

Taxonomic Studies of the Genus *Phymaturus* (Iguania: Liolaemidae): Redescription of *Phymaturus patagonicus* Koslowsky 1898, and Revalidation and Redescription of *Phymaturus spurcus* Barbour 1921

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ABSTRACT.—*Phymaturus spurcus* was described by Barbour in 1921. In 1931, Burt and Burt placed this species in the synonymy of *Phymaturus patagonicus* based on their comparison of one paratype of *P. spurcus* with one specimen of *P. patagonicus*. Additionally, Burt and Burt considered *P. patagonicus* a subspecies of *Phymaturus palluma*. Although some subsequent authors accepted the synonymy of *P. patagonicus* with *P. palluma*, the synonymy of *P. spurcus* with *P. patagonicus* has gone unquestioned. We examined the type series of *P. patagonicus* and *P. spurcus*, as well as new material collected from the type localities of both species. Based on 47 morphological characters of squamation, gular and nuchal folds, preloocal pores, and morphometric data, we conclude that *P. spurcus* is a valid species, distinct from *P. patagonicus* and all other *Phymaturus*. We agree with Ceï and Castro's study in 1973 that the population located west of Dolavon, Chubut Province, Argentina, is *P. patagonicus* of Koslowsky's study in 1898. Because in the original description Koslowsky failed to designate an holotype, we designate Museo La Plata S-778 as the lectotype of *P. patagonicus* and restrict its type locality to 40 km west of Dolavon, Chubut Province, Argentina. We provide a redescription of *P. patagonicus* Koslowsky and a redescription of *P. spurcus* based on the type series of Barbour's study in 1921, with additional data on intraspecific variation in both species.

RESUMEN.—*Phymaturus spurcus* fué descrito por Barbour en 1921. Burt and Burt (1931) ubicaron esta especie en la sinonimia de *Phymaturus patagonicus* basados en su comparación de un paratipo de *P. spurcus* con un espécimen de *P. patagonicus*. Adicionalmente, Burt and Burt (1931) consideraron a *P. patagonicus* como subespecie de *P. palluma*. Aunque algunos autores aceptaron la sinonimia de *P. patagonicus* con *Phymaturus palluma*, la sinonimia de *P. spurcus* con *P. patagonicus* no ha sido cuestionada hasta el presente. En este trabajo examinamos las series tipo de *P. patagonicus* y *P. spurcus*, así como nuevo material colectado en las localidades tipo de ambas especies. Basados en nuestras observaciones de 47 caracteres morfológicos de lepidosis, pliegues gulares y nuchales, poros prelocales, y datos morfométricos, concluimos que *P. spurcus* es una especie válida distinta de *P. patagonicus* y de todas las otras especies de *Phymaturus*. Coincidimos con Ceï and Castro (1973) en que la población localizada al oeste de Dolavon, provincia de Chubut, Argentina, es *P. patagonicus* de Koslowsky (1898). Debido a que Koslowsky (1898) no designó un holotipo, designamos a Museo La Plata S-778 como el lectotipo de *P. patagonicus* y restringimos la localidad tipo a 40 km al oeste de Dolavon, provincia de Chubut, Argentina. Aportamos la re-descripción de *P. Patagonicus* Koslowsky, y también la re-descripción de *P. spurcus* basados en la serie tipo de Barbour (1921) además de datos adicionales sobre la variación intraespecífica en ambas especies.

Phymaturus is a genus of austral South American liolaemid lizards characterized by a flat, wide head and body, lateral nuchal skin folds obscured by fat-filled pouches, and a tail with regular whorls of spinose scales (Etheridge, 1995). Their marginal teeth, including at least some premaxillary teeth, which are expanded and deeply cusped, are associated with their strictly herbivorous diet. All species are saxicolous, with a disjunct distribution between 26° and 45°30'S latitude in the high cordilleras and precordilleras of central Chile and adjacent western Argentina, and on various volcanic tablelands in Pata-

gonian Argentina (Ceï, 1986, 1993; Etheridge and Espinoza, 2000; Espinoza et al., 2004).

