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CATALOGUE OF THE BRAZILIAN *IXODES* (ACARI: IXODIDAE) MATERIAL IN THE MITE COLLECTION OF INSTITUTO BUTANTAN, SÃO PAULO, BRAZIL

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ABSTRACT

This catalogue lists the Ixodes species deposited in the mite collection of Instituto Butantan, providing information on their hosts and distribution. The collection includes the types of I. amarali, I. cooleyi and I. ricinus aragaoi. It also includes the newly designated lectotypes and paralectotypes of I. amarali.

KEYWORDS: *Ixodes* Ixodidae - ticks, taxonomy.

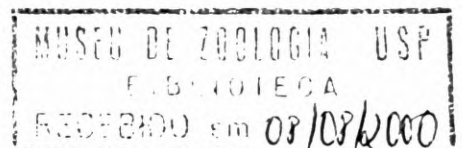
INTRODUCTION

The mite collection of Instituto Butantan, São Paulo (IBSP) is presently harbored at its arthropod laboratory (Laboratório de Artrópodes). It was established in 1931 by Flávio Oliveira Ribeiro da Fonseca, responsible for it until 1963, when the collection had 80.000 specimens belonging to different groups. In that period, he described 4 genera and 28 species of Laelapidae, 7 genera and 16 species of Macronyssidae, 6 species of Trombiculidae, 7 species of Ixodidae and the families Dasyponyssidae and Ixodorhynchidae. Types and other specimens of all those groups were deposited by him in the collection.

A total of 56 species of ticks belonging to 9 genera has been found in Brazil. *Amblyomma* Koch is the dominant genus, with 33 species, followed by

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Ixodes, with 10 species (Aragão & Fonseca 1961, Arzua *et al.* 1994). Worldwide, 234 recognized species belonging to 14 subgenera are assigned to the genus *Ixodes* (Clifford *et al.* 1973, Keirans 1992).

Despite not being the most representative genus of the IBSP collection, an evaluation of the Brazilian *Ixodes* deposited in this collection is relevant because little is known about its geographical distribution, biology and importance in the dissemination of pathogens in wild and urban environments.

The objective of this work was to list the types and other specimens of *Ixodes* deposited in this collection, providing information on their hosts and distribution.

In preparing this catalogue, all files and register book were revised, as well as specimens kept in Oudemans liquid or slide-mounted.

The IBSP collection has 6784 lots of mites in liquid medium and 6700 slide-mounted specimens. A total of 154 of those lots, representing 589 specimens, corresponds to *Ixodes* species found in Brazil. The nomenclature used for hosts has been updated according to Emmons (1990) and Wilson & Reeder (1993). Unless otherwise mentioned in the text, information on the distribution of species is based on the material deposited at the IBSP.

Some types of *Ixodes* referred in the present work are deposited in other institutions in addition to Instituto Butantan – IBSP: Natural History Museum, London (BMNH); École Nationale de Vétérinaire, Toulouse, France (ENVT); Instituto Oswaldo Cruz, Rio de Janeiro, Brasil (IOC); Museum National D'Histoire Naturelle, Paris, France (MNHN); Rocky Mountain Laboratory, Hamilton, Montana, USA (RML); Museum für Naturkunde Zentralinstitut der Humboldt-Universität zu Berlin, Berlin, Germany (ZMB).

***Ixodes amarali* Fonseca**

Ixodes amarali Fonseca, 1935: 137, figs. 1-4. Lectotype female, IBSP 917; paralectotypes 3 females, IBSP 818, here designated; collected on a wild rodent from Barro Alto, State of Minas Gerais, Brazil, examined, except 1 female paralectotype not found in this collection.

Material: The IBSP has 64 lots with 162 specimens, consisting of 48 females, 97 nymphs and 17 larvae (Table I). Although, male specimens have not yet been reported in the literature, while revising the IBSP slide mounted material, a single male specimen (IBSP 1613, without origin nor host, determined by Radford, 1938) was found.

Distribution: Northeastern and Southeastern Regions of Brazil (Aragão, 1936).

***Ixodes affinis* Neumann**

Ixodes affinis Neumann, 1899: 120. Syntypes, 12 females collected on *Felis pardalis* (Felidae) from Costa Rica.

Ixodes ricinus aragaoi Fonseca, 1935: 131, figs. 1-2. Syntypes, 8 males and 21 females collected on *Mazama simplicicornis* (= *M. gouazoubira*) (Cervidae) from Cotia, São Paulo State, Brazil, deposited in the IBSP 829, examined; Cooley & Kohls (1945): 29-34 (Syn.).

