

RANGE EXTENSION OF THE HARLEQUIN FROG *ATELOPUS NAHUMAE* (ANURA: BUFONIDAE)

HERNÁN DARÍO GRANDA-RODRÍGUEZ^{1,2,3}, ADOLFO DEL PORTILLO-MOZO^{1,2} AND JUAN MANUEL RENJIFO^{1,2}

¹ Programa de Biología, Facultad de Ciencias Básicas, Universidad del Magdalena, A.A. 1690, Santa Marta, Colombia.

² Grupo de Investigaciones en Sistemática y Ecología de Anfibios y Reptiles, Instituto de Investigaciones Tropicales, Universidad del Magdalena, Santa Marta, Colombia.

Abstract: A new locality record is reported for *Atelopus nahumae* in the southeastern sector of the Sierra Nevada de Santa Marta (Department of Cesar, municipality of Pueblo Bello, Colombia). Until this moment, this species was only known in the northwestern sector of the Sierra Nevada de Santa Marta (Department of Magdalena, Cuchilla de San Lorenzo and San Pedro de la Sierra). With this report, the distribution range of this species is extended.

Key Words: *Atelopus nahumae*, Sierra Nevada de Santa Marta, new record, Department of Cesar, Colombia.

Resumen: H.D. Granda-Rodriguez, A. Del Portillo-Mozo y J.M. Renjifo. "Ampliación del rango de distribución de la rana arlequín *Atelopus nahumae* (Anura: Bufonidae)". Se reporta una nueva localidad para *Atelopus nahumae* en el sector suroriental de la Sierra Nevada de Santa Marta (Departamento del Cesar, municipio de Pueblo Bello, Colombia). Hasta el momento, esta especie sólo se conocía para el sector noroccidental de la Sierra Nevada de Santa Marta (Departamento del Magdalena, Cuchilla de San Lorenzo y en el Corregimiento de San Pedro de la Sierra). Con este registro se amplía el rango de distribución de esta especie.

Palabras Clave: *Atelopus nahumae*, Sierra Nevada de Santa Marta, nuevos registros, departamento del Cesar, Colombia.

INTRODUCTION

Atelopus nahumae Ruiz-Carranza, Ardila-Robayo et Hernandez-Camacho (1994) is a bufonid restricted to the Sierra Nevada of Santa Marta inhabiting the streams and rivers in mountainous areas in the northwestern sector of this mountain massif. This endemic species is in the Critically Endangered (CR) category, according to the IUCN Red List criteria (IUCN et al. 2004), since it had not been seen in the field for over 15 years and was known only by its description in the nineties (Ruiz-Carranza et al. 1994). There was concern that some species of the Sierra Nevada of Santa Marta might bear the same fate of other mountainous *Atelopus* species (La Marca et al. 2005). Recently, two populations of *A. nahumae* in the area of San Lorenzo were found again, supporting that the species continues to be present in the area (Granda-Rodriguez and Del Portillo-Mozo 2007, Carvajalino-Fernandez et al. 2008). This species is known from the slopes of south-eastern Cuchilla San Lorenzo, in the north-western sector of Parque Nacional Natural Sierra Nevada de Santa Marta, Colombia, Magdalena Department (11°11'N, 74°03'W; 1990 masl). This species is distributed at an altitude from 1600 m to 2800 m, in the cuchilla of San Lorenzo and San Pedro de la Sierra (Ruiz-Carranza et al. 1994). This paper provides details of the first record of *A. nahumae* in the southeastern sector of the Sierra Nevada de Santa Marta (SNSM).

MATERIAL AND METHODS

The finding was made while performing a preliminary survey in order to determine the presence of any *Atelopus* species in the southeastern sector of the SNSM on May 2008. Five streams on the road leading from Pueblo Bello to Nabusimake were encountered; each stream was searched for two hours using the Visual Encounter Survey method (Crump and Scott 1994) in the morning hours (9 am to 11 am). During the searches, special attention was paid to find tadpoles and any adult individuals along a two-meter band on both sides of the stream, in the leaf litter, and turning over rocks and logs.

RESULTS

In May of 2008, we found *Atelopus nahumae* for the first time in the Department of Cesar, southeastern sector of the Sierra Nevada de Santa Marta, municipality of Pueblo Bello, some 30 min by car on the road that leads from Pueblo Bello to Nabusimake, in an indigenous settlement of the Arhuaco community (10°24'N and 73°35'W; 1092 m.a.s.l.). The area corresponds to a very humid subtropical forest (Espinal and Montenegro, 1963). We found a juvenile of *A. nahumae* (30.5 mm SVL) (Fig. 1) exactly next to a stream with a quite open canopy and exposed to the sun during the morning hours (10 am). This report extends the species range in 90

³ Send correspondence to / Enviar correspondencia a:
hernangranda@gmail.com



FIG. 1. Juvenile *Atelopus nahumae*, in the southeastern sector of the Sierra Nevada de Santa Marta, 15 May 2008 (Photo by Hernán Darío Granda-Rodríguez).

