

Geographic distribution and apparent decline of *Crotalus durissus terrificus* (Laurenti 1768; Serpentes, Viperidae) in Uruguay

Carlos Prigioni, Claudio Borteiro, Francisco Kolenc, Marcelo Colina, Enrique M. González

Museo Nacional de Historia Natural. 25 de Mayo 582, Montevideo, Uruguay.

The rattlesnake *Crotalus durissus terrificus* (Laurenti, 1768) (Serpentes, Viperidae) is a rare species in Uruguay, where it reaches the southern boundaries of its distribution (see Wüster *et al.*, 2005). The most recent distribution map available for this species in Uruguay is based on a few specimens that were collected during the 1950s and 1960s (Carreira *et al.*, 2005). Herein, we make a comprehensive account of rattlesnake records in this country obtained from herpetological literature and other bibliographic sources, specimens accessioned in herpetological and non-specialized local collections, and new information gathered during field surveys. All records are numbered in the text as in the distribution map provided (Fig. 1). Institutional abbreviations are: MHN, Museo Histórico Nacional, Montevideo; MNHN, Museo Nacional de Historia Natural, Montevideo; ZVC-R, Departamento de Zoología Vertebrados, Facultad de Ciencias, Universidad de la República, Montevideo.

Most references to the presence of rattlesnakes in Uruguay published in the non-herpetological literature correspond to old records from throughout the country. The oldest one is the chronicle by the British mineralogist John Mawe who mentions the killing of 27 rattlesnakes in the course of a few weeks at a mine in Barriga Negra, Lavalleja 33°58'S, 55°03'W [1], during his stay there in 1806 (Mawe 1812). By middle 19th century, rattlesnakes were apparently rather common at Cerro Pan de Azúcar, 34°48'S, 55°20'W [2], Maldonado, in southern Uruguay (Seijo 1945). More recently, a photograph of a specimen captured at this same site in 1949 was given by Siri (1950), who states that rattlesnakes were frequently observed by these times also at the close sites Sierra de las Palmas, 34°49'S, 55°14'W [3], Cerro del Toro, 34°51'S, 55°15'W [4], and Cerro Betete, 34°41'S, 55°18'W [5]. The old work by Pérez (1902) indicates that in Cerro Largo, northeastern Uruguay, rattlesnakes were most frequently found at

Sierra del Carmen, 32°45'S, 55°00'W [6] and Sierra de Aceguá 31°52'S, 54°19'W [7]. Badano Repetto (1948) and Badano Repetto and Badano Carbajal (1965) report a few confirmed cases of human envenomation due to *Crotalus* snakes in Uruguay from Rivera, and presumably one from Cerro Largo. They also comment that these snakes were occasionally found in Cerro Largo, Lavalleja, Maldonado, and Tacuarembó.

The geographic distribution of *C. d. terrificus* in Uruguay available from the herpetological literature is based on a very few and old specimens stored in herpetological collections coming from northern Uruguay: Arroyo de la Invernada, Artigas, 30°58'S, 55°53'W, 1954 [8], ZVC-R 69 and 70; Rivera, unknown locality, 1958, ZVC-R 2856 and 2857 (Carreira *et al.*, 2005); Tacuarembó, unknown locality, 1919, MNHN 1920 (Devincenzi, 1925); and also from

