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A New Species of Molinema (Nematoda: Onchocercidae) in Bolivian Rodents and Emended Description of Litomosoides esslingeri Bain, Petit, and Diagne, 1989

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A NEW SPECIES OF MO LINEMA (NEMATODA: ONCHOCERCIDAE) IN BOLIVIAN RODENTS
AND EMENDED DESCRIPTION OF LITOMOSOIDES ESSLINGERI BAIN, PETIT, AND
DIAGNE, 1989

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ABSTRACT: We report the distribution of 2 species of filarioid nematodes occurring in different hosts in the central region of South America. Molinema boliviensis n. sp. was recorded as a parasite of sigmodontine and echymyid rodents in Bolivia, and Litomosoides esslingeri was recorded in sigmodontine and ctenomyid rodents from Bolivia and Argentina. Molinema boliviensis n. sp. shares several similarities with other species reported in spiny rats; however, it can be easily differentiated by the presence of a flat anterior end, gradually tapering lappets and a tubercle present in posterior end, a short, uniform buccal capsule, an oval-shaped vagina vera, and a ratio of spicules of 1:1.44. An account for the morphological variability of L. esslingeri is presented that allows the identification of the buccal capsule, the tail tip in females, and the shape of spicules as reliable diagnostic traits. A complete set of head papillae is also described. The finding of these parasites in phylogenetically unrelated hosts suggests that host capture may be a frequent phenomenon in these filarioids. Researchers should focus efforts in surveying mammals within the same ecological guild to understand the distribution and host specificity of these nematodes.

From 1984–2000, the American Museum of Natural History (AMNH), the Museum of Southwestern Biology (MSB), the Bolivian National Museum of Natural History in La Paz, and the Harold W. Manter Laboratory of Parasitology (HWML) mounted joint collecting expeditions throughout Bolivia to survey and inventory sylvatic mammals and their parasites.

Within the geopolitical boundaries of Bolivia, more than 327 species of mammals have been documented, with about 5% being endemic (Anderson, 1997). At the present time, around 140 species of rodents are known to occur in Bolivia, some of them only recently described (Salazar et al., 1994; Anderson, 1997; Anderson and Yates, 2000; Gardner et al., 2012). While the mammal fauna of the country is fairly well known, the data on the parasites are still lagging due to the paucity of workers in this area.

Members of Molinema Freitas and Lent, 1939 and Litomosoides Chandler, 1931 (Nematoda: Oncho cercinae) are known exclusively from the New World (Guerrero and Bain, 2001). Representatives of both genera have been reported from echymyid, ctenomyid (Hystricomorpha), and murid (Myomorpha) rodents in South America and from castorids in North America. At the present time, 12 species of Molinema are known and most of these parasites use mosquitoes as vectors (Bain, 1974); adults may be found in the body cavity of hystricognath rodents (11 species) and beavers (1 species) (Freitas and Lent, 1939; Anderson, 1953; Esslinger, 1974; Guerrero and Bain, 2001). To our knowledge, there is no record for any species of Molinema in Bolivia.

There are 41 species included in Litomosoides, all recorded from the thoracic and abdominal cavities of sigmodontine and ctenomyd rodents, bats, and marsupials (Caballero, 1947; Esslinger, 1973; Bain et al., 1989; Brant and Gardner, 1997; Notarnicola et al., 2000). Species of Litomosoides use mites as intermediate hosts (Bain et al., 1980). In Bolivia, they have been recorded in tuco-tucos (Hystricognathi: Ctenomyidae) and in phyllostomid and vespertilionid bats (Brant and Gardner, 1997; 2000; Notarnicola et al., 2010).

As part of our investigations on Bolivian parasite biodiversity, we herein describe a new species of Molinema parasitizing sigmodontine and echymyid rodents (Holochilus and Proechimys, respectively) and record for the first time Litomosoides esslingeri Bain, Petit and Diagne, 1989 for Bolivia and Argentina. We also provide some additional data on the morphological variability of L. esslingeri based on observations of the type specimens and material from the present study.

