

The Type Specimens of Chewing Lice (Insecta, Mallophaga) Deposited in the Entomological Collection of Instituto Oswaldo Cruz, Rio de Janeiro, RJ, Brazil

Margareth Cardozo-de-Almeida/⁺, Pedro Marcos Linardi*, Jane Costa**

Laboratório de Transmissores de Leishmanioses **Núcleo de Informatização da Coleção Entomológica, Departamento de Entomologia, Instituto Oswaldo Cruz-Fiocruz, Av. Brasil 4365, 21045-900 Rio de Janeiro, RJ, Brasil *Departamento de Parasitologia, ICB, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brasil

This paper presents a list of 131 Mallophaga type specimens deposited in the Werneck Collection of Instituto Oswaldo Cruz, Rio de Janeiro, RJ, Brazil. It includes 69 holotypes, 62 allotypes, 683 paratypes, 1 syntype and 2 neoparatypes, distributed among 6 families and 35 genera. The types are listed with their respective data and literature.

Key words: type specimens - Mallophaga - chewing lice - Werneck Collection - Instituto Oswaldo Cruz - Rio de Janeiro - Brazil

The Werneck Collection derives from field captures undertaken by Fabio Leoni Werneck, and also by other researchers, from 1888 to 1960, in Brazil (14 states), and in other countries (51 countries, and three islands). The Werneck Collection also includes specimens donated to the Instituto Oswaldo Cruz (IOC) in Rio de Janeiro by several other institutions from Brazil and abroad. In 1961, this collection was closed after the death of this dedicated researcher, being thereafter referred as a historical collection. The Werneck Collection includes insects of medical and veterinary importance such as Mallophaga, Anoplura, Siphonaptera and Hemiptera.

The present work represents the continuation of an ongoing effort to review and update the information available in the insect collections maintained at the Entomology Department of the IOC-Fiocruz. Recently, a list including 34 type specimens of sucking lice (Anoplura) also from the Werneck Collection was published, contributing to the recognition of its importance and helping to make available this rich source of scientific information (Cardozo-de-Almeida et al. 1999).

The Werneck Collection is part of the Entomological Collection (EC) of IOC, which is one of the largest and most expressive in Latin America with, nowadays, approximately 2 million specimens. Several other historical collections are part of the EC, which also includes a "general collection" representing all the insect orders. Following the guidelines prescribed by the International Code of Zoological Nomenclature, different authors have published lists of the type specimens included in the EC of IOC: Gonçalves et al. (1993), Marchon-Silva et al. (1996),

Ferraz (1997), Cardozo-de-Almeida et al. (1999) and Felipe-Bauer and Oliveira (2001). Entomological collections are indispensable for the modern taxonomy, since the study of the comparative characters has been considering the starting point to new scientific investigations (Martins 1983).

The Werneck Collection is represented by 4,069 slides deposited in 136 wood slide-boxes containing 30 slides each. Records of this material are kept in 9 protocol-books, and archives (which include 5,285 index-cards) with information such as: locality, date, host species identification, record number, sex, slide number, collector identification, number of samples per slide, and the louse species identification. There are also several unidentified specimens kept in 373 flasks.

The Mallophaga specimens deposited in the Werneck Collection are preserved in 2,823 slides representing 369 species of 73 genera. These include 131 type species (69 holotypes and 62 allotypes), and 683 paratypes, 1 syntype and 2 neoparatypes, distributed among 35 genera, a total of 817 type specimens.

Lyal (1985), based on cladistic analysis of the characters, presented a classification with these two groups of lice (Mallophaga and Anoplura) included in a single order Phthiraptera, comprising four sub-orders: Anoplura, Rhynchophthirina, Ischnocera, and Amblycera. However, because other phylogenetic analyses did not reach the same conclusion (Kim & Ludwig 1978, Kim 1988), Mallophaga is here considered as an insect order. A list of 131 Mallophaga type specimens deposited in the Werneck Collection is presented in this current paper. The methodology here applied was the same of Cardozo-de-Almeida et al. (1999). Main synonymies are indicated in the text. Other synonymies for chewing lice can be found in Hopkins (1949). Mammal taxonomy follows that presented by Wilson and Reeder (1993), also available by Smithsonian National Museum of Natural History in web (www.nmnh.si.edu/msw). For birds, the specific names are in accordance with informations available at <http://birdingonthe.net/> as Sibley and Monroe world list of birds. A list of host synonymy is also presented after the Mallophaga type specimens.

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⁺Corresponding author. Fax: +55-21-2573.4468. E-mail: marca@ioc.fiocruz.br

*Research fellow CNPq

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The chewing lice are small wingless insects, ectoparasites of mammals and birds. Because they go through all their biological cycle among the fur and feathers of their hosts, most Mallophaga have developed a high level of specificity to them (Linardi 2001). So, such as Anoplura, they are of fundamental importance to studies on co-evolution with their respective hosts (Hopkins 1949, Vanzolini & Guimarães 1955, Barker 1994).

Their chewing buccal apparatus is adapted to triturate feathers, epidermic scales and fur. Some species can also eventually ingest blood flowing due to some host skin damage.

The chewing lice, that parasitize birds, are in general more harmful, mainly the ones living on domestic birds. The effects of the chewing lice can be reflected in the decrease of productivity of their hosts. In mammals, the constant bites in high infestations cause damage to the skin leading to wounds. One species, *Trichodectes canis*, is incriminated as the intermediary host of the *Dipylidium caninum*.

Family Boopiidae

Genus *Boopia* Piaget, 1880

dubia Werneck & Thompson, 1940. *Boopia*. (1039) Paratypes 1 male (3456) and 1 female (3455); *Lasiorhinus latifrons*; Blanchetown, Australia.

mjöbergi Werneck & Thompson, 1940. *Boopia*. (784) Paratype 1 female (3459); *Macropus major*; Victoria, Australia.

phanerocerata Harrison & Johnston, 1916. *Boopia*. (730) Paratypes 1 male (3458) and 1 female (3457); *Perameles nasuta*; Sidney, Australia; VI-1911.

Genus *Paraboopia* Werneck & Thompson, 1940

flava Werneck & Thompson, 1940. *Paraboopia*. (1101) Paratypes 1 male (3462) and 1 female (3461); *Osphranter robustus*; Scone, Australia; 18-VII-1925.

