

ECTOPARASITES AND OTHER ASSOCIATES OF SOME MAMMALS FROM MINAS GERAIS, BRAZIL¹

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ABSTRACT: One marsupial, two carnivores and 8 species of cricetid rodents from Brazil were examined for ectoparasites. Some of the major parasites found were laelapid mites *Androlaelaps fahrenheitsi*, *A. rotundus*, *A. pachyptilae*, *Laelaps paulistensis*, *L. thori*, *L. mazzai*, *L. castroi*, *Mysolaelaps heteronychus*, *Mysolaelaps* sp., *Gigantolaelaps goyanensis*, *G. vitzhumi*, *G. wolffsohni*, and the macronyssid mite, *Argitus oryzomys*. Eleven species of chiggers were found of which 5 have already been described as new (*Serratacarus dietzi*, *S. lasiurus*, and *Microtrombicula rhipidomysi*, *Kymoceta lutui*, and *Colicus brasiliensis*) and two more are in the process of being described. More abundant lice (Anoplura) found were *Hoplopleura travasso*, *H. fonsecai*, *H. angulata*, and *H. affinis*. A few fleas, ticks and other mites were also reported.

While studying the biology of the maned wolf, *Chrysocyon brachyurus*, James Dietz had the opportunity to collect ectoparasites from a number of mammals from the state of Minas Gerais, Brazil. Some of the parasites collected were new species or new for Brazil. This paper presents information resulting from these collections.

METHODS AND MATERIALS

Mammals were hand picked using a dissecting microscope. Parasites were preserved in alcohol and later placed in Nesbitt's solution containing acid fuchsin stain for 3-5 days, then mounted in Hoyer's solution and finally ringed with Euparal.

Representative specimens have been or will be deposited in the Research Branch, Biosystematics Research Center, Ottawa, Ontario; in the Stovall Museum (Univ. Oklahoma, laelapid mites); in the collection of Alex Fain (smaller mites); at the University of Hawaii (chiggers); at the Department of Biology, University of Northern Iowa (ticks); and in the collections of the authors. Skins and skulls of the mammals are in the Museum, Michigan State University, East Lansing.

RESULTS

Results are given below for some of the species, and for the cricetid rodents in Table 1. For the latter group only the more abundant or otherwise noteworthy forms are specifically mentioned in the text.

¹Received December 5, 1986. Accepted April 27, 1987

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MARSUPIALIA: DIDELPHIDAE

Monodelphis domestica

One individual was taken (29 March 1979) at Faz das Pedras, Serra da Canastra National Park, 25 km west Sao Roque de Minas, Minas Gerais, Brazil. From it were collected 23 chiggers including two species, 16 individuals of *Parasecia aitkeni* (Brennan and Jones, 1960) and 7 of *Trombewingi bakeri* (Fonseca, 1955).

RODENTIA: CRICETIDAE

Akodon (Thalpomys) reinhardtii

Eight individuals of this species were taken (Table 1). The most abundant associate taken, totalling 19 individuals on one host, was the hypopial mite, *Dermacarus* of the *hypudaei* group. Members of this group form a closely related complex with the hypopi being very similar, whereas the adults may be quite different. Individuals thus must be cultured to the adult form for determination of its relationships to other *Dermacarus hypudaei*. *Androlaelaps fahrenheitsi* (Laelapidae) and a chigger, currently being described by M.L. Goff and Whitaker, were the other more abundant forms.

Bolomys lasiurus lasiurus

A total of 47 individuals of the Cane Mouse, *B.l. lasiurus*, was examined during the present study (Table 1). The most abundant ectoparasites of this species were the laelapids *Androlaelaps rotundus* and *Androlaelaps fahrenheitsi*, the chigger *Quadracetas pazca* and the louse *Hoplopleura affinis*. *Androlaelaps rotundus* was not mentioned by Furman (1972), although it was the species we most commonly encountered on *B. lasiurus* (total of 372 individuals). Furman (1972) indicated that *Laelaps dearmasi* (Furman & Tipton, 1961) was common on *Zygodontomys brevicauda* in Venezuela. Furman (1972) indicated that *Z. brevicauda* was the host most heavily infested in Venezuela by this parasite. Twenty specimens of *Eulaelaps* were found but need further study. Johnson (1972) found *Hoplopleura nesoryzomydis* to be the typical sucking louse of *Zygodontomys brevicauda* in Venezuela, but we found *H. affinis* to be the anopluran on *B. lasiurus* in Brazil.

