

Notes on Pearson's Chaco Mouse *Andalgalomys pearsoni* (Myers, 1977) (Rodentia: Cricetidae: Sigmodontinae) in the Paraguayan Chaco

Notas sobre *Andalgalomys pearsoni* (Myers, 1977) (Rodentia: Cricetidae: Sigmodontinae) en el Chaco Paraguayo

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Pearson's Chaco Mouse *Andalgalomys pearsoni* (Myers, 1977) is a nocturnal and terrestrial, Chaco endemic Sigmodontine rodent, confined to the lowland Dry Chaco ecoregion of western Paraguay and southwestern Bolivia (Braun 2015) with an old specimen record from Salta province, Argentina (Teta *et al.* 2016). It is a distinctive mouse, instantly recognizable within its area of distribution by the sandy-yellow dorsum sharply demarcated from the white ventral pelage, a tail longer than the head and body length which lacks a tuft at the tip and the distinct whitish spots behind the ears (Fig. 1) (Salazar-Bravo 2015, Teta *et al.* 2016). The genus *Andalgalomys* Williams & Mares, 1978 contains three species (*A. olrogi*, *A. pearsoni* and *A. roigi*)



Figure 1. Adult *Andalgalomys pearsoni* showing main external characteristics. Teniente Enciso National Park, Boquerón department, 2 July 2022 (Paul Smith).

and has in the past been included within *Graomys* Thomas, 1916 (Steppan 1995, Steppan & Sullivan 2000), but has more recently been considered distinct (Braun 2015, Carrizo & Catalano 2015, Pardiñas & Ruelas 2017).

Andalgalomys pearsoni description was based on a series of specimens collected in Boquerón department Paraguay. The type specimen (MVZ 145276) was collected by Philip Myers “410 km NW of Villa Hayes by road” on 24 September 1973. Additional specimens (UCS 17562-17563, 17566, 17568, 17575, 17579, 17580) collected in the area around the Teniente Enciso National Park Headquarters (km 655 on Transchaco Road) by R.M. Wetzel, R.E. Dubos and R.L. Martin make up the type series (Table 1). The first Bolivian specimens were considered to belong to a distinct subspecies *A. p. dorbignyi* Olds *et al.*, 1987 based on larger size, more pronounced anterior zygomatic spines, broader mesopterygoid fossa, and different diploid number ($2n=76$ versus $2n=78$ for the Paraguayan form). The Argentinian specimen was also assigned to the nominotypical form (Teta *et al.* 2016).

Since the description of the species no additional natural history information has been published for the species in Paraguay other than the description of some chiggers (Acari: Trombiculidae: *Andalagalomacarus paraguayensis*, *Microtrombicula pearsoni*, *Paraguacarus abrelli*, *P. callosus*, *Paratrombicula enciscoensis*, *Quadrasetta brenmani*) found parasitizing specimens (Goff & Whitaker 1984, Whitaker & Abrell 1987)

Table 1. Localities and specimen records in the Paraguayan Chaco for *Andalgalomys pearsoni*. Museum codes as follows: AMNH (American Museum of Natural History); FMNH (Field Museum of Natural History); MNHNP (Museo Nacional de Historia Natural del Paraguay); MSB (Museum of Southwestern Biology); TK-field numbers of the Natural Science Research Laboratory, Museum of Texas Tech University; UCS (University of Connecticut); UMMZ (University of Michigan Museum of Zoology).

