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New Lizards from the Volcanic Patagonian Plateau of Argentina

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ABSTRACT — The authors studied the herpetological fauna of Somuncura and Lago Buenos Aires formations. A new genus, *Vilcunia*, with one species *V. silvanae*, is described. Other lizards belonging to the genus *Liolaemus* are described under the names *Liolaemus archeforus*, *Liolaemus ruizleali* and *Liolaemus elongatus petrophilus*.

* * *

INTRODUCTION

The present herpetological contribution is based on studies carried out on material collected by Dr. J. M. Cei in patagonic territory during the last 5 years. The lizards were collected in two isolated volcanic areas of the patagonian territory (Provinces of Río Negro and Santa Cruz, Fig. 1). Detailed information about the ecological, geographical and geological features of the Somuncura plateau have been reported by one of the authors (Cei, 1969). The Lago Buenos Aires plateau is an isolated basaltic plateau surrounded by glacial morains. According to Dr. Oscar Reverberi (pers. comm.) the plateau originated during the tertiary period and persists now as a true "nunatak". In the greatest glacial expansion the upper surface of the plateau was never covered by the ice.

The herpetological fauna in both areas is represented by endemic and patagonian species, as listed below.

Somuncura formation (over 700 m)

a) Endemic herpetofauna: *Liolaemus elongatus petrophilus* sub. sp. nov., *L. ruizleali* sp. nov., *Telmatobius reverberi* Cei, *T. somuncurensis* Cei.

b) Patagonian herpetofauna: *Liolaemus fuscus* Boulenger, *L. rothi* Koslowsky, *Diplolaemus bibronii* Bell, *D. darwinii* Bell, *Phymaturus patagonicus* Koslowsky, *Pleurodema bufonina* Bell, *Odontophrynus occidentalis* (Berg).

Lago Buenos Aires formation (over 1000 m)

a) endemic herpetofauna: *Vilcunia silvanae* sp. nov., *Liolaemus archeforus* sp. nov.

b) Patagonian herpetofauna: *Liolaemus lineomaculatus* Boulenger.

During our research we have studied 49 lizards belonging to the new species described here: *Vilcunia silvanae*, *Liolaemus ruizleali*, *L. archeforus*, and *L. elongatus petrophilus*. The reptiles are deposited in the Herpetological Collection of Instituto Biología Animal, Universidad Nacional de Cuyo (IBAUNC) and in the Herpetological Collection of the senior author, R. Donoso-Barros (RODOBA).

A report on all the herpetological collections obtained together with general ecological information on the explored areas will be presented in a future paper.

Vilcunia gen. nov.

This new lizard genus belongs to the family Iguanidae, and is characterized by hidden tympanum; lateral teeth tricuspid; pterygoid teeth absent; hemigular fold present; body stout and depressed; neck broader than head; tail shorter than length of head plus body; hispid scales of sides of neck disposed in lateral tufts; scales of posterior border of thighs not granular but enlarged;