Calomys laucha tenor

This is one of the Vesper mice; often referred to the genus *Hesperomys*. Nine individuals were examined for parasites. Chiggers, *Parasecia aitkeni* and *Quadrasetta pazca*, the laelapid *Laelaps mazzai*, and lice, *Hoplopleura* sp., possibly new, in the *H. hesperomydis* complex, were the most abundant parasites of this host. Furman (1972) found *Laelaps mazzai* primarily on *Calomys hummelincki* from Venezuela.

Nectomys squamipes

Only two individuals of this Neotropical water rat were taken (Table 1).

No lice were found on *Nectomys squamipes* although the types of *Hoplopleura quadridentata* (Neumann) were from this host and this louse was recorded from this host in Venezuela (Johnson, 1972b). *Gigantolaelaps goyanensis* was commonly found on this host and only occasionally on others and *A. fahrenheitsi* was occasional on this host in Venezuela (Furman, 1972). Two species of chiggers, *Arisocerus hertigi* and *Parasecia aitkeni* were also taken. Jones et al. (1972) recorded *Amblyomma* sp. on *N. squamipes* from Venezuela, but we found no ticks on this host.

Oryzomys fornesi

A total of 27 individuals of this rice rat were examined. The most abundant parasites on our sample of this species were the laelapids, *Gigantolaelaps wolffsohni*, *Laelaps castroi*, *Androlaelaps fahrenheitsi* and *Mysolaelaps parvispinosus* (Table 1), and a chigger described on the basis of this material, *Colicus brasiliensis* Goff, Whitaker, & Dietz, 1983. Also, 7 individuals of a sucking louse, *Hoplopleura travossosi* Werneck, 1932, were found. *Laelaps paulistanensis*, *G. wolffsohni* and *Androlaelaps fahrenheitsi* were commonly found on species of *Oryzomys* in Venezuela (Furman, 1972). *Mysolaelaps microspinosus* Fonseca and *M. parvispinosus* Fonseca were found on species of *Oryzomys* in Venezuela.

Oryzomys subflavus

A macronyssid, *Argitis oryzomys*, the laelapids *Laelaps castroi* and *Gigantolaelaps vitzthumi*, and a newly described chigger, *Colicus brasiliensis* (Goff, Whitaker & Dietz, 1983), were the most abundant parasites taken on the three individuals of this rice rat examined (Table 1). Also taken were seven lice, *Hoplopleura* sp., which may represent a new species.

Laelaps paulistanensis was taken from species of *Oryzomys* in Venezuela (but mainly from *Rhipidomys*), whereas the specimens from our material appeared to be *L. castroi*. *Gigantolaelaps vitzthumi* was not taken there on *Oryzomys*, although several other species of the genus were, especially *G. amazonae* (Furman), *G. canestrinii* Fonseca, *G. gilmorei* Fonseca, *G. inca* Fonseca, *G. intermedia* Furman, *G. oudemansi* Fonseca, *G. peruviana* (Ewing), and *G. tiptoni* Furman (Furman, 1972). *Argitis oryzomys* Yunker & Saunders (1973) was described from *Oryzomys concolor* from Venezuela.

Oxymycteris roberti

Only five individuals of this burrowing mouse were examined (Table 1), but *Androlaelaps fahrenheitsi* and *Laelaps paulistanensis* among the laelapids, and lice, *Hoplopleura fonsecai*, were the more abundant parasites.

Also, 7 staphylinid beetles were taken. Beetles of this group have been found on a number of different hosts. Eighteen lice were taken on *Oxymycteris roberti*, but we find no record of lice on this host in either Johnson (1972) or Ferris (1951). They were identified as *Hoplopleura fonsecai* by K.C. Emerson. This louse was described from *Oxymycteris "judex"* from Humboldt, Santa Catharina, Brasil (Ferris, 1951). *Oxymycteris judex* is now recognized as *O. hispidus judex* (Cabrera, 1960). Johnson (1972) recorded *H. fonsecai* from *Oxymycteris rutilans* from Uruguay, and Ronderos and Capri (1965) recorded it from the same host from Argentina.