Family Gyropidae

Genus *Abrocomophaga* Emerson & Price, 1976

chilensis Emerson and Price, 1976. *Abrocomophaga*. Paratypes 1 male and 1 female (4063); *Abrocoma bennetti*; Santiago, Chile; 2-XI-1974.

Genus *Gliricola* Mjöberg, 1910

aequatorialis Werneck, 1948. *Gliricola*. (2682) Paratypes 1 male (3330) and 1 female (3329); *Proechimys brevicauda*; Jatun Yacu, Oriente, Equator; Clarke-Macintyre coll.

brasiliensis Werneck, 1934. *Gliricola*. (512) Holotype 1 female (997). Allotype 1 male (1000). Paratypes 4 males (999, 1001-1003) and 2 females (996, 998); *Cavia porcellus*; Pedreiras, São Paulo, Brazil; F Fonseca coll., 21-VIII-1933. *calcaratus* Werneck, 1937. *Gliricola*. (940) Holotype 1 male (2037). Allotype 1 female (2038). Paratypes 2 males (2039, 2040), 5 females (2041-2045) and 2 nymphs (2046, 2047); *Proechimys oris*; River Acará, Pará, Brazil.

capromydis armatus Werneck, 1944. *Gliricola*. (1732) Paratypes 1 male (2847), 2 females (2845, 2846) and 2 nymphs (2848, 2849); *Capromys prehensilis*; San Diego de los Baños, Cuba; Ferris coll.

capromydis capromydis Werneck, 1944. *Gliricola*. (2202) Paratypes 15 males (2840-2842, 2843, 2844), 8 females (2837-2839, 2843, 2844) and 2 nymphs (2844); *Capromys pilorides*; Camaguey, Cuba; WM Mann coll.

columbanus Werneck, 1944. *Gliricola*. (1729) Holotype 1 male (2834); *Proechimys mincae*; Minca, Colombia; Ferris coll.

cubanus Werneck, 1944. *Gliricola*. (1731) Holotype 1 male (2857). Allotype 1 female (2857). Paratype 1 male (2858); *Capromys pilorides*; Camaguey, Cuba; Ferris coll.

decurtatus maculatus Werneck, 1942. *Gliricola*. (1557) Holotype 1 female (2736). Allotype 1 male (2739). Paratypes 2 males (2740, 2741) and 2 females (2737, 2738); *Proechimys iheringi*; Caixa D'Água Forest, Santa Tereza, Espírito Santo, Brazil.

decurtatus marajoensis Werneck, 1942. *Gliricola*. (935) Holotype 1 female (2054). Allotype 1 male (2056). Paratype 1 male (2055); *Loncheres armatus*; Pará, Brazil.

decurtatus paraensis Werneck, 1942. *Gliricola*. (951) Holotype 1 female (2057). Allotype 1 male (2060) Paratypes 2 males (2058, 2059); *Loncheres grandis*; Monte Alegre, Pará, Brazil.

echimydis Werneck, 1933. *Gliricola*. (344) Holotype 1 female (698). Allotype 1 male (699). Paratypes 7 females (700-702, 704, 705); *Echymys cayennensis*; Angra dos Reis, Rio de Janeiro, Brazil; L Travassos coll.

ewingi Werneck, 1944. *Gliricola*. (1733) Holotype 1 male (2860). Allotype 1 female (2859); *Capromys prehensilis*; San Diego de los Baños, Cuba; Ferris coll.

fonsecai Werneck, 1933. *Gliricola*. (65) Holotype 1 female (284). Allotype 1 male (290). Paratypes 4 males (288, 289, 291) and 12 females (283, 286, 287, 293 a 299); *Nelomys* sp.; Butantan, São Paulo, Brazil; F Fonseca coll. Synonym of *Gliricola decurtatus fonsecai* Werneck, 1942.

humilis Werneck, 1951. *Gliricola*. (2823) Holotype 1 male (3524). Allotype 1 female (3523). Paratypes 2 males (3525, 3526); *Proechimys albispinus albispinus*; "Maco" Seco, Andaraí, Bahia, Brazil; J Moojen coll.

lindolphoi Werneck, 1942. *Gliricola*. (1524) Holotype 1 male (2721); *Cavia aperea*; Santo Amaro, São Paulo, Brazil; LR Guimarães coll., 06-I-1937.

mendezii Emerson & Price, 1975 *Gliricola*. Paratypes 2 females (4062); *Proechimys semispinosus*; Capibara, Amazonas, Venezuela; 09-VI-1967.

mesomydis Werneck, 1933. *Gliricola*. (337) Holotype 1 female (679). Allotype 1 male (680). Paratypes 4 males (688-691) and 7 females (681-687); *Euryzygomatomys spinosus catellus*; Butantan, São Paulo, Brazil; F Fonseca coll.

mirandai Werneck, 1935. *Gliricola*. (788) Holotype 1 male (1419). Allotype 1 female (1420). Paratype 1 female (1421); *Isothrix bistriatus*; River Manoel Correia, Porto Bicentenário, Mato Grosso, Brazil; C Rondon coll., 12-II-1935.

o'mahonyi Werneck, 1951. *Gliricola*. (2824) Paratypes 3 males (3527, 3528), 1 female (3527) and 1 nymph (3528); *Geocapromys ingrahami*; Bahamas; E O'Mahony coll., 17-II-1948.

panamensis Werneck, 1944. *Gliricola*. (1734) Allotype 1 female (2835). Paratypes 1 male (2835) and 2 females (2836); *Sigmodon hispidus chiriquensis*; Campo Pital, Chiriqui, Panama; LH Dunn coll., VII-1929.

pintoi Werneck, 1935. *Gliricola*. (759) Holotype 1 female (1295). Allotype 1 male (1296); *Hapale santaremensis*; River Tapajoz, Pará, Brazil; 02-IV-1934.

spinus Werneck, 1942. *Gliricola*. (1547) Holotype 1 male (2725). Allotype 1 female (2722). Paratypes 3 males (2726-2728) and 2 females (2723, 2724); *Cavia aperea*; Santo Amaro, São Paulo, Brazil; LR Guimarães coll., 06-I-1937. *tiptoni* Emerson & Price, 1975 *Gliricola*. Paratypes 1 male and 1 female (4061); *Proechimys semispinosus*; El Dividivi, Valera, Trujillo, Venezuela; 13-IX-1965.

vogelsangi Werneck, 1951. *Gliricola*. (2795) Holotype 1 male (3508). Allotype 1 female (3511). Paratypes 2 males (3509, 3510) and 2 females (3512, 3513); *Proechimys trinitatis*; Caripito, Monagas, Venezuela; EG Vogelsang coll.

