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## A NEW SPECIES OF *LEPOSOMA* (SQUAMATA, GYMNOPHTHALMIDAE) FROM THE REMNANT ATLANTIC FORESTS OF THE STATE OF BAHIA, BRAZIL

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### ABSTRACT

*Leposoma puk*, a new species of the scincoides group is described from the Atlantic forests of southern state of Bahia, Brazil. The new species is characterized by a single frontonasal; elongate dorsal and lanceolate ventral scales arranged in diagonal rows; weakly striated or smooth scales on top of head; a longer than wide interparietal, with almost straight lateral margins; 17-18 pores; third supraocular the largest one, wider than long and clearly rectangular in shape; a suture between frontal and frontoparietal scales coincident with the middle of the third supraocular; and, a black pigmentation in the venter or along venter margins in males. The discovery of this new species, sympatric with *Leposoma annectans*, *L. nanodactylus*, and *L. scincoides* ranks the Atlantic Rainforest region of Southern Bahia first in species diversity for the genus. Zoogeography and speciation of *Leposoma* of the scincoides group are discussed.

KEYWORDS: *Leposoma puk*, new species, Brazil, Squamata, Gymnophthalmidae.

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## RESUMO

*Leposoma puk*, uma nova espécie do grupo *scincoides* é descrita para a região da mata Atlântica do sul da Bahia, Brasil. A nova espécie é caracterizada por apresentar: frontonasal simples; escamas dorsais alongadas e ventrais lanceoladas dispostas em fileiras diagonais; escamas do topo da cabeça lisas ou levemente estriadas; interparietal mais longa que larga, com margens laterais quase paralelas; 17-18 poros; terceira supraocular mais larga que longa e a maior da área supraocular; sutura entre a frontal e frontoparietal coincidente com a região mediana da terceira supraocular; e machos com pigmentação negra no ventre ou ao longo da região paraventral. A descoberta desta nova espécie, simpátrica com *Leposoma annectans*, *L. nanodactylus*, e *L. scincoides* torna a região da mata atlântica do sul da Bahia a área com a maior diversidade local de espécies do gênero. Discutem-se alguns aspectos sobre a zoogeografia e a especiação de *Leposoma* do grupo *scincoides*.

**PALAVRAS-CHAVE:** *Leposoma puk*, espécie nova, Brazil, Squamata, Gymnophthalmidae.

## INTRODUCTION

The Atlantic rainforests and their highly diverse and endemic biota are one of the top five threatened hotspots of the world (Mittermeier *et al.*, 1997, 1999; Myers *et al.*, 2000). Originally extending along the eastern coast of Brazil for about 5.500 km from near 6° to 30° S and covering a total area of approximately 1.000.000 km<sup>2</sup>, less than 6% of the original coverage remains today. Despite the enormous amount of forests that have been cut down, species surveys are far from complete and several new species have been discovered during the past few years. Under the present regime of forest disturbance, discovery of new species contributes to phylogenetic understanding of particular groups and consequently the history of these forests and their relationships with other habitats in South America.

The gymnophthalmid lizards of genus *Leposoma* are a conspicuous component of the forest litter herpetofauna of Amazonian and Atlantic forests (Pellegrino *et al.*, 1999; Rodrigues, 1997; Rodrigues and Borges, 1997; Rodrigues *et al.*, 2002). Two assemblages of species are presently known: the *parietale* and *scincoides* species groups. Until now, the highest species diversity in *Leposoma* was concentrated in the species of *parietale* group which ranges from Amazonia to Costa Rica. Nine species are presently recognized in *parietale* group and a maximum of two species have been reported to occur sympatrically (Avila-Pires, 1995; Rodrigues, 1997). The *scincoides* species group of *Leposoma* is restricted

