

NOTAS SOBRE  
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*Sociedad Argentina para el Estudio de los Mamíferos*

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**Rediscovery of Mouse of Chuanisin, *Akodon llanoi* Pine 1976  
(Rodentia, Cricetidae), with comments on its conservation status**

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**ABSTRACT**

In this note we report three new specimens of *Abrothrix (Angelomys) xanthorhina* from Isla de los Estados, southernmost Argentina, which are representatives of the nominal form *Akodon llanoi* Pine 1976. These are the first voucher specimens since the species description, more than four decades ago. In addition, we provide morphometric data for these specimens and update the distribution of the species on the island. Because of its rarity and isolated condition, added to the presence of *Rattus norvegicus* in Isla de los Estados, we suspect that the conservation status of this population could be compromised.

**RESUMEN**

En esta nota reportamos tres nuevos especímenes de *Abrothrix (Angelomys) xanthorhina* para Isla de los Estados, en el extremo austral de Argentina, que son representativos de la forma nominal *Akodon llanoi* Pine 1976. Estos son los primeros especímenes de referencia desde su descripción, hace más de cuatro décadas. Adicionalmente, proveemos datos morfométricos para estos ejemplares y una actualización de la distribución de esta especie en la isla. En virtud de su rareza y su condición de endemismo insular, sumada a la presencia de *Rattus norvegicus* en Isla de los Estados, sospechamos que el estado de conservación de este ratón estaría comprometido.

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Isla de los Estados or Chuanisin is a small island that lies 29 kilometers off the easternmost Argentine coast of Isla Grande de Tierra del Fuego (TDF), from which it is separated by the Le Maire Strait. There is only one native rodent species recorded for this island (Formoso & Teta 2019), which was originally described as *Akodon (Akodon) llanoi* Pine 1976. No further knowledge has been generated for this nominal form since its discovery, except for some mentions without voucher specimens by Massoia & Chebez (1993). Less than a decade after its description, it was synonymized with *Abrothrix x. xanthorhina* (Waterhouse 1837) by Patterson et al. (1984), based on the overall similarity between these two nominal forms, although recognizing some differences in size. Later, Massoia & Chebez (1993) proposed its treatment as a distinct subspecies (i.e., *A. x. llanoi*). Teta et al. (2017) followed Patterson et al. (1984) includ-

Recibido el 28 de abril de 2020. Aceptado el 18 de junio de 2020. Editor asociado: Pablo Jayat



ed this nominal form under *A. xanthorhina*, referring it to the subgenus *Angelomys* Teta, Cañón, Pardiñas, & Patterson 2017. In southern South America, the subgenus *Angelomys* includes several nominal forms (e.g., *canescens* Waterhouse 1837, *hershkovitzi* Patterson, Gallardo & Freas 1984, and *xanthorhina*), which were considered as valid or as synonyms of *A. xanthorhina* (e.g., Patterson et al. 1984) or *A. olivacea* (e.g., Patterson et al. 2015). All these mice are similar in external features, having dorsal colorations that vary between brownish and grayish, whitish to grayish venters, and manus, pes, nose, ears, and tails washed with orange (Osgood 1943; Patterson et al. 2015). Pending of a comprehensive review using both morphological and molecular evidence (Sánchez et al. in prep.), we provisionally follow Teta et al. (2017) in maintaining *llanoi* as a synonym of *Abrothrix* (*Angelomys*) *xanthorhina*.

In this note we report the capture of three additional specimens of the nominal form *Akodon llanoi*, which are the first with voucher specimens since its description, together with the observation of living individuals. In addition, we provide external and cranial measurements for the three collected specimens, update the distribution of this mouse in Isla de los Estados, and discuss its conservation status.