Genus *Gyropus* Nitzsch, 1818

cercomydis Werneck, 1942. *Gyropus*. (1383) Holotype 1 male (2667). Allotype 1 female (2668). Paratypes 1 male and 1 female (flask 209); *Cercomys laurentis*; Chique-Chique, Bahia, Brazil.

cruzi Werneck, 1933. *Tetragyropus*. (72) Holotype 1 female (319). Allotype 1 male (330). Paratypes 7 males (327-329, 332-334), 13 females (315-318, 321-327) and 9 nymphs (335-343); *Euryzgomatomys spinosus catellus*; Butantan, São Paulo, Brazil; F Fonseca coll. Synonym of *Gyropus cruzi* Werneck, 1933.

freitasi Werneck, 1942. *Gyropus*. (1368) Holotype 1 male (2641). Allotype 1 female (2642). Paratypes 3 males (2643-2645); *Cercomys cunicularis inermis*; Serra do Ouro, Pacoti, Ceará, Brazil; 13-II-1941.

grypophallus Werneck, 1939. *Gyropus*. (363) Holotype 1 male (2227). Allotype 1 female (2223). Paratypes 3 males (2228-2230) and 3 females (2224-2226); *Ctenomys lewisi*; Santa Cruz de la Sierra, Bolivia; FL Werneck coll., 11-X-1937. Synonym of *Phtheiropoios ewingi* (Eichler, 1939).

lenti distinctus Werneck, 1948. *Gyropus*. (1640) Holotype 1 male (2863). Allotype 1 female (2864). Paratypes 1 male (2867) and 2 females (2865, 2866); *Cercomys cunicularis fosteri*; Salobra, Mato Grosso, Brazil; Teixeira de Freitas coll.

lenti lenti Werneck, 1936. *Gyropus*. (884) Holotype 1 male (1941). Allotype 1 female (1945). Paratypes 3 males (1942-1944) and 1 female (1946); *Cercomys laurentis*; Ceará, Brazil; H Lent coll.

limai Werneck, 1948. *Gyropus*. (1654) Holotype 1 male (2934). Allotype 1 female (2935). Paratypes 3 males (2937-2940), 1 female (2936) and 2 nymphs (2941, 2942); *Proechimys setosus*; Fortuna, Bahia, Brazil; 13-I-1944.

martini iheringi Werneck, 1948. *Gyropus*. (1672) Holotype 1 male (2955). Allotype 1 female (2956). Paratypes 2 males (2959, 2960), 2 females (2957, 2958) and 4 genitalia of male (2964); *Proechimys iheringi*; Santa Tereza, Espírito Santo, Brazil.

martini martini Werneck, 1934. *Tetragyropus*. (507) Holotype 1 female (992). Allotype 1 male (994). Paratypes 2 males (993, 995), 3 females (989-991) and 1 nymph (1066); *Proechimys albispinus*; Corcovado, Rio de Janeiro, Brazil; 1933. Synonym of *Gyropus martini* Werneck, 1934.

martini matthaeensis Werneck, 1948. *Gyropus*. (1669) Holotype 1 male (2986). Allotype 1 female (2987). Paratypes 2 males (2988, 2989) and 1 genitalia of male (2990); (wild

rat); Ribeirão do Engano, São Mateus, Espírito Santo, Brazil; L Travassos coll.

nematophallus Werneck, 1935. *Gyropus*. (779) Holotype 1 male (1383). Allotype 1 female (1381). Paratypes 5 nymphs (1384); *Ctenomys luteolus*; Abra Pampa, Jujuy, Argentina; 02-II-1935. Synonym of *Phtheiropoios nematophallus* (Eichler, 1939).

parasetosus Werneck, 1935. *Gyropus*. (798) Holotype 1 male (1468). Allotype 1 female (1469). Paratypes 3 females (1471, 1472) and 14 nymphs (1473, 1474); *Proechimys spinosus*; Tapirapoan, Mato Grosso, Brazil; 1909.

ribeiroi Werneck, 1935. *Gyropus*. (799) Holotype 1 male (1475). Allotype 1 female (1476). Paratypes 10 males (1485-1494), 6 females (1478-1483) and 20 nymphs (1495, 1496); *Scapteromys gnambiquarae*; Campo Novo da Serra do Norte, Mato Grosso, Brazil; C Rondon coll.

scalaris Werneck, 1942. *Gyropus*. (1382) Holotype 1 male (2650). Allotype 1 female (2651). Paratypes 3 males (2655-2657) and 3 females (2652-2654); *Cercomys laurentis*; Chique-Chique, Bahia, Brazil.

thompsoni Werneck, 1935. *Gyropus*. (792) Holotype 1 female (1424) Allotype 1 male (1433). Paratypes 3 males (1435-1437), 7 females (1426-1432) and 7 nymphs (1438); *Isothrix bistriatus*; River Manoel Correia, Porto Bicentenário, Mato Grosso, Brazil; C Rondon coll.

travassosi Werneck, 1948. *Gyropus*. (1655) Holotype 1 male (2943). Allotype 1 female (2944). Paratypes 3 males (2947-2949), 2 females (2945, 2946), 1 genitalia of male (2950); *Isothrix pictus*; Ilhéus, Bahia, Brazil; 04-VIII-1944.

Genus *Macrogyropus* Ewing, 1924

amplexans longisetis Werneck, 1948. *Macrogyropus*. (947) Holotype 1 female (1994). Paratypes 1 female (1995) and 5 nymphs (1996-2000); *Dasyprocta acouchy*; Macapá, Amapá, Brazil.

costalimai Werneck, 1931. *Heterogyropus*. (32) Holotype 1 female (521). Allotype 1 male (32). Paratypes 1 male (529), 7 females (522-528) and 4 nymphs (530-533); *Coelogenys paca*; Itaguaí, Rio de Janeiro, Brazil; FL Werneck coll. Synonym of *Macrogyropus costalimai* Werneck, 1931.