to the Atlantic Forest and until recently the only species admitted in the group was *Leposoma scincoides*. More recent surveys in the remaining patches of the Atlantic forests revealed a much higher diversity in this group: *Leposoma baturitensis* (Rodrigues and Borges, 1997) and *Leposoma nanodactylus* (Rodrigues, 1997) were described and *Leposoma annectans* resurrected from synonymy of *Leposoma scincoides* (Rodrigues *et al.*, 2002). The revalidation of *Leposoma annectans* resulted from the study of a large series of specimens obtained during fieldwork at Una, state of Bahia, in the context of a broad project (RestaUna), designed to study the comparative response of several biological groups facing forest fragmentation in northern Atlantic forests (Rodrigues *et al.*, 2002). Although not describing it, Rodrigues *et al.* (2002) made reference to an adult specimen of a still undescribed *Leposoma* collected more than 10 years ago in the Atlantic forests of Bahia (see also Rodrigues, 1990). Fortunately, in the last field campaign of the RestaUna project another specimen of that undescribed species was obtained and subsequently, an additional specimen was collected on an adjacent mountain. Therefore, the description presented here is based on three specimens. The discovery of this new species raises to five the number of species of *Leposoma* known from the Atlantic forests and to four the number of species in the genus that occur sympatrically in the forests of southern Bahia, placing the area to that of with the highest local diversity for the genus.

#### SPECIES DESCRIPTION

##### ***Leposoma puk* sp.nov.**

Holotype: MZUSP 87.959, an adult male from Una: state of Bahia: Brazil (15°10'S, 39°03'W), collected by Marianna Dixo on 25 February 2000; field number MD 2592.

Paratypes: MZUSP 66.475, an adult male from São José do Macuco, presently São José da Vitória (Fazenda Unacau): state of Bahia: Brazil (15°09'S, 39°18'W); collected by Miguel Trefaut Rodrigues on 15. x. 1986, field number 86.7231, and MZUSP 89334, an adult male from Serra do Teimoso: Jussari: state of Bahia: Brazil (15°09'S, 39°31'W); collected by M. T. Rodrigues, D. Pavan, M. Dixo and V. K. Verdade on 20.iii.2001, field number MRT 6160.

Etymology: *puk* derives from the vocabulary of the now extinct Botocudo indians who formerly lived in the Atlantic forests of State of Bahia, Brazil. It means "the one who cries", and here is intended to reflect the loss of the Botocudo culture, as well as the highly threatened and dwindling present condition of the Atlantic Rainforests, the remaining habitat of these little forest lizards.

Diagnosis: A *Leposoma* of the *scincoides* group characterized by a single frontonasal, elongate dorsal and lanceolate ventral scales arranged in diagonal rows and having: 1) weakly striated to smooth scales on top of head; 2) interparietal longer than wide, with almost straight lateral margins; 3) parietals longer than wide; 4) 17-18 pores; 4) third supraocular the largest one, wider than long and clearly rectangular in shape; 5) a suture between frontal and frontoparietal scales that coincides with the middle of the third supraocular, and, 6) a black pigmentation in the venter or along venter margins in males.

Description of the holotype: (Figs. 1-2). Snout normal, slightly acuminate. Rostral broad, wider than high, contacting first supralabial, nasal and frontonasal. Frontonasal entire, as wide as long; in broad contact with rostral, nasal, loreal, and prefrontal, always indenting posteriorly the latter; separating or just touching first supraocular. Prefrontals as long as large, in broad contact at midline and with first supraocular; indented anteriorly by the frontonasal and posteriorly by the frontal. Frontal hexagonal, with almost straight lateral margins; approximately twice as long as broad; indenting posteriorly a pair of frontoparietals. Frontoparietals pentagonal, larger than prefrontals, in broad contact; their midline suture approximately the same size as suture between prefrontals. Interparietal wider and longer than frontal, with almost straight lateral margins, longer than wide; almost straight posteriorly. Parietals irregularly hexagonal, longer than wide; as large as and as long as interparietal, always reaching the level of its posterior margin. Supraoculars four; first smallest, triangular, longer than wide and contacting loreal. Third supraocular the largest, roughly rectangular, wider than second and fourth supraoculars that are equivalent in size; all supraoculars contacting superciliaries. Nasal above first supralabial, large, longer than wide, with the nostril in the center. Nasal semidivided superiorly or divided at the level of posterior margin of nostril. Ventral margin of nasal slightly convex, dorsal margin straight. Loreal narrow, posterior to nasal, diagonally and ventro-posteriorly oriented; contacting nasal, internasal, first supraocular and first superciliar, a small preocular granule, and frenocular. Frenocular contacting nasal and followed by a series of four infraorbital elongate scutes; the first one quadrangular, smaller than frenocular, the second, third and fourth elongate, the fifth enlarged, quadrangular, and followed by a temporal scute with about the same size. Six supralabials, first and third the longest, fifth highest, third and fourth below eye. Sixth supralabial followed by a granule much smaller than last supralabial and separated from the tympanum by two similar granules. Five superciliaries, first largest, slightly larger than first supraocular, expanded both on lateral and dorsal surface of head and in broad contact with loreal and a small granule placed between the latter and frenocular. Other superciliaries elongated, the last being the largest one. Eyelid with semitrans-

