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Taxonomic and Serological Researches on the *Phymaturus patagonicus* Complex

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ABSTRACT—Five subspecies of *Phymaturus* from Argentine Patagonia are identified: *P. patagonicus patagonicus* Koslowsky, *P. patagonicus indistinctus* subsp. nov., both from Chubut, *P. patagonicus somuncurensis,* subsp. nov. from Río Negro, *P. patagonicus zapalensis* subsp. nov. from Neuquén, and *P. patagonicus payuniae* subsp. nov. from Southern Mendoza. Their morphological and ecological features are described according to their widespread but isolated distribution. Quantitative immunological analyses emphasize the close affinities of the 5 proposed subspecies and their more distant relationships to *P. palluma* which is sympatric with *P. patagonicus* in Mendoza and Neuquén.

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INTRODUCTION

The history of *Phymaturus patagonicus* is interlaced with the history of the ancient *Lacerta palluma* Molina reported since 1782, from Chile, later quoted as *Cordylus palluma* Meyer (1795) or *Stellio palluma* Latreille (1801). The genus *Phymaturus* was proposed by Gravenhorst (1838) and a new species, *Phymaturus patagonicus,* was correctly identified by Koslowsky (1898) during the very important geographical expedition to the unexplored Patagonian lands, carried out in 1896 by Francisco P. Moreno and the geological staff of the La Plata Museum (1897).

Since Koslowsky's discovery, this lizard has remained poorly known and rarely discussed. *Phymaturus spurcus* Barbour (1921) from Huanuluan, Río Negro, Argentina, is synonymous with *patagonicus.* Burt and Burt (1931) and a number of later herpetologists (Donoso B., 1966, and Peters and Donoso B., 1970) considered *patagonicus* a subspecies of *Phymaturus palluma* (Molina), even though Koslowsky found the two forms sympatric in many areas of Patagonia. Others (Cei, 1969a; Gallardo, 1970; Liebermann, 1939) maintained the specific status for *patagonicus.*

The present paper is a general revision of all the known populations of *Phymaturus patagonicus* Koslowsky. These represent a complex of widespread but well defined geographical units extending between 36° and 46° South latitude (Fig. 1). Five subspecific taxa are proposed, based on our diagnosis and descriptions. The nominal form *patagonicus patagonicus* Koslowsky (Fig. 2) is easily referred, by means of its *terra typica* ("ravines alongside Chubut River") to the only possible localities of collection, in February 1896, such as indicated by the itinerary map of Fig. 3. Clefts near to Chubut River, between Dolavon and Las Plumas, are the probable true *terra typica* of Koslowsky. Specimens from this area, now in the Herpetological Collection of the Institute of Animal Biology, Mendoza, agree with the Koslowsky types. This form is distributed alongside the Chubut River to Paso de Indios; southwards it reaches the basaltic Meseta of Canquel (900-1000 m) and some populational variation is stressed. A new form (*P. patagonicus indistinctus* subsp. nov.), superficially studied, is proposed for the Southern Chubut population, near Musters lake.

North of Chubut River two subspecies are described, one from the volcanic plateau of Somuncura (Río Negro), a very peculiar Patagonian center of endemism (Cei, 1969b,c; Donoso

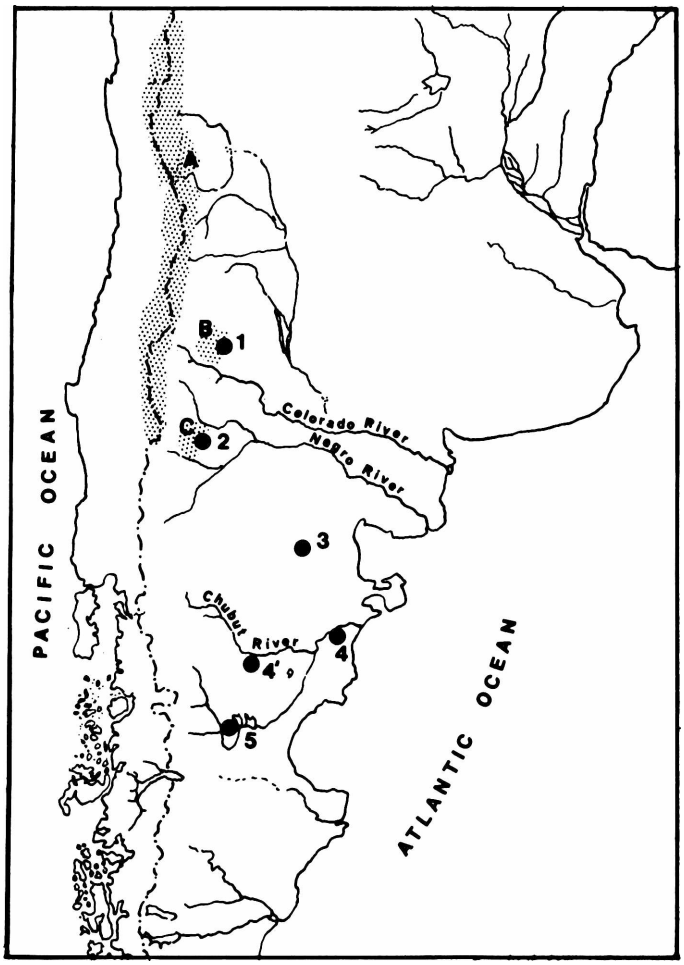

FIGURE 1. Geographical distribution of the subspecies of the *Phymaturus patagonicus* complex, 1-*Phymaturus p. payuniae*; 2-*Phymaturus p. zapalensis*; 3-*Phymaturus p. somuncurensis*; 4-*Phymaturus p. patagonicus* (Dolavon populations) and 4'-*Phymaturus p. patagonicus* (Paso de Indios populations); 5-*Phymaturus p. indistinctus*. Stippled areas: distribution of *Phymaturus palluma* populations: A-Cordilleran range; B-(Payún plateau) and C-(Zapala plateau), sympatric areas with *Phymaturus patagonicus*.

