

NEW STATE RECORDS OF *DIPSAS VARIEGATA* (DUMÉRIL, BIBRON AND DUMÉRIL 1854) (SERPENTES: COLUBRIDAE) FROM NORTHERN VENEZUELA, WITH COMMENTS ON NATURAL HISTORY

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Abstract: We update the known distribution of the snail-eater *Dipsas variegata* within Venezuela, providing the first records for the states Miranda, Carabobo and Yaracuy. The records are accompanied by photographs and natural history notes.

Key words: *Dipsas variegata*, Colubridae, distribution, natural history, Venezuela.

Resumen: S. Lotzkat, M. Natera-Mumaw, A. Hertz, J. Sunyer and D. Mora. “Nuevos registros estatales de *Dipsas variegata* (Duméril, Bibron and Duméril 1854) (Serpentes: Colubridae) para el norte de Venezuela, con comentarios acerca de su historia natural”. Actualizamos la distribución conocida de la serpiente caracolera *Dipsas variegata* dentro de Venezuela, presentando los primeros registros para los estados Miranda, Carabobo y Yaracuy. Los registros están acompañados por fotografías y notas de historia natural.

Palabras clave: *Dipsas variegata*, Colubridae, distribución, historia natural, Venezuela.

INTRODUCTION

The snail-eater *Dipsas variegata* was described by Duméril, Bibron and Duméril (1854) as *Leptognathus variegatus*, based on a specimen from Surinam. Throughout the 20th century, the name *D. variegata* has been applied to many specimens from several localities well west of Venezuela, such as Panama, Ecuador, and Peru. Having examined the available specimens from the latter three countries, and moreover realizing that there is obviously not a single voucher to substantiate any records from Colombia, Cadle and Myers (2003) restricted the specific name “*variegata*” to populations from Venezuela eastwards. Removing the Panamanian endemic *D. nicholsi* (Dunn 1933) from the synonymy of *D. variegata*, they accepted the validity of two subspecies within the latter taxon: *D. variegata variegata* (Duméril, Bibron and Duméril 1854), ranging from Venezuela via Guyana, Surinam and French Guiana to the mouth of the Amazon in the Brazilian state Pará, and *D. variegata trinitatis* Parker 1926 from Trinidad.

For almost a century, all documented records of *Dipsas variegata* from Venezuela were based on specimens collected within

the Coastal Range (Cordillera de la Costa) along the Caribbean coast. Stejneger (1901) provided the first record for Venezuela, reporting a specimen collected in 1895 near La Guaira, which back then belonged to Distrito Federal but nowadays belongs to Vargas state. Peters (1960) added two localities in the states Sucre and Distrito Federal. Roze (1966) summarized these three records while Test *et al.* (1966) reported five specimens from the vicinities of Rancho Grande (Henri Pittier National Park), northern Aragua state. Gorzula and Señaris (1999) indicated its presence in the Venezuelan Guayana. They collected three specimens, two of which were misidentified and listed under the name *Sibon nebulatus*, according to Cadle and Myers (2003) who examined these vouchers and provided an additional locality within Henri Pittier National Park in Aragua state. The record of *Dipsas latifrontalis* from southern Lara state published by Esqueda and La Marca (1999) was based on a misidentification of the specimen ULABG 4441, which in fact represents an individual of *D. variegata* with an intermediate coloration (L. F. Esqueda, pers. comm.). At the turn of the centuries, Péfaur and Rivero (2000) reported *D. variegata*

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to be present in their ecoregion "Lara-Falcón", but we were unable to locate any voucher specimen. Hereafter, the records of Markezich (2002) and Calcaño and Barrio-Amorós (2003) extended the known range of *D. variegata* to the eastern foothills of the Venezuelan Andes in the states Portuguesa and Barinas.

We herein document for the first time the presence of *Dipsas variegata variegata* in the Venezuelan states Miranda, Carabobo, and Yaracuy.

