

# RANGE EXPANSION IN THE GEOGRAPHIC DISTRIBUTION OF *XENODON ANGUSTIROSTRIS* PETERS, 1864: A NEW LOCALITY FOR THE COLOMBIAN CARIBBEAN ECOREGION

## EXPANSIÓN DEL RANGO EN LA DISTRIBUCIÓN GEOGRÁFICA DE *XENODON ANGUSTIROSTRIS* PETERS, 1864: UNA NUEVA LOCALIDAD PARA LA ECORREGIÓN DEL CARIBE COLOMBIANO

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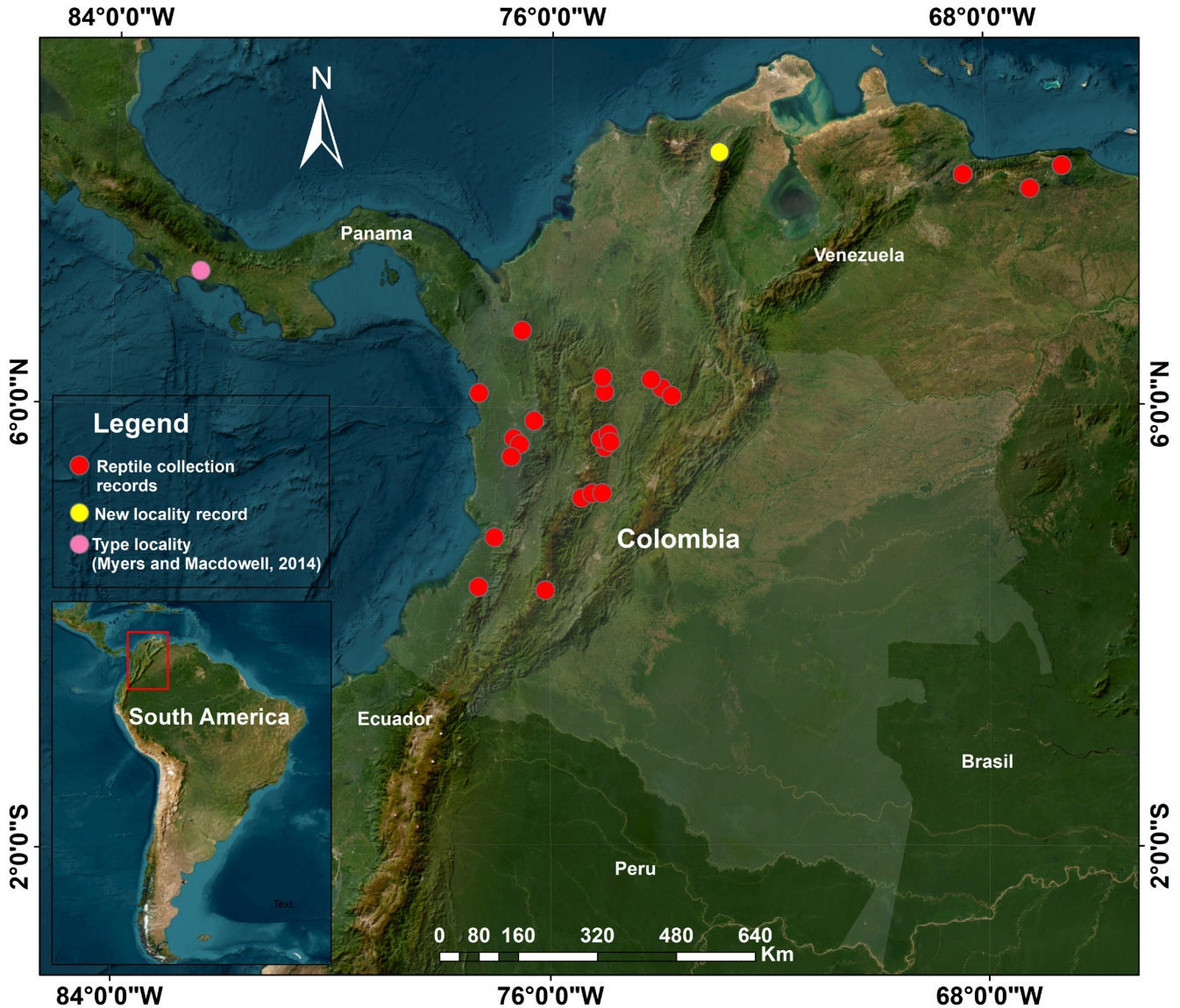
*Xenodon angustirostris* (Peters, 1864) is an opisthoglyphous, oviparous snakes, rare and poorly represented in biological collections. Myers and McDowell (2014) through a comprehensive revision of *Xenodon rabdocephalus* (Wied, 1824) (sensu lato) provided light on this cryptic species complex, proposing nomenclatural actions resurrecting *X. suspectus* and *X. angustirostris* from their synonymy with *X. rabdocephalus*. Hence, the historical geographic distribution of *X. rabdocephalus* was splitted and reduced, allocating the resurrected name of *X. angustirostris* to the populations of Central America and western Colombia (Myers & McDowell, 2014). Currently, the known range distribution in Colombia of *X. angustirostris* encompasses the departments of Antioquia, Caldas, Cauca, Chocó, Santander, Tolima, Valle del Cauca, at elevations between sea level and 1778 m (Fig. 1). Herein, we expanded the known range geographic distribution of *X. angustirostris* based on the finding of one male specimen from the western versant of the Serranía del Perijá in La Guajira department (Colombia).

