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Mammalia, Didelphimorphia and Rodentia, Southwest of the province of Mendoza, Argentina.

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Abstract: We documented terrestrial micromammal assemblages at five localities of southwestern Mendoza province, Argentina. We added new localities for several of the most uncommon small mammal species of this region (e.g. *Loxodontomys micropus* and *Tympanoctomys barrerae*). Two main groups of terrestrial non-volant micromammals are represented in southwestern province of Mendoza: one group is related to the South American arid diagonal, and includes species typically adapted to the xeric environments of the Monte Desert; a second group includes Patagonian and High Andean species. Some Patagonian species reached in the study area their northernmost distributional records (e.g. *Abrothrix longipilis*, *A. olivaceus*, *Chelemys macronyx*, *Loxodontomys micropus*).

Introduction

With the exception of a handful references in the literature, small mammal communities from the southwest of the province of Mendoza, Argentina, are still poorly known. Available information corresponds mostly to general descriptions of the assemblages without vouchers or localities clearly stated (e.g. Roig 1965) or isolated records from sporadic trappings or owl pellets analyses (e.g. Thomas 1894; 1912; Massoia 1981; Massoia et al. 1994; 1997; Ojeda et al. 2005; Gasco et al. 2006; Nabte et al. 2006). The continuous discoveries of both new taxa and new locality records for this province (e.g. Jayat et al. 2006) demonstrate how little is known about the small mammal fauna of this region. In this note we document the terrestrial micromammal assemblages at five localities from the southwestern Mendoza, adding new localities for several of the most uncommon small mammal species of this region. We also made some comments regarding species abundance at the different localities and discuss the biogeographic implications of some of these and previously known records.

Materials and methods

The southwest of the province of Mendoza is characterized by a cold temperate climate. Rainfall ranges from 600 mm in the Andean Cordillera to 300 mm in the Central Monte Desert.

Decrease in rainfall from west to east determines the main vegetational types: bunchgrass, shrub steppe, and creosote bush communities. High elevations of the Andean Cordillera are characterized by cold-dry climate, strong nightly frost, hard soils of fine rock debris, and sparse shrubby vegetation; climax communities includes bunchgrass of the genus *Festuca*, *Poa*, and *Stipa*. Patagonian semidesert, locally known as *Payunia*, occupies intermediate elevations, mostly in volcanoes slopes. Vegetation types include bunchgrass plains and areas of low shrub and brush in basaltic or sandy soil. Patagonian steppes grade eastwards into the arid Monte Desert, characterized by grasslands and scattered evergreen creosote scrubs of *Larrea* spp. (Cabrera 1976).

Studied assemblages, mostly constituted by craniodental remains recovered from pellets of *Bubo magellanicus* (Aves, Strigidae) and *Tyto alba* (Aves, Tytonidae), were collected in the following localities (from north to south; between parenthesis we provide the collection numbers under which the material is housed at the *Colección de Material de Egagrópilas y Afines "Elio Massoia" del Centro Nacional Patagónico*, Puerto Madryn, Chubut, Argentina [CNP-E]): (1) Laguna de la Niña Encantada (35°09'38" S,

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69°52'09" W; 1,826 m; CNP-E.55-6); (2) Cerro Morocho, Laguna Llanquanelo (35°36' S, 69°12' W; 1,300 m; CNP-E.19); (3) 10 km W Bardas Blancas on Ruta Provincial 145 (35°52'28" S, 69°52'46" W; 1,152 m; CNP-E.289); (4) La Pasarela (conjunction Río Grande and RN 40, 36°18'46" S, 69°40'03" W; 1,250 m; CNP-E.198), and (5) Los Frisos (36°28'20" S, 69°38'54" W; 1,101 m; CNP-E.199). Taxonomic identifications were made by comparisons with reference material.

The taxonomy employed here follows Pardiñas et al. (2003).

Results and discussion

Assemblage compositions per locality and previously known assemblages for this region are given in Table 1. Figure 1 depicts the geographic location of all recording localities mentioned in this contribution and the main phytogeographic units.

