

Mammalia, Rodentia, Sigmodontinae, *Holochilus brasiliensis* (Desmarest, 1819): Distribution extension

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ABSTRACT: We report the southernmost record for the marsh rats *Holochilus brasiliensis* 20 km S of Pedro Luro on Hwy 3, province of Buenos Aires, Argentina (39°41'31.13"S, 62°40'23.5"W) extending the range of the species ca. 110 km S. This represents the first contemporaneous record of *H. brasiliensis* in Patagonia, and also the only species of sigmodontine rodent with amphibious habits reported in Patagonia.

Rats of the genus *Holochilus* inhabit marshes, swamps, grasslands, and other moist, primarily open areas of South America, from sea level to approximately 2,000 meters (Hershkovitz 1955).

Two species of *Holochilus* occur in Argentina (see Massoia 1976; Cirignoli *et al.* 2006), namely *Holochilus brasiliensis* (Desmarest, 1819) with *H. b. darwini* Thomas, 1897 and *H. b. vulpinus* (Brants, 1827) as subspecies, and *H. chacarius* Thomas, 1906 including *H. c. balnearum* Thomas, 1906 and *H. c. chacarius* Thomas, 1906.

Holochilus brasiliensis ranges from eastern Paraguay, southern Brazil, Uruguay to northeastern Argentina and south-central province of Buenos Aires (Waterhouse 1839; Hershkovitz 1955; Massoia 1976). Interestingly, the first record for *H. brasiliensis* in Argentina (Bahía Blanca, Buenos Aires province; Waterhouse 1839) remained the southernmost locality for more than 170 years. The aim of this contribution is to extend the current geographical distribution of *H. brasiliensis*, reporting the southernmost locality known for the genus and species, which is also the first report in Patagonia.

In November 2006 we collected a sample of owl pellets generated by *Tyto alba* (Aves, Tytonidae) in an abandoned human building about 20 km S of Pedro Luro on Hwy 3, province of Buenos Aires, Argentina (39°41'31.13"S, 62°40'23.5"W; Figure 1). Pellets were disaggregated with hot water; osteological remains (skulls and mandibles) were recovered by hand and identified to the finest taxonomic level using specific literature (Massoia and Fornes 1969; Pearson 1995; Voglino *et al.* 2004) and reference material at the Colección de Egagrópilas y Afines "Elio Massoia" at Centro Nacional Patagónico (CNP-E, Puerto Madryn, Chubut, Argentina). The studied sample is housed at this collection with the reference number CNP-E 374.

The cranial and mandibular remains (an anterior fragment of skull and both mandibles all referable to the same young individual; Figure 2) were assigned

to *Holochilus brasiliensis* because of the following combinations of characters: 1) moderately large size among largest cricetines; 2) lower and upper ridges of the masseteric crest meet at the level of the posterior root of the m1 and ventral to the mental foramen; 3) vestigial mesoloph present in the first upper molar (Hershkovitz 1955; Massoia 1976; Pardiñas and Galliari 1998; Voglino *et al.* 2004).

An additional 205 rodent specimens were found together with *H. brasiliensis* (N = 1; 0.48 %) including *Calomys musculus* (N = 95; 46.12 %), *Akodon azarae* (N = 61; 29.61 %), *Oligoryzomys longicaudatus* (N = 33; 16.02 %), *Eligmodontia typus* (N = 13; 6.13 %), *Graomys griseoflavus* (N = 1; 0.48 %), *Mus musculus* (N = 1; 0.48 %), and *Reithrodon auritus* (N = 1; 0.48 %).

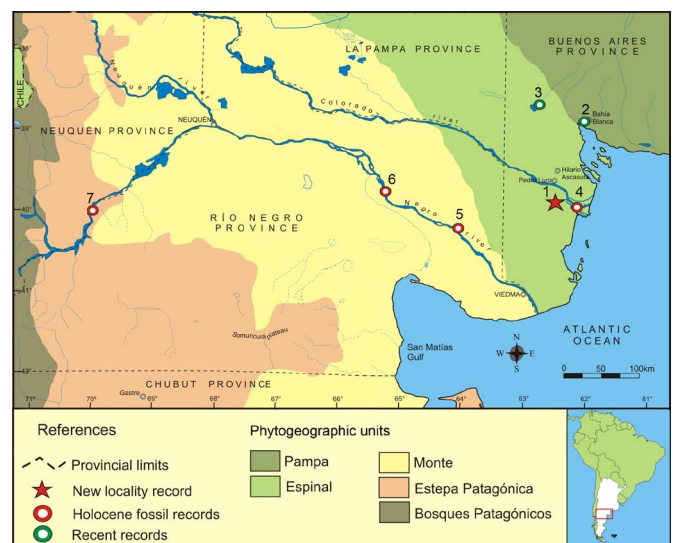


FIGURE 1. Map of northern Patagonia and adjacent areas showing the new locality for *Holochilus brasiliensis* ([1] 20 km S of Pedro Luro on Hwy 3), southern previous records ([2] Bahía Blanca, [3] Arroyo Chasicó) and Late Holocene occurrences in Patagonia (archaeological sites [4] El Tigre, [5] Angostura I, [6] Negro Muerto, and [7] Alero Arias). Main phytogeographic units according to Cabrera (1976).

This new find extends the current range of *H. brasiliensis* ca. 110 km S and constitutes the first contemporaneous record of this species in Patagonia representing the only sigmodontine rodent with amphibious habits reported in this vast region (see Pardiñas *et al.* 2003). Previous southern records of *H. brasiliensis* were reported by Waterhouse (1839) in Bahía Blanca based on a specimen collected by C. Darwin during the voyage of the Beagle; and by Massoia (1976) who listed two specimens obtained by J. Bianchini in arroyo Chasicó, 7 km upstream its mouth (see also Contreras, 1973).

We considered three likely scenarios that would explain the occurrence of *H. brasiliensis* in northern Patagonia: 1) This rodent is taking advantage of the currently-growing areas with irrigation channels, which might be used as dispersal corridors from the north of Colorado river to the south of it. In fact, in Hilario Ascasubi (a locality about 15 km N Pedro Luro, see Figure 1) “big red rats” were observed by the Instituto Nacional de Tecnología Agropecuaria personal when they burned the vegetation covering of an irrigation channel; 2) In addition to taking advantage of irrigation channels *H. brasiliensis* recent discovery in southern latitudes could be linked to global warming (*e.g.*, Moritz *et al.* 2008) which would induce Brazilian species to move southwards (Udrizar Sauthier *et al.* 2005); 3) This record represents a relictual population, remain of a wider past distribution, as *H. brasiliensis* was found in Late Holocene archaeological deposits (Figure 1) in the valleys of Negro River (Prates 2008), Limay River (Teta *et al.* 2005), and Colorado River (Stoessel *et al.* 2008).

Our finding highlights -once again- the suitability of owl-pellet analyses as a quick -although dirty- and effective approach to assess small mammal assemblages in poorly known regions. While more fieldwork needs to be conducted in unexplored areas of argentine Patagonia, collection of owl-pellets seems a cost-effective technique that ought to be used extensively.

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FIGURE 2. Remains of *Holochilus brasiliensis* found 20 km S of Pedro Luro on Hwy 3 (Buenos Aires province, Argentina). From top to bottom, anterior fragment of skull in dorsal, ventral, left lateral, and mandible in labial view. Scale bar = 10 mm.

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