On March 4th of 2023 at 08:10h (GTM-5), on the way to perform a speleological expedition to Los Santos Cave in the corregimiento of Corraleja, municipality of San Juan del Cesar, department of La Guajira, Colombia, we found one male specimen of *Xenodon* along the trail that borders the Capuchino River (xerophytic riverine forest) and takes from Corraleja settlement to Los Santos Cave (10.69997222° N, 72.82633333 W ° WGS84; 347 m a.s.l.; Fig.1). The specimen was collected, euthanized, and fixed following the procedures described by Pisani (1973). Hemipenial eversion procedures from fresh-euthanized specimen followed the procedures described by

Manzani and Abe (1988). Based on hemipenial morphology (Fig. 3), we identified it as *Xenodon angustirostris* by having a suitable matched with the diagnostic characters described by Myers and McDowell (2014), such as: Hemipenial lobes moderately divided (27.5%); sulcus spermaticus centrifugal and weakly grooved, each branch extending onto the tip of lobe; intersulcar area nude; apices of lobes nude lacking apical discs; hemipenial body with several medium size spines positioned laterally on each side. Besides, we provided a meristic and morphometric characters for further comparisons (Table 1). The specimen was deposited in the Colección Zoológica del Instituto Nacional de Salud (INSZ, Bogotá) and assigned the collection number INZ-281.

The specimen found was active, moving freely on the leaf litter and parallel to path, escaping from us likely. During capture, handling, and photography session the specimen displays antipredator behaviors such as locomotor scape, elevated body, crouching, dorsoventral neck compression, and cloaca discharge (= green pigmented excrement). However, passive deterrent displays were the most frequent antipredator behaviors exhibited (elevate body, crouching, dorsoventral neck compression). Particularly, during the photography session the specimen was extremely passive and docile, maintaining an elevation body posture with a feeble dorsoventral neck compression for about 20 minutes (Fig. 2A).

The new specimens of *X. angustirostris* from the corregimiento of Corraleja improve our knowledge of the morphological variation of the species and represent the most northeastern



**Figura 1.** Distribución geográfica de *Xenodon angustirostris* en el norte de Sudamérica. Los puntos rojos representan registros de distribución recuperados de las siguientes colecciones de reptiles: Instituto de Ciencias Naturales de la Universidad Nacional de Colombia (ICN-R); Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (IAvH-R); Museo Americano de Historia Natural (AMNH); Museo Nacional de Historia Natural del Instituto Smithsonian (NMNH). El punto rosa representa la localidad tipo del presunto holotipo según Myers y McDowell (2014). El punto amarillo representa el nuevo registro de localidad.