Genus *Monothoracius* Werneck, 1934

almeidai Werneck, 1937. *Monothoracius*. (983) Holotype 1 male (2112). Allotype 1 female (2113). Paratypes 2 males (2117, 2118) and 3 females (2114-2116); *Dasyprocta acouchy*; Cachoeira do Mel, River Cumina, Pará, Brazil; RF d'Almeida coll., 15-IX-1936.

penidoi Werneck, 1934. *Monothoracius*. (534, 557) Holotype 1 male (1021). Allotype 1 female (1038). Paratype 1 nymph (1022); *Kerodon rupestris*; Lassance, Minas Gerais, Brazil; JCN Penido coll., VII-1933.

Genus *Phtheiropoios* Eichler, 1939

pearsoni Werneck, 1948. *Phtheiropoios*. (2678) Paratypes 1 male (3328) and 1 female (3327); *Abrocoma cinerea*; Caccachara, Peru; OP Pearson coll., 05-XII-1946.

Family Philopteridae

Genus *Allobrueelia* Eichler, 1951

amsel Eichler, 1952. *Allobrueelia*. (2929) Paratype 1 female (3629); *Turdus merula*; Germany.

Genus *Brueelia* Kéler, 1936

imponderabilica Eichler, 1954. *Brueelia*. (2936) Paratype 1 female (2936); *Lanius excubitor*; Germany.

jacobi Eichler, 1952. *Brueelia*. (3250) Paratypes 3 females (3748); *Turdus merula merula*; Germany; W Eichler coll.

Genus *Columbicola* Ewing, 1929

columbae juan-fernandez Eichler, 1952. *Columbicola*. (2767) Paratype 1 female (3470); *Columba araucana*; Juan Fernandez Islands, Chile. Synonym of *Columbicola columbae columbae* (L., 1758).

Genus *Penenirmus* Clay & Meinertzhagen, 1938

campephili Eichler, 1953. *Penenirmus*. (2927) Paratypes 1 male and 1 female (3627); *Campephilus magellanicus*; Chile.

Genus *Struthiolipeurus* Cummings, 1916

nandu Eichler, 1950. *Struthiolipeurus*. (2926) Paratypes 1 male and 1 female (3626); *Rhea americana*; Zoological Garden of Halle, Germany.

Family RallicolidaeGenus *Rallicola* Johnston & Harrison, 1911

parani Eichler, 1954. *Rallicola*. (3243) Paratypes 1 male (3738) and 1 female (3737); *Gallinula chloropus galeata*; Paraguay; W Eichler coll.

Genus *Rhombiceps* Eichler, 1952

mysigma Eichler, 1954. *Rhombiceps*. (3252) Paratypes 1 male (3750) and 1 female (3749); *Recurvirostra andina*; Bolivia; W Eichler coll.

Family TrichodectidaeGenus *Bovicola* Ewing, 1929

conectens Hopkins, 1943. *Damalinia*. (1584) Paratypes 2 males (2784, 2785), 3 females (2781-2783), 1 head of male (2786) and 1 genitalia of male (2787); *Oreotragus oreotragus aureus*; Loru Hill, Jie County, Karamoja, Uganda; 28-II-1942. Synonym of *Bovicola conectens* Hopkins, 1943.

pelea Bedford, 1934. *Bovicola*. (693) Paratypes 2 females (3350, 3351); *Pelea capreolus*; Naauwpoort, Cape Province, South Africa; 29-VII-1932.

sedecimdecembrii Eichler, 1946. *Bovicola*. (2939) Syntype 1 female (2939); *Bison bonasus*; Bialowieza Forest, Polonia; 1918.

zuluensis Werneck, 1950. *Bovicola*. (2723) Paratypes 2 males (3393, 3394), 3 females (3389-3391), 1 abdome of male (3395), 1 abdome of female (3392) and 2 genitalias of male (3396, 3397); *Equus burchelli antiquorum*; Zululandia, South Africa, GHE Hopkins coll.

Genus *Cebidicola* Bedford, 1936

extrarius Werneck, 1950. *Cebidicola*. (2746) Holotype 1 male (3421). Allotype 1 female (3422). Paratypes 2 males (3423, 3424); *Tamandua tetradactyla*; Santa Cruz, Amazonas, Brazil; LR Guimarães coll., 08-XI-1936.

Genus *Damalinia* Mjöberg, 1910

baxi Hopkins, 1947. *Damalinia*. (2570) Paratypes 4 males and 4 females (3157); *Damaliscus korrigum jimela*;

Ukerewe Peninsula, Tanganyika (=Tanzania); X-1944.

forficula siamensis Werneck, 1950. *Damalinia*. (1018) Paratypes 1 male (3180) and 1 female (3179); *Muntiacus muntjak curvostylis*; Sian; 1939.

hendrickxi Hopkins, 1947. *Damalinia*. (2568, 2569) Paratypes 1 male (3310) and 1 female (3311); *Cephalophus (Cephalophus) nigrifrons kivuensis*; Kivu, Belgian Congo and Kigezi, Uganda; III-1945.

traguli Werneck, 1950. *Damalinia*. (1812) Holotype 1 male (3412). Allotype 1 female (3411). Paratypes 1 male (3412) and 2 females (3411); *Tragulus borneanus*; Kendawagan, Borneo.

Genus *Dasyonyx* Bedford, 1932

(Dasyonyx) hopkinsi Werneck, 1941. *Dasyonyx*. (1266) Paratypes 3 males (2546-2548) and 3 females (2543-2545); *Dendrohyrax dorsalis marmota*; Namiryango, Kampala, Uganda; GHE Hopkins coll., 02-X-1939.

(Dasyonyx) validus ugandensis Werneck, 1941. *Dasyonyx*. (1245) Paratypes 2 males, 5 females and 1 nymph (2533); *Heterohyrax brucei brucei*; Umi Rocks, East Madi, Uganda; GHE Hopkins coll., 31-VIII-1936.

Genus *Eurytrichodectes* Stobbe, 1913

machadoi Werneck, 1958. *Eurytrichodectes*. (3948) Paratypes 1 male (4025) and 2 females (4023, 4024); *Dendrohyrax (Heterohyrax) brucei bocagei*; Marco de Canavezes, Benguela, Angola; AB Machado coll., 28-III-1956.