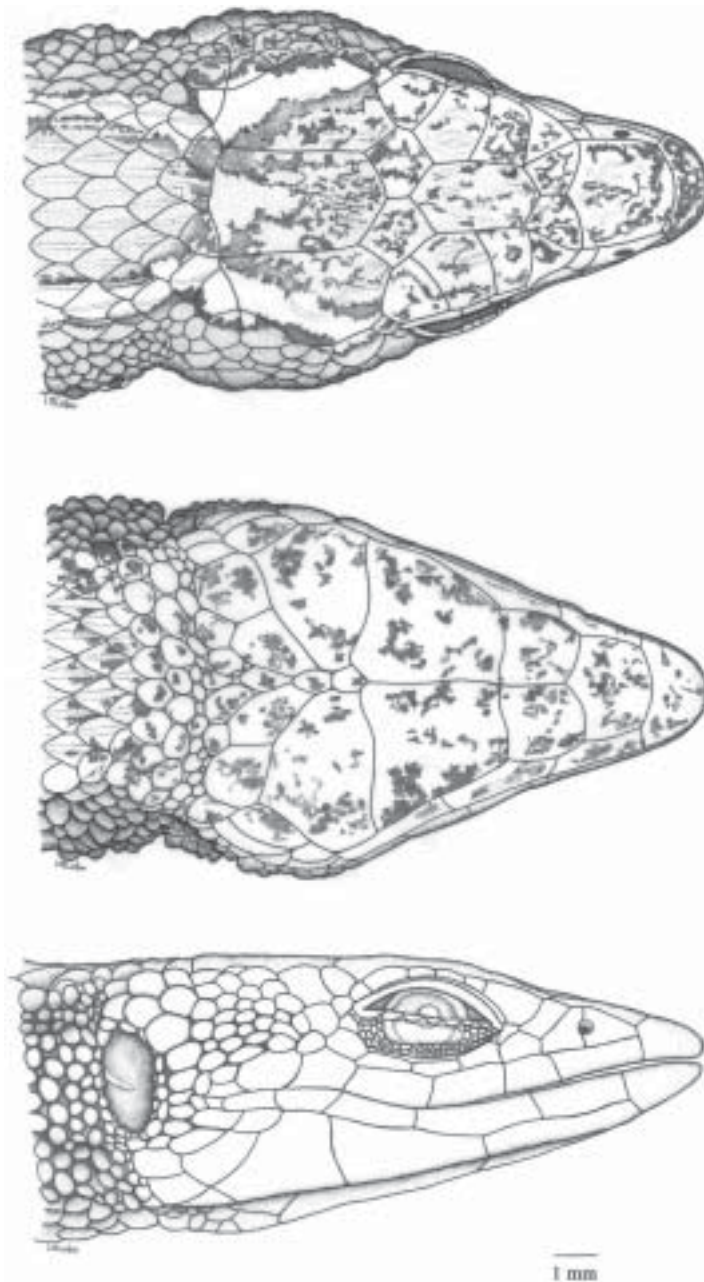


Figure 1. Dorsal, ventral, and lateral view of head of the holotype of *Leposoma puk* from Una, state of Bahia, Brazil (MZUSP 87959).



Figure 2. Dorsal and ventral view of a paratype of *Leposoma puk* (MZUSP 66475) from São José do Macuco.

parent disc formed by two enlarged scales. Temporal region almost all covered with smooth or slightly keeled and juxtaposed scales that are larger around tympanum, around parietals and surrounding postocular area. Lateral surface of neck with conical and juxtaposed keeled granules, irregularly arranged in transversal rows. Ear opening bordered by a series of very small, smooth, granules; tympanum distinct, subvoid. Scales of the top of head with very slight, low relief irregular longitudinal striations; almost smooth when compared to most of other *Leposoma*.