In the most recent taxonomic revision of *Phymaturus*, Etheridge (1995) recognized 10 species in two groups, the *patagonicus* and *palluma* groups. The former contained *Phymaturus patagonicus* Koslowsky (1898), and five species originally described as subspecies of *patagonicus*: *Phymaturus indistinctus* Ceï and Castro (1973), *Phymaturus nevadoi* Ceï and Castro (1975), *Phymaturus payunae* Ceï and Castro (1973), *Phymaturus somuncurensis* Ceï and Castro (1973), and *Phymaturus zapalensis* Ceï and Castro (1973). The *palluma* group included *Phymaturus palluma* (Molina 1782), *Phymaturus mallimacci* Ceï (1980), *Phymaturus punae* Ceï et al. (1983), and

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Phymaturus antofagastensis Pereyra (1985). Subsequently, Ceï and Videla (2003) described *Phymaturus verdugo*, a member of the *palluma* group.

The taxonomic status of these forms, as well as numerous other populations of *Phymaturus*, is largely unresolved. In the present study, we examine the status of one species, *Phymaturus spurcus*, that has until the present been considered a synonym of *P. patagonicus*.

Barbour (1921) described *P. spurcus* based on five specimens collected by James Peters at Estancia Huanuluan, Río Negro Province, Argentina. Comparisons were made with the only two other species of the genus recognized at that time, *P. palluma* and *P. patagonicus*. Barbour's diagnosis is quite accurate: "Somewhat intermediate between *Phymaturus palluma* (Molina) and *Phymaturus patagonicus* Koslowsky. Peter's series of five specimens all agree in having more spinose tails, smaller dorsal granules than *patagonicus* and a perfectly uniform coloration, while they differ from *palluma* in having considerably less spinose tails and in not having the mid-dorsal granules very considerably enlarged and flattened as well as lacking the characteristic color pattern" (pp. 139–140).

Barbour also noted that: "While Koslowsky's types [of *P. patagonicus*] from Patagonia were all speckled with light markings on the dark background, Mr. Peter's series are all exactly alike and show a rich brown on the body, lighter and more yellowish on the tail, with no trace of markings whatsoever" (pp. 140).

In their studies of *Phymaturus* in the collections in the American Museum of Natural History, Burt and Burt (1931) found few differences between the specimens of *P. patagonicus* and *P. spurcus*, remarking that small dorsal granules are present in both and that there are no obvious differences in caudal squamation. They attributed these differences to ontogenetic change because the specimen of *P. patagonicus* from Chubut is a juvenile and the *P. spurcus* from Estancia Huanuluan (Río Negro) is an adult paratype lacking any pattern at all, stating that "the examples figured in the original description, and other adults (such as AMNH 38970), lose this distinction and become more or less unicolor above" (p. 281). Subsequent authors have followed this synonymy. Peters and Donoso-Barros (1970) considered *P. patagonicus* a subspecies of *P. palluma* and included *P. spurcus* Barbour (1921) as a synonym of *Phymaturus palluma patagonicus*. Ceï and Castro (1973) described four additional subspecies of *P. patagonicus*, but also considered *P. spurcus* a synonym of *P. patagonicus*. In their study, they identified a population located west of Dolavon (Chubut Province) as morphologically most similar to Koslowsky's (1898) syntypes of *P. spurcus*.

Our examination of the type series of *P. patagonicus* Koslowsky (1898; two specimens deposited at Museo de La Plata, Argentina), and

holotype and two paratypes of *spurcus* Barbour (1921), indicate that the two species are morphologically distinct. Additionally, during our fieldwork in October 2003, we obtained specimens close to the Chubut River (northern bank) that are indistinguishable from the syntypes of *P. patagonicus* of Koslowsky, as had been previously stated by Ceï and Castro (1973), as well as specimens from Huanuluan, approximately 400 km north and west, in Río Negro Province, the type locality of *spurcus*. Studies of these specimens confirm that *spurcus* is a valid species. Here we provide detailed redescriptions of *patagonicus* and *P. spurcus*.

MATERIALS AND METHODS

We examine 72 specimens of "*P. patagonicus*" from nine localities and a sample of other four species of the *patagonicus* group (see Appendix 1). All specimens (other than the types) were initially preserved in 10% formalin and later transferred to 70% ethanol. Measurements were taken with digital caliper to the nearest 0.02 mm. Descriptions of color in life were based on notes taken in the field from recently captured individuals.