**Figure 1.** Geographical distribution of *Xenodon angustirostris* in northern South America. Red dots depict distribution records retrieved from the following reptile collections: Instituto de Ciencias Naturales de la Universidad Nacional de Colombia (ICN-R); Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (IAvH-R); American Museum of Natural History (AMNH); National Museum of Natural History of the Smithsonian Institute (NMNH). Pink dot depicts the type locality of the presumable holotype according to Myers and McDowell (2014). Yellow dot depicts the new locality record.

records known in Colombia, locating 1080 km (airline) northeast from the type-locality, and 548.4 km (airline) from nearest previous known record in Colombia. In addition, this locality expands our knowledge about its distribution and ecological habitats. Historically, the distribution records indicated that

*X. angustirostris* inhabits only in Colombian ecosystems such as the Chocoan rainforests and evergreen forest of the main trans-Andean rivers from the sea level to moderate elevations (~1,700 m; Fig. 1), depicting a geographic distribution restricted to Chocó-Magdalena province biogeographic unit proposed by

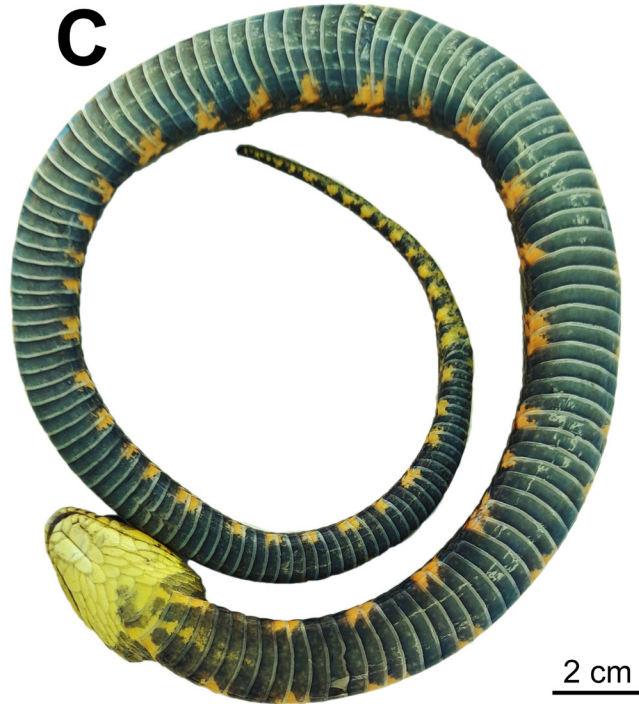
A



B



C



2 cm

**Figura 2.** Nuevo registro de *Xenodon angustirostris*. (A) Color en vida del ejemplar de *X. angustirostris* manteniendo una postura corporal elevada. (B) Vista dorsal de un espécimen recientemente sacrificado. (C) Vista ventral de un espécimen recientemente sacrificado.

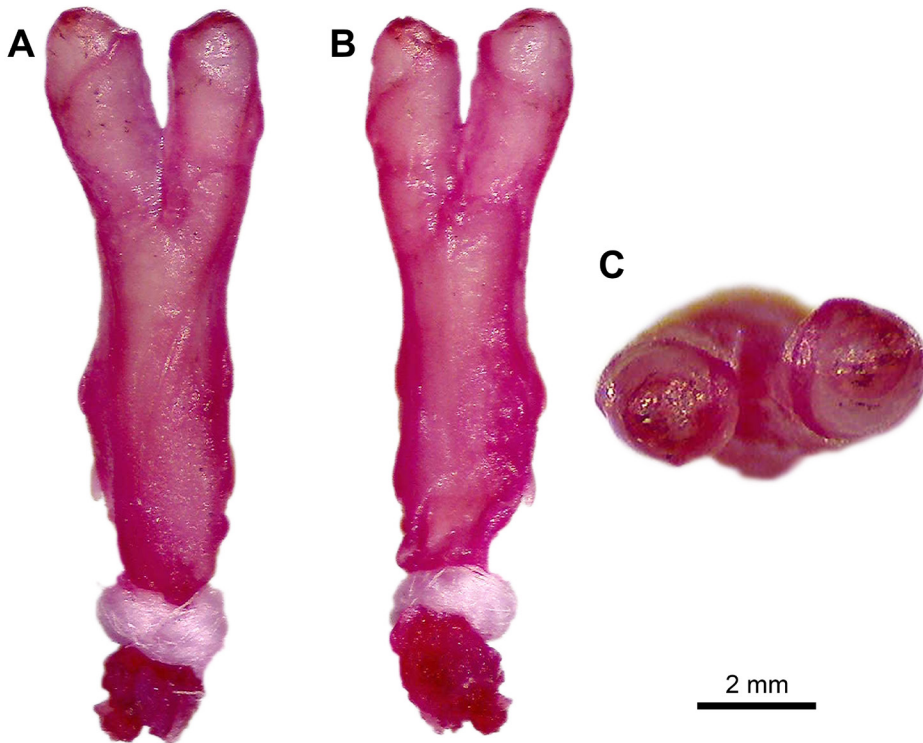
**Figure 2.** New record of *Xenodon angustirostris*. (A) Color in life of the specimen of *X. angustirostris* maintaining elevated body posture. (B) Dorsal view of recently euthanized specimen. (C) Ventral view of recently euthanized specimen.

