

Short Note

Southernmost record for a living marsupial

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Marsupials are generally widespread throughout most of the environments present in South and Central America, with a marked reduction in diversity south of 42° S (Birney and Monjeau 2003, Brown 2004). At this latitude, only four species from three different orders occur: *Thylamys pallidior* (Thomas 1921) and *Lestodelphys halli* (Thomas 1921) (Didelphimorphia), *Rhyncholestes raphanurus* Osgood 1924 (Paucituberculata) and *Dromiciops gliroides* Thomas 1893 (Microbiotheria). Of these, the didelphids, the slender mouse opossum (*T. pallidior*) and the Patagonian opossum (*L. halli*), inhabit the dry and cold steppes of Patagonia.

Located at the southern tip of South America east of the Andes, Patagonia is a region of 786.595 km², with temperate cold weather, very strong winds (predominantly from the west) and a mean annual temperature ranging from 12°C to 3°C in a NW-SE pattern (del Valle 1998, Paruelo et al. 1998).

The Patagonian opossum (*L. halli*) is one of the most poorly known mammals from South America, with a very low representation in museum collections (Nowak 1999), little knowledge of its ecology and distribution and vulnerable status according to IUCN (Cabrera 1957, Marshall 1977, Pearson 1995, Martin 2003, IUCN 2007). The species is endemic to the Patagonian steppe and has also been recorded, marginally, in the southern Monte ecosystem (Martin 2003). In recent years, several hundred remains have been recovered from owl pellets, representing nearly 60 sites scattered throughout southern Argentina, from 32° to 48° S (Appendix).

The objectives of the present work were to document a new southernmost locality for the species and to present an update of the distribution of the species using all known collection records.

We recovered a complete skull (Figure 1) and several other partial remains (identified by pellet numbers B16, B28, B78, B90 and B125) from 137 pellets probably generated by a strigiform at Estancia “La Primavera” (48°25′14″ S, 69°33′41″ W), Santa Cruz Province, Argentina, which account for a minimum number of five individuals (MNI=5) and 13 identified specimens (NISP=13) (*sensu* Lyman 1994). Unfortunately, only one of the specimens (MLP 1.I.03.10) is an adult (with fully erupted dentition) and therefore comparisons with other materials were limited. Measurements taken follow [Martin \(2005\)](#) and are: zygomatic breadth, 21.5 mm; palatal length, 18.3 mm; palatal width, 11 mm; least interorbital constriction (LINOR), 5.2 mm; braincase width, 13.5 mm; breadth between alisphenoid bulla, 4.8 mm; first upper premolar to last upper molar (P1–M4), 11.1 mm; first upper molar to last upper molar (M1–M4), 6 mm; first lower molar to last lower molar, 7.2 mm; third upper molar, length 1.9 mm, width 1.3 mm and area 2.47 mm²; and third lower molar, length 2.1 mm, width 2.63 mm and area 2.76 mm². Most of the measurements fall within the range analyzed for a sample of >300 specimens (Martin 2005), but M1–M4, LINOR and area of the third lower molar are slightly smaller.

An update of the distribution of the species with all known localities (loc.) compiled from the literature is presented for both captured specimens and disaggregated owl pellets (Figure 2 and Appendix 1). The new finding (loc. 59) is located in the Central District of the Patagonian Phytogeographic Region (*sensu* León et al. 1998), an area with average annual precipitation of <200 mm and vegetation coverage of <50%, comprised mostly of small shrubs and cushion-forming plants (Paruelo et al. 1998). This locality extends the distribution of the species by approximately 150 km south of previous records and represents the southernmost record for a living marsupial. This range extension is beyond the home range of any strigiform bird that could have generated the deposits known from the previous southernmost locality at Piedra Museo, Santa Cruz Province, Argentina (De Santis et al. 1995; see Appendix 1). Home range estimates of great horned owls and barn owls, although seasonally variable, do not exceed a radius of 15 km (e.g., Smith et al. 1974, Frank and Lutz 1997).

Most of the previously known localities are concentrated in western Patagonia (Figure 2). In the north, four localities are found outside Patagonia (*sensu* León et al. 1998) and occur in the Provinces of Mendoza (loc. 18



Figure 1 Remains of *Lestodelphys halli* extracted from owl pellets at Estancia “La Primavera” (Santa Cruz Province, Argentina). Specimens are deposited in the mammal collection of the Departamento Zoología Vertebrados, Museum of La Plata, Argentina.

