HERPETOTROPICOS Vol. 4(1):07-09

Original article / *Artículo original*

ISSN 1690-7930

EXTENSION OF THE KNOWN GEOGRAPHIC DISTRIBUTION OF *ATELOPUS CRUCIGER* IN NORTHERN VENEZUELA

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Abstract: A new locality is reported for *Atelopus cruciger* in the Interior Serrania of the Coastal Cordillera of Venezuela, based on field observations in a cloud forest of Guatopo national park in 1984. This is evidence of a broader geographical distribution for the species. The need to expand herpetological surveys to the rest of the Cordillera, given it is a "critically endangered" species which could be present in other localities, is stressed. It is highlighted the importance of Guatopo as a protected area for this species and the need to check its persistence in the park.

Key words: Amphibia, Anura, *Atelopus cruciger*, distribution, Guatopo National Park, Venezuela.

Resumen: E. Yerena y C. Rivero Blanco. "Extensión de la distribución conocida de *Atelopus cruciger* en el norte de Venezuela". Se reporta una nueva localidad para *Atelopus cruciger* en la Serranía del Interior de la Cordillera de La Costa de Venezuela con base en observaciones de campo realizadas en 1984 en un bosque nublado del parque nacional Guatopo. Esto evidencia que la especie tiene una distribución mayor a la conocida. Se resalta la necesidad de extender las exploraciones hacia el resto de la cordillera por cuanto la especie, catalogada como en "peligro crítico", podría estar presente en otras localidades. Se destaca la importancia de Guatopo como área protegida para esta especie y la necesidad de constatar su existencia actual en el parque.

Palabras clave: Amphibia, Anura, *Atelopus cruciger*, distribución, Parque Nacional Guatopo, Venezuela.

INTRODUCTION

Atelopus cruciger Lichtenstein and Martens 1856, is a "critically endangered" species (Manzanilla and La Marca 2004, Manzanilla *et al.* 2004), belonging to a vertebrate group considered as of great concern from the conservationist point of view (La Marca *et al.* 2005). The habitat for this species is humid mountain forests (Sexton 1958) of the Coastal Cordillera of Venezuela (Manzanilla *et al.* 2004, Rivas 1998, Lötters 1996, Rivero 1961), specifically within the Litoral and the Nirgua-Tinaquillo mountain ranges (Fig. 1), which belong to the Coastal Range biogeographical region (Péfaur and Rivero 2000). Improving knowledge on its geographical distribution is essential to optimize conservation efforts. This report shows the species was present, at least until 1984, in Guatopo national park, located in the Interior Serrania of the same Cordillera, therefore implying an extension on its geographical distribution. We provide here details on this finding and discuss some possible consequences of it.

NEW DISTRIBUTION RECORD

As a part of a characterization study of Guatopo national park (Yerena 1985), the first author did an on-foot trip to the summit of Cerro Azul (1500 m elevation), from February 24th to 26th 1984, following the Río de Piedra, a permanent mountain stream (Lagartijo river basin), helped by a field assistant, a pathfinder and a park-ranger. The goal of this trip was to gather evidence on the possible occurrence of non-previously reported cloud forest in the park.

Along the trip, in diurnal hours, it became evident a relatively high abundance of a toad species along the route, close and away from the water stream, between 600 and 1100 m of elevation, on a perimeter around 66º33'29"W - 10º01'35''N (Fig.1). We visually identify the toad as *Atelopus cruciger* (Fig. 2), confirmed by other herpetologists (E. La Marca, C. Barros-Amorós, pers. com.). This finding was previously reported although not formally published (Yerena 1985).

The habitat where it was observed is uninhabited by humans (Yerena and Escalona 1995), although some scattered and abandoned orchards still can be found, and neither trails nor hikers occur, except for occasional poachers. The time of the sighting (February) is usually the annual extreme driest month on this portion of the park; the nearest pluviometer station (Río de Piedras, 400 m elevation) records a mean annual precipitation of 1117 mm (Yerena 1985). Precipitation on the upper watershed portion where *A. cruciger* was seen might be higher.