Snout-vent length (SVL) was measured from the tip of the snout to the anterior margin of the cloacal opening. Axilla-groin length was measured from the posterior insertion of the forelimb to the anterior insertion of the thigh. Head length was measured from the anterior border of the snout to the anterior border of the auditory meatus. Head width was measured at the widest point over the posterior mandibles. Head height was measured at the level of the interparietal scale. Foot length was measured to the tip of the fourth toe including the claw. Scale counts were taken with the aid of a binocular dissecting scope. Dorsal head scales were counted in a line drawn horizontally between the anterior margin of external auditory meatus to the anterior margin of the rostral. Temporals were counted vertically from the buccal commissure to the posterior corner of the orbit. Scales between the auditory meatus and the shoulder were counted along the postauricular fold and longitudinal nuchal fold. Dorsal scales were counted along the midline of the trunk in a distance equal to its head length. Scales around the midbody were counted half-way between the axilla and groin. Ventral scales were counted from the mental to the preloacal pores. Subdigital lamellae were counted from the most proximal scale wider than long to the most distal scale bordering the claw.

Scale terminology follows Smith (1946). Terminology of lateral neck folds follows Frost (1992).

RESULTS

Phymaturus patagonicus Koslowsky 1898

Phymaturus patagonicus Koslowsky 1898

Phymaturus palluma (part) Burt and Burt 1931

Phymaturus palluma patagonicus Peters and Donoso-Barros 1970

Phymaturus patagonicus patagonicus Cei and Castro, 1973

Centrura patagonica (Cei, 1986)

Phymaturus patagonicus Etheridge 1995

Designation of Lectotype.—The number of specimens available to Koslowsky is unknown, but there must have been more than the two currently in the Museo La Plata (MLP S-777–778). In Koslowsky's description of variation in the dorsal color pattern, he noted that: "El color, por encima del cuerpo, es un gris ceniciento o requemado, salpicado con manchitas o puntitas blancas que provienen siempre, en unos individuos, de tres a cinco escamas de color blanco y en otros ejemplares, por siempre, una sola escama blanca; . . . [Dorsal coloration gray, ashen, spotted with small white markings formed by these to five scales in some individuals and by one scale in others; . . ." (p. 184).

Also, the figure in the original description (Lam. VII) shows two males and the cloacal region of a female. The two specimens remaining in the Museo La Plata are both males. Measurements of a single specimen given at the end of the description are not in accord with our measurements of either of the two remaining specimens, but those of MLP S-778 are closest to those in the original description.

Cei and Castro (1973) listed MLP S-778 as the holotype. However, in the original description, Koslowsky (1898) failed to designate a holotype. Thus, to fix the name-bearing type, and in compliance with the International Code of Zoological Nomenclature (ICZN, 1999), we here select MLP S-778 as the lectotype of *P. patagonicus* Koslowsky 1998. The specimen is a well-preserved adult male, one of the three specimens figured by Koslowsky (1898, Lam. VII), and is easily identified because of the absence of the distal extremities of digits III and IV of the left manus and digits I, II, and III of the right pes.

Restriction of Type Locality.—The syntypes of *P. patagonicus* were said to come from a ravine alongside the Chubut River (Koslowsky, 1898). We agree with Cei and Castro (1973) that specimens from 40 km west of Dolavon, a town located on the Chubut River, are indistinguishable from the syntypes. Also because of considerable diversity among other populations of *P. patagonicus*, we believe it is appropriate to restrict the type locality of *patagonicus* Koslowsky 1898 to 40 km west of Dolavon, Chubut Province, Argentina.

Diagnosis.—*Phymaturus patagonicus* is a member of the *patagonicus* group of *Phymaturus*, distinguished from the *palluma* group in having elongate and overlapping superciliaries rather than rectangular and nonoverlapping, caudal