Rhipidomys masticalis

The main ectoparasites found on this climbing mouse were the laelapid mites, *Laelaps paulistanensis*, *L. thori*, and *Mysolaelaps heteronychus*, lice, *Hoplopleura angulata*, and chiggers, *Microtrombicula rhipidomysi* described as a new species by Goff, Whitaker & Dietz (1983). Numerous individuals of *Laelaps paulistanensis* and of *Mesolaelaps heteronychus* were also taken from *Rhipidomys* from Venezuela (Furman, 1972), but *L. thori* was not recorded from there. Furman (1972) reported *L. surcomata* from *Rhipidomys* from Venezuela.

Hoplopleura angulata was found on several species of *Rhipidomys* from Venezuela, and this louse is the typical anopluran louse of *Rhipidomys* (Johnson, 1972).

CARNIVORA: CANIDAE

Chrysocyon brachyurus

Parasite data are available from 5 maned wolves. The wolves were examined alive for larger ectoparasites and released. All were from Gameleira, 26 km W (3), Onession, 11 km NE (1), and Gurita, 7 km SE Sao Roque de Minas (1). Three species of parasites were found, two species of ticks, and 3 maggots from the ear of one wolf. A total of 56 ticks, *Amblyomma tigrinum*, was found on four of the wolves. All were adults. Three nymphal ticks, *Amblyomma cajennense*, were taken on two of the wolves. *Amblyomma cajennense* is most commonly reported from domestic animals, but Jones et al (1972) reported it from several hosts from Venezuela. *Amblyomma tigrinum* is generally on carnivores and likewise was taken on several Venezuelan hosts. The maggots were of the screw-worm, *Cochliomyia hominivorax* (Diptera: Calliphoridae), an obligatory parasite of great economic importance which affects numerous species, but especially livestock.

Dusicyon vetulus

Skin scrapings were made of one individual of this South American fox in which were found 22 mange mites, 18 adults and 6 immature *Sarcoptes scabiei*.

DISCUSSION

The most widespread mite on these mammals from South America, *Androlaelaps fahrenheitsi*, is also the most widespread North American mite. It was found on 6 of the 8 rodent species examined from Brazil. Another common mite is *Laelaps paulistanensis*. It occurred on four of the rodent species. Those that occurred on three were *Mysolaelaps heteronychus* and *Androlaelaps projecta*. Other parasites occurred on only one or two host species.

The genus *Psylloglyphus* Fain, 1966 (Family Winterschmidtidae) had not been taken in the New World until recently, but Fain and Beaucournu (1986) described *Psylloglyphus* (*Tetrapsyllopus*) *micronychus* from fleas from a South American rodent, *Ctenomys* sp. The specimens of *Psylloglyphus* near *reticulatus* taken during the present study thus constitute the second South American record of this genus, and if this species is indeed *P. reticulatus*, is the first record of the genus being found in both the Old and the New world. *Psylloglyphus reticulatus* was originally described from Zaire (Fain and Beaucournu, 1976). Most previous records of the genus are from fleas, although one species was described from *Hemimerus* (Hemimeridae), an African dermapteran parasitic on *Cricetomys* Fain & Beaucournu, 1976), and there are some previous records from mammals (Uchikawa and Suzuki, 1980).

Five new species and a new genus of chigger have already been described from this material. The new genus *Serratacarus* with two new species, *S. dietzi* and *S. lasiurus*, was described from *Bolomys lasiurus* by Goff and Whitaker (1984). *Microtrombicula rhipidomysi*, *Kymocta lutui*, and *Colicus brasiliensis* were described, the first two from *Rhipidomys mastacalis* and the third from *Bolomys lasiurus* (Goff, Whitaker, & Dietz, 1983). In addition, a new genus and new species is being described from *Calomys laucha* and *Akodon reinhardti*, and another new species is being described from *Oryzomys fornesi*. *Kymocta brasiliensis* was previously described from a single specimen, which has since disappeared. This species will be redescribed. Other chiggers not previously reported from Brazil are *Quadrasetta pazca*, *Arisocerus hertigi* and *Parasecia aitkeni*. Six species of lice were found, including two apparently new, one from *Calomys laucha* and one from *Oryzomys subflavus*. Of the other four, two have previously been reported from Brazil, *H. travassoi* and *H. fonsecai* (Ferris, 1951).

