

Nota



# IT WASNT SO HARD TO FIND... NEW RECORDS OF *Lyncodon patagonicus* (DE BLAINVILLE, 1842) (MAMMALIA, CARNIVORA, MUSTELIDAE) IN LA RIOJA PROVINCE, ARGENTINA

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**ABSTRACT.** The Patagonian weasel, *Lyncodon patagonicus*, is one of the least known carnivorous species of South America. Specifically for La Rioja province, there are only two reports of the species that date from the beginning of the 20th century. We describe new records of this species for this province that corresponds to the first records of *L. patagonicus* for La Rioja in more than 80 years. Moreover, the distribution of the species in La Rioja is expanded to an area within the ecoregion of "Monte de Sierras y Bolsones" that showed high probability values of presence on previous studies of potential distribution.

**RESUMEN.** No era tan difícil encontrarlo... Nuevos registros de *Lyncodon patagonicus* (De Blainville, 1842) (Mammalia, Carnivora, Mustelidae) en la provincia de La Rioja, Argentina. El huroncito patagónico, *Lyncodon patagonicus*, es una de las especies de carnívoros menos conocidas de Sudamérica. Específicamente para la provincia de La Rioja, solo hay dos registros de la especie que datan de principios del siglo XX. En este trabajo presentamos nuevos registros de esta especie para esta provincia, que corresponden a los primeros registros de *L. patagonicus* en La Rioja en más de 80 años. Además, se amplía la distribución de la especie en La Rioja a localidades dentro de la ecorregión de "Monte de Sierras y Bolsones", un área que mostró altos valores de probabilidad de presencia en estudios previos de distribución potencial.

**Key words:** conservation, distribution, Mustelidae, Patagonian weasel

**Palabras clave:** conservación, distribución, huroncito patagónico, Mustelidae

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The Patagonian weasel, *Lyncodon patagonicus* (de Blainville, 1842), is one of the least known carnivorous species of South America, which is mostly distributed in Argentina, from Salta province to southern Patagonia, plus a limited presence in the southern continental lands of Chile (Larivière & Jennings 2009; Kelt et al. 2016; Schiaffini 2017; Sferco et al. 2018). However, records of this species are

relatively few, and most of the specimens were observed or collected in Patagonia. *Lyncodon patagonicus* is found in several environments, like the Patagonian Steppe, Espinal, "Monte de Llanuras y Mesetas", "Monte de Sierras y Bolsones", and Pampas, mainly associated with arid and semiarid climatic conditions, and within an altitudinal range from sea level to 2000 meters above sea level (Prevosti

& Pardiñas 2001; Prevosti et al. 2009; Schiaffini et al. 2013).

Historical works remark that the species is not that rare to the northwest of Argentina (NWA) (Olrog 1958) (Table 1), but this is contradicted by the limited number of more recent records for the region (Schiaffini et al. 2013; Schiaffini 2017). Moreover, the newest records for the center of Argentina are for the provinces of San Juan and Córdoba (Sanabria & Quiroga 2003; Sferco et al. 2018), while the last record of the species for the NWA was made by Massoia & Latorraca (1992) (Fig. 1). The situation for La Rioja is similar, since only two specimens have been reported for this province up to now: MLP 6.III.36.27 (Museo de La Plata, La Plata, Buenos Aires, Argentina) collected in the surroundings of La Rioja City, described by Cabrera (1929) as the holotype of *L. patagonicus thomasi*, and MACN 31-214 (Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina) collected in the town of Patquía, also adjudicated to this subspecies (Yepes 1935).

A previous work that estimated the potential distribution of *L. patagonicus*, using recent (not fossil) records of the species, observed two prediction zones with high probability of presence for the species, one in Patagonia and another in NWA, determined mainly by cold climates, marked seasonality, and altitudes below 2000 m a.s.l. (Schiaffini et al. 2013).

