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New species and records of mites of the superfamily Sarcoptoidea (Acariformes: Psoroptidia) from mammals in Brazil

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Abstract

Sixteen species of the superfamily Sarcoptoidea (Acariformes: Psoroptidia) belonging to 10 genera of the families Atopomelidae, Listrophoridae, Chirodiscidae, and Listropsoralgidae are recorded in Brazil. Among them, three species, *Prolistrophorus hylaeamys* sp. nov. from *Hylaeamys laticeps* (Lund, 1840) (Cricetidae: Sigmodontinae) from Minas Gerais, *Lynxacarus serafirei* sp. nov. from *Galictis cuja* (Molina, 1782) (Carnivora: Mustelidae) from Rio de Janeiro (Listrophoridae), and *Didelphoecius micoureus* sp. nov. (Atopomelidae) from *Micoureus paraguayanus* (Tate, 1931) (Didelphimorphia: Didelphidae) from Minas Gerais are described as new for science. Three species of the family Listrophoridae, *Prolistrophorus bidentatus* Fain et Lukoschus, 1984 from *Akodon cursor* (Winge, 1887) (Rodentia: Cricetidae) (new host), *Prolistrophorus ctenomys* Fain, 1970 from *Ctenomys torquatus* Lichtenstein, 1830 (Rodentia: Ctenomyidae) (new host), and *Leporacarus sylvilagi* Fain, Whitaker et Lukoschus, 1981 from *Sylvilagus brasiliensis* (Linnaeus, 1758) (Lagomorpha: Leporidae) (new host) –from Minas Gerais and Rio Grande do Sul, and one species of the family Chirodiscidae, *Parakosa tadarida* McDaniel and Lawrence, 1962 from *Molossus molossus* (Pallas, 1766) (Chiroptera: Molossidae) are recorded for the first time in Brazil. The previously unknown female of *Didelphoecius validus* Fain, Zanatta-Coutinho et Fonseca, 1996 (Atopomelidae) from *Metachirus nudicaudatus* (Geoffroy, 1803) (Didelphimorphia: Didelphidae) from Minas Gerais is described. All data on host-parasite associations of sarcoptoids in Brazil are summarized. Totally, 61 sarcoptoid species of 8 families are recorded in Brazil.

Keywords

Acari, fauna, Mammalia, parasites, South America, systematics

Introduction

The mite superfamily Sarcoptoidea (Acariformes: Psoroptidia) is represented by obligate and permanent symbionts of mammals (commensals and parasites) strongly specialized to live on/in their hosts. Most of them are highly host specific being monoxenous or stenoxenous. The superfamily Sarcoptoidea currently includes about 1100 species in 12 families (Bochkov 2010; Bochkov and Mironov 2011). In Brazil, the fauna of these mites has not been thoroughly examined and represented by 61 species in eight families (see Table I). The occurrence of four other families is quite probable: mites of the Chirohynchobiidae, Dromiciocoptidae, and Lemurnyssidae are associated with South American mammals; species of the family Pneumocoptidae inhabit rodent lungs and probably occur worldwide.

In the present paper, descriptions of three new sarcoptoid species and records of three new species for Brazil are provided. Totally, 16 species belonging to eight genera of the families Atopomelidae, Listrophoridae, Chirodiscidae, and Listropsoralgidae are recorded. All data on host-parasite associations and geographical distribution of sarcoptoids in Brazil are summarized.

Materials and Methods

Collected mite specimens were softened in hot Nesbitt's solution and mounted in Hoyer's medium. Drawings were made with a Leica microscope equipped with DIC optics and with a camera lucida. In the descriptions below, the idiosomal setation follows [Griffiths et al. \(1990\)](#) with modifications by Norton

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Table I. Species of the superfamily Sarcoptoidea (Acariformes: Psoroptida) recorded in Brazil

Mite species	Host species	Host family	Host order	State (municipality)	Reference
Sarcoptidae					
<i>Sarcoptes scabiei</i> (Linnaeus, 1758)	<i>Homo sapiens</i>	Hominidae	Primates	Amazonas (Tabatinga); Pará (Belém); Rio de Janeiro (Rio de Janeiro); Rio Grande do Sul (Pelotas, Santa Maria)	Domingos <i>et al.</i> 1984; Lugon <i>et al.</i> 1992; Fernandes and Stringhini 1993; Matte <i>et al.</i> 1998; Rodrigues <i>et al.</i> , 1999; Penha <i>et al.</i> 2013
“	<i>Canis lupus</i>	Canidae	Carnivora	Minas Gerais (Lavras); Per- nambuco (Recife); Rio Grande do Norte (Mossoró); Santa Catarina (Lages)	Bellato <i>et al.</i> 2003; Dantas-Torres <i>et al.</i> 2004; Rocha <i>et al.</i> 2008; Guimarães <i>et al.</i> 2011
“	<i>Felis catus</i>	Felidae	Carnivora	Rio Grande do Norte (Mos- soró)	Rocha <i>et al.</i> 2008
“	<i>Bradypus variegatus</i>	Bradypodidae	Pilosa	Pernambuco (Recife; captive)	Oliveira <i>et al.</i> 2000
“	<i>Sus scrofa</i>	Suidae	Artiodactyla	Goiás (Goiânia, Teresópolis)	Silva <i>et al.</i> 2002; Sobestiansky <i>et al.</i> 2005
<i>Notoedres cati</i> (von Hering, 1838)	<i>Felis catus</i>	Felidae	Carnivora	Rio Grande do Norte (Mos- soró); Paraíba (João Pessoa); São Paulo (São Paulo)	Araújo 1941; Rocha <i>et al.</i> 2008; Ferreira <i>et al.</i> 2010
“	<i>Leopardus pardalis</i>	Felidae	Carnivora	Pará (Altamira)	Scifield <i>et al.</i> 2011
<i>Chirnyssoides brasiliensis</i> Fain, 1959	<i>Sturnira lilium</i>	Phyllostomidae	Chiroptera	Amapá (Macapá); Pernambuco (?)	Fain 1959
<i>Chirnyssoides caparti</i> Fain, 1959	<i>Artibeus jamaicensis</i>	Phyllostomidae	Chiroptera	Amapá (Macapá)	Fain 1959
<i>Chirnyssoides amazonae</i> Fain, 1959	<i>Carollia brevicauda</i>	Phyllostomidae	Chiroptera	Amazonas (?); Rio de Janeiro (Nova Iguaçu)	Fain 1959; Lourenco <i>et al.</i> 2013
<i>Chirnyssoides phyllostomus</i> Fain et Lukoschus, 1975	<i>Lophostoma carrikeri</i>	Phyllostomidae	Chiroptera	Pará (Belém)	Klompén 1992
Rhyncoptidae					
<i>Rhyncoptes anastosi</i> (Fain, 1962)	<i>Leontopithecus rosalia</i>	Cebidae	Primates	Rio de Janeiro (Silva Jardim)	Wilson <i>et al.</i> 1989
Atopomelidae					
<i>Chirodiscoies caviae</i> (Hirst, 1917)	<i>Cavia porcellus</i>	Caviidae	Rodentia	Rio de Janeiro (Duque de Caxias; Silva Jar- dim)	Valim <i>et al.</i> 2004
<i>Chirodiscoides galeae</i> Fain, 1972	<i>Galea spixii</i>	Caviidae	Rodentia	Minas Gerais (São Lourenço)	Fain 1979
<i>Chirodiscoides didelphicola</i> Fain, 1970	<i>Kannabateomys amblyonyx</i>	Echimyidae	Rodentia	Rio de Janeiro (East part)	Fain 1979
<i>Chirodiscoides cercomys</i> Fain, 1970	<i>Thrichomys apereoides</i>	Echimyidae	Rodentia	Minas Gerais (São Lourenço)	Fain 1979
<i>Chirodiscoides echimys</i> Fain, 1970	<i>Phyllomys thomasi</i>	Echimyidae	Rodentia	São Paulo (São Sebastião)	Fain 1979
<i>Chirodiscoides euryzygomatomys</i> Fain, 1972	<i>Euryzygomatomys spinosus</i>	Echimyidae	Rodentia	Santa Catarina (Joinville)	Fain 1979

Mite species	Host species	Host family	Host order	State (municipality)	Reference
<i>Euryzomysia catharinae</i> Fain, 1979	<i>Euryzomatomys spinosus</i>	Echimyidae	Rodentia	Santa Catarina (Joinville)	Fain 1979
<i>Isothricola amazonicus</i> Fain, 1970	<i>Isothrix</i> sp.	Echimyidae	Rodentia	Amazonas (Rio Solimões)	Fain 1979
<i>Oryzomysia longilobata</i> Fain, 1970	' <i>Oryzomys</i> ' sp.	Cricetidae	Rodentia	Minas Gerais (São Lourenço)	Fain 1979
<i>Oryzomysia oxymycterus</i> Fain, 1976	<i>Oxymycterus quaestor</i>	Cricetidae	Rodentia	Santa Catarina (Joinville)	Fain 1979
<i>Oryzomysia emarginata</i> Fain, 1979	<i>Oligoryzomys flavescens</i>	Cricetidae	Rodentia	Rio Grande do Sul (Taquara)	Fain 1979
"	<i>Nectomys squamipes</i>	Cricetidae	Rodentia	Rio de Janeiro (Itatiaia)	Fain 1979
<i>Oryzomysia neacomys</i> Fain et Lukoschus, 1976	<i>Neacomys spinosus</i>	Cricetidae	Rodentia	Pará (Belém); Rondônia (Porto Velho)	Fain 1979; Present paper
<i>Prodidelphoecius euphallus</i> Fain, 1976	<i>Monodelphis scalops</i>	Didelphidae	Didelphimorphia	Rio de Janeiro (Teresópolis)	Fain 1979
<i>Didelphoecius dissimilis</i> Fain, 1976	<i>Caluromys philander</i>	Didelphidae	Didelphimorphia	Amazonas (Manaus)	Fain 1979
<i>Didelphoecius colombianus manausensis</i> Fain, 1979	<i>Caluromys philander</i>	Didelphidae	Didelphimorphia	Amazonas (Manaus)	Fain 1979
<i>Didelphoecius scutatus</i> Fain, 1976	<i>Caluromys philander</i>	Didelphidae	Didelphimorphia	Amazonas (Manaus); Minas Gerais (Marilândia)	Fain 1979; Present paper
"	<i>Caluromys derbianus</i>	Didelphidae	Didelphimorphia	Paraná (Barra do Jacaré)	Fain 1979
<i>Didelphoecius palmeriensis</i> Fain, 1976	<i>Gracilinanus microtarsus</i>	Didelphidae	Didelphimorphia	Paraná (Palmeira); Rio Grande do Sul (?)	Fain 1979
"	<i>Micoureus paraguayanus</i>	Didelphidae	Didelphimorphia	Minas Gerais (Marilândia)	Present paper
<i>Didelphoecius capirangensis</i> Fain, 1970	' <i>Marmosa</i> ' sp.	Didelphidae	Didelphimorphia	Amazonas (Caapiranga)	Fain 1979
<i>Didelphoecius coalescens</i> Fain, 1979	' <i>Marmosa</i> ' sp.	Didelphidae	Didelphimorphia	Amazonas (Caapiranga)	Fain 1979
<i>Didelphoecius squamatus</i> Fain, 1976	<i>Thylamys karimii</i>	Didelphidae	Didelphimorphia	Rio Grande do Sul (São Lourenço do Sul)	Fain 1979
<i>Didelphoecius paranensis</i> Fain, 1970	<i>Monodelphis dimidiata</i>	Didelphidae	Didelphimorphia	Paraná (Palmeira)	Fain 1979
<i>Didelphoecius monodelphis</i> Fain, 1970	<i>Monodelphis brevicaudata</i>	Didelphidae	Didelphimorphia	Unknown locality in Brazil	Fain 1979
<i>Didelphoecius marmosae</i> Fain, 1970	' <i>Marmosa</i> ' sp.	Didelphidae	Didelphimorphia	Amazonas (Caapiranga)	Fain 1979
<i>Didelphoecius validus</i> Fain, Zanatta-Coutinho et Fonseca, 1996	<i>Metachirus nudicaudatus</i>	Didelphidae	Didelphimorphia	Minas Gerais (Belo Horizonte, Marilândia)	Fain <i>et al.</i> 1996; Present paper
<i>Didelphoecius micoureus</i> sp. nov.	<i>Micoureus paraguayanus</i>	Didelphidae	Didelphimorphia	Minas Gerais (Marilândia)	Fain <i>et al.</i> 1996; Present paper
<i>Didelphilichus serrifer</i> Fain, 1970	<i>Didelphis aurita</i>	Didelphidae	Didelphimorphia	Rio Grande do Sul (?); Rio de Janeiro (?); Minas Gerais (Marilândia)	Fain 1979; Present paper
"	<i>Didelphis albiventris</i>	Didelphidae	Didelphimorphia	Minas Gerais (Belo Horizonte)	Fain <i>et al.</i> 1996

