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## The Herpetofauna of Isla de Margarita, Venezuela: New Records and Comments

GILSON RIVAS FUENMAYOR<sup>1</sup>, GABRIEL UGUETO<sup>2</sup>, RAMÓN RIVERO<sup>3</sup>, AND AURÉLIEN MIRALLES<sup>4</sup> <sup>1</sup>*Museo de Historia Natural La Salle, Apartado Postal 1930, Caracas 1010-A, Venezuela. gilson.rivas@fundacionlasalle.org.ve,* <sup>2</sup>*11111 Biscayne Boulevard, Jockey Club, Phase III, # 556, Miami, Florida, 33181;* <sup>3</sup>*Ministerio del Ambiente y de los Recursos Naturales, Oficina Nacional de Diversidad Biológica, Museo de la Estación Biológica de Rancho Grande. Apartado 184, Maracay, Estado Aragua, Venezuela;* <sup>4</sup>*Département d'Ecologie et de Gestion de la Biodiversité, FRE 2696—Adaptation et évolution des systèmes ostéomusculaires, 55 rue Buffon, Muséum National d'Histoire Naturelle, 75005 Paris, France*

**ABSTRACT.**—We studied the herpetofauna of the Island of Margarita, the largest and most biologically diverse Venezuelan island on the Caribbean. We present an updated checklist of five amphibians and 43 reptiles and add some taxonomic comments for poorly known species, especially those which had been erroneously cited in former works. We report six new records for the island (*Bufo marinus*, *Norops chrysolepis*, *Mabuya nigropunctata*, *Phyllodactylus ventralis*, *Sphaerodactylus molei*, and *Tupinambis*

*teguixin*). The herpetofauna of the Island of Margarita have strong ties with that from mainland Venezuela, in particular with the species from the adjacent northeastern coastal range. Only one reptile species is endemic to the island, the colubrid snake *Drymarchon margaritae*. No endemic amphibians have yet been found.

**KEYWORDS.**—*Bufo marinus*, *Norops chrysolepis*, *Mabuya nigropunctata*, *Phyllodactylus ventralis*, *Sphaerodactylus molei*, *Tupinambis teguixin*

The islands off the Caribbean coast of Venezuela (including Aruba, Bonaire and Curaçao) have a herpetofauna of South American origins (van Buurt 2001). Some of these islands have never been connected to the continent, thus present a poor and mostly endemic herpetofauna. However, Trinidad, Tobago, Los Frailes, Los Testigos, Coche, Cubagua and Margarita Island were once connected to the mainland and their herpetofauna show little or no differentiation from that of the continent.

The Venezuelan state of Nueva Esparta consists of three islands of which the largest is Margarita (934 km<sup>2</sup>). The other two islands, Coche and Cubagua, are smaller and lie south of Margarita and closer to the Venezuelan coast. These three islands are considered a prolongation of the Venezuelan coastal range (Hoyos 1985). Excluding Trinidad, Margarita is the largest island off the coast of Venezuela. It is located 38 km northeast of the mainland and is roughly formed by two mountainous peninsulas connected by the isthmus of La Restinga, a low-elevation, long barrier reef bordered by mangroves. The western Peninsula de Macanao is drier than the eastern peninsula where tropical forests and the highest mountain of this island (Cerro Copey, 930 m asl) are found (Hoyos 1985). The island's habitat diversity sustain a complex herpetofauna richer in species number than that of its neighboring islands or even that of Curacao or Aruba, both land masses of similar size to Margarita.

The first comprehensive list of the herpetofauna of Margarita was done by Roze (1964) where four amphibians and 36 reptiles were reported. The list also contained information about the morphology, coloration and ecology. This list was preceded by

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short reports by Meek and Cory 1910; Hummelinck 1940; Marcuzzi 1950. Subsequent to Roze's work a few authors have added new records increasing the herpetofauna of Margarita to 43 species. Heyer (1978) reported an individual of the frog *Leptodactylus fuscus* from the island. Mainly from literature records, Barrio-Amorós (1998) reported five species of amphibians (*Bufo granulatus*, *Scinax ruber*, *Leptodactylus fuscus*, *L. mystaceus* and *Pleurodema brachyops*) in his list, as present in Isla de Margarita. Medina et al. (1987—see also Guada and Solé 2000), and Rivas et al. (2001), respectively, reported the sea turtle *Dermochelys coriacea* and the introduced gecko *Hemidactylus mabouia* for the island; and Barrio-Amorós et al. (2004) added an individual of *Scinax x-signatus*. Herein, we report new additions, changes to the herpetofauna of Margarita, update the list of the species and comment on the status of some taxa reported to occur in the island. In Appendix 1, we list 48 species (5 frogs, 5 turtles, 19 lizards and 19 snakes). All the specimens mentioned are deposited in Museo de Historia Natural La Salle, Caracas (MHNLS) and Museo de la Estación Biológica de Rancho Grande, Ministerio del Ambiente y de los Recursos Naturales, Maracay, Estado Aragua (EBRG).

