



Checklist of the Helminth Parasites of South American Bats

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Abstract

Although the Chiroptera represents a significant proportion (*c.*20%) of the mammalian fauna and South America has the highest diversity of bat species, only about a third of the known species in this region have had helminth parasites reported from them. This work represents the first comprehensive checklist of the helminth parasites (nematodes, acanthocephalans, trematodes and cestodes) of South American bats. The data were extracted from more than 120 references and are presented as a key to each group of parasites down to the generic level, with an indication of how the bats become infected, accompanied by a list of the species recorded for each genus. This is followed, in tabular form, by parasite-host and host-parasite checklists. The parasite-host list also includes their geographical distribution in South America (at the country level) and site data, plus the references in which the parasite records occur. The host-parasite list is arranged according to the classification of the hosts. In all, *c.*370 host-parasite associations are recorded, involving 114 nominal species of helminths from 92 named chiropteran taxa.

Key words: Chiroptera, bats, helminths, South America, checklist, Nematoda, Acanthocephala, Trematoda, Cestoda

Introduction

The Chiroptera is a large group, representing 20–22% of mammalian species (e.g. Simmons, 2005), and some of the highest chiropteran (bat) species diversity in the world occurs in the Neotropical region (Willig & Selcer 1989). Since the work of Diesing (1850), the helminth parasites of bats in South America have been studied sporadically and locally in more than 120, generally small, investigations with little or no continental or national compilation or evaluation. Given that there is increasing evidence suggesting that there is cryptic diversity in Neotropical bats and that many bat species are endangered, ‘a comprehensive survey of potential diversity is needed on a scale which is taxonomically diverse’ and ‘geographically broad’ (Clare *et al.* 2011). The same is true for their helminth parasites, for, as indicated below, only about a third of the known bat species in South America have had helminths reported from them.

Recorded helminths include members of the phyla Nematoda, Acanthocephala and Platyhelminthes, the latter including the classes Trematoda and Cestoda. These records exclusively represent endoparasites. Bats generally acquire such parasites in the form of a passive infection via their diet, with the result that the alimentary canal and thoracic and abdominal cavities are the most parasitized sites. Infected bats usually represent the ‘definitive (or final) host’, harbouring the parasite as a sexual adult, or, more rarely, as either an ‘intermediate host’, in which one or more larval stages develop, or a ‘paratenic host’, in which a larval stage can survive without further development. In addition to increasing our knowledge in terms of biodiversity and disease, the study of the helminth parasites of bats is important as it contributes to our understanding of feeding habits and other aspects of their biology, and may indicate useful biological markers for bat populations.

Methods

The identification of helminths is best realized using specimens in good condition, which means that the parasites

should be collected from freshly killed hosts and fixed live. The following details may be of interest to readers with no experience of collecting helminth parasites. Live specimens are best cleaned in a 0.8% saline medium, heat-fixed in boiling water or a hot fixative to avoid contraction, and then stored in 70–80% alcohol (the heat-fixation techniques advocated for fish trematodes by Cribb & Bray (2010) can be used for helminths from bats). A slight pressure can be applied to acanthocephalans during fixation to prevent the contraction of the proboscis and to some platyhelminths to make some internal details clearer. After fixation, nematodes and acanthocephalans are generally studied as temporary wet mounts between a slide and a coverslip in a clearing agent, such as glycerine, lactophenol or beechwood creosote, depending on the size of the worm. Platyhelminths are normally mounted as permanent wholemounts on slides in Canada balsam, after being stained by various, usually carmine-based, stains such as Mayer's paracaramine. In some cases serial sections are needed, which are usually stained with haematoxylin and eosin.

The parasite-host and host-parasite checklists for South American parasitic helminths from bats presented in this work were compiled from data acquired from searches of the literature, aided especially by searches of databases such as the *Web of Science* (Zoological Record), *Helminthological Abstracts* and the Host-Parasite Data-base of the Natural History Museum, London (Gibson *et al.* 2005). The chiropteran nomenclature mainly follows Wilson & Reeder (2005), with additional data from Reis *et al.* (2007) and Nogueira *et al.* (2014). Selected data from the CABI Keys (Khalil *et al.* 1994; Gibson *et al.* 2002; Jones *et al.* 2005; Bray *et al.* 2008; Anderson *et al.* 2009) aided the preparation of some of the keys, but were adapted and updated to suit the situation.

Helminth groups

A general view of the groups of helminths (parasitic worms) that parasitize bats is presented below, with an indication of how they are transmitted to or between bats, identification keys to the generic level and a list of the species of parasites for each genus. The keys are designed to distinguish known taxa found in bats and will not necessarily work for taxa from other hosts or for newly recorded taxa from bats. In addition, for each parasite species, a complete checklist of its host species, the South American countries in which it has been found and the sites within the body which it inhabits are tabulated (Table 1), along with the associated bibliographic data. This is followed by a list of chiropteran host, arranged by family, and a compilation of their helminth parasites (Table 2).

Key to the Phyla

- | | | |
|----|---|-----------------|
| 1. | Body usually dorso-ventrally flattened, acoelomate..... | Platyhelminthes |
| - | Body cylindrical, pseudocoelomate..... | 2 |
| 2. | Proboscis at anterior end of body..... | Acanthocephala |
| - | Proboscis at anterior end of body absent..... | Nematoda |

Phylum Nematoda

This phylum is one of the most abundant and widespread animal groups, occurring in large numbers in a variety of environments as free-living forms, animal parasites and plant parasites. At least 30,000 species are known, but huge numbers have yet to be described. They are symmetrically bilateral, unsegmented, pseudocoelomate and normally dioecious worms which are usually filiform in shape. All nematodes have five life-history stages, four larval and one adult, and intermediate hosts are usually, but not always, involved in the life-cycle of animal parasitic forms.