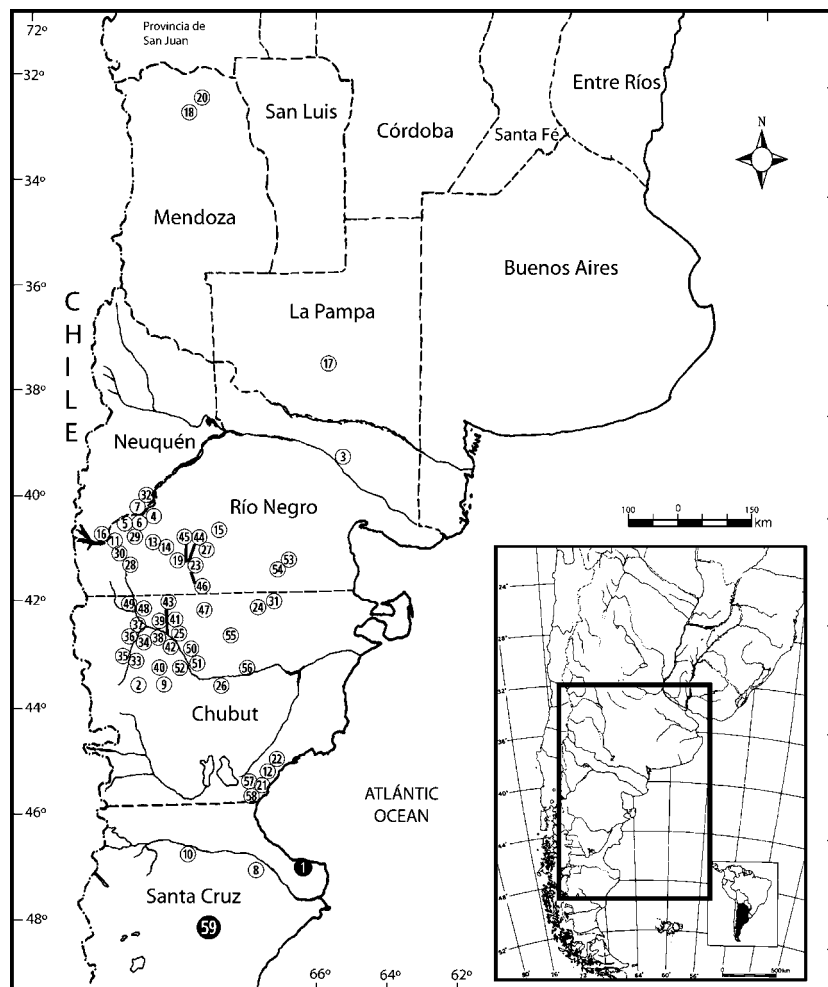


Figure 2 Recorded localities for *Lestodelphys halli* throughout southern Argentina. See Appendix for references.

and 20), La Pampa (loc. 17) and Río Negro (loc. 3), perhaps as relicts of a past range that also included the southern portion of Buenos Aires Province until the early Holocene (Goin 1999). In the south, just a few localities are concentrated near the border between Chubut and Santa Cruz Provinces (46° S) and only four localities are found in northeastern Santa Cruz, scattered throughout an area of approximately 23,000 km². It is interesting to note that despite intensive work carried out recently near the type locality (Ea. La Madrugada, loc. 1) and near Pie-

dra Museo (loc. 8), and with a large quantity of owl pellets (>400), no remains from *L. halli* have been recovered (P. Díaz, personal communication). The species has not been recorded in large areas throughout its known range and the central and western portions of Chubut and Santa Cruz Provinces remain almost unexplored.

Future work should concentrate on identifying the geographic limits of the species, improving samples between the known extremes and elucidating the environmental and physiological factors limiting its distribution.