Mite species	Host species	Host family	Host order	State (municipality)	Reference
<i>Metachiroecius brasiliensis</i> Fain, Zanatta-Coutinho et Fonseca, 1996	<i>Metachirus nudicaudatus</i>	Didelphidae	Didelphimorphia	Minas Gerais (Belo Horizonte, Mariléia)	Fain <i>et al.</i> 1996; Present paper
Listrophoridae					
<i>Leporacarus gibbus</i> Pagenstecher, 1861	<i>Oryctolagus cuniculus</i>	Leporidae	Lagomorpha	Pará (Bragantina); São Paulo (Mogi das Cruzes); Rio Grande do Norte (Mossoró); Rio Grande do Sul (Santa Maria)	Silva <i>et al.</i> 2006; Serra-Freire <i>et al.</i> 2010; Oliveira <i>et al.</i> 2011
<i>Leporacarus sylvilagi</i> Fain, Whitaker et Lukoschus, 1981	<i>Sylvilagus brasiliensis</i>	Leporidae	Lagomorpha	Minas Gerais (Mariléia)	Present paper
<i>Lynxacarus radovskyi</i> Tenório, 1974	<i>Felis catus</i>	Felidae	Carnivora	Rio Grande do Sul (Porto Alegre); Pernambuco (Recife); Rio de Janeiro (?; Rio de Janeiro, Niterói); Rio Grande do Norte (Mossoró); Pará (Belém); Paraíba (João Pessoa)	Faccini and Coutinho 1987; Serra-Freire <i>et al.</i> 2002; Jaffe <i>et al.</i> 2005; Romeiro <i>et al.</i> 2007; Rocha <i>et al.</i> 2008; Aguiar <i>et al.</i> 2009; Ferreira <i>et al.</i> 2010; Mendes-de-Almeida <i>et al.</i> 2011
<i>Lynxacarus serrafreirei</i> sp. nov.	<i>Galictis cuja</i>	Mustelidae	Carnivora	Rio de Janeiro (Seropédica)	Present paper
<i>Prolistrophorus argentinus</i> (Hirst, 1921)	<i>Cerradomys subflavus</i>	Cricetidae	Rodentia	Minas Gerais (Mariléia)	Fain <i>et al.</i> 1996
<i>Prolistrophorus ctenomys</i> Fain, 1970	<i>Ctenomys torquatus</i>	Ctenomyidae	Rodentia	Rio Grande do Sul (Cachoeira do Sul)	Present paper
<i>Prolistrophorus pernamboucensis</i> Fain, 1973	' <i>Oryzomys</i> ' sp.	Cricetidae	Rodentia	Minas Gerais (São Lourenço)	Fain and Lukoschus 1984
<i>Prolistrophorus amazonicus</i> Fain, 1970	<i>Hylaeamys laticeps</i>	Cricetidae	Rodentia	Mato Grosso (Chapada)	Fain 1973
<i>Prolistrophorus akodon</i> Fain et Lukoschus, 1984	<i>Necomys lasiurus</i>	Cricetidae	Rodentia	Minas Gerais (Mariléia)	Fain <i>et al.</i> 1996
<i>Prolistrophorus nectomys</i> Fain, 1970	<i>Mesomys hispidus</i>	Echimyidae	Rodentia	Pará (Marajó)	Fain 1973
<i>Prolistrophorus cryptophallus</i> Fain, 1970	<i>Kannabateomys amblyonyx</i>	Echimyidae	Rodentia	Santa Catarina (Joinville)	Fain, 1973
<i>Prolistrophorus hylaeamys</i> sp. nov.	<i>Hylaeamys laticeps</i>	Cricetidae	Rodentia	Minas Gerais (Mariléia)	Present paper
<i>Prolistrophorus bidentatus</i> Fain et Lukoschus, 1984	<i>Akodon cursor</i>	Cricetidae	Rodentia	Minas Gerais (Mariléia)	Present paper
<i>Sclerolistrophorus oxymycterus</i> Fain, 1976	<i>Oxymycterus quaestor</i>	Cricetidae	Rodentia	Santa Catarina (Joinville)	Fain and Lukoschus 1980
"	<i>Hylaeamys megacephalus</i>	Cricetidae	Rodentia	Minas Gerais (Mariléia)	Fain <i>et al.</i> 1996
"	<i>Hylaeamys laticeps</i>	Cricetidae	Rodentia	Rio de Janeiro (Piquete)	Sikora and Bochkov 2012
<i>Sclerolistrophorus oryzomys</i> Fain, 1976	<i>Hylaeamys laticeps</i>	Cricetidae	Rodentia	Mato Grosso (Chapada); Minas Gerais (Mariléia)	Fain 1976; Present paper
Chirodiscidae					
<i>Labidocarpellus chrotopterus</i> (Fain, 1976)	<i>Chrotopterus auritus</i>	Molossidae	Chiroptera	Santa Catarina (Joinville); Mato Grosso (?)	Fain 1982

Mite species	Host species	Host family	Host order	State (municipality)	Reference
<i>Lawrenceocarpus mimon</i> Fain, 1970	<i>Mimon bennettii</i>	Phyllostomidae	Chiroptera	Amazonas (?)	Fain 1973
<i>Paralabidocarpus tonatiae</i> Fain, 1970	<i>Sturnira lilium</i>	Phyllostomidae	Chiroptera	Rio Negro (Rio Curiay)	Fain 1973
<i>Dentocarpus silvai</i> Dusbábek et Cruz, 1966	<i>Molossus molossus</i>	Molossidae	Chiroptera	Rio de Janeiro (Rio de Janeiro)	Fonseca <i>et al.</i> 2005
“	<i>Molossus rufus</i>	Molossidae	Chiroptera	Rio de Janeiro (Silva Jardim)	Fonseca <i>et al.</i> 2005
<i>Parakosa flexipes</i> (Pinichpongse, 1963)	<i>Molossus rufus</i>	Molossidae	Chiroptera	Bahia (Barro Preto)	Gomes <i>et al.</i> 2012
“	<i>Molossus molossus</i>	Molossidae	Chiroptera	Rio de Janeiro (Cachoeira de Macacu); Mato Grosso (Barão de Melgaço)	Present paper
<i>Parakosa tadarida</i> McDaniel et Lawrence, 1962	<i>Molossus molossus</i>	Molossidae	Chiroptera	Mato Grosso (Barão de Melgaço)	Present paper
Myocoptidae					
<i>Myocoptes musculus</i> (Koch, 1844)	<i>Mus musculus</i>	Muridae	Rodentia	São Paulo (?); Rio de Janeiro (?); Rio Grande do Sul (Porto Alegre); Paraíba (Patos)	Amaral <i>et al.</i> 1975; Fróes <i>et al.</i> 1974; Santos <i>et al.</i> 2006
Listropsoralgidae					
<i>Listropsoralges marmosae</i> Fain, 1965	<i>Gracilinanus microtarsus</i>	Didelphidae	Didelphimorphia	Santa Catarina (Joinville)	Bochkov <i>et al.</i> 2013
<i>Listropsoralges caluromys</i> Bochkov et Wauthy, 2009	<i>Caluromys lanatus</i>	Didelphidae	Didelphimorphia	Paraná (Barra do Jacaré)	Bochkov <i>et al.</i> 2013
“	<i>Caluromys philander</i>	Didelphidae	Didelphimorphia	Pará (Belém); Alagoas (Mangabeiras)	Bochkov <i>et al.</i> 2013; Present paper
<i>Listropsoralges monodelphis</i> Fain, 1965	<i>Monodelphis dimidiata</i>	Didelphidae	Didelphimorphia	Paraná (Palmeira)	Bochkov <i>et al.</i> 2013
<i>Listropsoralges vossi</i> Bochkov, OConnor et Grootaert, 2013	<i>Monodelphis domestica</i>	Didelphidae	Didelphimorphia	Pernambuco (?)	Bochkov <i>et al.</i> 2013
Gastronyssidae					
<i>Rodhainyssus myotis</i> Fain, 1967	<i>Histiopus velatus</i>	Vesperilionidae	Chiroptera	Paraná (Palmeira)	Bochkov <i>et al.</i> 2008

A few obvious museum contaminations (Fain 1979) are not included (they are indicated in host-parasite list by Bochkov 2010)

Two species inquirendae, *Prolistophorus dolichus* Lizaso, 1975 and *Prolistophorus inornatus* Lizaso, 1977, are inadequately described making their differentiation impossible, and they are not included in this list

“ – same mite species

? – unknown municipality

(1998) concerning coxal setae. The leg setation follows Grandjean (1939). All measurements are in micrometres (µm) and were taken as follow: body length = the total length from the anterior extremity of the prescapular shield to the posterior border of the body; body width = width at the level of setae *se* (Listrophoridae) or setae *c2* (Atopomelidae); length of dorsal shields = maximum length, measured along the median line of the shields; length of opisthosoma = length from the posterior

margins of trochanter IV insertions to the posterior border of the opisthosoma; length of the posterior legs = length from the most basal point of the trochanter to the apex of the tarsus, excluding pretarsus; tarsal length was measured without pretarsus. Systematics of Brazilian hosts follow Gardner (2008) and Patton *et al.* (2015), non Brazilian hosts – according to Wilson and Reeder (2005). Mite specimen and some host voucher depositories are cited using the following abbreviations:

MNRJ – Museu Nacional da Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil;

MZUSP – Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil;

UMMZ – Museum of Zoology, University of Michigan, Ann Arbor, MI, USA;

ZISP – Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

Systematics

Family Listrophoridae Mégnin et Trouessart, 1884

Genus *Sclerolistrophorus* Fain, 1976

Sclerolistrophorus oryzomys Fain, 1976

Sclerolistrophorus oryzomys Fain, 1976a: 41; Fain and Lukoschus 1980: 30, Fig. 2; Fain and Ritzi 2001: 253.

Material examined. 10 females from *Hylaeamys laticeps* (Lund, 1840) (Rodentia: Cricetidae), BRAZIL: Minas Gerais, Mariléia, Parque Estadual do Rio Doce, 19°38'31"S, 42°31'46"W, 16 October 2004, coll. D.M. Avelar (host ring 1406); 4 females from same host and data (host ring 1412). Material in MZUSP and ZISP (7 females).

