

# HERPETOLOGICA

VOL. 53

MARCH 1997

NO. 1

*Herpetologica*, 53(1), 1997, 1-6  
© 1997 by The Herpetologists' League, Inc.

## A NEW SPECIES OF *LEPOSOMA* (SQUAMATA: GYMNOPHTHALMIDAE) FROM A RELICTUAL FOREST IN SEMIARID NORTHEASTERN BRAZIL

MIGUEL TREFAUT RODRIGUES<sup>1</sup> AND DIVA MARIA BORGES<sup>2</sup>

<sup>1</sup>*Universidade de São Paulo, Instituto de Biociências, Departamento de Zoologia,  
Caixa Postal 11.294, CEP 05422-970, São Paulo, SP, Brazil*

<sup>2</sup>*Universidade Federal do Ceará, Departamento de Biologia, Caixa Postal 52.856,  
CEP 60.151-970, Fortaleza, Ce, Brazil*

**ABSTRACT:** We describe a new species of *Leposoma* from Serra de Baturité, a forest enclave in the semi-arid Caatingas of the State of Ceará, in northeastern Brazil. The new species has a single frontonasal scale, elongate dorsals, lanceolate ventrals in transverse and diagonal, rather than longitudinal, rows, conical granules on the side of the neck, and strong sexual dichromatism. *Leposoma annectans* is considered a synonym of *L. scincoides*.

**Key words:** *Leposoma baturitensis*; New species; Squamata; Gymnophthalmidae; Brazil

LIZARDS of the genus *Leposoma* are a conspicuous element of the leaf-litter herpetofaunal assemblages of tropical forest areas in South and Central America (Duellman, 1978; Zimmerman and Rodrigues, 1990). The genus *Leposoma* was first reviewed more than 40 years ago (Ruíbal, 1952). In 1971, Uzzell and Barry described a new species and clarified differences among some formerly confused sibling species. The latter work and that of Hoogmoed (1973) were particularly important in recognizing *Leposoma percarinatum* as parthenogenetic. More recently, Ayala and Harris (1982) and Avila-Pires (1995) described three new species.

*Leposoma* currently includes 11 species that range from Costa Rica throughout Amazonia to the Atlantic forests of eastern Brazil. *Leposoma hexalepis* occurs in the Orinoco Basin in Colombia, and *L. ioanna* is from the Valle de Cauca in Pacific Colombia. *Leposoma rugiceps* ranges from Canal Zone of Panama east to the Santa Marta region and south into Valle de Río Magdalena in Colombia, and *L. southi* oc-

curs in Costa Rica, Panama, and Pacific Colombia. *Leposoma parietale* is known from the Amazonian slopes of the Andes in Peru, Ecuador, Colombia, and adjacent Brazil. *Leposoma percarinatum* and *L. guianensis* occur in central and eastern Amazonia, *L. oswaldoi* and *L. snethlagae* in western Amazonia of Brazil, and *L. scincoides* and *L. annectans* in eastern Brazil.

The species of *Leposoma* can be separated into two distinct groups. Species from the Atlantic forest (*L. scincoides* and *L. annectans*) have elongate dorsal scales and lanceolate ventrals that characteristically are arranged in diagonal, rather than in regular longitudinal, rows. In all other species, the dorsal scales are wider and shorter, and the ventral scales vary from rectangular to rhomboid and are slightly mucronate and arranged in regular, longitudinal rows. These two groups were formally referred to as the *L. scincoides* and *L. parietale* species groups, respectively (Ruíbal, 1952).

Herein, we describe a new species of the

*L. scincoides* species group from Serra de Baturité, a mountain forest enclave in the semiarid Caatingas of northeastern Brazil. The range of this species partially fills the geographic discontinuity between the Amazonian and Atlantic forest species.