B. and Cei, 1971), the other from the volcanic tablelands, scattered by shallow lagoons, extending west of Zapala, Neuquén. They have been named *P. patagonicus somuncurensis* subsp. nov. and *P. patagonicus zapalensis* subsp. nov. A fifth form, *P. patagonicus payuniae* subsp. nov., is proposed for the population on the volcanic plateau surrounding the big peak of Payún Volcan (3300 m) in Mendoza Province.

The *Phymaturus patagonicus* complex is a significant herpetological element of the Patagonian biota, and it seems to be related constantly to late Tertiary volcanic landscape and basaltic environments. Each locality of its wide range is in the Patagonian phytogeographic realm. *Stipa, Mulinum, Ephedra, Lycium, Berberis, Adesmia, Verbena, Grindellia,* etc. are the predominant plants in the bush. These lizards are viviparous and phytophagous forms, feed on flowers of compositae, and shelter in the rock crevices and under stones. The climate of their habitat is dry and very continental, with cold winters and sunny summers, and with very wide range of daily thermal variation. Only the *payuniae* and *zapalensis* forms are sympatric with *Phymaturus palluma* in their own area of distribution.

Besides of the diagnosis and descriptions of the subspecies of *patagonicus,* extensive serological comparisons were made of the nominal form and *zapalensis* and *payuniae,* to add

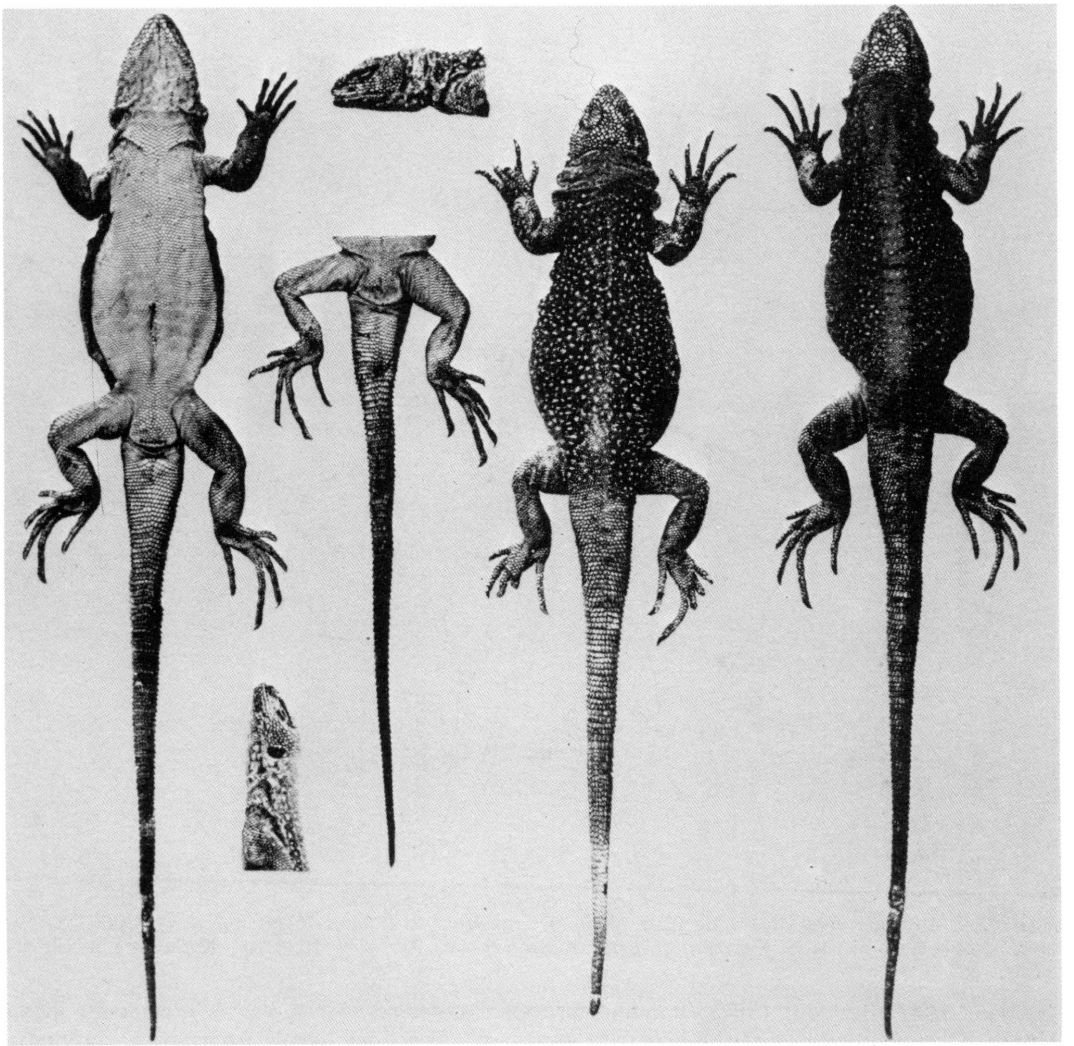

FIGURE 2. *Phymaturus patagonicus* Koslowsky (original plate; 1898).