Locality	Coordinates	Specimens
ALTO PARAGUAY DEPARTMENT		
Cerro León	-20.1941, -60.4830	MNHNP 1797
BOQUERÓN DEPARTMENT		
1km SW Transchaco road km 620	ca. -21.6426, -61.1386	AMNH 262344-262347; FMNH 151997; UCS 25245-25248, 25291-25292, UMMZ 130037, 158621
Transchaco road km 620	ca. -21.6326, -61.1386	UCS 25243-25244, 25249
15.6 km N by road from Filadelfia	ca. -22.1984, -60.0668 (Campo Aroma zone)	UMMZ 134386
410km NW by road from Villa Hayes	ca. -22.4529, -60.1581 (Laguna Negra zone)	UMMZ 145276-145268
Cañada Elisa, 1.3km N, 14 km E Mcal. Estigarribia	-21.9164, -60.6541	TK 60287-60272, 60274, 60276, 60277
Comunidad Pearson's, Loma Plata	-22.3567, -59.85	MSB 80511-80512
Fortín Corrales	-22.4436, -60.3922	FMNH 164184-164187
Estancia Toledo, 35 km W of Filadelfia	-22.4497, -60.1330	FMNH 164188-164189
Estancia Toledo, 37 km W of Filadelfia	-22.4697, -60.1330	FMNH 164190-164196
Experimental farm 11 km NE of Filadelfia	-22.2875, -59.9835	FMNH 157341
Parque Cue	-20.1275, -61.7566	TK 63307, 63310-63312, 63316, 63318, 63339-63340, 63343-63346, 63350, 63355, 65697-65700, 65711, 65733, 65740
Rodeo Trebol	-22.3491, -59.9863	TK 130729, 132252, 132275, 132293, 132295, 132346, 132348, 132361, 132363, 132382, 132384, 132386-132387, 132427, 132437, 132457, 132462, 132464, 206358
Teniente Enciso National Park	-21.0833, -61.1333	MNHNP 666-667, 669-670, 673, 690; UCS 17562-17563, 17566, 17568, 17575, 17579
0.5 km S of Teniente Enciso	-21.0873, -61.1333	UCS 17580
Yalve Sanga	-22.5613, -59.8896	TK 130965
PRESIDENTE HAYES DEPARTMENT		
Estancia Samaklay	-23.5121, -59.8525	TK 62746, 62776, 64944-64945
Laguna Capitán	-22.5313, -59.8016	This publication

and basic data on habitat preference (Yahnke 2006). In this note we provide additional ecological and distributional data from Paraguay, including the first description of the nest of the species and a table of specimen records.

Distribution

A full list of Paraguayan localities and known specimens is provided in Table 1 and these are mapped in Figure 2. In Paraguay the species is confirmed to be widespread in Boquerón department and to occur marginally into Alto Paraguay (where it is probably more widespread than currently known) and extreme western Presidente Hayes department (where its distribution is probably limited by the extent of the Humid Chaco). Only two Bolivian specimens are known (AMNH 260762 and MSB 210967), both females collected by D.W. Moore at “29.5 km W of Roboré, Santa Cruz department” (Anderson 1997) (ca. -18.334, -60.073) on 7 October 1984 and are the only known specimens of the subspecies *A. p. dorbignyi*. The single Argentinian specimen (MACN 14318) was collected by Ince Apostol at Cerro Colorado (ca. -25.57721, -64.49058), Metán department, Salta province, on 9 September 1962 (Teta *et al.* 2016).

Morphometrics

Previously unpublished external morphometric for the 20 TTU specimens from Rodeo Trebol and

Yalve Sanga localities (Boquerón department) (See Table 1) are provided in Table 2. Males appear to be marginally larger than females in mass and external measurements except for ear length.

Reproductive data

Myers (1977) stated that two females trapped in July were neither pregnant nor lactating, but a subadult male trapped at the same time suggested that some winter breeding occurs. Casual observations of large numbers of small individuals (presumably juveniles and subadults) in the area around Teniente Enciso National Park during late June and early July 2022 supports this assertion (PS pers. obs.). Myers (1977) also reported that five males trapped in July and three in September all had large, scrotal testes and Yahnke (2006) reported a female pregnant with 5 embryos in January in the Paraguayan Chaco. Of 19 individuals collected in September 2006 at Rodeo Trebol, five of 11 males had scrotal testes, and all eight females had closed vaginas, indicating no current reproductive activity. Of the 20 specimens from Rodeo Trebol and Yalve Sanga with age recorded, the only one collected in June was recorded as subadult. All others with age recorded were collected in September, and were all adults. Although the sex ratio of collected individuals varied among localities and sampling dates, we found that males and females were represented approximately equally (Table 3).