Collections [c] and observations [o] were made at Bahía Crossley (-54.801, -64.703 [o]) and around Bahía Franklin (at seven separate points: -54.835, -64.654 [o]; -54.847, -64.644 [c]; -54.852, -64.642 [c]; -54.853, -64.678 [o]; -54.854, -64.660 [o]; -54.876, -64.724 [o]; and -54.883, -64.615 [o]; Fig. 1). Traps were set during December 2017 (360 trap-nights; no catches) and December 2018 (87 trap-nights; three individuals captured, one adult male and two subadult females; relative age was determined by tooth-wear and external measurements [see Patterson et al. 1984, Patterson 1992]). All individuals were collected with Sherman-like traps on the ground in old-growth stands of coastal evergreen forests of *Drimys winteri* (height = 5–9 m) and *Nothofagus betuloides* (height = 8–13 m). The shrub-layer of these forests is sparse and mainly dominated by *Berberis ilicifolia*. The mounds formed by fallen decaying tree trunks, and exposed roots are covered by extensive, deep, spongy carpets of liverworts, mosses, filmy ferns, and lichens (Promis et al. 2008) (Fig. 2). Living specimens (not counted) were observed during the day in this same general area during December 2018. Collected individuals were deposited at the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia” under the catalog numbers MACN-Ma 28506 (adult male with scrotal testes; preserved as skeleton and fluid), MACN-Ma 28289 (subadult female; preserved in fluid) and MACN-Ma 28290 (subadult female; preserved in fluid). External measurements of these specimen are (in mm): total length, 165, 158, and 152; tail length, 70, 52, and 55; hindfoot length, 21, 21, and 22; ear length, 10, 11, and 11.

The specimens could be referred to the nominal form *llanoi* Pine 1976 by the following combination of external and cranial characters (cf. Pine 1976): fur long, soft and dense; dorsally warm brown and whitish below; nose, ears, and feet washed with tawny; tail distinctly bicolor (Fig. 3); skull delicate, with a long rostrum and nearly rounded braincase; interorbital region amphora-shaped; nasals and premaxillae projecting well in front of the upper incisors as a tube (Fig. 4).

In addition to the three new collected specimens, we also studied the holotype (illustrated for the first time, Fig. 5), and three paratypes of *Akodon llanoi* (housed at the United States National Museum, Smithsonian Institution [Washington D.C., USA]). Twenty craniodental measurements were taken for each specimen using digital calipers (Table 1), following the definitions given by Patterson (1992). Overall, individuals from Isla de



los Estados are tawnier, less dusky laterally, and have proportionally longer and tubular snouts when compared with specimens from TDF (cf. Pine 1976).

Pine (1976) documented this mouse in four different coastal localities : Bahía Capitán Cánepa, Puerto Basil Hall, Puerto Celular, and Puerto Vancouver (Fig. 1). Massoia & Chebez (1993) provide observations and notes on the natural history of this rodent at Bahía Crossley, Bahía San Antonio, and Puerto Parry, but do not provide voucher specimens (Fig. 1). As expressed by Pine (1976) and Massoia & Chebez (1993), this must be the same species of mouse referred to Puerto Cook by Milne Edwards (1890) and Vicinguerra (1883). Our records, both collected specimens and observations, confirm the presence of this mouse on the westernmost portion of Isla de los Estados (Fig. 1).

Massoia & Chebez (1993) expressed some concerns regarding the conservation situation of *A. (A.) xanthorhina*, since Isla de los Estados had been colonized by the exotic Norway rat, *Rattus norvegicus*. As in other insular contexts, the introduction of alien species may have a negative impact on the native species, mostly due to competition or direct predation. For example, the extinction of some oryzomyine rodents of the genus *Nesoryzomys* from the Galapagos Islands occurred as the result of competition with the black rat, *Rattus rattus* (Amori & Clout 2003). Because of its rarity (at least judging by our trapping results) and isolated situation, added to the presence of *Rattus norvegicus* in the same sectors where captures were made, we believe the conservation status of this population might be compromised. This situation could be more severe along the coast, where *R. norvegicus* appears to be more abundant (Massoia & Chebez 1993). Although we did not measure the abundance of *R. norvegicus*, the fact that we captured five individuals using four snap traps during two days in 2018 suggests that this species is more abundant than *A. (A.) xanthorhina*. It is interesting to note that in 2018 individuals of both *A. (A.) xanthorhina* and *R. norvegicus* were observed more easily, in greater numbers, and with greater frequency than in previous fieldwork (since 2014). This is also reflected in the fact that no captures were made in 2017 when compared to 2018, when the capture effort was much lower. This situation could be related to some cyclic events or environmental factors that we were unable to detect. Additional data on the population dynamics and threats to *A. (A.) xanthorhina* are much needed in order to more accurately assess its conservation status.