Mental broad, wider than long. Postmental single, contacting first infralabial. Three pairs of enlarged genials, all contacting infralabials; first pair the smallest one, second largest, both in broad contact at midline, and in contact with infralabials. Third pair of genials wider than long, separated medially by two elongate granules. An additional series of relatively large, diagonally oriented and flat chin-shield like scutes follows the genials. Mental, postmental and genials smooth. Infralabials five; first largest, followed by second in size. Scales immediately posterior and lateral to third pair of genials, juxtaposed, smooth, flat. From there they gradually change to lanceolate, imbricate and keeled, like posterior gulars. Gulars variable in shape, in nine transverse rows; anterior rows smooth, rounded and juxtaposed, changing progressively to lanceolate, imbricate, keeled and mucronate. Collar fold indistinct.

Dorsal scales large, strongly keeled, mucronate, lanceolate, and imbricate anteriorly, becoming wider and laterally juxtaposed with almost straight lateral sides at midbody; 28 regular transverse rows between interparietal and posterior level of hind limbs. Lateral scales resembling dorsals but more lanceolate; changing progressively to ventrals except for an area with small, rounded, almost smooth and juxtaposed conical granules around arm level. Groin scales identical to flank scales except for their smaller size. Twenty seven scales around midbody. Ventrals leaf-shaped, keeled, mucronate, imbricate, in 21 regular transverse and diagonal rows from interbrachials (included) to preanals.



Figure 3. General view of Serra do Teimoso: Jussari: state of Bahia. The primary forests on the top are the habitat of *Leposoma nanodactylus*, *L. puk*, and *L. scincoides*.



Posterior margin of the vent with five scales; central and lateral scales the smallest, paramedials the largest. Total pores 18; 4 of them preanal.

Scales of tail imbricate, keeled, in complete rings that became more regular ventrally. Near the base of tail dorsal and lateral tail scales are more strongly keeled and wider than ventral tail scales, becoming gradually identical towards the extremity.

Limb scales keeled and imbricate, except on ventral surface of brachium and on posterior surface of thigh which are mostly subimbricate or juxtaposed, sometimes granular. Palmar and plantar surfaces with small, conical granules. Subdigital lamellae double, 13 on Finger IV and 17 on Toe IV. Fingers and toes clawed, with the following relative sizes:  $1 < 2 = 5 < 3 < 4$  and  $1 < 2 < 5 < 3 < 4$ , respectively.

Dorsal surface of body and tail light brown with irregular dark brown or black spots. Dorsal surface of head lighter. A dorsolateral light stripe one to one and half scale wide extends from lateral part of parietal scale, converge to occipital region and run to third part of tail. The dorsolateral stripe is more conspicuous anteriorly, fading progressively towards midbody. An irregular longitudinal dark brown to black area one to three scales size marginate inferiorly the dorsolateral light stripe. The dorsolateral stripes delimit a midorsal light brown area of about 4 scales wide with the characteristic dark brown reticulate background. Flanks and lateral surface of tail slightly darker than back with a few small light spots more conspicuous on neck. Dorsal surface of head lighter with scattered dark brown reticulation. Lateral surface of head darker, coloured as flanks. Ventral parts of head and body cream with a very conspicuous reticulate pattern of irregularly disposed dark spots. The dark reticulation is more concentrated in the ventrolateral area. In the ventral part of tail only the anterior third remains with some light pigmentation, rest of tail almost entirely black. Limbs dark brown dorsally, mottled with cream; ventrally yellowish cream, like in the ventral parts of body and tail.

Left hemipenis everted at preservation; bilobed, with short lobes. Sulcus spermaticus medial, bifurcating centripetally towards the apex. Right and left lobes symmetric with two longitudinal rows of 20-22 enlarged spines on the apex of naked W-shaped flounces.

Measurements of the holotype: Snout-vent length: 38 mm; tail length 53 mm.