MATERIALS AND METHODS

Rodents collected in the field were processed following the guidelines for the use of wild mammals in research of the American Society of Mammalogists (Sikes and Gannon, 2011). Nematodes were collected and preserved following Gardner (1996) and Gardner and Jiménez (2009). Filarioids were placed directly into either 70% ethanol, 95% ethanol, or 10% formalin; some were killed and straightened in glacial acetic acid and stored in 70% ethanol. All filarioids were transported in those solutions to the Harold W. Manter Laboratory (HWML), Lincoln, Nebraska, and stored until further examination. For study of morphological characters, specimens were cleared in lactophenol and examined using a Zeiss Ultraphot or Zeiss Axioskop digital microscope (Zeiss, Oberkochen, Germany). To examine the oral papillae, the apical portion was excised from a specimen and used to prepare an en face view. The lateral cuticular internal ridge was used to identify lateral fields and the Y-shaped section of the lumen of the esophagus was used to identify the dorsal side. The uterus of 1 female was dissected to extract microfilariae. Illustrations were made with the aid of a drawing tube. Measurements are presented as follows: holotype male; paratypes males, allotype female, and paratypes females. If more than 3 specimens were examined, mean values and standard deviations are presented with ranges in parentheses; measurements from 2 specimens are separated by semicolons. Measurements are given in micrometers unless otherwise stated. Prevalence and mean intensity of infection are also provided for each species.

Specimens were deposited in the HWML (Division of Parasitology, University of Nebraska State Museum). We choose the sigmodontine rodent Holochilus sciureus Wagner, 1842 as the type host for the description of the new species of Molinema because the material included 2 males and 1 female that were well preserved. One specimen of Proechimys contained a female and a male, but they were not well preserved; the remaining hosts contained either females or males. Specimens of L. esslingeri (originally identified as Litomosoides carinii) from Melanomys caliginosus (Fomes, 1860) from Yumbo, Valle del Cauca, Colombia, were requested from the United States National Museum, Parasite Collection (Beltsville, Maryland). Material examined included 3 males, 3 females (USNM 72391), and a slide with microfilaria from blood (USNM 72392). Other acronyms used throughout the text include: AMNH: American Museum of Natural History, New York, New York; CML: Colección Miguel Lillo, San Miguel de Tucumán, Argentina;
Mammals examined in Bolivia were infected by several species of filarioid nematodes, the results of which are reported elsewhere (Brant and Gardner, 1997, 2000; Notarnicola et al., 2007, 2010). Herein, we report on a new species of Molinema for Bolivia and emend the description of L. esslingeri, a species known only from Colombia, based on material collected from Bolivia and the northwest of Argentina and on the type specimens from Colombia. For details of the localities see the Appendix.

**DESCRIPTION**

*Molinema boliviensis* n. sp.  
(Figs. 1–20; Table I)

General description (based on 4 males, 8 females): Males 1.4 to 1.6 times smaller. Anterior end flat. Rectangular cephalic shield expanded laterally, constricted in sagittal plane, wide and with rounded edges laterally (Figs. 2–5, 15–17). Oral opening minute and round. Buccal capsule wider than long, rhomboid-shaped (Figs. 4, 5). Esophagus divided, muscular and glandular parts of similar diameter; muscular esophagus observed in a single female. Deirids slightly asymmetrical, without salient point (Figs. 1, 13). Tail with 2 conical lappets terminating in narrow digitiform protuberances (Figs. 10, 20). Phasmids at base of lappets.

Male: Posterior region coiled. Area rugosa extends from coiled region to tail; with conspicuous transverse ridges (Figs. 9, 10). Spicules unequal in size and shape. Right spicule with strongly cuticularized proximal part and membranous wide distal end; rolled up and distal end with single protuberances (Fig. 11). Left spicule with well-cuticularized proximal handle; lamina membranous, supported by cuticular axis (Fig. 12). Four pairs of precloacal papillae; postcloacal pair 5 smaller and lateral relative to pair 6; 1 asymmetrical ventro-lateral papillae on posterior third of tail plus 1 symmetric terminal pair (Figs. 6–8). Lappets digitiform. Tests at level of esophago-intestinal junction.

Holotype: Length 41.4 mm; maximum width 193 at mid-body; width at nerve ring 130, at esophago-intestinal junction 170. Buccal capsule 6 ± 1.4 (5–7) high and 12.5 ± 3.5 (10–15) wide. Esophagus 1,343 ± 102.1 (1,270–1,460) long; muscular portion 373 ± 30 (300–400). Nerve ring 231.6 ± 18.9 (210–245) from anterior extremity. Deirids in 1 male 380. Tail 257.3 ± 66.3 (200–330) long. Lappets 12 ± 1 (11–13) long. Left spicule 225 ± 35.3 (200–250) long; handle 125 ± 18 (110–145) long. Right spicule 155 ± 21.2 (140–170); spicule ratio 1.144 ± 0.02 (1.42–1.47). Area rugosa 3,736 ± 412 (3,410–4,200) long.

