

SHORT COMMUNICATIONS

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NEW GEOGRAPHICAL RECORD OF THE LIZARD *Phymaturus williamsi* LOBO ET AL., 2013 (SQUAMATA: LIOLAEMIDAE) AFTER A DECADE OF ITS DESCRIPTION IN THE PUNA REGION OF ARGENTINA

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The species of the genus *Phymaturus* are viviparous, inhabit rocky areas in cold and harsh environments, and are characterized by restricted distributions with a high level of endemism. The objective of this work is to report a new geographic record of *Phymaturus williamsi* and expand its known distribution within the Province of San Juan, Argentina. In February 2023, during faunal sampling in the Calingasta Department, three adult male specimens of *P. williamsi* were observed. This new record is located approximately 32 km southwest in a straight line from the species' type locality. Additionally, the straight-line distance to its closest congeners is approximately 172 km to *Phymaturus palluma*, found to the south in the Province of Mendoza, and 90 km to *Phymaturus aguanegra*, located to the north in the Iglesia Department, Province of San Juan. The new record of *P. williamsi* is crucial for conservation efforts, as it highlights the need to assess and mitigate the impacts of mining activities in its habitat, ensuring the protection of this vulnerable species and its unique ecosystem. Further efforts are needed to explore new sites and search for additional *P. williamsi* populations to more accurately define the limits of its geographic range. However, considering the proximity of its congeners, we hypothesize that its distribution is highly restricted.

Keywords: Andes mountains; conservation; geographic distribution; mining; San Juan.

Until 2021, 54 species of the genus *Phymaturus* have been described and many others are in the process of taxonomic revision (Lobo et al., 2022). The species of this genus are viviparous and inhabit rocky areas of cold and harsh environments (Abdala et al., 2012). The genus *Phymaturus* is distributed from the Puna de Catamarca in northwest Argentina to the southern steppe of Patagonia,

along the eastern and western slopes of the Andes at medium and high altitudes in both Argentina and Chile (Lobo et al., 2013). The species of this genus are characterized by a restricted distribution, with a marked level of endemism (Andrade-Díaz et al., 2017; Lobo et al., 2022). Together, these ecological and distribution characteristics have determined that the conservation status of the entire genus is classified as Vulnerable by the Argentine Herpetological Association (Abdala et al., 2012).

Phymaturus williamsi (Lobo et al., 2013; Fig. 1a) is an herbivorous lizard. Females have a biennial reproductive cycle, producing a litter of one or two hatchlings every two years, with births occurring from late summer to early fall, while males exhibit an annual postnuptial cycle (Lobo et al., 2013; Castro et al., 2018). In addition, it develops both tigmothermic and heliothermic thermoregu-

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Fig. 1. Adult male specimen of *Phymaturus williamsi* (a) and general view of the environment of the new record (b).

lation strategies with moderate thermal efficiency and presents both unimodal and bimodal temporal activity patterns, depending on seasonal climatic conditions (Lobo et al., 2013). It also has a small range of action with seasonal variations, with females exhibiting a more restricted range than males and juveniles. Additionally, it specializes in the use of two types of rocks due to their thermal conditions (Victorica Erostarbe et al., 2022).

The objective of this work is to report a new geographic record for the species and expand its geographic distribution within the Province of San Juan, Argentina. The type locality of this species is only known in Quebrada de Vallecito, located in the Calingasta Department in the province of San Juan (Lobo et al., 2013).

It is *Phymaturus williamsi* type locality is characterized by extreme climatic conditions. In general, the climate is cold and dry, with great thermal amplitude, strong winds, high radiation, with prolonged periods of drought, and the vegetation is subject to snow cover during the winter months and to freezing and thawing depending on the time of year (Márquez et al., 2018). After a decade since the species description, here we provide a new record of *Phymaturus williamsi* observed on the slopes of the Calingasta River (Fig. 1b). During February 2023, in a faunal sampling carried out in the Calingasta Department, three adult male specimens of *P. williamsi* were observed (31°18'42.00" S 70°0'10.80" W, 3207 m a.s.l.).

This new record is located approximately 32 km in a straight line to the southwest of the type locality of this species (Fig. 2). In addition, the straight-line distance to its closest congeners is approximately 172 km to *Phymaturus palluma*, found to the south in the Province of Mendoza, and 90 km to *Phymaturus aguanegra* (Lobo et al., 2013), located to the north in the Iglesia Department of the Province of San Juan.

The Andes Mountains are a region heavily impacted by anthropic activities, such as mining, tourism, trampling, and overgrazing due to intensive livestock farming by local inhabitants, all of which significantly affect Andean ecosystem (J. C. Acosta, personal communication; Valdez Ovallez et al., 2023). These activities are the main causes of the negative impacts that occur in rocky environments (Hjort et al., 2015). Currently, the population of the *Phymaturus williamsi* type locality is very close to the Casposo mining project that is currently developing exploitation, exploration and/or prospecting activities (Argentine Secretariat of Energy, 2023). While the new record is not located near a mining project, it is possible that in the future this area will be subject to the start of mining activity, since this is the main economic activity of the province.