I. aragaoi Aragão & Fonseca, 1952: 727-728 (Stat. n.); Fairchild (1966): 180 (Syn.).

Material: 13 lots with 208 specimens, consisting of 75 males, 132 females and 1 nymph (Table II).

Distribution: According to Fairchild *et al.* (1966), *I. affinis* is found from Georgia and Florida (south of the USA) to Brazil, and prefers deer and larger carnivores as hosts. Except for 1 female collected in the State of Rio Grande do Sul, the lots at IBSP come from the State of São Paulo. This species was also recorded by Ribeiro (1966/1967) in the State of Paraná. Pinheiro Machado, State of Rio Grande do Sul, represents the southern most place where the species was found.

***Ixodes auritulus* Neumann**

Ixodes auritulus Neumann, 1904: 450. Syntypes, 3 females, MNHN 2474, 2483; 1 female, ENVT, not examined.

Material: 3 lots with 5 immature specimens (IBSP 746, 1 nymph; IBSP 833, 1 nymph, collected on Galliformes birds, *Penelope superciliaris* (Cracidae), from Serra da Cantareira, in the city of São Paulo, in 1936; IBSP 3597, 2 nymphs and 1 larva, on slides, collected on *Penelope* sp., from Cotia, São Paulo State, in 1956).

Distribution: According to Clifford *et al.* (1973) *I. auritulus* is found in Neotropical, Nearctic, Ethiopian, and Australian zoogeographic areas. In Brazil, adult specimens of *I. auritulus* were collected on Passeriformes birds from Serra de Itatiaia, Rio de Janeiro State, in 1922 (Cooley & Kohls, 1945); on Passeriformes from Curitiba, Paraná State (Arzua *et al.*, 1994) and, on a Columbiformes bird from Paraná State (Marcia Arzua, personal communication). New host records and local were presently added by the lots IBSP 833 e IBSP 3597 analyzed.

***Ixodes didelphidis* Fonseca & Aragão**

Ixodes didelphidis Fonseca & Aragão, 1952: 713, figs. 4 - 5. Syntypes, 4 females, IOC 40, collected on *Metachirops* sp. (= *Philander* sp. L, 1758) from Anápolis,

Goiás State; allotype male, IOC 93, collected on *Didelphis albiventris* from Anápolis, Goiás State, not examined.

This species differs from *I. loricatus* in having somewhat larger spiracular plates with slightly smaller and more numerous goblets (Fairchild *et al.*, 1966). Biological studies on both species are necessary to determine whether such differences represent interspecific or intraspecific variations.

Material: 7 lots with 17 specimens, consisting of 5 males and 12 females (Table III).

Distribution: Middle-Western (Fonseca & Aragão, 1952), Southern (Ribeiro, 1966/1967) Brazil. New local records were presently added for southeastern regions, according to Table III.

***Ixodes fuscipes* Koch**

Ixodes fuscipes Koch, 1844: 233; 1847: 106, fig. 80. Holotype female, ZMB 1123, on unknown host, from Brazil, examined.

I. spinosus Neumann, 1899: 146-147. Syntypes, 4 females, 7 nymphs, 3 larvae, collected on *Dasyprocta aguti* (= *Dasyprocta agouti*) from Brazil; Neumann, 1901: 288 - 289 (Syn.).

Material: 8 lots with 12 specimens, consisting of 2 females, 8 nymphs, and 2 larvae (Table IV).

Distribution: This species is found in Central and South America. In Brazil it is found in the States of Pará, Minas Gerais, Rio de Janeiro (Aragão, 1936) and, São Paulo. According to Aragão (1936), *I. fuscipes* is found on agoutis (*D. agouti*) and pacas (*A. paca*). Nevertheless, immature ticks were collected on Sciuridae and adult ticks on a paca and a bird (Table IV) adding new host and local records.

***Ixodes loricatus* Neumann**

Ixodes loricatus Neumann, 1899: 139-142, figs. 15-17. 2 females and 1 male, from *Didelphis quica* (= *Philander opossum*) from Brazil and 2 nymphs from Southern Brazil (coll. Göeldi); 2 nymphs and 1 larva found on *Microdidelphis sorex* (= *Monodelphis sorex* (Hensel) 1872), from Rio Grande do Sul, Brazil; 5 males and 4 females from Buenos Aires (coll. G. Berg), deposited in BMNH and ENVT, not examined.