Hosts and distribution. This species is recorded exclusively from the type host *Hylaeamys laticeps* (Rodentia: Cricetidae) in Brazil (Mato Grosso and Minas Gerais) (Fain and Lukoschus 1980; present paper).

Genus *Prolistrophorus* Fain, 1970

Subgenus *Prolistrophorus* Fain, 1970

Prolistrophorus (Prolistrophorus) hylaeamys sp. nov. (Figs 1, 2)

Male (holotype, Fig. 1). Body 355 long (350–385 in 7 paratypes), 115 wide (110–120). Prescapular shield 100 long (90–100). Posterior margin of prescapular shield distinctly sclerotised, not interrupted medially. Postscapular shield 60 long (60–65), with 4–5 pairs of dark lateral transverse markings present posterior to setal bases *si*, none of them reaching median frame. Median frame (not sclerotised median area in postscapular shield) closed, well developed – about 40 long and 25 maximum wide. Median apodeme present. Soft cuticle of median frame covered by numerous (23–26) transverse striae. Hysteronotal shield with uneven anterior margin, 155 long (155–160), occupying most of hysteronotum. Lateral margins of hysteronotal shield without incisions. This shield covered by 4–5 regularly spaced fine transversal striae in anterior half. Posterior half of hysteronotal shield between levels of setal bases *d2* and *e1* covered by a few slightly thickened and interrupted transverse striae. Supranal concavity distinctly developed, tapering anteriorly, with blunt anterior end, about 30 long and 25 wide at level of posterior margin. Area between postscapular and

hysteronotal shields 32 long (32–40), covered by 4–5 transverse striae. Opisthosoma 105 long (105–115). Opisthogaster without scales and striations. Coxal fields III only slightly dilated. Apodemes IIIb greatly reduced. Ventral paramedian shields posterior to coxal fields IV absent. Sclerites connecting genital apparatus and coxal fields IV absent. Pregenital apodeme distinctly developed, arch-like. Setae *4b* situated immediately anterior to pregenital apodeme, on soft cuticle. Penis about 12 long, distinctly curved; setae *g* not discernible (probably absent). Adanal suckers oval, their diameter about 12. Minimal distance between these suckers 6 long. Opisthosomal lobes weakly developed, terminal cleft about 20 long, lobes about 15 wide, without triangular projections. Setae *h2* about 90 long; setae *h3* present, narrowly lanceolate, about 15 long. Legs III and IV subequal (about 75 long and 25 wide at level of trochanters), shorter than opisthosoma. Tarsi III and IV about 20 long without dorso-apical projection. Setae *fIV* slightly inflated, setae *dIV* and *eIV* filiform. Solenidia ωI , II about 10 long, $\omega 3I$ about 25 long, ϕI , II about 40 long.

Female (9 paratypes, Fig. 2). Body 425–450 long, 125–130 wide, not curved ventrally in anterior third. Prescapular shield 100–105 long. Postscapular shield 75–80 long, with 5–6 pairs of dark lateral transverse markings present posterior to setal bases *si*, none of them reaching median frame. Median frame closed, well developed – about 50 long and 45 wide. Median apodeme present. Soft cuticle of median frame covered by numerous (23–25) transverse striae. Hysteronotal shield 50–55 long, with 5–6 pairs of lateral striae. Anterior margin of this shield with short and narrow median incision. Setal bases *d1* situated at level of posterior margin of hysteronotal shield. Area between posterior margin of hysteronotal shield and level of hysteronotal glands crossed by 3–4 transverse body striae. Area between postscapular and hysteronotal shields about 45 long, covered by 5–6 transverse striae, slightly sclerotised. Hysteronotal shield not fused with sclerotisation of coxal fields IV. Opisthosoma 150–160 long. Opisthonotum covered by regularly spaced 15–17 transverse striae, slightly sclerotized. Lateral shields of opisthosoma absent. Protrusion of bursa copulatrix situated at level of setal bases *ps1*. Spermatheca located at level of setal bases *e1*. Setae *h2* short, about 5 long, subequal in length to other opisthosomal setae. Apodemes IIa fused to each other into Y-shaped sclerite. Cuticle between coxal fields II not striated. Derivatives of apodemes IIIa fused at inner tips, strongly sclerotised. Setae *4b* absent. Opisthogaster covered by small scales confined to longitudinally striated cuticle. Legs III and IV subequal, 70–80 long. Setae *dIII* and *dIV* 1.5 times shorter than respective tarsi without pretarsus. Solenidia ωI , II about 12 long, $\omega 3I$ about 18 long, and ϕI , II about 15 long.

Type material: Holotype male, 7 male and 9 female paratypes from *Hylaeamys laticeps* (Lund, 1840) (Cricetidae: Sigmodontinae), BRAZIL: Minas Gerais, Mariléia, Parque Estadual do Rio Doce, 19°38' 31"S, 42°31'46"W, 17 June 2005, coll. M.P. Valim (host ring 1458).

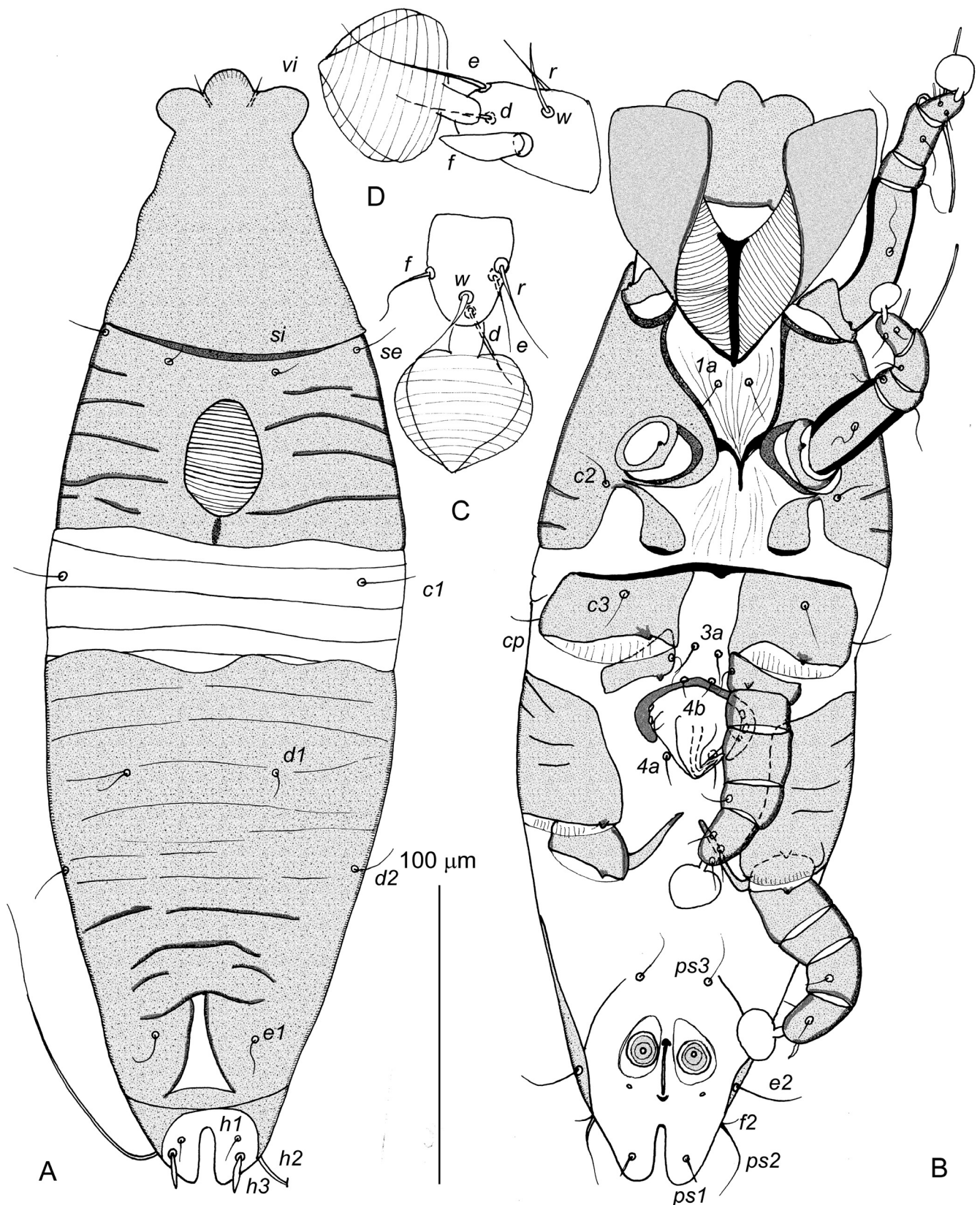


Fig. 1. *Prolistrophorus hylaeamys* sp. nov., male. **A** – in dorsal view; **B** – in ventral view; **C** – tarsus III in ventral view; **D** – tarsus IV in ventral view. Scale bars: A, B = 100 µm; C, D = 50 µm

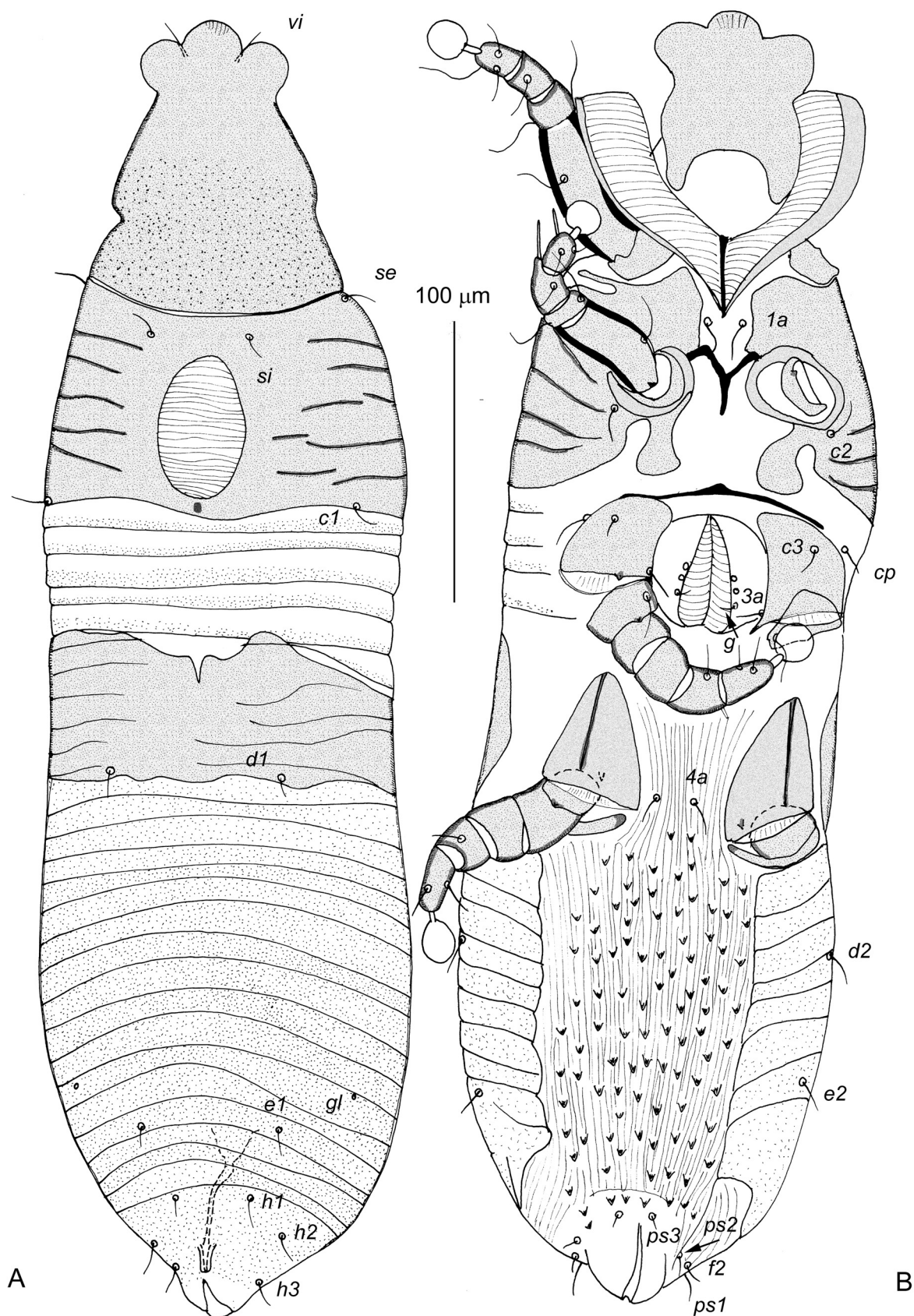


Fig. 2. *Prolistophorus hylaeamys* sp. nov., female. A – in dorsal view; B – in ventral view