Female: Vulva at level of esophagus, slightly posterior to muscular-glandular division. Vagina with muscular walls, oval-shaped (Figs. 13, 14). Ovejector long and muscular. Tail rounded, finishing in a terminal tubercle and 2 digitiform lappets (Figs. 19, 20).

Holotype: Length 59.3 mm. Maximum width 400; width at nerve-ring 200; at vulva 250. Distance between cephalic papillae in median view 90, in lateral view 52; cephalic ratio 1.79; distance between labial papillae in median view 52 and 25 in lateral view. Buccal capsule 6 high and 10 wide. Nerve ring and deirids 260 and 420, respectively, from anterior end. Esophagus 1,260 long; muscular portion 430 long. Vulva 560 from anterior end. Vagina 200 long; ovejector 2,500 long. Tail 275 long; width at anus 130; tail ratio 2.11. Lappets 12 long.

**RESULTS**

From the 12 species of *Molinema* currently known, 8 have been recorded from species of Echimyidae, 2 in Erethizontidae, 1 in Castoridae, and 1 in Myocastoridae. The species we herein describe presents a unique combination of characters that includes the presence of a flat anterior end, gradually tapering lappets and a tubercle present in posterior end, a short uniform buccal capsule, an oval-shaped vagina vera, and a ratio of spicules of 1:1.44.

*Molinema boliviensis* n. sp. has a flat anterior end, which differs from the concave anterior end in *Molinema diacantha* (Molin, 1858), *Molinema bifida* (Molin, 1858), *Molinema travassosi* (Artigas and Pacheco, 1933), *Molinema proechimyis* (Esslinger, 1974), and *Molinema barbarae* Guerrero and Bain, 2001. Moreover, the new species possesses a shorter esophagus compared with *M. diacantha* (mean of 1,735 in females and 1,343 in males vs. 4,895 and 4,200–4,700, respectively) and has a terminal tubercle in the tail, absent in *M. bifida*. The vulva in *M. boliviensis* n. sp. is closer to the anterior end compared with *M. travassosi*, and males have a shorter tail (mean of 257.3 vs. 330–400, respectively) (Artigas and Pacheco, 1933; Freitas, 1964; Esslinger, 1974; Guerrero and Bain, 2001). In addition, the new species differs from *M. proechimyis* in having males with a smaller spicule ratio (1.4 vs. 1.8), shorter tails, and larger microfilariae (mean of 236.5 vs. 192) (Esslinger, 1974). The females of *M. bifida*, *M. travassosi*, *M. proechimyis*, and *M. barbarae* are larger when compared with those of the new species (body length of more than 104 mm vs. a mean of 73.36 mm in our specimens). Moreover, there are another 3 differences between *Molinema* n. sp. and *M. barbarae*: first, the left spicule of the new species is shorter than that in *M. barbarae*; second, microfilariae are longer (236.5 vs. 172, respectively), and third, males lack 1 precloacal papilla (Guerrero and Bain, 2001).

*Molinema boliviensis* n. sp. also is different from *Molinema arbuta* (Highby, 1943), a parasite of Erethizon dorsatum, in having a longer and different shape of the spicules; the tip of the tail of females possesses a tubercle and lappets, absent in *M. arbuta*, and the vagina is oval-shaped with a markedly muscular duct whereas this structure is elongated and muscular in *M. arbuta* (Highby, 1943).

In addition, the new species differs from *Molinema spreanti* (Anderson, 1953), a parasite of Castor canadensis Kuhl, in having a shorter esophagus, a vulva opening near the anterior end, tail with a smaller ratio in both sexes (2.11 in
females and 4.19 in males vs. 4.36 and 5.88 respectively), and shorter microfilariae (Anderson, 1953). From Molinema nattereri Guerrero and Bain, 2001 it differs in having a more-posterior vulva opening, a smaller tail ratio, a left spicule with a longer handle (mean of 125 vs. 90), and a smaller microfilaria (210–270 vs. 165–185) (Esslinger, 1973; Guerrero and Bain, 2001).