## ACKNOWLEDGMENTS

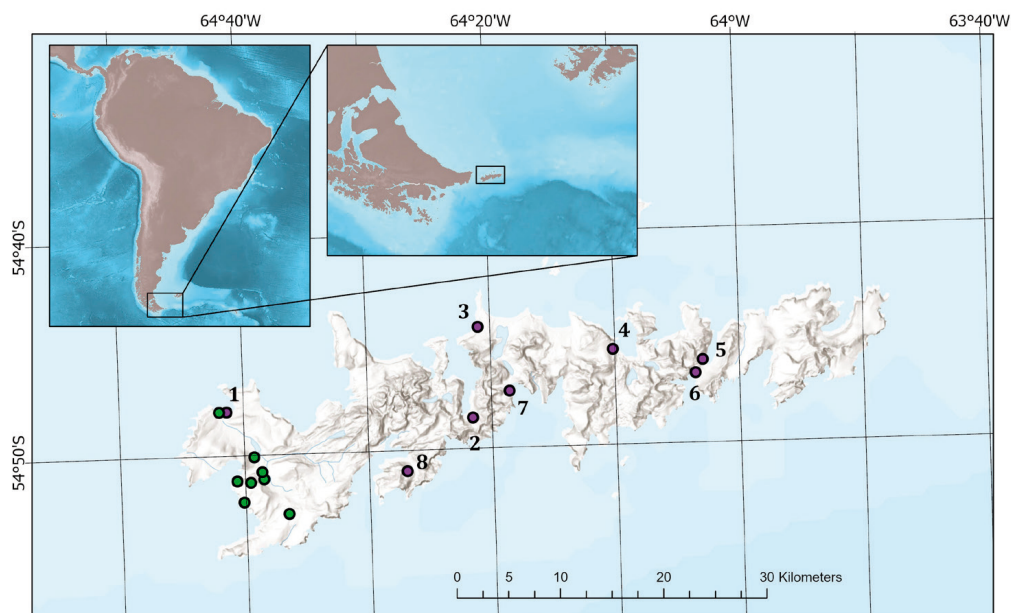
We give special thanks to Andrea Raya Rey for allowing us to participate in the travel to Isla de los Estados. We are grateful to the curators of the following collections: U. F. J. Pardiñas (CNP), B. Patterson (FMNH), and D. Lunde (USNM). Finally, we want to acknowledge the comments of Gabriel Martin, J. Pablo Jayat, Agustina Novillo, and an anonymous reviewer on a first draft of this contribution. Permission: Res. Subs. P.A. y S. N° 071/2017.

## FUNDING

This project was funded by RD 1160 and PUE 2017 CONICET and the PIDUNTFD



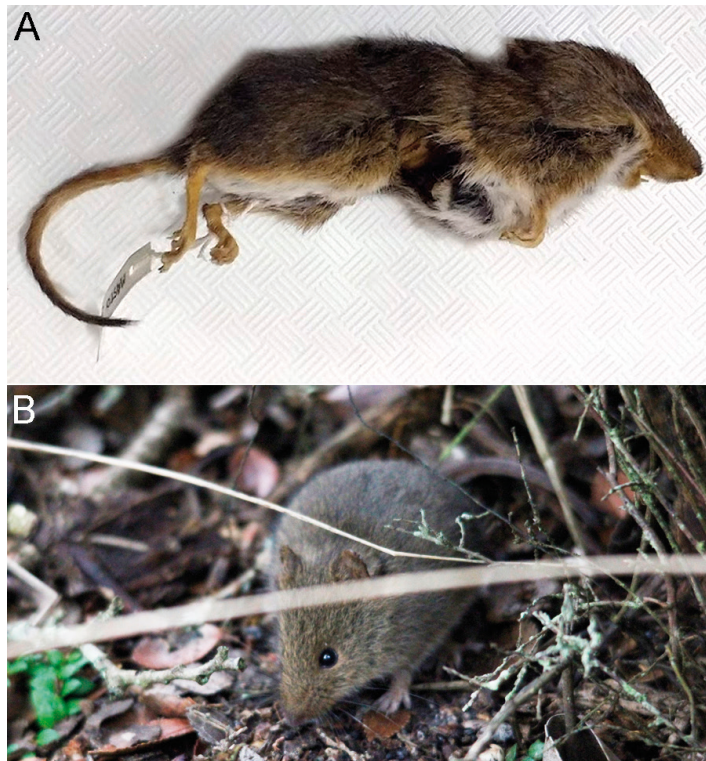
05-2017, Tierra del Fuego National University, Argentina. The American Society of Mammalogists contributed to PT with funds through its “O. P. Pearson Award” to travel across the United States.