Type depositions: Holotype, 3 male, and 5 female paratypes – at MZUSP; 3 male and 3 female paratypes – at ZISP, 1 male and 1 female paratype – at UMMZ.

Hosts and distribution: This species is known only from *Hylaeamys laticeps* from Brazil.

Etymology: The specific epithet derives from the generic name of the host and is a noun in apposition.

Differential diagnosis: *Prolistophorus* (*P.*) *hylaeamys* sp. nov. is most similar to *P. (P.) argentinus* (Hirst, 1921). In both sexes of these species, the median frame of the postscapular shield is closed and large, the transverse striae between the postscapular and hysteronotal shields are slightly sclerotised, the postscapular shield bears laterally only slightly thickened striae, not reaching the median frame; in males, legs IV are shorter than the opisthosoma, shields posterior to coxal fields IV are absent, apodemes IIIb are greatly reduced, the hysteronotal shield is covered by a few (5–6) transverse striae in anterior half, the opisthosomal lobes are 1.3 times longer than wide at base; in females, scales of the opisthogaster are situated only on the longitudinally striated cuticle. These species differ from each other by the following features. In males of *P. hylaeamys*, the pregenital apodeme is arch-like (vs. an inverted Y in *P. argentinus*), the hysteronotal shield is with distinct transverse striae in the posterior half (vs. smooth), the supranal concavity distinctly developed, tapering (vs. weakly discernible); in females, the anterior margin of the hysteronotal shield is with a short median incision (vs. without incision), the bursa copulatrix is situated at the level of setal bases *e1* (vs. slightly posterior to setal bases *d2*).

Subgenus *Aprolistophorus* Fain, 1980

Prolistophorus (*Aprolistophorus*) *bidentatus* Fain et Lukoschus, 1984

Prolistophorus (*Aprolistophorus*) *bidentatus* Fain et Lukoschus, 1984: 176, Figs 17, 18.

Material examined. 4 females from *Akodon cursor* (Winge, 1887) (Rodentia: Cricetidae), BRAZIL: Minas Gerais, Mari-léia, Parque Estadual do Rio Doce, 19°38'31"S, 42°31'46"W, 16 December 2005, coll. M.P. Valim (host ring 1382), 54 males and 35 females from same host and data (host ring 1428), 1 male from same host and data (host ring 1419), 1 male from same host and data (host ring 1417), 1 female from same host and data (host ring 1417), 12 males and 3 females from same host and data (host ring 1429), 5 males and 5 females from same host and data (host ring 1438). Material in MZUSP, UMMZ (5 males and 5 females) and ZISP (10 males and 10 females).

Hosts and distribution. *Lestoros inca* (Thomas, 1917) (Paucituberculata: Caenolestidae) (type host) from Peru and *Reithrodontomys megalotis* (Baird, 1857) (Rodentia: Cricetidae) from USA (California) (Fain and Lukoschus 1984), *Akodon cursor* (Rodentia: Cricetidae) [**new host**] from Brazil (Minas Gerais) (present paper).

Prolistophorus (*Aprolistophorus*) *ctenomys* Fain, 1970

Prolistophorus ctenomys Fain, 1970: 281, 1973: 31, Figs 21–24. *Prolistophorus* (*Aprolistophorus*) *ctenomys*, Fain and Lukoschus 1984: 165.

Material examined. 5 males and 5 females from *Ctenomys torquatus* Lichtenstein, 1830 (Rodentia: Ctenomyidae), BRAZIL: Rio Grande do Sul, Cachoeira do Sul, coll. T.R.O. Freitas (leg. P.M. Linardi) (field number TR921). Material in MZUSP and ZISP (2 males and 2 females).

Hosts and distribution. *Ctenomys talarum* Thomas, 1898 (Rodentia: Ctenomyidae) (type host) from Argentina (Fain 1970), *Ctenomys torquatus* [**new host**] from Brazil (Rio Grande do Sul) (present paper).

Genus *Lynxacarus* Radford, 1951

Subgenus *Lynxacarus* Radford, 1951

Lynxacarus (*Lynxacarus*) *serrafreirei* sp. nov. (Figs 3–6)

Male (holotype, Figs 3, 4). Body 405 long (395 in 1 paratype), 190 wide (200 in 2 paratypes). Prescapular shield 115 long (110). Anterior margin of prescapular shield slightly convex. Postscapular shield 62 long (60–65), completely covered by 12–14 dark transverse striae. Hysteronotal shields very short, situated at level of legs III insertions, 56 long (57–60), 65 wide (65–67), completely covered by transverse dark lines and bearing setae *d2*. Minimal distance between hysteronotal shields 55 (56–60). Area between postscapular and hysteronotal shields about 87 long (85–90). Opisthosomal shields absent. Opisthosoma 85 long (80–87). Coxal fields II with distinct auxiliary valves. Coxal fields III smooth. Coxal apodemes IVb about 50 long. Penis about 5 long; setae *g* very small, membranous with 2 tips (Fig. 3B). Pregenital apodeme about 25 long, as an inverted Y, its median and lateral branches subequal in length. Adanal suckers oval, their diameter about 15 long. Setae *f2* and *ps2* thicker, spur-like. Opisthosomal lobes weakly developed, each with small triangular lateral projection, about 12 long. Setal lengths: *si* 51 (49–52), *se* 61 (60–62), *c1* 40 (41–42), *c2* 115 (115–120), *c3* 16 (15–17), *cp* 30 (28–30), *d1* 50 (49–50), *d2* 51 (50–53), *e1* 220 (220–225), *e2* 225 (220–225), *f2* 10 (9–11), *h1* 6 (5–6), *h2* 405 (400–410), *h3* 2 (2–3), *ps1* 11 (10–11), *ps2* 21 (20–22), and *ps3* 81 (80–85). Legs III and IV about 140 and 150 long, respectively. Femur I without dorso-apical tooth. Femora and genua III and IV with short ventral membranous projection each. Setae *dIII* longer than respective tibia and tarsus, about 70 long. Lengths of solenidia: *ωI* 12 (13), *ωII* 35 (33), *ω3I* 47 (45), *φI* 70 (65), and *φII* 77 (75).

Female (12 paratypes, Figs 5, 6). Body 465–485 long, about 250 wide in lateral view at level of setal bases *c2*. Prescapular shield about 135 long with slightly convex anterior margin. Postscapular shield 70–75 long, with 12–14 dark transverse lines. Median apodeme present. Setae *c1* situated

on posterior margin of postscapular shield. Dorsal surface of idiosoma uniformly striated. Idiosomal venter without scales or tubercles. Lengths of idiosomal setae: *si* 28–31, *se* 110–125, *c1* 80–85, *c2* 120–130, *c3* 23–25, *cp* 60–63, *d1* 50–55, *d2* 70–73, *e1* and *e2* about 105, *f2*, *h1*, *ps1*, *ps2*, and *ps3* 10–20, *h2* and *h3* about 225. Femur I without Legs III about 100 long, legs IV about 115 long. Setae *dIII* and *dIV* about 110 long. Lengths of solenidia: ω I 12–14 long, ω II 26–30 long, ω 3 I 38–40 long, ϕ I 23–25, and ϕ II 19–20 long.

Type material: Holotype male, 2 male and 13 female paratypes from *Galictis cuja* (Molina, 1782) (Carnivora: Mustelidae), BRAZIL: Rio de Janeiro, Seropédica, coll. CETAS team (leg. R.P. Mello).

Type depositories: Holotype, 1 male and 7 female paratypes – at MZUSP, 1 male and 4 female paratypes – at ZISP, 2 female paratypes – at UMMZ.

Hosts and distribution: This species is known only from *Galictis cuja* from Brazil (Rio de Janeiro) (present paper).

Etymology: The specific epithet is dedicated to the late professor, Dr. Nicolau M. Serra-Freire (13.xii.1947–

24.vi.2015), for his introduction of the junior author in ectoparasitology.

Differential diagnosis: *Lynxacarus* (*L.*) *serrafreirei* sp. nov. is most similar to *L. (L.) semnopithecii* Fain, 1970. In males of both species, the opisthosomal shields are absent, the postscapular shield is longer than 60, apodemes IVb 50–60 long, the median and lateral branches of pregenital sclerite are subequal in the length; in females, the ventral opisthosomal surface is without scales or tubercles. These species differ from each other by the following features. In both sexes of *L. serrafreirei*, femur I is without dorso-apical tooth (vs. with tooth in *L. semnopithecii*); in males, setae *d1* are situated off the hysteronotal shields (vs. on this shields), setae *se* are as long as the postscapular shield (vs. twice shorter than this shield), setae *g* are membranous with two apices (vs. filiform), setae *e1* are 220–225 long (vs. 29–31 long), setae *ps2* are 2 times longer than *f2* (vs. subequal), setae *ps3* are 80–85 long (vs. 20–30 long), setae *dIII* longer than respective tibia and tarsus (vs. shorter than respective tarsus); in females, setae *dIII* and *dIV* are slightly longer than the respective legs without the pretarsus (vs. not longer than tarsus).