Several authors have already mentioned that it is not clear if the limited knowledge about the species is really due to its natural scarcity, or to the lack of specific surveys in different regions of the country (Prevosti & Pardiñas 2001; Prevosti et al. 2009; Schiaffini et al. 2013; Formoso et al. 2016). Beyond the reasons, it is clear that there is a gap in the knowledge of the distribution and conservation of the species in NWA. This work is an attempt to contribute to complete this gap. Here we describe the first records of *Lyncodon patagonicus* for La Rioja province in more than 80 years, and expand its distribution to the department of Castro Barros, in an area covered by the ecoregion of "Monte de Sierras y Bolsones".

The records of the species were obtained during the realization of a general survey on the mammals of La Rioja. After a bibliographical review and interviews with locals, two trap cameras were placed for two months, at points where the presence of specimens that met the description of the Patagonian weasel was reported. We also received photographs and videos that were taken by locals, which were later analyzed for the correct identification of the specimens. The specimens were identified following

the general description provided for the species: small animals around 30-45cm head-body length, slender body, with long grayish-white hairs, a wide white band on top of the head and a black hairs spot in the back of the neck (Cabrera 1929; Prevosti & Pardiñas 2001; Larivière & Jennings 2009).

Although the species was not recovered in the camera traps, seven specimens were recorded by pictures and videos obtained by locals, a direct observation was made by one of us (FJP), and also, a juvenile specimen of *L. patagonicus* was rescued from being attacked by dogs by a colleague from CRLAR.

In January 2018, a specimen was observed in the city of Anillaco, department of Castro Barros (28°48'41"S, 66°56'24"W) (Fig. 2A) by one of the locals. The specimen was photographed at the entrance of a cave of *Ctenomys* sp. near an olive farm; the distribution of the white fur around the neck and eyes, in addition to the size of the specimen and the cave where it was found, leads us to identify the specimen as *L. patagonicus*.

Later on, one of the authors (FJP) had the opportunity to observe another specimen crossing a street and entering into another olive farm on the opposite side of town (28°48'10"S, 66°56'16"W), and again we receive a description that matches that of the species, but unfortunately it was not possible to obtain a photographic record for this specimen.

A third specimen was reported in March 2018 in the capital city of La Rioja, (29°24'18"S, 66°48'41"W) (Fig. 2B). It was rescued from a pipeline in the industrial park area of the city, and then transferred to a veterinary center, where it was examined and retained, until its later release in a more remote area of the city. It should be noted that this specimen was initially identified by the vet as a juvenile of *Galictis cuja*. After talking with the veterinarian Dr. Juan Manuel Luque, we realized that he was unaware of the existence of the Patagonian weasel, much less that the species is distributed in the province. He also told us that it is not the first specimen of this weasel found in the area.

Approximately two months later, we received a new report in the northeast area of La Rioja City (29°22'54"S, 66°50'41"W) (Fig. 2C). In this case, they had the opportunity to observe a female accompanied by two cubs, which were being attacked by a group of dogs. As they commented, one of the cubs was killed by the dogs, the female escaped and the second juvenile was kept captive for a few days and then released in the same area, where they observed the female again.

**Table 1**

Records of *Lyncodon patagonicus* in northwest Argentina (NWA) since 1929. Modified from Prevosti et al. 2009.