The six new records of reptiles for the island re-affirm more evidently the strong affinities of Margarita's herpetofauna to that of the continent. All the new records are from taxa that are found in the adjacent mainland. The only endemic reptile is the colubrid snake *Drymarchon margaritae*. No endemic amphibian has been found.

Taxonomic changes for species previously cited to occur in Isla de Margarita

#### Anura

*Bufo humboldti*.—Narvaes and Rodrigues (2003) revised the *B. granulatus* species complex and synonymised the endemic subspecies reported from Margarita, *B. g. barbouri* (Gallardo 1965), with *B. g. humboldti*. They elevated many of the subspecies erected by Gallardo (1965) to species

status and synonymized others. These authors clarified that *B. granulatus* is not part of the Venezuelan herpetofauna. Besides *B. humboldti*, two other species are present in mainland Venezuela: *B. merianae* and *B. nattereri*.

*Leptodactylus fuscus*.—Based on five specimens, Roze (1964) reported *Leptodactylus mystaceus* from Margarita. However, Heyer (1978), assigned them to *L. fuscus* (a common species on mainland Venezuela) and listed one additional specimen from Margarita.

*Scinax ruber*.—Roze (1964), based on numerous specimens that later were apparently lost, reported this species from Margarita. Brongersma identified them as *Hyla rubra*. Nevertheless Roze was unsure of their taxonomic status because they were collected in epiphytic bromeliads. The taxonomic status of *S. ruber* in Venezuela is still unclear; at some localities in Venezuela this species has been confused with *S. x-signatus*. Barrio-Amorós et al. (2004) assigned one individual from the isla de Margarita deposited in the EBRG (3636) to *S. x-signatus* (a species also common in mainland Venezuela). We retain the later name, pending future revision of these two species in Venezuela.

#### Crocodylia

*Crocodylus intermedius*.—Hummelinck (1940) mentioned finding remains of several individuals of this species in Laguna de Las Marites. Roze (1964), unable to confirm the presence of this crocodile on the island, concluded Hummelinck's material may have been transported by ocean currents off the Orinoco Delta, where this species is found. It is unlikely that a population of this large crocodile, which when young needs fresh water to survive, could have remained unnoticed until the present. As no other records of this species have been reported from the area since Hummelinck's (1940) we do not include it as part of the herpetofauna of the island. If a crocodylian were to reach the coasts of Margarita, one would expect *Crocodylus acutus*, which inhabits brackish waters of the Venezuelan coast.

## Lacertilia

*Gonatodes* sp.—Roze (1964) referred to this species as "*Gonatodes ocellatus*" (being uncertain of the identity of Margarita's population). However, Rivero-Blanco (1979) examined the specimens mentioned by Roze, collected new material (on the Island of Margarita and on adjacent mainland in the eastern part of the Venezuelan Coastal Range), and concluded that this population represents a new species. Additionally the same author restricted *G. ocellatus* to the island of Tobago. Although Rivero-Blanco (1979) described and assigned a name to this species in his unpublished thesis, we call it here *Gonatodes* sp as the species has never been formally described. This species is in the process of being described (Carlos Rivero-Blanco, personal communication).

## New regional records and distribution expansion

## Anura

*Bufo marinus*.—Laguna La Pared, San Francisco de Macanao, 11 m asl. 28 May 2004. Ramón Rivero. EBRG 5086. This young individual was collected on the shores of a lagoon. This is the first voucher of this species for a Venezuelan island; it was previously reported for Aruba, Trinidad and Tobago (Murphy 1997; van Buurt 2001). The populations on Aruba were introduced (van Buurt 2001) while those from Trinidad and Tobago appear to be native (Murphy 1997). It is not clear if the Margarita population of *B. marinus* was accidentally introduced by humans or naturally dispersed there.

## Lacertilia

*Bachia heteropa*.—Cerro El Copey, 600 m asl, in 11 July 2004, by Gilson Rivas and Walter Schargel, MHNLS 16756-16757. San Francisco de Macanao, 300 m asl, in 25 May 2004, Ramón Rivero and Pilar Bermudez, EBRG 4477; 2 June 2004, Ramón Rivero and Pilar Bermudez, EBRG 4478. All four specimens belong to the subspecies *B. h. trinitatis*, a taxon previously reported from the

island of Trinidad and northeastern Venezuela. They have four clawed toes (external one greatly reduced and claw hardly visible), seven gular scales and three specimens show prefrontal scales but separated (although just slightly separated). However, one of the specimens from Macanao shows the prefrontals medially in contact. Although the last condition is commonly associated with *B. h. alleni* from Grenada, Tobago and neighbouring islands, it is also present in a few specimens of *B. h. trinitatis* in Trinidad (Dixon, 1973). This condition has not been reported for *B. h. trinitatis* in mainland Venezuela, but it is reported herein to occur in one individual from the Isla de Margarita. *Bachia heteropa* appears to have a clinal variation occurring from west to east and from south to north. Detailed genetic studies and the collection of more specimens are needed to support or reject the subspecies of *Bachia heteropa*, at least in the eastern portion of its range.