TABLE 1. ECTOPARASITES FOUND ON SOME CRICETID RODENTS FROM MINAS GERAIS STATE, BRAZIL.

	No.	Percent	No.	Average
<i>Akodon (Thalpomys) reinhardti</i>	(n = 8)			
Mites				
<i>Dermacarus — hypudaei group</i>	1	12.5	19	2.4
<i>Androlaelaps fahrenheitzi</i>	4	50.0	6	0.8
<i>Androlaelaps projecta</i>	2	25.0	2	0.3
<i>Prolistophorus</i> sp.	1	12.5	1	0.1
<i>Tyrophagus</i> sp. (nymph)	1	12.5	1	0.1
Chiggers				
n. gen #1, n.sp. #4,	1	12.5	5	0.6
<i>Parasecia aitkeni</i>	1	12.5	1	0.1
Flea				
<i>Polygenis rimatus rimatus</i>	1	12.5	1	0.1
<i>Bolomys lasiurus lasiurus</i>	(n=47)			
Mites				
<i>Androlaelaps rotundus</i>	46	97.9	372	7.9
<i>Androlaelaps fahrenheitzi</i>	25	53.2	104	2.2
<i>Eulaelaps</i> sp.	5	10.6	20	0.4
<i>Dermacarus</i>				
<i>hypudaei group</i>	9	19.1	14	0.3
<i>Psylloglyphus</i> near <i>reticulatus</i>	5	10.6	12	0.3
<i>Prolistophorus</i> sp., perhaps <i>hirstianus</i>	5	10.6	11	0.2
<i>Androlaelaps projecta</i>	7	14.9	9	0.2
<i>Myssolaelaps parvispinosus</i>	1	2.1	8	0.2
<i>Tyrophagus putrescentiae</i>	2	4.3	2	0.04
<i>Hypoaspis miles</i>	4	8.5	4	0.08
<i>Prolistophorus paraguayensis?</i>	1	2.1	1	0.02
<i>Cheyletus malaccensis</i>	1	2.1	1	0.02
<i>Radfordia subuliger?</i>	1	2.1	1	0.02
Fleas				
<i>Polygenis tripus*</i>	9	17.0	12	0.3
<i>Polygenis axius axius</i>	1	2.1	2	0.04
<i>Polygenis rimatus rimatus</i>	1	4.3	1	0.04
Lice				
<i>Hoplopleura affinis</i>	16	34.0	72	1.5
Ticks				
<i>Amblyomma</i> sp.	2	4.3	3	0.1

	No.	Percent	No.	Average
Chiggers				
<i>Quadracetas pazca</i>	7	14.9	47	1.0
<i>Kymocta brasiliensis</i>	5	10.6	11	0.3
<i>Serratacarus dietzi</i>	1	2.1	1	0.02
<i>Serratacarus lasiurus</i>	1	2.1	1	0.02
<i>Parasecia aitkeni</i>	1	2.1	1	0.02
<i>Calomys laucha tenor</i>	(n=9)			
Mites				
<i>Laelaps mazzai</i>	6	66.7	25	2.8
Chiggers				
<i>Parasecia aitkeni</i>	4	44.4	52	5.8
<i>Quadrasetus pazca</i>	3	33.3	23	2.6
n. gen. #1, no. sp. #4	1	11.1	1	0.1
Lice				
<i>Hoplopleura</i> sp. (new species)?	2	22.2	8	0.9
<i>Nectomys squamipes</i>	(n = 2)			
Mites				
<i>Gigantolaelaps goyanensis</i>	2	100.0	14	7.0
<i>Androlaelaps fahrenheitzi</i>	2	100.0	13	6.5
<i>Laelaps manguinhosi</i>	1	50.0	1	0.5
<i>Mysolaelaps heteronychus</i>	1	50.0	1	0.5
Chiggers				
<i>Arisocerus hertigi</i>	1	50.0	6	3.0
<i>Parasecia aitkeni</i>	1	50.0	6	3.0
<i>Oryzomys fornesi</i>	(n=27)			
Mites				
<i>Gigantolaelaps wolffsohni</i>	19	70.4	42	1.6
<i>Laelaps castroi</i>	9	33.3	39	1.4
<i>Androlaelaps fahrenheitzi</i>	5	18.5	20	0.7
<i>Mysolaelaps parvispinosus</i>	8	29.6	19	0.7
<i>Hypoaspis miles</i>	2	7.4	4	0.1
<i>Androlaelaps rotundus</i>	1	3.7	2	0.1
<i>Laelaps paulistanensis</i>	1	3.7	2	0.1
<i>Prolistophorus</i>				
<i>paraguayensis</i> (?)	1	3.7	1	0.04
<i>Radfordia subuliger</i> ?	1	3.7	1	0.04
<i>Tyrophagus putrescentiae</i>	1	3.7	1	0.04
Chiggers				
<i>Colicus brasiliensis</i>	5	18.5	19	0.7
<i>Arisocerus hertigi</i>	1	3.7	3	0.1

