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Liolaemus riodamas Esquerré, Núñez & Scolaro, 2013 (Reptilia: Squamata: Liolaemidae): new record for the Maule Region in Chile

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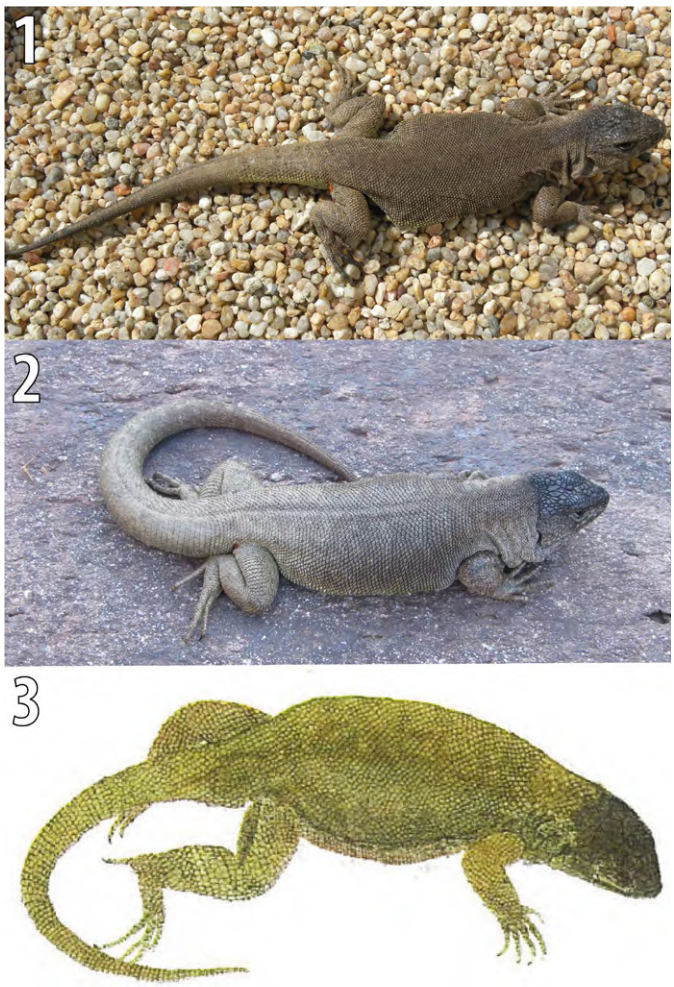
Abstract: *Liolaemus riodamas* is a recently described lizard, only known from a very restricted river canyon in the Andes of the O'Higgins Region in Chile. The species is particular for being one of the few *Liolaemus* lacking the pheromone secreting glands known as precloacal pores. Here we document a second locality for this species located 30 km southwest of the type locality. This is also 500 m higher than the type locality, therefore a considerable altitudinal extension. This is a very positive discovery since the type locality of *L. riodamas* is intervened by a hydroelectric project, and gives hope to the conservation of this unique taxon.

Key words: Liolaemidae; precloacal pores; Teno; Planchón

The extremely species rich iguanid genus *Liolaemus* Wiegmann, 1834 is widely distributed across the southern portion of South America (Etheridge and Espinoza 2000; Abdala and Quinteros 2014). Two main clades considered subgenera are widely accepted: *Liolaemus* (*sensu stricto*) and *Eulaemus* (Laurent 1985; Etheridge 1995; Schulte et al. 2000). The subgenus *Liolaemus* (*sensu stricto*) has also been termed the "Chilean" group because it occurs mainly west of the Andes, in Chile. The two most conspicuous diagnostic traits of this group are the presence of flattened supralabial scales with the fourth or fifth posteriorly curved upwards and having few (usually four or less) precloacal pores, although with some exceptions. These structures could be more accurately described as pheromone secreting glands, and they are found in the anterior edge of the cloacal opening of most males of the Liolaemidae (Labra et al. 2002). *Liolaemus riodamas* Esquerré, Núñez & Scolaro, 2013 (Figure 1), is a recently described viviparous and saxicolous species that was previously considered as *Liolaemus* cf. *ceii* (Núñez and Torres-Mura 1992), belonging to the *Liolaemus* subgenus and one of the few known liolaemids to completely lack precloacal pores (Esquerré et al. 2013). Until now, this species was only known to inhabit a very narrow canyon of the Las Damas River (34°56′ S, 070°23′ W), located in the Andes of the southern end of the O'Higgins Region in Chile, between 2,012 and 2,057 m above sea level (a.s.l.). Given the small area where these lizards occur and the apparent low population density (Esquerré et al. 2013) the conservation status of this species is of some concern.

During a field trip we made in January 2012 to an Andean plateau with two lagoons known as El Planchón, two male *Liolaemus* lizard specimens (Figure 2) were collected with a noose tied to a fishing rod. Later, these specimens were euthanized with sodium thiopental and deposited in the "Colección de Flora y Fauna Prof. Patricio Sánchez Reyes" of the Pontificia Universidad Católica de Chile (SSUC Re 493 and 494). Several others specimens were photographed but not collected. The collecting permit number is N°1637, SAG. El Planchón is located in the Andes of the Maule Region in Chile, just south of the Teno River and north of the Planchón-Peteroa Volcano. The specimens were found on the road to the Eastern Teno Lagoon (35°09′ S, 070°31′ W, 2,570 m a.s.l.) and on the shore of the Eastern Teno Lagoon (35°09′ S, 070°32′ W, 2,550 m a.s.l.) (Figure 4).