another kind of information on the status of the geographic forms of *patagonicus* and their affinities with *Phymaturus palluma.*

MATERIALS AND METHODS

The samples used in immunological tests were collected between December 1971 and February 1972 in the areas of distribution of *P. payuniae, zapalensis* and *patagonicus.* The localities were: 5 km from Payún Volcan, Mendoza (2000 m), for *Phymaturus patagonicus payuniae*; Laguna Blanca and neighbouring lagoons, 35 km from Zapala, Neuquén (1200 m), for *Phymaturus patagonicus zapalensis*; Dolavon (250 m) and 50 km SE of Paso de Indios, Chubut (600 m) for *Phymaturus patagonicus patagonicus.* The localities for several earlier samples not used in immunological tests, are listed in the descriptions (paratypes). Blood samples, obtained by cardiac puncture, were allowed to clot and the resulting sera were stored at −20 C, until needed. Precipitin titrations were carried out using the photronreflectometric technique described in papers of Boyden and colleagues (Boyden and De Falco, 1943; Bolton, Leone and

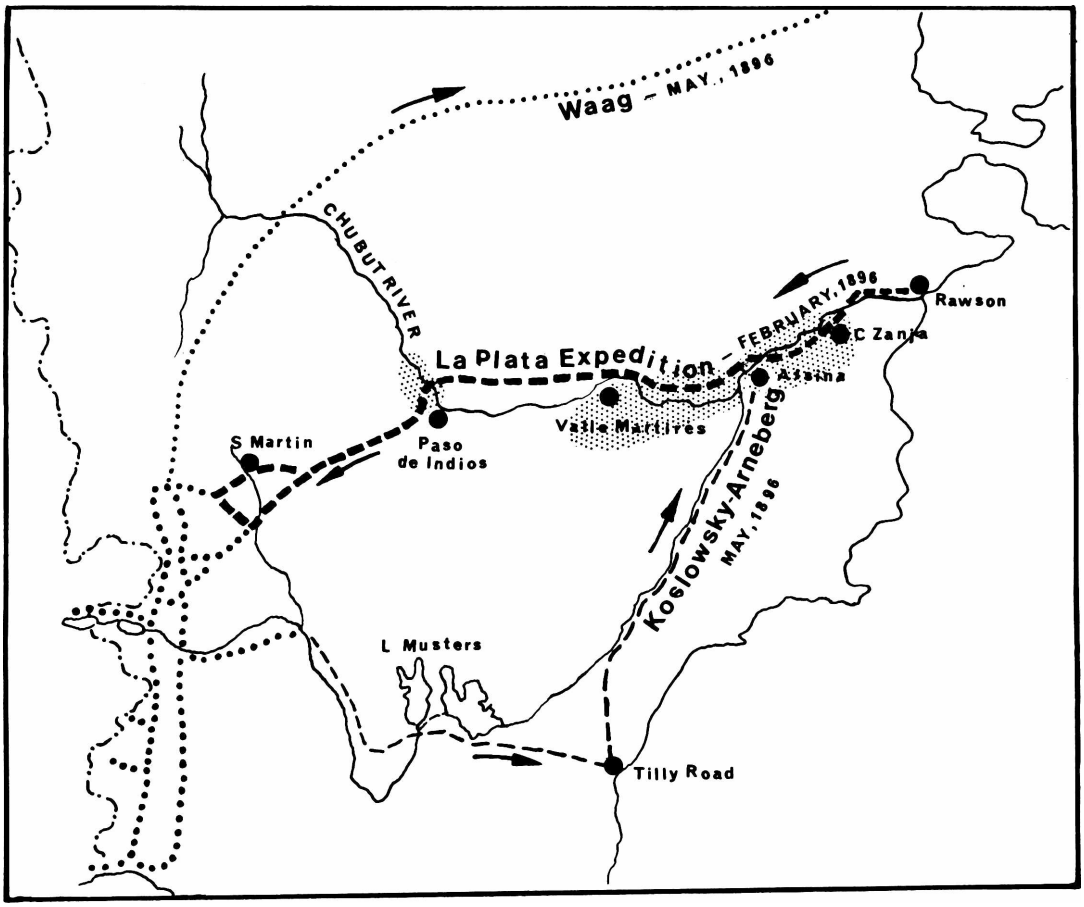

FIGURE 3. Itinerary map of the La Plata Museum Expedition to Chubut (February, May, 1896). Stippled area: probable localities of *Phymaturus patagonicus* samples, February 1896, by Koslowsky, Waag and Arneberg.

Boyden, 1947; Boyden, 1967). Immune sera were prepared in rabbits by progressive inoculations of strengthened antigens (Freund's Adjuvant). The homologous titrations of antibodies were made against a progressive series of dilutions of their own antigens. The results of these standard tests are considered as 100 per cent reaction. Heterologous titrations of the antibodies against a series of dilutions of a different antigen are reported relative to the homologous reaction. The metric measurements were made either with calibers of 0.5 mm precision, or with a stereomicroscope of 0.1 mm precision.

