

Range extension of the Munchique rufous lancehead *Bothrocophias colombianus* in Colombia

JACKELINE RIVERA-GÓMEZ¹, LUIS ENRIQUE VERA-PÉREZ^{2*} &
JUAN CAMILO MANTILLA-CASTAÑO¹

¹Grupo de Investigación en Biología de la Conservación y Biotecnología, Corporación Universitaria de Santa Rosa de Cabal, El Jazmín University Campus, km 4 Santa Rosa de Cabal-Chinchiná, Risaralda, Colombia

²Independent researcher, carrera 8 # 2A-12, Las Quintas neighbourhood, La Plata, Huila, Colombia

*Corresponding author e-mail: dipsadini@gmail.com

The South American pitvipers of the genus *Bothrocophias* are corpulent, moderate-sized snakes with non-prehensile tails, mainly terrestrial and active at night and twilight. They are associated with primary forests, mature secondary forests and are frequently found in riparian forests. They feed mainly on rodents, although lizards, caecilians, frogs and even other snakes are also included in their diet (Wüster et al., 2002; Campbell & Lamar, 2004; Cisneros-Heredia et al., 2006; Rojas-Rivera et al., 2013). The highest species richness of *Bothrocophias* is found in Colombia, where 5 of the 7 currently recognised species occur (Uetz et al., 2020), of which *Bothrocophias myersi* and *Bothrocophias colombianus* (Rendahl & Vestergren, 1940) are endemic and only known from a few localities in the Colombian Pacific region. These are thus the most geographically restricted species within the genus (Campbell & Lamar, 2004; Castro et al., 2005).

The Munchique rufous lancehead *B. colombianus* is distributed along the western slopes of Cordillera Occidental in Colombia between 800-2300 m, in the municipality of El Tambo, department of Cauca, inside the protected area and buffer zones of Parque Nacional Natural Munchique and in surrounding areas, such as Reserva Natural Tambito (Rendahl & Vestergren, 1941; Castro et al., 2005; Ayerbe-González et al., 2007; Folleco-Fernández, 2010). In that area, the species has been reported as common and relatively abundant (Vera-Pérez et al., 2018). Here we add a new locality of the species in the Colombian Pacific region (Fig. 1), which represents a significant expansion of its geographical range.

Bothrocophias colombianus in the department of Risaralda

On 25th November 2015 an adult individual of *B. colombianus* (Fig. 2) was collected by Juan Camilo Mantilla-Castaño. This was during a herpetological study using the Visual Encounter Surveys method (VES) (Crump & Scott, 1994) in the Área de Manejo Especial Étnico Alto de Amurrapá, Santa Cecilia township, municipality of Pueblo Rico, department of Risaralda, Colombia (5° 18'43.50" N, 76° 9'22.84" W, 1233 m a.s.l.). The snake was found at night (18:55 h) on the leaf litter 1 m away from a slowly flowing body of water. The specimen was stored at the zoological collection of Corporación Universitaria de Santa Rosa de Cabal, where it was catalogued with the code CUS-R 0092.

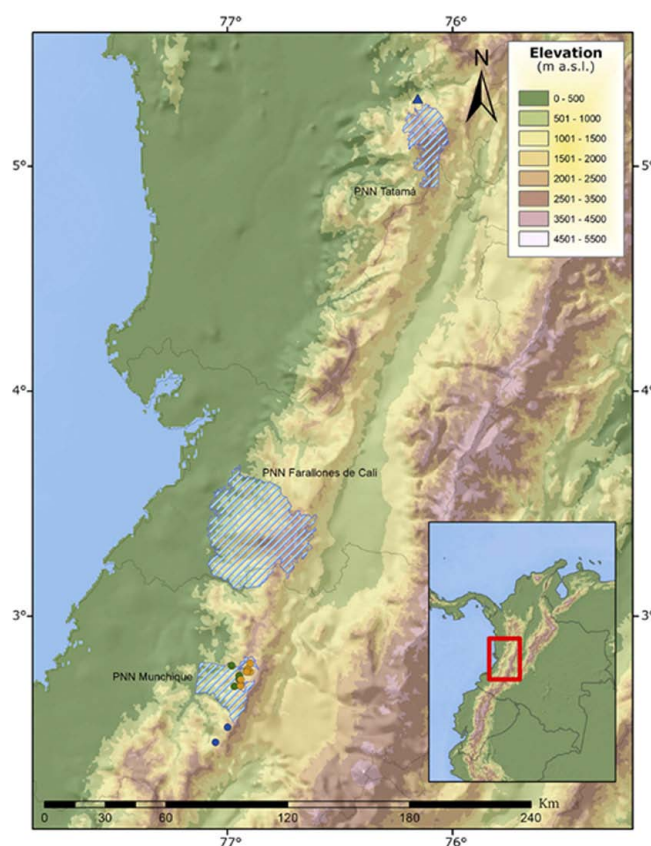


Figure 1. Geographic distribution of *Bothrocophias colombianus* in Colombia. Dots indicate previous records from the department of Cauca; triangle indicates the new record from the department of Risaralda. Green symbols are records inside protected areas (hatched areas), orange symbols are from buffer zones, blue symbols are from surrounding areas

Species Identification

Under unknown circumstances, the specimen CUS-R 0092 disappeared from the herpetological collection where it was deposited, so a complete review of it was not possible. Species identification is based on some data obtained after the snake was euthanised, as well as on the photographic record, taking as references the original description by Rendahl & Vestergren (1940) complemented by Campbell & Lamar (2004). The specimen CUS-R 0092 was identified as *B. colombianus* according to the following characteristics: adult, robust body, dorsal scales with tubercular keels in 25 rows



Figure 2. *Bothrocophias colombianus* from Risaralda, Colombia (CUS-R 0092) in life

at midbody, non-prehensile tail; canthals 1/1, canthorostrals absent, labials separated from loreal pit (lacunolabial absent); ventrals 170, subcaudals divided; black postorbital stripe, white edged, as are some other dark spots or blotches on the lateral and ventral surfaces of the head; dorsal ground colour grey, with dark brown to reddish lateral triangles with grey centers, black bordered followed by whitish borders that are more conspicuous on the posterior triangles, and, a reddish vertebral stripe, more noticeable from midbody (Fig. 2).