MATERIALS AND METHODS

We found all five snakes reported herein during opportunistic search activities in the course of inventory field work between August 2006 and May 2007. Upon encountering the snakes, we photographed them and used the key of Kornacker (1999) to verify their identities. All

but one individual were freed afterwards. The collected specimen has been deposited in the collection of the Museo de la Estación Biológica Rancho Grande (EBRG [MBRG] 4886; field tag number SL 049). In Yaracuy, we annotated the local time as well as additional circumstances of the encounter. We recorded geographic coordinates and elevation above sea level (asl) by employing a GPS receiver (Garmin Etrex® Summit) in Yaracuy, and by consulting Google Earth® for the localities in Carabobo and Miranda.

The map (Fig. 1) was created using DIVA-GIS and the NASA elevation datasets processed by Jarvis *et al.* (2006). Collecting sites for which no coordinates are provided in the respective publications (Stejneger 1901, Peters 1960, Markezich 2002, and Calcaño and Barrio 2003) were located using the gazetteers of the U.S. National Geospatial Intelligence Agency's GEOnet Names Server and Google Earth®.

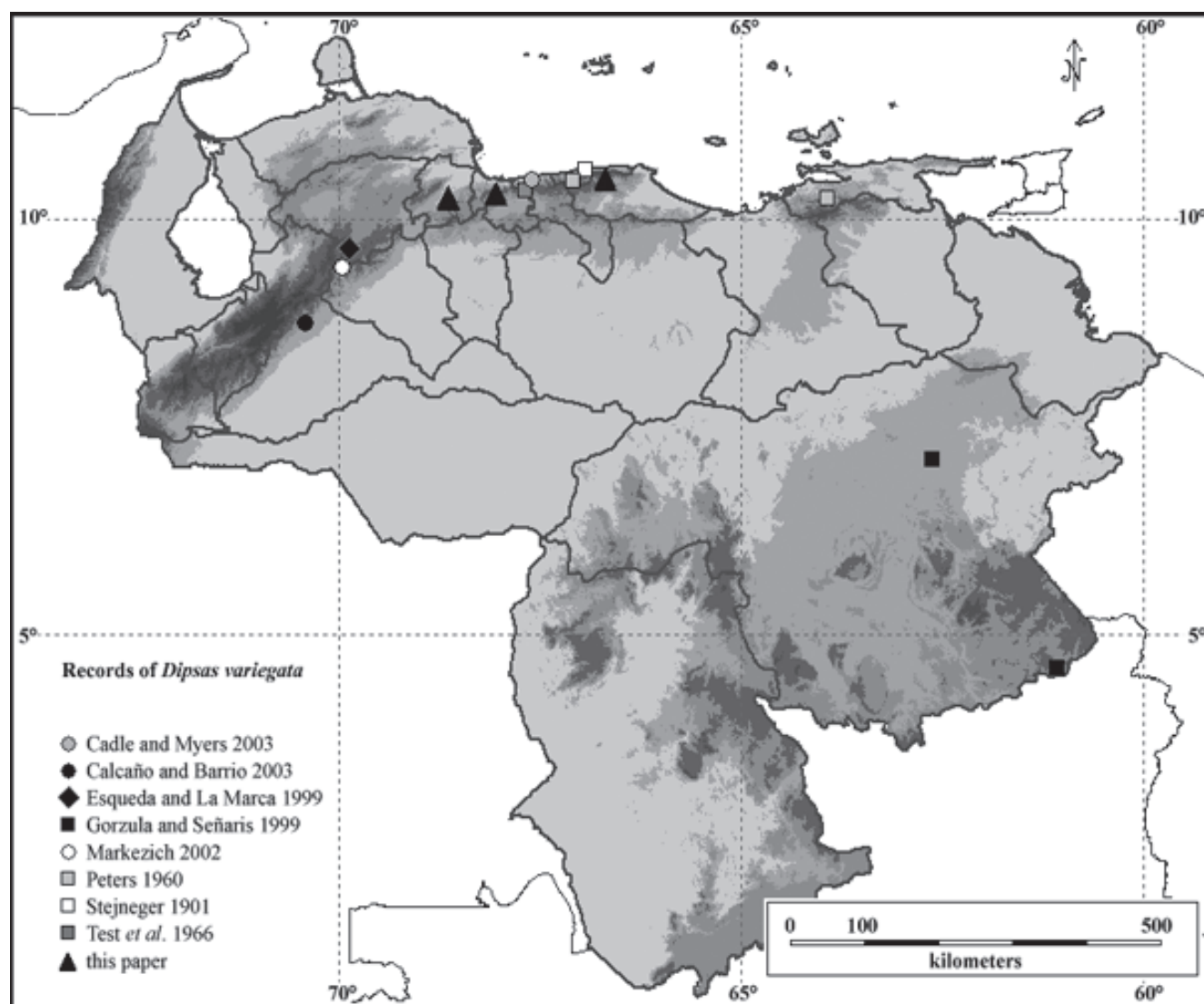


FIG. 1. Distribution of *Dipsas variegata variegata* in Venezuela. Squares represent records of the 20th century, circles those published since the year 2000. Triangles identify the locations reported in this paper.

Distribución de Dipsas variegata variegata en Venezuela. Los símbolos cuadrados representan los registros hechos durante el siglo XX, los círculos representan los registros a partir del año 2000. Los triángulos identifican las localidades reportadas en este trabajo.

RESULTS AND DISCUSSION

We provide the following new distributional records for *Dipsas variegata variegata*:

Miranda state, Mampote (10°28'17"N and 66°40'29"W), 6 km west of Guarenas, 1023 m asl. Juvenile (Fig. 2A) photographed by Marco Natera in March 2007, not collected. First record for Miranda state, approximately 30 km southeast of the nearest locality in Vargas state, La Guaira (Stejneger 1901). **Carabobo state**, Southern versant of San Esteban National Park (10°19'02"N and 68°2'42"W), Sector Crialinda, Valencia, 950 m asl. Adult female (Fig. 2B) photographed by Marco Natera in May 2007, not collected. First record for Carabobo state, approximately 40 km west of the nearest locality in Aragua state, Rancho Grande (Test *et al.