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Appendix

Recorded localities of *Lestodelphys halli* as displayed in Figure 1

Information is given as locality number; locality name (province); bibliographic reference; latitude, longitude; and registry type. Argentine Province name is indicated as: SC, Santa Cruz; C, Chubut; RN, Río Negro; N, Neuquén; M, Mendoza and Ea. Estancia. Registry type: #trapped specimen, *recovered from owl pellets. Record localities that are too close to each other to be depicted individually on the map are followed by a letter (e.g., 37a, 37b, 37c, 37d).

- 1) Cabo Tres Puntas, Ea. La Madrugada (type locality) (SC); Thomas 1921; 47°06' S, 66°29' W; #
- 2) Ea. Los Manantiales/Languiño (C); Reig 1959; 43°18' S, 69°50' W; #
- 3) Choele Choel (RN); Marshall 1977; 39°16' S; 65°41' W; #
- 4) Confluencia (N); Massoia 1988; 40°30' S, 70°32' W; *
- 5) Pampa de Nestares (RN); Massoia and Pardiñas 1988a; 40°42' S, 70°46' W; *
- 6) Cañadón las Coloradas (RN); Massoia and Pardiñas 1988b; 40°37' S, 70°46' W; *
- 7) Cerro Castillo/Paso Flores (RN); Pardiñas and Massoia 1989; 40°33'56" S, 70°38'12" W; *
- 8) Piedra Museo (SC); De Santis et al. 1995; 47°30' S, 67°30' W; *
- 9) 30 km NW Pampa de Agnia (C); Birney et al. 1996a; 43°28.78' S, 69°49.09' W; #
- 10) Meseta el Pedrero (SC); Birney et al. 1996b; 46°46'37" S, 69°38'49" W; #
- 11) Cerro Leones (RN); Birney et al. 1996b; 41°04' S, 71°08' W; *
- 12) Pico Salamanca (C); Birney et al. 1996b; 45°30' S, 67°30' W; #
- 13) Comallo (RN); Birney et al. 1996b; 41°04' S, 70°20' W; *
- 14) 10 km E Clemente Onelli (RN); Birney et al. 1996b; 41°10' S, 70°10' W; # *
- 15) 15 km SE Los Menucos (RN); Birney et al. 1996b; 40°55' S, 68°05' W; #
- 16) Tehuel Malal (N); Birney et al. 1996b; 41°02' S, 71°10' W; *
- 17) Lihué Calel (LP); Birney et al. 1996b; 38°02' S, 65°35' W; #
- 18) Chacras de Coria (M); Birney et al. 1996b; 32°45' S, 69°00' W; #
- 19) Ea. Juquiche (RN); Pardiñas 1999; 41°20' S, 69°33' W; *
- 20) Huayquerías del Oeste (M); Pardiñas 1999; 32°20' S, 68°30' W; *
- 21) Astra 20 km N Comodoro Rivadavia (C); Pardiñas 1999; 45°44' S, 67°30' W; *
- 22) Ea. El Gauchito (C); Pardiñas et al. 2000; 45°14' S, 67°09' W; *
- 23) Ea. Calcatreo (RN); Andrade et al. 2002; 41°44' S, 69°22' W; *
- 24) Sierras de Talagapa (C); Teta and Andrade 2002; 42°14'/42°12' S, 68°14'/68°13' W; *
- 25) Paso del Sapo N° 1 (C); Pardiñas et al. 2003; 42°41'07" S, 69°43'22" W; *
- 26) Los Altares (C); Pardiñas et al. 2003; 43°53'49" S, 68°24'17" W; *
- 27) Ea. Maquinchao (RN); Pardiñas et al. 2003; 41°42' S, 68°39' W; *
- 28) Ea. Pilcañeu (RN); Pardiñas et al. 2003; 41°48' S, 70°41' W; *
- 29) Paraje Paso de los Molles (RN); Pardiñas et al. 2003; 40°55' S, 70°43' W; *
- 30) Perito Moreno (RN); Pardiñas et al. 2003; 41°03'34" S, 71°01'42" W; *
- 31) Ea. San Pedro (C); Pardiñas et al. 2003; 42°04' S, 67°34' W; *
- 32) Cañadón del Tordillo (N); Pardiñas et al. 2003; 40°24' S, 70°10' W; *
- 33) Cabaña Arroyo Pescado (C); Martin 2003; 43°04'11" S, 70°54'46" W; *
- 34) Río Gualjaina/1000 m W crossing of Provincial Roads 25 and 14 (C); Martin 2003; 43°01' S, 70°47'48" W; *
- 35a) Nahuel Pan (C); Martin 2003; 42°59'15" S, 71°10'59" W; # *
- 35b) Boquete Nahuel Pan (C); Martin 2003; 42°57'56" S, 71°09'24" W; *
- 36a) Arroyo Mayoco N° 1 (C); Martin 2003; 42°45'06" S, 70°52'12" W; *
- 36b) Arroyo Mayoco N° 2 (C); Martin 2003; 42°47' S, 70°49' W; *
- 36c) Arroyo Mayoco N° 3 (C); Martin 2003; 42°43' S, 70°50' W; *
- 36d) Cueva Watkins/Mayoco (C); Martin 2003; 42°45'01" S, 70°52'25" W; *
- 37) Gualjaina (C); Martin 2003; 42°42' S, 70°28' W; *
- 38a) Piedra Parada N° 1 (C); Martin 2003; 42°39'32" S, 70°06'34" W; *
- 38b) Piedra Parada N° 2 (C); Martin 2005; 42°40'16.8" S, 70°05'13.4" W; *
- 39) Cañadón La Buitrera (C); Martin 2003; 42°39'05" S, 70°06'11" W; *
- 40) Camino a Colan Conhué (C); Martin 2005; 43°08'06.7" S, 70°28'08.4" W; *
- 41) Cañadón del Loro (C); Martin 2005; 42°33'38" S, 69°53'58" W; *
- 42) Paso del Sapo N° 2 (C); Martin 2005; 42°40'54" S, 69°39'49.2" W; *
- 43a) Cerca de Ea. Cretón (C); Udrizar Sauthier et al. 2007; 42°41'44" S, 70°01'33" W; *
- 43b) Ea. Cretón N° 1 (C); Udrizar Sauthier et al. 2007; 42°44'38" S, 70°03'18" W; *
- 43c) Ea. Cretón N° 2 (C); Udrizar Sauthier et al. 2007; 42°42' S, 70°02' W; *
- 44) Puesto Machín (RN); Udrizar Sauthier et al. 2007; 41°40'40" S, 69°24'05" W; *
- 45) Cañadón Arroyo Quetrequile (RN); Udrizar Sauthier et al. 2007; 41°41'49" S, 69°24'13" W; *
- 46) Cañadón del Painemil (RN); Udrizar Sauthier et al. 2007; 41°44'29" S, 69°22'05" W; *

