

# Distribution, natural history, and conservation of the Patagonian Weasel *Lyncodon patagonicus*

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## Abstract

The Patagonian Weasel *Lyncodon patagonicus* is a small mustelid that lives in the Southern Cone of South America (Argentina and Chile). The species is known from relatively few direct observations and collected specimens. In this paper we review available data about *L. patagonicus* to assess its conservation status. Information about its natural history is largely anecdotal, and suggests that it feeds on fossorial rodents. Known record localities are based on specimens observed or collected during the nineteenth and twentieth centuries. Its distribution encompasses herbaceous and shrub steppes and xerophytic woodlands, and presumably includes protected areas. However, the presence of *L. patagonicus* in these areas must be reconfirmed, because most records of occurrence are more than 10 years old. The perceived scarcity of this species in the wild could be real, but its relatively widespread distribution might protect it from the effects of environmental alteration and other human impacts. We conclude that field studies are urgently needed to confirm the current distribution and ecological requirements of the Patagonian Weasel.

**Keywords:** Argentina, Chile, Mustelidae, recommendations for study, research needs, South America

## Distribución, historia natural y conservación del Huroncito Patagónico *Lyncodon patagonicus*

### Resumen

El Huroncito Patagónico *Lyncodon patagonicus* es un pequeño mustélido que habita el extremo sur de América del Sur (Argentina y Chile). Esta especie es conocida a través de escasas observaciones directas y unos pocos ejemplares depositados en museos. En este trabajo recopilamos la información existente sobre este mustélido para diagnosticar su estado de conservación. La información sobre historia natural es básicamente anecdótica y sugiere que depreda principalmente sobre roedores fosoriales. La mayoría de las referencias sobre su distribución fueron hechas durante los siglos XIX y XX. La amplia distribución de esta especie abarca ambientes de estepas gramíneas y arbustivas y bosque xerófilo, incluyendo presuntivamente algunas áreas protegidas. Sin embargo, la presencia de *Lyncodon patagonicus* en las mismas debe ser confirmada, dado que las citas para dichas áreas fueron realizadas en general hace más de 10 años. La escasa abundancia de esta especie podría ser natural y por su amplia distribución podría verse moderadamente amparada ante las modificaciones ambientales y el impacto antrópico. Sin embargo, hacen faltan urgentes trabajos de campo y ecológicos para corroborar la distribución de esta especie y obtener información precisa sobre su historia natural.

**Palabras clave:** Argentina, Chile, Mustelidae, necesidad de estudios, necesidades de investigación, Sur America

## Introduction

Twelve mustelid species live today in South America: four are otters (Lutrinae) and the remaining seven native species are currently classified in the subfamily Mustelinae (Wilson & Reeder 2005, Koepfli *et al.* 2008). Another species, the non-native American Mink *Neovison vison*, was introduced from North America for fur farming in some ranches of southern Argentina and in recent decades has invaded Patagonia and Tierra del Fuego (Fasola *et al.* 2009). The habits of most species are relatively well studied, excepting the three smaller species (*Mustela africana*, *M. felipei*, *Lyncodon patagonicus*): these are only known from a few collected specimens and anecdotal information (Izor & de la Torre 1978, Schreiber *et al.* 1989, Larivière 1998, 1999a, 1999b, Presley 2000, Prevosti & Pardiñas 2001, Nowak 2005, Kruuk 2006, Yensen & Tarifa 2003a, 2003b).

The Patagonian Weasel *Lyncodon patagonicus* (de Blainville, 1842) (Fig. 1) is one of the most poorly known carnivores of southern South America (Redford & Eisenberg 1992; Prevosti & Pardiñas 2001). Most available information about this small mustelid (head and body length ~25 cm; tail ~10 cm) comes from the very few specimens housed in museum collections, which are

useful primarily for morphological, phylogenetic, and distributional studies (Prevosti & Pardiñas 2001). Data regarding its natural history remains entirely anecdotal (e.g. Pocock 1926, Cabrera & Yepes 1940, Redford & Eisenberg 1992, Prevosti & Pardiñas 2001).