Comparisons: species of genus *Leposoma* are separated in two distinctive groups: *parietale* and *scincoides* (Rodrigues, 1997; Rodrigues *et al.*, 2002). Since originally proposed by Ruibal (1952) their content varied due to the description of new species but their similarity based definition stands until now. Species of the *scincoides* group (*annectans*, *scincoides*, *nanodactylus* and *baturitensis*) have elongate dorsal and lanceolate ventral scales that are characteristically



arranged in diagonal rather than in longitudinal rows. In the *parietale* group, dorsal scales are wider and shorter than those present in species of *scincoides* group, and ventral scales are arranged in regular longitudinal rows. *Leposoma puk*, is a member of the *scincoides* group. *Leposoma puk*, *Leposoma nanodactylus* and *Leposoma baturitensis* are unique in the *scincoides* group in presenting an entire and smooth frontonasal and weakly striated or smooth scales on head (longitudinally divided and highly striated in *L. annectans* and *L. scincoides*). *Leposoma puk*, *Leposoma nanodactylus* and *Leposoma baturitensis* are also the only species in the *scincoides* group presenting a characteristically black pigmentation in the venter or along venter margins in males (venter cream, immaculate in *L. annectans* and *L. scincoides*). *Leposoma puk*, *nanodactylus*, and *baturitensis* can be separated by the following list of characters.

1) Supraoculars: in *Leposoma puk* the third supraocular is the largest one, wider than long and clearly rectangular in shape; in *L. baturitensis* the second supraocular is the largest, which is squared. In *L. nanodactylus*, the scale corresponding to the first supraocular of *baturitensis* and *puk* is characteristically divided in two scales. This implies that the largest supraocular in *L. nanodactylus* (the fourth), which is also squared, is actually homologous to the third of *nanodactylus* and *baturitensis*.

2) Frontal: frontoparietal suture: in *Leposoma puk* the suture between frontal and frontoparietal scales coincides with the middle of the third supraocular. In *L. baturitensis* and *L. nanodactylus* the suture always reaches the anterior third of the third supraocular (actually the fourth in *L. nanodactylus*)

3) Shape of dorsal scales: in *Leposoma puk* and *L. baturitensis* midbody dorsal scales are wider than the anterior ones and are laterally juxtaposed with almost straight lateral sides. Dorsals in *L. nanodactylus* are always elongate, lanceolate, imbricate.

4) In *Leposoma puk*, *L. baturitensis* and *L. nanodactylus* the fingers III and IV have approximately the same comparative size but in *L. puk* and *baturitensis* the size difference between the referred fingers corresponds to less than the equivalent size of the distal supradigital lamellae; in *nanodactylus* to two of those scales.

5) *Leposoma puk* has 17-18 total pores; there are 9-11 in *baturitensis* and 10 in *nanodactylus*.

6) *Leposoma puk* additionally differs from *L. baturitensis* by slight differences in the number of dorsal and ventral scales, higher counts of scales around mid-

body, and of fourth finger infradigital lamellae, and from *nanodactylus* by a lower number of dorsal scales and higher counts of IV finger and IV toe infradigital lamellae (Table 1). Data for *L. nanodactylus* includes data for two specimens (one female) recently obtained at Serra do Teimoso. Table 1 also presents comparative data for other species of the *scincoides* group.

#### DISCUSSION

As usual in the Atlantic Forest domain at this latitude, most of the original forest was disturbed for cacao plantations. The paratype and first specimen of *Leposoma puk* was collected at São José do Macuco. It was active in the litter of a cacao grove where only large trees from primary forest (up to 30 m tall and over approximately 50 cm diameter at breast height) had been preserved to shade the understory cacao plants. At the time, the mountainous area had been recently disturbed for cacao planting and was adjacent to a hilly region covered with primary forest. The holotype was obtained in a pit-fall trap located in cacao groves at the Una Reserve, in the same general area but characterized by lower reliefs and located a few kilometers away. The third specimen was also collected in the same area but at Serra do Teimoso, a mountain reaching approximately 1000 meters altitude. Most of the southern face of the mountain has been preserved as a private reserve (RPPN Serra do Teimoso) and is still covered with the original forest. At the base of the mountain the forest is less diverse and humid than at the peak which is dominated by large trees (up to 30 m tall and approximately 1.0 m DBH), and characterized by higher abundance of palms, ferns, bromeliads and more leaf litter than the forest situated at lower altitudes. The specimen was obtained in a pit-fall trap located at about 900 m altitude, near the top of the mountain dominated by primary rainforest. Maximum straight-line distances among the three localities is less than 30 kilometers.

Table 1. Condition of frontonasal scale, number of Dorsals, Ventrals, Scales around body (SAB), of total pores, and IV Finger and IV Toe infradigital lamellae in species of *Leposoma* of the *scincoides* group. Data were taken from specimens examined (Appendix I), and from Rodrigues, Dixo and Accacio (2002).