DISCUSSION

From a physiographic point of view (Freiles 1969, Fig. 1), the Coastal

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Received / *Recibido* 17 FEB 2007
Accepted / *Aceptado* 28 MAY 2007

FIG. 1. *Atelopus cruciger* at Río de Piedra, Guatopo National Park. Photo by Edgard Yerena, 25 February 1984.

Atelopus cruciger *en Río de Piedra, Parque Nacional Guatopo. Fotografíado por Edgard Yerena, 25 Febrero 1984.*

Cordillera of Venezuela is a "province" comprised by three "regions": Nirgua-Tinaquillo Serrania, Litoral Mountain Chain and Interior Serrania. The distribution map reported by Manzanilla and La Marca (2004) spatially corresponds only to the former two, despite they name it under the generic name of *Cordillera de La Costa* of Venezuela; while Guatopo belongs exclusively to the third region. Therefore, the recent distribution of *A. cruciger* should be considered extended to the three mountain regions of the Coastal Cordillera (Fig. 1), within the altitudinal range corresponding with that reported for the species (La Marca *et al*. 2005), confirming Lötters *et al*. (2004) contention that its distribution could extend to the whole Coastal Cordillera. The only record outside this mountain range appears to be that of "Curanna (Cumana, Gunther, 1858)" of Rivero (1961). La Marca (1992) recommended to take out this distribution record from Sucre State (NE Venezuela) due to its uncertainty.

Most of the biological studies in Guatopo have been carried out in areas along the asphalted highway, mainly because access to the higher (above 700 m) elevations of the park is difficult (Yerena 1985). James R. Dixon (Wildlife and Fisheries Science Department, Texas