Material: 58 lots with 182 specimens, consisting of 24 males, 93 females, 10 nymphs and 55 larvae (Table V).

Distribution: From Mexico to Argentina (Fairchild *et al.*, 1966).

***Ixodes luciae* Senevet**

Ixodes luciae Senevet, 1940: 896-898, figs. 3-4. The types came from the French Guiana but Senevet did not give the locality, host nor the number of specimens, depository unknown.

Ixodes loricatus spinosus Nuttall, 1910: 411, fig. 4. 3 females, N 647, taken from a large Opossum, Tabasco de la Frontera, Mexico (ex Hon. N. C. Rothschild's collection). Preoccupied by *spinosus* Neumann, 1899.

Lectotype female and 1 female paralectotype, N 647, *Ixodes loricatus spinosus*, designated by Keirans & Brewster (1981), 1 female from lot N 647, was not cited by Keirans & Brewster (1981), not examined.

Material: 1 lot from Igarapé-Açu, Pará State, on *Metachirops opossum* (= *Philander opossum*), IBSP 3845, 2 males and 1 female, in 1955.

Distribution: Panama, Mexico, Honduras, Guatemala, Colombia, Venezuela, Peru, French Guiana, Argentina and Brazil (Fairchild *et al.*, 1966) and Bolivia (Keirans & Brewster, 1981).

There are no specimens of *I. schulzei* Aragão & Fonseca, 1951 in IBSP. Holotype female, IOC 481, on indetermined host, from Teresópolis, RJ; paratypes 2 females, IOC 455, 456, on *Nectomys squamipes*, from Tinguá, RJ; 1 female paratype, IOC 476, on wild rodent, from Brusque, SC, not examined; nor *I. coxaefurcatus* Neumann, 1899 (Holotype male, ZMB 7165, on indetermined host, from Brazil), examined.

In spite of being cited in the catalogue of Aragão & Fonseca (1961), the 2 females syntypes of *I. cooleyi* Aragão & Fonseca, 1951, collected on *Ctenomys* sp., deposited in the IBSP 1385, are from Oruro, Bolivia.

In IBSP there are still 16 lots of *I. affinis* from Peru and 2 lots of *I. luciae* from Bolivia; 22 lots of *Ixodes* sp., composed by immature specimens, and 2 lots with 2 females and 1 nymph on *Dasyprocta* sp. from Amazonas State, not yet identified.

Based on the material studied, small wild mammals are the preferential hosts for Brazilian species of *Ixodes*, except for *I. affinis* and *I. auritulus*.

In the present study, new geographical records were added for *I. affinis*, *I. auritulus*, *I. didelphidis* and *I. fuscipes*.

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Table I. Registers for *Ixodes amarali* Fonseca, 1935, occurrences and hosts