Furthermore, unlike other congeners, such as *P. extrilidus* (Lobo et al., 2012), *P. punae* (Cei et al., 1983), *P. palluma* (Lobo et al., 2010), and *P. tenebrosus* (Ku-

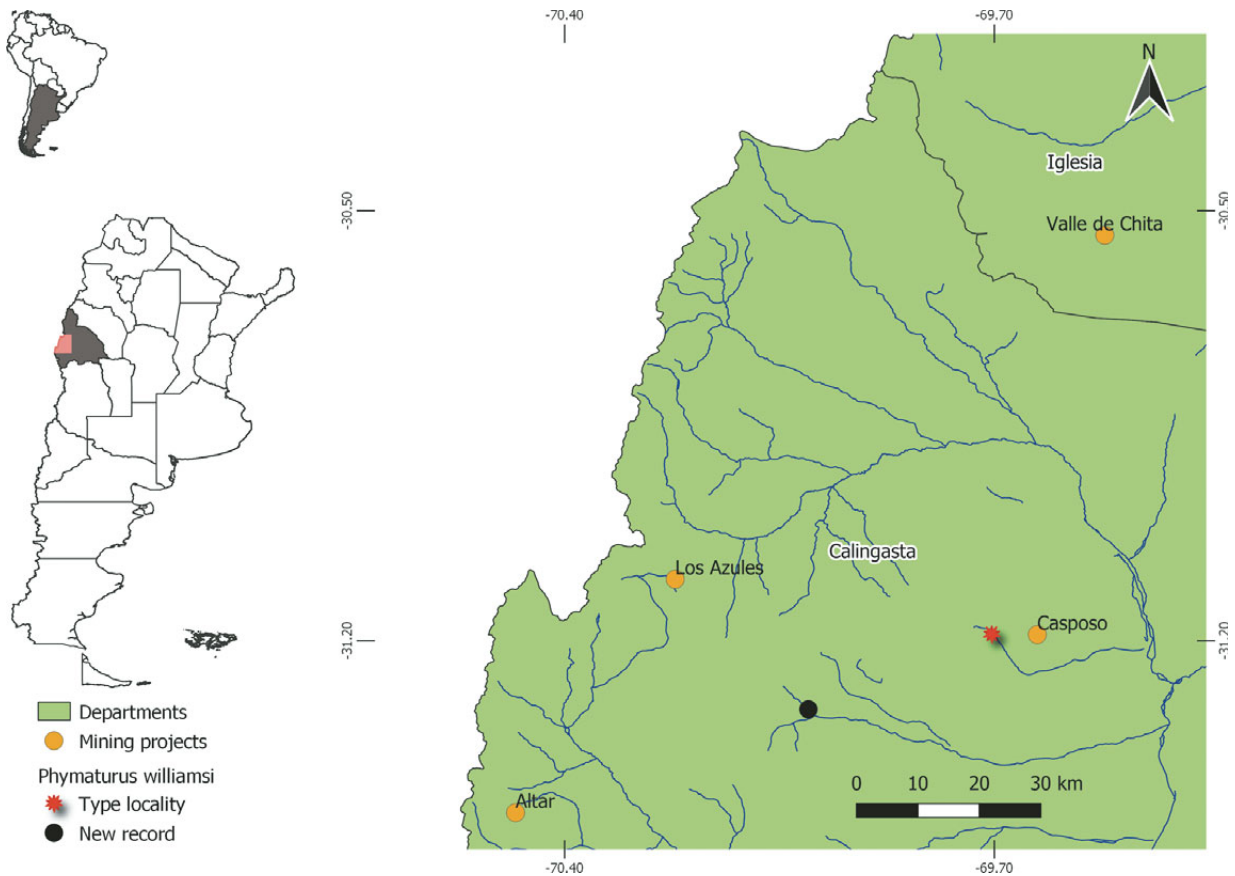


Fig. 2. Distribution map of *Phymaturus williamsi*. The type locality, current mining projects in the province of San Juan and the new record are shown. Mining project records were obtained from the Argentine Secretariat of Energy (2023).

bisch et al., 2017), neither of the two records of *Phymaturus williamsi* falls under the protection of any national or provincial protected area. This supports the presumption of a potential decline in habitat quality due to disturbances and transformations (Ramírez-Álvarez et al., 2017), such as mining activities. Moreover, the ecological characteristics of this species, combined with various threats of natural and/or anthropogenic origin (Vicenzi et al., 2017), underscore the importance of prioritizing conservation efforts for species with restricted distributions (Meiri et al., 2018). Therefore, it is important to conserve these Andean environments, which are the habitat not only for these *Phymaturus* species, but also for flora and fauna in general (Gómez Carella et al., 2019). In this sense, the High Andean and Puna environments in the Andes Mountains require the creation of priority areas for conservation and habitat management plans in these strongly threatened environments (Portelli and Díaz Gómez, 2017; Perrig et al., 2020). Moreover, increased efforts are necessary to explore new sites and identify additional populations of *Phymaturus williamsi* to more ac-

curately define the species' geographic range. However, considering the proximity of its congeners, we hypothesize that its distribution is likely quite restricted.

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