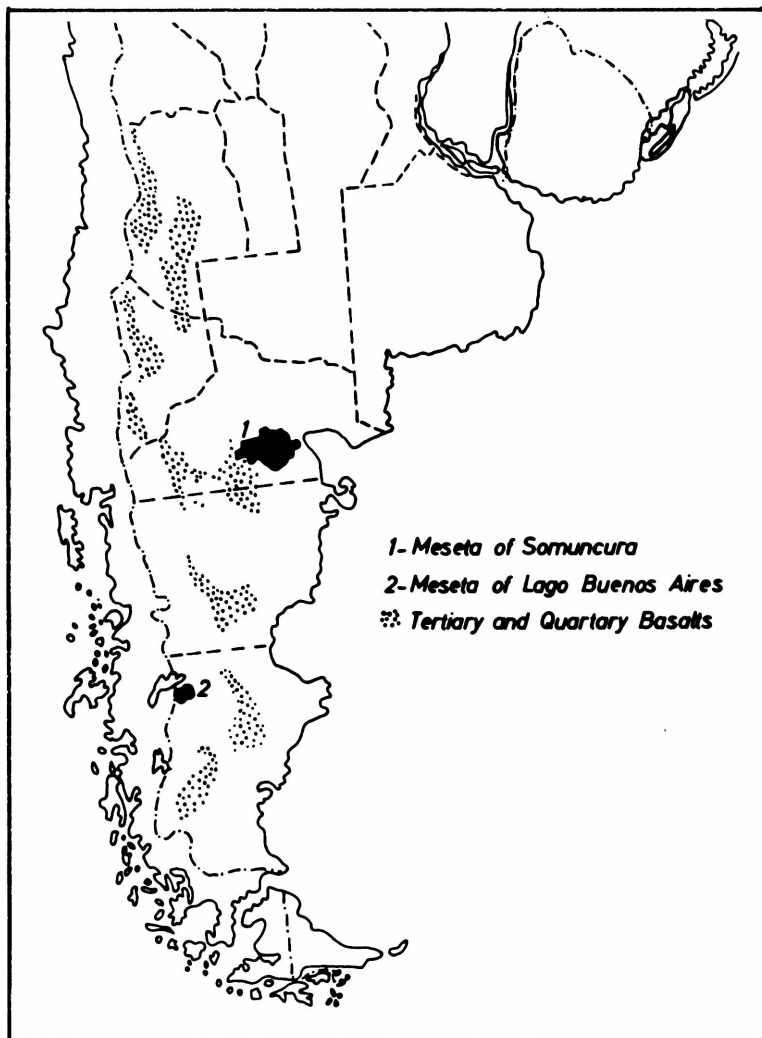


FIGURE 1. Patagonian plateau studied in the present paper.

infradigital lamellae smooth, occasionally with inconspicuous keels; hind legs very short; preanal pores absent.

The genus *Vilcunia* differs from *Liolaemus* in length of tail, shortness of hind legs, presence of an hemigular fold, absence of preanal pores in both sexes and posterior border of thighs not granular.

Vilcunia differs from the closely related genus *Proctotretus* in lacking pterygoid teeth; in having smooth head scales (carinate in *Proctotretus*); and in having a broad neck in relation to head width.

The name of the present genus comes from the araucanian word "Vilcun" which means "lizard".

Type species *Vilcunia silvanae* sp. nov.

Vilcunia silvanae sp. nov.

Fig. 2 A, B

Holotype. — IBAUNC 519-1, male, Puerto Lebrún, Meseta del Lago Buenos Aires, Santa Cruz, 1500 m, 24 Dec. 1968. Collector: Cei.

Paratype. — IBAUNC 519-2, female, from the same place. Other paratypes. IBAUNC 520-1 male; 520-2 female; 519-4, 534 juveniles. RODOBA 001324 male. All from Laguna del Sello, 1600 m, 24 Dec. 1968, Cei coll.

Diagnosis. — Body depressed; tail and limbs short; neck wide, with swollen fold covered with erect, spine-like scales; dorsum black, pale-mottled.

Description of holotype. — General form stout and flattened; adpressed hind limb not reaching axilla; tail shorter than length of head and body; cheeks prominent; half gular fold on each side; neck wider than head; short lateral fold on level of head.

Upper surface of head rather large, somewhat wrinkled; rostral broad, three times as long as high; one zygous frontal separated from the inter-parietal by a pair of irregular frontoparietals; the half ocular circles not clearly limited; four enlarged and convex supraoculars; subocular little expanded, excavated; a single series of scales between labials and subocular; five supralabials and five infralabials; temporal scales conspicuously carinate; ear opening small, its anterior border denticulate, hidden beneath cervical fold; sides of neck not granular, with erect scales forming tufts, strongly plicate and swollen; cervical fold prolonged ventrally, forming a short half gular fold; short antehumeral fold; a strong longitudinal fold on each side of trunk. Dorsal scales of regular size, imbricate, lanceolate in shape, strongly keeled and sharply pointed; on vertebral line, keels forming longitudinal lines; numerous scales with lateral nibs; lateral scales larger than dorsals, lanceolate and keeled; ventral scales smooth, rounded and imbricate. Ground color black mottled with light small spots, blue or bright yellow in living animals; pileus densely bright black; sides of head intensely light spotted; flanks and limbs mottled with light spots; tail with yellow rings, in the beginning with a light longitudinal line. Ventral surface bluish with black.

Description of the female paratype 519-2. — General features similar to those of holotype. Hind limbs shorter and head smaller than in male; upper head scales and general lepidosis similar to that of male; 58 scales around middle of body; length of head corresponding to length of nine median dorsal scales; 19 lamellae under fourth toe. General color similar to the male with two rows of yellow dorsal spots.