Key to Superfamilies

- | | | |
|----|---|---------------------|
| 1. | Males with well-developed copulatory bursa, supported by numerous rays; body frequently with longitudinal cuticular ridges..... | Trichostrongyloidea |
| - | Males without copulatory bursa (small bursa may be present in some capillariids, but with few rays); body normally without..... | |

longitudinal cuticular ridges (although lateral alae may be present)	2
2. Parasites of tissues and/or body cavities of host	3
- Parasites of digestive tract	4
3. Parasites of wing tissues of bats	Muspiceoidea
- Parasitic in other tissues and/or cavities	Filarioidea
4. Body with two rows of lateral spines; oesophagus clearly divided into two regions	Rictularioidea
- Body without rows of lateral spines; oesophagus not clearly divided into two regions	5
5. Body with lateral bacillary bands (longitudinal row of large cells); long oesophagus in form of row of large cells (stichocytes)	Trichinelloidea
- Body without above features; oesophagus short, claviform	Seuratoidea

Superfamily Filarioidea Weinland

Filarioid nematodes are subcutaneous parasites transmitted by the bite of haematophagous arthropods which harbour a larval stage.

Family Onchocercidae Leiper

1. Buccal cavity long, tubular, with thick walls; vulva postoesophageal or at level of oesophagus. *Litomosoides* Chandler
Species: *L. artibeii* Esslinger, 1973; *L. brasiliensis* Almeida, 1936; *L. caliensis* Esslinger, 1973; *L. carolliae venezuelensis* Rodrigo, 1964; *L. chandleri* Esslinger, 1973; *L. colombiensis* Esslinger, 1973; *L. hamletti* Sandground, 1934; *L. molossi* Esslinger, 1973; *L. salazari* Notarnicola, Jiménez Ruíz & Gardner, 2010; *L. serpicula* (Molin, 1858); *L. solarii* Guerrero, Martin, Gardner & Bain, 2002; *L. teshi* Esslinger, 1973; *L. yutajensis* Guerrero, Martin & Bain, 2003; *Litomosoides* sp.
- Buccal cavity not long and tubular, without thick walls; vulva pre-oesophageal. *Migonella* Lent, Freitas & Proença
Species: *M. fracchiali* Lent, Freitas & Proença, 1946

Superfamily Muspiceoidea Brumpt

These subcutaneous parasites have a direct life-cycle. Larvae leave via the skin and are transmitted by ingestion during mutual or individual grooming.

Family Muspiceidae Brumpt

Lukonema Chabaud & Bain

Species: *L. lukoschusi* Chabaud & Bain, 1974

Superfamily Physalopteroidea Railliet

Physalopteroids are gut parasites of all major vertebrate groups, but occur mainly in mammals, birds and reptiles. The final host normally acquires the parasite by ingesting insects harbouring the third-stage larva. As no adult has been found, this group is not included in the key to superfamilies.

Family Physalopteridae Railliet

Physaloptera Rudolphi

Species: *Physaloptera* sp. (juv.)

Superfamily Rictularioidea Hall

Rictularioid nematodes utilize an insect intermediate host. Transmission to bats occurs when they feed on infected insects.

Family Rictulariidae Hall

1. Mouth oriented dorsally; with single oesophageal tooth *Rictularia* Froelich
Species: *Rictularia* sp.
- Mouth apical; with three oesophageal teeth *Pterygodermatites* Wedl
Species: *P. elegans* (Travassos, 1928)

Superfamily Seuratoidea Hall

There is only one record, of an unidentified species of *Seuratum*, from South American chiropterans. Intestinal parasites of this genus are normally acquired by small mammals when feeding on insects harbouring a larval stage.

Family Seuratidae Hall

Seuratum Hall
Species: *Seuratum* sp.

Superfamily Trichinelloidea Ward

Trichinelloids have a direct life-cycle. Eggs are released with the faeces and are eaten directly or in/on organisms (e.g. plants, insects) which have been in contact with the faeces.

Family Capillariidae Railliet

1. Caudal alae present in male. 2
- Caudal alae absent in male 4
2. Spicule with spiny sheath *Pterothominx* Freitas
Species: *P. angrense* (Freitas, 1934); *P. brevidelphis* Freitas & Mendonça, 1960(b)
- Spicule without spiny sheath. 3
3. Bursa of male with complex system of symmetrical rays. *Tenoranema* Mas-Coma & Esteban
Species: *T. rivarolai* (Lent, Freitas & Proença, 1946)
- Bursa of male with one or more pairs of rays which may be curved *Aonchotheca* López-Neyra
Species: *A. cubana* (Freitas & Lent, 1937); *A. magnifica* Freitas & Mendonça, 1961; *A. parca* Freitas & Dobbin Jr., 1961(a); *A. pereirai* (Freitas & Lent, 1936); *A. pintoii* (Freitas, 1934); *A. pulchra* (Freitas, 1934)¹; *Aonchotheca* sp.
4. Male with spiny spicular sheath *Capillaria* Zeder²
Species: *Capillaria* sp.
- Male with smooth spicular sheath. *Pseudocapillaria* Freitas
Species: *P. pusilla* (Travassos, 1914)

Superfamily Trichostrongyloidea Leiper

Trichostrongyloid nematodes have a direct life-cycle. Eggs leave with the host's faeces. Transmission occurs via larvae ingested with contaminated food. These parasites are especially common in herbivores.

Keys to Families

1. Dorsal external ray of male copulatory bursa absent Molineidae

-
1. Recently transferred from *Pterothominx* by Cardia *et al.* (2014).
 2. It is likely that this report represents another capillariid genus.