#### MATERIALS AND METHODS

Specimens were collected by one of us (Borges) during a survey of the herpetofauna of Serra de Baturité from 1988–1991. Additional specimens were obtained later and donated to the herpetological collection of the University of Ceará. Data were taken from preserved specimens housed in the Museu de Zoologia da Universidade de São Paulo (MZUSP) and Universidade Federal do Ceará (UFC). We obtained distributional records from the collection of the Museu Nacional do Rio de Janeiro (MN) and the private collection of Sergio Potsch Carvalho e Silva (SPCS). Scale nomenclature and scale counts are according to Uzzell and Barry (1971). Snout–vent length and tail length were measured to the nearest millimeter with a ruler. The following description is based on the type series.

#### SPECIES DESCRIPTION

*Leposoma baturitensis* sp. nov.

*Holotype*.—MZUSP 79.378 (Figs. 1 and 2), an adult male obtained at Serra de Baturité (Sítio Barbosa): Pacoti: State of Ceará: Brazil (4°10'S, 38°55'W; 800 m above sea level); collected by Diva Maria Borges on 8 February 1989.

*Paratypes*.—All collected at Serra de Baturité: State of Ceará: Brazil. MZUSP 79.379, female, Sítio São Gonçalo do Freire: Pacoti; collected by D. M. Borges on 23 August 1991. UFC 1948, male, Sítio Arábia: Guaramiranga; collected by D. M. Borges on July 1989. UFC 1951, male, and UFC 1952–1953, females, Sítio São José, Guaramiranga; collected by R. Otoch and L. P. Castro on 7 April 1994.

*Diagnosis*.—A *Leposoma* having a single frontonasal scale, lanceolate ventrals in transverse (but not longitudinal) rows, conical granules on the side of the neck, and strong sexual dimorphism in color pattern;

ventral color cream in females, black in males.

*Leposoma baturitensis* can be distinguished from the species of the *L. parietale* group by having lanceolate ventrals in transverse and diagonal rows. On this basis, the comparisons below are restricted to the *scincoides* group. *Leposoma scincoides* differs from *L. baturitensis* in having a longitudinally divided frontonasal scale (single in *L. baturitensis*). In *L. scincoides*, all scales on the dorsal surface of the head have longitudinal striations; such striations also are present in *L. baturitensis*, but they are absent on the prefrontals and the frontonasal, which are smooth. *Leposoma scincoides* further differs from *L. baturitensis* in the following characters (data for *L. baturitensis* in parentheses): 25–30 scales around midbody (24–26); 29–35 dorsals (25–27); 19–21 ventrals (17–18); total pores in males 16–20 (13–15). *Leposoma baturitensis* is further distinguished from all other *Leposoma* by the marked sexual dimorphism in adult color pattern in this species; the belly is red-orange in adult males and cream in females, whereas in all other *Leposoma*, males and females have the same dorsal and lateral body color. *Leposoma baturitensis* is the only species in which adult males are almost black laterally and ventrally, and females have a brown dorsum and a cream venter.

*Description*.—Rostral broad, wider than high, contacting first supralabial, nasal, and frontonasal. Frontonasal single, slightly wider than long, biconcave posteriorly, just reaching anterior supraocular, in broad contact with rostral, nasal, loreal, and prefrontals. Prefrontals large, in broad contact. Frontal hexagonal with lateral margins slightly concave; approximately twice as long as broad; anteriorly adjacent to paired frontoparietals. Frontoparietals larger than prefrontals, in broad contact. Interparietal as large as frontal, with nearly straight, slightly divergent lateral margins. Parietals wider than interparietal, posterior margins rounded. Supraoculars four; the second largest, first the smallest. Nasal large, longer than wide, divided above, with the nostril in center. Loreal

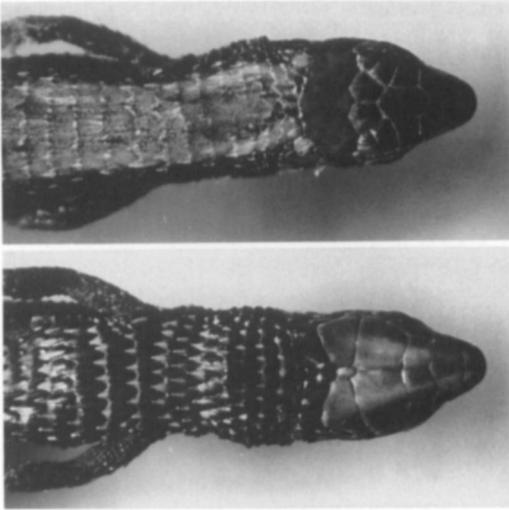


Fig. 1.—Dorsal (above) and ventral (below) views of the holotype of *Lepsosoma baturitensis* (MZUSP 79.378, adult male).