Species	Frontonasal	Dorsals	Ventrals	SAB	Pores	IV Finger	IV Toe
<i>annectans</i>	divided	26-30	16-20	21-27	10-13	9-12	12-16
<i>scincoides</i>	divided	29-36	17-23	24-29	14-20	9-15	14-20
<i>baturitensis</i>	single	25-27	17-18	24-26	9-11	11-12	16-18
<i>nanodactylus</i>	single	31-34	16-20	27-32	10	7- 9	10-12
<i>puk</i>	single	26-30	20-22	27-30	17-18	13-14	16-19

The Una area is characterized by low hills dissected by medium to small size streams. This relatively homogeneous landscape is interrupted only by a series of isolated, higher mountains like Serra do Teimoso. In contrast to the lower altitude areas used for growing cacao, these mountains are still partially covered with the original primary forest (e.g. Serra das Trempes, Serra do Padre, Serra da Lontra or Serra do Teimoso). Additional data on habitat and miscellaneous information on the local herpetofauna was presented previously (Rodrigues *et al.*, 1989; Rodrigues, 1997; Rodrigues *et al.*, 2002).

Four species of *Leposoma* occur sympatrically in this region, the highest diversity locality so far reported for the genus. Most of the specimens were collected in pit-falls traps during field work of the RestaUna project. Table 2 shows capture data for the four species in three field campaigns during the year in a low relief area (about 100 m altitude) near the Una reserve (Rodrigues *et al.*, 2002). *Leposoma scincoides* was the most abundant species, followed by *L. annectans*; *Leposoma nanodactylus* and *Leposoma puk* were extremely rare. Table 2 also includes comparative data for species of *Leposoma* collected at Serra do Teimoso. *Leposoma scincoides* is the only widespread species, distributed from the state of Bahia to the state of Rio de Janeiro; the other three species are restricted to the state of Bahia: *L. nanodactylus* and *L. puk* are found in the area around Una, with *L. annectans* probably extending to Salvador.

Why is *Leposoma scincoides* so widespread and locally abundant in Atlantic Forests, whereas *L. annectans* is locally common and the other two sympatric species are so rare? Why do four species of *Leposoma* occur sympatrically in the general area of Una and not elsewhere? We suggest that the distribution of these species probably reflects historical patterns.

South American tropical forests have fluctuated in time and space, especially during the Quaternary (Haffer, 1979; Vanzolini and Williams, 1970) giving rise to the “refuge hypothesis” of animal and plant distributions in the Amazon. Biological and geomorphological evidence for Quaternary forest fluctuation is abundant (see Haffer, 1979; Vanzolini and Williams, 1970).

Table 2. Number of specimens of *L. scincoides*, *L. annectans* and *L. nanodactylus* collected at Una, Bahia with pit-fall trapping (sets of four 30 liter buckets connected by 8 meter drift fences) during three field campaigns. Pit-fall effort was equivalent to 2592/pit-falls/day in the first campaign and of 5184/pit-falls/day for the other two. Comparative data for Serra do Teimoso are also shown; pit-fall effort there was 240/pit-falls/day.

Species	January-February 1999	October-November 1999	January-February 2000	Serra do Teimoso 2001
<i>L. puk</i>	0	0	1	1
<i>L. annectans</i>	14	23	26	–
<i>L. scincoides</i>	46	80	84	6
<i>L. nanodactylus</i>	0	3	2	2

tuations in the Atlantic forest domain is vast (Ab'Saber, 1977, 1982; Haffer, 1979, 2001; Heyer and Maxon, 1983; Jackson, 1978).

The "brejos", isolated forest islands located in the semiarid Caatingas of northeastern Brazil provide textbook examples of refuges (Vanzolini, 1981; Vanzolini and Williams, 1981; Rodrigues, 1990; 1996). Their relict forest-adapted fauna persists from eras when forest was continuous between Atlantic forest and the "brejos" of today. Presently, vestiges of similar forest patches not larger than 300 km<sup>2</sup> occur within the semiarid Caatingas; a region that spans approximately 800,000 km<sup>2</sup> (Ab'Saber, 1977). One example is Serra de Baturité, a mountain complex in the State of Ceará, and the type locality of *Leposoma baturitensis* the only extralimital species of the *scincoides* group of *Leposoma* known. From the top of the highest Baturité mountain one can see that forest is restricted to the mountainous area. Other physionomically similar scenarios exist in the Caatingas of northeastern Brazil as a testimony of times when, under more humid climates, these areas and Atlantic forest were possibly connected.

