

**Remarks on the South American Iguanid Lizard *Liolaemus anomalus*
Koslowsky, and the Synonymy of *Phrynosaura weneri* Müller
(Reptilia, Lacertilia, Iguanidae)**

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ABSTRACT—A description of the neotype of *Liolaemus anomalus* Koslowsky is given, with comments about its relationships, geographical variation and ecology. The comparison of new samples of this poorly known tropidurine lizard with the holotype of *Phrynosaura weneri* Müller suggests their synonymy.

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In 1896 Koslowsky described the tropidurine iguanid lizard *Liolaemus anomalus* from "la provincia de La Rioja" in western Argentina. No further specimens have been referred to this species, and a careful check in the Museo de La Plata by Dr. A. Alonso de Aramburu (pers. comm. 1976), where Koslowsky's types were presumably deposited, failed to reveal them. However, during my recent field work in the arid territories of La Rioja, San Juan and Mendoza provinces from about 28° to 32° South Lat.) in western Argentina, several specimens were found that agree closely with the description and figures of this species provided by Koslowsky. Furthermore a comparison of these specimens and others collected earlier in the same region with the holotype of *Phrynosaura weneri* Müller 1928 has revealed that this species is a synonym of *Liolaemus anomalus*. According to Donoso Barros (1969) *Liolaemus lentus* Gallardo (1966) is a synonym of *Phrynosaura weneri*; thus *lentus* may also be placed in the synonymy of *Liolaemus anomalus*. Because of the apparent loss of the types of *Liolaemus anomalus* I have selected a neotype and neoparatypes for this species, and provided a detailed redescription of the species below. A brief discussion of its geographical variation and ecology, and of its possible relationships with similar forms are also given, and its allocation to the genus *Liolaemus* is discussed. Abbreviations used for specimens are as follows: MF—Museo Zoologico Università, Firenze, Italy; DC-JMC—Diagnostic collection of J. M. Cei; IBA-UNC—Instituto Biología Animal, Universidad Nacional Cuyo, Mendoza, Argentina.

Liolaemus anomalus Koslowsky

- 1896 *Liolaemus anomalus* Koslowsky, Revta Mus. La Plata, 7:452. Type-locality: "la provincia de La Rioja" (syntypes: ? Museo La Plata, presumed lost).
1928 *Phrynosaura weneri* Müller, Zool. Anz., 77:64. Type-locality: none given (holotype: Zool. St. Samm. München Nº. 2/1928).
1966 *Liolaemus lentus* Gallardo, Neotropica, B. Aires, 12(37):17, fig. 1. Type-locality: "Argentina, La Pampa, Dto Puelen, Cochico, Altos de Cochico (holotype: Mus. Argent. Cien. Nat. Nº. 22071).
1969 *Ctenoblepharis anomalus*—Donoso Barros, Bol. Soc. Biol. Concepción, Chile 41:94.
1974 *Ctenoblepharis weneri*—Cei, J. Herpet. 8(1):71.

Neotype.—MF-22232, male collected 40 km west of Encon, San Juan Province, western Argentina, on 9 October 1977, by J. M. Cei.

Neoparatypes.—MF-22233-22242, 3 males, 4 females, 2 juveniles with the same locality and data as the neotype; MF-22243, female, 30 km west of Encon, San Juan Province, collected 19 November 1977 by J. M. Cei; MF-22244, male, 30 km east of Encon, San Juan Province,

collected 11 December 1977 by J. M. Cei; MF-21790, male, 20 km west of Encon, San Juan Province, 12 December 1976, collected by J. M. Cei; DC-JMC-3, male, same locality and data as the neotype; IBA-UNC-1239, male, Bermejo, San Juan Province, collected 11 November 1976 by J. M. Cei and L. P. Castro; IBA-UNC-72, male, Maipu, Mendoza Province, collected 3 March 1954 by J. M. Cei; IBA-UNC-432, female, borders of San Luis Province, road-San Luis-Casuarinas, collected 10 May 1967 by J. M. Cei; IBA-UNC-1237-1-2, male and female, 10 km north Desaguadero Bridge, Mendoza Province, collected 5 November 1976 by J. M. Cei and L. P. Castro.