scales smooth rather than keeled, and in having closed and fused Meckel's groove. *Phymaturus patagonicus* from the restricted type locality differs from all other members of the *patagonicus* group in having a unique dorsal color pattern of gray that becomes darker, almost black, on the back, and uniform with the spots (Fig. 1A). Juveniles and adults of both sexes exhibit the same pattern. Sexual dichromatism in pattern is scarcely detectable in this population, whereas in the El Sombrero populations (Chubut Province) dichromatism is more evident. Sexual dichromatism is well marked in *Phymaturus zapalensis* and *P. payunae* as described by Cei and Castro (1973) and Cei (1986), each with their own distinctive pattern. *Phymaturus indistinctus* has a uniform pattern of transverse and slender dark paravertebral markings. Ventral sexual dichromatism in *P. patagonicus*, when present, consists of light gray with scattered fine dark spots, whereas in *P. somuncurensis* the throat is almost melanic or with dark variegations. *Phymaturus nevadoi* has seven infralabial scales versus 8–10 in *P. patagonicus*. *Phymaturus patagonicus* has fewer scales around the midbody (mean \pm SD 174.1 \pm 8.6; 160–187) than the other species of the *patagonicus* group (*P. nevadoi*: mean 194.7 \pm 6.5; 188–201; *P. payunae*: mean 214.9 \pm 14.7; 193–248; *P. zapalensis*: mean 221.1 \pm 23.2; 190–276; *P. indistinctus*: mean 195.9 \pm 19.8; 168–234; *P. somuncurensis*: mean 229.1 \pm 24.2; 202–277; *P. spurcus*: mean 224.3 \pm 14.4; 207–245).

Description of Lectotype.—Male. SVL 87.6 mm. Head length 17.5 mm. Head width 15.4 mm. Head height (at parietal) 7.9 mm. Axilla–groin 42.6 mm (48.6% of SVL). Tail length (complete, not regenerated) 107.3 mm (1.2 times SVL). Body moderately wide, trunk with: 30.5 mm (34.8% of SVL).

Twenty-four dorsal head scales. Dorsal head scales smooth, with scale organs most abundant in prefrontal and internasal regions. Five, four, and four scale organs in each postrostral. Nasal not in contact with rostral, bordered by eight scales. Canthal separated from nasal by two scales. Loreal region flat. Eight enlarged supralabials with seventh upturned posteriorly, not contacting subocular (separated by one lorilabial). Nine enlarged infralabials. Auditory meatus oval; projecting auricular scales absent, with 3–4 projecting scales on anterior margin of auditory meatus (both sides). Twelve convex, juxtaposed, smooth temporals. Orbit–auditory meatus distance: 6.4 mm. Rostral undivided, about 3.1 times wider than high (width: 3.4 mm; height: 1.1 mm). Mental subpentagonal, about 1.8 times as wide as high (width: 2.2 mm; height: 1.2 mm). Interparietal bordered by seven scales, parietals of similar size. Frontal region without an azygous scale. Supraorbital semicircles

**A****B**

FIG. 1. (A) Male *Phymaturus patagonicus* from 40 km west to Dolavon (Chubut province), the restricted type locality. (B) Male *Phymaturus spurcus* from the type locality (Estancia Huanuluan, Rio Negro Province).

incomplete posteriorly on both sides. No distinctly enlarged supraoculars. Eight distinctly imbricate superciliaries. Fourteen upper and 13 lower ciliaries (right side). Subocular elongate (5.6 mm), longer than eye diameter, separated from supralabials by a single row of lorilabials. Nine lorilabials; seventh through ninth contacting subocular. Preocular separated from lorilabial row by one scale. Postocular equal in length to preocular. Mental in contact with four scales: first infralabials (on each side) and two enlarged chinshields. Chinshields forming a longitudinal row of six or seven enlarged scales. Scales of throat round, flat, and juxtaposed. Sixty-eight gulars between auditory meatus. Lateral nuchal folds well developed, with flat, round (almost granular) scales over longitudinal fold that are smaller than dorsals. Antehumeral pocket well developed. Seventy-two scales between auditory meatus and shoulder, fifty-four scales between auditory meatus and antegular fold. In ventral

view, gular fold absent, and posterior gular folds present with their anterior margins bordered by conspicuously enlarged scales. Dorsal scales round, smooth, juxtaposed. Thirty-nine dorsal scales along midline of the trunk in a distance equivalent to its head length. Scales around midbody 187. Middorsal scales slightly enlarged, becoming smaller and granular on flanks and toward belly. Ventral scales larger than dorsals. Ventral scales between mental and preloacal pores 168. Nine preloacal pores forming an interrupted row; one supernumerary pore. Brachial and antibrachial scales smooth with round posterior margins. Supracarpals laminar, rounded, smooth. Subdigital lamellae of fingers with three keels, in number I: 11; II: 17; III: 23; IV: 24; V: 16. Claws moderately long. Supradigital lamellae convex, smooth, imbricate. Infracarpals and infratarsals with rounded margins close to carpal-metacarpal articulation becoming trifid on base of fingers and toes. Supracarpals and

supratarsals smooth, with rounded posterior margins. Subdigital lamellae of toes I: 13; II: 17; V: 21 (toes III and IV are naturally cut exhibiting callosities).

