

REFERENCES: BONS, J. & GENIEZ, PH. (1996): Amphibiens et reptiles du Maroc (Sahara Occidental compris). Atlas biogéographique. Barcelona (Asociación Herpetológica Española), 320 pp. DESTRE, R. & ROUX, PH. & GENIEZ, PH. & THÉVENOT, M. & BONS, J. (1989): Nouvelles observations sur l'herpétofaune marocaine. – Bull. Soc. Herpetol. France, Paris; 51: 19-26.

KEY WORDS: Amphibia: Anura: Pelobatidae: *Pelobates varaldii*, chorology, conservation, Morocco

SUBMITTED: March 27, 2003

AUTHORS: Pierre-André CROCHET, CEFE-CNRS, 1919 route de Mende, 34293 Montpellier-cedex 5, France < [crochet@cefe.cnrs-mop.fr](mailto:crochet@cefe.cnrs-mop.fr) >; Philippe GENIEZ, Laboratoire de Biogéographie et Ecologie des Vertébrés, EPHE, cc.94, U.M.2, F-34095 Montpellier-cedex 5, France < [geniez@univ-montp2.fr](mailto:geniez@univ-montp2.fr) >.

## Two new country records of salamanders of the Genus *Bolitoglossa* from Colombia and Venezuela

The lungless salamanders of the genus *Bolitoglossa* occur from Mexico to Bolivia and southern Brazil (WAKE & LYNCH 1976). In South America few more than 20 species are recognized at present, with the highest species diversity occurring in the northern Andes; most species of *Bolitoglossa* in this continent inhabit humid forests at lower and medium elevations of the Andes, and only one species is widespread in lowland Amazon rain forest (WAKE & LYNCH 1976). WAKE & LYNCH (1976) discussed the patterns of geographic distribution of diversity of plethodontid salamanders in the Neotropics from an evolutionary and ecological standpoint. However, our knowledge of the geographic and ecological distribution of South American salamanders is still very poor, mainly due to lack of proper surveys for many regions. The only major works on South American salamanders are those of BRAME & WAKE (1963, 1972) and CRUMP (1977); most other contributions are limited to descriptions of new species. Species geographic distribution information is very important for studies of ecological and historical biogeography and is also essential for planning conservation efforts. While engaged in the description of a new species of salamander from Venezuela (SCHARGEL et al. 2002), the senior author examined specimens of *Bolitoglossa* that represent noteworthy records for the amphibian fauna of Colombia and Venezuela. It is the purpose of

this note to report these new country records and also provide data on the morphological variation in the voucher salamanders.

The museum specimens were measured to the nearest 0.1 mm with dial calipers under a dissecting scope. We used standard measurements as defined by BRAME & WAKE (1963) and these are presented in table 1. The color descriptions are based on formalin fixed specimens stored in 70% ethanol).

### *Bolitoglossa altamazonica* (COPE, 1874)

We examined one specimen of *B. altamazonica*, deposited at the Colección de Anfibios y Reptiles del Laboratorio de Biogeografía, Universidad de Los Andes, Mérida, Venezuela (ULABG). The single specimen was collected on August 16, 1990, in Quebrada Doradas, 650 m, Distrito Uribante, Táchira, Venezuela and constitutes the first country record (LA MARCA 1997; SCHARGEL et al. 2002). The specimen (ULABG 3392) is probably a juvenile, and could not be sexed. Its dorsum has a broad cream band extending from the snout to the tip of the tail. The flanks and the venter are brown with some small cream spots. The limbs are mostly brown, except for the hands which are cream. Due to poor preservation of the specimen it was not possible to determine the number of premaxillary and maxillary teeth without causing further damage to it. Vomerine teeth, however, were exposed and we counted 12 in total. Hands and feet are completely webbed.