Genus *Eutrichophilus* Mjöberg, 1910

comitans Werneck, 1950. *Eutrichophilus*. (2757) Paratypes 1 male (3444) and 1 female (3445); *Coendou pruinosus*; Merida, Venezuela.

exiguus Werneck, 1950. *Eutrichophilus*. (2757) Paratypes 1 male (3443) and 1 female (3442); *Coendou (Sphiggurus) melanurus*; Kartabo, Guyana; 5-III-1924.

guyanensis Werneck, 1950. *Eutrichophilus*. (2751) Paratypes 3 males (3435-3437), 3 females (3432-3434) and fragments of male and female (3438-3441); *Coendou (Sphiggurus) melanurus*; Kartabo, Guyana; 5-III-1924.

moojeni Werneck, 1945. *Eutrichophilus*. (1643) Holotype 1 male (2870). Allotype 1 female (2871). Paratypes 6 males (2880-2885), 8 females (2872-2879) and fragments of male and female (2886-2888); *Chaetomys subspinosus*; Santa Tereza, Espírito Santo, Brazil.

Genus *Felicola* Ewing, 1929

bedfordi Hopkins, 1942. *Felicola*. (1571) Paratype 1 female (2774); *Bdeogale crassicauda omnivora*; Sokoke Forest, Kenya; 23-VI-1932.

bedfordi Hopkins, 1942. *Felicola*. (1636) Neoparatypes 1 male and 1 female (2861); *Bdeogale crassicauda crassicauda*; Ncheu, Nyasaland; 04-X-1939.

braziliensis Emerson & Price, 1983. *Felicola*. (842) Holotype 1 male (1729). Allotype 1 female (1728); *Felis pajerus*; Mato Grosso, Brazil.

felis Werneck, 1934. *Trichodectes*. (585) Holotype 1 female (1067). Allotype 1 male (1073). Paratypes 3 males (1074, 1075) and 5 females (1069-1072); *Felis chibigouazou*; River Cuiabá, Mato Grosso, Brazil; L Travassos coll., 02-VII-1922. Synonym of *Felicola felis* Werneck, 1934.

juccii Conci, 1942. *Felicola*. (2762) Holotype 1 male (3471). Paratype 1 female (3298); *Paguma larvata grayi*; Karin, Birmania; 27-VIII-1888.

macrurus Werneck, 1948. *Felicola*. (1806) Holotype 1 male (3036). Allotype 1 female (3035). Paratypes 3 males (3036) and 1 female (3035); *Mungos paludinosus rubescens*; Kilimandjaro, Tanzania; 1943.

minus Werneck, 1948. *Felicola*. (1495) Paratypes 1 male (2713) and 1 female (2712); *Atilax paludinosus robustus*; Kampala, Uganda; GHE Hopkins coll., 12-IX-1941.

neofelis Emerson & Price, 1983. *Felicola*. (116) Holotype 1 male (444). Allotype 1 female (443); *Felis geoffroyi*; Russas, Ceará, Brazil; 1936.

pygidialis Werneck, 1948. *Felicola*. (1423) Paratypes 3 males (2709-2711) and 3 females (2706-2708); *Atilax paludinosus robustus*; Kampala, Uganda; 12-IX-1941.

robertsi Hopkins, 1944. *Felicola*. (1638) Paratypes 1 male and 1 female (2862); *Rhychogale melleri langi*; Swaziland, South Africa; 17-VI-1937.

rohani Werneck, 1956. *Felicola*. (3806) Holotype 1 male (3965). Allotype 1 female (3966). Paratype 1 female (3967); *Herpestis griseus*; Rose Hill, Mauricio Islands; FL Werneck coll., I-1954.

similis Emerson & Price, 1983. *Felicola*. (832) Paratypes 2 males (1659, 1660) and 3 females (1656-1658); *Felis jaguarundi*; Palma, Goiás, Brazil.

Genus *Geomydoecus* Ewing, 1929

chapini minor Werneck, 1950. *Geomydoecus*. (2749) Paratypes 2 males (3430, 3431) and 1 female (3429); *Thomomys tularosae*; Alamogordo, New Mexico, U. S. A. *copei* Werneck, 1945. *Geomydoecus*. (739) Holotype 1 male (2927). Allotype 1 female (1768). Paratype 1 male (1769); *Geomys mexicanus*; Misantla, Mexico; II-1912.

truncatus Werneck, 1950. *Geomydoecus*. (2748) Paratypes 2 males (3427, 3428); *Geomys personatus*; Father Island, Texas, U. S. A.

Genus *Lutridia* Kéler, 1938

lutrae Werneck, 1937. *Trichodectes*. (952) Holotype 1 female (1964). Allotype 1 male (1965). Paratypes 6 males (1972-1977) and 6 females (1966-1971); *Lutra paranensis*; Belém, Pará, Brazil. Synonym of *Lutridia lutrae* Werneck, 1937.

Genus *Neofelicola* Werneck, 1948

aspidorhyncus Werneck, 1948. *Neofelicola*. (1836) Holotype 1 male (3122). Allotype 1 female (3121); *Prionodon linsang*; Sungei Maudam, River Boewatan, East Sumatra; Ferris coll.

bengalensis Werneck, 1948. *Neofelicola*. (1905) Holotype 1 female (3123). Paratypes 2 females (3123); *Paradoxurus hermaphroditus*; Pulo Terutan, Malaca, Sian; Ferris coll., 1943.

sumatrensis Werneck, 1948. *Neofelicola*. (1836) Holotype 1 female (3120); *Prionodon linsang*; Sungei Maudam, River Boewatan, East Sumatra; Ferris coll.

Genus *Neotrichodectes* Ewing, 1929

arizonae Werneck, 1948. *Neotrichodectes*. (1878) Paratypes 2 males (3233) and 2 females (3232); *Conepatus*

mesoleucus; Santa Catalina, Arizona, U. S. A.; R Flock coll., 23-X-1938.

chilensis Werneck, 1948. *Trichodectes*. (878) Holotype 1 male (1832). Allotype 1 female (1794). Paratypes 12 males (1824-1831) and 27 females (1795-1820); *Conepatus chinga*; Cayutue, Llanquihue, Chile; 26-XII-1935. Synonym of *Neotrichodectes chilensis* Werneck, 1948.

wolffhugeli Werneck, 1936. *Trichodectes*. (878) Holotype 1 male (1834). Paratype 1 male (1836); *Conepatus chinga*; Cayutue, Llanquihue, Chile; K Wolffhügel coll., 28-III-1927. Synonym of *Neotrichodectes wolffhugeli* Werneck, 1936.