- Dorsal external ray of male copulatory bursa present. 2
- 2. Rays of male copulatory bursa grouped 2-2-1 Ornithostrongylidae
- Rays of male copulatory bursa grouped 2-3. Heligmonellidae

Family Molineidae Skrjabin & Schulz

1. Cephalic extremity with cuticular spines. 2
 - Cephalic extremity without cuticular spines 5
2. Cephalic extremity with 2 large ventral spines 3
 - Cephalic extremity surrounded by ring of 8 large spines 4
3. Cephalic spines side by side in ventral field *Biacantha* Wolfgang
 - Species: *B. desmoda* Wolfgang, 1954; *B. normaliae* Oviedo, Ramallo & Claps in Oviedo, Ramallo, Claps & Miotti, 2012
 - Cephalic spines opposite (in dorsal and ventral fields). *Websternema* Vaucher & Durette-Desset
 - Species: *W. parnelli* (Webster, 1971)
4. Anterior and posterior branches of ovejector vestibule similar in length. *Parahistiostrongylus* Pérez Viguera
 - Species: *P. octacanthus* (Lent & Freitas, 1940) (also attributed to *Stilestrongylus*)
 - Anterior branch of ovejector vestibule longer than posterior. *Histiostrongylus* Molin
 - Species: *H. coronatus* Molin, 1861; *H. paradoxus* Travassos, 1918; *Histiostrongylus* sp.
5. Cephalic extremity with vesicle divided in two regions 6
 - Cephalic extremity with simple, undivided vesicle 9
6. Posterior part of cephalic vesicle equal or longer than anterior part. 7
 - Posterior part of cephalic vesicle shorter than anterior part *Torrestrongylus* Viguera
 - Species: *Torrestrongylus* sp.
7. Spicule undivided distally. 8
 - Spicule divided distally *Tricholeiperia* Travassos
 - Species: *T. leiperi* Travassos, 1935; *T. peruensis* Vargas, Martinez, Tantaleán, Cadenillas & Pacheco, 2009; *T. proencai* Travassos, 1937
8. Dorsal ray of male copulatory bursa long and divided in distal third; ovejector of female without spines *Anoplostrongylus* Boulenger
 - Species: *A. paradoxus* (Travassos, 1918)
 - Dorsal ray of male copulatory bursa short and deeply divided; ovejector of female with spines. *Molostrongylus* Durette-Desset & Vaucher
 - Species: *M. acanthocolpos* Durette-Desset & Vaucher, 1996; *M. mbopi* Durette-Desset & Vaucher, 1999
9. Tail of female without appendices/tubercles. *Cheiropterionema* Sandground
 - Species: *C. globocephala* Sandground, 1929; *C. striatum* Oviedo, Ramallo & Claps, 2010; *Cheiropterionema* sp.
 - Tail of female with appendices/tubercles. 10
10. Tail of female with two appendices. *Bidigiticauda* Chitwood
 - Species: *B. embryophilum* (Freitas & Dobbin Jr., 1960 (a)); *B. vivipara* Chitwood, 1938
 - Tail of female with five to seven tubercles *Carostrongylus* Durette-Desset & Vaucher
 - Species: *C. touzeti* Durette-Desset & Vaucher, 1989

Family Heligmonellidae Skrjabin & Schikhobalova

Stilestrongylus Freitas, Lent & Almeida

Species: *S. octacanthus* (Lent & Freitas, 1940) (also attributed to *Parahistiostrongylus*)

Family Ornithostrongylidae Travassos

Allintoshius Chitwood

Species: *A. bioccai* Rossi & Vaucher, 2002; *A. nudicaudatus* (Freitas & Mendonça, 1963); *A. parallintoshius* (Araújo, 1940); *A. urumiac* (Freitas & Mendonça, 1960(a)); *Allintoshius* sp.

Phylum Acanthocephala

The Acanthocephala is a small group of more than a thousand species (thorny-headed worms) which occur as

intestinal parasites of a wide range of vertebrates at the adult stage. They are readily recognisable by the possession of a single large, eversible, armed proboscis at the anterior end, which they use to attach to the wall of their host's intestine. Acanthocephalans are dioecious and have a body-cavity which contains little but their reproductive organs. The lack of a gut means that they absorb nutrients from the host's intestine directly through their body wall.

Acanthocephalans all use arthropods as intermediate hosts. In the case of bats, the rare cases of infection are by the ingestion of insects harbouring a cystacanth larva encysted in its body, or, possibly, in the case of carnivorous bats, by feeding on small vertebrates acting as paratenic hosts. According to Gibson & McCarthy (1987), there are no species specific acanthocephalan parasites of bats, i.e. they tend to be accidentally infected with the parasites of other vertebrates. These worms are usually encysted juveniles and do not develop to maturity, so the bat is likely acting as a paratenic host. Nevertheless, Smales (2007) reported immature specimens from the intestine.

Key to families

1. Proboscis cylindrical; proboscis receptacle double-walled; protonephridial organs absent Moniliformidae
- Proboscis subspherical; proboscis receptacle with single, thick wall; protonephridial organs present Oligacanthorhynchidae

Family Moniliformidae Van Cleave

Moniliformis Travassos

Species: *M. moniliformis* (Bremser, 1811); *M. convolutum* Meyer, 1932

Family Oligacanthorhynchidae Southwell & Macfie

Neonicicola Schmidt

Species: *N. artibeii* Smales, 2007

Phylum Platyhelminthes

The platyhelminths, or flatworms, include free-living and parasitic groups. These worms are bilaterally symmetrical, lack a body cavity, comprise three main cell layers, may lack an intestine and usually lack an anus, and are usually hermaphroditic. Two groups occur as parasites in chiropterans, the trematodes (flukes) and the cestodes (tapeworms).