Variation.—Based on Koslowsky's types plus 12 specimens from west of Dolavon (6 females and 8 males). SVL 74.1–93.3 mm (mean 84.1 ± 6.2). Head length 0.16–0.20% (mean 0.18 ± 0.01) of SVL. Tail length 1.01–1.45 (mean 1.28 ± 0.13) times SVL. Scales around midbody 160–187 (mean 174.4 ± 9.0). Dorsal head scales 17–24 (mean 20.92 ± 2.14). Ventrals 143–173 (mean 156.5 ± 9.1). Preloacal pores in males 8–10 (mean 8.7 ± 0.8), preloacal pores present in three females. Scales surrounding interparietal 7–8 (mean 7.1 ± 0.4). Scales of neck along longitudinal fold from posterior border of auditory meatus to shoulder 57–79 (mean 68 ± 6.14). Scales from posterior border of auditory meatus to antehumeral fold 42–58 (mean 51.4 ± 5.2). Gulars 63–84 (mean 73.0 ± 6.5). Scales between rostral and frontal 7–11 (mean 9.1 ± 1.2). Subdigital lamellae of fourth finger 14–20 (mean 16.7 ± 1.8). Subdigital lamellae of fourth toe 22–23 (mean 22.5 ± 0.7).

Color in Life.—Based on one male and two females (Fig. 1A). Both sexes with dorsal background color of head and limbs gray, becoming darker gray on trunk. Dorsum over shoulders and trunk uniformly spotted white. Both females with immaculate white abdomen, one with fine speckling on chest. The male has a very light yellow color on the posterior abdomen, which becomes brighter on thighs.

Distribution.—We agree with Cei and Castro (1973) that the population from 40 km west of Dolavon cannot be distinguished from Koslowsky's syntypes. Samples studied by us from IBA, SDSU, and those we collected (MCN) are very similar in pattern and general squamation. Members of the population from El Sombrero (IBA and MCN samples) exhibit more variation in pattern (especially among females). Until additional studies of this populations are conducted, we prefer not to assign these to *P. patagonicus*.

Phymaturus spurcus Barbour, 1921.

Holotype.—MCZ 14791, male, from Huanuluan, Río Negro Province, Argentina collected by J. A. Peters in 1920.

Paratypes.—MCZ 14914 (female)–14915 (male). Same data as the holotype.

Etymology.—The name *spurcus* is Latin for "dirty," which is appropriate because it describes the unicolor brown pattern typical and unique to this species (Fig. 1B).

Diagnosis.—*Phymaturus spurcus* is a member of the *patagonicus* group of *Phymaturus*, distin-

guished from the *palluma* group in having elongate superciliaries that are overlapping rather than rectangular and nonoverlapping, the subocular is single and elongate rather than fragmented, caudal scales are smooth rather than keeled, and the Meckel's groove is closed and fused. *Phymaturus spurcus* may be distinguished from other members of the *patagonicus* group, as well as those of the *palluma* group, in having a unique and homogeneous color pattern: brown with a paravertebral pattern formed by paired, diffuse marks of slightly lighter brown (seven between shoulders and thighs), and in having a conspicuous yellow interparietal that is markedly lighter than the other head scales (Fig. 1B). *Phymaturus spurcus* has a fragmented subocular scale (mean = 3 scales) as in most species of the *palluma* group, but not other members of the *patagonicus* group. *Phymaturus spurcus* also has a higher number of scales around the midbody (mean 224.3 ± 14.4 ; range = 207–245) compared to a maximum of 201 in *P. nevadoi* and 187 in *P. patagonicus*.

Description of Holotype.—Male, SVL 82.6 mm; head length 15.8 mm; head width 13.7 mm; head height (at parietal) 8.2 mm. Axilla–groin distance 45.6 mm (55.2% of SVL). Tail length (complete, not regenerated) 90.4 mm (1.1 times SVL).