Measurements (mm). — Holotype and female paratype respectively: total length 145,77 (without tail); head length 16,16; tail length 68,—; hind leg 41,39; fore leg 29,24.

Variation. — Paratype RODOBA 001324 adult male from the same locality is very similar in features to both types. Male 520-1 and female 520-2 from Laguna del Sello in the same plateau. The male 520-1 has color and pattern much like that of holotype. The female 520-2 is dirty black with yellow disposed in two irregular stripes along each side of trunk; the flanks are yellow marbled; the base of the tail has triangular dark spots; the limbs are black streaked; the ventral surface is intense black. The preserved animals maintain the general pattern, but the light color changes to grayish. The number of scales around the middle of the body varies between 59 and 68, the number of lamellae under the fourth toe between 17 and 21.

The young animals are similar to the adults and the differences are restricted to size.

Remarks. — The present species is named in honor to Mrs. Silvana Cei.

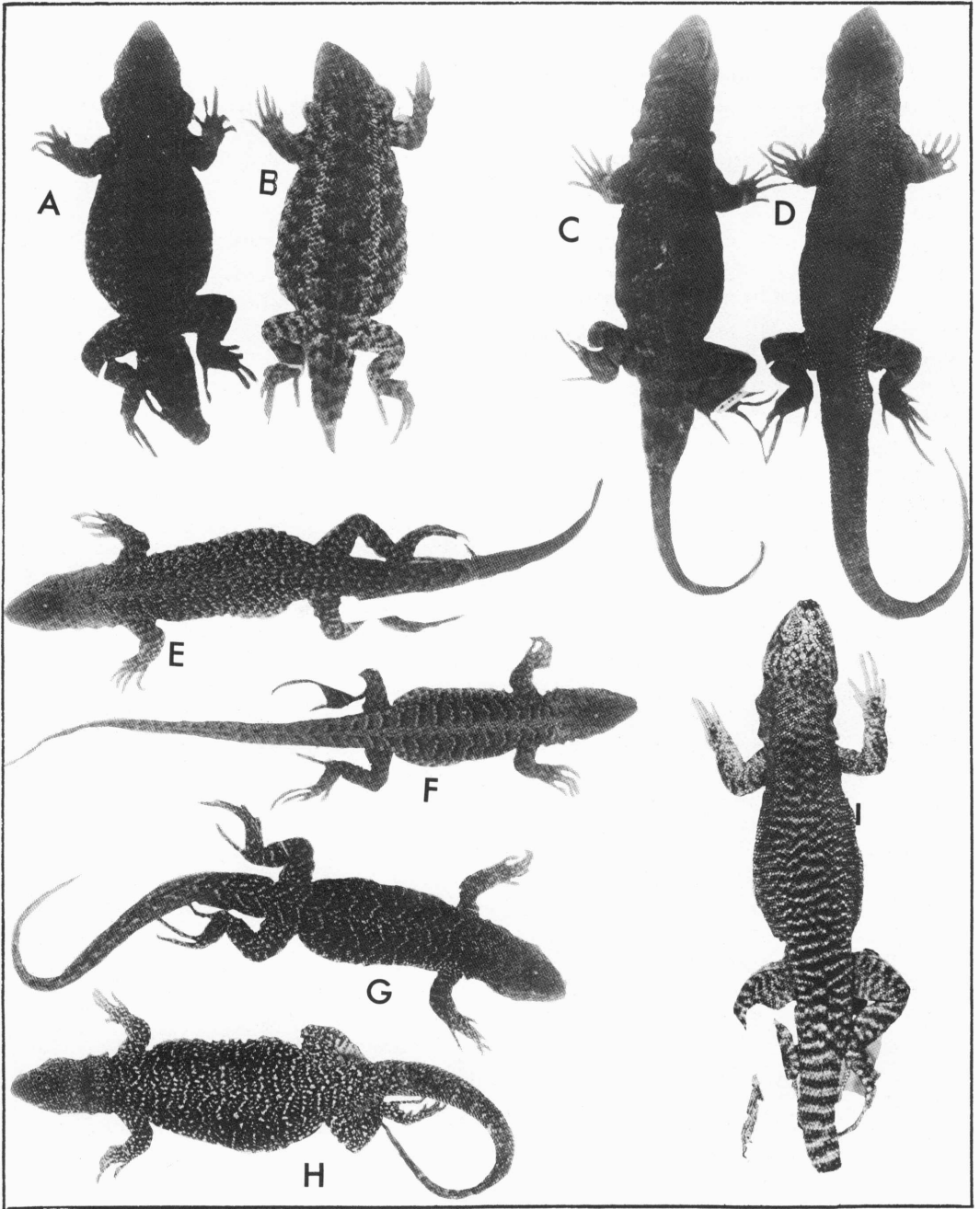


FIGURE 2. New lizards from Patagonian Plateau. A. *Vilcunia silvanae* (male); B. *Vilcunia silvanae* (female); C. *Liolaemus ruizleali* (male); D. *Liolaemus ruizleali* (female); E, F. *Liolaemus archeforus* (juvenile); G. *Liolaemus archeforus* (male); H. *Liolaemus archeforus* (female); I. *Liolaemus elongatus petrophilus* (male).

Liolaemus ruizleali sp. nov.

Fig. 2 C, D

Holotype. — IBAUNC 483, male, Cerro Corona, Meseta de Somuncura, Río Negro, 1600 m, 16 Feb. 1968. Collectors: Castro and Cei. Paratype. IBAUNC 484-3, female, Cerro Corona, Meseta de Somuncura, Río Negro, 1600 m, 16 Feb. 1968. Collectors: Castro and Cei. Other paratypes: IBAUNC 482-2 male; 482-1, 484.2 females. RODOBA 001327 male, 001328 female. All from the same locality.

Diagnosis. — A large lizard characterized by hind limb reaching axilla; temporal scale subcarinate, rounded, not pointed; more than 72 scales around middle of body; general pattern black or dark brown with light points on dorsum; males with 6 to 9 preanal pores.

Description of holotype. — General form stout; adpressed hind limb reaching axilla; tail a little longer than length of head and body; cheeks prominent; upper head scales rather large, wrinkled; rostral broad, two times as long as high; one zygous frontal separated from interparietal by a pair of small frontoparietals; interparietal same size as parietals; subocular expanded; a single series of scales between labials and subocular; 