The species sharing the most similarities with M. boliviensis n. sp. includes Molinema dessetae (Bain, 1973), and Molinema algardneri Guerrero and Bain, 2001. These 4 species are all similar in that they have a flat head, similar body sizes, and similar shape of the vulva. However, M. boliviensis can be differentiated from M. peruviensis in the shape and length of the lappets and the buccal capsule. The new species shows a muscular and glandular esophagus, which is different from the one seen in M. dessetae; in addition, the tail of females is longer (mean of 262.1 vs. 207) (Esslinger, 1974) in the arrangement of the precloacal papillae with 4 pairs instead of 3, in the shape of the vagina, and in the length of the female tail (mean of 262.1 vs. 207) (Esslinger, 1974; Guerrero and Bain, 2001). These 4 species differ in having a more-posterior vulva opening, a smaller tail ratio, a left spicule with a longer handle (mean of 125 vs. 90), and a smaller microfilaria (210–270 vs. 165–185) (Bain, 1973; Guerrero and Bain, 2001).

### REDESCRIPTION

**Litomosoides esslingeri** Bain, Petit and Diagne, 1989

(Figs. 21–32; Tables I, II)

*Diagnosis:* Filarioids were identified as *L. esslingeri* by the tubular buccal capsule with irregular thickenings, a smooth buccal cavity, a female tail with a constricted tip, the shape and length of the spicules, between 4–6 pairs of cloacal papillae (Figs. 27, 28), and conspicuous area rugosa (Fig. 32), and by a microfilaria with a large sheath (see Esslinger, 1973; Bain et al., 1989). Measurements of relevant traits for specimens collected in Bolivia and Argentina are included in Table II. In apical view, specimens possess 4 labial papillae and 4 cephalic papillae (Fig. 26).

#### Taxonomic summary

*Type hosts:* Oligoryzomys microtis Allen, 1916; Oligoryzomys sp. Bangs, 1900. *Eligmodontia puerculus* (Philippi, 1896); *Calomys lepidus* (Thomas, 1884); *Holochilus sciuereus* Wagner, 1842; *Oecomys inca* (Thomas, 1906); and *Ctenomys opimus* Wagner, 1848 from Bolivia; *Eligmodontia puerculus* from Argentina.

*Localities:* See Appendix for details on the localities from Bolivia and Argentina.

*Vouchers:* See Appendix for details on the collection numbers.

*Site of infection:* Abdominal cavity.

*Prevalence and mean intensity:* In Oligoryzomys microtis 21.73% (5/23); 6.33 (1–20) parasites.

#### Remarks

The measurements and most of the characters from specimens collected in Bolivia and Argentina match with those of paratype material and data available in the original description. The shape of the buccal capsule is uniform among all the specimens (see Fig. 25) as well as the shape of the spicules (Figs. 30, 31). Both should be considered reliable diagnostic characters. However, 3 traits show considerable variability in our specimens and in the lot from Colombia. These include the esophagus and tails of males and females which, in specimens from Argentina and Bolivia, appear to be longer. In addition, the vulva opening is placed about 1,899 from the anterior end in specimens from Argentina and

### Table I. List of species and number of rodents trapped from 4 Departments in Bolivia. Symbols indicate the positive hosts for filarioid species as follow: *Molinema boliviensis* n. sp. and *Litomosoides esslingeri*.