In this paper we review the available information about systematics, distribution, and natural history of *Lyncodon patagonicus* to assess its conservation status.

## Systematics

*Lyncodon* was traditionally included with *Galictis* in the family Mustelidae, subfamily Galictinae, tribe Galictini (Reig 1956, Baskin 1998). However, other authors do not recognise Galictinae and Galictini, simply allocating these species to the subfamily Mustelinae (e.g. Wozencraft 2005). Morphology-based phylogenetic study suggested that *Lyncodon* might be the sister taxon of the African weasel genus *Poecilogale* (Bryant *et al.* 1993). Unfortunately, *Lyncodon* has not been included in published molecular phylogenies (e.g. Fulton & Strobeck 2006, Koepfli *et al.* 2008), but in these phylogenies *Galictis* is allied with *Poecilogale* and another African genus, *Ictonyx* (along with the Marbled Polecat



Fig. 1. Female Patagonian Weasel *Lyncodon patagonicus* from Puerto Madryn surroundings, Chubut, Argentina (Photograph by Dario Podesta). See front cover for the photograph of a male.

*Vormela peregusna* of Eurasia), suggesting that *Lyncodon* could be part of this clade of largely Neotropical and African species.

The genus *Lyncodon* comprises only two species: the living *L. patagonicus*, known from Late Pleistocene to Recent contexts (Prevosti & Pardiñas 2001), and the extinct *L. bosei*, known from the Middle-Lower Pleistocene (Pascual 1958).

Two subspecies have sometimes been recognised under the living species, *L. p. patagonicus* (de Blainville, 1842), in Patagonia, southern Buenos Aires and Mendoza provinces, and *L. p. thomasi* Cabrera, 1929, from north-western Argentina (Cabrera 1929, Cabrera 1958). However, the validity and the distribution of these nominal taxa is far from clear and ideally requires testing with modern approaches.

## Distribution

*Lyncodon patagonicus* is found in herbaceous and shrub steppes and xerophytic woodlands of north-western, central, and southern Argentina and southern Chile, from sea level up to 2,000 m, and within arid–semi-arid climates (Osgood 1943, Tamayo & Frassinetti 1980, Prevosti & Pardiñas 2001). In Table 1 we provide a revised list of recorded occurrences, both contemporary and fossil (see also Fig. 2). *Lyncodon* is almost entirely restricted to Argentina and indications from Chile are limited to two references (Wolffsohn 1923, Peña 1966). Most historical records were made in the nineteenth and early twentieth centuries. The last confirmed record from Buenos Aires was made in the first part of the 20th century, in Pocock (1926). In fact, the species is probably extirpated from most of the territory of this province (Prevosti & Pardiñas 2001), potentially surviving only south Bahía Blanca and in the boundary with the La Pampa province. An increase of precipitation of more than 300 mm per year in recent decades and the expansion of agriculture are considered the main factors that triggered the retraction of the Patagonian Weasel in Buenos Aires province (Prevosti & Pardiñas 2001). Only about 10 site occurrences for *Lyncodon* have been recorded in the past decade. These recent records originate from Santa Cruz, Chubut, Río Negro, and San Juan provinces in Argentina. During Late Pleistocene and Holocene, *L. patagonicus* occurred in eastern portions of Buenos Aires province where it is now absent (Prevosti & Pardiñas 2001). This geographic occurrence was related to the existence of more arid climates in these areas compared to present times (Tonni *et al.* 1999, Prevosti & Pardiñas 2001). In the Late Holocene the species was also present in Chilean side of the Isla Grande de Tierra del Fuego (Latorre 1998), an island that was part of the South American continent until late Pleistocene (Clapperton 1993), and is the

Table 1. Modern and fossil record localities for *Lyncodon patagonicus*.