Genus *Parafelicola* Werneck, 1948

lenicornis Werneck, 1948. *Parafelicola*. (2562) Paratype 1 female (3112); *Genetta* sp.; Rutschuru, Belgian Congo; FL Hendrickx coll., V-1942.

wernecki Hopkins, 1941. *Felicola*. (1586) Paratype 1 female (2791); *Genetta tigrina stuhlmanni*; Near Butiaba, Bungoro, Uganda; 13-IX-1933. Synonym of *Parafelicola wernecki* Hopkins, 1941.

Genus *Procavicola* Bedford, 1932

(*Acondylocephalus*) *scutifer* Werneck, 1941. *Procavicola*. (1228) Paratype 1 female (2528); *Dendrohyrax dorsalis marmota*; Namiryango, Kampala, Uganda; GHE Hopkins coll., 02-X-1939.

(*Condylocephalus*) *bedfordi bedfordi* Werneck, 1941. *Procavicola*. (687) Holotype 1 female (1189). Allotype 1 male (1190). Paratypes 2 males (1191, 1192); *Dendrohyrax arboreus*; Port Alfred, Cape Province, South Africa; 1933. (*Condylocephalus*) *bedfordi dissimilis* Werneck, 1941. *Procavicola*. (1185) Paratypes 4 males (2479-2482) and 4 females (2475-2478); *Dendrohyrax adolfi-friederici*; Mount Mufumbiro, Lake Kivu, Belgian Congo.

(*Condylocephalus*) *hopkinsi* Werneck, 1941. *Procavicola*. (1194) Paratypes 4 males (2589-2592) and 2 females (2491, 2492); *Dendrohyrax adolfi-friederici*; Mount Mufumbiro, Lake Kivu, Belgian Congo; RC van Somerem, VI-1939.

(*Meganarionoides*) *africanus* Werneck, 1941. *Procavicola*. (546, 1056) Paratypes 1 male (2406) and 2 females (2404, 2405); *Procavia emini*; Upper Lukenya, South Central Congo; 15-XII-1909.

(*Procavicola*) *brucei* Werneck, 1941. *Procavicola*. (1206) Paratypes 2 males (2513, 2514) and 2 females (2511-2512); *Procavia brucei brucei*; Umi Rocks, East Madi, Uganda; GHE Hopkins coll., 31-VII-1936.

(*Procavicola*) *eichleri* Werneck, 1941. *Procavicola*. (686) Holotype 1 male (2319). Allotype 1 female (2318); *Dendrohyrax arboreus*; Port Alfred, Cape Province, South Africa; 1933.

(*Procavicola*) *thorntoni* Hopkins, 1942. *Procavicola*. (1582) Paratypes 1 male and 1 female (2773); *Procavia johnstoni matschiei*; Mwansa, Tanganyika (=Tanzania); D Thornton coll., III-1942.

(*Procavicola*) *ugandensis* Werneck, 1941. *Procavicola*. (1212) Paratypes 2 males (2517, 2518) and 2 females (2515, 2516); *Dendrohyrax dorsalis marmota*; Namiryango, Kampala, Uganda; GHE Hopkins coll., 02-X-1939.

Genus *Procviphilus* Bedford, 1932

dubius Werneck, 1941. *Procviphilus*. (1296) Paratypes 2 males (2598, 2599); *Dendrohyrax adolfi-friederici*; Mount Mufumbiro, Lake Kivu, Belgian Congo.

ferrisi hindei Werneck, 1946. *Procviphilus*. (1688) Paratypes 1 male (3013) and 2 females (3011, 3012); *Heterohyrax brucei hindei*; Mutha Hill, Ukaban, Kenya; GHE Hopkins coll., IX-1938.

granulatus Ferris, 1930. *Trichodectes*. (1295) Paratypes 2 males (2596, 2597); *Dendrohyrax adolfi-friederici*; Mount Mufumbiro, Lake Kivu, Belgian Congo; GHE Hopkins coll. Synonym of *Procviphilus granulatus* Ferris, 1930.

harrisi Werneck, 1946. *Procviphilus*. (1692) Paratypes 2 males (3016, 3017) and 2 females (3014, 3015); *Dendrohyrax validus schusteri*; Mount Uguru, Tanganyika (=Tanzania); WV Harris coll., VIII-1941.

Genus *Stachiella* Kéler, 1938

retusa martis Werneck, 1948. *Stachiella*. (1856) Holotype 1 female (3304). Allotype 1 male (3305); *Martes* sp.; Mount Lyell, Yosemite Neat Park, California, U. S. A.; Ferris coll., 1915.

retusa salfi Conci, 1940. *Stachiella*. (2373) Holotype 1 female (3472); *Martes martes*; Trentino, Italia; Conci coll.

Genus *Suricatoecus* Bedford, 1932

decipiens Hopkins, 1941. *Felicola*. (1444) Paratype 1 female (2772); *Mungos mungo macrurus*; Kampala, Uganda; 15-XI-1933. Synonym of *Suricatoecus decipiens* Hopkins, 1941.

fahrenheiti Werneck, 1948. *Suricatoecus*. (2587) Holotype 1 male (3167). Allotype 1 female (3168). Paratypes 6 males (3171-3176) and 2 females (3169, 3170); *Cerdocyon azarae*; Puerto General Diaz, Chaco, Paraguay; Missão Científica Brasileira coll., III-1944.

guinei Werneck, 1948. *Suricatoecus*. (1851) Paratypes 1 male and 1 female (3349); *Otocyon virgatus*; Naiwasha, Kenya; Ferris coll.

helogaloidis Werneck, 1948. *Suricatoecus*. (1838) Paratypes 2 males (3095, 3096) and 3 females (3092-3094); *Helogale atsoni*; Haullich, Africa; Ferris coll., 28-XII-1945.

laticeps Werneck, 1942. *Trichodectes*. (578) Paratypes 1 male (2412) and 1 female (2411); *Atilax paludinosus*; Kilassa, Tanganyika (=Tanzania); 1931. Synonym of *Suricatoecus laticeps* Werneck, 1942.

paralaticeps Werneck, 1948. *Suricatoecus*. (1496) Paratype 1 female (2715); *Atilax paludinosus robustus*; Kampala, Uganda; GHE Hopkins coll., 12-IX-1941.