6 supralabials, 6 infralabials; temporal scales smooth, ear opening vertically oval; sides of neck strongly folded; no antehumeral fold. Dorsal scales small, triangular, weakly keeled, without terminal points, keels forming longitudinal lines; scales on neck granular. Caudal scales triangular at base of the tail, quadrangular and diagonally keeled elsewhere; limb scales smooth; scales on tibia weakly carinate; flank scales smooth, triangular; ventral scales rounded, smooth, imbricate, larger than dorsals; 81 scales around middle of body; length of head contained in 21 middorsal scales; rear of thighs granular; 6 preanal pores. Living animal with a dark brown ground color, transversely dotted with white; pileus black; sides of snout white dotted; sides of body with narrow, vertical white lines; limbs white streaked; belly black pigmented; lower jaw white anteriorly; posterior border of thighs pale.

Female paratype IBAUNC 484-3. — General form similar to that of holotype, except hind limb a little shorter. Head scales and lepidosis similar to that of male; 80 scales around middle of body; length of head corresponding to length of 16 dorsal scales; 26 lamellae under fourth toe.

Measurements (mm). — Holotype and allotype, respectively: total length 201,166; head length 21,17; tail length 106,86; hind leg 41,42; fore leg 33,27.

Variation. — The ground color in some animals is black. The white dots on the back of young animals are more conspicuous, forming transverse, black-bordered lines. The young animals have the belly marbled black and white. Some animals are mottled, with yellowish dots on the dorsum. The number of scales around middle of body varies between 72 and 85, the lamellae under fourth toe between 22 to 28.

Remarks. — The endemic *L. ruizleali* is quite different from all the patagonian *Liolaemus*. *L. nitidus* from Chile, is somewhat similar in the disposition of pale dots over the general black ground color, but the shape of scales and number of scales around middle of body are sharply different. Another species very little known is that described by Burmeister (1888) as *L. melanops*; it is clearly different from *L. ruizleali* in having a black head and blue lateral color.

We dedicate the present species to the honor of the botanist Dr. Ruiz Leal, who is at the present studying the flora of the explored patagonic areas.

Liolaemus archeforus sp. nov.

Fig. 2 E, F, G, H

Holotype. — IBAUNC 517-3 male, Puesto Lebrún, Meseta del Lago Buenos Aires, Santa Cruz, 1500 m, 24 Dec. 1968. Collector: Cei.