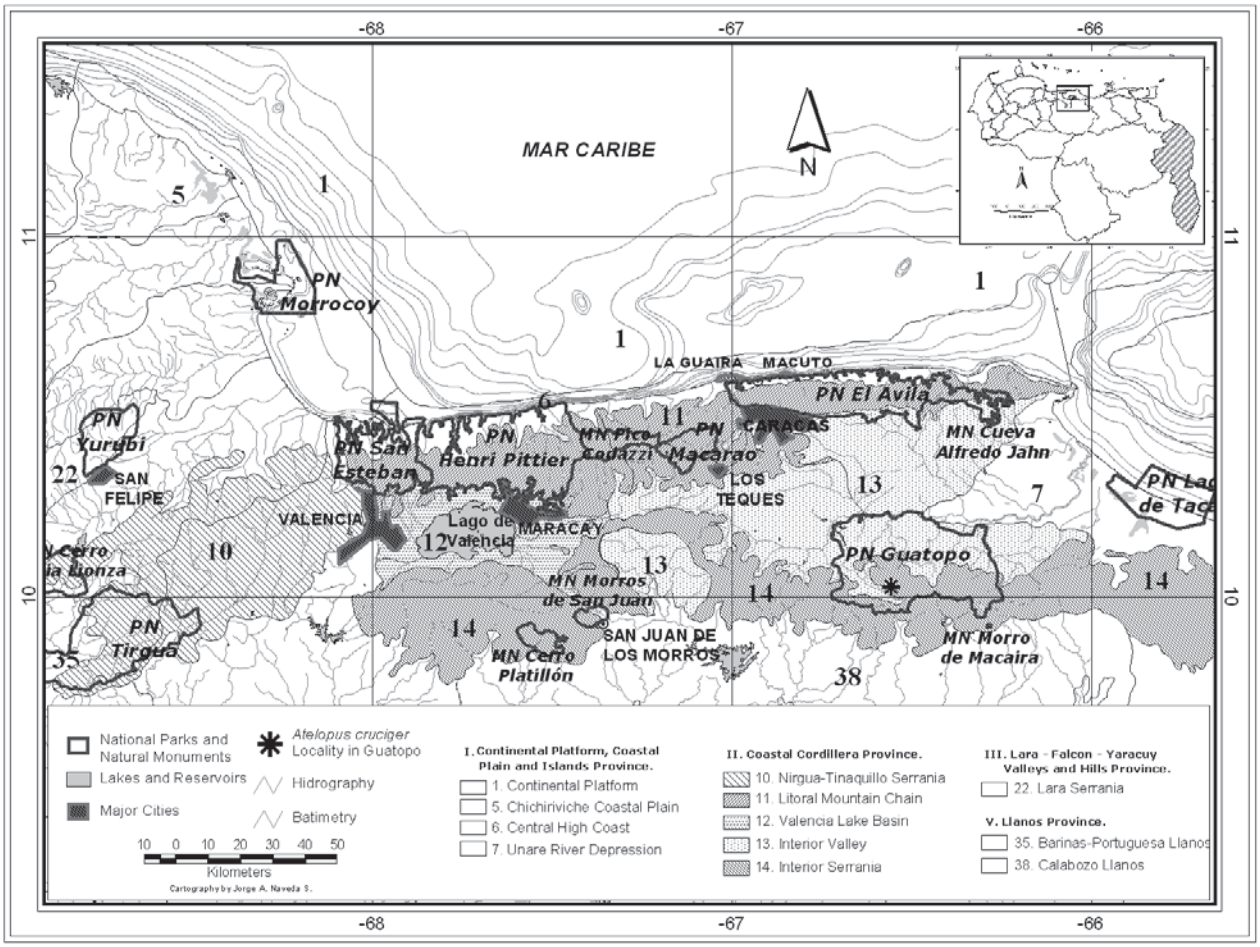

FIG. 2. Physiographic regions (following Freiles 1969) and protected areas of the Coastal Cordillera of Venezuela. The new locality record for *Atelopus cruciger* in Guatopo National Park is indicated by an asterisk.

Regiones fisiográficas (según Freiles 1969) y áreas protegidas de la Cordillera de la Costa de Venezuela. La nueva localidad para Atelopus cruciger *en el Parque Nacional Guatopo se indica con un asterisco.*

A&M University) conducted extensive herpetological surveys on such accessible localities in 1980 (unpublished data, in Yerena 1985), all of them within the altitudinal range reported for *A. cruciger* (30-2200 m, La Marca *et al*. 2005), but never reported it. We presume that *A. cruciger* may have a habitat preference above 900 m in Guatopo national park. This would explain why this species had not been previously reported. We recommend conducting future biological surveys on the higher elevations.

Continuity of evergreen forests has existed between the Interior Serrania (Guatopo national park) and the Litoral Mountain Chain (El Ávila national park), through the humid Interior Valley region (Smith, no date, Fig. 1), which today is fragmented by human activity. Therefore, at least in historical times, a drastic vegetation barrier had not existed that could isolate biologically both mountain regions. In consequence, the populations of humid forest amphibians could have exchanged between them.

We highlight the relevance of Guatopo national park as a protected area for this species, since it preserves 428 km2 of lands above the 600 m altitude (35% of its total surface). Also, we point to the necessity of extending the explorations in the Interior Serrania, in order to verify whether the species possesses an even broader distribution along this physiographic unit where other remnants of humid forest actually exist (Meier 2002).

The report here described, from 23 years ago, does not imply that the species is actually present in Guatopo. *Atelopus cruciger* was considered as possibly extinct between 1988 and 2004 (Manzanilla *et al*. 2004) after having been relatively abundant. Its decline in Venezuela might be caused by a chytrid fungus infection (Bonaccorso *et al*. 2003). The extinction phenomenon of the *Atelopus* frogs has been documented and it is of great concern (La Marca *et al*. 2005, Bonaccorso *et al*. 2003), therefore it is important to carry out new explorations in Río de Piedra in order to verify whether the species is still extant in Guatopo national park.

ACKNOWLEDGEMENTS

We thank our field assistant Gustavo Marquina†, park ranger Juan Alayón and pathfinder Juan Reyes, who joined the senior author in the field trip. We also thank Enrique La Marca and Cesar Barrio-Amorós for stimulating the publication of this report, Jorge Naveda for the elaboration of the map, as well as Stefan Lötters and Jesús Manzanilla for comments and observations on the manuscript. To Luís Escalona† and Rafael Durán, both former superintendents of Guatopo national park, we dedicate this article.

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