Genus *Trichodectes* Nitzsch, 1818

emersoni Hopkins, 1960. *Trichodectes*. (3999) Paratypes 1 male and 1 female (4059); *Helictis orientalis*; Tanompak, Kinalalu, Borneo; 20-VIII-1953.

fallax Werneck, 1948. *Trichodectes*. (803) Holotype 1 male (1512). Allotype 1 female (1510). Paratype 1 female (1511); *Procyon cancrivorus*; Guariba, São Paulo, Brazil; 24-VI-1934.

ferrisi Werneck, 1944. *Trichodectes*. (1916) Paratypes 2 males (2829, 2830) and 3 females (2829, 2830); *Tremarctos ornatus majori*; Rubio, Venezuela; Ferris coll.

galictidis Werneck, 1934. *Trichodectes*. (30) Holotype 1 female (509). Allotype 1 male (514). Paratypes 4 females (510-513) and 9 nymphs (515); *Galictis vittata*; Manguinhos, Rio de Janeiro, Brazil.

malaysianus Werneck, 1948. *Trichodectes*. (2440) Paratypes 5 males (3138-3142) and 5 females (3133-3137); *Cynogale bennetti*; River Siak, East Sumatra; WL Abbott coll., 10-XII-1906.

pinguis euarctidos Hopkins, 1954. *Trichodectes*. (4000) Paratypes 1 male and 1 female (4060); *Euarctos americanus cinnamomus*; Gray Creek, Kootmays, British Columbia; TK Moilliet coll., 03-VI-1936.

potus Werneck, 1934. *Trichodectes*. (514) Holotype 1 female (1011). Allotype 1 male (1018). Paratypes 5 males (1013-1017) and 5 females (1007-1010, 1012); *Potus flavus*; Tinguá, Rio de Janeiro, Brazil; R Avellar coll., X-1933.

Genus *Tricholipeurus* Bedford, 1929

albimarginatus Werneck, 1936. *Trichodectes*. (802) Holotype 1 female (1674). Allotype 1 male (1676). Paratypes 2 males (1677, 1678) and 4 females (1671-1673, 1675); *Mazama americana*; River Aripuanã, Amazonas, Brazil; C Rondon coll. Synonym of *Tricholipeurus albimarginatus* Werneck, 1936.

annectens Hopkins, 1943. *Damalinia*. (1583) Paratypes 2 males (2778, 2779), 3 females (2775-2777) and 1 genitalia of male (2780); *Tragelaphus scriptus bor*; Lango, Uganda; III-1942. Synonym of *Tricholipeurus annectens* Hopkins, 1943.

balanicus balanicus Werneck, 1938. *Trichodectes*. (253) Holotype 1 male (2175). Allotype 1 female (2172). Paratypes 2 males (2176, 2177) and 2 females (2173, 2174); *Antilope cervicapra*; Londres, England; Teresa Clay coll., 1937. Synonym of *Tricholipeurus balanicus* Werneck, 1938.

balanicus ourebiae Hopkins, 1943. *Damalinia*. (2712, 2714) Paratypes 4 males (3370, 3374-3376) and 5 females (3370, 3371-3373); *Ourebia ourebi ugandae*; Lango, Uganda and Mongalla, Sudan; III-1942 and XI-1940. Synonym of *Tricholipeurus ourebiae* Hopkins, 1943.

clayae Werneck, 1938. *Trichodectes*. (259) Holotype 1 male (2193). Allotype 1 female (2190). Paratypes 3 males (2194-2196) and 2 females (2191, 2192); *Neotragus pygmaeus*; Londres, England; Teresa Clay coll., IV-1937. Synonym of *Tricholipeurus clayae* Werneck, 1938.

dorcelaphi Werneck, 1936. *Trichodectes*. (809) Holotype 1 female (1694). Allotype 1 male (1699). Paratypes 3 males (1696-1698) and 3 females (1692, 1693, 1695); *Dorcelaphus besoarticus*; Chapada, Mato Grosso, Brazil. Synonym of *Tricholipeurus dorcelaphi* Werneck, 1936.

indicus Werneck, 1950. *Tricholipeurus*. (2760) Paratypes 2 males (3448, 3451) and 3 females (3448-3450); *Muntiacus muntjak*; Mphal, Manipur, India; CD Radford coll., 04-II-1946.

pakenhami Werneck, 1947. *Tricholipeurus*. (2571) Paratypes 1 male (3188) and 1 female (3187); *Cephalophus adersi*; Zanzibar Islands; X-1943.

parkeri Hopkins, 1941. *Tricholipeurus*. (1418) Paratypes 3 males and 2 females (2689); *Gazella (Eudorcas) thomsoni nasalis*; Naivasha, Kenya; 22-I-1941.

spinifer Hopkins, 1943. *Damalinia*. (1580) Paratypes 2 males (2768, 2769), 3 females (2765-2767) and spermatheca (3378); *Gazella (Nanger) brighti*; Moroto, Karamoja,

Uganda; 16-X-1941. Synonym of *Tricholipeurus spinifer* Hopkins, 1943.

trabeculae ugandae Werneck, 1950. *Tricholipeurus*. (1424) Holotype 1 male (3366). Allotype 1 female (3362). Paratypes 2 males (3367, 3368) and 6 females (3363-3365); *Redunca redunca*; Nakitoma, Buruli, Uganda; 12-VI-1941. *victoriae* Hopkins, 1943. *Damalinea*. (2596) Paratypes 4 males (3192-3194) and 3 females (3189-3191); *Rhynchotragus guentheri smithi*; Nyanga, Jie County, Karamoja, Uganda; GHE Hopkins coll., 09-IX-1941. Synonym of *Tricholipeurus victoriae* Hopkins, 1943.

Family Trimenoponidae

Genus *Cummingsia* Ferris, 1922

intermedia Werneck, 1937. *Cummingsia*. (925) Holotype 1 male (2093). Allotype 1 female (2094). Paratypes 2 females (2095, 2096); *Marmosa incana paulensis*; Itatiaia, Rio de Janeiro, Brazil.