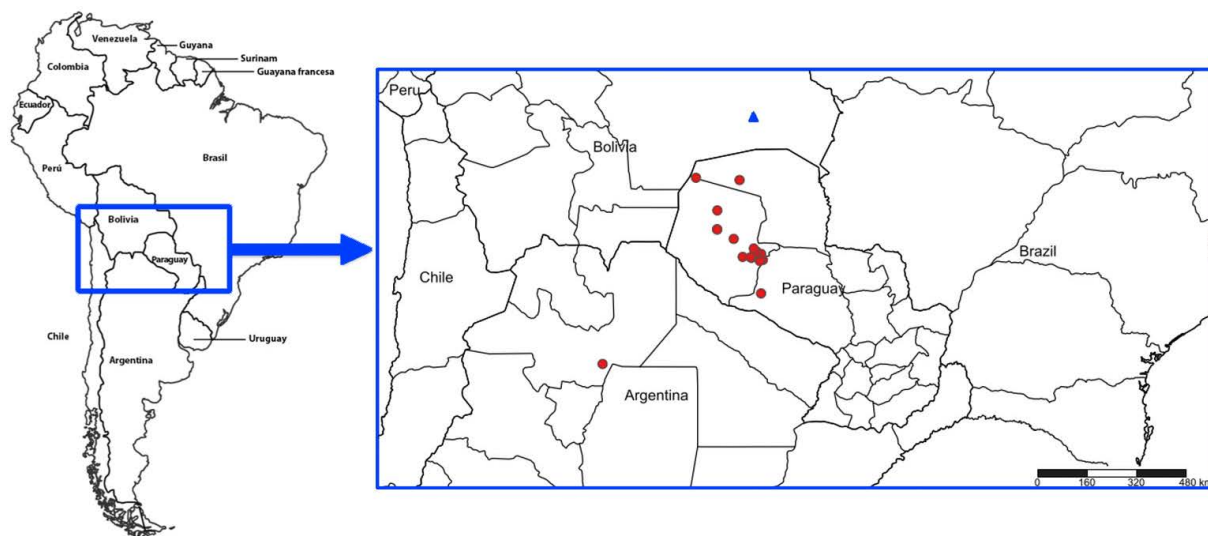


Figure 2. A map of documented localities for *Andalgalomys pearsoni* in Paraguay, Bolivia and Argentina. Red circles *A. p. pearsoni*; Blue triangle *A. p. dorbignyi*.

To this, we add the first description and images of a nest from Laguna Capitán (-22.531 -59.801), Presidente Hayes department (Fig. 3). The nest was discovered on 2 March 2023 underneath a dry flattened plank of wood (160 cm long, minimum 21 to maximum 34 cm wide) on a mudflat close to the shore of a saline lake and approximately 4.3

m distant from vegetation cover of *Sarcocornia ambigua* (Amaranthaceae) and an island of scrubby xeric Chaco woodland. No discernible entrance hole was visible, but beneath the plank it was clear that there were two chambers connected by a single straight tunnel (40 mm deep x 25 mm wide). The total length from the entrance to the end of the

Table 2. Previously unpublished external morphometrics (mm) of 20 specimens of *Andalgalomys pearsoni* in TTU collection from Rodeo Trebol and Yalve Sanga localities (Boquerón department, Paraguay). Square brackets indicate a specimen with a damaged tail.