#	Specific locality	Province/Region	Lat S	Long W	Date	Primary source
1	Andalgalá	Catamarca	27° 36'	66° 20'	1946	Olrog (1958)
2	Santa María	Catamarca	26° 42'	66° 02'	1976	Olrog (1976)
3	Chancani	Córdoba	31° 22'	65° 28'	2017	Sferco et al. (2018)
4	Anillaco	La Rioja	28° 48'	66° 56'	2018	This paper
5	Anillaco	La Rioja	28° 48'	66° 56'	2018	This paper
6	LaRioja	La Rioja	29° 25'	66° 51'	1929	Cabrera (1929)
7	LaRioja	La Rioja	29° 24'	66° 48'	2018	This paper
8	LaRioja	La Rioja	29° 22'	66° 50'	2018	This paper
9	Patquía	La Rioja	30° 03'	66° 53'	1931	Yepes (1935)
10	San Carlos	Mendoza	33° 45'	69° 02'	1965	Roig (1965)
11	San Rafael	Mendoza	34° 36'	68° 21'	1935	Yepes (1935)
12	Tunuyán	Mendoza	33° 34'	69° 01'	1965	Roig (1965)
13	Tupungato	Mendoza	33° 21'	69° 08'	1965	Roig (1965)
14	Uspallata	Mendoza	32° 41'	69° 22'	1986	Castro & Cicchino (1986)
15	Alemanía	Salta	25° 38'	65° 37'	1976	Olrog (1976)
16	Cafayate	Salta	26° 06'	65° 57'	1976	Olrog (1976)
17	Pampa de Gualilan	Santiago del Estero	30° 48'	68° 55'	2003	Sanabria & Quiroga (2003)
18	Guampacha	Santiago del Estero	28° 03'	64° 48'	1986	Massoia & Latorraca (1992)
19	Sol de Julio	Santiago del Estero	29° 33'	63° 27'	1976	Olrog (1976)
20	Amaicha del Valle	Tucumán	26° 23'	65° 55'	1976	Olrog (1976)
21	Banda del río Salí	Tucumán	26° 51'	65° 10'	1976	Olrog (1976)
22	Colalao del Valle	Tucumán	26° 22'	65° 56'	1976	Olrog (1976)
23	El Timbó	Tucumán	26° 14'	65° 23'	1958	Olrog (1958)

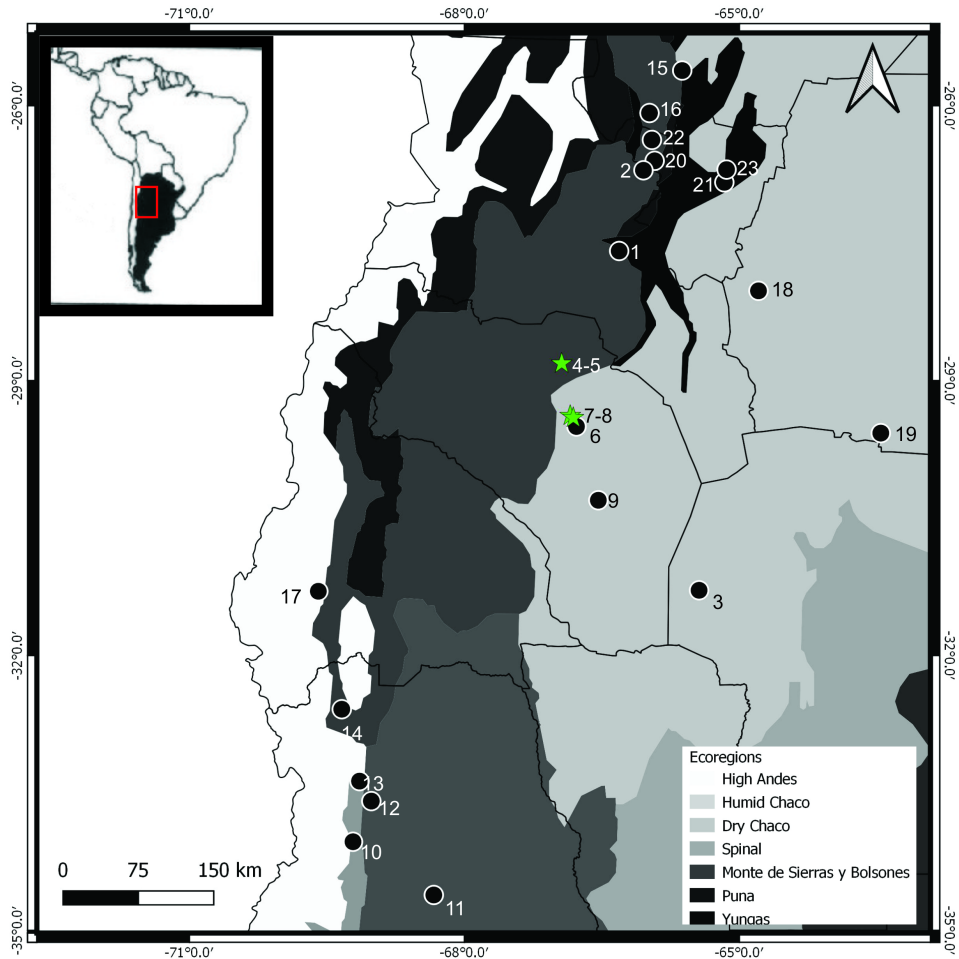
Finally and more recently, in October 2018, one of our colleagues from the CRILAR received the report of the presence of a ferret in the main square of Anillaco (28°48'42"S, 66°56'17"W) (Fig. 2D); the specimen was rescued in bad conditions after being chased by dogs and not having access to water or shelter. We had the opportunity to see it and confirm that it was a juvenile of *L. patagonicus*; neighbors told us that they had observed at least another individual entering a cave of *Ctenomys* sp. in the same square, but unfortunately at the time of review the cave was collapsed; we assume it was due to dogs trying to catch the other specimen. The rescued specimen is in recovery, and we hope it can be released in a remote area briefly.