The specimen was collected in a pit-fall trap that was set in the forest. The ecological unit in this region has been classified as "Tropofilous Semicaducifolious Premontane Forest" (HUBER & ALARCÓN 1988) or "Very Humid Premontane Tropical Forest" in HOLDRIDGE's (1967) classification and in EWELL et al. (1976). LA MARCA (1998) was the first to suggest the presence of Amazonian elements like *Hyla lanciformis* (COPE, 1870) and *Lithodytes lineatus* (SCHNEIDER, 1799), or species with Amazonian relationships like those described and undescribed species in the groups of *Bufo guttatus* SCHNEIDER, 1799, *Hyla parviceps* BOULENGER, 1882 and *Eleutherodactylus conspiciatus* (GÜNTHER, 1858), in

Table 1: Standard measurements for the voucher specimens of *Bolitoglossa altamazonica* (COPE, 1874) and *B. chica* BRAME & WAKE, 1963. ULABG - Laboratorio de Biogeografía, Universidad de Los Andes, Mérida; KU - University of Kansas Museum of Natural History, Lawrence; SL - Snout-Vent Length (Standard Length), TL - Tail Length, HW - Head Width, S-GF Distance from Snout to Gular Fold, A-G - Distance from Axilla to Groin, LI - Limb Interval (number of costal folds between tips of longest digits of fore and hind limbs when the limbs are adpressed to the sides of the trunk), DE - Diameter of Eye, FL - Forelimb Length, HL - Hindlimb Length.

	SL	TL	HW	S-GF	A-G	LI	DE	FL	HL
<i>Bolitoglossa altamazonica</i>									
ULABG 3392	33.9	27.6	5.5	8.2	17.4	3 ½	1.8	5.6	6.3
<i>Bolitoglossa chica</i>									
KU 212531	38.5	42.9	5.5	8.7	19.1	3	2.1	7.2	7.9
KU 212532	37.1	41.1	5.4	9.1	20.0	3 ½			

the Andean versants of the Cordillera de Mérida. BARRIO (1998) confirmed the occurrence of an Amazonian herpetofauna component in the Andean piedmont of Táchira, especially in the valley of the Doradas river. Our record of *B. altamazonica* seems to further support this notion.

*Bolitoglossa altamazonica* is the most widespread species of tropical salamander extending over a great part of the Amazon basin (WAKE & LYNCH 1976; REICHLE et al. 2000). Additionally, *B. altamazonica* is one of the few species of amphibians the range of which includes the upper Amazon basin and Andean slopes north and south of the Huancabamba Depression (DUELLMAN 1999). However, it has been suggested that *B. altamazonica* may represent a species complex (BRAME & WAKE 1963; REICHLE et al. 2000). DUNN (1926) referred a specimen from Venezuela to *B. altamazonica*, but this specimen was later allocated to *B. borburata* TRAPIDO, 1942, a species endemic to the coastal mountain range of Venezuela (BRAME & WAKE 1963). The combination of the small size of 31.7 – 40.1 mm in snout-vent length, the low number of 12 – 33 maxillary teeth, and extensively webbed hands and feet clearly distinguishes *B. altamazonica* from other *Bolitoglossa* from Venezuela. *Bolitoglossa orestes* BRAME & WAKE, 1962 is similar to *B. altamazonica* in size and dentition, differing mainly in hand and foot shape. *Bolitoglossa orestes*, however, is endemic to cloud forests around the city of Mérida, whereas *B. altamazonica* is restricted to lowland rain forest, thus locality data can be useful in diagnosing these species.