Atelopus nahumae juvenil, en el sector suroriental de la Sierra Nevada de Santa Marta, 15 mayo 2008 (Foto por Hernán Darío Granda-Rodríguez).

kilometers from San Lorenzo to the new locality in Pueblo Bello, and 70 kilometers from San Pedro de la Sierra additionally, its presence is noted at an altitude of 1092 m, a lower elevation than that reported by Ruiz-Carranza *et al.* (1994) in the Cuchilla of San Lorenzo and San Pedro de la Sierra. The frog *Colostethus ruthveni* was also found calling next to the stream, along with *A. nahumae*.

DISCUSSION

It is urgent to start monitoring the species of amphibians in the southeastern sector of the Sierra Nevada of Santa Marta, especially the *Atelopus* species that are known in the area: *A. nahumae*, *A. arseycue*, *A. walkeri* and *A. carrikeri*; these last three in the upper basin of the Badillo and Guatapurí rivers, between 2000 and 3500 m elevation (Rueda-Almonacid 1994). This is of paramount importance, since the area deteriorates due to its conversion for livestock (cattle and sheep), and traditional and non-traditional agriculture. These monitoring efforts must be to better understand the biology, ecology, pathogens and conservation of the species of *Atelopus*, and to contribute more to the natural history of the species, because very little is known about them.

According to John Lynch (pers. comm.), *Atelopus* species present in the Sierra Nevada de Santa Marta have a very narrow range, although their distribution patterns are not very clear, because the area is poorly studied. In most cases, the available information are only the description year and the type locality of a given species.

ACKNOWLEDGMENTS

This work was performed thanks to the funding of Conservación Internacional Colombia and Fundación Omacha. We are particularly grateful to Federico Bolaños, César Molina, Fernando Castro, Mauricio Suarez, Enrique La Marca, Carlos J. Villa, Andres Gutierrez and Stephan Lötters for their valuable comments and suggestions to the manuscript. We extend our sincere thanks to the Unidad Administrativa Especial Sistema de Parques, Parque Nacional Natural Sierra Nevada de Santa Marta, for the granted permissions.

REFERENCES

- Carvajalino-Fernández, J.M., B. Cuadrado-Peña and M.P. Ramírez-P. 2008. Registros adicionales de *Atelopus nahumae* y *Atelopus laetissimus* para la Sierra Nevada de Santa Marta, Colombia. *Actualidades Biológicas* 30(88):97-103.
- Crump, M.L. and N.J. Scott. 1994. Standard techniques for inventory and monitoring. Pp. 77-171 In R.W. Heyer, M.A. Donnelly, R.W. McDiarmid, L.C. Hayek and M.S. Foster (eds.). *Measuring and Monitoring Biological Diversity. Standard Methods for Amphibians*. Smithsonian Institution Press, Washington, D.C.
- Espinal, L.S. and E. Montenegro. 1963. Formaciones vegetales de Colombia. Instituto Geográfico Agustín Codazzi. Bogotá.
- Granda-Rodríguez, H.D. and A.G. Del Portillo-Mozo. 2007. Evaluación poblacional de *Atelopus laetissimus* y *Atelopus nahumae* (Anura: Bufonidae) del sector San Lorenzo, Sierra Nevada de Santa Marta. Unpubl. thesis. Universidad del Magdalena. Santa Marta, Colombia.
- IUCN, Conservation International and NatureServe. 2004. Global amphibian assessment. <http://www.globalamphibians.org>. Accessed January 2007.
- La Marca, E., K.R. Lips, S. Lötters, R. Puschendorf, R. Ibáñez, J.V. Rueda-Almonacid, R. Schulte, C. Marty, F. Castro, J. Manzanilla-Puppo, J.E. García-Pérez, F. Bolaños, G. Chaves, J.A. Pounds, E. Toral and B.E. Young. 2005. Catastrophic population declines and extinctions in neotropical harlequin frogs (Bufonidae: *Atelopus*). *Biotropica* 37:190-201.
- Rueda-Almonacid, J.V. 1994. Una nueva especie de *Atelopus* Dumeril & Bibron, 1841 (Amphibia: Anura: Bufonidae) para la Sierra Nevada de Santa Marta, Colombia. *Trianea (Acta Científica y Técnica. Inderena)* 5:101-108.
- Ruiz-Carranza, P.M., M.C. Ardila-R. and J.I. Hernández-Camacho. 1994. Tres nuevas especies de *Atelopus* A.M.C. Dumeril & Bibron 1841 (Amphibia: Bufonidae) de la Sierra Nevada de Santa Marta. *Revista de la Academia Colombiana de Ciencias* 19:153-163.