Paratype. — IBAUNC 516-2, female, Laguna de los Cisnes, about 10 km from Puesto Lebrún, Meseta del Lago Buenos Aires, Santa Cruz, 1500 m, 24 Dec. 1968. Collector: Cei. Other paratypes: IBAUNC 517-2, male; 516-1, 517-1, 517-4, female; 517-5, 517-6, 518-2, juveniles. RODOBA 001326 female. All topotypes.

Diagnosis. — A large *Liolaemus* with short hind limbs; scales not pointed; triangular (66-77 around middle of body); dorsum black, crossed by broken transverse light lines; males with 6-7 preanal pores.

Description of holotype. — General form elongate, adpressed hind limb not reaching axilla; tail one and a quarter times as long as head and body; head of moderate size, longer than wide; upper head scales smooth, moderate in size; rostral twice as long as high; 3 azygous frontals; interparietal much smaller than parietals; 4 or 5 supraoculars on each side; subocular expanded; a single series of scales between subocular and supralabials; temporal scales smooth. Ear opening large, oval, with one or two prominent scales on its interior border; sides of neck with a longitudinal fold open in V behind ear; a short antehumeral fold. Dorsal scales imbricate, of small size, triangular, keeled, not sharply pointed, mucrones absent; keels forming longitudinal lines; flank scales smooth, triangular; ventral scales imbricate, smooth, rounded; dorsal and ventral scales similar in size; 63 scales around middle of body; a longitudinal fold on each side of body, extending between groin and axilla; caudal scales triangular at base of tail, elsewhere squarish, diagonally keeled, except smooth on lower surface of tail; limb scales triangular and smooth, only on tibia softly carinate; 21 lamellae under fourth toe; six preanal pores; length of head corresponding to length of 15 middorsal scales. Ground color black, with transverse, narrow broken light bars; head dark brown; pileus black mottled; tail paler than body, with white-bordered black marks; limbs white streaked; belly dirty black; posterior surface of thighs with a pale line. The color is somewhat brighter in living animals than in specimens.

Description of the female paratype IBAUNC 516-2. — General form flattened; hind limb and tail shorter than in male; one azygous frontal; a pair of frontoparietals; 75 scales around middle of body; length of head corresponding to length of 14 dorsals; 24 lamellae under fourth toe; head scales and general lepidosis otherwise similar to that of holotype. Dorsal pattern similar to that of holotype, except ground color paler and transverse white bars more conspicuous.

Measurements (mm). — Holotype and female paratype 516-2 respectively: total length 188,188; head length 18,17; tail length 104,101; hind leg 45,44; fore leg 31,29.

Variation. — The color varies with age. The belly is pale in juveniles, completely black in adults. The dorsal ground color is pale grayish in young animals, with more conspicuous transverse bars than in adults.

The number of scales around middle of body varies between 63 and 80, the number of lamellae under the fourth toe between 20 and 24.

Remarks. — The present new species is allied to *Liolaemus kingii* from southwestern Patagonia, and *L. nigroviridis* from the central Andes of Chile. *L. kingii* is not found (Donoso-Barros and Codoceo, 1964) in the Buenos Aires Lake area. *L. archeforus* differs from *L. kingii* in lacking wide transverse bands on back. The number of scales around middle of body in *L. kingii* is frequently less than 66. The dorsal scales are wider than long, and softly carinate in *L. kingii*, longer than wide and conspicuously carinate in *L. archeforus*. The interparietal is nearly the same size as the frontal in *L. kingii*, much smaller in *L. archeforus*. The *L. nigroviridis* group of Chile has general features so dramatically different from those of *L. archeforus* that detailed comparisons are unnecessary. The word *archeforus* is derived from the greek: *αρχαίος*: antique and *φορα*: to carry, "the carrier of the antiquity".

Liolaemus elongatus petrophilus subsp. nov.

Fig. 2 I

Holotype. — IBAUNC 496-3, male, between Laguna Raimunda and Laguna Clara, Meseta de Somuncura, Río Negro, 1400 m, 20 Dec. 1967. Collector: Cei.