* 1966). **Yaracuy state**, Cerro Zapatero, Reserva Ecológica Privada Guáquira, 15 km southeast of San Felipe, three individuals as follows: Northwestern versant of Cerro Zapatero (10°16'34"N and 68°37'59"W), 710 m asl. Adult male (Fig. 2C; EBRG [MBRG] 4886; field tag number SL 049) collected by Javier Sunyer, Andreas Hertz and Sebastian Lotzkatt on 20th August 2006. Ridge of Cerro Zapatero just north of summits (10°14'51"N and 68°37'42"W), 1330 m asl. Adult female (Fig. 2D) encountered by Andreas Hertz, Sebastian Lotzkatt and Douglas Mora on 10th September 2006, not collected. Western versant of Cerro Zapatero (10°14'58"N and 68°37'28"W), 1240 m asl. Adult female (Fig. 2E) encountered by Andreas Hertz, Sebastian Lotzkatt and Douglas Mora on 10th September 2006, not collected. The three animals found on Cerro Zapatero represent the first records for Yaracuy state, approximately 100 km west of the nearest locality in Aragua state, Rancho Grande (Test *et al.* 1966, Manzanilla *et al.* 1996), and 60 km west of our Carabobo record.

Our records for Carabobo and Yaracuy narrow the gap between the westernmost localities in the Coastal Range and the easternmost Andean locality from previously 270 km between Rancho Grande (Test *et al.* 1966) and Chabasquén (Markezich 2002) to 170 km between Cerro Zapatero and Chabasquén. The distribution map (Fig. 1) shows the continuous distribution of *Dipsas variegata variegata* from the Venezuelan Guayana throughout the Coastal Range to the eastern foothills of the Merida Andes. Other than indicated by Roze (1966) and Lancini and Kornacker (1989), most of these records occurred at elevations greater than 500 m asl: The only records below this elevation are those from La Guaira (Stejneger 1901), Cumanacoa (Peters 1960) and Rio Yuruari (Gorzula and Señaris 1999). Therefore, *D. variegata* should not be considered a lowland dweller as stated by Lancini and Kornacker (1989), because it has been recorded primarily at moderate elevations. Nevertheless, neither the Orinoco river nor the depressions of Unare, Yaracuy or Barquisimeto have acted as effective barriers hindering the westward dispersal of this species. Given the presence of humid forest environments at lower elevations, *D. variegata* shows no restriction to higher altitudes. Thus, we suspect that it is also present in the mountainous regions of Lara-Falcón, and that the paucity of records from Venezuelan lowland localities is primarily due to the heavy deforestation throughout the valleys of northern Venezuela.