#	Specific locality	Province/Region	Country	Lat. °S	Long. °W	Age	Date	Primary source
1	Alemania	Salta	Argentina	25° 38'	65° 37'	Recent	1976	Olrog 1976
2	Cafayate	Salta	Argentina	26° 06'	65° 57'	Recent	1976	Olrog 1976
3	El Timbó	Tucumán	Argentina	26° 14'	65° 23'	Recent	1958	Olrog 1958
4	Colalao del Valle	Tucumán	Argentina	26° 22'	65° 56'	Recent	1976	Olrog 1976
5	Amaicha del Valle	Tucumán	Argentina	26° 23'	65° 55'	Recent	1976	Olrog 1976
6	Santa María	Catamarca	Argentina	26° 42'	66° 02'	Recent	1976	Olrog 1976
7	Banda del río Salí	Tucumán	Argentina	26° 51'	65° 10'	Recent	1976	Olrog 1976
8	Andalgalá	Catamarca	Argentina	27° 36'	66° 20'	Recent	1946	Olrog 1958
9	Guampacha	Santiago del Estero	Argentina	28° 03'	64° 48'	Recent	1986	Massoia & Latorraca 1992
10	La Rioja	La Rioja	Argentina	29° 25'	66° 51'	Recent	1929	Cabrera 1929
11	Sol de Julio	Santiago del Estero	Argentina	29° 33'	63° 27'	Recent	1976	Olrog 1976
12	Patquía	La Rioja	Argentina	30° 03'	66° 53'	Recent	1931	Yepes 1935
13	Pampa de Gualilan	San Juan	Argentina	30° 80'	68° 90'	Recent	2003	Sanabria & Quiroga 2003
14	Uspallata	Mendoza	Argentina	32° 41'	69° 22'	Recent	1986	Castro & Cicchino 1986
15	Tupungato	Mendoza	Argentina	33° 21' 55"	69° 08' 3"	Recent	<1965	Roig 1965
16	Tunuyán	Mendoza	Argentina	33° 34' 24"	69° 01' 19"	Recent	<1965	Roig 1965
17	San Carlos	Mendoza	Argentina	33° 45' 57"	69° 02' 4"	Recent	<1965	Roig 1965
18	San Rafael	Mendoza	Argentina	34° 36' 35"	68° 21' 12"	Recent	<1935	Yepes 1935
19	Cueva del Tigre	Mendoza	Argentina	35° 45' 49"	69° 13'	Recent	1991	Trajano 1991
20	Azul	Buenos Aires	Argentina	36° 47'	59° 51'	Recent	1879	Burmeister 1879
21	Bonifacio	Buenos Aires	Argentina	36° 49'	62° 15'	Recent	1926	Pocock 1926
22	Macachín	La Pampa	Argentina	37° 09'	63° 40'	Recent	1992	Prevosti & Pardiñas 2001
23	Marimenuco	Araucanía	Chile	38° 42'	71° 06'	Recent	1966	Peña 1966
24	Rincón Grande	Buenos Aires	Argentina	39° 42'	63° 13'	Recent	1881	Doering 1881

Table 1 contd.