posterior to nasal; long, narrow, and diagonally oriented; anterior to squared frenocular. Infraorbital granules six. Supralabials six; first largest. Superciliaries five or six, first as large as first supraocular, expanded on lateral surface of head. Eyelid with transparent disc formed by three or four scales. Temporal region covered with keeled, juxtaposed scales, larger than the granules of the lateral surface of neck. Ear opening bordered by a series of small granules; tympanum distinct. Scales of dorsal surface of head (except rostral and frontonasal) with longitudinal striations. Side of neck covered with conical, sometimes keeled granules.

Mental broad, wider than long, anterior to unpaired genial and three pairs of large genials. First pair of genials smallest, second largest, both in contact medially and with infralabials. Third pair of chin shields intermediate in size, in contact with infralabials and separated medially by one or two flat, elongate granules. A symmetric series of flat enlarged scutes between third pair of chin shields and gulars; those closer to the midline smaller than genials, but resembling them in size and shape. Infralabials five, third largest. Gulars in eight transverse rows, most scales in most anterior row smooth, rounded, grading in

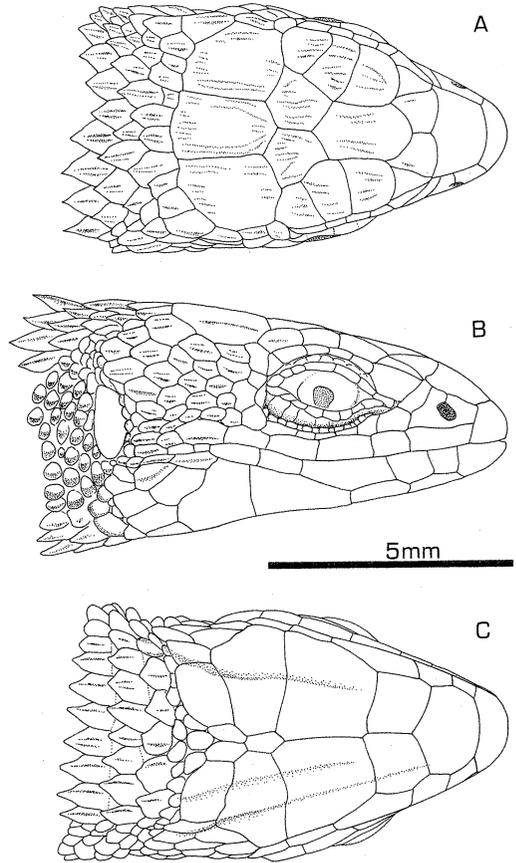


Fig. 2.—(A) Dorsal, (B) lateral, and (C) ventral views of the head of *Lepsosoma baturitensis* (MZUSP 79.378, holotype).

posterior rows to lanceolate and slightly keeled. Collar fold distinct, concealing small granules. Interbrachials identical to ventrals.

Dorsal scales large, strongly keeled, mucronate, imbricate, becoming juxtaposed at midbody, in 25–27 regular transverse rows between interparietal and posterior level of hind limbs. Lateral scales resembling dorsals; grading into ventrals except for an area with small granules above level of arm. Distinct granular area in groin. Scales around midbody 25–27. Ventrals narrower and longer than dorsals, leaf-shaped, keeled, mucronate, imbricate, in 17–18 regular transverse and diagonal rows from interbrachials (included) to preanals. Posterior margin of vent with five scales;