COMMENTS ON NATURAL HISTORY

The juvenile specimen from Mampote (Fig. 2A) was encountered along an ecotone between transitional forest and cloud forest. The female individual from Crialinda (Fig. 2B) was photographed in a cloud forest which is subject to very few anthropogenic alterations. The adult male collected on Cerro Zapatero (Fig. 2C) was found foraging about 0.5 m above the ground in low shrubs along the edge of semideciduous moist forest at 22:00 hours. The other two individuals (Fig. 2D,E) were both spotted between 19:30 and 20:00 hours in seemingly pristine cloud forest. They were inactive and coiled up on thin branches of small trees, both approximately 3 m above the forest floor.

We observed that *Dipsas variegata* occurs in sympatry with two other species of snail-eaters, *Sibon nebulatus* and *Dipsas* sp. The latter taxon (Fig. 2F) was identified as *Dipsas latifrontalis* (Boulenger 1905) using the key of Kornacker (1999), which distinguishes *D. variegata* from *D. latifrontalis* on the base of coloration patterns. However, as *D. latifrontalis* was described from the Merida Andes, a revision of the populations inhabiting the Coastal Range previously assigned to this species (Peters 1960, Test *et al.* 1966, Manzanilla *et al.* 2001) is currently being carried out by M. Harvey (pers. comm.).

Sibon nebulatus was recorded between 100 and 1060 m asl on the slopes of Cerro Zapatero, being very abundant in the lowland moist forest. *Dipsas* sp. was found between 1060 and 1350 m asl and seems to be restricted to the cloud forest. Thus, at least in the lower cloud forest zone at elevations shortly above 1000 m asl, these three snail-eaters definitely coexist. This also seems to be the case in the comparatively well-studied cloud forest of Henri Pittier National Park, where the same three species have been reported to occur in the vicinities of Rancho Grande by different authors (Test *et al.* 1966 reported *D. latifrontalis*, herein called *Dipsas* sp., and *D. variegata*, while Manzanilla *et al.* 1996 listed *D. variegata* and *S. nebulatus*).

We know little about the ecological competition between these three species of similar habitat and diet. Yet, we consider probable the existence of a spatial niche partitioning between *Dipsas variegata* on the one hand and *Dipsas* sp. as well as *Sibon nebulatus* on the other hand: in the surroundings of Rancho Grande (Henri Pittier National Park) and on Cerro Zapatero (Yaracuy), we observed that *D. variegata* sleeps during the day, and eventually the first hours after sunset, coiled up on branches of woody plants and tree ferns between 1.5 and 3 m above ground. At nighttime the species feeds on, or closely above, the forest floor, where terrestrial gastropods are frequent. By contrast, we seldom observed *Sibon nebulatus* and *Dipsas* sp. at less than 1 m above the forest floor. These observations suggest that the latter two species prefer to forage in arboreal microhabitats. *D. variegata*, as the largest of the three snail-eating species, might be an important predator of large ground-dwelling snails while the smaller *Sibon nebulatus* and *Dipsas* sp. are more likely to prey on small to medium-sized, climbing snails and slugs, thus avoiding direct competition for prey by the utilization of separated microhabitats on the one hand and by interspecific morphological differences on the other hand.