Forty-six dorsal head scales. Dorsal head scales smooth, with scale organs most abundant in prefrontal and internasal regions (each postrostral scales with one to three scale organs). Nasal not in contact with rostral and bordered by nine scales. Canthal separated from nasal by two scales. Nine enlarged supralabials with seventh upturned posteriorly and not contacting subocular (separated by two lorilabials). Eight enlarged infralabials. Auditory meatus oval; auricular absent, with 2–3 projecting scales on anterior margin of auditory meatus (both sides). Fourteen convex, juxtaposed, smooth temporals. Orbit–auditory meatus distance: 4.9 mm. Interparietal bordered by seven scales, parietal scales being smaller. Frontal region without an azygous scale. Ten distinctly imbricate superciliaries. Supraorbital semicircles incomplete posteriorly on both sides. No distinct enlarged supraoculars. Seventeen upper ciliaries (right side). Subocular elongate (3.1 mm), slightly shorter than eye diameter (3.7 mm); separated from supralabials by a single row of lorilabials. Eleven lorilabials, none contacting subocular. Preocular separated from lorilabial row by two scales. Mental in contact with five scales: first infralabials (on each side), two enlarged chinshields, and one sublabial. Chinshields not forming a row distinct from other scales of the throat. Scales of throat round, flat, and juxtaposed. Eighty-three gulars between auditory meatus. Lateral nuchal folds well developed, with round (almost granular) scales

TABLE 1. Twelve morphological characters taken from these samples of *Phymaturus* lizards. *N* = number of specimens examined, \bar{x} = Mean SD = standard deviation, *P* = Student's *t*-test for differences between *Phymaturus spurcus* and the taxa/populations indicated. *Phymaturus patagonicus* ES = El Sombrero.

Species	Scales around midbody				Dorsals in a head-length				Ventrols			Temporals			Enlarged scales on ear					
	<i>N</i>	\bar{x}	SD	<i>P</i>	<i>N</i>	\bar{x}	SD	<i>P</i>	<i>N</i>	\bar{x}	SD	<i>P</i>	<i>N</i>	\bar{x}	SD	<i>P</i>	<i>N</i>	\bar{x}	SD	<i>P</i>
<i>Spurcus</i>	12	224.3	14.4		12	43.9	3.4		12	174.3	9.8		12	10.5	1.4		12	5.4	1.9	
<i>patagonicus</i>	18	174.4	11.7	< 0.01	18	35.8	4.7	< 0.01	18	167.4	13.9	0.029	18	8.7	1.0	0.0001	15	3.5	1.7	0.004
<i>patagonicus</i> ES	14	174.1	9.0	< 0.01	14	35.3	2.3	< 0.01	14	156.5	9.1	< 0.01	7	9.1	1.9	0.04	4	3	0.8	0.014

over longitudinal fold. Antehumeral pocket well developed. Ninety-six scales between auditory meatus and shoulder. Dorsal scales round, smooth and juxtaposed. Forty-six dorsal scales along midline of trunk (in a distance equivalent to its head length). Scales around midbody 207. Middorsal scales slightly enlarged, become smaller and granular on flanks and toward belly. Ventral scales between mental and preloacal pores 184. Eight preloacal pores. Brachials and antibrachials with round posterior margins. Supracarpals laminar, rounded, smooth. Subdigital lamellae of fingers keeled. Claws moderately long. Supradigital lamellae convex, smooth, imbricate. Infracarpals and infratarsals with round margins, close to the carpal-metacarpal articulation becoming trifid to the base of fingers and toes. Supracarpals and supratsarsals smooth, with round posterior margins.

Variation.—Based on adult specimens, four females and five males (MCN 1238–1240, 1244–1249), plus the holotype and two paratypes. SVL 77.8–92.8 mm (mean 86.7 ± 0.5). Head length 0.16–0.20% (mean 0.18 ± 0.01) of SVL. Tail length 0.89–1.09 (mean 1.00 ± 0.06) times SVL. Scales around midbody 207–245 (mean 224.3 ± 14.4). Dorsal head scales 18–23 (mean 20.60 ± 1.56). Ventrols 158–189 (mean 174.3 ± 9.81). Preloacal pores in males 8–11 (mean 9.4 ± 1.0). Preloacal pores absent in females. Scales surrounding interparietal 6–8 (mean 7.3 ± 0.8). Scales of neck along longitudinal fold from posterior border of auditory meatus to shoulder 74–96 (mean 84.7 ± 7.6). Scales from posterior border of auditory meatus to antehumeral fold 56–68 (mean 62.1 ± 4.9). Gulars 73–93 (mean 82.7 ± 5.7). Scales between rostral and frontal 6–11 (mean 8.6 ± 1.9). Subdigital lamellae of fourth finger 23–26 (mean 24.7 ± 1.5). Subdigital lamellae of fourth toe 22–28 (mean 25.3 ± 3.1).