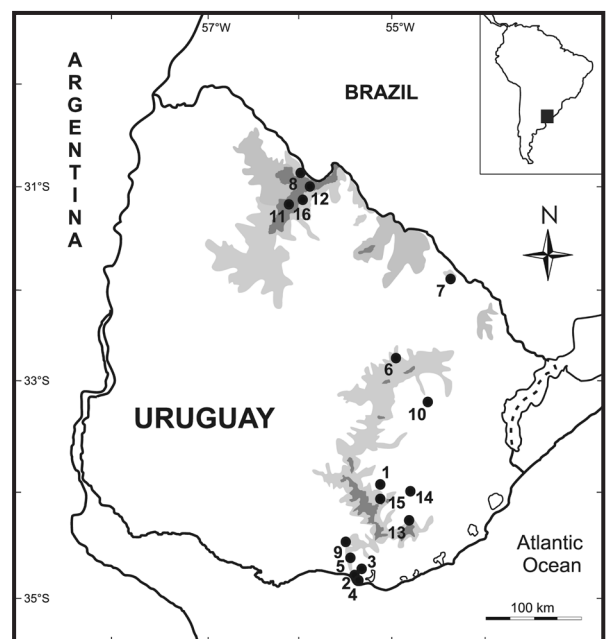


Figure 1. Distribution of *Crotalus durissus terrificus* in Uruguay; localities are numbered as in the text; shaded areas correspond to main hilly landscapes in Uruguay, up to 100 m a.s.l. (grey) and between 100 and 500 m a.s.l. (dark grey).

southern Uruguay: Solís de Mataojo, Lavalleja, 34°37'S, 55°20'W, 1963 [9], ZVC-R 561. An additional locality reported from central-eastern Uruguay is Quebrada de los Cuervos, Treinta y Tres, 32°55'S, 54°27'W [10], where a specimen was killed by local people by the early 1960's (Prigioni *et al.*, 2011).

Unpublished records of specimens accessioned in local collections are the following: Rincón de Vassoura, Tacuarembó, 31°14'S, 56°08'W, 1959 [11], MNHN 750; Cerro Pan de Azúcar, Maldonado, 1968 [2], MNHN 1702; Subida de Pena, Rivera, 31°08'S, 55°55'W, 1984, rattle [12], MNHN 4045; Sarandí de Aiguá, Arroyo del León, 20 km E from Aiguá, Maldonado, 34°10'S, 54°33'W, 1958, adult specimen ca. 120 cm total length [13], preserved at the educational center Liceo de Aiguá "Q. F. Roque Massetti", #7 in the local biological catalog; rattle of an adult specimen, MHN, Museo Casa de Lavalleja, material #398 of the "Roberto Bouton" collection, leg. by Mr. Fausto Tanco to R. Bouton (1877-1940), unknown date, from Treinta y Tres. This last record presumably correspond to the locality Quebrada de los Cuervos in Treinta y Tres, where F. Tanco owned a rural establishment. During some recent fieldwork in Lavalleja, we could see rattles conserved by local people that were obtained at Colón 33°53'S, 54°43'W [14] and Sierras de Polanco 33°56'S, 55°13'W [15], in 1940s and 1966 respectively.

The account of records presented herein for Cerro Largo, Lavalleja and Treinta y Tres, suggests an extended distribution of *C. d. terrificus* in southern and central-eastern Uruguay about five decades ago. The lack of rattlesnake accessions in public collections for more than four decades contrasts with the historical references to the species as being rather common in the country. The most recently published finding of *C. d. terrificus* in Uruguay (Achaval, 1998) is the photograph of an adult specimen seen in 1995 at Arroyo Lunarejo, Rivera, 31°07'S, 55°56'W [16]. We are aware of photographs of two adult specimens, taken in 2006 and in March, 2012 at this same site (respectively José Bessonart and José Luis Antúnez Zaballa, pers. comm.).

In summary, the historical distribution of *C. d. terrificus* in Uruguay is associated to main hilly landscapes in the country (Fig. 1). This snake seems to be locally extirpated except for some relict populations in northern Uruguay. The conservation status of rattlesnakes in neighboring areas of Argentina and Brazil contrast with that. Although scattered, populations of *C. d. terrificus* in northeastern Ar-

gentina could be abundant and are not considered as endangered (Giraudó, 2001; Giraudó *et al.*, 2012). Similarly, rattlesnakes seem not to be threatened in Rio Grande do Sul, southern Brazil (Marques *et al.*, 2002). More studies are needed to assess the current conservation status of rattlesnakes in Uruguay, and the possible causes of the apparent decline of southernmost populations of the species.