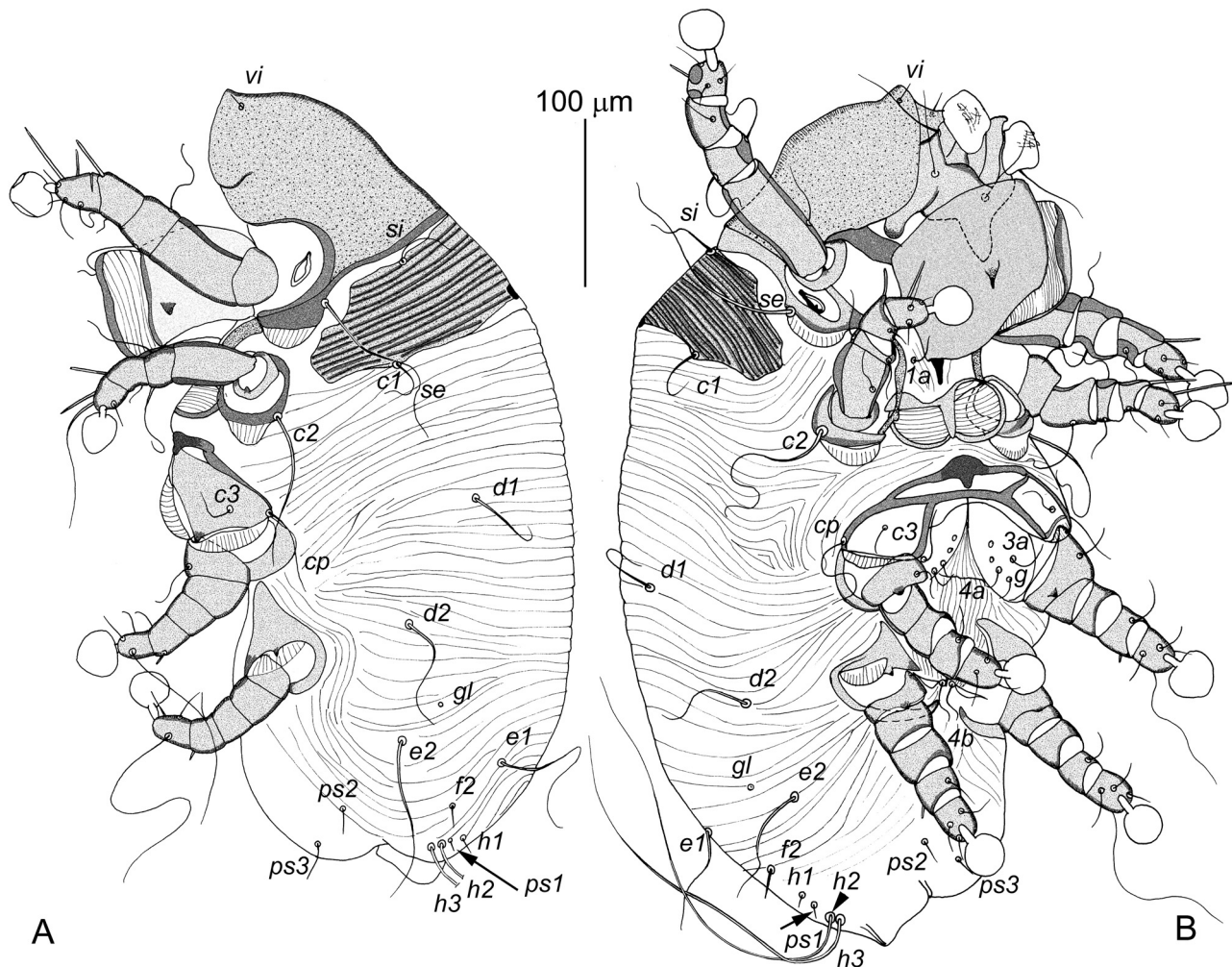


Fig. 3. *Lynxacarus serrafreirei* sp. nov., male. A – in dorsal view; B – in ventral view

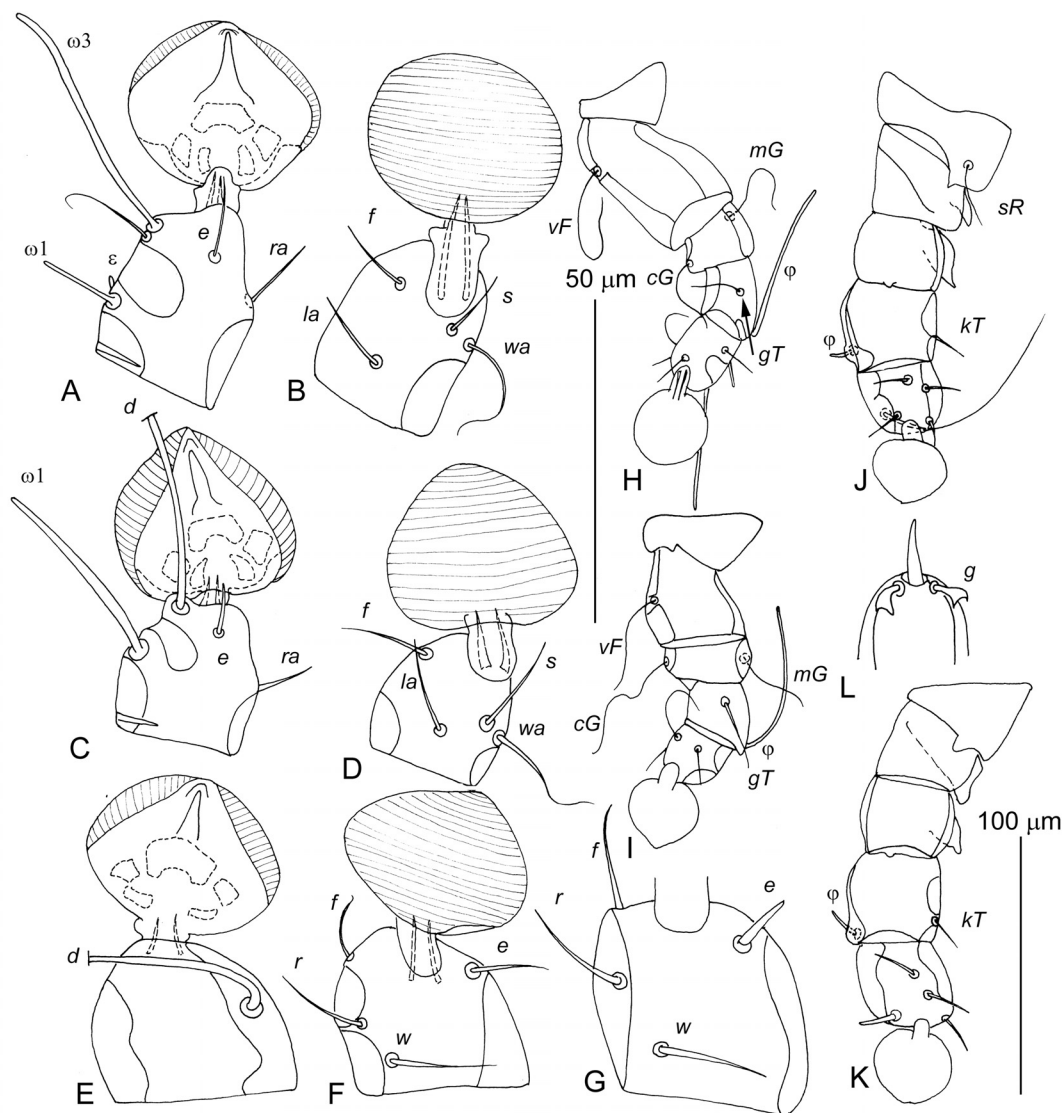


Fig. 4. *Lynxacarus serrafreirei* sp. nov., details of male. **A** – tarsus I in dorsal view; **B** – same in ventral view; **C** – tarsus II in dorsal view; **D** – same in ventral view; **E** – tarsus III in dorsal view; **F** – same in ventral view; **G** – tarsus IV in ventral view; **H** – **K** – legs I–IV in ventral view, respectively, **L** – genital setae (g). Scale bars: **A** – **G**, **L** = 50 μm; **H** – **K** = 100 μm

Genus *Leporacarus* Fain, 1970
Subgenus *Leporacaroides* Fain, 1971

***Leporacarus (Leporacaroides) sylvilagi* Fain, Whitaker et Lukoschus, 1981**

Leporacarus (Leporacaroides) sylvilagi Fain, Whitaker et Lukoschus, 1981: 214; Fain *et al.* 1983: 68, Figs 4–6.

Material examined. 8 males and 9 females from *Sylvilagus brasiliensis* (Linnaeus, 1758) (Lagomorpha: Leporidae), BRAZIL: Minas Gerais, Marilândia, Parque Estadual do Rio Doce, 19°38'31"S, 42°31'46"W, 18 June 2005, coll. M.P. Valim. Material in MZUSP and ZISP (4 males and 4 females).

Hosts and distribution. *Sylvilagus bachmani* (Waterhouse, 1839) (Lagomorpha: Leporidae) (type host) from USA (Ore-

gon) (Fain *et al.* 1981, 1983) and *Sylvilagus brasiliensis* [**new host**] from Brazil (Minas Gerais) (present paper).

Family Atopomelidae Gunther, 1942

Genus *Didelphoecius* Fain, 1970

***Didelphoecius micoureus* sp. nov.** (Figs 7, 8)

?*Didelphoecius didelphicola* Fain, 1970: Fain *et al.* 1996: 58 (probable misidentification).

Male (holotype, Figs 7, 8A, B). Body 310 long (300–315 in 10 paratypes), 145 wide (135–145). Prescapular shield 54 long (50–55), smooth. Sclerotized lateral parts of prescapular shield about 10 wide. Postscapular shields 35 long (33–38) and about 45 wide at level of posterior margin, smooth, separated from

prescapular shield. Distance between postscapular shields about 43. Hysteronotal shield smooth, about 65 long laterally (from level of setal bases *d1* to level of setal bases *e1*). Its anterior margin with very deep an U-shaped median incision about 45 long; its posterior margin deeply and widely concave, length of this concavity about 57. Length of hysteronotal shield in midline about 20. Lateral arms of hysteronotal shield distinctly developed, about 125 long and about 17 maximum wide, reaching level of setal bases *c2*. Distance between apices of lateral arms of hysteronotal shield about 160. Soft cuticle between postscapular and hysteronotal shield covered by fine transverse membranous folds, entire or interrupted. Dorsal cuticle posterior to hysteronotal shield covered by numerous triangular scales. Opisthosoma about 150 long. Opisthosomal end widely rounded. Penis about 15 long. Paragenital sclerites parallel to each other, with hook-like posterior ends. Diameter of adanal suckers about 17; distance between suckers about 12. Adanal shield entire, arch-like, its posterior ends reaching level of seta *ps2* bases; setae *ps3* situated at adanal shield. Setae *ps1* membranous, inflated and finger-like. Setae *e1* about 40, *e2*, *h1*, and *h2* 60–65, and *h3*

about 45 – all filiform. Leg III about 125 long; femur III 18–20 wide. Leg IV about 115 long; femur IV 35–38 wide. Femora and genua III and IV distinctly separated from each other. Tibiotarsi III and IV about 45 and 40 long, respectively. Solenidia ϕ III and ϕ IV about 45 and 70 long, respectively.

Female (10 paratypes, Fig. 8C, D). Body 370–385 long, about 140 wide in lateral view at level of setal bases *c2*. Prescapular shield 40–50 long; sclerotized lateral parts of this shield about 15 wide. Postscapular shields about 35 long and 40 wide, without ornamentation, connected with lateral sclerotized parts of prescapular shields via short and narrow bridge (about 10 long and 4 wide); setae *si* situated off these shields. Minimal distance between postscapular shields about 40. One pair of small unornamented hysteronotal shields present, about 35 long and 40 wide. Anterior margin of these shields situated at level of setal *d1* bases; distance between postscapular and hysteronotal shields about 85 long. Dorsal cuticle of podosoma with fine transverse membranous folds, entire or interrupted. Lateral parts of podosoma covered by weakly sclerotized microtubercles. Opisthosoma about 150 long, with widely rounded posterior end, covered by triangular scales.