DESCRIPTIONS

Phymaturus patagonicus patagonicus Koslowsky

Holotype.—Herp. Coll. La Plata Museum. 1-an adult male. *Terra typica*: "ravines alongside Chubut River". Argentina. Taken February 1896 by Koslowsky, Waag and Arneberg. (Fig. 2; Fig. 4, A, A', B, B').

Paratype.—Herp. Coll. La Plata Museum. 2-same data as holotype.

Definition.—A *Phymaturus* lizard characterized by dorsal gray color scattered by plentiful whitish irregular flecks, without sex-dimorphic pattern; gular folds moderate; median dorsal granules slightly larger than lateral granules; caudal scales gently mucronate.

Distribution.—On ravines and rocks alongside the Chubut River, from Dolavon to Paso de Indios and Northern borders of Meseta Canquel, Chubut (above 250 to 1000 m).

Redescription.—To unify our taxonomic criterion a redescription of Koslowsky's form is given. A male specimen, snout-vent length 90 mm, tail 124 mm; head length 20 mm, head width 17 mm; hind leg 52 mm. General aspect tall, the adpressed limb reaches the shoulder. Upper head scales somewhat rounded, small; small interparietal, 2 frontal scale rows; one scale row between the nasals and nostril; 8 temporal scale rows; 8 small supraorbitals, expanded; subocular expanded with a single series of small scales between labials and subocular; 8 supralabials and 7 infralabials. Ear opening vertically extended. Gular and antihumeral folds moderate. Dorsal scales small, rounded or granular. Ventral scales quadrangular, smooth, in transversal series: larger than dorsals. Caudal scales quadrangular, medially keeled, disposed in alternate slightly mucronate rows. Limb scales as in the body. Eight anal pores. 24 subdigital lamellae, with 4-5 keels. The live animal has a dark gray brown ground color, with many whitish spots given by 5-10 assembled white scales. Ventral surface gray or whitish with some black points on the throat. Tail with alternate paler or darker bands.

Variation.—In addition to the types of Koslowsky the following series have been studied: IBA.UNC. 789(1-7), Dolavon, Chubut, January 1972; IBA.UNC. 786(1-6), Paso de Indios, near Chubut River, Chubut, January 1972; IBA. UNC. 783(1-4), Sombrero, Chubut, January 1972; at all 9 males and 8 females, taken by J. M. Cei, L. M. Cei and T. Ferreyra. The following measurement of the males from Dolavon agree with the holotype: head length/head width; head length/body length; body length/hind leg. However some populational trends of variation seem to exist between Dolavon and Paso de Indios-Sombrero samples (head length/body length: 0.27-0.32, 4 males Dolavon; 0.25-0.27, 4 males Paso de Indios-Sombrero. Body length/hind leg: 1.30-1.34, 4 males Dolavon; 1.37-1.46, 4 males Paso de Indios-Sombrero). Body measurement also point out some dimorphic sex characters. Head length/body length are 0.27-0.32 for 4 males and 0.25-0.26 for 3 females, from Dolavon, 0.25-0.27 for 4 males and 0.23-0.25 for 4 females, from Paso de Indios-Sombrero; body length/hind leg are 1.30-1.34 for 4 males and 1.48-1.60 for 5 females, from Paso de Indios-Sombrero. Color patterns do not show sex differences in Dolavon samples, such as in the Koslowsky's type (Fig. 4 A,A'). But in the western Paso de Indios-Sombrero populations a sex dichromatism is enough evident (Fig. 4 B,B'). Dichromatism is there associated with a larger number (25-30) of white or reddish dorsal scales, assembled in the rounded lateral spots of the females.

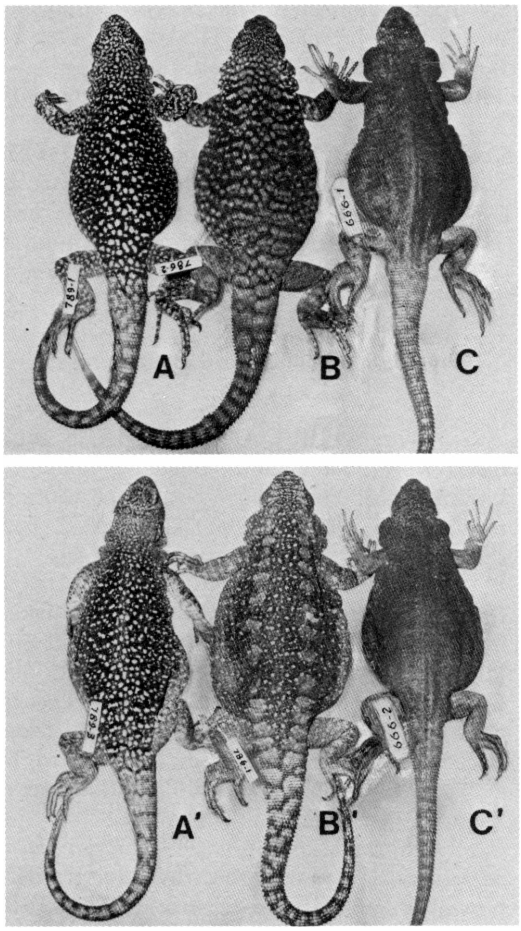

FIGURE 4. Male and female specimens of *Phymaturus patagonicus patagonicus*: A and A' from Dolavon; B and B' from Paso de Indios; C and C' male and female specimens of *Phymaturus patagonicus indistinctus* from Musters Lake. (The homeomorphism of A and A', C and C' must be emphasized).