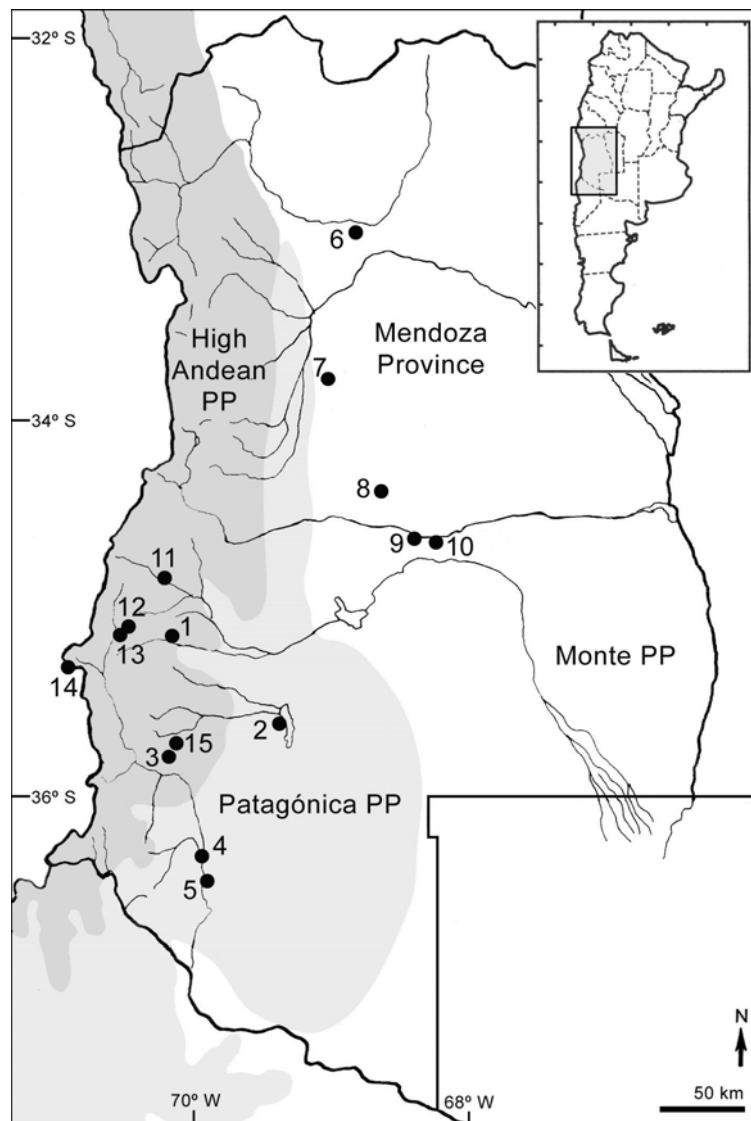


Figure 1. The province of Mendoza (Argentina) including the localities discussed in the text and the main phytogeographic provinces (PP). References: 1, Laguna de la Niña Encantada; 2, Cerro Morocho, laguna Llanquanelo; 3, 10 km W Bardas Blancas on RP 145; 4, La Pasarela (conjunction Río Grande and RN 40); 5, Los Frisos; 6, Chacras de Coria; 7, Huayquerías del Oeste; 8, 50 km N San Rafael; 9, San Rafael; 10, Las Aguaditas; 11, Arroyo Malo 3 archaeological site; 12, Valle Hermoso; 13, 6 km NW de Las Leñas; 14, 45 km ENE Volcán Peteroa; 15, Caverna de Las Brujas.

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Recorded species are discussed in the following accounts:

Order Didelphimorphia

Family Didelphidae

Lestodelphys halli (Thomas, 1921)

L. halli has a relatively homogeneous distribution in the Patagonian shrub steppes, from Santa Cruz to Río Negro (Udrizar Sauthier et al. 2007). Known locality records for this marsupial in the province of Mendoza are from, north to south, Chacras de Coria (32°45' S, 71°10' W, the northernmost record for the species; Birney et al. 1996), Huayquerías del Oeste (33°38' S, 68°26' W; Carlini, A., pers. comm.), 50 km N San Rafael (34°15' S, 68°40' W; Nabte et al. 2006), and Caverna de Las Brujas (35°45' S, 69°49' W; Gasco et al. 2006). These four locality records are isolated, with an interposed gap of ca. 500 km with the closest southern localities. The significance of this disjunction, if any, remains to be explored. In addition, it is important to note that one Late Holocene record has been mentioned for Mendoza (Arroyo Malo 3 archaeological site; 34°51'20" S, 69°53'15" W; Neme et al. 2002).