Hernández-Camacho et al. (1992). The new record adds the tropical dry forest as new ecosystem and the xerophytic riverine forest as new habitat for the species. This new record provides

new evidence to feed the discussion about hypothetical biogeographic units stated by Hernández-Camacho et al. (1992) that Chocó-Magdalena province biogeographic unit extends

**Tabla 1.** Rasgos merísticos y morfométricos (mm) del nuevo registro de *Xenodon angustirostris*. Abreviaturas: longitud hocico-cloaca (SVL), longitud de la cola (TL) y longitud total (TTL).  
**Table 1.** Meristic and morphometric (mm) traits of *Xenodon angustirostris* new record. Abbreviations: snout-vent length (SVL), tail length (TL), and total length (TTL).

Character	<i>Xenodon angustirostris</i> INS-S 281	Character	<i>Xenodon angustirostris</i> INS-S 281
SVL (mm)	340	Parietal scale width	5.24
LT (mm)	50	Frontal scale width	3.99
TTL (mm)	390	Prefrontal scale length	2.44
LT/SVL	15%	Prefrontal scale width	2.31
Ventral scales	139	Internasal scale height	2.01
Subcaudal scales	38 (tip broken)	Inter nasal scale height	2.41
Dorsal scale rows	21/21/17	Eye diameter	4.89
Supralabial scales	8/8	First temporal scale length	3.40
Infralabial scale	10/11	First temporal scale height	2.95
Preocular	1	Interorbital length	4.29
Loreal	2	Rostro-orbital length	5.01
Temporal formula	1+3	Naso-orbital length	3.30
Head length	3.76	Hemipene length	6th subcaudal scales
Head width	18.13	Vertebral insertion of the muscle retractor penis magus	23rd subcaudal scales
Parietal scale length	6.11		



**Figura 3.** Arquitectura hemipenial de *Xenodon angustirostris*. (A) Vis sulcada. (B) Vista asulcada. (C) Vista cenital de la punta de los lóbulos del hemipene.

**Figure 3.** Hemipenial architecture of the *Xenodon angustirostris* new record. (A) Sulcate view. (B) Asulcate view. (C) Top view of the hemipenial lobes tip.

towards northern section of Cordillera Oriental over lowland of the Serranía del Perijá, crossing through Low Magdalena River Basin. Other authors propose a fragmented biogeographical regionalization in which Chocó, Magdalena, and Serranía del Perijá represent different centers of endemism (González-Orozco, 2021; Morrone, 2001), contrasting with other studies that suggest that Chocó-Magdalena province could be considered a full biogeographic unit (Angarita-Sierra & Lynch, 2017). A single new record does not explain the biogeographic history of continental Caribbean ecoregion, but this unexpected record remarks its evolutionary complexity. Further studies including a broad sampling and taxonomic revision of specimens housed in biological collections are needed to untangle these debates, as well as to clearly delimit the geographic distribution of *X. angustirostris* because its state of knowledge still extremely fragmentary.

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