Phymaturus patagonicus indistinctus
subsp. nov.

Holotype.—IBA. UNC. 666-1—An adult male from Las Pulgas, 800 m, 50 km from Musters Lake, Chubut, Argentina, taken January 1970 by J. M. Cei, L. M. Cei and P. Mathioli. (Fig. 4 C,C').

Paratypes.—IBA. UNC. 666-2-3 (a male-a female). Same data as holotype.

Definition.—A subspecies of *Phymaturus patagonicus* characterized by dorsal gray brownish color, scattered by very scarce, small transversal dark spots; without any sex dimorphic pattern; gular fold very prominent; body stout with short hind legs.

Distribution.—Northern slopes of the Sierra San Bernardo, West of Musters Lake, Chubut.

Description—A male specimen, snout-vent 85 mm, tail 100 mm; head length 18 mm, head width 15 mm; hind leg 50 mm. General aspect stout, the adpressed limb does not reach the shoulder. Upper head scales, supraorbitals, interparietal, frontals, temporals, as in the nominal form; suboculars, supralabials, infralabials as in the nominal form. Ear opening also vertically extended. Gular and antihumeral folds swelled, very evident. Dorsal scales small, granular, as in the nominal form. Ventral scales small (1.2 mm; 1.0 mm in *patagonicus patagonicus*). Caudal scales mucronate, not disposed in alternate rows by their different size, as in the nominal form, but larger than in *patagonicus patagonicus* (1.5 mm; 1.2 mm in *patagonicus patagonicus*). 10 anal pores. 28 subdigital lamellae, with 5 keels. The live animals have a gray brownish uniform dorsal color, with scarce scattered transversal small spots. Ventral surface grayish unspotted, with evident pink-yellowish shades. Lack of any sex dichromatism. The males may be recognized only by the yellow anal pores. Tail profusely banded.

Variation.—The paratypes agree with the holotypes. Females have a very stout body, with shorter legs than the males.

Remarks.—The head length/body length of *patagonicus indistinctus* is lower (0.20-0.22) than in the nominal form, and in the other subspecies. Also the hind legs are short in *patagonicus indistinctus* (body length/hind legs: 1.70-1.93 versus 1.30-1.60 of the other forms). The homeomorphism of this austral *Phymaturus* is really remarkable. They have been captured under stones, in the cooler hours of the early morning. *Liolaemus bibroni* and *Homonota darwini* were observed in the same place.

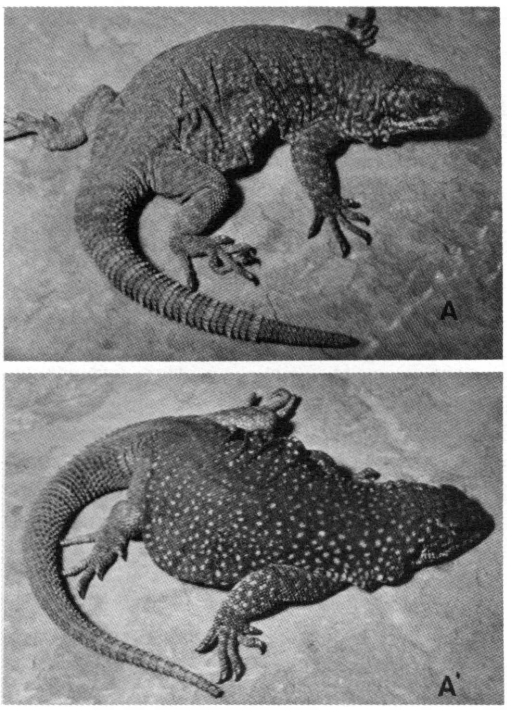

FIGURE 5. *Phymaturus patagonicus somuncurensis* subsp. nov; A-male, A'-female.

Phymaturus patagonicus somuncurensis
subsp. nov.

Holotype.—IBA. UNC. 470-1—An adult male from Somuncura Plateau, Raimunda Lagoon (1400 m), Río Negro, Argentina, taken March 1968 by J. M. Cei and N. P. Tuzi (Fig. 5, A,A').

Paratypes.—IBA. UNC. 433-1-3, taken December 1967 by J. M. Cei; 470-2, taken March 1968 by J. M. Cei; 495 (1-2) and 507 (1-5), taken November 1968 by J. M. Cei and L. P. Castro: all near Raimunda Lagoon (1400 m), Somuncura Plateau; 508 (1-5) taken December 1968 by J. M. Cei, L. P. Castro, N. P. Tuzi, Cerro Corona (1500 m), Somuncura Plateau, Río Negro.

Definition.—A subspecies of *Phymaturus patagonicus* characterized by dorsal dark brownish color, with scarce and irregular whitish small spots; sex dimorphic pattern indistinct; gular folds moderate; head enlarged; ventral surface whitish gray pigmented throat; caudal scales mucronate; dorsal and ventral scales small.

Distribution.—Somuncura plateau, above 800 m, Río Negro.