Very little is known about the ecology of the Patagonian weasel, since it is rarely seen or collected. Sferco et al. (2018) were the first to document the predator-prey relationship between *Lyndocoon patagonicus* and *Ctenomys*, by presenting photographs of an individual of *L. patagonicus* carrying a dead *Ctenomys*. Redford & Eisenberg (1992) mentioned that the weasel enters the burrows of *Ctenomys* and *Microcavia* looking for preys. Also, incidental lines of evidence suggest that they prey on small subterranean micromammals: its body shape, the findings of Holocene remains of *L. patagonicus* in the same deposits as *Ctenomys* remains, and shared ectoparasites between *Ctenomys* and *L. patagonicus*

(as mentioned by Prevosti et al. 2009, and references therein).

Two of our reports also reinforce the idea of a relationship between this weasel and tuco-tucos, since individuals of *L. patagonicus* were observed in caves of *Ctenomys*. So, we are adding new indirect evidence to support the strong relationship between *Lyncodon* and *Ctenomys* and also to the hypothesis that the diet of this species of weasel could include fossorial rodents (i.e., *Ctenomys*; Prevosti & Pardiñas 2001; Prevosti et al. 2009; Schiaffini et al. 2013), in line with the observations of Redford & Eisenberg (1992) and Sferco et al. (2018). However we cannot discard the possibility that the Patagonian weasel is using the *Ctenomys* caves as an opportunist for shelter. Considering the little knowledge about *L. patagonicus*, we cannot state the relationship between these species, specially the predator-prey hypothesis, until more studies about the ecology of *Lyncodon* are performed.

We also received several reports of live specimens in other areas, where observers describe small animals that match the characteristics of *L. patagonicus*. However, since we cannot confirm the specific assignments, we did not include them in this contribution. It is worth mentioning that the specimens reported here correspond to the first confirmed sightings of the species in the province in the last 87 years.

