

REDESCRIPTION AND STATUS OF *LIOLAEMUS HATCHERI* STEJNEGER, 1909 (REPTILIA: SQUAMATA: TROPIDURIDAE)

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RESUMEN: *Liolaemus hatcheri* está redescrito, y está comparado con *L. magellanicus*, *L. lineomaculatus*, *L. silvanae* y *L. periglacialis*. El status de *L. hatcheri* como una especie válida está confirmado. *L. hatcheri* puede ser un sinónimo mayor de *Liolaemus periglacialis*.

Palabras clave: *Liolaemus hatcheri*, *Liolaemus magellanicus*, *Liolaemus periglacialis*, *Vilcunia*.

ABSTRACT: *Liolaemus hatcheri* is redescribed, and compared with *L. magellanicus*, *L. lineomaculatus*, *L. silvanae* and *L. periglacialis*. The status of *L. hatcheri* as a valid species is confirmed. *L. hatcheri* appears to be a senior synonym of *Liolaemus periglacialis*.

Key words: *Liolaemus hatcheri*, *Liolaemus magellanicus*, *Liolaemus periglacialis*, *Vilcunia*.

Introduction

In 1909, Stejneger described *Liolaemus hatcheri* from an unspecified locality in Santa Cruz Province, in southern Argentina. The species was recognized by Burt and Burt (1930, 1933), but was synonymized with *L. magellanicus* (Hombron and Jacquinot, 1847), by Donoso-Barros (1970), an action followed by Peters and Donoso-Barros (1970) and Cei (1986). My examination of the holotype of *L. hatcheri* revealed it to be a valid species, and not a synonym of *L. magellanicus* as previously thought. The holotype appears to be an adult male of the species described by Cei and Scolaro (1982) as *Vilcunia periglacialis*. The objectives of this work are to provide a redescription of *Liolaemus hatcheri* and to discuss its validity as

a species, based on comparisons with other austral species of *Liolaemus*.

Materials

Specimens examined for this study include the holotype and paratypes of *Liolaemus hatcheri*, and preserved specimens and skeletons of *L. lineomaculatus*, *L. magellanicus*, *L. silvanae* and *L. periglacialis* (see Appendix 1 for museum numbers, localities and type specimens). Additional data for *L. periglacialis* were obtained from Cei and Scolaro (1982) and Scolaro (1992).

Liolaemus hatcheri Stejneger

1909 *Liolaemus hatcheri* Stejneger, Rept. Princeton Univ. Patagonia, 1896-1899,

3(1) Zool., p. 218. - Type locality: "north of Santa Cruz River". (Holotype: USNM 36912).

Type locality. Two specimens of *Liolaemus hatcheri* (including the holotype) were in a jar with 12 *L. kingii*, labeled "Among mate negra and mate verde, plains of Patagonia." Six specimens of *L. hatcheri* and six of *L. lineomaculatus* were in a jar with the label "Common everywhere on pampas of Patagonia to alt. of 3,000 ft." And, three specimens of *L. hatcheri* were in a jar with 34 *L. lineomaculatus* and 13 *L. kingii* labeled "Common everywhere on pampas of Patagonia to alt. of 3,000 ft." These specimens were collected by Mr. J. B. Hatcher during his expeditions to Patagonia in 1896-1899, and according to Stejneger (1909), "it is probably legitimate to conclude that most of the specimens were obtained at the salt lakes Pueyrredon and Buenos Aires, consequently within the district bounded by latitudes 47° and 48° south, longitude 70° and 70°30' west from Greenwich."

Paratypes: Stejneger (1909) referred 10 additional specimens to *Liolaemus hatcheri*. Seven of these have been located. The holotype and four paratypes are presently in the U. S. National Museum, and three are in the Field Museum of Natural History (FMNH 61103-5). However, only two of the paratypes in the USNM (36908 and 36911) are of the same species as the holotype, the other two (USNM 36907 and 36909) appear to be referable to *Liolaemus lineomaculatus*.

Diagnosis. *Liolaemus hatcheri* differs from all other *Liolaemus* except *L. magellanicus*, *L. lineomaculatus*, *L. silvanae* and *L. periglacialis* in having at least some dorsal body scales with a tridentate posterior margin. It differs from *L. magellanicus* in lacking precloacal pores in males, a much higher percentage of tridentate body scales, and straight-sided rather than expanded marginal tooth crowns. It differs from *L. lineomaculatus* in having the lateral nuchal scales rhomboidal and imbricate rather than granular, dorsal body scales that are lanceolate ra-

ther than obovate, and a much higher percentage of tridentate body scales. It differs from *L. silvanae* in having a longer tail, fewer dorsal body scales, and a different color pattern.