Description.—A male specimen, snout-vent 90 mm, tail 100 mm, head length 17 mm, head width 15 mm, hind leg 44 mm. General aspect stout, the adpressed limb does not reach the shoulder. Upper head scales, supraorbitals, interparietal, frontals, temporals, supralabials and infralabials as in the nominal form. Subocular divided in 2 asymmetrical scales. Gular and antihumeral folds less prominent. Dorsal scales smaller than in the nominal form, all of equal size and regularly arranged (in *patagonicus patagonicus* the size may vary and the scales of the white spots are larger). Ventral scales as in *patagonicus patagonicus.* Caudal scales mucronate, strong (2.0 mm width), disposed in alternate rows (a row of larger and 2 rows of smaller scales, but 2 regularly alternate rows of larger and smaller scales in *patagonicus patagonicus*). 8 yellow anal pores. 26 subdigital lamellae with 5 keels. Color in living animal: dark brownish, with some whitish confused spots. Flanks somewhat darker. Ventral surface grayish with a strong pink-orange pigmentation. Throat gray, speckled. Sex dichromatism absent. Tail profusely banded.

Variation.—The paratypes agree with the holotype.

Remarks.—Head small, wider than in the *patagonicus patagonicus* form (head length/head width 1.06-1.13 versus 1.13-1.31, in the males) but narrower than in the subspecies from Neuquén and Mendoza. Other somatic differences appear with the populations from Chubut (body length/hind leg 1.47-1.68 versus 1.30-1.46, in the males: no difference with the Neuquén and Mendoza populations). Dorsal scales smaller than in *patagonicus patagonicus* both in *patagonicus somuncurensis* and in the Neuqúen and Mendoza populations. Ventral scales reduced in *patagonicus somuncurensis* and in Mendoza populations, but not in the subspecies of Neuquén. No clinal tendency may be thus supported for such a character. *Phymaturus patagonicus somuncurensis* live in the basaltic ravines of the extended Somuncura plateau. Other lizards from this comunity are *Liolaemus rothi, Liolaemus bibroni, Liolaemus boulengeri* and the endemic forms *Liolaemus elongatus petrophilus* and *Liolaemus ruizleali.* Also *Diplolaemus darwini, D. bibroni* and *Homonota darwini* are present.

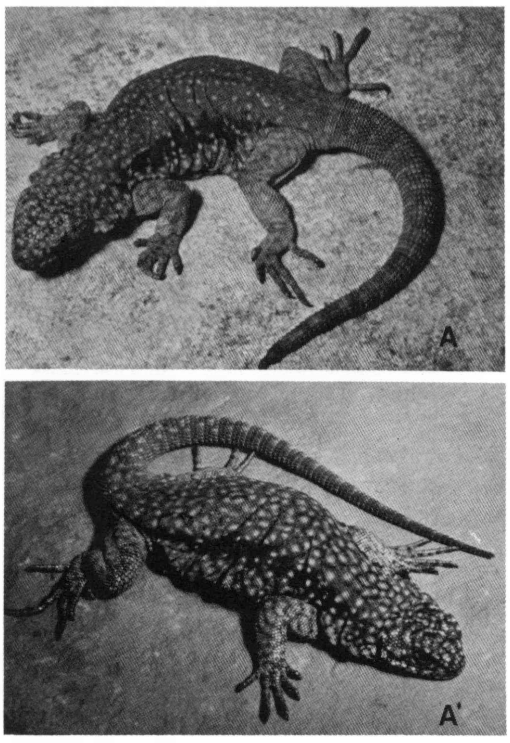

FIGURE 6. *Phymaturus patagonicus zapalensis* subsp. nov.; A-male, A'-female.

Phymaturus patagonicus zapalensis subsp. nov.

Holotype.—IBA. UNC. 792-2—An adult male from Teru Lagoon, 1200 m, 40 km W Zapala, Neuquén, Argentina, taken January 1972 by J. M. Cei, L. M. Cei and T. Ferreyra (Fig. 6 A,A').

Paratypes.—IBA. UNC. 349-1. Burro Lagoon, 1200 m, 48 km W Zapala, Neuquén, taken October 1966 by J. M. Cei and V. G. Roig; 436-1, Laguna Blanca, 1200 m, 30 km W Zapala, Neuquén, taken January 1968 by J. M. Cei; 590 (1-4), Casa de Piedra, 70 km SE Laguna Blanca, 1400 m, Neuquén, taken January 1970 by J. M. Cei and L. M. Cei; 681 (1-7) Teru Lagoon, 1200 m, 40 km W Zapala, Neuquén, taken March 1970 by J. M. Cei and L. P. Castro; 792 (1-4) same data as holotype.

Definition.—A subspecies of *Phymaturus patagonicus* characterized by dark brown dorsal color, with small and profuse whitish flecks and darker lateral bands, scattered by small rounded white spots; sex dimorphic

pattern somewhat evident; gular folds moderate; head as long as wide; hind legs large and strong; caudal scales mucronate without alternate rows.

Distribution.—Rocky, volcanic highlands west Zapala, Neuquén, above 1000 m.

Description.—A male specimen, snout-vent 86 mm, tail 105 mm, head length 17 mm, head width 16.5 mm (head length 17 mm and head width 17 mm in some specimens), hind leg 50 mm. General aspect tall, the adpressed limb reaches the shoulder. Head lepidosis and ear opening as in the nominal form. Gular and anti-humeral folds not too prominent. Dorsal scales as in *patagonicus somuncurensis*; ventral scales larger than in the nominal form (1.2 mm). Caudal scales mucronate, strong (1.6-1.8 mm), disposed without alternate rows. 12 orange anal pores. 30 subdigital lamellae, with 4-5 keels. Color in living animal dark brownish, scattered by small confused whitish flecks (5-12 scales). Lateral dark bands evident (darker in the females specimens), scattered by scarce white rounded spots. Ventral surface gray bluish with pink coloring and fine black spots on the throat. Tail also profusely banded.

