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New Patagonian species of *Liolaemus* (Iguania: Liolaemidae) and novelty in the lepidosis of the southernmost lizard of the world: *Liolaemus magellanicus*

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Abstract

We describe a new species within the genus *Liolaemus* from southeast Argentine Patagonia. This new taxon, *Liolaemus yatel* **sp. nov.**, presents anatomical traits shared with the *Liolaemus lineomaculatus* section within the *Liolaemus lineomaculatus* group, especially the absence of precloacal pores in both sexes. However, *Liolaemus yatel* **sp. nov.** does not exhibit trifid dorsal scales, which is a diagnostic character of the *L. lineomaculatus* group. Moreover, this new species differs from other taxa of the *L. lineomaculatus* group in that dorsal and nuchal scales either completely lack keels or are slightly keeled. We also report, for the first time, the presence of trifid scales in *Liolaemus magellanicus*, another species included in the *L. lineomaculatus* section but constituting an independent lineage regarding the *L. lineomaculatus* group. The phenotypic traits of *L. yatel* **sp. nov.** and the presence of trifid scales in *L. magellanicus* provide additional information for the study of evolutionary relationships among the species of the *L. lineomaculatus* section, especially the establishment of their diagnostic character states.

Key words: *Liolaemus lineomaculatus* section, *Liolaemus lineomaculatus* group, Morphology, New taxon, Patagonia, Argentina

Resumen

Describimos una nueva especie para el género *Liolaemus* del sureste de la Patagonia, Argentina. Este nuevo taxón, *Liolaemus yatel* **sp. nov.**, presenta rasgos anatómicos compartidos con la sección de *Liolaemus lineomaculatus*, dentro del grupo de *Liolaemus lineomaculatus*, especialmente la ausencia de poros precloacales en ambos sexos. Sin embargo *Liolaemus yatel* **sp. nov.** no exhibe escamas dorsales trífidas, que es uno de los caracteres diagnósticos del grupo de *L. lineomaculatus*. Asimismo, esta nueva especie se diferencia de los demás taxones del grupo de *L. lineomaculatus* en que las escamas dorsales y nucales son lisas sin quilla o levemente quilladas. También reportamos, por primera vez, la presencia de escamas trífidas en *Liolaemus magellanicus*, otra especie incluida en la sección de *L. lineomaculatus*, pero que constituye un linaje independiente respecto al del grupo de *L. lineomaculatus*. Los rasgos fenotípicos de *L. yatel* **sp. nov.** y la presencia de escamas trífidas en *L. magellanicus* provee información adicional en el estudio de las relaciones evolutivas entre las especies de la sección de *L. lineomaculatus*, especialmente en el establecimiento de sus estados de caracteres diagnósticos.

Palabras clave: Sección de *Liolaemus lineomaculatus*, grupo de *Liolaemus lineomaculatus*, Morfología, Nuevo taxón, Patagonia, Argentina

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The taxonomic composition of the *Liolaemus lineomaculatus* group has been modified as a result of the description of new species and the diagnostic characters of the groups which these new species were assigned to. The taxonomic and phylogenetic hypotheses about the composition of the *L. lineomaculatus* group are summarized in Table 5. Among these, however, the only formal phylogenetic hypothesis was put forward by Breitman *et al.* (2011b) on the basis of molecular characters. These authors proposed that the *L. lineomaculatus* section should include four groups of Patagonian species that are phylogenetically related as follows: ((*L. kingii- archeforus* group + *L. somuncurae* group) + *L. magellanicus* group)) + *L. lineomaculatus* group. More recently, Breitman *et al*. (2013) did not find either morphological or genetic differences between species of the *L. kingii*, *L. kingii-archeforus* and *L. somuncurae* groups, and consequently suggested that the two latter groups should be assimilated to the *L. kingii* group. However, in their comprehensive study, Breitman *et al.* (2013) did not mention the occurrence of trifid scales in *L. magellanicus*. The phylogenetic relationships proposed by Breitman *et al*. (2013) for the *L. lineomaculatus* section have been further supported by Olave *et al*. (2014).

