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Molecular phylogenetic relationships of the lizard clade *Liolaemus elongatus* (Iguania: Liolaemini) with the description of a new species from an isolated volcanic peak in northern Patagonia

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Abstract

A new species of the Andean-Patagonian *Liolaemus elongatus* clade is described. *Liolaemus crandalli* **sp**. **nov**. differs from other members of its clade by a combination of coloration characters, scale counts and genetic traits. *Liolaemus crandalli* **sp**. **nov**. is known only from an isolated volcanic mountain in northwestern Patagonia above 1500 m.a.s.l. unconnected with other habitat suitable for species of the *Liolaemus elongatus* clade.

Key words: Argentina, Liolaemidae, *Liolaemus elongatus* clade, *Liolaemus crandalli* **sp**. **nov**., northwestern Patagonia

Resumen

Se describe una nueva especie del clado andino patagónico *Liolaemus elongatus*. Esta nueva especie difiere de otros miembros de su clado por una combinación de caracteres de coloración, conteo de escamas y caracteres genéticos. *Liolaemus crandalli* **sp**. **nov**. sólo se ha encontrado en una montaña volcánica aislada del noroeste de Patagonia sobre los 1500 msnm, no conectada con otros hábitats adecuados para especies del clado *Liolaemus elongatus*.

Key words: Argentina, Liolaemidae, grupo *Liolaemus elongatus*, *Liolaemus crandalli* **sp**. **nov**., Noroeste de Patagonia

Introduction

Knowledge of the lizard fauna from northwestern Patagonia has increased rapidly in the last 15 years. The region between the Atuel and Agrio river basins is geographically very complex, with high mountains, deep valleys, and isolated plateaus that probably fostered a high number of speciation processes that created a remarkable lizard diversity that led us to consider the region as a ¨hotspot¨ for lizards (e.g. Avila *et al*. 2011, 2012, 2013; Martinez *et al*. 2011). High diversity is mainly found in Liolaemids of the sister genera *Phymaturus* and *Liolaemus*, which have very high species numbers and the majority of them have very restricted geographic distributions. In northwestern Patagonia, *Liolaemus* is by far the most important lizard genus in terms of species numbers and genetic diversity. Among the several species groups of this genus, the *Liolaemus elongatus* clade is widely distributed in rocky habitats, and several new species have been discovered and described in the last 10 years (Abdala *et al.* 2010, Avila *et al.* 2010, 2012).

The *Liolaemus elongatus* clade comprises species almost exclusively confined to Andean, Subandean and Patagonian Steppe rocky environments along the eastern slope of the Andes, south of the Mendoza River basin and related rocky rangelands, and extends to the volcanic hills and tablelands of central Patagonia in Chubut Province in the south (Morando *et al*. 2004; Minoli *et al*. 2013). Some species related to this clade are found in Chile in high

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APPENDIX 1. Specimens examined.

Liolaemus antumalguen (11).—ARGENTINA: NEUQUEN: Chos Malal Department, eastern piedmont of Domuyo volcano, around Chadileu Creek: MACN 38985 to 87, MLP.S 2592 to 5, LJAMM-CNP 6167, 6172–3, BYU 12592.

Liolaemus buergeri (12).—ARGENTINA: MENDOZA: Malargue Department, 16 km W Las Leñas: LJAMM-CNP 2682, 2732. Mallines Colgados: LJAMM-CNP 2744-5, 2747. NEUQUEN: Ñorquin, Cascada del Rio Agrio: LJAMM-CNP 3286-3292.

Liolaemus burmeisteri (19).—ARGENTINA: NEUQUEN: Chos Malal Department, Curi Leuvu River Valley, on Ruta Provincial 41, 7 km S Caepe Malal: LJAMM-CNP 7637-7638, 7641-7642, 7645-7647, 5239-5244.; MLP-S 2612-2617.

Liolaemus ceii (14).—ARGENTINA: NEUQUEN: Alumine Department, Provincial Road 13, Pampa de Lonco Luan: LJAMM-CNP 1174-5, 1198, 2606-16.