Thylamys cf. *T. pallidior* (Thomas, 1902)

T. pallidior is found in creosote bush, mesquite forest, and areas with dense thorny vegetation in arid and semi-arid regions from south-central Peru and western Bolivia south to central and western Argentina (Braun et al. 2005). Based on molecular evidences, individuals from San Rafael area (Mendoza) were referred by Braun et al. (2005) to *T. pallidior*. We tentatively assigned our records to this species; this small didelphid is present in all studied assemblages.

Order Rodentia

Family Cricetidae

Abrothrix longipilis (Waterhouse, 1837)

A. longipilis ranges from Coquimbo in Chile and Mendoza in Argentina south to Tierra del Fuego (Osgood 1943; Teta et al. 2006). *A. longipilis* is abundant in dense forests of *Nothofagus*, but also occurs in most of the other habitats, such as marshes, shrubby steppes, tussock grass, or rocky areas (Pearson 1995). Known localities in the province of Mendoza appear to be restricted to High Andean rocky areas with low sparse shrubs.

Abrothrix olivaceus (Waterhouse, 1837)

A. olivaceus ranges from northernmost Chile south to the Patagonia and the Island of Tierra del Fuego (Osgood 1943; Teta et al. 2006). This species occurs in a wide variety of habitats, including semi-arid scrub and bushy steppes, bunchgrass, meadows, and dense *Nothofagus* forests (Pearson 1995). Locality records for Mendoza correspond to high Andean rocky areas with low sparse shrubs and *Payunia* environments. Massoia (1981) captured and described specimens from Las Aguaditas (ca. 34°43' S, 68°05' W; the northernmost Argentinean record for the species). These specimens occur in sympatry with *Akodon molinae*, a typical element from the Monte Phytogeographical Province (PP, hereafter).

Chelemys macronyx (Thomas, 1894)

C. macronyx is found in mesic habitats, such as forest or meadows from Mendoza south to the Strait of Magellan (Osgood 1943, Pearson 1995). Known localities in the province of Mendoza correspond with High Andean rocky areas with low sparse shrubs and meadows. Ojeda et al. (2005) documented the karyotypes of topotypical specimens from Valle Hermoso (35°05' S, 70°06' W; 2,460 m).

Eligmodontia spp.

Species of *Eligmodontia* occur in arid and semiarid habitats and in both high and low elevation areas (Mares et al. 2008). *Eligmodontia* spp. are moderate to dominant in the studied samples. At least three species of *Eligmodontia* – *E. morgani* J. A. Allen, 1901, *E. moreni* Thomas, 1896, and *E. typus* Cuvier, 1837 – occur in southwestern Mendoza (Lanzzone and Ojeda 2005; Mares et al. 2008), which are morphologically undistinguishable with fragmentary craniodental remains. The former is mostly restricted to Patagonian steppes and the other two to the Monte PP.

Euneomys chinchilloides (Waterhouse, 1839)

E. chinchilloides lives in bare, windswept, rocky scree habitat from Santiago latitude, in Chile, and Mendoza, in Argentina, south to Cape Horn (Pearson 1995). This species reaches high densities in samples from High Andean areas. Specimens from Valle Hermoso, morphologically identified as *E. chinchilloides*, have a different

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diploid complement from other specimens previously assigned to this species (Ojeda et al. 2005). Musser and Carleton (2005) restricted the name *chinchilloides* for Fuegian populations and included the continental samples under *E. petersoni* J. A. Allen, 1903, a taxonomic hypothesis that must be further tested.

Euneomys mordax Thomas, 1912

E. mordax is found at high elevations (> 1,700 m) in the provinces of Mendoza and Neuquén, in Argentina, and adjacent areas of Chile (Reise and Gallardo 1990; Pearson and Christie 1991). Ojeda et al. (2005) documented the karyotypes of topotypical specimens from Valle Hermoso. This species occurs in sympatry with *E. chinchilloides* in Laguna de la Niña Encantada, Caverna de Las Brujas, and Valle Hermoso (Ojeda et al. 2005; this work).