Register Number	Localities	Host	Specimens	Year
IBSP 818*	Barro Alto - MG	Rodentia	2 F	1935
IBSP 917**	Barro Alto - MG	Rodentia	1 F	1934
IBSP 3201	Guaraciaba - MG	Rodentia	1 N	1953
IBSP 3602	Ouro Preto - MG	<i>Oligoryzomys microtis</i> (Muridae)	1 N	1954
IBSP 3632	Ouro Preto - MG	<i>Rattus rattus</i> (Muridae)	1 N	1954
IBSP 3635	Ouro Preto - MG	<i>Oryzomys subflavus</i> (Muridae)	1 L	1954
IBSP 2691	Anadias - AL	Rodentia	1 N	1952
IBSP 5218	Anadias - AL	Rodentia	1 N	1953
IBSP 5341	Anadias - AL	Rodentia	2 N	1953
IBSP 2716	Palmeira dos Índios - AL	Rodentia	1 N	1952
IBSP 3409	Palmeira dos Índios - AL	Rodentia	4 N	1952
IBSP 2840	Princesa Izabel - PB	<i>Monodelphis domestica</i> (Didelphidae)	2 F	1952
IBSP 3400	Bom Conselho - PE	<i>O. subflavus</i>	2 N	1952
IBSP 2874	Caruarú - PE	Rodentia	1 N	1954
IBSP 2875	Caruarú - PE	Rodentia	4 N	1954
IBSP 2877	Caruarú - PE	Rodentia	9 N	1954
IBSP 3407	Caruarú - PE	Rodentia	1 N	1955
IBSP 5573	Caruarú - PE	<i>Rhipidomys matascalis</i> (Muridae)	1 L	1953
IBSP 5574	Caruarú - PE	<i>R. matascalis</i>	1 L	1953
IBSP 2815	Garanhuns - PE	<i>Akodon arviculoides</i> (Muridae)	1 N	1952
IBSP 2926	Garanhuns - PE	<i>Oligoryzomys eliurus</i> (Muridae)	2 N	1952
IBSP 3113	Garanhuns - PE	<i>Holochilus sp</i> (Muridae)	1 N	1952
IBSP 3412	Garanhuns - PE	<i>O. subflavus</i>	1 N	1952
IBSP 5545	Garanhuns - PE	<i>O. subflavus</i>	3 N	1953
IBSP 5547	Garanhuns - PE	<i>O. subflavus</i>	1 F	1953
IBSP 5549	Garanhuns - PE	<i>O. subflavus</i>	1 L	1953
IBSP 2869	Pesqueira - PE	<i>M. domestica</i>	1 F	1952
IBSP 5517	Pesqueira - PE	<i>M. domestica</i>	1 F	1953
IBSP 2565	Triunfo - PE	<i>M. domestica</i>	2 F, 3 N, 1 L	1952
IBSP 2841	Triunfo - PE	<i>M. domestica</i>	9 F, 1 L	1953
IBSP 2842	Triunfo - PE	<i>M. domestica</i>	2 F, 2 N	1953
IBSP 2843	Triunfo - PE	<i>M. domestica</i>	3 F, 1 N	1953
IBSP 2844	Triunfo - PE	<i>M. domestica</i>	1 F	1953
IBSP 2897	Triunfo - PE	Rodentia	2L	1954
IBSP 2899	Triunfo - PE	<i>M. domestica</i>	2 F, 2 N	1954
IBSP 2936	Triunfo - PE	<i>M. domestica</i>	1 N	1952
IBSP 3386	Triunfo - PE	<i>M. domestica</i>	9 F, 2 N, 1 L	1952
IBSP 3391	Triunfo - PE	Rodentia	8 N	1954
IBSP 5629	Triunfo - PE	<i>M. domestica</i>	2 N	1953
IBSP 5630	Triunfo - PE	<i>M. domestica</i>	1 F	1953
IBSP 2372	São Benedito - CE	Rodentia	1 N	1954
IBSP 3202	São Benedito - CE	Rodentia	1 N, 8 L	1953
IBSP 3203	São Benedito - CE	Rodentia	1 N	1953
IBSP 3434	São Benedito - CE	Rodentia	2 N	1953
IBSP 5290	São Benedito - CE	<i>O. subflavus</i>	1 N	1952
IBSP 5291	São Benedito - CE	Rodentia	2 N	1952
IBSP 5305	São Benedito - CE	<i>O. subflavus</i>	1 N	1953
IBSP 5306	São Benedito - CE	<i>O. eliurus</i>	6 N	1952
IBSP 5621	São Benedito - CE	<i>O. subflavus</i>	4 N	1952
IBSP 5622	São Benedito - CE	<i>Didelphis albiventris</i> (Didelphidae)	8 F	1953
IBSP 2746	Viçosa - CE	Rodentia	1 N	1952
IBSP 2905	Viçosa - CE	Marsupialia	1 F	1954
IBSP 3184	Viçosa - CE	Rodentia	1 N	1953
IBSP 3192	Viçosa - CE	Rodentia	1 N	1953
IBSP 3396	Viçosa - CE	Rodentia	2 N	1952
IBSP 3397	Viçosa - CE	Rodentia	1 N	1952
IBSP 3398	Viçosa - CE	Rodentia	2 N	1952
IBSP 3433	Viçosa - CE	Rodentia	1 N	1953
IBSP 2648	Northeast	<i>O. subflavus</i>	5 N	1954
IBSP 2654	Northeast	<i>O. subflavus</i>	1 N	1954
IBSP 2664	Northeast	<i>O. subflavus</i>	1 N	1954
IBSP 2668	Northeast	<i>O. subflavus</i>	3 N	1954
IBSP 3389	Northeast	<i>O. subflavus</i>	1N	1954
IBSP 5624	Northeast	<i>M. domestica</i>	2F	1956