Color in life.—There is little variation in the dorsal pattern of *P. spurcus* (Fig. 1B): homogeneous brown with a series of seven transversally elongate paravertebral markings of a lighter brown. One specimen has black markings on the extremities and lower borders of flanks. All specimens have a distinctly light yellow interparietal scale, a charac-

teristic not found in other species of the genus. Five juveniles (MCN) share the same unicolor pattern.

Females have an immaculate light cream to pink/orange chest and abdomen. The dorsal surface of tail is continuous with the brown color of the dorsum, but the ventral surface varies from brown to orange. Males with light cream to light yellow chest and belly and brighter mustard-yellow on the thighs. One female juvenile has its entire ventral region (chest, belly, ventral surface of thighs and cloaca) yellow, but another lacks this coloration.

Distribution.—Known only from the type locality. Estancia Huanuluan ($41^{\circ} 22'S$, $69^{\circ} 52'W$) was a very important stop on the old road linking the western and eastern sides of the Patagonian province of Rio Negro, but this locality is lacking on most modern maps. However, it was recorded on a map drawn by an American geologist working for the Ministerio de Obras Pùblicas of Argentina (Willis, 1911). As such it is probably one of the only cartographic references for that area at the time.

DISCUSSION

Phymaturus patagonicus and *P. spurcus* exhibit obvious differences in pattern and coloration (Fig. 1) and in other morphological characters as described above (Table 1), some of these characters separate the two groups of species, that is, subocular fragmentation. Populations of both species are also geographically isolated. Hence, there is compelling evidence that the two forms are distinct on their own unique evolutionary paths. Therefore, we propose the revalidation of *P. spurcus* (Barbour, 1921). Our redescriptions of *P. patagonicus* should also facilitate future studies that focus on the taxonomic status of other *Phymaturus* populations now assigned to *P. patagonicus*.

The identification of the true "*palluma*" for which the type locality (Bell, 1843) is "Chile" is necessary because there are morphological differences between populations living at Planchón, San Pedro and those from areas close to Talca (unpubl. data). Moreover Cei and Videla (2003) mention a new Chilean population north to those

TABLE 1. Extended.

Subocular fragmentation				Lateral neck scales				Gulars				Internares distance/head length				Frontal-superciliars				Loriolabial-subocular				Canthal-nasal scales																			
N	\bar{x}	SD	P	N	\bar{x}	SD	P	N	\bar{x}	SD	P	N	\bar{x}	SD	P	N	\bar{x}	SD	P	N	\bar{x}	SD	P	N	\bar{x}	SD	P	N	\bar{x}	SD	P												
9	3	1.1		12	84.7	6.1		12	82.7	5.69		12	0.2	0.01		12	7.7	1.9		8	8.7	0.70		12	2.3	0.5																	
18	1.2	0.4	0.0005	16	70.2	5.7	< 0.01	15	74.9	6.03	0.0009	18	0.2	0.01	0.0002	18	5.5	0.6	0.001	17	7.70	0.84	0.003	18	2	0.3	0.01																
12	1	0	< 0.01	13	68.00	6.1	< 0.01	12	73.0	6.53	0.0003	13	0.1	0.01	< 0.01	13	5.8	0.8	0.003	17	7.3	1.36	0.01	13	1.9	0.3	0.008																

in the Coquimbo area. A taxonomic assessment of these populations requires comparative study of the type specimen, deposited at the British Museum, with those other specimens from Chile.

Pereyra (1992; Resúmenes II Congreso Argentino de Herpetología) proposed the name *Phymaturus adrianae* for a population from the Uspallata highlands of Mendoza Province, Argentina. However, because this name was proposed in an abstract it is considered a nomen nudum (ICZN, 1999; Art. 9.9).

