

# *Cavia tschudii*: extension of the distribution range and its tropic role in the biological communities in the extreme desert of Chile

## Abstract

*Cavia tschudii* is a medium-sized rodent that lives in Peru, Bolivia, Argentina, and the north of Chile. In this work we extend the distribution range of the species by 130 kilometers further south. On the other hand, this rodent is found on the diet of two raptors in the extreme desert of northern Chile, becoming a relevant species in the tropic networks of the biological communities of the Atacama deserts.

**Keywords:** caviidae, rodent, distributions, deserts, ecology

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## Introduction

*Cavia tschudii* Fitzinger, 1867 (Rodentia, Caviidae) is a wild species of guinea pig<sup>1,2</sup> which inhabits northern Chile, central and southern Peru, western Bolivia and northwestern Argentina.<sup>3,4</sup> There is little biological information available about this species, it is an herbivorous species of crepuscular/nocturnal habits. Its gestation period is 56-69 days, inhabiting from deserts to highlands at elevation to sea level to 4500 m. According to IUCN Red List, the conservation status of *C. tschudi* is Least Concern because of its very extensive distributions in several countries. Nevertheless, in Chile is listed as a Rare<sup>5</sup> because of a more restricted distribution.

The number of specimens in the biological collections is absolutely scarce, as well as their biological information of tropic role of the biological communities of the extreme desert. In this work, we document a new collection of *C. tschudii* in streams of the Atacama

Desert and we recorded the presence of *C. tschudii* remains in pellets of two raptors, predators that had not been registered for this species before.

## Material and methods

Two specimens of *C. tschudii* were collected in Quebrada de Tana, Tarapacá Region, Chile (Figure 1). One of the specimens was hunted by a domestic cat. The second specimen was collected with traps in places with high vegetative density. The specimens were deposited in the Colección Zoológica de Zonas Áridas y Altoandinas (CZZA) of the University of Tarapacá, Arica, Chile. Skins and skulls were taxidermied, likewise, tissue was deposited in a freezer at -80°C for subsequent molecular analysis. Pellets of two raptors were analyzed, *Geranoaetus polyosoma* and *Tyto furcata*, both recorded from Quebrada de Camarones, 51.7 km northern of the new collections.



**Figure 1** Map of Tarapaca Region, Chile. Stars show the collected area to *Cavia tschudi*.

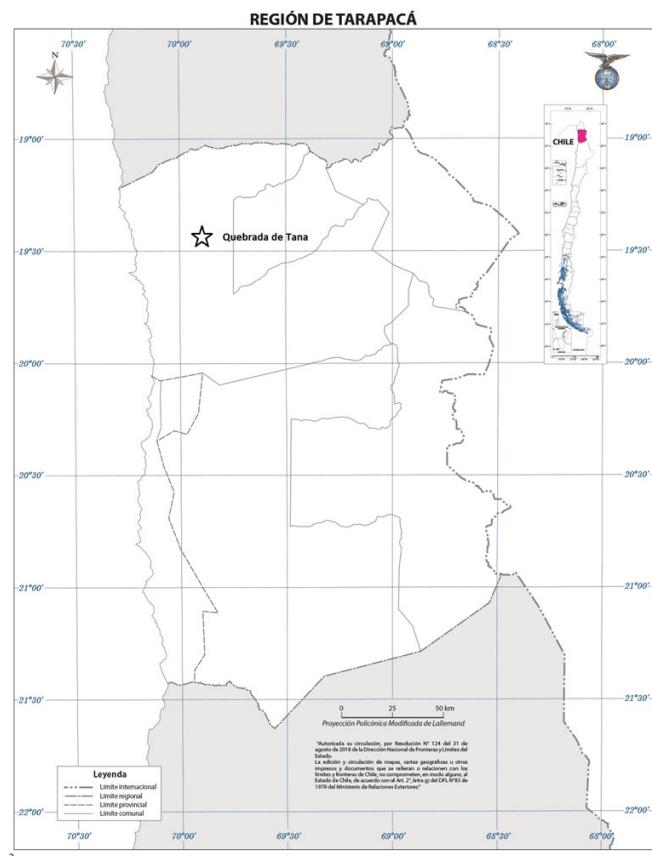
## Results

In this paper we provide the southernmost record of the distribution range of the *C. tschudii* in Chile, collected in the Quebrada de Tana, Tarapacá Region, Chile ( $19^{\circ}26'20.63''S$ ,  $69^{\circ}54'55.06''W$ ) (Figure 2). Two specimens were collected, one hunted by a domestic cat corresponding to an adult female (CZZA 11002), the medium size (Body length: 177 mm, Head length: 28.4 mm, Forelimb length: 46.6 mm, foot length: 43.4 mm), and a larger male (CZZA 11005) captured by Tomahawk traps (Body length: 251.8 mm, Head length: 46.1 mm, Forelimb length: 62.7 mm, foot length: 52.7 mm). Both specimens (Figure 3) have brown dorsal region, marbled, with long black or dark brown hairs (32 mm). Ventral region is light brown, with fine hairs, shorter than dorsal (11.1 mm). Mystical vibrissae prominent, arranged in six parallel rows above the upper lip running backward from the muzzle, mental vibrissae are beneath the chin on each side and are shorter, similar in size to the nasal vibrissae but it located dorsolaterally on the nose. Supraorbital and infra orbital vibrissae are shorter and blend with the rest of fur. The external nose is flat and triangular rostrally with its apex at the nasolabial sulcus, it does not protrude beyond the mouth. The nostrils are longitudinal slits with hairless borders. The nostrils are mobile so that they can be dilated. Mouth triangular, lips are covered with fine and short hairs. The eyelids are covered with fine and short hairs, except at their naked margins. External ears shorter, it is oval with its dorsorostral border rolled inward to form a funnel-shaped region. Four toes on the fore foot and three on the hind foot. The short nails of the manus and long nails in the foot, slightly curved and extend beyond the end of the distal phalanx.

Around 400 pellets of the Variable Hawks (*Geranoaetus polyosoma*) were analyzed, in which 1.43% correspond to *C. tschudii*, with a biomass contribution of 7.6% of the total diet. In the case of the owl *Tyto furcata*, of around 600 pellets 3.7% corresponded to *C. tschudii*, with a contribution in biomass of 16.4%.



**Figure 2** Specimens of *Cavia tschudii* collected in the Quebrada de Tana, Tarapacá Region, Chile. A corresponds to the female (CZZA 11002). B corresponds to male (CZZA 11005).



**Figure 3** Landscape of the Quebrada de Tana, Tarapacá Region, in the middle of the Atacama Desert.

## Discussion

This report constitutes an important advance in knowledge of *C. tschudii*. It seems that its taxonomic position does not present major doubts, but there are few publications about their biology, such as its reproduction, physiology, behavior and ecology. In this last aspect, we can affirm that the wild populations of *C. tschudii* have a strong predation pressure, in addition to raptors, we must mention the high abundance of foxes and domestic animals such as cats and dogs. Even, it is necessary to mention the high abundance of rats, those that have displaced the other species of rodents.

Although there are indirect records of *C. tschudii* in the Quebrada de Camarones, the last record in the wild was near the town of El Molino, in the Lluta valley, Arica and Parinacota region in the year 2000.<sup>1</sup> This means that we extend the distribution range of this species by 133 km.

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## Conflicts of interest

The author declares there are no conflicts of interest.

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