<td>This work</td>
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<td>073°21'52.5&quot;</td>
<td>1000</td>
<td>This work</td>
</tr>
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<td>12</td>
<td>ICN 55905-9</td>
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<td>Junín</td>
<td>04°45'14.5&quot;</td>
<td>073°39'52.3&quot;</td>
<td>2650</td>
<td>This work</td>
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<td>13</td>
<td>ICN 55899-904</td>
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<td>Junín</td>
<td>04°45'29.9&quot;</td>
<td>073°40'11.9&quot;</td>
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<tr>
<td>14</td>
<td>ICN 55896-8</td>
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<td>Junín</td>
<td>04°44'43.2&quot;</td>
<td>073°39'49.4&quot;</td>
<td>2802</td>
<td>This work</td>
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</table>
have a cream coloration in the posterior part of the thigh with brown stippling. These coloration patterns are different from the other known specimens of *P. carranguerorum* in which the posterior part of the thighs is uniform brown (LYNCH 1994).

Furthermore, Junín specimens have dark brown spots on their venter, which were generally much more numerous in the throat. Some specimens, specifically ICN 55901–2, 55905–7, and 55909, have a brown throat with pale mottling, in contrast to the stippled venter (although also with a more heavily marked throat) found in Santa María specimens, as well as in the type series (according to LYNCH 1994).

The identification of most of the specimens reported in this work was corroborated by John D. Lynch, Sandy B. Arroyo, and Gustavo González, experts on the taxonomy of the genus *Pristimantis* of Colombia. Additionally, all the newly-reported specimens were compared directly with the type series of *P. carranguerorum*.

The newly collected specimens of *P. carranguerorum* from Vereda San Antonio, Junín municipality, represent the first record of this species in the Cundinamarca Department and an extension to the distribution by ca. 120 km (in straight line) to the south (Fig. 1). This new locality also extends 742 m higher the altitudinal range of *P. carranguerorum*, from 2060 m to 2802 m a.s.l. Also, the previously unreported specimens provide additional records from Cundinamarca and Boyacá departments and fill the gap between the distribution of this species as previously known.

Although LYNCH (1994) suggested that the range of *P. carranguerorum* extends to the north of the type locality (Pajarito, Boyacá), the new records reported herein show that the range of the species comprises the eastern slope of the Cordillera Oriental to the south of Pajarito municipality, in Cundinamarca, Boyacá and Casanare departments, between 738 and 2802 m a.s.l. This latitudinal range is also exhibited by *Pristimantis medemi* (Lynch, 1994) and *P. savagei* (Pyburn & Lynch, 1981) (MALAMBO-L. & MARÍN-V. 2006, ACOSTA-GALVIS 2015, FROST 2016), 2 species morphologically very similar to *P. carranguerorum* (LYNCH 1994). However, at the present time it is unknown if the distribution of any of these 3 species extends north of Pajarito due to the apparent absence of collections undertaken on those areas (pers. obs.). Thus, further studies are needed for a better understanding of the distribution of *P. carranguerorum*, as well as for researching other aspects of its biology that remain poorly known, such as its microhabitat use, call, diet, reproduction patterns, and phylogenetic relationships. Additionally, the conservation status of this species needs to be re-evaluated, given that the records presented in this publication extend considerably its known range.

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LITERATURE CITED


Authors’ contributions: MAA collected and examined the Junín specimens, and prepared the figures. JPR made the map and revised all specimens. Both authors wrote the manuscript.

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