Description of the type. Adult male, 68 mm snout-vent length; tail 30 mm, distal 14 mm regenerated. Dorsal head scales smooth, slightly convex, those of the parietal region irregularly swollen. Anterior and upper temporal scales swollen, with irregular rugae; middle and posterior temporals compressed or pyramidal, projecting, terminating in a sharp keel or point. Rostral 2.8 times wider than high, bordered above by 4 postrostrals, the median pair much larger than the lateral; rostral separated from nasal scales by anterior lorilabial and lateral postrostral. Nasals separated dorsally by 5 elongate internasals. Anterior frontals and prefrontals larger than other head scales; a single azygous frontal. Enlarged medial supraoculars 6 - 6, 3rd, 4th and 5th much wider than long, 3rd and 4th partly fused on right side. Interparietal small, with a distinct "eye", bordered posterolaterally by parietals twice its size. Loreals 3 - 3; lorilabials 6 - 6, in a single row between subocular and supralabials; supralabials 5 - 5, followed by 2 large postlabials on each side. Mental wider than rostral, 2.0 times wider than high, separated from anterior sublabials by contact of anterior infralabials and postmentals; infralabials 6 - 6, the posterior 2 much reduced. External auditory meatus deep set, 1.3 times higher than wide, 0.37 times greatest diameter of orbit, ringed by small scales, granular except in middle of anterior margin where they are pyramidal; 2 (L) or 3 (R) posterior temporals project back over opening. Gular scales smooth, flat, rounded posteriorly, strongly imbricate; 20 posterior gulars between inferior termini of antehumeral folds.

Dorsal scales of body and neck strongly imbricate, sharply keeled and acuminate, about 40 percent with a distinctly tridentate margin, the others showing varying degrees of unilateral or bilateral indentation. Lateral

nuchals smaller but not sharply set off from dorsal nuchals, compressed or pyramidal, sharply pointed and projecting, those overlying the lateral nuchal skin folds larger than those in between; a shallow, more-or-less triangular pocket containing small, almost granular scales located below the transverse gular fold between the antehumeral and oblique neck folds (neck fold terminology follows Frost, 1992). Scales immediately above and posterior to forelimb articulation small, nearly granular; other lateral body scales large, smooth, flat, strongly imbricate, grading gradually into keeled dorsals above. Ventrals smooth, strongly imbricate, the largest about 1.5 times larger than largest dorsals. Scales around middle of body midway between limb insertions 50; scales along middle of back between occiput and anterior margin of hind limb articulation 53. Dorsal, lateral and ventral caudals of unregenerated portion tail similar to scales of body. Precloacal pores absent.

Forelimb scales imbricate, smooth except for moderately keeled postantibrachials; supradigitals and supracarpals smooth; infracarpals weakly keeled and tridentate; infradigital lamellae multicarinate and acuminate. Suprafemorals and supratibials imbricate and keeled but not as sharply as dorsal body scales, and none tridentate. Infracemorals and infratibials smooth, imbricate; free margins of anterior distal 4 infratibials form a strongly projecting crest, bordered above by zone of greatly reduced anterior tibials. Proximal, ventral postfemorals smooth, flat, elongate ovals, imbricating dorsally, grading into small, convex scales with interstitial granules distally, and into smaller but still imbricate, pointed scales dorsally. Supracarpals and supradigitals smooth; infracarpals smooth, imbricate proximally, becoming indistinctly keeled, with a few tridentate, distally; subdigital lamellae multicarinate and acuminate. Fourth toe lamellae 20 - 19.

Dorsal surface of head light tan, with pattern of more-or-less symmetrical dark brown markings: a short, median stripe containing