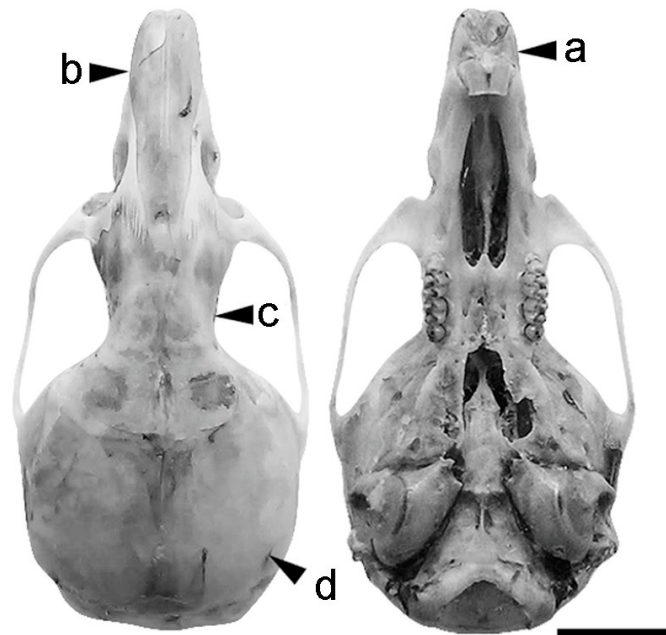
**Figure 1.** Map of Isla de los Estados, southern Argentina, showing records for *Abrothrix* (*Angelomys*) *xanthorhina*. Previously known localities (purple circles) arranged in a clockwise direction: 1) Bahía Crossley [-54.8027, -64.6847]; 2) Puerto Parry [-54.8082, -64.3644]; 3) Bahía San Antonio [-54.7416, -64.3505]; 4) Puerto Basil Hall [-54.7592, -64.1659]; 5) Puerto Cook [-54.7716, -64.0460]; 6) Puerto Vancouver [-54.7798, -64.0581]; 7) Puerto Celular [-54.7915, -64.3092]; 8) Bahía Capitán Cánepa [-54.8376, -64.4469]. Green circles show new records in Bahía Crossley and Bahía Franklin (see the text for coordinates).