Key to Classes

1. Body usually in shape of tape, segmented and with multiple set of reproductive organs Cestoda
- Body not segmented and with a single set of reproductive organs Trematoda

Class Cestoda Rudolphi

The Cestoda is a relatively large, diverse group of parasites (*c.*8,000 species), almost all of which are found parasitic in the intestine of different groups of vertebrates. They lack a gut and absorb nutrients through their surface layer. The majority are long, tape-like and segmented, with a complete set of reproductive organs in each segment. They anchor themselves to the intestinal wall of their host using an array of different attachment organs (hooks, suckers, etc.).

Keys to Families

- 1. Absence of rostellum with hooks on scolex Anoplocephalidae
- Presence of rostellum with hooks on scolex Hymenolepididae

Family Anoplocephalidae Cholodkovsky

Bats are generally infected with cestodes by the ingestion of larvae encysted in an intermediate host. In the case of anoplocephalids, this occurs via the ingestion of cysticeroid larvae encysted in oribatid mites.

- 1. Testes postero-lateral to ovary. 2
- Testes pre- and postero-lateral to ovary *Cycloskrjabinia* Spasskii
Species: *Cycloskrjabinia* sp.
- 2. Genital atrium with poorly developed musculature *Mathevotaenia* Akhumyan
Species: *M. boliviana* Sawada & Harada, 1986; *M. immatura* Rêgo, 1963
- Genital atrium with well-developed radial musculature *Atriotaeonia* Sandground
Species: *A. hastati* Vaucher, 1982(a)

Family Hymenolepididae Ariola

The life-cycle of hymenolepidids is similar to that of anoplocephalids, with transmission occurring via the ingestion of cysticeroid larvae in fleas and other insects.

- 1. Rostellum unarmed; testes separated into two groups by ovary *Hymenolepis* Weinland
Species: *H. dasypteri* Vaucher, 1985; *Hymenolepis* sp.
- Rostellum armed; testes not separated into two groups by ovary *Vampirolepis* Spasskii
Species: *V. artibeii* Zdzitowiecki & Rutkowska, 1980; *V. bihamata* Sawada & Harada, 1986; *V. crassihamata* Sawada & Harada, 1986; *V. christensoni* (Macy, 1931(a)); *V. decipiens* (Diesing, 1850); *V. elongata* Rêgo, 1962; *V. guarany* Rêgo, 1962; *V. longisaccata* Sawada & Harada, 1986; *V. mazanensis* (Vaucher, 1986(b)); *V. pandonensis* Sawada & Harada, 1986; *V. phyllostomi* Vaucher, 1982(b); *V. promopsis* (Vaucher, 1986(a)); *V. santacruzensis* Sawada & Harada, 1986; *V. temmincki* (Vaucher, 1986(a)); *Vampirolepis* sp.

Class Trematoda Rudolphi

The Trematoda is a large class of 15,000–20,000 parasitic species which utilize all of the major vertebrate groups as hosts. The vast majority belong to the subclass Digenea, the members of which are characterised by having multiple generations (usually three) within their life-cycle, i.e. two asexual generations which mature in a molluscan host and one sexual generation which occurs within a vertebrate host. In terms of morphology, life-cycle and site, the group is very plastic, although this is not the case for individual lower taxa. Digeneans are usually parasites of the alimentary canal of their host, usually have a blind intestine and usually attach to the host using two (sometimes one) suckers. Transmission to the vertebrate host is usually by the direct penetration of a larval stage (the cercariae) or, more often, by the ingestion of an encysted larval stage (the metacercaria) with the host's food, e.g. within an intermediate host.

Key to Families

- 1. Alimentary canal absent Anenterotrematidae
- Alimentary canal present. 2
- 2. Body bipartite, with spatulate anterior and oval posterior regions Diplostomidae
- Body not bipartite 3
- 3. Anterior body bears proboscis with hooks Rhopalidae
- Anterior region of body without proboscis 4
- 4. Intestinal caeca short to medium, may be restricted to anterior region of body; vitelline fields limited in distribution, often with

	limited number of follicles, often restricted to forebody	5
-	Intestinal caeca medium to long; vitelline fields usually extensive, with many follicles, entirely or mainly in hindbody	6
5.	True cirrus-sac absent; pseudocirrus-sac usually present; genital pore usually median or submedian in forebody	Lecithodendriidae
-	True cirrus-sac present; genital pore usually sublateral to lateral at level of ventral sucker.	Phaneropsolidae
6.	Genital pore in posterior region of body	7
-	Genital pore in anterior region of body	8
7.	Ventral sucker absent.	Nudacotyliidae
-	Ventral sucker present.	Urotrematidae
8.	Ovary between testes (in forms from the Americas).	Hasstilesiidae
-	Ovary anterior or posterior to testes	9
9.	Ovary post-testicular	Dicrocoeliidae
-	Ovary pre-testicular	Plagiorchiidae

Family Anenterotrematidae Yamaguti

The life-cycle of anenterotrematids is not known, but, judging by related digenean groups, the bats acquire the parasite by the ingestion of arthropods infected with the metacercarial stage. All digeneans utilize molluscs as first intermediate hosts.

1. Body pyriform, less than 1mm in length. *Anenterotrema* Stunkard
Species: *A. eduardocaballeroi* (Freitas, 1960); *A. liliputianum* (Travassos, 1928); *A. mesolecitha* Marshall & Miller, 1979; *Anenterotrema* sp.
- Body elongate, measuring 1–5 mm. *Apharyngotrema* Marshall & Miller
Species: *A. apharyngotrema* Marshall & Miller, 1979; *A. lenti* Santos & Gibson, 1998

Family Dicrocoeliidae Looss

Dicrocoeliids are parasites of terrestrial mammals and birds, with molluscs and arthropods serving as intermediate hosts. Bats acquire these parasites by feeding on insects harbouring the metacercarial stage.