<table>
<thead>
<tr>
<th>Host taxon</th>
<th>Host species</th>
<th>Ascensión</th>
<th>Rio Beni</th>
<th>Totaizal</th>
<th>Yucumo</th>
<th>Rio Tijamuchí</th>
<th>San Pablo</th>
<th>Huanacaroma</th>
<th>3.5 km NE Toledo</th>
<th>Rio Barros</th>
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<tr>
<td>Echimyidae</td>
<td>Proechimys breviceuda</td>
<td>12*</td>
<td>6</td>
<td>8*</td>
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<td>Proechimys sp.</td>
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<td>Ctenomidae</td>
<td>Ctenomys opimus</td>
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<td>Akodon sp.</td>
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<td>Phyllotis santopygus</td>
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<td>Pseudoryzomys simplex</td>
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There is morphological variability among mature females that allows the identification of 2 morphs. Both morphs are present in specimens from Argentina, Bolivia, and Colombia. One of the morphs includes females possessing a slender anterior end, with a width no greater than 100 at the level of the esophago-intestinal junction and a width no greater than 180 at the level of the vulva (Fig. 21). The second morph includes females possessing a robust anterior extremity, with a width greater than 120 at the esophago-intestinal junction and a width no greater than 180 at level of the vulva (Fig. 22). Both morphs of females were observed in the same individual host in the material from Colombia (USNM 72391), as well as in the material labeled HWML63479, and HWML67116–67118. Robust females were observed in HWML63481, and HWML63483. The variability of both the body width at the level of esophago-intestinal junction (range of 70 to 130) and in the tail of females was also noted in Esslinger’s description (Esslinger, 1973). Most of the tails appear to be slender (ratio of 7.7 to 10; Fig. 23), but 2 females have thicker and shorter tails (ratio of 6.4 and 6.7; Fig. 24) whereas 2 females have slender tails (ratio of 11.5 and 19.6). This variability was also documented for the material from Colombia by establishing a range of 414 to 710 and a width range 60 to 85 (Esslinger, 1973). However, all specimens show the tip of the tail constricted (see Figs. 23, 24; and Fig. 48 from Esslinger, 1973).

Female filarioids found in Ctenomys opimus and Calomys lepidus are immature specimens; therefore, no uterine microfilariae were observed. Those specimens show the diagnostic traits for the species including the shape of the buccal capsule, anterior end, and tip of tail.

### DISCUSSION

Molinema boliviensis n. sp. presents characters that are similar to species collected from other spiny rats (Proechimys). Those characters include an esophagus not exceeding 2 mm, small buccal capsule, anterior end flat, and a complete set of precloacal papillae. The cephalic ratio in our specimens suggests that the cephalic plate is elongated laterally, and cephalic and labial papillae are present in a cuticular shield.

Infections caused by *M. boliviensis* in the spiny rat, *Proechimys breviceuda*, were documented in 4 localities from 3 different Departments in Bolivia. This contrasts with the infection of a single marsh rat, *Holochilus sciurus*, in Ascenció, locality where the infection was also detected in spiny rats. This finding suggests rodents that share habitats may be exposed to the same vectors. In addition, the presence of *M. boliviensis* n. sp. in rodents of 2 different lineages (Echimyidae and Cricetidae) suggests that the phenomenon of host capture is frequent between filarioids.

Specimens from *L. esslingeri* showed variability in the morphology of the anterior extremity of females and the length of tails. This is not the first time variability is recorded for species of *Litomosoides*, as other authors have noted it (Esslinger, 1973; Guerrero et al., 2002; Notarnicola, 2005; Notarnicola et al., 2010).

*Litomosoides esslingeri* is distributed from south Colombia (3°N) to northwestern Argentina (23°S). DNA sequences show homogeneity in specimens from Argentina (data not shown); however, no sequences have yet been obtained from specimens from Bolivia or Colombia. A wide geographic distribution and a low host specificity have been observed in species of *Litomosoides* parasitizing bats. This contrasts with the patterns observed in species parasitizing marsupials and rodents, which seem to have a reduced geographic distribution and appear to be more host-specific (Notarnicola, 2004; Notarnicola and Navone, 2011). Our data show that a species of *Litomosoides* infecting rodents may exhibit a wide geographic distribution and a low host-specificity (6 host species). This suggests that filarioid nematodes should be surveyed in several species occurring in sympatry, especially in rodents known to form an ecological guild, and that more biodiversity studies should be carried out in order to understand the distribution and the host range of the genus.

Two New World species of filarioids *Molinema raposoensis* and *Litomosoides hoplomyis* Esslinger, 1973 were reported for *Proechimys semispinosus* Tomes, 1860 in Colombia (Esslinger,
1973; 1974). Similarly, we record here the presence of M. boliviensis and L. eslingeri parasitizing the rodent Holochilus sciureus in Bolivia. These findings were made possible only due to a substantial effort to sample many thousands of individual specimens in Colombia, by Esslinger, and in Bolivia and Argentina by the authors.