*Norops chrysolepis*.—Los Cedros, Macanao, Isla de Margarita, in 02 September and 15 December 1951, by Janis Roze, MHNLS 680-681 and 1208. These specimens were verified by Ernest Williams on 24 November 1967 and inexplicably were not mentioned by this author in his revision of the species years later (Vanzolini and Williams 1970). These specimens were listed by Roze (1964) as *Norops onca*, however after close examination of the three individuals it is clear that they belong to the species *N. c. planiceps*. The presence of this anole (common in northern Venezuela) on Margarita is expected, but that it was found on the driest part of the island, where it might be sympatric with *N. onca*, is somewhat surprising. The authors will address this subject in a review of the family Polychrotidae in Venezuela currently being prepared.

*Mabuya nigropunctata* (*sensu* Ávila-Pires 1995).—Cerro Copey, Isla de Margarita, in 1953 by Felipe Martín, MHNLS 3401-3402. Despite the great taxonomic confusion among the neotropical members of the genus *Mabuya*, diagnostic characters such as the parietals scales separated by the interparietal, the presence of 5 to 6 subequal supraciliaries and a relative large size (Ávila-Pires 1995; Massary et al. 2001), permit us

to clearly identify this species. Those specimens cannot be confused with *M. mabouya*, the Southern Lesser Antillean species of the genus (Miralles 2005). Indeed, a revision of the genus *Mabuya* in Venezuela revealed that *M. nigropunctata* is present in the eastern half of the country and could be regarded as one of the most common species of *Mabuya* on mainland Venezuela and on the island of Trinidad (Miralles et al. 2005). As in the other insular population of *M. nigropunctata* on Trinidad, the pattern and coloration of the specimens from Margarita seem to be slightly lighter than that of those from the mainland. This is the first record of this genus for the island of Margarita. This new locality may be, together with Trinidad and Tobago, the northernmost limit of *M. nigropunctata*.

*Phyllodactylus ventralis*.—El Guamache, Isla de Margarita, in May 1983, by M. Ameruoso, MHNLS 9327. This is the first confirmed record of this species in the island of Margarita. Although Roze (1964) mentioned this taxon as part of the island's herpetofauna his record was based on a misidentified specimen of *Sphaerodactylus molei* (see below) which he thought represented a juvenile *P. ventralis*.

*Sphaerodactylus molei*.—La Estancia, Isla de Margarita, in 29 December 1955, by Luis Jordan, MHNLS 1220. This specimen is an adult and it was misidentified by Roze (1964) as a juvenile individual of *Phyllodactylus ventralis*. This is the first record of this species for Margarita.

*Tupinambis teguixin*.—Playas del Tirano, Isla de Margarita, in August 1967, by Rafael Hoogestein, MHNLS 5894. This specimen is a sub-adult. This is the first record of this species for Margarita.

#### Serpentes

*Drymarchon margaritae*.—Cerro Copey, Isla de Margarita, 500 m.a.s.l. 19 June 1977. Carlos de Lima. MHNLS 6846. This is the second specimen known of this species (Roze 1959; Wüster et al. 2001), which is, so far, the only endemic reptile species of the island. There are only a few differences with the holotype, and it agrees with it in having 2 + 2 temporals (uppermost scale of

the first pair very reduced); 8 (4-5) supralabials, the sixth one triangular in shape and in contact with the lower postocular and the first lower temporal, the seventh supralabial is the largest; 8 infralabials; 17-17-15 rows of dorsals which are smooth and each scale presents two apical pits; subcaudals 76; anal plate single. It differs from the holotype only in that it has 200 ventrals (196 in the holotype). The head and body are black, but there are a few dorsal scales which are partially paler on the posterior part of the body. These pale scales may form rather diffuse, inconspicuous transversal bands. The ventral surface of the body is pale but speckled with black throughout its length.

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APPENDIX 1 Amphibians and reptiles from Isla de Margarita and some ecological data. We only consider subspecies that have a stable taxonomic status. Subspecies of doubtful status or that have not been recently revised are not included (leaving only the binomial species name).

