

Use of cow dung as shelter by *Liolaemus ruibali* Donoso-Barros 1961 (Squamata, Liolaemidae) in the Puna region of west-central Argentina

Uso de estiércol de vaca como refugio por parte de *Liolaemus ruibali* Donoso-Barros 1961 (Squamata, Liolaemidae) en la región de la Puna del centro-oeste de Argentina

Franco M. Valdez Ovallez^{1,2,*}, Yamila Méndez Osorio^{1,2}, Martina Feldman³, Nicolás Damiani³ & Rodrigo Gómez Alés^{1,2}

¹ Gabinete de Diversidad y Biología de Vertebrados del Árido (DIBIOVA), Departamento de Biología, Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de San Juan, San Juan, Argentina.

² Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), San Juan, Argentina.

³ Departamento de Biología, Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de San Juan, San Juan, Argentina.

*Correspondence to: franco.valdez408@gmail.com

Liolaemus ruibali Donoso-Barros 1961 is an omnivorous and viviparous lizard which is distributed in the Cordillera and Precordillera of the Central West of Argentina. It presents a bimodal activity pattern and is capable of withstanding large temperature differences and it is an efficient thermoregulatory lizard (Gómez Alés et al. 2022). This lizard lives in the extreme south of the arid Puna region (above 2500 m), where the climate reaches very low temperatures (Gómez Alés et al. 2022). The Puna is a region where anthropogenic activities are carried out that have a great impact on Andean ecosystems, such as trampling and overgrazing by intensive livestock farming owned by local inhabitants (Gómez Alés et al. 2021). *L. ruibali* mainly inhabits flat areas characterized by open thickets composed of low-growing and widely dispersed shrubs (Gómez Alés et al. 2022).

Recently, it has been observed that *L. ruibali* shelters in burrow systems built by Mendoza tuco-tuco *Ctenomys mendocinus*. Thus, the activity of this rodent causes an increase in the abundance of *L. ruibali* and the reduction of its flight distance (Bongiovanni et al. 2023).

At 1915 h on 13 October 2023 during a herpetological survey in the Iglesia Department, Province of San Juan, Argentina (-30.66°S, -69.55°W, 3.147 m), we found an adult male specimen of *L. ruibali* under cow dung (Fig. 1). The individual was captured and we recorded its snout-vent length (SVL = 41 mm) and body temperature (16.7 °C). We also recorded the temperature of the substrate under the dung (13.7 °C) and the temperature of the surface of the dung in contact with the substrate (14.3 °C). In addition, we measure the

maximum width and length of the dung and calculated its surface area (460 cm²).

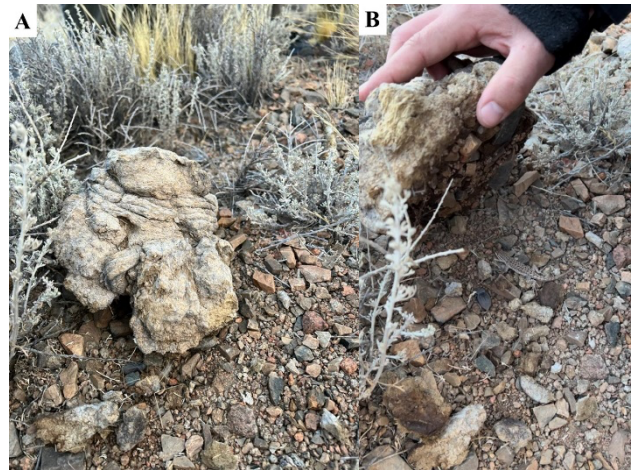


Figure 1: A) cow dung; B) adult male *Liolaemus ruibali* using cow dung as a retreat site in the Andes Mountains. Photographs by Martina Feldman. Figura 1: A) estiércol de vaca; B) macho adulto de *Liolaemus ruibali* utilizando estiércol de vaca como lugar de retiro en la Cordillera de los Andes. Fotografías por Martina Feldman.

There are reports of unusual lizard retreat site choice, such as the use of dead penguin carcasses or structures of anthropic origin (Entringer et al. 2023). However, to our knowledge, this is the first record of a lizard using a cow dung as a shelter. Retreat site choice in lizards is possibly related to adequate thermal and humidity characteristics to satisfy their physiological and metabolic needs

when they are inactive or as protection provided from predators (Entringer et al. 2023). In this sense, retreats sites in cold climate environments could be scarce due to the high ecological requirements (e.g., thermal, humidity, and soil), therefore, the choice of dung as a retreat site could indicate a certain plasticity in the use of available retreats sites. With this report we contribute to the knowledge of the use of space by *L. ruibali* in the Puna region.

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