Acknowledgments

We thank L. Bataglino, O. Pereira Parada, E. Fernández Fuentes and M. Pais (Liceo de Aiguá), L. A. Rodríguez Díaz (MHN), D. Arrieta (MNHN), J. Bessonart, R. Bonifacio, J. L. Antúnez Zaballa, A. Berrutti, and O. Blumetto, who kindly shared information, photographs and/or provided working space at their institutions. We also thank to M. Vaira and an anonymous reviewer. CB and FK acknowledge ANII/SNI.

Literature cited

- Achaval, F. 1998. Reptiles: 70-73. *In*: Cuenca Superior del Arroyo Lunarejo. Montevideo. DINAMA, AECI-Junta de Andalucía.
- Badano Repetto, J.L. 1948. Ofidismo en el Uruguay. Talleres Gráficos Goes, Montevideo.
- Badano Repetto, J.L. & Badano Carbajal, J.L. 1965. Ofidismo en el Uruguay. 3a ed. Aumentada y corregida, Imprenta Morato, Montevideo.
- Carreira, S.; Meneghel, M. & Achaval, F. 2005. Reptiles del Uruguay. Universidad de la República, Facultad de Ciencias, Montevideo.
- Devincenzi, G.J. 1925. Fauna erpetológica del Uruguay. *Anales del Museo Nacional de Historia Natural, Serie 2* 2: 1-66.
- Giraudó, A. 2001. Serpientes de la Selva Paranaense y del Chaco Húmedo. L.O.L.A., Buenos Aires.
- Giraudó, A.R.; Duré, M.; Schaefer, E.; Lescano, J.N.; Etchepare, E.; Akmentins, M.S.; Natale, G.S.; Arzamendia, V.; Bellini, G.; Ghirardi, R. & Bonino, M. 2012. Revisión de la metodología utilizada para categorizar especies amenazadas de la herpetofauna Argentina. *Cuadernos de Herpetología* 26 (Supl. 1): 117-130.
- Marques, A.A.B.; Fontana, C.S.; Vélez, E.; Bencke, G.A.; Schneider, M. & R.E. dos Reis. 2002. Lista das espécies da fauna ameaçadas de extinção no Rio Grande do Sul. *Publicações Avulsas, Fundação Zoobotânica do Rio Grande do Sul* 11: 1-52.
- Mawe, J. 1812. Travels in the interior of Brazil, particularly in the gold and diamond districts of that country, by authority of the Prince Regent of Portugal, including a voyage to the Rio de la Plata, and an historical sketch of the revolution of Buenos Ayres. Starhan & Preston, London.
- Pérez, S. 1902. Cartilla Geográfica con noticias históricas y datos estadísticos del Departamento de Cerro Largo. Melo, Uruguay.
- Prigioni, C.; Borteiro, C. & Kolenc, F. 2011. Amphibia and

- Reptilia, Quebrada de los Cuervos, Departamento de Treinta y Tres, Uruguay. *Checklist 7*: 763-767.
- Seijo, C. 1945. Maldonado y su región. El Siglo Ilustrado, Montevideo.
- Siri, M. 1950. Estudio geográfico del Territorio Nacional. Ocurrencia de la serpiente de cascabel en el Cerro Pan de Azúcar (Maldonado). *Revista Uruguaya de Geografía*

1: 70-76.

- Wüster, W.; Ferguson, J.E.; Quijada-Mascareñas, A.; Pook, C.E.; Salomão, M.G. & Thorpe, R.S. 2005. Tracing an invasion: landbridges, refugia, and the phylogeography of the Neotropical rattlesnake (Serpentes: Viperidae: *Crotalus durissus*). *Molecular Ecology* 14: 1095-1108.

Recibida: 10 Diciembre 2012

Revisada: 07 Enero 2013

Aceptada: 21 Enero 2013

Editor Asociado: A. Giraudo

© 2013 por los autores, licencia otorgada a la Asociación Herpetológica Argentina. Este artículo es de acceso abierto y distribuido bajo los términos y condiciones de una licencia Atribución-No Comercial 2.5 Argentina de Creative Commons. Para ver una copia de esta licencia, visite <http://creativecommons.org/licenses/by-nc/2.5/ar/>