*Bolitoglossa chica*  
BRAME & WAKE, 1963

We examined two specimens of *B. chica* deposited at the University of Kansas Museum of Natural History, Lawrence (KU), both of them collected in the Reserva Natural La Planada, 1650 m a.s.l., Nariño, Colombia, which represent the first country records for this taxon (RUIZ-CARRANZA et al. 1996; ACOSTA-GALVIS & RESTREPO 2001; LYNCH 2001) This locality lies within the southwestern range of the Cordillera Occidental of Colombia. There is considerable variation in color pattern and hand and foot webbing between the two specimens. KU 212531 is an adult male, with a well defined subrounded mental gland. The specimen is dark brown, except for the mental gland, nasolabial protuberances and hands and feet which are cream. It has two large fanglike premaxillary teeth piercing the lip; it lacks maxillary teeth and has 18 vomerine teeth. Hands and feet are fully webbed along all digits, except for the first ones that extend beyond webbing. KU 212532 is another adult male, with a subrounded mental gland. A wide cream dorsal band extends from the postorbital region to the tip of the tail; the flanks and the venter are brown. Premaxillary and maxillary teeth are as in KU 212531; vomerine teeth 19. Hands and feet are almost completely webbed.

Both specimens were found by night sitting on leaves about 1 m above a stream (Patricia BURROWS's field notes). LYNCH & BURROWS (1990) indicated that the habitat in the Reserva Natural La Planada is primarily a Very Humid Premontane Tropical

Forest following HOLDRIDGE's (1967) classification. Annual rainfall in this region is around 5000 mm.

*Bolitoglossa chica* was originally described from northwestern Ecuador at an elevation between 250 and 670 m (BRAME & WAKE 1963); therefore the record presented in the present note extends the altitudinal distribution for this species by almost 1000 m. The original description was based on two specimens, but CRUMP (1977) presented morphological variation in nine additional specimens collected from the type locality. The standard measurements and meristics of the specimens examined by us fall within the variation reported by previous authors. *Bolitoglossa chica* can easily be distinguished from all other *Bolitoglossa* from Colombia by lacking or having very few maxillary teeth (0–4).

**ACKNOWLEDGEMENTS:** We are most grateful to ENRIQUE LA MARCA (Laboratorio de Biogeografía, Universidad de Los Andes, Mérida, Venezuela) and LINDA TRUEB (University of Kansas, USA) for letting us examine specimens under their care. JOHN SIMMONS (University of Kansas, USA) provided us with PATRICIA BURROWE's field notes. The first author's work in Venezuela was partially supported by a Phi Sigma grant, the Biology Department and the College of Science of the University of Texas at Arlington. ERIC SMITH (University of Texas at Arlington) assisted WS in an attempt to find maxillary teeth in *Bolitoglossa chica*. Thanks also to William E. DUELLMAN (University of Kansas, USA), Ron BONNET, Jesse MEIK, and Carol SPENCER (University of Texas at Arlington, USA) for their comments on the original manuscript.

**REFERENCES:** ACOSTA-GALVIS, A. & RESTREPO, A. (2001): Una nueva especie de *Bolitoglossa* (Caudata: Plethodontidae) de las selvas del Magdalena medio en Colombia.- *Caldasia*, Santafé de Bogotá; 23 (2): 467–473. BARRIO AMORÓS, C. L. (1998): Sistemática y Biogeografía de los anfibios (Amphibia) de Venezuela.- *Acta Biol. Venezolana*, Caracas; 18 (2):1–93. BRAME, A. H. & WAKE, D. B. (1963): The salamanders of South America.- *Contrib. Sci., Nat. Hist. Mus. Los Angeles County, Los Angeles*; 69: 1–72. BRAME, A. H. & WAKE, D. B. (1972): New species of salamanders from Colombia, Ecuador and Panama.- *Contrib. Sci., Nat. Hist. Mus. Los Angeles County, Los Angeles*; 219:1–34. CRUMP, M. L. (1977): Intrapopulation and interspecific variation of "standard" morphological characters of four closely related South American salamanders (*Bolitoglossa*), with description of habitat preferences.- *Herpetologica*, Lawrence; 33 (4): 415–426. DUELLMAN, W. E. (1999): Distribution patterns of amphibians in South America; pp. 255–328. In: DUELLMAN, W. E. (ed.): *Patterns of distribution of amphibians. A global perspective*. Baltimore and London (J. Hopkins Univ. Press); 633 pp. DUNN, E. R. (1926): *The salamanders of the family Plethodontidae*. Northampton, Mass. (Smith College