Specimens	Total Length	Tail Length	Ear Length	Hind Foot Length	Mass (g)
Means of type series from Myers (1977) (n=9)	210	110 (97-124)	19 (18-20)	24 (22-25)	NA
Means of <i>A. p. dorbignyi</i> from Olds <i>et al.</i> (1987) (n=2)	257 (255-259)	124.5 (123-126)	23.5 (23-24)	26.5 (26-27)	c. 45
Males					
TK 130729	219	113	20	23	30
TK 132252	209	109	20	25	23
TK 132295	226	117	24	24	36
TK 132346	204	105	20	24	24
TK 132361	236	121	20	26	40
TK 132384	228	120	20	25	34
TK 132386	200	105	20	23	23
TK 132457	210	110	19	25	23
TK 132462	205	95	19	24	33
TK 132464	215	109	19	24	23
TK 130965	[173]	[76]	18	25	19
Means	215.2	110.4	24.4	20.6	25.0
Females					
TK 132275	219	115	21	24	23
TK 132293	201	111	20	24	21
TK 132348	210	110	20	23	26
TK 132363	[183]	[45]	26	29	36
TK 132382	[124]	[20]	20	24	29
TK 132387	208	106	20	24	27
TK 132427	180	96	18	23	15
TK 132437	200	105	20	24	23
TK 206358	219	112	20	26	28
Means	203.0	107.2	24.4	20.6	25.0

Table 3. Summary of capture records of *Andalgalomys pearsoni* for five localities in the Paraguayan Chaco, indicating locality, date(s) and season(s) sampled, relative proportion of all terrestrial small mammals collected, and number of males and females captured.

Locality	Year	Month	Season	% of captures	M/F
Mariscal Estigarriba	1995	08	Dry	9/44 (20.5%)	5/4
	1996	07-08	Dry	2/138 (1.4%)	1/1
Estancia Samaklay	1997	02-03	Wet*	2/6 (33.3%)	0/2
	2005	01	Wet	0/42 (0.0%)	
Parque Cué	1996	09	Dry	14/79 (17.7%)	9/5
	1997	05	Variable	7/167 (4.2%)	4/3
Yalve Sanga	2006	09	Dry	1/181 (0.6%)	1/0
	2019	06	Variable	0/99 (0.0%)	
Rodeo Trebol	2006	09	Dry	18/314 (5.7%)	10/8
	2019	06	Dry	1/80 (1.2%)	0/1
Total					30/24