Paratype. — IBAUNC 485-1, female, near Cerro Corona, 4 km from Laguna Blanca, Meseta de Somuncura, Río Negro, 1400 m, 21 Dec. 1967. Collector: Cei. Other paratypes: IBAUNC 496-2, 499-2, 499-3, 500-1 males; 456-1, 456-2, 496-5, 496-6, 496-7, 456-3, 452-2, 435, 485-2, 485-3, 499-1, 499-4, 500-2, 497-1, 498-1 females; 499-5, 500-3 juveniles. RODOBA 001329 male, 001330 female. All topotypes.

Diagnosis. — A subspecies characterized by longer head, and feet than in the nominate form; dorsal pattern of transverse black bars; vertebral black area absent.

Description of holotype. — General form slender; adpressed hind limb reaching ear; tail one and one-half times as long as length of head and body; head elongate; upper head scales large, smooth; rostral twice as long as high; no azygous frontal; interparietal a little smaller than parietals; a series of five small supraoculars; subocular expanded; a single series of scales between labials and subocular; 8 supralabials and 5 infralabials; temporal scales weakly keeled; ear opening large, quadrangular, anterior border with 4 prominent scales; sides of neck granular, with a longitudinal fold forming an open V; a short antehumeral fold. Dorsal scales imbricate, moderate in size, triangular, not pointed, conspicuously keeled, keels forming longitudinal lines; 84 scales around middle of body, length of head corresponding to length of 19 dorsal scales. Caudal scales keeled at base of tail, squarish with diagonal keels elsewhere; limb scales keeled; ventral scales rounded, larger than dorsals; 28 lamellae under fourth toe; 3 preanal pores.

Color and pattern. — Ground color grayish in fixed animals; pattern formed of transverse black bars (two scales wide) crossing back from each flank; dorsum resembles a tiger skin; head brownish, interparietal surrounded by a black margin; limbs black streaked; tail with dark rings; belly and ventral surface grayish. Living animal similar, but ground color pale brown; ventral surface grayish, lower jaw black.

Description of the female paratype 485-1. — General form stout, adpressed hind limb reaching beyond shoulder; tail (regenerated) little longer than length of head and body. Upper head scales similar to those of holotype, except two azygous frontals; interparietal smaller than parietals; 6 supralabials and 6 infralabials; 80 scales around middle of body; length of head corresponding to length of 23 dorsal scales; 29 lamellae under fourth toe. Other features and pattern like those of holotype.

Measurements (mm). — Holotype and paratype, respectively: total length 210,80 (with tail); head length 19,18; tail length 126,—; hind leg 52,50; fore leg 33,31.

Variation. — The greatest variation observed is in the number of scales around the middle of the body, varying between 71 and 95. There are 25 to 32 lamellae under the fourth toe.

With respect to the head scales, there are specimens with and without an azygous frontal. The size of interparietal is equal to or than that of parietals.

The dorsal pattern is very constant in the entire series. However, some animals are more pigmented on the flanks.

Remarks. — The subspecies *L. e. petrophilus* differs from the nominate form in dorsal pattern and in some body measurements.

In general, the dorsal pattern in *L. e. petrophilus* has transverse bars which produce a "tigroid" pattern; in *L. e. elongatus* the dorsal pattern is characterized by a dark vertebral band to which the dark areas of the flanks are not connected. The average of the feet length expressed in mm in *L. e. petrophilus* is $25,33 \pm 1.53$ and in *L. e. elongatus* is $23,47 \pm 1.92$, the difference between both species is significant beyond 1% level; the average of the head length expressed in mm in *L. e. petrophilus* is $18,71 \pm 1.56$ and in *L. e. elongatus* is $17,62 \pm 1.02$, the differences are significant beyond 5% level. The average of the length of the hind limb in *L. e. petrophilus* is 51.09 ± 4.1 and *L. elongatus* $48,66 \pm 3.7$, the differences are significant beyond 5% level. The name *petrophilus* is derived from the Latin, *petrus*: stone and *philus*: friend, "friend of the stones"

Ecological remarks. — All the lizards described in this paper are characteristic inhabitants of rocky formations. They live in rock crevices, are omnivorous, and ingest important amounts of flowers, plant buds and insects. Their reproduction is viviparous as in all other patagonian lizards. The extremely dark color probably represents an adaptation to low temperatures since a black color facilitates the absorption of solar warmth (Pearson 1954; Donoso-Barros and Codoceo, 1962). In both areas the winter temperatures are extremely low, and in summer temperatures below 0 C are very common.

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