- 47) 2 km NW Gastre (C); Udrizar Sauthier et al. 2007; 42°14' S, 69°12' W; *
- 48) Campo Netchovitch, Fofó Cahuel (C); Udrizar Sauthier et al. 2007; 42°19'42" S, 70°33'40" W; # *
- 49) Fofó Cahuel (C); Udrizar Sauthier et al. 2007; 42°20'27" S, 70°28'05" W; *
- 50) Cerro Gorro Frigio (C); Udrizar Sauthier et al. 2007; 43°05'30" S, 69°19'23" W; *
- 51) Ea. El Torito (C); Udrizar Sauthier et al. 2007; 43°16'35.9" S, 69°08'29.5" W; *
- 52) Cerca de Cerro Cóndor (C); Udrizar Sauthier et al. 2007; 43°23'20" S, 69°10'13" W; *
- 53) Cerro Corona (RN); Udrizar Sauthier et al. 2007; 41°27' S, 66°54' W; *
- 54) Subida del Naciente (RN); Udrizar Sauthier et al. 2007; 41°40' S, 67°09' W; *
- 55) 4 km S Tres Banderas (C); Udrizar Sauthier et al. 2007; 42°48'31" S, 68°00'56" W; *
- 56) Cañadón Carbón (C); Udrizar Sauthier et al. 2007; 43°49'27" S, 67°51'04" W; *
- 57) Ea. Los Manantiales (C); Udrizar Sauthier et al. 2007; 45°43'59" S, 67°28'59" W; *
- 58) Comodoro Rivadavia (C); Martin, unrecorded specimen; 45°47' S, 67°27' W; #
- 59) Ea. La Primavera (SC); southernmost record, 48°25'14" S, 69°33'41" W; *

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