a narrow central zone of light ground color, extending from apex of rostral back across postrostrals, internasals, and frontonasals, plus irregular brown markings on the supraocular and parietal regions; brown pigment present on posterior margins of supralabials, with brown spots on supralabials 4 and 5; temporal region with a few brown spots. Scale sensory organs present on loralabials, postrostrals, internasals, frontonasals, anterior supraoculars and frontals, all brown. Ground color of dorsal and lateral surfaces of body and appendages light tan, with pattern of dark brown markings and indistinct, cream-colored dorsolateral stripes, interrupted by brown crossbands. Paravertebral spots expanded medially to contact, or almost contact one another, such that the middorsal stripe is indistinct. Likewise, lateral spots highly irregular in form, continuous with paravertebral spots by way of a narrow brown arc that crosses the dorsolateral stripes; the latter, however, because of their slightly lighter color, remain moderately evident. Ventrolateral stripes scarcely apparent, being crossed by a series of brown bars that extend down from the lateral spots to the venter (for pattern terminology see description of "standard pattern" in Etheridge, 1993) Limbs patterned with irregular brown bars. Ventral surface of the posterior throat, chest, abdomen, hind limbs (excluding the pes) and unregenerated portion of the tail uniform black, the black pigment breaking up on the middle and anterior throat.

Variation in the paratypes. Of the 11 paratypes mentioned in the type description (Stejneger, 1909), only seven have been located, and two of these do not belong to the species *Liolaemus hatcheri* (see above). Thus, only one female (60 mm SVL) and four males (56 - 60) mm of *L. hatcheri* are represented.

Head scale surface and patterns are similar except as follows. Temporal scales as in the type in one individual, less strongly keeled in another, and smooth and convex in three; postrostral 2 - 4; internasals elongate

or not; anterior frontals and prefrontals larger than other dorsal head scales or not; one or two azygous frontals; interparietal from slightly smaller to slightly larger than parietals; loreals 3 - 7; supralabials 4 - 5, infralabials 4 - 6; posterior temporals project back over ear opening or not. Lateral nuchal scales above lateral skin fold smooth, somewhat convex and pointed or keeled and strongly acuminate (spiny). Scales around midbody 51 - 56; scales along middle of back from occiput to anterior margin of hind limb insertion 48 - 55. Limb scales as in type except for FMNH 61103, in which dorsal limb scales are more strongly keeled, some tridentate on hind limb, and infracarpals, infratarsals and subdigital lamellae are more strongly keeled; fourth toe lamellae 18 - 22.

Dorsal pattern of head variable but with same basic pattern as type, i.e., dark median frontonasal stripe with light center and symmetrical brown spots on supraocular and parietal region. Dorsal body pattern essentially as in type, with variation in intensity apparently due to state of preservation. Ventral surfaces with dark brown spots on yellowish background, the dark color more extensive on the abdomen in some than in others, but none uniformly dark as in type.

Taxonomic status of *Liolaemus hatcheri*

Subsequent to the publication of *Liolaemus hatcheri* Stejneger, 1909, the species was recognized by Burt and Burt (1930, 1933), but was synonymized with *Liolaemus magellanicus* (Hombron and Jacquinot, 1847) by Donoso-Barros (1970), an action followed by Peters and Donoso-Barros (1970), and Cei (1986).

As indicated in the diagnosis, *Liolaemus hatcheri* differs from all other *Liolaemus* except *L. lineomaculatus*, *L. magellanicus*, *L. periglacialis*, and *L. silvanae* in having at least some tridentate dorsal body scales. Other characteristics listed in the diagnosis serve to distinguish *L. hatcheri* from *L. ma-*

gellanicus, *L. lineomaculatus* and *L. silvanae*, but not from *L. periglacialis*.

Detailed comparisons of the holotype and paratypes of *Liolaemus hatcheri* with the type description and preserved specimens of *L. periglacialis*, including one of the paratypes, reveal some discrepancies, but on the whole indicate the likelihood that they are conspecific. In the morphology of the scales of the head, body, and appendages they are indistinguishable. Based on 32 specimens of *L. periglacialis* examined by Scolaro (1992), and five specimens of *L. hatcheri*, the mean number of scales around the middle of the body is 53.41 (StD = 2.58) in *L. periglacialis*, and 53.00 (StD = 2.68) in *L. hatcheri*; the mean number of tridentate scales in a 5 x 5 mm square on the middle of the back is 29.38 (StD = 4.87) in *L. periglacialis*, and 22.5 (StD = 3.11) in *L. hatcheri*. Although the holotype of *L. hatcheri*, an adult male 68 mm snout-vent length, has a uniformly dark ventral surface, as in adult male *L. periglacialis*, it lacks the distinctive dorsal color pattern described and figured for adult male *L. periglacialis* by Cei (1986). The dorsal color pattern of the head and body of the holotype and paratypes of *L. hatcheri*, representing adults of both sexes, closely matches the color photograph of an adult female *L. periglacialis* in Cei (1986, Lámina 29). The pattern illustrated for an adult male *L. periglacialis* (Cei, 1986, Lámina 30) differs in having the paravertebral and lateral spots obscured, and the dorsolateral stripes more distinctly delineated. In the type description of *L. periglacialis* (Cei and Scolaro, 1982), the lateral stripes and ventral melanism are said often to be absent in females. This discrepancy in the dorsal color pattern of adult males may be due to individual variation, or the smaller size of the largest known specimen of *L. hatcheri*.