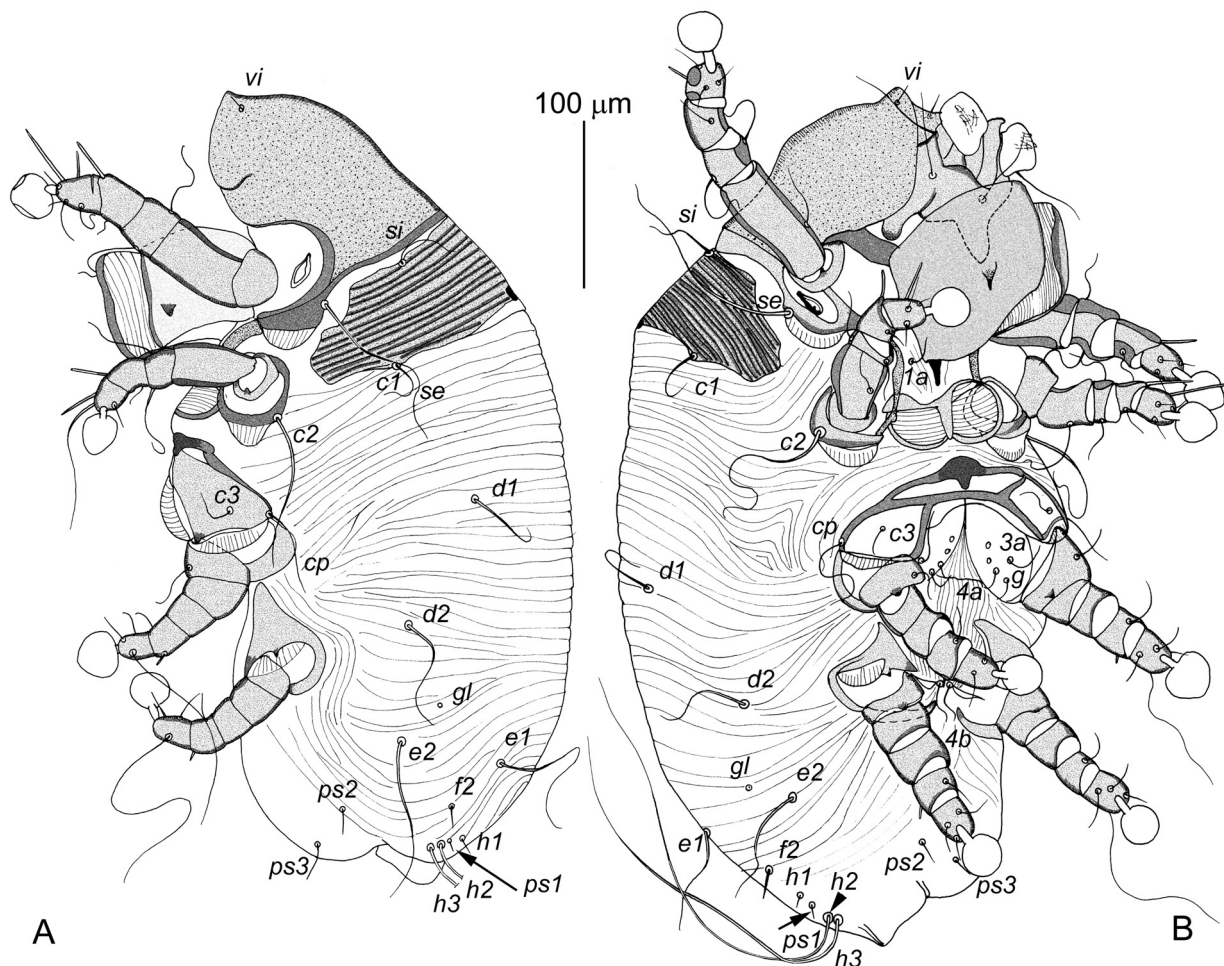


Fig. 5. *Lynxacarus serrafrereirei* sp. nov., female. A – in dorsal view; B – in ventral view

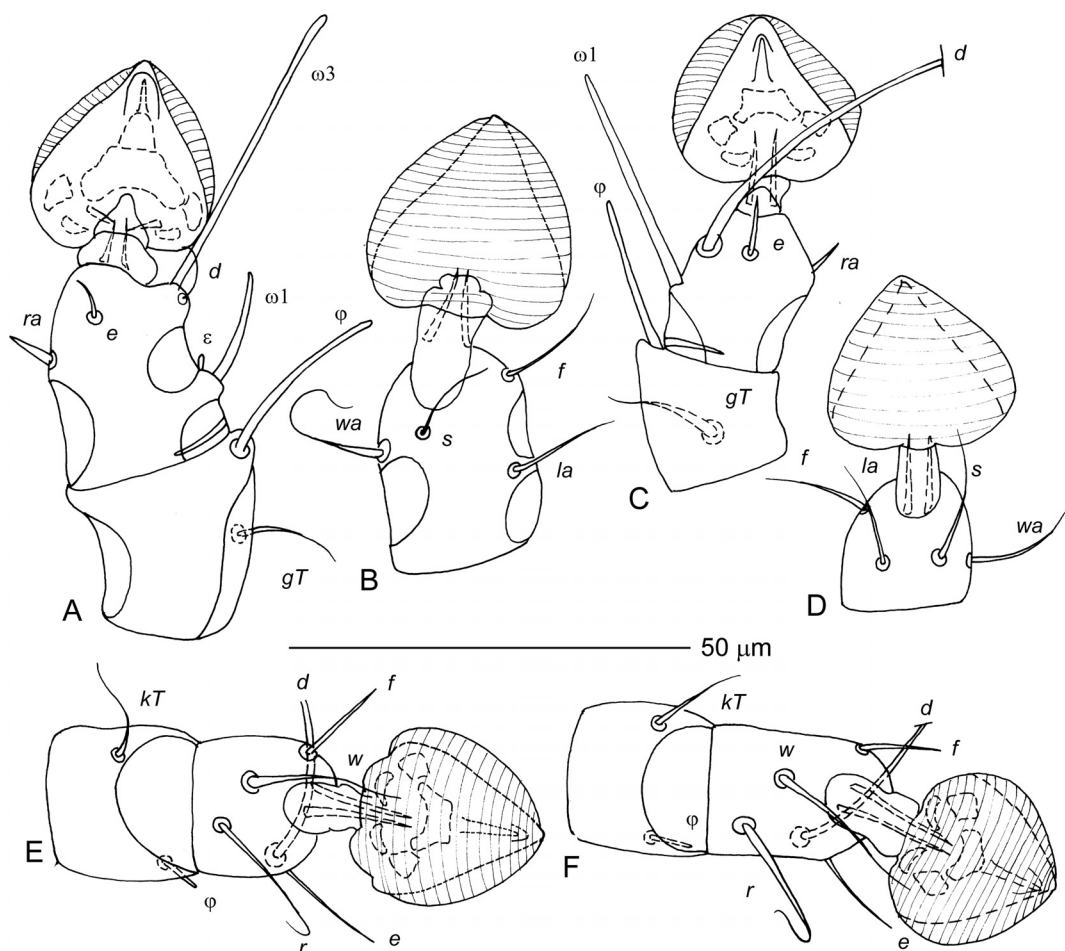


Fig. 6. *Lynxacarus serrafreirei* sp. nov., details of female. **A** – tibia and tarsus I in dorsal view; **B** – tarsus I in ventral view; **C** – tibia and tarsus II in dorsal view; **D** – tarsus II in ventral view; **E** – tibia and tarsus III in ventral view; **F** – tibia and tarsus IV in ventral view

Legs III and IV subequal, about 90 long; tibiotarsi III and IV about 35 long. Lengths of solenidia ϕ III and ϕ IV about 30 and 10, respectively.

Type material: Holotype male, 10 male and 7 female paratypes from *Micoureus paraguayanus* (Tate, 1931) (Didelphimorphia: Didelphidae), BRAZIL: Minas Gerais, Mariléia, Parque Estadual do Rio Doce, Trilha Vinhático, 19°38'31"S, 42°31'46"W, 23 April 2005, coll. M.P. Valim (host ring 1368); 3 male and 3 female paratypes from same host and locality, 20 April 2004, coll. M.P. Valim (host ring 1399); 1 male paratype from same host and locality, 20 April 2004, coll. M.P. Valim (host ring 1446).

Type depositories: Holotype, 8 male and 5 female paratypes in MZUSP, 5 male and 3 female paratypes – at ZISP, 2 male and 2 female paratypes – at UMMZ.

Hosts and distribution: This species is known from *Micoureus paraguayanus* (Didelphimorphia: Didelphidae) (present paper). Specimens of *Didelphoecius didelphicola* Fain, 1970 (species very close to *D. micoureus*) reported by Fain *et al.* (1996) from *Micoureus demerarae* (Thomas, 1905) in Minas Gerais probably also belong to the new species because this host

is absent in the state and was probably confused there with *Micoureus paraguayanus* (Fain *et al.* 1996; present paper).

Etymology: The specific epithet derives from the generic name of the host, *Micoureus* and is a noun in apposition.

Differential diagnosis: *D. micoureus* sp. nov. is very close to *D. didelphicola*. In males of both species, the opisthosomal lobes are absent and the opisthosomal end is widely rounded, the hysteronotal shield possesses widely concave anterior and posterior margins and a pair of very long and narrow lateral arms reaching the level of setal bases c_2 , the cuticle posterior to the hysteronotal shield is covered by numerous triangular scales; in females, the idiosoma is widely rounded posteriorly and not strongly elongated, the hysteronotal shields are paired, unornamented and very small.

These species differ from each other by the following features. In males of *D. micoureus*, the body length is 300–315 (vs. about 250 in *D. didelphicola*), the median part of the hysteronotal shield is about 20 long (vs. 10–12 long); in females, the body length is 370–385 (vs. 310), only a single pair of the hysteronotal shields (posterior pair) is present (vs. 2 pairs, anterior and posterior are present).