50th anniv. Publ.), viii + 441 pp. EWELL, J. & MADRIZ, A. & TOSI, J. (1976): *Zonas de vida de Venezuela*. (2nd ed.) Caracas (Fondo Nacional de Investigaciones Agropecuarias); 265 pp. HOLDRIDGE, L. R. (1967): *Life zone ecology*. (2nd ed.) San José, Costa Rica (Tropical Science Center); 206 p. HUBER, O. & ALARCÓN, C. (1988): *Mapa de vegetación de Venezuela*. 1:2.000.000. Caracas (MARNR, The Nature Conservancy). LA MARCA, E. (1997): *Lista actualizada de los anfibios de Venezuela*; pp. 103–120. In: LA MARCA, E. (ed.): *Vertebrados actuales y fósiles de Venezuela*. Mérida (Museo de Ciencia y Tecnología de Mérida, Serie Catálogo Zoológico de Venezuela. Vol. 1). LA MARCA, E. (1998): *Biogeografía de los anfibios de la Cordillera de Mérida, Andes de Venezuela*. Unpubl. Ph.D. Dissertation. Postgrado de Ecología Tropical, Universidad de Los Andes, Mérida. LYNCH, J. D. (2001): A small amphibian fauna from a previously unexplored páramo of the Cordillera Occidental in western Colombia.- *J. Herpetol., St. Louis*; 35 (2): 226–231. LYNCH, J. D. & BURROWES, P. A., (1990): The frogs of the genus *Eleutherodactylus* (Family Leptodactylidae) at the La Planada Reserve in southwestern Colombia with descriptions of eight new species.- *Occ. Pap. Mus. Nat. Hist. Univ. Kansas, Lawrence*; 136: 1–31. REICHEL, S. & LÖTTERS, S. & MALDONADO, M. M. (2000): A southern range extension for salamanders: two records of *Bolitoglossa* (Plethodontidae) from Bolivia.- *Herpetol. Nat. Hist., Riverside*; 7 (2):169–170. RUIZ-CARRANZA, P. & ARDILA-ROBAYO, C. & LYNCH, J. D. (1996): *Lista actualizada de la fauna anfibia de Colombia*.- *Rev. Acad. Colombiana Cienc. Exactas, Físicas Naturales, Santa Fe de Bogotá*; 20 (77): 365–415. SCHARGEL, W. E. & GARCÍA-PÉREZ, J. E. & SMITH, E. N. (2002): A new species of *Bolitoglossa* (Plethodontidae: Caudata) from the Cordillera de Mérida, Venezuela.- *Proc. Biol. Soc., Washington*; 115 (3): 534–542. WAKE, D. B. & LYNCH, J. F. (1976): The distribution, ecology, and evolutionary history of plethodontid salamanders in tropical America.- *Nat. Hist. Mus. Los Angeles County Sci. Bull., Los Angeles*; 25: 1–65.

**KEY WORDS:** Amphibia: Caudata: Plethodontidae: *Bolitoglossa altamazonica*, *Bolitoglossa chica*, Colombia, Venezuela, geographical distribution, biogeography

SUBMITTED: March 21, 2003

**AUTHORS:** Walter E. SCHARGEL, Department of Biology, University of Texas at Arlington, Arlington, TX 76010, USA. <wschargel@yahoo.com>; Gilson RIVAS FUENMAYOR, Museo de Historia Natural La Salle, Apartado postal 1930, Caracas 1010-A, Venezuela. <anolis30@hotmail.com>.

# ZOBODAT - [www.zobodat.at](http://www.zobodat.at)

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Herpetozoa](#)

Jahr/Year: 2003

Band/Volume: [16\\_1\\_2](#)

Autor(en)/Author(s): Schargel Walter E., Rivas Fuenmayor Gilson

Artikel/Article: [Two new country records of salamanders of the Genus \*Bolitoglossa\* from Colombia and Venezuela 94-96](#)