Genus *Philandesia* Kellog & Nakayama, 1914

chinchillae Werneck, 1935. *Trimenopon*. (822) Holotype 1 female (1620). Allotype 1 male (1621). Paratypes 2 females (1623); *Eriomys chinchilla*; Abra Pampa, Jujuy, Argentina; S Mazza coll., 10-V-1935. Synonym of *Philandesia chinchillae* Werneck, 1935.

mazzai Werneck, 1933. *Trimenopon*. (480) Holotype 1 male (939). Allotype 1 female (935). Paratypes 3 males (936-938) and 2 nymphs (940); *Eriomys chinchilla*; Cordillera dos Andes, Jujuy, Argentina; S Mazza coll. Synonym of *Philandesia mazzai* Werneck, 1933.

HOST SYNONYMY

Atilax paludinosus rubescens = *Atilax paludinosus*
Bdeogale crassicaudata omnivora = *Bdeogale crassicaudata*
Capromys prehensilis = *Mysateles prehensilis*
Cephalophus (Cephalophus) nigrifons kivuensis = *Cephalophus nigrifons*
Cercomys cunicularis fosteri = *Thrichomys apereoides*
Cercomys cunicularis inermis = *Thrichomys apereoides*
Cercomys laurentis = *Thrichomys apereoides*
Cerdocyon azarae = *Cerdocyon thous*
Coelogenys paca = *Agouti paca*
Coendou pruinosus = *Sphiggurus vestitus*
Coendou (Sphiggurus) melanurus = *Sphiggurus insidiosus*
Ctenomys luteolus = *Ctenomys opimus*
Damaliscus korrigum = *Damaliscus lunatus*
Dasyprocta acouchy = *Myoprocta acouchy*
Dendrohyrax adolfi-friederici = *Dendrohyrax arboreus*
Dendrohyrax dorsalis marmota = *Dendrohyrax dorsalis*
Dendrohyrax (Heterohyrax) brucei bocagei = *Heterohyrax brucei*
Dendrohyrax validus schusteri = *Dendrohyrax validus*
Dorcephalus besoarticus = *Ozotoceros bezoarticus*
Echimys cayennensis = *Proechimys cayennensis*
Eriomys chinchilla = *Chinchilla lanígera*
Equus burchelli antiquorum = *Equus burchelli*
Euarctos americanus cinnamomus = *Ursus americanus*
Euryzygomatomys spinosus catellus = *Euryzygomatomys spinosus*

Felis chibigouazou = *Leopardus pardalis*
Felis geoffroyi = *Oncifelis geoffroyi*
Felis jaguarundi = *Herpailurus yaguarondi*
Felis pajerus = *Oncifelis colocolo*
Gazella (Eudorcas) thomsoni nasalis = *Gazella thomsonii*
Gazella (Nanger) brighti = *Gazella granti*
Genetta tigrina stuhlmanni = *Genetta tigrina*
Hapale santaremensis = *Callithrix humeralisantaremensis*
Helictis orientalis = *Melogale orientalis*
Helogale atksoni = *Helogale parvula*
Herpestis griséus = *Herpestes edwardsii*
Heterohyrax brucei brucei = *Heterohyrax brucei*
Heterohyrax brucei hindei = *Heterohyrax brucei*
Isothrix bistratus = *Isothrix bistriata*
Isothrix pictus = *Isothrix bistriata*
Loncheres armatus = *Echimys brasiliensis*
Loncheres grandis = *Echimys grandis*
Lutra paranensis = *Pteronura brasiliensis*
Macropus major = *Macropus giganteus*
Marmosa incana paulensis = *Marmosops incanus*
Mungos mungo macrurus = *Mungos mungo*
Mungos paludinosus rubescens = *Atilax paludinosus*
Muntiacus muntjak curvostylis = *Muntiacus muntjak*
Nelomys sp. = *Echimys sp*
Neotragus pygmaeus = *Neotragus pygmeus*
Oreotragus oreotragus aureus = *Oreotragus oreotragus*
Osphranter robustus = *Macropus robustus*
Otocyon virgatus = *Otocyon megalotis*
Ourebia ourebi ugandae = *Ourebia ourebi*
Potus flavus = *Potos flavus*
Procavia brucei brucei = *Heterohyrax brucei*
Procavia emini = *Dendrohyrax dorsalis*
Proechimys albispinus albispinus = *Proechimys albispinus*
Rhyncogale malleri langi = *Rhyncogale melleri*
Rhynchotragus guentheri smithi = *Madoqua guentheri*
Sigmodon hispidus chiriquensis = *Sigmodon hispidus*
Thomomys tularosae = *Thomomys bottae*
Tragelaphus scriptus bor = *Tragelaphus scriptus*
Tragulus borneanus = *Tragulus napu*
Tremarctos ornatus majori = *Tremarctos ornatus*

DISCUSSION

Currently, the Order Mallophaga is composed of approximately 3,000 species grouped in 10 families. Of this total, 369 (12.3%) are represented in the Werneck Collection. From all of the described species, 467 are ectoparasites found on 356 different species of mammals, depending basically in which methodology is applied during the insect's collection (Emerson & Price 1981).

In addition to the type species presented in the list of species, there are still three other paratypes from which the year of the species' description could not be found: *Goniodes spinicornis dubiculus* Eichler (register 3266) with 1 male (slide 3814), and 1 female (slide 3813); *Neodocophorus asionis* Eichler (register 2935) with 1 female (slide 3628), and *Bovicola nippon* Nakagawa (register 3895) with 1 female (slide 4022).

According to Emerson and Price (1981) the mammal orders can be found infested in the following percentages: Proboscidea (100%), Hyracoidea (81.8%), Carnivora (42.9%), Artiodactyla (38.5%), Perissodactyla (37.5%), Marsupialia (16.9%), Edentata (6.3%), Primates (5.9%) and Rodentia (5.7%).

The contribution of Werneck for the improvement of our knowledge on Mallophaga is highly important since he described 199 species registered all over the world. This represents 42.6% of all species that infest mammals.

In Brazil, of 74 species found of Mallophaga that infest mammals (Werneck 1948 and 1950, Emerson & Price 1983, Linardi et al. 1991), 40 were described by Werneck (54.1%). The majority of the species are included in the genera *Gliricola* and *Gyropus*. In South American countries, from other 39 species, 15 (38.5%) were also described by that author. Because of the proximity of certain biomes, some of the species reported for other South American countries probably may be also found in Brazil. It is important to stress that in Venezuela, with a geographic area approximately nine times smaller than Brazil, Emerson and Price (1975) were able to record 56 species of Mallophaga infesting mammals.

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