1. Testes oblique *Metadelphis* Travassos
Species: *M. alvarengai* Travassos, 1955
- Testes symmetrical *Parametadelphis* Travassos
Species: *P. compactus* Travassos, 1955

Family Diplostomidae Poirier

Transmission is normally associated with the aquatic environment and effected by the ingestion of a fish or an invertebrate harbouring the metacercarial stage.

Neodiplostomum Railliet

Species: *Neodiplostomum vaucheri* Dubois, 1983

Family Hasstilesiidae Hall

In the Americas, hasstilesiids are parasites of rodents and lagomorphs. The record below is the first from a bat. *Hasstilesia tricolor* is essentially a parasite of rabbits. All of the larval development of this group takes place in the molluscan host. The infection of frugivorous bats may take place when they accidentally ingest infected molluscs in their diet or by drinking water containing cercarial larvae.

Hasstilesia Hall

Species: *H. tricolor* (Stiles & Hassall, 1894)

Family Lecithodendriidae Lühe

The lecithodendriids are closely related to the phaneropsolids, from which they are often difficult to distinguish based on morphology. Together they form the major group of bat parasites. The synonymies indicated are based on Lotz & Font (2008a).

Bats become infected by ingesting insects harbouring the encysted metacercarial stage.

1. Pseudocirrus-sac surrounding seminal vesicle *Castroia* Travassos
Species: *C. amplivava* Travassos, 1928; *C. silvai* Travassos, 1928
- Thin-walled pseudocirrus-sac surrounds seminal vesicle2
2. Genital atrium in forebody armed with spines *Acanthatrium* Faust
Species: *A. fugleri* Marshall & Miller, 1979
- Genital atrium unarmed.3
3. Deep acetabulo-genital sac enclosing separate genital pores and ventral sucker
. *Gymnoacetabulum* Lunaschi & Drago (= *Suttonia* Lunaschi)
Species: *G. talaveraense* (Lunaschi, 2002)
- Acetabulo-genital sac absent; genital pore usually but not always common.4
4. Pseudogonotyl (thick area of tegument surrounded by gland-cells) lateral to ventral sucker *Ochoterenatrema* Caballero
Species: *O. caballeroi* Freitas, 1957³; *O. diminutum* (Chandler, 1938); *O. fraternum* Freitas & Ibañez, 1963; *O. labda* Caballero, 1943
- Pseudogonotyl absent5
5. Caeca extend into posterior region of body *Chiropterotrema* Vélez & Thatcher
Species: *C. antioquiense* Vélez & Thatcher, 1992(a)
- Caeca end in forebody.6
6. Testes lateral to ventral sucker; body lacks large ventral cleft *Paralecithodendrium* Odhner (= *Prosthodendrium* Dollfus)
Species: *P. aranhai* Lent, Freitas & Proença, 1945; *P. brachycolon* Freitas & Dobbin Jr., 1960(b); *P. buongermanni* (Lent, Freitas & Proença, 1946); *P. conturbatum* (Freitas, 1960); *P. cordiforme* (Braun, 1900); *P. megovarium* (Marshall & Miller, 1979); *Paralecithodendrium* sp.
- Testes in anterior region of body; body with large ventral cleft *Topsiturvitrema* Vélez & Thatcher
Species: *T. verticalia* Vélez & Thatcher, 1992

Family Nudacotyliidae

Nudacotyliids occur in the intestines of several, normally vegetarian, groups of mammals in the Americas. Transmission occurs by the ingestion of metacercariae encysted on vegetation or other surfaces.

Nudacotyle Barker

Species: *N. carollia* Vélez & Thatcher, 1992; *N. novicia* Barker, 1916

Family Phaneropsolidae Mehra

The phaneropsolids are closely related to the lecithodendriids, from which they are often difficult to distinguish based on morphology. Together they form the major group of bat parasites. The synonymies indicated are based on Lotz & Font (2008b).

Bats become infected by ingesting insects harbouring the encysted metacercarial stage.

1. Caeca medium in length, reach into hindbody2
- Caeca short, reach only to level of ventral sucker or retained in forebody.3
2. Genital pore sublateral to submedian, in forebody *Maxbraunium* Caballero & Zerecero
Species: *M. tubiporum* (Braun, 1900)
- Genital pore lateral, at level of ventral sucker *Postorchigenes* Tubangui (= *Czosnowia* Zdzitowiecki)
Species: *P. mbopi* Vaucher, 1981; *P. paraguayensis* Fischthal & Martin, 1978
3. Male and female genital pores widely separated; male pore well anterior to ventral sucker, median or submedian.
. *Tremajoannes* Saoud

-
3. Syn. of *Ochoterenatrema diminutum* (Chandler, 1938) according to Cain (1966).

Species: *T. buckleyi* Saoud 1964

- Genital pore common or male and female pores close together, submedial to sublateral and close to level of ventral sucker.4
- 4. Ovary in forebody or at level of anterior region of ventral sucker; cirrus-sac not oriented horizontally
..... *Limatulum* Travassos (= *Stumiratrema* Vélez & Thatcher)
Species: *L. brevicoezum* Mañé-Garzón & González, 1976; *L. gastroides* Macy, 1935; *L. oklahomense* Macy, 1931(b); *L. umbilicatum* (Vélez & Thatcher, 1992)
- Ovary at level of posterior region of ventral sucker or in anterior hindbody; cirrus-sac oriented horizontally.
..... *Parabascus* Looss (= *Limatuloides* Dubois; *Parabascoides* Stunkard)⁴
Species: *P. cephalolecithus* (Marshall & Miller, 1979); *P. limatulus* (Braun, 1900)

Family Plagiorchiidae Lühe

This is a large group, occurring in a wide range of tetrapods. Metacercariae commonly occur encysted in both larval and adult insects; it is likely that bats acquire the parasites from the latter.