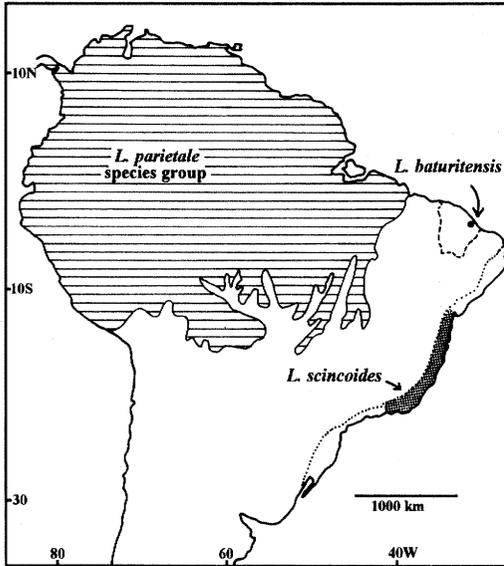


Fig. 3.—Approximate distribution of *Leposoma scincoides* (stippled area), the *L. parietale* group, and *L. baturitensis* (●); the dashed line shows the State of Ceará and the dotted line the approximate limits of the Atlantic forest.

central and paramedial scales the largest. Transverse series of six lanceolate, mucronate, weakly keeled scales anterior to vent scales; median pair largest. Preanal pores four in males and females, two on each side; femoral pores 9–11 in males, absent in females.

Scales of tail in complete rings; dorsal and lateral tail scales more strongly keeled and wider than ventral scales.

Limb scales keeled and imbricate, except on ventral surface of brachium and on posterior granular surface of thigh. Palmar and plantar surfaces with small, conical granules. Subdigital lamellae mostly double, 11 or 12 on Finger IV and 16–18 on Toe IV. Fingers and toes with following relative sizes:  $1 < 2 = 5 < 3 < 4$  and  $1 < 2 < 5 < 3 < 4$ , respectively.

Dorsal surfaces of body and tail in adult males light brown, moderately mottled with dark brown. Lateral and ventral surfaces of males uniform dark brown to black except for tip of gular and ventral scales and scales on the under surface of tail which are white. Genials and labials irregularly mottled with white spots. In females and juveniles, a light brown dorsal stripe three

scales wide extending from interparietal onto tail; dorsolateral light stripe one or two scales wide present parallel and ventral to light brown stripe. Inconspicuous, irregular dark brown line one-half to one scale wide beneath dorsolateral light stripe extending from arm onto the tail. In females, dorsum of head light brown with dark brown reticulations. Sides of head yellowish with some dark spots concentrated in center of labials; dark spots sometimes present on periphery of genials. Venter of body and midventer of head cream, immaculate. Ventral tail yellowish-white anteriorly, grading posteriorly to dark brown.

Snout–vent length of largest male (MZUSP 79.378) 35 mm; complete tail: 76 mm. Snout–vent length of largest female (MZUSP 79.379) 32 mm; incomplete tail.

*Etymology*.—The specific name is an adjective and refers to Serra de Baturité in the State of Ceará, Brasil, in which this species is known to occur. This mountain range is simply called “Baturité” locally.

*Distribution and ecology*.—Serra de Baturité is a residual crystalline mountain range rising from 400–1000 m above sea level from the large (approximately 800,000 km<sup>2</sup>), semiarid Caatingas (Ab’Saber, 1982). The general orientation of this 55 × 30-km massif is NNE–SSW, and it is located approximately between 4–4°30' S and 38°45'–39°15' W (Borges, 1991). Its northeastern border is about 70 km from the coast of the State of Ceará (Fig. 3). In contrast with the open xeromorphic vegetation of the surrounding Caatingas, most of the Serra de Baturité was covered formerly with rainforest. Long-time human occupation, timber commerce, and agriculture have reduced these forests extensively, and they now consist of second growth and groves. At present, the best preserved areas of primary forest are situated on the tops of the highest mountains. Guaramiranga and Pacoti are located at about 800 m elevation on the northeastern side of the massif where rainfall is greatest. The rainy season extends from January–July and annual precipitation reaches 1200 mm.

The lizards were obtained by day from

disturbed areas in second-growth forest. Two were found under decaying logs in the litter of banana and coffee groves near primary forest. Other specimens were obtained as they foraged in the leaf litter in primary forest. Other forest lizards collected at the same place and absent from the Caatingas were *Stenolepis ridleyi*, *Enyalius bibroni*, and *Tropidurus strobilurus* (= *Strobilurus torquatus* fide Frost, 1992).