Given its cryptic coloration pattern and the defensive behavior of head triangulation (see the individual in Fig. 2D), it is very likely that

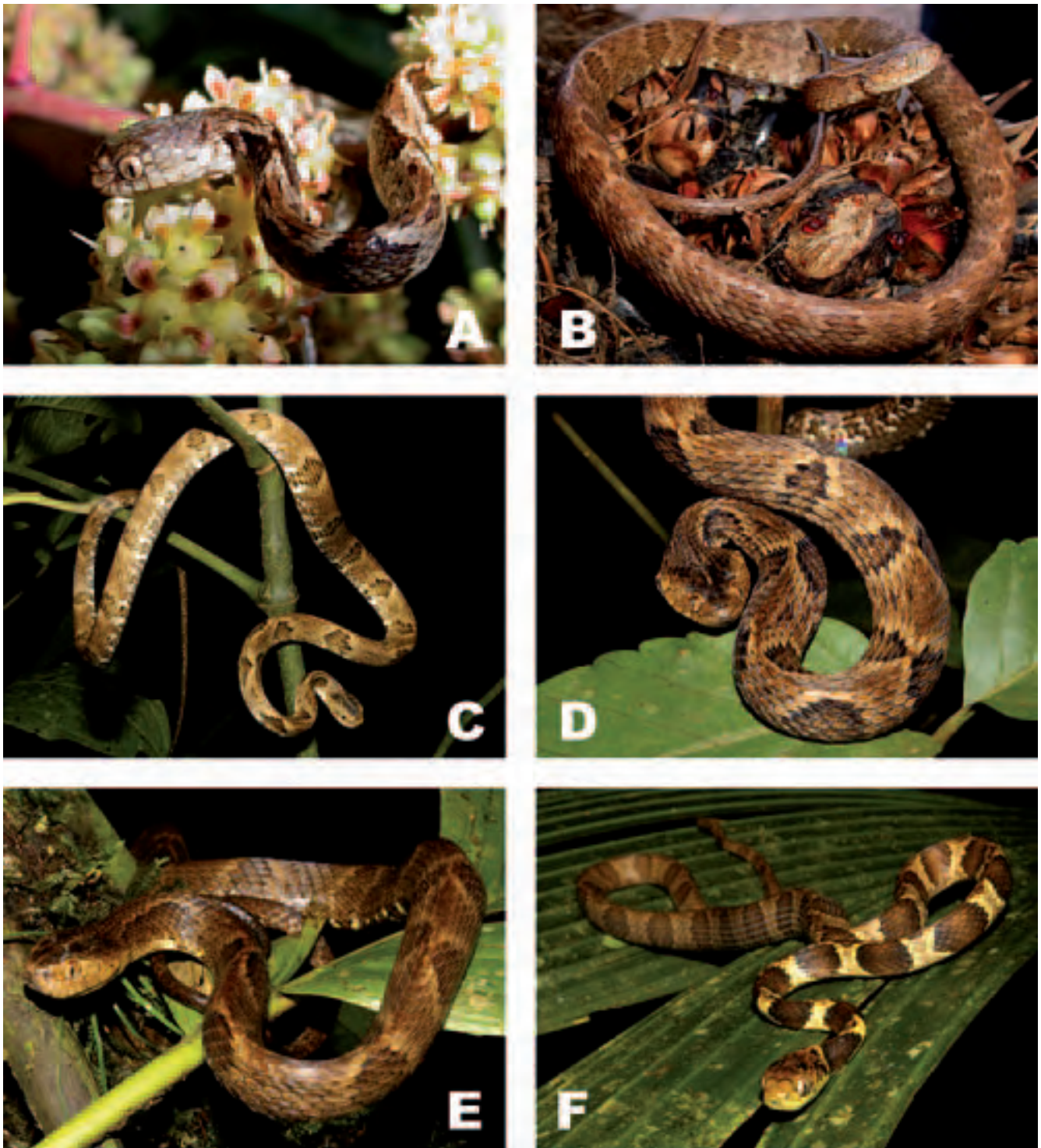


FIG. 2. Individuals of *Dipsas variegata variegata* and *Dipsas* sp. referred to throughout the text. See text for explanations. Photographs A and B taken by Marco Natera-Mumaw, C-F by Sebastian Lotzkat.

Ejemplares de *Dipsas variegata variegata* y *Dipsas* sp. mencionados en el texto. Véase el texto para explicaciones. Las fotografías A y B fueron tomadas por Marco Natera-Mumaw, C-F tomadas por Sebastian Lotzkat.

Dipsas variegata is a mimic of *Bothrops asper* and *B. venezuelensis* (Cadle and Myers 2003, Natera-Mumaw and Battiston in press).

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