Table II. Registers for *Ixodes affinis* Neumann, 1899, occurrences and hosts

Register Number	Localities	Host	Specimens	Year
IBSP 744	São Paulo - SP	<i>Mazama gouazoubira</i> (Cervidae)	4 M, 5 F	1934
IBSP 829	Cotia - SP	<i>M.gouazoubira</i>	8 M, 21 F	1934
IBSP 1730	Cotia - SP	<i>Mazama</i> sp.	6 M, 17 F	1939
IBSP 5768	Cotia - SP	Cervidae	5 M, 9 F	1960
IBSP 3846	Itapeccerica da Serra-SP	Cervidae	1 M	1955
IBSP 5632	Itapeccerica da Serra-SP	Pet dog	1 F	1957
IBSP 5701	Itapeccerica da Serra-SP	Cervidae	15 M, 16 F	1959
IBSP 5697	Embú - SP	Cervidae	30 M, 55 F	1959
IBSP 5778	Embú - SP	Cervidae	4 M, 7 F	1960
IBSP 5791	Embú-Guaçu - SP	Cervidae	1 M	1960
IBSP 1778	São Paulo - SP	-	1 M	1928
IBSP 1779	São Paulo - SP		1N	1928
IBSP 890	Pinheiro Machado-RS	<i>M.gouazoubira</i>	1 F	1923

M, male; F, female; N, nymph; slides were represented in bold

Table III. Registers for *Ixodes didelphidis* Fonseca & Aragão, 1952, occurrences and hosts

Register Number	Localities	Host	Specimens	Year
IBSP 1355	São Paulo - SP	<i>Didelphis marsupialis</i> (Didelphidae)	2M	1932
IBSP 3384	São Paulo - SP	<i>D. albiventris</i>	1F	1954
IBSP 4142	São Paulo - SP	<i>D. marsupialis</i>	7F	1941
IBSP 4569	São Paulo - SP	<i>Didelphis</i> sp.	3F	1952
IBSP 4959	São Paulo - SP	<i>D. marsupialis</i>	1M, 1F	1954
IBSP 5659	São Paulo - SP	<i>Marmosa</i> sp. (Didelphidae)	1M	1958
IBSP 5634	Araxá - MG	<i>Marmosa</i> sp.	1M	1957

M, male; F, female

Table IV. Registers for *Ixodes fuscipes* Koch, 1844, occurrences and hosts

Register Number	Localities	Host	Specimens	Year
IBSP 741	Angra dos Reis - RJ	<i>Agouti paca</i> (Agoutidae)	1 F	1931
IBSP 745	São Paulo - SP	<i>Sciurus aestuans</i> (Sciuridae)	2 N	1934
IBSP 808	São Paulo - SP	<i>S. aestuans</i>	1 N	1936
IBSP 809	São Paulo - SP	<i>S. aestuans</i>	2 L	1935
IBSP 810	São Paulo - SP	<i>S. aestuans</i>	2 N	1935
IBSP 1184	São Paulo - SP	<i>S. aestuans</i>	2 N	1937
IBSP 1186	São Paulo - SP	Rodentia	1 N	1937
IBSP 4457	São Paulo - SP	(Emberizidae: Passeriformes)	1 F	1950