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LITERATURE CITED


Procophyes brevicuuda Gunther, 1876: MSB56095, F, 13 August 1985, T. I. Mercado, NK13087, Bolivia, Santa Cruz, 15°43’S, 63°09’W, 6 km W (by road) Ascension, 240 m, HWML60291; MSB56092, F, 25 August 1985, S. Anderson, NK13320, Bolivia, Beni, 14°51’S, 66°21’W, 1 km SW Estación Biológica del Beni, Totaizal, 300 m, HWML63463; MSB56093, M, 29 August 1985, T. I. Mercado, NK13399, Bolivia, Beni, 4 km N Yucumo, 400 m, HWML63460.

We include the data as follows: Host collection number, sex, date collected, collector, field number, locality, and parasite collection number.

Molinema boliviensis n. sp.

Holochilus sciureus Wagner, 1842: MSB55987, M, 12 August 1985, T. I. Mercado, NK13055, Bolivia, Santa Cruz, 15°43’S, 63°09’W, 6 km W (by road) Ascension, 240 m, HWML63461.

Procophyes brevicuuda Gunther, 1876: MSB56095, F, 13 August 1985, T. I. Mercado, NK13087, Bolivia, Santa Cruz, 15°43’S, 63°09’W, 6 km W (by road) Ascension, 240 m, HWML60291; MSB56092, F, 25 August 1985, S. Anderson, NK13320, Bolivia, Beni, 14°51’S, 66°21’W, 1 km SW Estación Biológica del Beni, Totaizal, 300 m, HWML63463; MSB56093, M, 29 August 1985, T. I. Mercado, NK13399, Bolivia, Beni, 4 km N Yucumo, 400 m, HWML63460.

APPENDIX

We include the data as follows: Host collection number, sex, date collected, collector, field number, locality, and parasite collection number.
Yucumo, 400 m, HWML63458; ND, ND, 7 September 1985, ND, NK13520, Bolivia, La Paz, Rio Beni, HWML63457.

*Litomosoides esslingeri* (Esslinger, 1973)

*Oligoryzomys* sp.: MSB98868, M, 31 May 2004, J. L. Dunnum, NK102195, Bolivia, Beni, 15°14’11”S, 63°54’23”W, 4.5 km N of San Pablo, HWML63466.


*Eliommodontia puerulus* (Philippi, 1896): AMNH260310, M, 6 August 1984, ND, NK11521, Bolivia, Oruro, 17.40°S 67.30’W, 1 km W of Huancaroma, 3,730 m., HWML63477; MSB57112, M, 7 September 1986, S.L. Gardner, NK14507, Bolivia, Oruro, 18.9°S, 67.24’W, 37 Km. SW Camino de Oruro, 3.5 K. NE Toledo, 3,650 m., HWML60453; AMNH262808, F, 7 September 1986, S.L. Gardner, NK14509, Bolivia, Oruro, 18.9°S, 67.24’W, 37 Km. SW Camino de Oruro, 3.5 K. NE Toledo, 3,650 m, HWML60455; MACN22563, F, 25 March 2006, B. S. Coyner, ARG6687, Argentina, Salta, 23°24’58”S, 66°12’23”W, La Poma, 16 km S, 1.8 km W Barrancas, along Río de las Burras, HWML67115;

OMNH34763, M, 25 March 2006, B. S. Coyner, ARG6688, Argentina, Salta, 23°24’58”S, 66°12’23”W, La Poma, 16 km S, 1.8 km W Barrancas, along Río de las Burras, HWML67116, HWML67117, HWML67118; OMNH34765, ND, 25 March 2006, J. K. Braun, ARG6693, Argentina, Salta, 23°24’58”S, 66°12’23”W, La Poma, 16 km S, 1.8 km W Barrancas, along Río de las Burras, HWML67119; CML8549, 28 March 2006, B. S. Coyner, ARG6741, Argentina, Jujuy, 24°00’48.8”S, 66°30’52.8”W, Susques, 8.2 km S Sey, HWML67121.


*Holochilus sciureus* Wagner, 1842: AMNH261985, F, 18 August 1985, ND, NK13169, Bolivia, Beni, 14°56’S, 65°09’W, Río Tijamuchi, 240 m, HWML63483.

*Calomys lepidus* (Thomas, 1884): AMNH262790, M, 7 September 1986, NK14519, ND, Bolivia, Oruro, 18.9°S, 67.59’W, 5 km. SW Camino de Oruro, 3.5 K. NE Toledo, 3,650 m, HWML63485.