#	Specific locality	Province/Region	Country	Lat. °S	Long. °W	Age	Date	Primary source
25	Estancia Cerro de los Pinos	Neuquén	Argentina	39° 57'	71° 05'	Recent	1993	Prevosti & Pardiñas 2001
26	Carmen de Patagones	Buenos Aires	Argentina	40° 48'	63°	Recent	1881	Doering 1881
27	9 km SE Los Menucos	Río Negro	Argentina	40° 53' 24"	68° 02' 59"	Recent	1987	Prevosti & Pardiñas 2001
28	Estancia San Pedro	Río Negro	Argentina	40° 54'	70° 42'	Recent	2000-2002	Teta <i>et al.</i> 2008
29	San Carlos de Bariloche	Río Negro	Argentina	41° 08'	71° 17'	Recent	1973	Massoia 1992
30	Estancia El Desafío	Río Negro	Argentina	41° 18'	71° 06'	Recent	2000-2002	Teta <i>et al.</i> 2008
31	Puesto Horno, Estancia Maquinchao	Río Negro	Argentina	41° 42'	68° 39'	Recent	2000-2002	Teta <i>et al.</i> 2008
32	Estancia Calcatreo	Río Negro	Argentina	41° 42'	69° 24'	Recent	2006	This paper
33	Cañadón Angostura de Cides, Estancia Calcatreo	Río Negro	Argentina	41° 43'	69° 22'	Recent	2000-2002	Teta <i>et al.</i> 2008
34	Puerto Pirámide	Chubut	Argentina	42° 34'	64° 18'	Recent	1991	Prevosti & Pardiñas 2001
35	Piedra Parada	Chubut	Argentina	42° 39'	70° 06'	Recent	2004	This paper
36	Puerto Madryn	Chubut	Argentina	42° 45'	65° 02'	Recent	2005	This paper
37	Arroyo Quichaure	Chubut	Argentina	43° 50'	70° 50'	Recent	1887	Burmeister 1888
38	Cabo Dos Bahías	Chubut	Argentina	44° 54'	65° 39'	Recent	1979	Harris 2008
39	Puesto El Chango, Ea. Santa María	Chubut	Argentina	45° 27' 51"	69° 25' 54"	Recent	2007	This paper
40	Lago Blanco	Chubut	Argentina	45° 56'	71° 16'	Recent	1904	Koslowsky 1904
41	10 km S Perito Moreno on RN 40	Santa Cruz	Argentina	46° 41'	70° 52'	Recent	2005	This paper
42	Río Guenguel	Chubut	Argentina	46°	71°	Recent	1896	Koslowsky 1904
43	Aguada Grande	Santa Cruz	Argentina	47° 20'	67° 35'	Recent	1923	Yepes 1935
44	Extremo NE Lago Cardiel and RN 40	Santa Cruz	Argentina	48° 54'	71° 01'	Recent	2005	This paper
45	Near Puerto Santa Cruz	Santa Cruz	Argentina	50° 01'	68° 32'	Recent	1899	Allen 1905
46	Puerto Prat	Magallanes	Chile	51° 37'	72° 38'	Recent	1921	Wolffsohn 1923
47	"Las Represas de las Indias"	Santiago del Estero	Argentina	28° 10'	63°	Holocene	-	Kraglievich & Rusconi 1931
48	Córdoba	Córdoba	Argentina	31° 25'	64° 12'	Pleistocene	-	Ameghino 1889
49	Las Lagunitas	San Luis	Argentina	33° 41'	65° 28'	Pleistocene	-	Prevosti & Pardiñas 2001
50	Estancia el Centenario	San Luis	Argentina	34° 12' 27"	65° 51' 59"	Holocene	-	This paper
51	Luján	Buenos Aires	Argentina	34° 34'	59° 06'	Pleistocene	-	Ameghino 1888
52	Estación Manuel J. García	Buenos Aires	Argentina	34° 40'	59° 26'	Holocene	-	Prevosti & Pardiñas 2001
53	Cortaderas	Buenos Aires	Argentina	38° 21'	61° 06'	Holocene	-	Politis <i>et al.</i> 1983
54	Chenque Haichol	Neuquén	Argentina	38° 35'	70° 40'	Holocene	-	Massoia 1992
55	Camet Norte	Buenos Aires	Argentina	38°	57° 33'	Pleistocene	-	Prevosti & Pardiñas 2001
56	Cueva y Paredón Loncomán	Río Negro	Argentina	40° 47'	70° 10'	Holocene	-	Andrade <i>et al.</i> 2005
57	Alero Santo Rosario	Río Negro	Argentina	41° 43'	68° 40'	Holocene	-	Andrade <i>et al.</i> 2007
58	Punta Buenos Aires	Chubut	Argentina	42° 12'	64° 11'	Holocene	-	This paper
59	El Riacho	Chubut	Argentina	42° 25'	64° 36'	Holocene	-	This paper
60	Playa Pardelas	Chubut	Argentina	42° 38'	64° 12'	Holocene	-	This paper
61	Establecimiento San Pablo	Chubut	Argentina	42° 39' 55"	64° 12' 54"	Holocene	-	This paper
62	Punta Este	Chubut	Argentina	42° 47'	64° 57'	Holocene	-	This paper
63	Cerro Avanzado	Chubut	Argentina	42° 50'	64° 52'	Holocene	-	This paper
64	El Pedral	Chubut	Argentina	42° 57'	64° 22'	Holocene	-	This paper
65	Cueva de los Chingues, Parque Nacional Pali-Aike	Magallanes	Chile	52° 05' 37"	69° 44' 31"	Pleistocene	-	This paper
66	Tres Arroyos 1	Magallanes	Chile	53° 23'	68° 47'	Holocene	-	Latorre 1998