Variation.—Paratypes similar to the holotype. The darker lateral bands may be more or less accentuate in the female specimens. Subdigital lamellae 30-33, the highest number in the species.

Remarks.—The wide head is a significant character of the subspecies (in the males, head length/head width 1.00-1.06 versus 1.12-1.31 for the nominal form); likewise the relative length of the hind leg (in the males, body length/hind leg 1.40-1.52 versus 1.30-1.40). Young specimens are very similar to the female specimens. These lizards are very nimble inhabitants of the rocky environments, near to the small basaltic lagoons. They are associated with *Liolaemus elongatus elongatus, Liolaemus kriegi, Liolaemus bibroni, Diplolaemus darwini, Cupriguanus fasciatus, Homonota darwini,* besides their related sympatric form *Phymaturus palluma.*

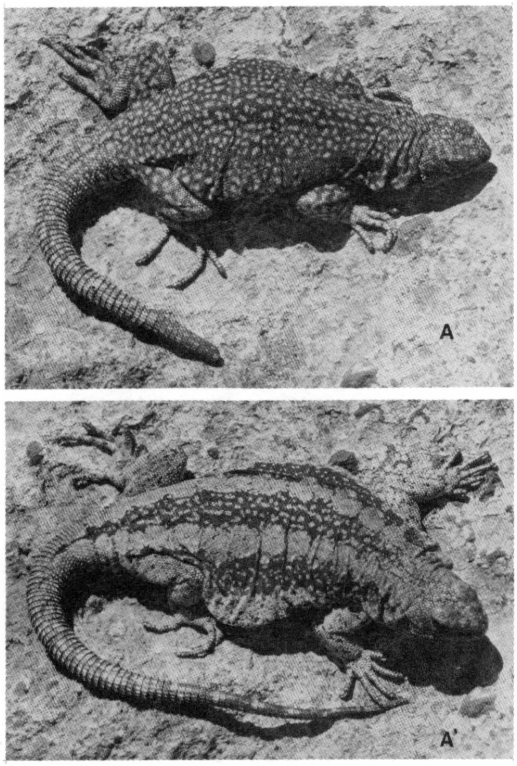

FIGURE 7. *Phymaturus patagonicus payuniae* subsp. nov.; A-male, A'female.

Phymaturus patagonicus payuniae subsp. nov.

Holotype.—IBA. UNC. 769-6—An adult male from Payún plateau, 5 km from the Payún Volcan, 2000 m, South Mendoza Province, Argentina, taken December 1971 by J. M. Cei, L. P. Castro and T. Ferreyra (Fig. 7 A,A').

Paratypes.—IBA. UNC. 726 (1-4), 734 (1-2) taken January 1971 by L. P. Castro; 769 (1-5, 7, 13, 15, 28), 787 (1-5) taken January 1972 by J. M. Cei, L. P. Castro and T. Ferreyra: all same locality as holotype.

Definition.—A *Phymaturus patagonicus* subspecies characterized by a very strong sex dimorphism. Dorsal color of the males dark brown, scattered by evident but irregular white spots; dorsal color of the females black with lateral series of large, rounded whitish spots. Gular folds moderate. Head compressed, hind legs short. Caudal scales slightly mucronate, without alternate rows.

Distribution.—Isolated volcanic plateau of Payún (or Payunia), in the South of Mendoza Province, above 1600 m.

Description.—A male specimen, snout-vent 85.5 mm, tail 103 mm, head length 17 mm, head width 15 mm, hind leg 47 mm.

General aspect tall, the adpressed limb scarcely reaches the shoulder. Head lepidosis and ear opening as in the nominal form. Gular and humeral folds moderate. Dorsal scales equally sized and regularly disposed, smaller than in *patagonicus patagonicus.* Ventral scales small. Caudal scales very slightly mucronate (1.4 mm, without alternate rows).11 yellow anal pores. 29 subdigital lamellae with 3-4 keels. Color in life: dorsally dark brown with plentiful scattered flecks of some 12-15 scales each; ventral surface whitish with scarce and very fine dark spots. Yellowish color on the posterior part of the belly and thighs. Tail with alternate spots and bands.

Variation.—Male paratypes as the holotypes. Female specimens characterized by a stouter body, shorter legs, and the lateral white larger spots of their symmetrical dorsal pattern (10-15 spots).

Remarks.—An apparently circumscribed geographical form. The juvenile specimens are very similar to the adult females, as it happens with the juvenile specimens of *palluma,* sympatric in the same area. We have found both species under the same stone or crevice, sometimes with *Liolaemus elongatus* and *Homonota darwini.* Lizards from the same habitat are *Diplolaemus darwini, Cupriguanus fasciatus, Liolaemus boulengeri, Liolaemus bibroni* and several others still undetermined species of *Liolaemus.*

RESULTS OF SEROLOGICAL TESTS

The results of the immunological reactions are given in the Table 1. Besides their reciprocal tests, antigens of *Phymaturus patagonicus patagonicus, P. patagonicus zapalensis* and *P. patagonicus payuniae,* have been compared with those of sympatric *Phymaturus palluma* (from Payún, Mendoza and Laguna Blanca, near Zapala, Neuquén) and with an allopatric cordilleran population of the same species (from Paramillo, Mendoza, 3000 m).