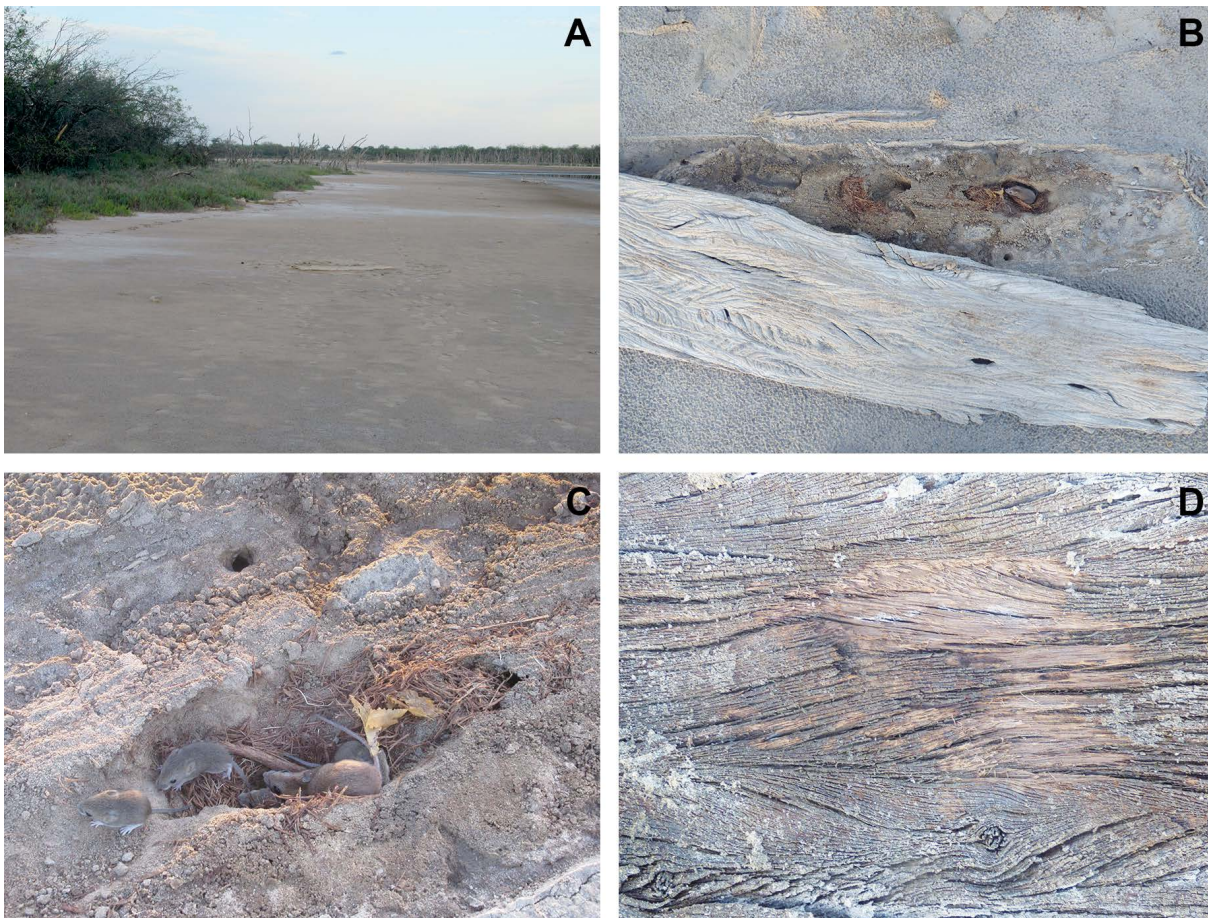


Figure 3. **A)** Location of the nest on mudflats next to a saline lake Laguna Capitán, Presidente Hayes department, 2 March 2023 (Christine Marshall). **B)** View of the entire nest system from above (Paul Smith). **C)** Female in the nest chamber, with four pups visible (Christine Marshall). **D)** View of the gnawed wooden plank representing the area above the main nest chamber, and confirming that the wood shavings form part of the nest material (Paul Smith).

farthest chamber was 66 cm and the plank was 28 cm wide at the position of the farthest chamber from the entrance. On discovery of the nest an adult female was found suckling one large pup in the second nest chamber, and a total of five large pups (eyes open and able to walk) were observed to be present (concurring with Yahnke 2006). The second chamber was 200 mm long, and between 60 (minimum) and 80 mm (maximum) wide. Both chambers were lined with abundant wood shavings that had been gnawed from the plank forming the ceiling of the nest chambers. The mother remained with the pups for the majority of the nest examination, but eventually fled towards nearby vegetation. The location where the nest had been was found to be flooded on a return visit on 10 March 2023.

Habitat

Field observations suggest that *Andalgalomys pearsoni* is at least seasonally abundant in the Dry Chaco of Paraguay. Myers (1977) stated that the species inhabits islands of dry grasslands within this region, and that the surrounding thorn scrub is occupied by Chaco Leaf-eared Mouse *Graomys chacoensis* Allen, 1901. However, we find no such ecological separation and have recorded the species with heat scopes in the undergrowth of the same scrubby hedgerows occupied by *G. chacoensis*. The nest of *A. pearsoni* reported here was on a mud flat close to a drying salt lake, with no grass nearby and the only nearby vegetation an island of scrubby Chaco forest typical of the region. This concurs with Yahnke (2006) who found the species in microhabitats with low herbaceous ground cover. Whilst *A. pearsoni* is certainly less arboreal than the much larger *Graomys chacoensis* (we have never seen *A. pearsoni* climb in bushes and all specimens have been trapped on the ground) it seems to be more generalist in its habitat selection and occupies both natural and disturbed open and semi-open areas, as well as open forest undergrowth and edge habitats.