Description of Neotype.—Upper head scales strongly rugose, swollen, well differentiated; rostral wider than high, separated from nasals by four small, rounded scales; prefrontals, frontals, and frontoparietals; interparietal slightly smaller than parietals; ten distinct supraoculars, surrounded by granular circumorbitals; four rows of small, rounded scales between supraoculars and ciliaries; subocular scale enlarged, separated from supralabials by a single scale row; eight projecting supralabials, seven infralabials; temporal scales irregular, swollen, faintly keeled or smooth. Snout blunt; nostrils lateral, opening posteriorly; loreal region depressed; ocular region swollen but not projecting; eyelids granular, distinctly fringed; ear opening transverse, anteriorly bordered by conical scales. Head broad, subtriangular, somewhat longer than wide, less than one fourth the body length. Distance between anterior border of eye and tip of snout slightly longer than diameter of eye.

Body stout, tail slightly longer than snout-vent length; fourth toe of adpressed forelimb reaching tip of snout; fourth toe of adpressed hind limb barely reaching axilla. Dorsal and lateral scales of neck granular; dorsal body scales subimbricate, smooth or faintly keeled, heterogeneous, almost conical or granular on sides of body; ventral scales quadrangular, imbricate, about twice as large as dorsals; caudal scales smooth at base of tail, elsewhere carinate, quadrangular, in regular rings, imbricate, ventrally keeled on distal part of tail; limb scales enlarged, imbricate and keeled, almost granular on ventral surface of arm and femur. Scales around midbody 88; four yellow preanal pores; 22–23 keeled lamellae under fourth toe, 17 under fourth finger. Length of head equal to length of 30 middorsal scales. Femoral patch not evident. Lateral skin fold present behind the ear opening and in the antehumeral region where they extend below as a gular fold.

Pterygoid teeth present. Maxillary teeth tricuspid.

Ground color ochre-gray, with scattered single blue scales; five transverse series of bluish-black blotches edged with white behind, especially well developed in the posthumeral region where reddish shades are apparent. Tail and limbs with transverse dark bands above. Venter white, speckled with a few light brown spots, darker on the throat and jaws.

Measurements of the neotype in millimeters: total length 140, snout-vent 69, tail 71, axilla-groin 37.5, head length 17.5, head width 16, forelimb 27, hindlimb 40.

Variation in Neoparatypes.—Preanal pores well developed in individuals of both sexes above 40 mm snout-vent length, showing seasonal macroscopic and microscopic changes in both sexes. Except for incomplete transverse gular fold in females, sexual dimorphism not well developed. Secretory preanal pores in females are unusual in *Liolaemus*. They have been observed in *Liolaemus wiegmanni* and in a new species of this genus from Cumbres Calchaquies, Huaca-Huasi Lagoon, Tucuman Province, north-western Argentina (Halloy: pers. comm. 1978). Although the tail is autotomic, a regenerated tail was found in only one individual in 18. Dorsal color pattern highly variable; transverse dark spotting reduced in some to a single velvet-black antehumeral spot, edged with carmin; no sexual dichromatism.

Measurements in mm based on 9 adult males and 7 adult females; total length: males 115–172, females 114–145; snout-vent length: males 55–80, females 54–72; tail length: males 60–92, females 60–73; axilla-groin length: males 24–42, females 26.5–38; head length: males 13–19.7, females 12.5–17; head width: males 12–19, females 11–15.5; forelimb length: males 27.7–31, females 21–25; hind limb length: males 30–46, females 32–36.

Distribution.—Arid regions of western Argentina from southern Catamarca Province and the flats of La Rioja (Koslowsky's types) southward through eastern San Juan Province to northeastern Mendoza Province. With *Liolaemus lentus* in the synonymy of this species the range is extended into the sandy western region of La Pampa Province (Cochico hills).

DISCUSSION

Although a comparison of the type-description of *Liolaemus anomalus* (Koskowsky, 1896) and *Phrynosaura weneri* (Müller, 1928) suggests strongly their synonymy, this synonymy is confirmed by the actual comparison of the neotypes and neoparatypes of *L. anomalus* with the holotype of *P. weneri* (Bayer. Staat. Samml., München No. 2/1928). They are strikingly similar in aspect of head and body, lepidosis, preanal pores, coloration and measurements. Furthermore the distinctive individual variation in color pattern that includes the reduction of dorsal spots leading to a unique black antehumeral blotch, noted in the description of the paratypes, was also observed by Koslowsky, and shown in his excellent plates.