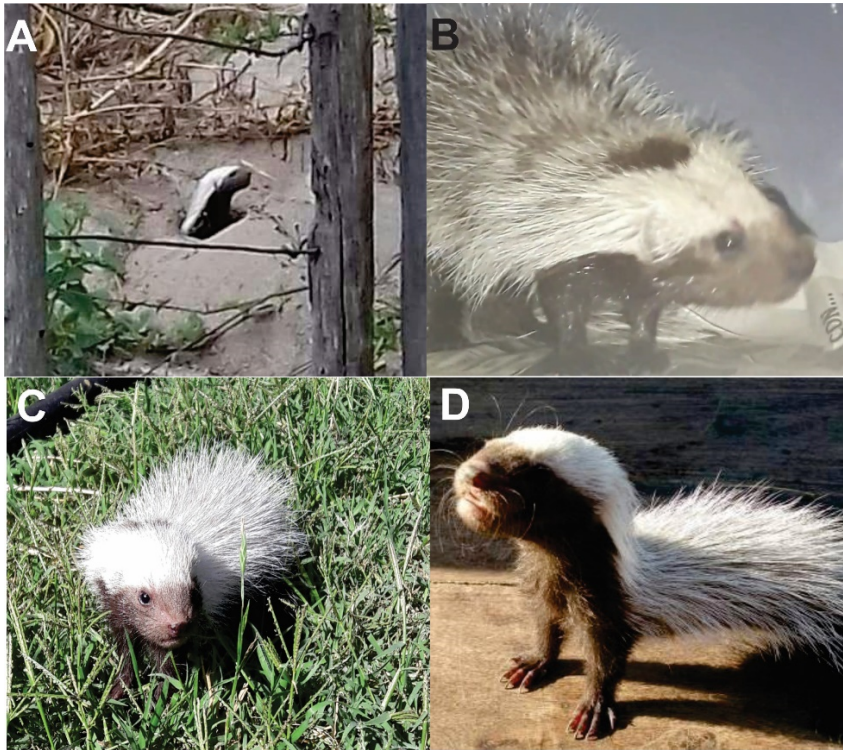


**Fig. 1.** Map of records of *Lyncodon patagonicus* in northwest Argentina (NWA) since 1929. Black circles: previous records, green stars: new records presented here. Numbers corresponds to **Table 1**

The Anillaco records represent a new locality for the species, expanding the confirmed distribution approximately 65 km Northwest from the closest record for the province, as well as it confirms its presence in the ecoregion of "Monte de Sierras y Bolsones". This environment is characterized by the presence of shrub steppes of fairly homogeneous physiognomy, dominated by species of the genera *Larrea*, *Bulnesia* and *Prosopis*, associated with fluvial courses and groundwater (Cabrera 1976; Burkart et al. 1999). In the specific locality of the record, annual average temperature is of  $17.2^{\circ}\text{C} \pm 16.2^{\circ}\text{C}$ , annual precipitations reach 259 mm with a maximum in January averaging 61 mm (Climate Data 2019a). Since all previous records of the province were in the dry Chaco, this is a new environment within

this species distribution in the province of La Rioja (**Fig. 1**), even though the species had already been registered in the "Monte de Sierras y Bolsones" in the provinces of Salta, Tucumán, San Juan, and Mendoza.

Regarding the specimens observed in the vicinity of La Rioja City, the physiognomy of the region is characteristic of the ecotone between the Monte and Chaco, with a mixture of shrub steppes and xerophytic forest. Here the greatest environmental difference with respect to the other localities is given by the anthropic development in the area and by climatic variables. The average annual temperature is  $20^{\circ}\text{C} \pm 17.1^{\circ}\text{C}$  and the annual precipitations reach 300 mm, with a maximum of 71 mm in January (Climate Data 2019b). It is important to note that the specimens were observed in an area near the



**Fig. 2.** . Specimens registered of *L. patagonicus*. A) Adult, Anillaco town; B) Adult, La Rioja Capital City; C) Juvenile, Anillaco town; D) La Rioja Capital City.

locality reported for *L. patagonicus thomasi*, a subspecies described by Cabrera (1929) based on the only specimen collected up to that moment in the province.

The original description of the subspecies does not report significant differences in cranial and body measurements, and it is based mainly on the characteristics of distribution and shape of the black and white hair bands around the head. The distinctive nuchal spot that characterizes the species is much smaller and the dorsal fur is longest and whiter than the observed in the specimens of Patagonia, a character that could also be observed in the specimens of these new records. Likewise, the models presented by Schiaffini et al. (2013) coincide with the proposed distribution for the two subspecies; however, the specimens collected in the NWA were only referred as *L. patagonicus*, without any distinction at a subspecies level; more molecular and morphometric analyzes are pending, to be able to clarify the validity of these subspecies.