	No.	Percent	No.	Average
<i>Trombewingi bakeri</i>	1	3.7	1	0.04
<i>Parasecia</i> sp.	1	3.7	1	0.04
Lice				
<i>Hoplopleura travassoi</i>	6	23.1	7	0.3
<i>Oryzomys subflavus</i>	(n = 3)			
Mites				
<i>Argitis oryzomys</i>	1	33.3	32	10.7
<i>Laelaps castroi</i>	2	66.7	32	10.7
<i>Gigantolaelaps vitzthumi</i>	3	100.0	24	8.0
<i>Androlaelaps fahrenheitzi</i>	1	33.3	7	2.3
<i>Mysolaelaps heteronychus</i>	1	33.3	5	1.7
<i>Androlaelaps projecta</i>	1	33.3	2	0.7
Chiggers				
<i>Colicus brasiliensis</i>	2	66.7	13	4.3
Lice				
<i>Hoplopleura</i> sp. (new species)?	1	33.3	7	2.3
<i>Oxymycteris roberti</i>	(n = 5)			
Mites				
<i>Androlaelaps fahrenheitzi</i>	4	80.0	42	8.6
<i>Laelaps paulistanensis</i>	1	20.0	9	1.8
<i>Androlaelaps pachyptilae</i>	2	40.0	5	1.0
<i>Eulaelaps</i> sp.	1	20.0	1	0.2
<i>Dermacarus</i> nr. <i>hypudaei</i>	1	20.0	1	0.2
Lice				
<i>Hoplopleura fonsecai</i>	3	60.0	18	3.6
Coleoptera (Staphylinidae)	3	60.0	7	1.4
<i>Rhipidomys masticalis</i>	(n = 11)			
Mites				
<i>Laelaps paulistanensis</i>	11	100.0	173	15.7
<i>Mysolaelaps heteronychus</i>	7	63.6	47	4.3
<i>Laelaps thori</i>	6	54.5	44	4.0
<i>Radfordia</i> sp.	1	9.1	1	0.1
<i>Tyrophagus putrescentiae</i>	1	9.1	1	0.1
Chiggers				
<i>Microtrombicula rhipidomysi</i>	1	9.1	16	1.5
Lice				
<i>Hoplopleura angulata</i>	9	81.8	113	10.3
Flea				
<i>Craneopsylla minerva minerva</i>	1	9.1	1	0.1

*includes 1 individual "probably *P. tripus*"

ACKNOWLEDGMENTS

Fleas and lice were identified by P.M. Linardi (Departamento de Parasitologia, Instituto de Ciencias Biologicas, Universidade Federal de Minas Gerais, 30,000, Belo Horizonte, Minas Gerais, Brazil), ticks by Nixon Wilson (Dept. Biology, Northern Iowa University, Cedar Falls, Iowa 50613), and chiggers by M.L. Goff (Honolulu, Hawaii 96819). Mites were verified and/or identified by A. Fain (Institut Royal des Sciences Naturelles de Belgique, Rue Vautier, 31, B-1040, Brussels, Belgium) and Donald Gettinger (Stovall Mus. Science History, Univesity of Oklahoma, Norman, Oklahoma 73019). The screwworm larvae were identified by Stuart Neff, Univ. Louisville, Louisville, KY 40208).

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Whitaker, John O. and Dietz, J M. 1987. "Ectoparasites And Other Associates Of Some Mammals From Minas gerais, Brazil." *Entomological news* 98, 189–197.

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