A population apparently referable to *Liolaemus anomalus*, but differing in scalation, color pattern and behavior, occurs along the western slopes of the old Pampean Famatina embossment, at Chilecito in northern La Rioja Province. It is characterized by a grayish or reddish ground color, striped on the back by heavy, dark transverse bands with semilunar indentations on their posterior margins. In behavior they are sluggish and non-aggressive, whereas animals from San Juan Province are very active and ferocious (Fig. 1). Non-aggressive behavior has also been reported for *Liolaemus lentus* (Gallardo, 1966). Further study is clearly needed to determine the exact nature of geographic variation in these lizards.

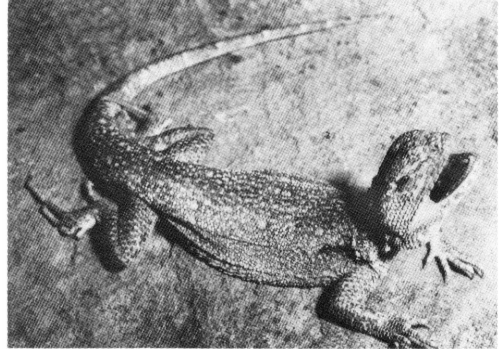


FIGURE 1. *Liolaemus anomalus* from Encon, San Juan Province, Western Argentina: aggressive behavior.

Other reptilian species found in the xeric environments inhabited by *Liolaemus anomalus* are *Liolaemus darwini*, two as yet undescribed forms of *Liolaemus fitzingeri* and *Liolaemus multimaculatus* groups (Cei, Cei and Scolaro, in press), *Homonota underwoodi*, *Cnemidophorus longicaudus*, *Tupinambis rufescens*, *Leptotyphlops borrichiana*, *Leimadophis sagittifer*, *Pseudotomodon trigonatus*, *Philodryas psammophilus*, *Lystrophis semicinctus*, *Oxyrhopus rhombifer*, *Phimophis vittatus*, *Micrurus frontalis pyrrhocryptus*, *Bothrops neuwiedi diporus*, *Bothrops amodytoides*, and *Crotalus durissus terrificus*.

Recently Donoso Barros (1969) placed *Liolaemus anomalus* in the genus *Ctenoblepharis*. This genus was initially proposed by Tschudi (1845) for *C. adspersus*, a psammophilous species from the coastal deserts of Peru. Subsequently several additional species were described in this genus, and still other forms that were initially assigned to *Liolaemus* and *Phrynosaura* have also been placed in *Ctenoblepharis*. All of these forms exhibit a spectrum of structural characteristics that are apparently adaptive to life in a sandy, arid environment; however, it now appears (Cei, in press) that several unrelated species groups are involved: in the coastal deserts of Peru and northern Chile, in the high Andes of Chile and Atacama, in the arid lands of western Argentina, and in the deserts of central and coastal Argentina. Thus, *Ctenoblepharis* should probably be restricted to those forms of the coastal deserts of Peru and northern Chile, and the Atacama Plateau: *adspersus*, *stolzmanni*, *reichei*, and *nigriceps*; the others (*anomalus*, *donosobarrosi*, *marmorata*, *schmidti*, *weneri*, *jamesi*, *multimaculatus* and *rabinoi*) should be assigned to the genus *Liolaemus*. A detailed justification for this new arrangement will be presented elsewhere (Cei, in press).

ACKNOWLEDGMENTS

I acknowledge with thanks the friendly criticism of R. Etheridge from the San Diego State University, California, providing notes on type materials, revising the manuscript, and sharing his valuable, personal knowledge of iguanid lizards.

LITERATURE CITED

- Donoso Barros, R. 1969. Consideraciones nomenclaturales sobre dos lagartijas argentinas. Bol. Soc. Biol. Concepción 41:93-94.
- Gallao, J. W. 1966. *Liolaemus lentus* nov. sp. (Iguanidae) de La Pampa y algunas observaciones sobre saurios de dicha provincia argentina y del oeste de Buenos Aires. Neotropica 12:15-29.
- Koslowsky, J. 1896. Sobre algunos reptiles de Patagonia y otras regiones argentinas. Revta Mus. La Plata 7:445-453.
- Müller, L. 1928. Herpetologische Mitteilungen. Zool. Anz. 77:61-84.
- Tschudi, J. J. von. 1845. Reptilium conspectus quae in Republica Peruana reperiuntur et pleraque observata vel collecta sunt in itinere. Arch. Naturgesch. 11:150-170.

Accepted 31 Dec 1978

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