The data point up the close relationships of *P. patagonicus* from Mendoza, Neuquén and Chubut, with cross reactions falling invariably between 93 and 96 per cent. Subspecific status of these geographical forms is clearly suggested by these results, with the ranges falling within

TABLE 1. Immunological titrations* in the *Phymaturus patagonicus* complex.

	antisera[3]						
	Phymaturus patagonicus antisera				*Phymaturus palluma* antisera		
antigens[3]	pat_1	pat_2	zap	pay	pal_1	pal_2	pal_3
pat_1	100[4]	94	93	96	74	78	74
pat_2	96	100	95	95	76	79	76
zap	95	93	100	96	77	77	79
pay	95	95	94	100	83	88	85
pal_1	75	77	76	84	100	93	90
pal_2	77	78	76	85	94	100	91
pal_3	75	77	77	83	92	93	100
Cup	32	30					33
Lio				35			
Dip						22	

*Abbreviations: pat_1 = *P. patagonicus patagonicus* from Dolavon, Chubut. pat_2 = *P. patagonicus patagonicus* from Paso de Indios, Chubut. zap = *P. patagonicus zapalensis* from L. Blanca, Neuquén. pay = *P. patagonicus payuniae* from Payún, Mendoza. pal_1 = *P. palluma* from Paramillo, Mendoza. pal_2 = *P. palluma* from Payún, Mendoza. pal_3 = *P. palluma* from Laguna Blanca, Neuquén. Cup = *Cupriguanus fasciatus* from Payún, Mendoza. Lio = *Liolaemus* sp. from Payún, Mendoza. Dip = *Diplolaemus darwini* from Payún, Mendoza. 2: sera of species indicated. 3: sera from rabbits immunized with sera of species indicated. 4: percent of cross reactivity using homologous reaction as 100% standard.

extremes expected for natural genetic variation of the specific serum antigens. Similar results were obtained for the *palluma* complex (percentages ranging from 90 to 94 per cent). On the other hand the serological data clearly distinguished *palluma* and *patagonicus* with their cross-reactions falling between 74 and 79 per cent, except for reactions involving *P. palluma* and the *payuniae* sample of *P. patagonicus.* These titrations, involving the latter, were stronger, falling between 83 and 88 per cent indicating a closer serological relationship to *palluma* than the other *patagonicus* subspecies. This curious result cannot be easily referred to genetic interchange by interspecific hybridation in the Payún area of sympatry, because of the lack of similar findings in the case of the equally sympatric populations from Neuquén.

DISCUSSION

The *Phymaturus* genus includes 2 clear cut species: *palluma* and *patagonicus.* The *P. palluma* populations occur along both the eastern and western Andean slopes and in some extra-cordilleran basaltic plateau between 25° and 40° south latitude in Argentina. The *patagonicus* complex is a significant extra-cordilleran element of the Patagonian biota.

In spite of its geographical segregation and morphological differentiation, a whole specific status of *P. patagonicus* is supported by the immunological evidence. Such evidence also supports specific status for the subspecifically undifferentiated populations of *P. palluma.* Besides confirming Koslowsky's form, *P. patagonicus patagonicus* from Chubut River, our work indicates that the subspecies *indistinctus, somuncurensis, zapalensis* and *payuniae* are isolated by topography or other natural factor concerned with the specialized ecology of these lizards, which live in crevices of broken and rough basaltic rocks. The absence of clinal tendency in several of their somatic characters gives a first evidence of the independent selective regulation acting on genetic structures of the isolated populations of *patagonicus.*

A striking feature of the different *patagonicus* subspecies is the irregularity in the degree of sexual dimorphism. The strongly monomorphic form *P. patagonicus indistinctus* from southern Chubut is replaced along the Chubut River by the slightly dimorphic populations of *P. patagonicus patagonicus.* Northwards the slightly dimorphic subspecies *zapalensis* occurs but so does the monomorphic *somuncurensis.* North of the Colorado River the subspecies *P. patagonicus payuniae* exhibits the highest degree of sexual dimorphism of the species. We can advance no geographic or climatic reason for the present distribution of secondary sex-characters in the *patagonicus* complex.

Sympatry in Mendoza and Neuquén territories, plus the morphological and serological evidences, eliminates any doubts concerning the conspecific status of *Phymaturus palluma* and *P. patagonicus.* The serological distance between members of the two species (74-79 per cent between *palluma* and *patagonicus patagonicus* or *patagonicus zapalensis*; 83-88 per cent between *palluma* and *patagonicus payuniae*) is less than between *Phymaturus* and other Iguanid genera tested (cross reactions with *Cupriguanus, Liolaemus, Diplolaemus* lie between 22 and 35 per cent). No explanation of the closer serological relationships between *P. patagonicus payuniae* and *P. palluma* is forthcoming. Perhaps the *payuniae* form is genetically (or phylogenetically?) nearer to the ancestral *palluma* than the other forms. Antigenic structure of the sera could represent, in this case, remains of some past common genetic constitution. It is a suggestive observation that both young specimens of *payuniae* and *palluma* present similar pattern, quite indistinct at a first look.

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