We formally described a new species and found that some of the morphological characters commonly recognized as diagnostic for the *L. lineomaculatus* group must be revised for use in taxonomic classifications. After that, we believe that performing a taxonomic revision and a formal phylogenetic analysis based on morphological characters is a priority in order to assess the phylogenetic position of *Liolaemus yatel* **sp. nov.**, the relationships between all species of the Patagonian groups of the genus *Liolaemus*, and the congruence between molecular and morphological hypotheses about the composition of the *L. lineomaculatus* section.

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APPENDIX 1.

List of species, number of specimens, localities and acronyms of the Argentine museums where the material used in this paper is deposited. Acronyms are as follows: Colección Herpetológica de la Fundación Miguel Lillo (FML), Tucumán; Colección Herpetológica del Museo de Ciencias Naturales de Salta (MCN); Instituto de Biología Animal de Mendoza (IBA); Colección Herpetológica del Museo de La Plata (MLP.R), y Centro de Investigaciones de Puerto Deseado (CIPD).

Liolaemus avilae **(2): Santa Cruz.** Departamento Lago Buenos Aires. FML 20404, road from Estancia La Vizcaína to Laguna del Sello, Meseta del Lago Buenos Aires (46º57'11"S; 71º06'44"W; 1340 m). Departamento Lago Buenos Aires. FML 20384, 5,5 km from Laguna Honda to Laguna del Sello (road to Estancia La Vizcaína), Meseta del Lago Buenos Aires (47º01'13"S; 71º05'46"W; 1274 m).

Liolaemus hatcheri **(27): Santa Cruz.** Departamento Río Chico. FML 19257-70, road to Estancia Laguna Verde, detour from 30 km to Lake Cardiel from route 40, meseta of the Lake Strobel (48º39'51"S; 71º07'24''W; 858 m). Departamento Río Chico. MCN 837-42, Cerro Beltza (47°59´37.0´´ S; 71°41´´11.2' W). Departamento Río Chico. MCN 843; 848-51, 6 km S of Estancia Belgrano. Departamento Río Chico. MCN 844, Meseta de La Siberia (49°09´8.63´´ S; 71°47´6.98´´ W; 1062 m). Departamento Río Chico. MCN 845-846, 13 km E of Estancia Belgrano (47°54´´46.9' S; 71°57´´47.2' W).

Liolaemus kolengh **(17): Santa Cruz.** Departamento Lago Buenos Aires. FML 10870-79: Monte Ceballos, next to río Ceballos (S 47°10.02.0'; W 71°55´´55.0', 1485 m). Departamento Lago Buenos Aires. MCN 811-13; 817; 827-28; 833: Monte Ceballos next to río Ceballos (S 47°10.02.0'; W 71°55´´55.0', 1485 m).

Liolaemus lineomaculatus **(18): Santa Cruz.** Departamento Lago Argentino. MCN 883, on the National Road 40, 50 km S of El Calafate, road to Esperanza. Departamento Lago Argentino. MCN 1553-556, 40 km S of lago Cardiel (49°11´´ 05.8´´ S; 71°20´ 44.8´´ W). Departamento Lago Argentino. FML 20394- 98, Between El Calafate and Glaciar Perito Moreno, on the Provincial Road 11, 42 km from El Calafate (50º22'45" S; 72º44'38" W; 201 m). Departamento Lago Argentino. FML 2118, approximately 70 km E of El Calafate. FML 1797-99, Estancia Tapi-Aike. Departamento Deseado. FML 21291-3, Punta Maqueda, 35 Km S of Comodoro Rivadavia. Departamento Deseado. FML 23299, on the National Road 3, 3 km N of Tres Cerros.

Liolaemus magellanicus **(46): Santa Cruz.** Departamento Lago Argentino. MCN 581-586; 852-878; 888-894, Cordón de Los Escarchados, road to La Martina (50°22´ 42.1´´ S; 71°36´52.1´´ W; 960 m). FML 17981-3, estancia Tapi-Aike. **Tierra del Fuego.** Departamento Río Grande. FML 24161-3, Bahía of San Sebastián.