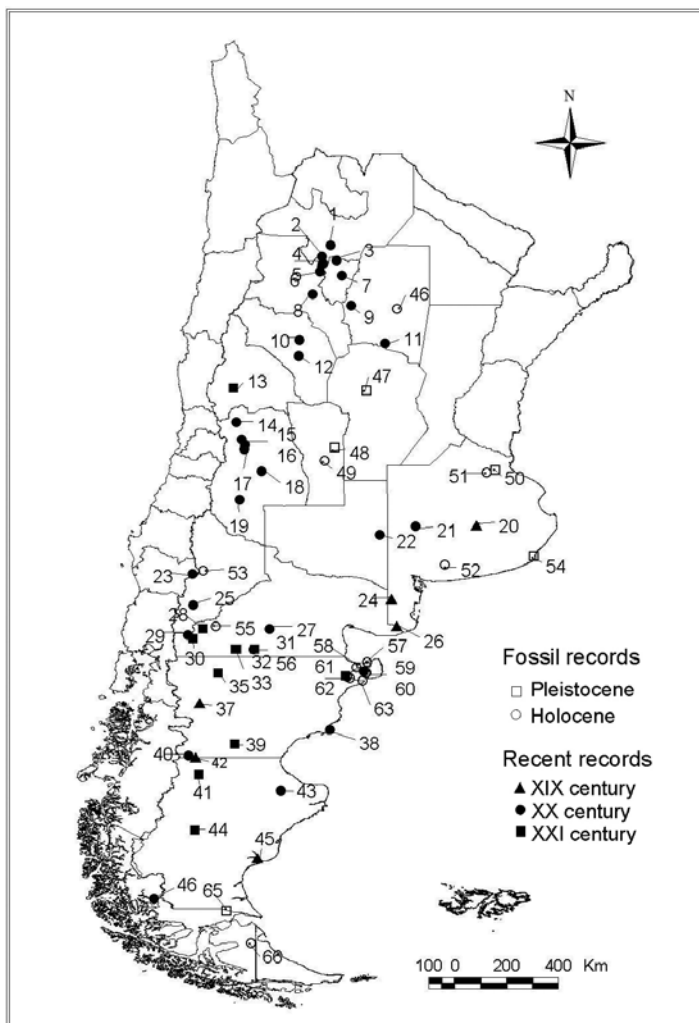


Fig. 2. Modern and fossil recorded localities for the Patagonian Weasel *Lyncodon patagonicus*, endemic to southern South America. Numbers refer to localities listed in Table 1.

only known mustelid that reached this island. However, as with many other aspects of this species, its extirpation from the Tierra del Fuego region remains to be studied in detail.

### Natural history

The habits of *L. patagonicus* are little known. Information about its natural history is based on scattered and occasional field observations (e.g. Cabrera & Yepes 1940, Redford & Eisenberg 1992). Available information indicates that *L. patagonicus* is nocturnal–crepuscular and preys on fossorial rodents (e.g. *Ctenomys* and *Microcavia*) and birds (Kosłowsky 1904, Cabrera & Yepes 1940, Redford & Eisenberg 1992). Its predation of subterranean micro-mammals is supported by several incidental lines of evidence. First, it has a small, long and tubular body (e.g. Pocock 1926, Cabrera 1929) perfectly matching the small diameter (8–10 cm) of *Ctenomys* burrows. Second, several specimens of *L. patagonicus* were recovered from Holocene sand-dune deposits in Chubut and San Luis provinces, in which cranial and mandible remains of *Ctenomys* were the most common fossil specimens present. In addition, Castro & Cicchino (1986) found ectoparasites of *Ctenomys* in a study-skin of *L. patagonicus*. A complete picture of *L. patagonicus* habits requires direct ecological studies; the same is