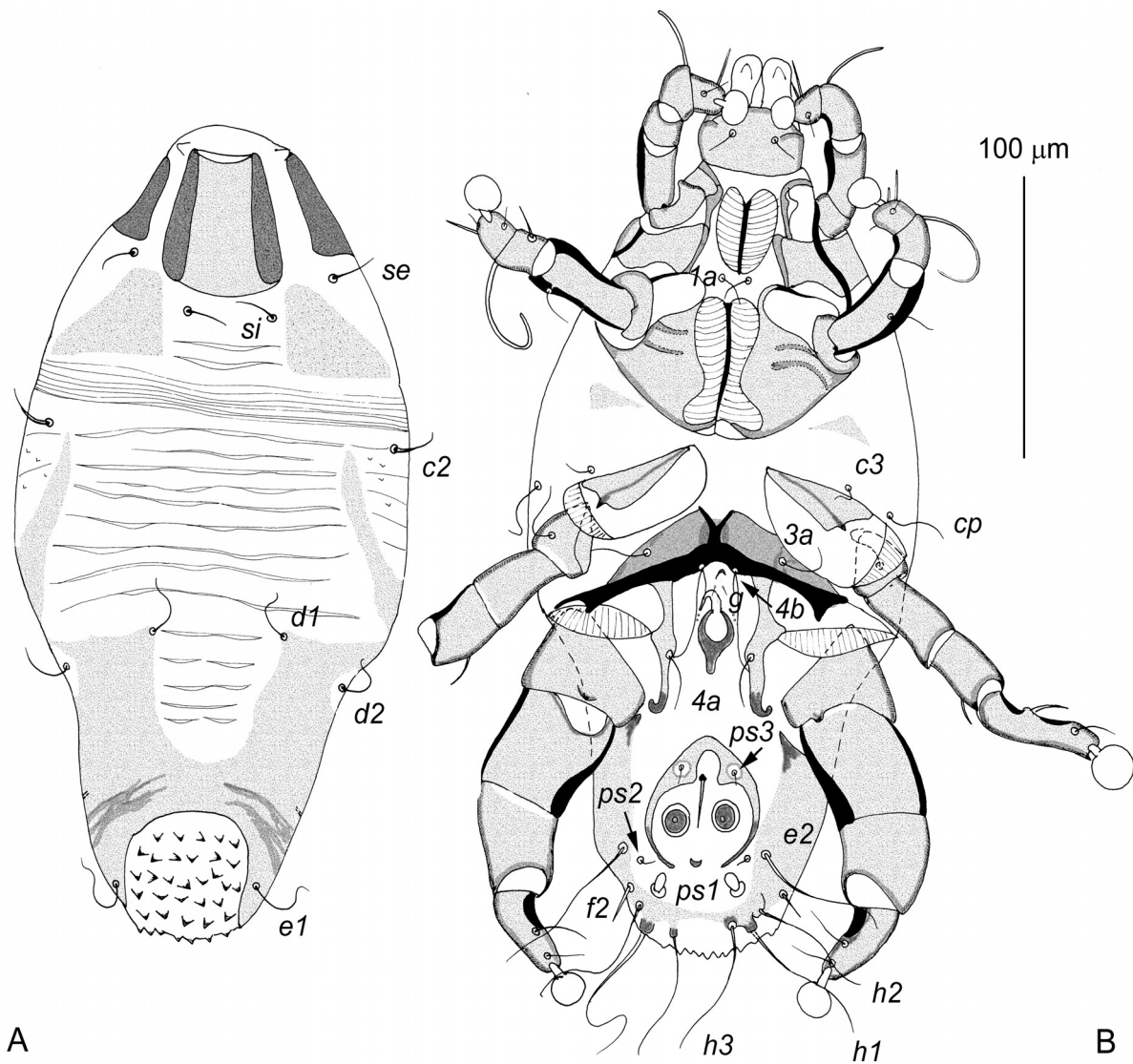


Fig. 7. *Didelphoecius micoureus* sp. nov., male. A – in dorsal view; B – in ventral view

***Didelphoecius palmeriensis* Fain, 1976**

Didelphoecius palmeriensis Fain, 1976a: 65, 1979: 84, Fig. 95.

Material examined. 1 female from *Micoureus paraguayanus* (Tate, 1931) (Didelphimorphia: Didelphidae), BRAZIL: Minas Gerais, Mariléia, Parque Estadual do Rio Doce, 19°38'31"S, 42°31'46"W, 20 April 2004, coll. M.P. Valim (host ring 1445), 1 female from same host and locality, Trilha Campolina, 20 April 2004, coll. M.P. Valim (host ring 1399); 1 female from same host and locality, 19 April 2005, coll. M.P. Valim (host ring 1463). Material in MZUSP and ZISP (2 females).

Hosts and distribution. *Gracilinanus microtarsus* (Wagner, 1842) (Didelphimorphia: Didelphidae) (type host) from Brazil (Paraná and Rio Grande do Sul) (Fain 1979) and *Micoureus paraguayanus* (Didelphimorphia: Didelphidae) [new host] from Brazil (Minas Gerais) (present paper).

***Didelphoecius validus* Fain, Zanatta-Coutinho et Fonseca, 1996**

Didelphoecius validus Fain, Zanatta-Coutinho et Fonseca, 1996: 59, Figs 1, 2.

Material examined. 2 males from *Metachirus nudicaudatus* (Geoffroy, 1803) (Didelphimorphia: Didelphidae), BRAZIL: Minas Gerais, Mariléia, Parque Estadual do Rio Doce, 19°38'31"S, 42°31'46"W, 16 October 2005, coll. M.P. Valim (host ring 1315); 4 males and 1 female from same host and data (host ring 1370); 2 males from same host and data (host ring 1373); 3 males and 1 female from same host and data (host ring 1413); 2 males from same host and locality, Trilha Vinhático, 16 December 2004, coll. D.M. Avelar (host ring 1409); 45 males and 19 females from same host and data (host ring 1420); 4 males and 1 female from same host and locality, Trilha Campolina, 20 April 2004, coll. M.P. Valim (host ring

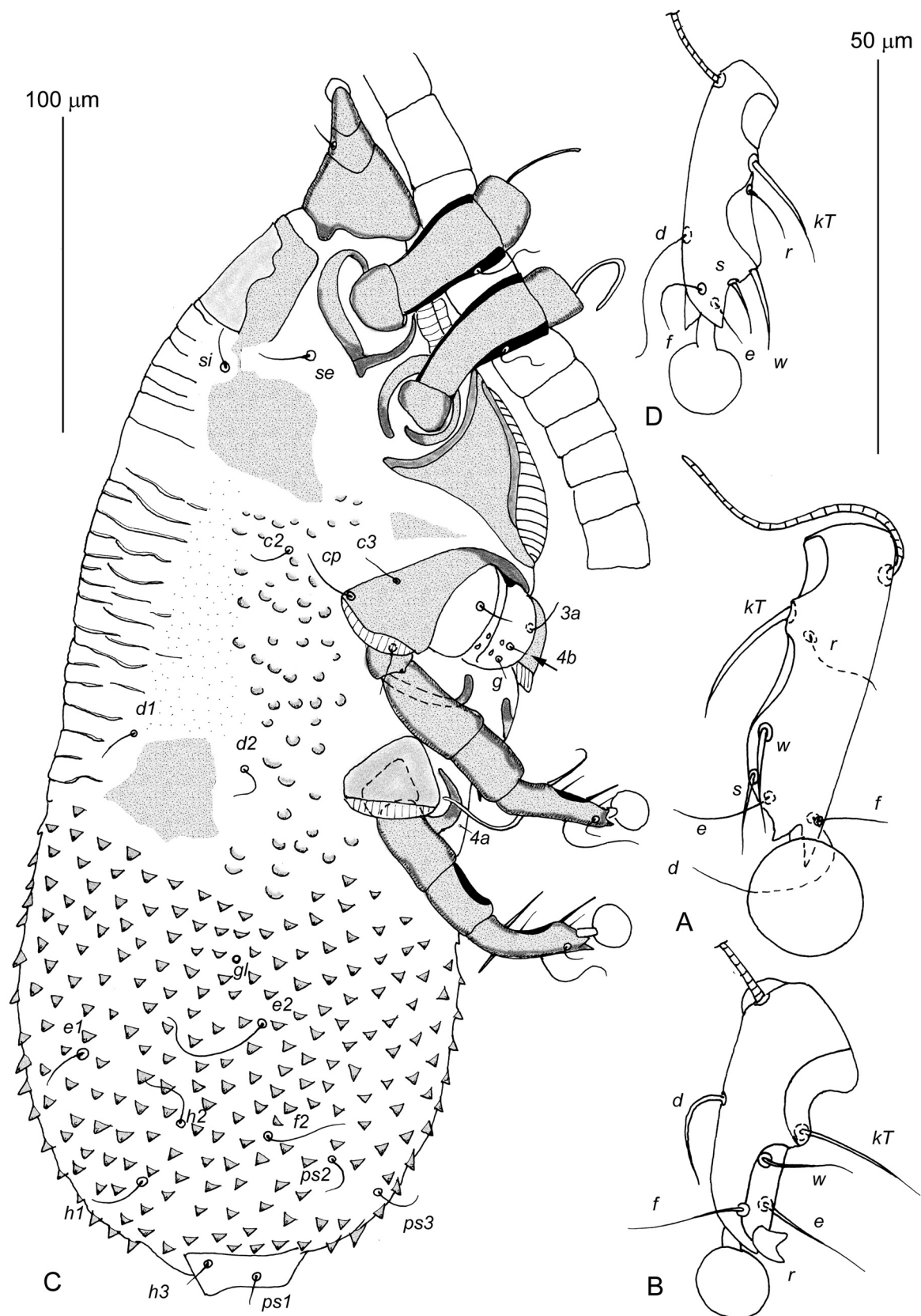


Fig. 8. *Didelphoeicius micoureus* sp. nov. **A** – tibiotarsus III of male in ventral view; **B** – tibiotarsus IV of male in ventral view; **C** – female in lateral view; **D** – tibiotarsus III of female in lateral view. Scale bars: A, B, D = 50 µm; C = 100 µm

1444); 13 males and 6 females from same host and data (host ring 1447); 2 males and 4 females from same host and locality, 17 June 2005, coll. M.P. Valim (host ring 1457). Material in MZUSP and ZISP (10 males and 5 females).

Hosts and distribution. *Metachirus nudicaudatus* (Didelphimorphia: Didelphidae) from Brazil (Minas Gerais) (Fain *et al.* 1996; present paper).

Remark. The female of this species was unknown, therefore we provide its description herein.

Female (10 specimens, Fig. 9). Body 360–385 long, about 130 wide. Prescapular shield 40–50 long; sclerotized lateral parts of this shield about 15 wide. Postscapular shields 57–60, monotonously sclerotized without ornamentation. Postscapular shield entire and unornamented, about 20 long and 120 wide, fused with prescapular shield in median part and separated by narrow oblique lateral incisions about 40 long each. Setae *si* situated on postscapular shield. One pair of large unornamented hysteronotal shields present, about 175 long and 60 wide; setae *c2* situated on these shields. Minimal distance between hysteronotal shields 55. Dorsal cuticle of idiosoma between hysteronotal shields with weakly sclerotized and widely rounded membranous scales being more distinct in posterior third. A few small triangular scales present near hysteronotal gland openings *gl*. Opisthosoma about 135 long, with widely rounded posterior end. Narrow transverse band of small scales surrounding opisthosoma approximately at level of setal bases *h1* and *f2*. Legs III and IV subequal, about 100 long; tibiotarsi III and IV about 30 long. Lengths of solenidia ϕ III and ϕ IV about 20 and 8, respectively.

***Didelphoecius scutatus* Fain, 1976**

Didelphoecius scutatus Fain, 1976a: 66; 101, 1979: Figs 16–19.

Material examined. 31 males and 10 females from *Caluromys philander* (Linnaeus, 1758) (MZUSP #10107) (Didelphimorphia: Didelphidae), BRAZIL: Pará, Itapoama, Rio Tapajós, 03°15'S, 55°10'W, 1 May 1960, coll. A.M. Olalla. Material in MZUSP, UMMZ (5 males and 1 female) and ZISP (15 males and 6 females).

Hosts and distribution. *Caluromys philander* (Didelphimorphia: Didelphidae) (type host) and *Caluromys derbianus* (Waterhouse, 1841) both from Brazil (Amazonas, Pará, and Paraná) (Fain 1979; present paper).

Genus *Metachiroecius* Fain, Zanatta-Coutinho et Fonseca, 1996

***Metachiroecius brasiliensis* Fain, Zanatta-Coutinho et Fonseca, 1996**

Metachiroecius brasiliensis Fain, Zanatta-Coutinho et Fonseca, 1996: 62, Figs 3–6.

Material examined. 2 males from *Metachirus nudicaudatus* (Geoffroy, 1803) (Didelphimorphia: Didelphidae), BRAZIL:

Minas Gerais, Mariléia, Parque Estadual do Rio Doce, 19°38' 1"S, 42°31'46"W, 20 April 2004, coll. M.P. Valim (host ring 1444); 1 male and 1 female from same host and locality, 17 June 2005, coll. M.P. Valim (host ring 1457). Material in MZUSP and ZISP (1 male and 1 female).