**Remarks.**—The description of *Leposoma annectans* was based on a female from "Baia," State of Bahia, Brasil (Ruibal, 1952), at the time a reference implying the city of Salvador. *Leposoma annectans* was distinguished from *L. scincoides* by the presence of an enlarged interparietal (narrow in *scincoides*) and separation of the third pair of genials from the lower labials by a small scale (contacting labials in *L. scincoides*). Although later collections from the area revealed several new specimens of *L. scincoides*, the type of *L. annectans* is the only known specimen of the species. We have examined the holotype and in all other characters it is identical to *L. scincoides*. Each of the putative diagnostic features is represented (sometimes asymmetrically in the same individual) within the range of variation of *scincoides*. Consequently, the two taxa should be considered to be synonymous.

#### DISCUSSION

*Leposoma baturitensis* is known only from the Serra de Baturité, to which it seems the species is endemic, given the rainforest preferences of the genus and its absence from the semiarid Caatingas surrounding this isolated mountain range. *Leposoma scincoides* occurs in the Atlantic forests of eastern Brazil from Teresópolis in the State of Rio de Janeiro to Salvador in Bahia. Curiously, the genus seems to be absent from the Atlantic forest extending about 700 km from north of Salvador to the State of Rio Grande do Norte where these forests dwindle and disappear. Intensive surveys performed in large patches of remaining Atlantic forests throughout this area failed to reveal any *Leposoma* in seemingly suitable habitat. Several strictly forest lizards (e.g., *Anolis fuscoauratus*, *A.*

*punctatus*, *A. ortonii*, *Coleodactylus meridionalis*, *Polychrus marmoratus*, and *Tropidurus strobilurus*, among others) occur in these areas, but species of *Leposoma* are absent. Perhaps *Leposoma baturitensis* is a relictual species that evolved in a forest refuge in the semiarid Caatingas. As suggested by Ab'Saber (1982) and Vanzolini (1981), these relictual forests may have been part of a forest bridge that united Amazonian and Atlantic forests in the past.

#### RESUMO

Uma nova espécie de *Leposoma* é descrita para a Serra de Baturité, um enclave de florestas nas Caatingas do Estado do Ceará, Brasil. A nova espécie apresenta frontonasal inteira, escamas dorsais alongadas, ventrais lanceoladas em fileiras transversais e diagonais, grânulos cônicos nos lados do pescoço e acentuado dicromatismo sexual. *Leposoma annectans* é considerado sinônimo de *L. scincoides*.

**Acknowledgments.**—We thank Fundação de Amparo à Pesquisa do Estado de São Paulo and CNPq for support, and the following persons and institutions for permission to study material under their care: P. E. Vanzolini and A. M. Malva-Ramos (MZUSP); U. Caramaschi and M. Soares (MN) and S. P. Carvalho e Silva (SPCS). We thank R. Otoch and L. H. Pinto de Castro for collecting additional specimens and F. J. A. Nojosa for his valuable help in the field during the survey of the area. G. Skuk drew the figures. We also thank L. Trueb, R. G. Jaeger, and three anonymous reviewers for comments on the manuscript.

#### LITERATURE CITED

- AB'SABER, A. N. 1982. The paleoclimate and paleoecology of Brazilian Amazonia. Pp. 41–59. In G. T. Prance (Ed.), *Biological Diversification in the Tropics*. Columbia University Press, New York, New York.
- AVILA-PIRES, T. C. S. 1995. Lizards of Brazilian Amazonia (Reptilia: Squamata). *Zool. Verh. Leiden* 299:1–706.
- AYALA, S. C., AND D. M. HARRIS. 1982. Una nueva especie de microteido (Sauria: Teiidae) del oriente de Colombia. *Caldasia* 13(63):467–472.
- BORGES, D. M. 1991. Herpetofauna do maciço de Baturité, estado do Ceará: composição, ecologia e considerações zoogeográficas. M.S. Thesis, Universidade Federal da Paraíba, João Pessoa, Paraíba, Brasil.
- DUELLMAN, W. E. 1978. The biology of an equatorial herpetofauna in Amazonian Ecuador. *Misc. Publ. Mus. Nat. Hist. Univ. Kansas* 65:1–352.