According to Cei and Scolaro (1982), *Liolaemus periglacialis* occurs from Lago Belgrano and the Río Belgrano to the mesetas Pampa del Aguila and Pampa del Asador, and Lake Guitarra, about 70 km eastward in

Santa Cruz Province. According to Stejneger (1909), the specimens obtained by Mr. Hatcher probably came from the vicinity of Lago Buenos Aires and Lago Pueyrredon, between 47° and 48° South Latitude. Lago Belgrano lies about 30 km south of Lago Pueyrredon, and within the area bounded by 47° and 48° South Latitude. Therefore, although the type locality of *Liolaemus hatcheri* is not precisely known, it is likely that it lies within the range of *Liolaemus periglacialis*.

Cei and Scolaro (1982) described *Vilcunia periglacialis*, and this binomial subsequently was published by Laurent (1985), Cei (1986), Christie (1995) and Scolaro (1992). The genus *Vilcunia* was placed in the synonymy of *Liolaemus* by Frost and Etheridge (1989), and the binomial *Liolaemus periglacialis* was published by Etheridge (1995). Therefore, since *Vilcunia periglacialis*, or *Liolaemus periglacialis*, has appeared in only five publications since its description in 1982, it is ineligible for petition to preserve the name under Article 79c of the International Code of Zoological Nomenclature (ICZN, 1985).

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- 36896-906, FMNH 6108487, MNHN Paris 03-163-4; Santa Cruz River, probably between Santa Cruz and Lago Buenos Aires FMNH 61088-902; beach 4 km N Puerto Deseado SDSU 1666-68. Prov. Neuquén: 3 km E Cerro Blanco, Bariloche SDSU 3710-14; between Primeros Pinos and Quilca, Estancia Tapi-Aike FML 1797(3); proximity of Río Leona, about 70 km E Calafate FML 2118; 2 km S Paso Briggieri on Ruta Nac. 40 (Río La Leona) FML 3356.

Liolaemus magellanicus. CHILE: Havre Pacquet, Estrecho de Magallanes MHNP 6866 (holotype); Tierra del Fuego, 98 km E Puerto Porvenir MVZ 180118; lighthouse at Cabo Espiritu Santo, 70 km E. Cerro Sombreiro MVZ 180134-36; Puerto Montt (in error) FMNH 9964. ARGENTINA: Prov. Santa Cruz: Estancia Tapi Aike FML 1798(3); Estancia Las Vizcachas IBA-UNC 595(6); Guer Aike IBA-UNC 618; Estancia Esperanza IBA-UNC 616; Río Pinturas (Cueva de las manos) SDSU 3707. Prov. Tierra del Fuego: Bahía de San Sebastián FML 2416(3).

Liolaemus periglacialis. ARGENTINA: Prov. Santa Cruz: Peninsula Lago Belgrano, Parque Nacional Perito Moreno SDSU 3706; Cerro Beltza, 10 km E Lago Belgrano, 1000 m FML1032 (paratype); north margin of Río Belgrano, 950-970 m FML 1033 (paratype), MCZ 162007-10; Meseta Aguila-Asador, near Lago Guitarra, 1300 m FML 1034-36 (paratypes), SDSU 1677;

Liolaemus silvanae: ARGENTINA: Prov. Santa Cruz: Puesto Lebrun, meseta Lago Buenos Aires, 1400 m FML 1031(3), DBCU-CH 0258-0260, MCZ 162004-06.

Appendix 1

The specimens examined for this study and their localities are listed below. Museum numbers preceded by SDSU are in the herpetological collection of San Diego State University. Other museum acronyms are given in the Acknowledgements.

Liolaemus hatcheri. ARGENTINA: Prov. Santa Cruz: Patagonia, USNM 36912 (holotype), 36908, 36911, FMNH 61103-05 (paratypes).

Liolaemus lineomaculatus. ARGENTINA: Prov. Santa Cruz: Patagonia BMNH 1946.8.5.72-5 (syntypes), USNM 36907, 36909 (paratypes of *L. hatcheri*), 36893-4,