Parasites

Ticks, mites (Macronyssidae: Ornithonyssus and Laelapidae: Eubrachylaelaps), chiggers (Trombiculidae), sucking lice (Anoplura) and chewing lice (Mallophaga) were collected from 34 individuals collected between 1995-1997 from

Mariscal Estigarribia and Parque Cué (Boquerón department) and Estancia Samaklay (President Hayes department). No fleas were encountered on these animals.

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References

- Anderson S. 1997. Mammals of Bolivia, taxonomy and distribution. *Bulletin of the American Museum of Natural History*, 231: 1-652.
- Braun J.K. 2015. Genus *Andalgalomys* Williams & Mares, 1978. Pp. 469-472. In: J. Patton, U.F.J. Pardiñas & G. D'Elía (eds.). *Mammals of South America Volume 2 Rodents*. University of Chicago Press, Chicago.
- Carrizo L.V. & Catalano S.A. 2015. First phylogenetic analysis of the tribe Phyllotini (Rodentia: Sigmodontinae) combining morphological and molecular data. *Cladistics*, 31: 593-620. DOI: [10.1111/cla.12109](https://doi.org/10.1111/cla.12109)
- Goff M.L. & Whitaker Jr J.O. 1984. A small collection of chiggers (Acari: Trombiculidae) from mammals collected in Paraguay. *Journal of Medical Entomology*, 21: 327-335.
- Myers P. 1977. A new Phyllotine rodent (genus *Graomys*) from Paraguay. *Occasional Papers of the Museum of Zoology, University of Michigan*, 676: 1-7.
- Olds N., Anderson S. & Yates T.L. 1987. Notes on Bolivian mammals 3: a revised diagnosis of *Andalgalomys* (Rodentia, Muridae) and the description of a new subspecies. *American Museum of Natural History Novitates*, 2890: 1-17.
- Pardiñas U. & Ruelas D. 2017. Pearson's Chaco Mouse *Andalgalomys pearsoni*. Pp. 529-530. In: D.E. Wilson, T.E. Lacher & R.A. Mittermeier (eds.) *Handbook of the Mammals of the World Volume, 7 Rodents II*. Lynx Edicions, Barcelona.
- Salazar-Bravo J. 2015. Tribe Phyllotini Vorontsov, 1959. Pp. 465-468. In: J. Patton, U.F.J. Pardiñas & G. D'Elía (eds.). *Mammals of South America Volume 2 Rodents*. University of Chicago Press, Chicago.
- Steppan S.J. 1995. Revision of the tribe Phyllotini (Rodentia: Sigmodontinae), with a phylogenetic

- hypothesis for the Sigmodontinae. *Fieldiana Zoology new series*, 80: 1-112.
- Steppan S.J. & Sullivan J. 2000. The emerging statistical perspective in systematics: a comment on Mares and Braun. *Journal of Mammalogy*, 81: 260-270. DOI: [10.1644/1545-1542\(2000\)081<0260:TESPIS>2.0.CO;2](https://doi.org/10.1644/1545-1542(2000)081<0260:TESPIS>2.0.CO;2)
- Teta P., Jayat J.P. & Ortíz P.E. 2016. Notes on the distribution of the genus *Andalgalomys* (Rodentia, Cricetidae) with the first record of *A. pearsoni* (Myers, 1978) from Argentina. *Mammalia*, 80: 667-671. DOI: [10.1515/mammalia-2015-0118](https://doi.org/10.1515/mammalia-2015-0118)
- Yahnke C.J. 2006. Habitat use and natural history of small mammals in the central Paraguayan Chaco. *Mastozoología Neotropical*, 13: 103-116.

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