- FROST, D. 1992. Phylogenetic analysis and taxonomy of *Tropidurus* group of lizards (Iguania: Tropiduridae). *Am. Mus. Novit.* 3033:1-68.
- HOOGMOED, M. S. 1973. Notes on the herpetofauna of Surinam IV: The lizards and amphisbaenians of Surinam. W. Junk, The Hague, The Netherlands.
- RUIBAL, R. 1952. Revisionary studies of some South American Teiidae. *Bull. Mus. Comp. Zool.* 106(11): 477-529.
- VANZOLINI, P. E. 1981. A quasi-historical approach to the natural history of the differentiation of reptiles in tropical geographic isolates. *Pap. Avul. Zool., S. Paulo* 34(19):189-204.
- UZZELL, T, AND J. C. BARRY. 1971. *Leposoma percarinatum*, a unisexual species related to *L. guianense*; and *Leposoma toanna*, a new species from pacific coastal Colombia (Sauria, Teiidae). *Postilla, Peabody Mus. Yale Univ.* 154:1-39.
- ZIMMERMAN, B. L., AND M. T. RODRIGUES. 1990. Frogs, snakes and lizards of the INPA-WWF reserves near Manaus, Brazil. Pp. 426-454. *In* A. H. Gentry (Ed.), *Four Neotropical Rainforests*. Yale University Press, New Haven, Connecticut.

Accepted: 9 January 1996

Associate Editor: Linda Trueb

*Herpetologica*, 53(1), 1997, 6-13

© 1997 by The Herpetologists' League, Inc.

## A NEW SPECIES OF *BATRACHYLA* (ANURA: LEPTODACTYLIDAE) FROM SOUTHERN CHILE

J. RAMÓN FORMAS

*Instituto de Zoología, Universidad Austral de Chile,  
Casilla 567, Valdivia, Chile*

**ABSTRACT:** A new species of frog, *Batrachyla nibaldoi*, is described from the temperate *Nothofagus* forests of South America in southern Chile. This species is most similar to *B. taeniata* (Girard).

**Key words:** Anura; *Batrachyla nibaldoi*, new species; Temperate *Nothofagus* forests; Southern Chile

THE genus *Batrachyla* Bell 1843 is endemic to the temperate *Nothofagus* forests of southern Chile and Argentina. At present, four species are known (*B. leptopus*, *B. taeniata*, *B. antartandica*, and *B. fitzroya*). In *B. leptopus*, *B. taeniata*, and *B. antartandica*, fertilization is external and the eggs are laid on damp vegetation out of the water (Barrio, 1967; Busse, 1971; Capurro, 1958; Ceï, 1962; Formas, 1976). The larval proctodeal tube is absent in tadpoles of *B. taeniata* and *B. antartandica* (Lavilla, 1988), and in *B. leptopus*, the tube is short (Formas, 1976). The reproductive biology of *B. fitzroya* is unknown.

In November 1990, Lila Brieva, Raúl Arriagada, and the author collected frogs along the Carretera Austral in the Aisen Región (XI Región) of southern Chile. The herpetofauna of this cold, woody area is among the most poorly known of any part

of Chile. While there, we collected four adults of a distinct new species of *Batrachyla*, described herein.

### MATERIALS AND METHODS

Specimens are deposited in the Instituto de Zoología, Universidad Austral de Chile (IZUA). Measurements were taken with a dial caliper to the nearest 0.1 mm. The following measurements were taken according to Ceï (1962): snout-vent length (SVL), head length, head width, thigh length, tibia length, foot length, and nostril-snout distance. Internarial distance was measured according to Ceï (1980). Eye diameter and tympanum diameter were taken according to Duellman (1970). Descriptions of the pectoral girdle and hyoid plate are based on dissections of the paratype IZUA 1622. Other osteological characters are described from the paratype