true regarding its potential trophic overlap with the more widespread, larger, and aggressive sympatric Lesser Grison *Galictis cuja*. It is eaten by the Black-chested Buzzard Eagle *Geranoaetus melanoleucus*, at least in Patagonia (Teta *et al.* 2008). Ecological interactions with other small mustelids, such as *G. cuja* and the introduced invasive *Neovison vison*, merit further study.

### Conservation

*Lyncodon patagonicus* was categorised as “Near Threatened” in the Argentinean Red Book (Díaz & Ojeda 2000), primarily based on the scarcity of knowledge. In Chile it was listed as “rare” by the Corporación Nacional Forestal (1993). More recently, IUCN assessed the species globally as Data Deficient (Kelt & Pardiñas 2008): there is no published information on current population status, ecology or major threats. According to Kelt & Pardiñas (2008), the scarcity of this species appears natural. Thus, there are no reasonable justifications for considering it to be globally threatened; which would seem over-precautionary. In addition, its large distribution range and its occurrence in some protected areas seem to ensure its immediate conservation. In addition, there is no likely major threat to this species, although habitat degradation (mainly due to sheep grazing) and occasional killing by ranchers are local threats. It is possible that it occurs in several protected areas of southern Patagonia (e. g. Nahuel Huapi, Lanin, Lago Puelo, Los Alerces, Perito Moreno, and Los Glaciares National Parks), although most of these reserves are dominated by forested habitats rather than open arid-lands. Better documentation is needed to confirm occurrence in all protected areas. For example, a skin exhibited as *L. patagonicus* in the visitor centre of the Natural Monument Bosques Petrificados (Santa Cruz, Argentina) is actually *Galictis cuja* (see Prevosti & Travaini 2005). Occurrence of *Lyncodon* in the Reserva Provincial Península Valdés, Chubut, as stated by Daciuk (1974) and Prevosti & Pardiñas (2001) is open to doubt and recent voucher specimens are much needed.

### Conclusions

The main message from this review is the scarcity of reliable information on *L. patagonicus*, a surprise considering its wide distribution and potentially important trophic role as a predator, especially in Patagonia. Several factors may explain this lack of knowledge. First, and perhaps the main factor, is its apparent natural scarcity. Even local farmers and settlers, in general with good knowledge of mammal fauna, are not aware of the existence of this mustelid (pers. obs.). Another factor is confusion between *L. patagonicus* and *G. cuja*, the latter being more visible and abundant. We also highlight the lack of any specific programmes of research focused on the ecology or other biological aspects of *L. patagonicus*. Several groups of researchers are working with Patagonian or Central Argentinean mammals, including research aimed at a better understanding of carnivore dynamics and diets (e.g. Novaro *et al.* 2000, Zapata *et al.* 2008), but we are not aware of any study efforts regarding the Patagonian Weasel.

Clearly, field and ecological studies are urgently needed to confirm the current distribution, natural history, and ecological requirements of this species. This information will be necessary for developing effective conservation strategies for this little-known species.

## Acknowledgements

We thank Jan Schipper and José F. González-Maya, who invited us to participate in this special issue and Kristofer M. Helgen and one anonymous reviewer for their comments. Jim Patton sent us digital photographs of Museum of Vertebrate Zoology (Berkeley) specimens. Darío Podesta took the picture in Fig. 1 and generously permitted its use. Gabriela Mas-saferro helped us with the distribution map. Marcelo Carrera and Mariano Merino kindly shared unpublished information about *Lyncodon patagonicus*. CONICET provide economic support. To the mentioned persons and institutions, the authors express their deep gratitude.

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