Preliminary phylogenetic analysis performed for another study confirm that this population is *L. riodamas* (Esquerré et al. in prep.). Moreover, the external morphological characteristics of these specimens match



Figures 1–3. 1: *Liolaemus riodamas* from its type locality, Las Damas River (photo: Damien Esquerré). **2:** *Liolaemus riodamas* from El Planchón, the new record (photo: Jaime Troncoso-Palacios). **3:** Illustration of *Liolaemus kriegi* according to Donoso-Barros (1966), who reported it for the Andes of Curicó. *Liolaemus kriegi* is now restricted to the Argentine Patagonia and this illustration is strongly reminiscent of *L. riodamas.*

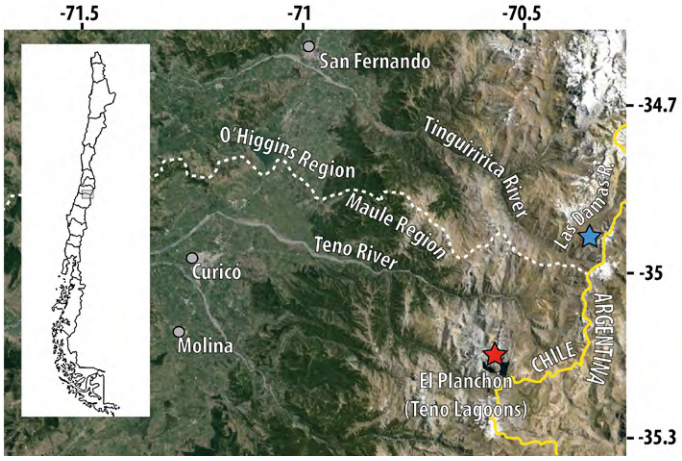


Figure 4. Topographic map depicting the current known populations of *Liolaemus riodamas*. Blue star: type locality in Las Damas River. Red star: new population in El Planchón. Gray circles: cities. White dashed line: administrative region border. Yellow solid line: Chile-Argentina border. Latitude and longitude are in decimal degrees.

those of *L. riodamas*, and although the specimens collected are smaller than the type series from Las Damas River, they have similar body proportions (Table 1). They lack any dorsal pattern and precloacal pores and have brownish gray general coloration, a dark head, a light yellowish coloration in the ventral region, small, weakly keeled and juxtaposed dorsal scales, all diagnostic traits of *L. riodamas*. Because both specimens were determined as males (internal sexed), the absence of precloacal pores is especially strong evidence suggesting the specimens belong to *L. riodamas*. Approximately 10 individuals were observed between 12:00 and 14:00, all in rocky environments. In the same area, *Phymaturus* cf. *damasense* Troncoso-Palacios & Lobo, 2012 were found. At a lower elevation (2,550 m a.s.l.), along with *P.* cf. *damasense, L. buergeri* Werner 1907 were also found, which was expected, given that this is the type locality for this species.

Donoso-Barros (1966: 291) identified *Liolaemus kriegi* Müller & Hellmich, 1939 from the "zona cordillerana de Curicó" (cordilleran zone of Curicó). We currently know that *L. kriegi* has its northern distribution limit in Neuquén, Argentina (Medina et al. 2014), and the figure of "*L. kriegi*" provided by Donoso-Barros (1966: cxxvii) is strongly reminiscent of *L. riodamas* (Figure 3). Consequently, these records of "*Liolaemus kriegi*" of the Andes of Curicó very likely correspond to *L. riodamas*. Additionally, Mella (2005), included El Planchón as a locality for *Liolaemus ceii*, which was then the name used for *Liolaemus riodamas* in Chile.

The record presented here extends the distribution of *L. riodamas* 30 km southwest of its type locality along the Las Damas River. This is very optimistic news because of the extremely restricted and low abundance of this species at its type locality. Moreover, the type locality may in the future experience substantial change due hydroelectric projects in the area. More exploration

Table 1. Measurement (in mm) mean, standard deviation (SD) and range of *L. riodamas* from Las Damas River, and the individual measurements for the two specimens collected at El Planchón. Captions are: M, male; SVL, snout vent length; AGD, axilla-groin distance; FLL, forelimb length; HLL, hindlimb length; TL, tail length; MBS, midbody scales; HL, head length; HW, head width; HH, head height; reg, regenerated.

Specimen	Sex	SVL	AGD	FLL	HLL	TL	MBS	HL	HW	HH
Las Damas Mean±SD		80.89±3.92	38.71±2.73	31.65±2.01	46.12±2.49	123.7±11.5	85.33±4.42	17.51±1.27	15.27±1.06	10.1±0.47
Las Damas Range		72.71-85.5	34.71-41.9	27.43-34.4	42.7-50.2	112-135	80-93	15.42-19.53	13.44-16.24	9.52-10.8)
SSUC 493	M	61.79	27.76	20.21	34.58	70 (reg.)	80	12.78	11.05	6.5
SSUC 494	M	82.47	35.38	28.42	47.05	114	76	17.06	16.2	10

in the area would be necessary to determine if there is possible genetic connectivity between the two now known populations. As part of an environmental impact assessment D. Esquerré and H. Núñez thoroughly surveyed in the high part of the Teno and Malo River canyons, up to 1,400 m a.s.l., between the type locality and El Planchón but *L. riodamas* was not seen. The absence of *L. riodamas* in the upper Tinguiririca River and the Termas del Flaco area just below Las Damas River, in addition to its absence in the Teno River canyon, could suggest that this species does not occur below 2,000 m a.s.l.

To conclude, the two known populations of *L. riodamas,* although only separated by 30 km and possibly with genetic connectivity through the high altitude slopes bordering the Argentine border, are very restricted and show a very low population density. Moreover, this record presents an altitudinal extension of 500 m. Further exploration is needed in the poorly accessible high altitude areas between these two localities, but we recommend that both populations be protected. Genetic studies in progress are necessary to evaluate the conspecific status of these populations and their potential current and historical connectivity via gene flow.

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