Loxodontomys micropus (Waterhouse, 1837)

L. micropus occurs in forest, marshes, humid dense grasslands, or among bushes in southern Chile and southwestern Argentina; from about 35° S in Mendoza south to Santa Cruz (Pearson 1995). Jayat et al. (2006) listed the first specimens from Mendoza, based on trapped individuals from Valle Hermoso, 45 km ENE Volcán Peteroa (35°05' S, 70°05' W), and from 6 km NW Las Leñas (35°06' S, 70°07' W). Here we add a new record for Mendoza, in Laguna de la Niña Encantada.

Oligoryzomys longicaudatus (Bennet, 1832)

O. longicaudatus occupies brushy places and edge of forests from Mendoza south to Santa Cruz, where is replaced by its congeneric *O. magellanicus* (Cirignoli et al. 2006). Isolated population occurs in the Monte PP of Mendoza, La Pampa, and Buenos Aires (Carbajo and Pardiñas 2007), mostly along the main rivers that dissect this region.

Phyllotis xanthopygus (Waterhouse, 1837)

P. xanthopygus occupies open rocky habitats from Peru south along the Andes to Santa Cruz and southern Chile (Kramer et al. 1999). This species dominates the samples from *Payunia* and High Andean areas.

Reithrodon auritus (Fischer 1814)

R. auritus is found in grassland habitats of southern South America, from the Island of Tierra del Fuego northwards to the Pampean region (Pardiñas and Galliari 2001); north of 36° S its populations appear to be restricted to a few high altitude areas (mainly > 2,000 m). Only two records are certainly known in the province of Mendoza, both in open vegetation areas (Jayat et al. 2006, Gasco et al. 2006). The specimens from Cerro Morocho, Laguna Llanquanelo, were previously reported by Jayat et al. (2006) as the first record for Mendoza.

Family Ctenomyidae

Ctenomys sp.

Taxonomy of *Ctenomys* populations from southwestern Mendoza Province is unclear. *C. pontifex* Thomas, 1918, has its type locality in this area. According to Pearson and Lagiglia (1992), the relationships between this form and the Chilean *C. maulinus* Philippi, 1872 and *C. maulinus brunneus* Osgood, 1943 are unclear. Additionally, Pearson and Lagiglia (1992) referred specimens from near San Rafael to *C. mendocinus* Philippi, 1869. *C. mendocinus* occurs in northern and central Mendoza from ca. 31° S to 34° S and from Andean Precordillera eastward across arid sub-Andean regions (Rosi et al. 2005).

Family Caviidae

Microcavia australis (I. Geoffroy Saint-Hilaire & d'Orbygny, 1833)

M. australis inhabits arid and semiarid lowlands and valleys from Jujuy, northwestern Argentina, south to Santa Cruz (Cabrera 1953; Tognelli et al. 2001).

Family Octodontidae

Tympanoctomys barrerae (Lawrence, 1941)

T. barrerae is found in arid and semi-arid areas of central-western Argentina. This rat is known from only twelve patchy localities in salt basin (*salares*), sand dune, and open scrubland habitats in the Monte PP (Díaz et al. 2000; Ojeda et al., 2007). In this work we added one new locality record to the seven previously known for the province of Mendoza (cf. Ojeda et al., 2007; Nabte et al. 2006).

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Table 1. Assemblages of micromammals known for Southwestern province of Mendoza, Argentina (x = presence).

	Assemblages						
	Previous		This paper				
	Laguna de la Niña Encantada ¹	Caverna de Las Brujas ²	Laguna de la Niña Encantada	Cerro Morocho	10 km W Bardas Blancas	La Pasarela	Los Frisos
Altitude (m a.s.l.)	1,826	1,800	1,826	1,300	1,152	1,250	1,101
Didelphimorphia							
<i>Lestodelphys halli</i>		x					
<i>Thylamys</i> cf. <i>T. pallidior</i>	x	x	x	x	x	x	x
Rodentia							
Cricetidae							
<i>Abrothrix longipilis</i>	x		x		x		
<i>Abrothrix olivaceus</i>	x	x	x	x	x	x	
<i>Chelemys macronyx</i>	x	x	x				
<i>Eligmodontia</i> spp.	x	x	x	x	x	x	x
<i>Euneomys chinchilloides</i>		x	x	x	x	x	
<i>Euneomys mordax</i>			x				
<i>Euneomys</i> spp.	x	x					
<i>Loxodontomys micropus</i>		x	x				
<i>Oligoryzomys longicaudatus</i>						x	
<i>Phyllotis xanthopygus</i>	x	x	x	x	x	x	x
<i>Reithrodon auritus</i>		x		x			
Caviidae							
<i>Microcavia australis</i>		x	x	x			x
Ctenomyidae							
<i>Ctenomys</i> sp.	x	x	x	x	x		x
Octodontidae							
<i>Tympanoctomys barrerae</i>							x

¹ Data from Massoia et al. (1994).