Cei and Videla (2002) suggested that the type specimen of Bell was collected in Argentina by Darwin during his 1835 trip. In that case, the population requiring specific designation should be the Chilean ones. But later, Cei and Videla (2003) used the name "*P. adrianae*," attributing it to Pereyra (1992), and provided sufficient data and a photograph to diagnose the species; however, because no holotype was identified, this name remains without standing (ICZN, 1999; Art. 16.4.1).

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- Phymaturus indistinctus*: IBA 666-1 (holotype), IBA-2, IBA-3. 2 km O de Las Pulgas (lago Munsters), Prov. del Chubut, Argentina. 700–800 m. MCN 1274–77. Las Pulgas (cerro frente a Gruta de la Virgen). Dpto. Sarmiento, Prov. de Chubut, Argentina.
- Phymaturus payunae*: IBA 769 2,4-8, 10, 12, 17, 20, 24, 26. (specimens of type series). IADIZA-CH 00087–8, 00087–9. 20 km southeast of Volcan Payún. 1800 m. SDSU 1981–1984. Argentina: Prov. Mendoza: Dpto Malargüe: 10 km southwest of base of Volcán Payún. MCZ 152079–81. Basaltic rocks of the Payún plateau, Mendoza, Argentina.
- Phymaturus somuncurensis*: IBA 470 (2 specimens). (Types). Laguna Raimunda, Meseta de Somuncurá, Prov. de Río Negro. Argentina. IBA 507 (4 specimens). Circa Laguna Raimunda, Meseta de Somuncurá, Prov. de Río Negro. Argentina. IADIZA 212. Cerro Corona, Meseta de Somuncurá. Prov. de Río Negro. Argentina. SDSU 1780–1783. Argentina: Prov. Río Negro: Dpto 9 de Julio: 2 km north of Laguna Raimundo, Meseta Somuncurá, IADIZA-CH 00212. Co. Corona. Meseta de Somuncura. Prov. de Río Negro, Argentina. FML 8435. 43 km north of de Moligüe. Dpto. 25 de Mayo, Río Negro. 41°35'S; 69°22'W. FML 1038. Meseta de Somuncurá, Laguna Raimundo (1400 m). Prov. de Río Negro. Argentina. MCZ 156909, 170443–44. Laguna Raimunda, Meseta de Somuncurá, Prov. de Río Negro. Argentina.
- Phymaturus zapalensis*: IBA 792 (type series, 4 specimens). Laguna Tern (L. Blanca). Prov. de Neuquén, Argentina. IBA 866–1 and 998–3 (2 specimens). 55 km south of Piedra del Aguila, Neuquén, Argentina. SDSU 1985–1988. Argentina: Prov. Neuquén: Dpto. Zapala: S shore Laguna Blanca. SDSU 1989–90. Argentina: Prov. Neuquén: Dpto. Zapala: southern shore Laguna Blanca, 1275 m. MVZ 232508–12. R. Prov. 46, 1580 m. 9.5 km south, 5 km Co Chachil, Dpto. Catan Lil, Prov. de Neuquén, Argentina. MVZ 232514. Puesto de Control, 3.5 km north of de Co. de la laguna. PN Laguna Blanca (23°80', 56°83'). Dpto. Zapala, Prov. de Neuquén. Argentina. 1300 m. MVZ 232515–16. Ruta provincial 46, Dpto. Zapala, Prov. de Neuquén, Argentina. MVZ 232513. 0.5 km west of Primeros Pinos, 1600 m. Dpto. Pirunches. Prov. de Neuquén. Argentina. MVZ 188908–10. Depto. Huiliches, rocks along Río Malleo, 8 km north of and 4 km east of Junin de los Andes; 800 m. Prov. Neuquén, Argentina.

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APPENDIX 1

Specimens examined and localities. All specimens examined are from Argentina. Museum symbolic codes are those listed by Leviton et al. (1985), except MCN for Museo de Ciencias Naturales de la Universidad Nacional de Salta (Salta, Argentina).

Phymaturus spurcus: MCZ 14791 (holotype), 14914 and 14915 (paratypes). Huanuluan, Prov. Río Negro. Argentina. MCN 1237–49, 62. Cerro frente a Estancia Huanuluan. Ruta 23, 22 km west of de Ing. Jacobacci, Prov. Río Negro.

Phymaturus patagonicus: MLP S-778, MLP S-777 (syntypes). Territorio del Chubut (Patagonia). IBA 789 (1–7), Dolavon, Prov. de Chubut. MCN a 40 km west of