Plagiorchis Lühe

Species: *P. parumbursatus* Freitas & Dobbin Jr, 1961

Family Rhopaliidae Looss

Species of this rare group occur mainly in marsupials from the Americas, but occasionally in other in omnivorous mammals (and birds). The life-cycle is not known, but bats likely acquire the parasite by the ingestion of metacercariae encysted on the surface of vegetation or on/in molluscs or other invertebrates.

Rhopalias Stiles & Hassall

Species: *R. coronatus* (Rudolphi, 1819)

Family Urotrematidae Poche

Urotrematids occur in a variety of insectivorous rodents, bats, lizards and fishes. Bats acquire the parasite by the ingestion of encysted metacercariae in their insect prey.

Urotrema Braun

Species: *U. scabridum* Braun, 1900

Records

See Table 1 for a checklist relating to the various species of helminth parasites occurring in South American bats extracted from more than 120 references. The data in the table include the name of the parasite, its chiropteran host(s), the name of the South American countries in which it has been recorded, the site(s) of the parasite within the host and the related reference(s). Table 2 is a host-parasite checklist, listing the groups and species of helminth parasites so far recorded from the individual South American bat species which have been investigated.

Helminth parasites have been reported from 92 named chiropteran species belonging to six families, which is only about a third of the known taxa; Nogueira *et al.* (2014) listed 178 species of bats (from nine families) as occurring in Brazil alone and Wikipedia listed 275 bats (from nine families) as present in the whole of South America (Wikipedia: The free encyclopedia, 2014). The c.370 records of 114 nominal species of helminth parasites include 53 nematode species, three acanthocephalans, 18 cestodes and 40 trematodes. Despite the fact that the Chiroptera is the second largest mammalian order, given that the vast majority are insectivores, it is not surprising that their helminth fauna is not very diverse and tends to be somewhat restricted to those helminth

4. According to recent molecular studies (Kanarek *et al.* 2014), this genus belongs to the Pleurogenidae.

TABLE 1. List of records of helminth species from bats in South America, with their host(s), geographical distribution, site and data-sources.

Parasite	Host(s)	Locality	Site	Reference(s)
NEMATODA				
<i>Alintoshius bioccai</i>	<i>Eptesicus furinialis</i>	Paraguay	-	Rossi & Vaucher 2002
<i>Alintoshius nudicaudatus</i>	<i>Myotis nigricans</i>	Brazil	Small intestine	Freitas & Mendonça 1963; Vicente <i>et al.</i> 1997
<i>Alintoshius parallintoshius</i>	<i>Tadarida brasiliensis</i> , <i>Eptesicus furinialis</i> , <i>Myotis albescens</i> , <i>M. nigricans</i> , <i>M. riparius</i> , <i>M. ruber</i> , <i>M. levis</i>	Brazil, Paraguay, Peru	Small intestine	Araújo 1940; Lent <i>et al.</i> 1946; Vicente <i>et al.</i> 1997; Rossi & Vaucher 2002
<i>Alintoshius</i> sp.	<i>Saccopteryx bilineata</i> , <i>Molossops temminckii</i> , <i>Carollia castanea</i>	Colombia	-	Cuartas-Calle & Muñoz-Arango 1999
<i>Alintoshius urumiac</i>	<i>Myotis nigricans</i>	Brazil	Small intestine	Freitas & Mendonça 1960a; Vicente <i>et al.</i> 1997
<i>Anoplostrongylus paradoxus</i>	<i>Nyctinomops laticaudatus</i> , <i>Tadarida brasiliensis</i> , <i>Eumops perotis</i> , Phyllostomidae gen. sp.	Brazil, Paraguay	Small intestine	Travassos 1918; Travassos 1920; Lent <i>et al.</i> 1946; Durette-Desset & Pinto 1977; Vicente <i>et al.</i> 1997
<i>Aonchotheca cubana</i>	<i>Molossus currentium</i> (as <i>M. bondae</i>), <i>M. molossus</i>	Colombia	-	Cuartas-Calle & Muñoz-Arango 1999
<i>Aonchotheca magnifica</i>	<i>Molossus rufus</i>	Brazil	Small intestine	Freitas & Mendonça 1961; Vicente <i>et al.</i> 1997
<i>Aonchotheca parva</i>	<i>Glossophaga soricina</i>	Brazil	Small intestine	Freitas & Dobbin Jr. 1961a, 1962; Vicente <i>et al.</i> 1997
<i>Aonchotheca pereirai</i>	Molossidae gen. sp.	Brazil	Intestine	Freitas & Lent 1935
<i>Aonchotheca pintoii</i>	Chiroptera gen. sp.	Brazil	Small intestine	Freitas 1934
<i>Aonchotheca pulchra</i>	<i>Tadarida brasiliensis</i> , <i>Nyctinomops laticaudatus</i> , <i>N. macrotis</i>	Brazil, Paraguay	Stomach, stomach mucosa	Freitas & Lent 1936; Lent <i>et al.</i> 1946; Travassos & Freitas 1964; Vicente <i>et al.</i> 1997; Cardia <i>et al.</i> 2014
<i>Aonchotheca</i> sp.	Chiroptera gen. sp.	Argentina	-	Ramallo <i>et al.</i> 2007
<i>Biacantha desmoda</i>	<i>Desmodus rotundus</i>	Venezuela, Ecuador	-	Guerrero 1985; Vaucher & Durette-Desset 1986
<i>Biacantha normaliae</i>	<i>Desmodus rotundus</i>	Argentina	Intestine	Oviedo <i>et al.</i> 2012
<i>Bidigiticauda embryophylum</i>	<i>Glossophaga soricina</i>	Brazil	Small intestine	Freitas & Dobbin Jr. 1960a, 1962; Vicente <i>et al.</i> 1997
<i>Bidigiticauda vivipara</i>	<i>Artibeus lituratus</i>	Venezuela	-	Guerrero 1985
<i>Capillaria</i> sp.	<i>Anoura caudifer</i> , <i>Artibeus jamaicensis</i> , <i>Carollia perspicillata</i> , <i>Tadarida brasiliensis</i> , <i>Trachops cirrhosus</i> , <i>Sturnira erythromos</i> , <i>S. magna</i>	Argentina, Brazil, Colombia, Venezuela	Stomach	Cuartas-Calle & Muñoz-Arango 1999; Noronha <i>et al.</i> 2002; Nogueira <i>et al.</i> 2004; Drago <i>et al.</i> 2007; Guerrero 1985
<i>Carostromylus touzeti</i>	<i>Carollia brevicauda</i> , <i>C. castanea</i> , <i>C. perspicillata perspicillata</i>	Ecuador, Paraguay, Peru	-	Durette-Desset & Vaucher 1989