F, female; N, nymph; L, larva

Table V. Registers for *I. loricatus* Neumann, 1899, occurrences and hosts

Register Number	Localities	Host	Specimens	Year
IBSP 742	São Paulo - SP	<i>D. marsupialis</i>	5 F	1932
IBSP 743	São Paulo - SP	<i>D. marsupialis</i>	3 F	1932
IBSP 812	São Paulo - SP	<i>D. marsupialis</i>	1 F	1935
IBSP 813	São Paulo - SP	<i>D. marsupialis</i>	2 M	-
IBSP 814	São Paulo - SP	<i>D. marsupialis</i>	1 M	1934
IBSP 815	São Paulo - SP	<i>D. marsupialis</i>	1 M, 1 F	1933
IBSP 816	São Paulo - SP	<i>D. marsupialis</i>	1 M, 1 F	1936
IBSP 817	São Paulo - SP	<i>D. marsupialis</i>	1 F	1932
IBSP 867	São Paulo - SP	<i>Didelphis</i> sp.	2 F	1934
IBSP 899	São Paulo - SP	<i>D. marsupialis</i>	25 L	1936
IBSP 927	São Paulo - SP	<i>D. marsupialis</i>	1 F	
IBSP 1095	São Paulo - SP	<i>D. marsupialis</i>	3 L	1937
IBSP 1195	São Paulo - SP	Rodentia	1 M	1937
IBSP 1258	São Paulo - SP	Free	1 F	1938
IBSP 1262	São Paulo - SP	<i>Marmosa</i> sp.	1 F	1938
IBSP 1282	São Paulo - SP	<i>D. marsupialis</i>	2 F	1914
IBSP 1354	São Paulo - SP	<i>D. marsupialis</i>	2 F	1932
IBSP 1626	São Paulo - SP	<i>D. marsupialis</i>	2 M, 1 F	1938
IBSP 1959	São Paulo - SP	<i>Oryzomys</i> sp.	2 N, 7 L	1940
IBSP 1991	São Paulo - SP	<i>D. marsupialis</i>	1 M, 1 F	1940
IBSP 1994	São Paulo - SP	Rodentia	1 F	1940
IBSP 3599	São Paulo - SP	<i>D. marsupialis</i>	1 F	1955
IBSP 4142	São Paulo - SP	<i>D. marsupialis</i>	1M, 1F	1941
IBSP 4271	São Paulo - SP	<i>D. marsupialis</i>	1F, 20L	1941
IBSP 4272	São Paulo - SP	<i>D. marsupialis</i>	2 F	1942
IBSP 4303	São Paulo - SP	<i>D. marsupialis</i>	1 F	1942
IBSP 4958	São Paulo - SP	<i>D. marsupialis</i>	3 F	1954
IBSP 4980	São Paulo - SP	<i>Didelphis</i> sp.	1 M, 1 F	1954
IBSP 4982	São Paulo - SP	<i>D. marsupialis</i>	2 F	1954
IBSP 4985	São Paulo - SP	<i>D. marsupialis</i>	8 F	1954
IBSP 4998	São Paulo - SP	<i>Didelphis</i> sp.	3 F	1952
IBSP 5637	São Paulo - SP	<i>D. marsupialis</i>	2 F	1957
IBSP 1800	Ribeirão Pires - SP	<i>Marmosa</i> sp.	1 F	1939
IBSP 4487	Sampaio Moreira - SP	<i>Marmosa</i> sp.	2 F	1951
IBSP 4564	Francisco Morato - SP	<i>Didelphis</i> sp.	1 F	1952
IBSP 4569	João Eugênio - PR	<i>Didelphis</i> sp.	1 F	1952
IBSP 891	Pelotas - RS	<i>D. marsupialis</i>	2 F	1920
IBSP 892	Pelotas - RS	<i>D. marsupialis</i>	8 N	1936
IBSP 929	Angra dos Reis - RJ	-	1 F	
IBSP 5633	Araxá - MG	<i>Didelphis</i> sp.	1 F	1957
IBSP 2566	Garanhuns - PE	<i>D. albiventris</i>	2 F	1953
IBSP 3114	Garanhuns - PE	<i>D. albiventris</i>	2 M	1952
IBSP 3240	Garanhuns - PE	<i>D. albiventris</i>	4 M, 1 F	1952
IBSP 3385	Garanhuns - PE	<i>D. albiventris</i>	5 F	1953
IBSP 3419	Garanhuns - PE	<i>Oryzomys subflavus</i>	1 F	1952
IBSP 5623	Garanhuns - PE	<i>D. albiventris</i>	4 F	1952
IBSP 5625	Garanhuns - PE	<i>D. albiventris</i>	4 F	1953
IBSP 5626	Garanhuns - PE	<i>D. albiventris</i>	1 M, 8 F	1953
IBSP 5627	Caruarú - PE	<i>D. albiventris</i>	1 M, 3 F	1953
IBSP 5628	Caruarú - PE	<i>D. albiventris</i>	1 F	1953
IBSP 2567	Coité - CE	<i>Didelphis</i> sp.	2 F	1952
IBSP 2649	Palmeira dos Índios - AL	<i>D. albiventris</i>	1 F	1954
IBSP 2653	Palmeira dos Índios - AL	<i>Zygodontomys</i> sp.	1 F	1954
IBSP 2666	Palmeira dos Índios - AL	Rodentia	1 M	1954
IBSP 2568	Northeast	<i>D. albiventris</i>	1 F	1954
IBSP 2760	Northeast	Rodentia	1 F	1954
IBSP 2773	Northeast	Rodentia	4 M	1954
IBSP 5619	Northeast	<i>D. albiventris</i>	1 M	1956

M, male; F, female; N, nymph; L, larva; slides were represented in bold

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