Liolaemus elongatus (99).—ARGENTINA: CHUBUT: Cushamen Department: Ruta Provincial 12, 9.1 km E La Cancha Railroad Post, road to Gualjaina: LJAMM-CNP 8852. Futaleufu Department: Ruta Nacional 40, Km 1530, 17 km S Esquel, 5 km S junction Ruta Nacional 40 and Ruta Nacional 259: LJAMM-CNP 2128, 2156/7, 2262. Ruta Nacional 40, Km 1589, 18 km N Tecka: LJAMM-CNP 2164. Languineo Department: Ruta Nacional 25, 5 km W Colan Conhue, Cuesta del Paisano: LJAMM-CNP 6177 to 80. Rio Senguer Department: Ruta Provincial 20, 23 km W Los Manantiales: FML13070, LJAMM-CNP 3046/7. Tehuelches Department: Ruta Nacional 40, 22 km S Gobernador Costa: FML 13071, LJAMM-CNP 3049. Ruta Provincial 53, 40 km S junction Ruta Nacional 25: LJAMM-CNP 4681 to 83. Near Gobernador Costa: LJAMM-CNP 6145/6. NEUQUEN: Alumine Department. Portal La Atravesada, 3 km S, 7 km W Primeros Pinos: MVZ 232401/5. 3 km ENE Lago Ruca Choroi, 8 km E, 9 km N Cerro Ruca Choroi: MVZ 188761. Along Arroyo Rucaco, SE end of Lago Ruca Choroi, 3.5 km E and 6.5 km N Cerro Ruca Choroi: MVZ 188762/3. Catan Lil Departament. Campo de la Pistola, 4 km W and 2 km N Las Coloradas: MVZ 188766/67, 188769/70, 188772/3/4. On E side of Rio Alumine, 31 km S Rahue via Ruta Provincial 23: MVZ 188746. Lacar Department. Pampa de Alicura on Ruta 40 and 237, 5 km W and 6 km N Paso Flores: MVZ 188768. Los Lagos Department, on W side of Rio Limay, 2 km E and 16 km S Confluencia: MVZ 18845. Sandy flat along highway, Estancia Tehuel Malal, ca. 6 km WNW Nahuel Huapi: MVZ 188760. 0.5 km S, 3 km W Cerro de las Ardillas: MVZ 232399. Zapala Department. Ruta Provincial 13, 12 km W, 1 km N Zapala Station: MVZ 232402/4/7/8. SW end of Laguna Blanca, 8.5 km W and 1 km N Cerro Mellizo Sud: MVZ 188777/8. W end of Laguna Blanca: MVZ 126476. Ruta Provincial 46, 0.5 km N limite PN Laguna Blanca: MVZ 232410. RIO NEGRO: Bariloche Deparment. Ridge above Refugio Neumeyer, 15 km S Bariloche: MVZ 188779/90/81/82. Chalhuaco Valley: FML 13072/3, LJAMM-CNP 2811, 3051/2, 2055 to 57, 3051/2, 3055 to 7. El Cuy Department: Ruta Provincial 67, 20 km S Mencue: LJAMM 5559/60. Ñorquinco Department. Along Rimrock, 4 km S and 1 km E Alto del Escorial: MVZ 188736, 188743, 188922. Along Rio Chenqueniyen, 10 km E and 3 km S Cerro Pico Quemado: MVZ 188732 to 34, 188740 to 41. Los Juncos Lagoon, Chenqueniyen rimrock, 5 km N Alto del Escorial: LJAMM-CNP 188758/9. Ruta Provincial 6, 1 km NW Ojo de Agua: LJAMM-CNP 2139. Pilcaniyeu Department. Rocky knoll, Cañadon Bonito, 23 km NE Pilcaniyeu: MVZ 188727/8. Ruta Provincial 23, 2.3 km SE Comallo: LJAMM-CNP 5424. Ruta Provincial 23, 4.8 km SE Comallo: LJAMM 5449/50. Ruta Nacional 40, 2.7 km S Estancia San Pedro: LJAMM-CNP 5428 to 5435. Ruta Provincial 67, 2 km N Cañadon Chileno, 37 km NE Comallo: LJAMM-CNP 5644. Ruta Provincial 67, 3.5 km 3.5 km N