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TABLE 1. (Continued)

Parasite	Host(s)	Locality	Site	Reference(s)
<i>Cheiropteronea globocephala</i>	<i>Sturnira lilium</i> , <i>Artibeus anderseni</i> , <i>A. cinereus</i> , <i>A. obscurus</i> (as <i>A. fuliginosus</i>), <i>A. jamaicensis</i> , <i>A. lituratus</i> , <i>A. planirostris</i> , <i>A. watsoni</i>	Brazil, Colombia, Ecuador, French Guiana, Peru	Stomach, Intestine	Durette-Desset & Vaucher 1988; Cuartas-Calle & Muñoz-Arango 1999; Nogueira <i>et al.</i> 2004; Guerrero 1985
<i>Cheiropteronea striatum</i>	<i>Artibeus planirostris</i>	Argentina	Intestine	Oviedo <i>et al.</i> 2010
<i>Cheiropteronea</i> sp.	<i>Artibeus planirostris</i> , <i>Carolla perspicillata</i>	Peru, Venezuela	-	Durette-Desset & Vaucher 1988; Guerrero 1985
<i>Histiostrongylus coronatus</i>	<i>Phyllostomus discolor</i> , <i>Myotis nigricans</i> , <i>Myotis</i> sp.	Brazil, Colombia, Venezuela	Small intestine	Molin 1861; Travassos 1937; Diaz-Ungria 1973, 1979; Vicente <i>et al.</i> 1997; Cuartas-Calle & Muñoz-Arango 1999; Guerrero 1985
<i>Histiostrongylus paradoxus</i>	<i>Artibeus jamaicensis</i>	Colombia	Intestine	Travassos 1918; Cuartas-Calle & Muñoz-Arango 1999
<i>Histiostrongylus</i> sp.	<i>Phyllostomus hastatus</i> , <i>Carolla brevicauda</i> , <i>C. perspicillata</i>	Brazil, Colombia	Small intestine	Vicente <i>et al.</i> 1997; Cuartas-Calle & Muñoz-Arango 1999
<i>Litomosoides artibeii</i>	<i>Artibeus cinereus</i> , <i>Artibeus</i> sp.	Colombia	Thoracic & abdominal cavities	Esslinger 1973; Cuartas-Calle & Muñoz-Arango 1999; Marinkelle & Garcia-Castañeda 1999; Brandt & Gardner 2000
<i>Litomosoides brasiliensis</i>	<i>Anoura caudifer</i> , <i>A. geoffroyi</i> , <i>Myotis</i> sp., <i>Phyllostomus discolor</i> , <i>P. elongatus</i> , <i>P. hastatus</i> , <i>Phyllostomus</i> sp., <i>Carolla brevicauda</i> , <i>C. castanea</i> , <i>C. perspicillata</i> , <i>Carolla</i> sp., <i>Sturnira lilium</i> , <i>Lionycteris spurrellii</i> , <i>Glossophaga soricina</i> , <i>Glossophaga</i> sp., <i>Lonchophylla thomasi</i> , <i>Trachops cirrhosus</i>	Brazil, Venezuela, Colombia, Peru, French Guiana, Bolivia	Thoracic & abdominal cavities	Almeida 1936; Régo 1961; Diaz-Ungria 1963; Esslinger 1973; Padilha & Barros-Araújo 1976; Guerreiro <i>et al.</i> 2002; Brandt & Gardner 2000; Marinkelle & Garcia-Castañeda 1999; Vicente <i>et al.</i> 1997; Mourão <i>et al.</i> 2002; Cuartas-Calle & Muñoz-Arango 1999; Notarnicola <i>et al.</i> 2010; Guerrero 1985
<i>Litomosoides caliensis</i>	<i>Sturnira lilium</i> , <i>S. tildae</i>	Colombia	Thoracic & abdominal cavities	Esslinger 1973; Brandt & Gardner 2000; Marinkelle & Garcia-Castañeda 1999; Cuartas-Calle & Muñoz-Arango 1999
<i>Litomosoides carolliae venezuelensis</i>	<i>Carolla</i> sp.	Venezuela	-	Rodrigo 1964
<i>Litomosoides chandleri</i>	<i>Artibeus jamaicensis</i> , <i>A. planirostris</i> , <i>Nyctinomops laticaudatus</i> , <i>Sturnira lilium</i> , <i>S. oporaphilum</i> , <i>Lasiurus ega</i> , <i>Phyllyonycteris poeyi</i>	Colombia, Bolivia, Brazil, French Guiana, Venezuela, Peru	Thoracic & abdominal cavities	Esslinger 1973; Brandt & Gardner 2000; Marinkelle & Garcia-Castañeda 1999; Cuartas-Calle & Muñoz-Arango 1999; Bain <i>et al.</i> 2003; Notarnicola <i>et al.</i> 2010; Guerrero 1985
<i>Litomosoides colombiensis</i>	<i>Platyrrhinus</i> (as <i>Vampyrops) dorsalis</i> , <i>P.</i> (as <i>V.</i>) <i>helleri</i> , <i>Artibeus jamaicensis</i>	Colombia	Thoracic & abdominal cavities	Esslinger 1973; Brandt & Gardner 2000; Marinkelle & Garcia-Castañeda 1999