² Data from Gasco et al. (2006).

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Two large landscape units located in southern Mendoza (Figure 1) are characterized by the total absence of data regarding micromammal assemblages. These are the volcanic plateau of Payunia (ca. 10,000 km²) and the Sierra del Nevado chain (with heights of ca. 4,000 m). Despite this fact, that clearly tackles our interpretation of the main zoogeographic patterns, several general aspects can be addressed. Two main groups of terrestrial non-volant micromammals are represented in southern Mendoza. One group is related to the South American arid diagonal, and includes species adapted to the xeric environments of the Monte Desert (e.g. *Akodon molinae*, *Calomys musculinus*, *Eligmodontia typus*, *Graomys griseoflavus*). Species of this group are widely distributed through central Argentina, in arid and semiarid environments. The second group includes Patagonian and High Andean species. Within this group, we can recognize at least four main patterns of distribution: (1) *Phyllotis xanthopygus* has a widespread distribution from Peru to southern South America, mostly related to rocky outcrops and partially independent from the main environmental matrix (Kramer et al. 1999); (2) *Euneomys mordax* restricted to High Andean (> 1,700 m) humid grasslands in southwestern Mendoza and northern Neuquén, in Argentina, and adjacent areas of Chile; (3) A pool of species widely distributed in the Patagonian semiarid steppes (e.g. *Abrothrix* spp., *Euneomys chinchilloides*); species of this subgroup have a distribution compressed against the Andes in southwestern Mendoza and northern Patagonia, that gradually expands to the east in southern lati-

tudes; and (4) Two species, *Chelemys macronyx* and *Loxodontomys micropus*, mostly associated with the *Nothofagus* forest, ecotonal areas, and humid microenvironments in the Andean piedmont of Patagonia and High Andean Areas in the province of Mendoza.

Some species of the subgroups 3 and 4 reach their northernmost Argentinean distributional limits in central-western or southwestern of the province of Mendoza. They are *Abrothrix olivaceus* (northernmost record in Las Aguaditas, see above), and a pool of Patagonian and High Andean species – *Abrothrix longipilis*, *Chelemys macronyx*, *Euneomys chinchilloides*, *E. mordax*, and *Loxodontomys micropus* – with northernmost record at Laguna de la Niña Encantada (35°17' S). With the exception of *Lestodelphys halli*, the species of the groups 3 and 4 or their presumed counterparts (e.g. *Euneomys noei*, *Loxodontomys pikumche*) are also present on the other side or the Andean chain, in Chilean territory; however, west of the Andes, they reach more northern locations (including 18° S in the case of *A. olivaceus*; cf. Osgood 1943). This fact invites to consider if the known northern limit in Argentina is the true distributional boundary or just an effect caused by low sampling effort. Along the Andes, between Laguna de la Niña Encantada in the south and Río Mendoza in the north, there is a strip of about 50 x 250 km of mostly unexplored territory, where only some minor collections were made in early XX century (Thomas 1920). The continuity of presumably suitable habitats for the taxa above mentioned along this gap suggests that populations of several of these species would remain to be discovered.

Acknowledgements

Sebastián Cirignoli and Dario Podestá helped during field work conducted in southern Mendoza that retrieved several of the studied samples; Hernán Povedano collected and kindly offered the sample from Cerro Morocho. Marcela Nabte assisted during laboratory tasks. Guillermo D'Elía and Sergio Tiranti made valuable comments on an earlier version of this study. Field activities in Mendoza were authorized by *Dirección de Fauna Silvestre*. This research was funded by CONICET. To the mentioned persons and institutions the gratitude of the authors.

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Received May 2008

Accepted June 2008

Published online July 2008