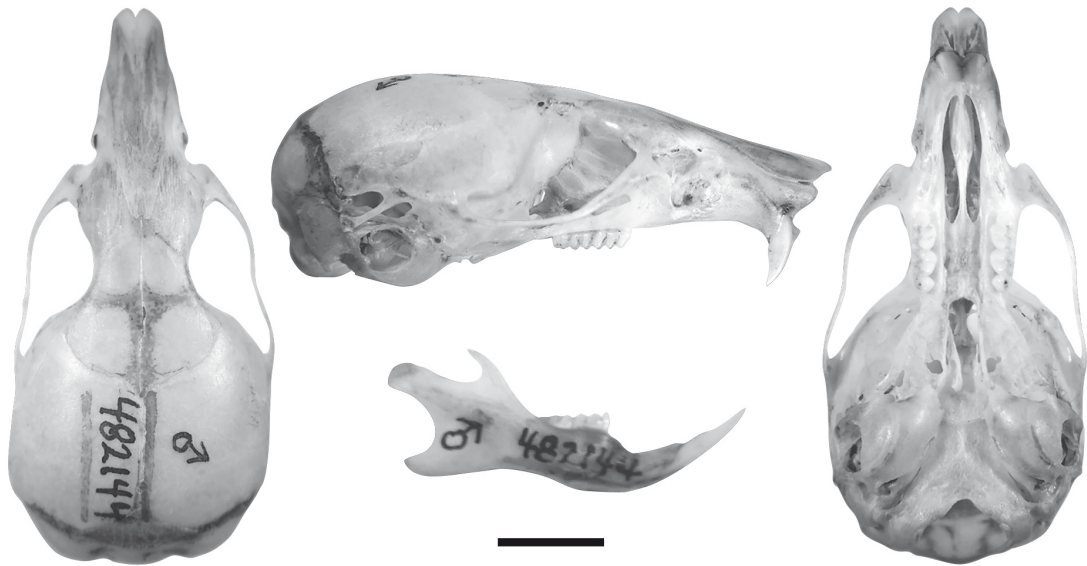
**Figure 2.** Old-growth stands of coastal evergreen forests of *Drimys winteri* and *Nothofagus betuloides* in Bahía Franklin, Isla de los Estados, Argentina. Specimens of *Abrothrix* (*Angelomys*) *xanthorhina* were caught in the ground, which is covered by spongy carpets of liverworts, mosses, filmy ferns, and lichens.



**Figure 3.** A) External view of *Abrothrix (Angelomys) xanthorhina* from Bahía Franklin, Isla de los Estados, Argentina (MACN-Ma 28506); see text for external measurements of this specimen; B) Living individual photographed in this same locality. Note the distinctive tawny washing of the nose, feet, and tail.



**Figure 4.** Dorsal and ventral views of the cranium of *Abrothrix (Angelomys) xanthorhina* from Bahía Franklin, Isla de los Estados, Argentina (MACN-Ma 28506) depicting some of its diagnostic features, such as nasals and premaxillae projecting well in front of the upper incisors as a tube (a), long rostrum (b), interorbital region amphora-shaped (c), and nearly rounded braincase (d). Scale = 5 mm.



**Figure 5.** Dorsal, lateral and ventral views of the cranium and labial view of the mandible of the holotype of *Akodon llanoi* Pine, 1976. Scale = 5 mm.

**Table 1.** Individual measurements for specimens of *Abrothrix (Angelomys) xanthorhina* from Isla de los Estados, Argentina. The asterisk corresponds to the holotype of *Akodon llanoi* Pine, 1976.

	USNM 482144*	USNM 482129	USNM 482128	USNM 482127	MACN-Ma 28506
Skull length	25.50	25.92	25.12	26.58	26.44
Condyllo-incisivelength	22.77	23.40	22.02	23.91	23.65
Zygomatic breadth	11.90	12.38	12.35	12.59	12.70
Braincase breadth	11.66	11.73	11.59	11.37	11.60
Palatilar length	10.15	10.09	9.53	10.52	10.55
Incisive foramina length	5.75	5.75	5.64	6.04	5.97
Incisive foramina width	1.70	1.72	1.70	2.00	2.01
Upper diastema length	6.27	6.49	6.13	6.59	7.01
Upper toothrow length	3.69	3.74	3.55	3.70	3.44
Palatal width at M1	4.70	4.92	5.02	5.13	4.97
Palatal width at M3	4.00	4.52	4.38	4.14	4.18
Zygomatic plate width	1.91	2.17	2.00	2.02	2.19
Nasal length	10.62	10.49	9.91	10.75	10.83
Nasal width	2.94	2.98	2.75	3.09	3.15
Rostrum width	4.44	4.52	4.00	4.42	4.29
Frontal sinus width	5.87	6.13	5.87	5.94	5.36
Interorbital breadth	4.35	4.46	4.31	4.34	4.05
Frontal length	7.14	8.39	7.79	8.22	7.64
Parietal length	5.70	6.31	5.75	5.80	6.98
Wide of mesopterygoid fossa	1.47	1.73	1.40	1.50	1.45

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