Hosts and distribution. *Metachirus nudicaudatus* (Didelphimorphia: Didelphidae) from Brazil (Minas Gerais) (Fain *et al.* 1996; present paper).

Genus *Didelphilichus* Fain, 1970

***Didelphilichus serrifer* Fain, 1970**

Didelphilichus serrifer Fain, 1970: 291, 1979: 109, Figs 130–134; Fain *et al.* 1996: 58.

Material examined. 1 male and 6 females from *Didelphis aurita* Wied-Neuwied, 1826 (Didelphimorphia: Didelphidae), BRAZIL: Minas Gerais, Mariléia, Parque Estadual do Rio Doce, 19°38'31"S, 42°31'46"W, 20 April 2005, coll. M.P. Valim (host ring 1465); 1 male and 1 female from same host and locality, 16 December 2004, coll. D.M. Avelar (host ring 1425). Material in MZUSP and ZISP (1 male and 3 females).

Hosts and distribution. *Didelphis aurita* (Didelphimorphia: Didelphidae) from Brazil (Rio Grande do Sul, Rio de Janeiro, and Minas Gerais) (Fain 1979; present paper), *Didelphis virginiana* (Kerr, 1792) from USA (Indiana) and *Didelphis marsupialis* Linnaeus, 1758 from Mexico, Suriname, Colombia, and Brazil (Amazonas) (Fain 1979), and *Didelphis albiventris* Lund, 1840 from Brazil (Minas Gerais) (Fain *et al.* 1996).

Genus *Oryzomysia* Fain, 1970

***Oryzomysia neacomys* Fain et Lukoschus, 1976**

Oryzomysia neacomys Fain et Lukoschus, 1976 in Fain 1976b: 115; Fain 1979: 71.

Material examined. 3 females from *Neacomys spinosus* (Thomas, 1882) (Rodentia: Cricetidae) (field number MSA FM 02), BRAZIL: Rondônia, Porto Velho, Teotônio left bank of Rio Madeira, 08°50'28.607"S, 64°03'43.936"W, 7 February 2010, coll. F.A.M. Madeira. Material in MZUSP and ZISP (2 females).

Hosts and distribution. *Neacomys spinosus* (Rodentia: Cricetidae) from Brazil (Pará and Rondônia) (Fain 1979; present paper) and *Neacomys tenuipes* (Thomas 1900) from Colombia (Fain 1979).

Family Chirodiscidae Trouessart, 1892

Genus *Parakosa* McDaniel et Lawrence, 1962

***Parakosa tadarida* McDaniel et Lawrence, 1962**

Parakosa tadarida McDaniel et Lawrence, 1962: 465, Figs 1–7; Dusbábek and Cruz 1966: 16; McDaniel 1970: 814, 1972: 20, Figs 9, 10; Fain 1973: 107, Figs 69, 70, 73, 74.

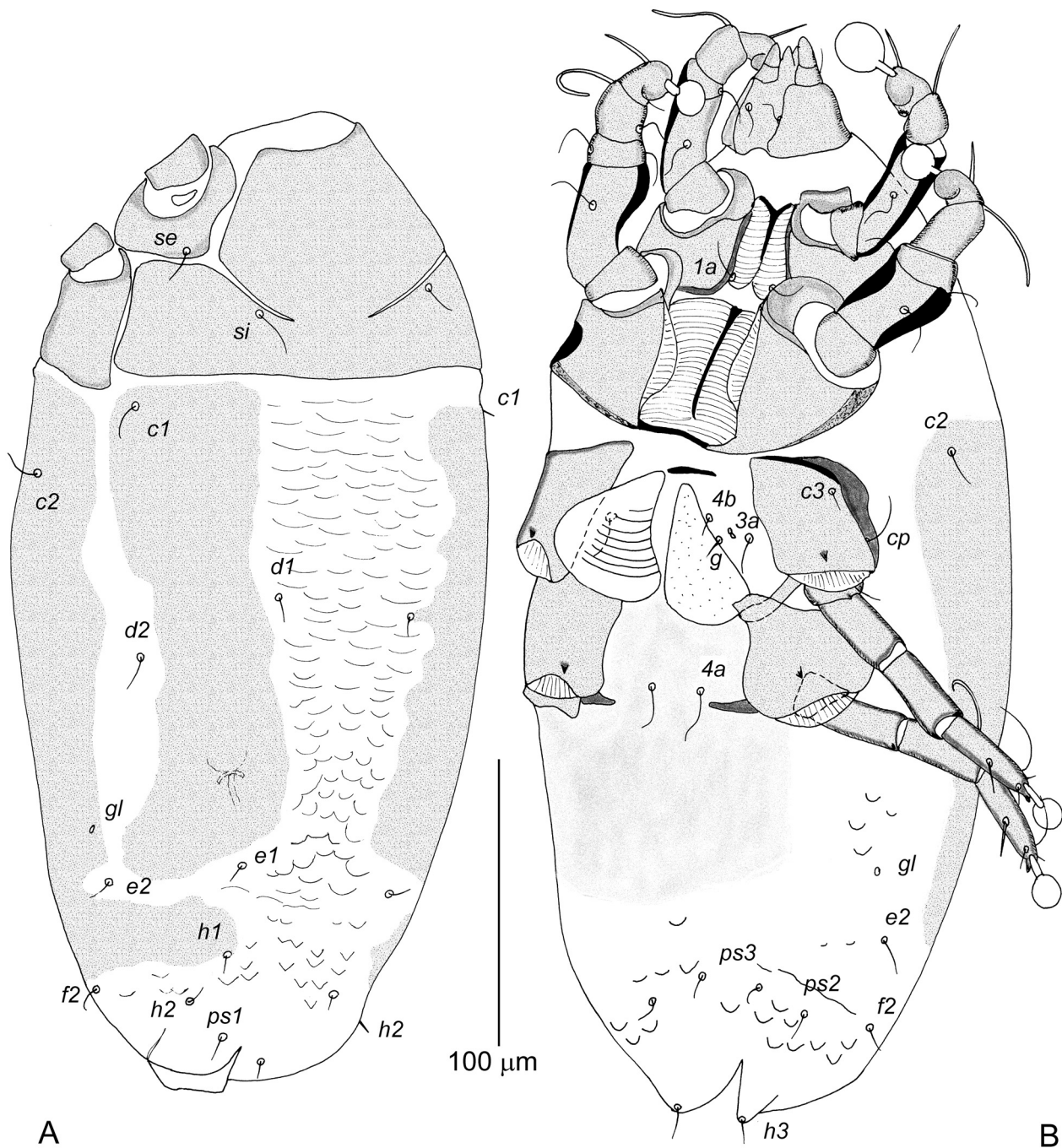


Fig. 9. *Didelphilichus validus* Fain, Zanatta-Coutinho et Fonseca, 1996, female. **A** – in dorsal view; **B** – in ventral view

Eulabidocarpus rectipes Pinichpongse, 1963: 400, Figs 24–27.

Material examined. 3 males and 6 females from *Molossus molossus* (Pallas, 1766) (MNRJ #71568) (Chiroptera: Molossidae), BRAZIL: Mato Grosso, Barão de Melgaço, Reserva Particular do Patrimônio Natural Sesc Pantanal, May 2008, coll. J.C. Almeida. Material in MZUSP, UMMZ (1 female), and ZISP (2 males and 2 females).

Hosts and distribution. Chiroptera, Molossidae: *Nyctinomops laticaudatus* (Geoffroy, 1805) (type host) from Mexico (Daniel and Lawrence 1962), *Molossus molossus* from Cuba (Dusbábek and Cruz 1966), Venezuela (McDaniel 1972), Suriname (Fain 1973), and Brazil (Mato Grosso) (present paper), *Molossus rufus* Geoffroy, 1805 from Trinidad and Tobago (Pinichpongse 1963) and Venezuela (McDaniel 1972), *Molossus pretiosus* Miller, 1902 from Nicaragua (McDaniel 1970), *Molossus currentium* Thomas, 1901 from Venezuela (Mc-

Daniel 1972); Phyllostomidae: *Sturnira lilium* (Geoffroy, 1810), *Glossophaga longirostris* Miller, 1898, *Carollia brevicauda* (Schinz, 1821) from Venezuela (McDaniel 1972); Noctilionidae: *Noctilio leporinus* (Linnaeus, 1758) from Venezuela (McDaniel 1972).

***Parakosa flexipes* (Pinichpongse, 1963)**

Eulabidocarpus flexipes Pinichpongse, 1963: 398, Figs 20–23. *Parakosa flexipes*, Dusbábek and Cruz 1966: 17, Fig. 7; McDaniel 1970: 818; Fain 1973: 111, Figs 71, 72, 77, 78; Gomes *et al.* 2012: 424, Fig. 1.

Parakosa maxima McDaniel, 1970: 814, Figs 10–14; 1972: 22, Figs 11–14.

Material examined. 1 female from *Molossus molossus* (MNRJ #71568) (Chiroptera: Molossidae), BRAZIL: Mato Grosso, Barão de Melgaço, Reserva Particular do Patrimônio Natural Sesc Pantanal, May 2008, coll. J.C. Almeida. Material in MZUSP; 3 females from same host, BRAZIL, Rio de Janeiro, Cachoeira de Macacu, Reserva Ecologica de Guapiacu, date unknown, coll. J.C. Almeida (field number 763). Material in MZUSP and ZISP (2 females).

Hosts and distribution. Chiroptera, Molossidae: *Molossus molossus* (type host) from Trinidad and Tobago (Pinichpongse 1963), Cuba (Dusbábek and Cruz 1966), Suriname (Fain 1973), and Brazil (Mato Grosso and Rio de Janeiro) (present paper), *Molossus aztecus* Saussure, 1860 and *Molossus pretiosus* from Nicaragua (McDaniel 1970), *Molossus rufus* from Trinidad and Tobago (Pinichpongse 1963), Venezuela (McDaniel 1972), and Brazil (Bahia) (Gomes *et al.* 2012), *Molossus currentium* from Venezuela (McDaniel 1972), *Promops centralis* Thomas, 1915 from Trinidad and Tobago (Fain 1973); Phyllostomidae: *Artibeus jamaicensis* (Leach, 1821) from Dominican Republic (Fain 1973); *Enchisthenes hartii* (Thomas, 1892) and *Glossophaga longirostris* from Venezuela (McDaniel 1972); Noctilionidae: *Noctilio leporinus* from Venezuela (McDaniel 1972).

Family Listropsoralgidae Fain, 1965

Genus *Listropsoralges* Fain, 1965

***Listropsoralges caluromys* Bochkov et Wauthy, 2009**

Listropsoralges caluromys Bochkov et Wauthy, 2009: 271, Figs 1, 2; Bochkov *et al.* 2013: 21, Figs 11–14.

Material examined. 2 males and 12 females from *Caluromys philander* (Linnaeus, 1758) (MZUSP #7558) (Didelphimorphia: Didelphidae), BRAZIL: Alagoas, Mangabeiras, Usina Sinimbu, 09°55'S, 36°08'W, 12 November 1952, coll. E. Dente. Material in MZUSP, UMMZ (4 females), and ZISP (1 male and 4 females).

Hosts and distribution. *Caluromys lanatus* (Olfers, 1818) (Didelphimorphia: Didelphidae) (type host) from Brazil (Paraná) (Bochkov and Wauthy 2009) and *Caluromys philander* from Suriname (Bochkov and Wauthy 2009) and

Brazil (Alagoas and Pará) (Bochkov *et al.* 2012; present paper).

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