If we examined early periods in the Quaternary characterized by higher humidity than present day and look at the prevalent landscape physiognomy, the relictual condition disappears. At those times, Serra de Baturité would have been connected by forest to the surrounding area. What would have been the distributional limits of *Leposoma baturitensis* in those times? Would it have been restricted to Baturité mountains or widespread around forest areas surrounding them? An affirmative answer to both questions is possible. Restriction of *Leposoma baturitensis* to the Baturité mountains could be explained by recent differentiation in isolation and/or by historical contact with another widespread generalist congeneric species that despite the continuous forest coverage prevented expansion of its distribution. As there are no vestiges of a putative relative we could hypothesize that it became extinct when, following climatic deterioration towards present, the forest dwindled and disappeared from surrounding areas. Under the second possibility, the same arguments could explain disappearance of a more widespread *baturitensis* from the adjacent areas today dominated by the semiarid Caatingas.

As in the Baturité example, we may use similar logic to explain the history of Atlantic forest in the study area. The aridity that progressively affected northeastern Brazil left a formerly continuous forest fauna isolated in hilly areas surrounding by Caatingas (Oliveira *et al.*, 1999). Forested mountains like Serra das Trempes, Serra dos Padres, Serra do Teimoso, or Serra da Lontra, may have acted as forest refugia in the recent past. Presently, they are what we are here calling *concealed refuges* because they remain as yet unrecognized. This is because under the present humid climate the general green coverage of these mountains are simply recognized as part of the Atlantic forest region, a large core area described mainly on geomorphologic grounds, rather than faunal attributes.

Considering the rarity of *Leposoma nanodactylus* and *Leposoma puk* in the lowlands surrounding Una, we hypothesize that these species may have differentiated and remained isolated in some of these concealed refuge areas. Both the widespread and generalist *Leposoma scincoides* and the relatively common *Leposoma annectans* might outcompete these rare species in forest surrounding the concealed refuge areas.

Presently, even after climatic change and intensive exploration for wood, agriculture, mining, and cattle ranching, has dramatically altered the landscape, the contrast between open and formerly forested areas remains evident in the semiarid Caatingas of northeastern Brazil. Evergreen forested areas are visually recognized as islands in the grayish-brown dry Caatingas. This is why putative refugia or centers of differentiation of forest fauna in the semiarid Caatingas were first surveyed and should receive priority for conservation. Their insularity and endemisms are so obvious that they are obvious candidates for conservation priority (Conservation International, 1994). In contrast, several important probable refuges are overlooked because they are part of an otherwise homogeneous habitat. These concealed refuges and their limits can only be detected with intensive biogeographical study.

The highly endemic sand dune area of Rio São Francisco in the core area of semiarid Caatingas of State of Bahia is now recognized as a concealed refugium (Rodrigues, 1991a,b,c,d; 1993a,b; 1996). We suggest that the relictual mountains near Una in the Atlantic Forest of State of Bahia provide other examples of concealed refugia. Our suggestion could be tested with additional field work in the region complemented by molecular phylogeographic studies. If our hypothesis is confirmed, we hope there will be enough time left to take adequate conservation measures before the remaining forest habitats and their associated fauna are destroyed.

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## ADDITIONAL SPECIMENS EXAMINED

*Leposoma nanodactylus* – Brazil: Bahia: Una: MZUSP 87955-87957, 87986-87987; Serra do Teimoso: Jussari: MZUSP 89332-89333.

*Leposoma baturitensis* – Brazil: Ceará: Serra de Baturité: Pacoti (Sítio Barbosa) MZUSP 79378; Pacoti (Sítio São Gonçalo do Freire) MZUSP 79379.

*Leposoma annectans* – Brazil: Bahia: Una: MZUSP 87792-87804; 87851-87874; 87958.

*Leposoma scincoides* – Brazil: Bahia: Una: MZUSP 87805-87050, 87875-87954; Serra do Teimoso: Jussari: MZUSP 89324-89329.