This record of *B. colombianus* extends the geographical distribution of the species northwards by about 289 km in a straight line from El Rosal sector, Parque Nacional Natural Munchique, municipality of El Tambo, department of Cauca, to Santa Cecilia township, municipality of Pueblo Rico, department of Risaralda (Fig. 1). This species was hitherto considered to have a very restricted distribution (Campbell & Lamar, 2004; Castro et al., 2005; Folleco-Fernández, 2010), covering less than 38 km in a straight line between the northern and southernmost localities. Its distribution range is now increased to around 333 km, and it seems likely that the species may occur in other localities in the Pacific region of Colombia, among the departments of Cauca, Valle del Cauca, Chocó and Risaralda, and even in adjacent departments such as Nariño and Antioquia.

The extension in the geographic distribution of this Colombian endemic pitviper, added to the fact that most of its records correspond to localities within or near protected areas, are important aspects to take into account for a future evaluation of its conservation status. Likewise, a redescription of *B. colombianus* is necessary, since most diagnostic characters are based on only three specimens (Campbell & Lamar, 2004), therefore very little is known about its intraspecific variation. Several specimens collected in the region where its type locality is assumed are available at Museo de Historia Natural de la Universidad del Cauca, in Popayán, Colombia. However, the specimen CUS-R 0092 is the only one known outside the municipality of El Tambo, so, although its characteristics do not seem to differ from what is known for the species, a detailed review of it will be essential. We hope that this specimen will reappear soon, but above all, that the responsible entity will carry out an investigation of this fact, taking measures to ensure that it does not happen again.

ACKNOWLEDGEMENTS

We thank Sonia Cortés, Henry Mosquera, Yolanda Maturana and Iván Pareja for their contributions and support in the field work. To Corporación Autónoma Regional de Risaralda (CARDER) for the institutional agreement with Corporación Universitaria de Santa Rosa de Cabal, from which the collection permit was obtained.

REFERENCES

- Ayerbe-González, S., Arrieta-Guevara, F.M., Chantre-Ortiz, C.A., Coral-Plaza, E.R. & Guerrero-Vargas, J.A. (2007). *Catálogo de Los Reptiles Presentes en Las Colecciones de Referencia y Exhibición del Museo de Historia Natural de la Universidad del Cauca*. Popayán, Colombia: Taller Editorial Universidad del Cauca. 84 pp.
- Campbell, J.A. & Lamar, W.W. (2004). *The Venomous Reptiles of the Western Hemisphere. Volume 1*. Ithaca/London: Comstock Publishing Associates. 475 pp.
- Castro, F., Ayerbe, S., Calderón, J.J. & Cepeda, B. (2005). Nuevo registro para Colombia de *Bothrocophias campbelli* y notas sobre *B. colombianus* y *B. myersi* (Serpentes: Viperidae). *Novedades Colombianas* 8: 57-64.
- Cisneros-Heredia, D.F., Borja, M.O., Proaño, D. & Touzet, J.M. (2006) Distribution and natural history of the Ecuadorian toad-headed pitvipers of the genus *Bothrocophias* (Squamata: Serpentes: Viperidae: Crotalinae). *Herpetozoa* 19: 17-26.
- Crump, M.L. & Scott Jr, N.J. (1994). Visual encounter surveys. In *Measuring and Monitoring Biological Diversity: Standard Methods for Amphibians*, 84-92 pp. Heyer, W.R., Donnelly, M.A., McDiarmid, R.W., Hayek, L.C. & Foster, M.S. (Eds.). Washington, D.C.: Smithsonian Institution Press.
- Folleco-Fernández, A.J. (2010). Taxonomía del complejo *Bothrops asper* (Serpentes: Viperidae) en el sudoeste de Colombia. Revalidación de la especie *Bothrops rhombeatus* (García 1896) y descripción de una nueva especie. *Revista Novedades Colombianas* 10: 33-70.
- Rendahl, H. & Vestergren, G. (1940). Notes on Colombian snakes. *Arkiv för Zoologi* 33A: 1-16.
- Rojas-Rivera, A., Castillo, K. & Gutiérrez-Cárdenas, P.D.A. (2013). *Bothrocophias campbelli* (Campbell's toad-headed pitviper, víbora boca de sapo de Campbell). Diet/ophiophagy. *Herpetological Review* 44: 518.
- Uetz, P., Freed, P. & Hošek, J. (2019). The Reptile Database. Available from: <http://www.reptile-database.org>. (accessed 8 Dec 2020).
- Vera-Pérez, L.E., Zúñiga-Baos, J.A. & Ayerbe, S. (2018). Reptiles del Parque Nacional Natural Munchique, Colombia. *Revista Novedades Colombianas* 13: 97-131.
- Wüster, W., Salomão, M.D.G., Quijada-Mascareñas, J.A. & Thorpe, R.S. (2002). Origins and evolution of the South American pitviper fauna: evidence from mitochondrial DNA sequence analysis. In *Biology of the Vipers*, 111-128 pp. Schuett, G.W., Höggren, M., Douglas, M.E. & Greene, H.W. (Eds.). California: Eagle Mountain Publishing.

Accepted: 24 December 2020