It should be noted that all the specimens recorded here were observed in areas close to human settle-

ments, so it could be considered that the species has been able to adapt to the pressure of urban expansion. However, this situation shows a large deficit of information on the diversity of mammals in La Rioja province, since the individuals were mostly identified by locals as juveniles of the largest weasel that they claim to usually see (i.e., *Galictis cuja*). Clearly, most people of La Rioja are not aware of the presence of the Patagonian weasel in this province (and perhaps are not aware of the existence of the species at all).

The new records presented in this work were recovered in approximately 10 months, a relatively short period considering that more than 80 years have passed since the last reports of the species in the province. The ease with which the data was obtained seems to indicate that *L. patagonicus* is not as rare as the few published records had suggested.

The new records in La Rioja and Córdoba (Sferco et al. 2018) agree with the potential distribution models published by Schiaffini et al. (2013) and Schiaffini (2017), since the observations were made in areas with a high probability of occurrence of the

species. However, the same does not happen with the specimens observed in La Pampa province (Formoso et al. 2016), where there are two fossil records of the species, but no current observations. Consequently, Formoso et al.'s records of the species are located in areas of low probability of occurrence in the distribution models. Based on the new data from La Rioja and Córdoba, it is clear that the species has a greater distribution in Argentina than previously thought, so it would be advisable to obtain new distribution models that take into account the records obtained since 2016, allowing a more accurate reconstruction of the area of distribution of this species.

In the last decade the number of records of *L. patagonicus* has increased, and it is important to evaluate what are the reasons that have led to this increase. On the one hand, it is possible that the distribution of the species is really much wider than previously thought, and since the species seems to demonstrate the ability to adapt to semi-urban environments, new records are easier to obtain. On the other hand, probably the most influential factor is the increasing interest in expanding the knowledge about Argentinean wildlife. It has not been until recently, that many of the less explored areas of Argentina have been benefited from new projects on research, protection and tourism, which facilitate access for both researchers and naturalists to poorly surveyed areas. This increase of specialists in the field, the application of new field techniques such as trap cameras, and the exchange of knowledge and observations with the locals, certainly have a positive effect on the number of sightings of this and other rare species.

As a final consideration, regarding the importance of the new records on the general knowledge of the species and its conservation, we must highlight that the Patagonian weasel is considered a species with conservation status Near Threatened (NT; Schiaffini et al. 2019) mostly due to the lack of knowledge about it and the scarcity of its records. Although it is true that there has been an increase in its records in recent years (in addition to those presented in this work), it is still necessary to obtain ecological information on the species and its threats (Schiaffini et al. 2019). This contribution is not only adding new records and extending the range of the species distribution but is also contributing to the knowledge of its ecological habits. Since this is a species with scarce reliable information, most of the data on diet and behavior comes from indirect observations as the ones presented here (see Prevosti et al. 2009, and references therein). Another important piece

of ecological information that we are adding is that the Patagonian weasel can tolerate at least certain degree of urbanization, since all of our records come from sub-urban settlements. Associated with the vicinity of humans, dog attacks become a risk for individuals of *L. patagonicus*, as showed by two of our records. We believe that more surveys are necessary in the area of distribution of the species to see if the pattern observed in La Rioja is also true for other places. Also, extension programs are needed to increase the public awareness and knowledge of the local fauna, in order to benefit from the reports of locals and conduct citizen science projects. It is possible that with new data, the conservation status of *L. patagonicus* could change to Least Concern in a future evaluation.

**Acknowledgments.** We thank Dr. Juan Manuel Luque, Tonino Bustamante, Diego Delgado, Luis Pereira, Stella de La Vega, Claudia Ocampo, Valente Rodríguez and other residents of La Rioja, for sharing the records and photographs that allowed the realization of this work. To M. Schiaffini for providing the distribution models. This work was partially funded by CONICET PUE 0125 and PICT 2015-966 (ANPCyT, FONCYT).

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