Activity: D = Diurnal, N = Nocturnal; Habits: T = Terrestrial, Ar = Arboreal, F = Fossorial, Aq = Aquatic; Habitats: M = Marine, Ts = Thorn scrubland, Gs = Psammophile and Hilophile grasslands, Cm = Coastal mangroves, Df = Deciduous and semi-deciduous forests, Pf = Premontane evergreen forests, Dw = Dwarf submontane woodlands, H = Human habitations.

Species	Activity	Habits	Habitat							
			M	Ts	Gs	Cm	Df	Pf	Dw	H
Class Amphibia										
Order Anura										
Family Bufonidae										
<i>Bufo humboldti</i>	N	T		X	X	X	X	X	X	X
<i>Bufo marinus</i>	N	T					X			
Family Hylidae										
<i>Scinax x-signatus</i>	N	Ar						X	X	
Family Leptodactylidae										
<i>Leptodactylus fuscus</i>	N	T			X					X
<i>Pleurodema brachyops</i>	N	T		X	X		X			X
Class Reptilia										
Order Testudines										
Family Testudinidae										
<i>Geochelone carbonaria</i>	D	T						X		X
Family Cheloniidae										
<i>Chelonia mydas</i> <sup>1,2</sup>	D,N	Aq	X							
<i>Eretmochelys imbricata</i> <sup>1,2</sup>	D,N	Aq	X							
<i>Lepidochelys olivacea</i> <sup>2</sup>	D,N	Aq	X							
Family Dermochelyidae										
<i>Dermochelys coriacea</i> <sup>1,2</sup>	D,N	Aq	X							

## APPENDIX 1 Continued.

Species	Activity	Habits	Habitat							
			M	Ts	Gs	Cm	Df	Pf	Dw	H
Order Squamata										
Family Iguanidae										
<i>Iguana iguana</i>	D	Ar		X	X	X	X			X
Family Polychrotidae										
<i>Norops chrysolepis</i>	D	T,Ar					X	X		
<i>Norops onca</i>	D	T		X						X
<i>Polychrus marmoratus</i>	D	Ar					X			
Family Tropiciduridae										
<i>Tropidurus hispidus</i>	D	T,Ar		X	X		X			X
Family Gekkonidae										
<i>Gonatodes</i> sp.	D	Ar						X	X	
<i>Gonatodes vittatus</i>	D	Ar		X	X		X			X
<i>Hemidactylus mabouia</i>	N	Ar								X
<i>Phyllodactylus ventralis</i>	N	Ar		X						X
<i>Sphaerodactylus molei</i>	D	T					X			
<i>Thecadactylus rapicauda</i>	N	Ar		X	X		X			X
Family Gymnophthalmidae										
<i>Bachia heteropa</i>	D	F					X	X	X	
<i>Gymnophthalmus</i> sp	D	T		X	X		X			X
<i>Tretioscincus bifasciatus</i>	D	T		X	X		X			X
Family Teiidae										
<i>Ameiva ameiva</i>	D	T		X	X		X			X
<i>Ameiva bifrontata</i>	D	T		X	X	X	X			X
<i>Cnemidophorus lemniscatus</i>	D	T		X	X	X	X			X
<i>Tupiambis teguixin</i>	D	T		X			X			
Family Scincidae										
<i>Mabuya nigropunctata</i>	D	T					X	X		
Family Leptotyphlopidae										
<i>Leptotyphlops goudotti</i>	N	F					X			
Family Boidae										
<i>Boa constrictor</i>	N	T,Ar		X						
<i>Corallus ruschenbergerii</i>	N	Ar				X	X			
<i>Epicrates maurus</i>	N	T		X	X					
Family Colubridae										
<i>Drymarchon margaritae</i>	D	T					X			
<i>Leptodeira annulata ashmeadii</i>	N	T,Ar			X		X			X
<i>Leptophis ahaetulla</i>	D	Ar					X	X	X	
<i>Liophis melanotus melanotus</i>	D	T					X			
<i>Masticophis mentovarius</i>	D	T		X	X		X			X
<i>Mastigodryas amarali</i>	D	T			X		X	X	X	
<i>Mastigodryas pleei</i>	D	T		X	X		X			X
<i>Oxybelis aeneus</i>	D	Ar		X			X	X		X
<i>Phimophis guianensis</i>	N	F		X	X		X			
<i>Pseudoboa newwiedii</i>	N	T					X	X		
<i>Sibon nebulata</i>	N	Ar					X			
<i>Spilotes pullatus</i>	D	T,Ar						X	X	
Family Elapidae										
<i>Micrurus isozonus</i>	N	F		X			X			
Family Viperidae										
<i>Crotalus durissus cumanensis</i>	N	T		X						
<i>Porthidium lansbergii</i>	N	T		X						

<sup>1</sup>In nesting sites (coastal beaches).<sup>2</sup>In feeding sites.