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TABLE 1. (Continued)

Parasite	Host(s)	Locality	Site	Reference(s)
<i>Litosomoides salazari</i>	<i>Lasiurus ega</i>	Bolivia	Body-cavity	Notarnicola <i>et al.</i> 2010
<i>Litosomoides serpicula</i>	<i>Phyllostomus</i> sp.	Brazil	Abdominal cavity	Molin 1858
<i>Litosomoides solarii</i>	<i>Trachops cirrhosus</i>	Peru	Body-cavity	Guerrero <i>et al.</i> 2002
<i>Litosomoides</i> sp.	<i>Sturnira lilium</i> , <i>Myotis riparius</i>	Argentina, Brazil	Abdominal cavity	Boero & Delpietro 1970; Vicente <i>et al.</i> 1987, 1997
<i>Litosomoides teshi</i>	<i>Carollia perspicillata</i>	Colombia	Thoracic & abdominal cavities	Esslinger 1973; Brandt & Gardner 2000; Marinkelle & Garcia-Castañeda 1999; Cuartas-Calle & Muñoz-Arango 1999
<i>Litosomoides yutajensis</i>	<i>Pteronotus parnellii</i>	Venezuela	Microfilariae in blood system	Guerrero <i>et al.</i> 2003, 2006
<i>Lukonema lukoschusi</i>	<i>Noctilio labialis</i> (= <i>N. leporinus</i> or <i>N. albiventris</i>), <i>Lophostoma</i> (as <i>Tonatia carrikeri</i>), <i>Carollia perspicillata</i> , <i>Desmodus rotundus</i> , <i>Saccopteryx leptura</i> , <i>Eptesicus brasiliensis melanopterus</i> , <i>Myotis nigricans</i>	Suriname, French Guiana	Uropatagium	Chabaud & Bain 1974
<i>Migonella fracchiatii</i>	<i>Molossops temmincki</i>	Paraguay	Mesenteries	Lent <i>et al.</i> 1946
<i>Molostromylus acanthocolpos</i>	<i>Cynomops abrasus</i> , <i>C. planirostris</i> , <i>Molossops temmincki</i>	Paraguay	Intestine	Durette-Desset & Vaucher 1996, 1999
<i>Molostromylus mbopi</i>	<i>Cynomops abrasus</i> , <i>C. planirostris</i> , <i>Molossops temmincki</i>	Paraguay	Intestine	Durette-Desset & Vaucher 1999
<i>Parahistiostrongylus octacanthus</i>	<i>Pteronotus parnelli</i> , <i>Phyllostomus hastatus</i>	Venezuela	-	Guerrero 1985
<i>Physaloptera</i> sp. (juv.)	Chiroptera gen. sp.	Argentina	-	Ramallo <i>et al.</i> 2007
<i>Pseudocapillaria pusilla</i>	<i>Sturnira lilium</i> , <i>Lonchophylla robusta</i>	Brazil, Colombia	Small intestine	Travassos 1914; Freitas 1934; Freitas & Lent 1936; Vicente <i>et al.</i> 1997; Cuartas-Calle & Muñoz-Arango 1999
<i>Pterothominx angrensis</i>	<i>Molossus rufus</i>	Brazil	Small intestine	Freitas 1934; Freitas & Lent 1936; Vicente <i>et al.</i> 1997
<i>Pterothominx brevidephsis</i>	<i>Myotis nigricans</i>	Brazil	Stomach	Freitas & Mendonça 1960b; Vicente <i>et al.</i> 1997
<i>Pterygodermatites elegans</i>	<i>Eumops perotis</i>	Brazil	Intestine	Travassos 1928; Vicente <i>et al.</i> 1997
<i>Rictularia</i> sp.	<i>Tadarida brasiliensis</i> , <i>Micronycteris megalotis</i> , <i>Myotis nigricans</i>	Brazil, Colombia	Intestine	Cuartas-Calle & Muñoz-Arango 1999; Noronha <i>et al.</i> 2002
<i>Seuratium</i> sp.	<i>Myotis keaysi</i>	Venezuela	-	Guerrero 1985
<i>Stilestrongylus octacanthus</i>	<i>Phyllostomus hastatus</i>	Brazil	Small intestine	Lent & Freitas 1940; Vicente <i>et al.</i> 1997
<i>Tenoranema rivarolai</i>	<i>Nyctinomops laticaudatus</i>	Paraguay	Small intestine	Lent <i>et al.</i> 1946
<i>Torrestromylus</i> sp.	<i>Sturnira bidentis</i> , <i>Micronycteris schmidtorum</i>	Colombia	Small intestine	Cuartas-Calle & Muñoz-Arango 1999

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TABLE 1. (Continued)

Parasite	Host(s)	Locality	Site	Reference(s)
<i>Websterinema parnelli</i>	<i>Pteronotus parnelli</i>	Venezuela	-	Guerrero 1985
ACANTHOCEPHALA				
<i>Moniliformis convolutum</i>	<i>Vampyrum spectrum</i>	Brazil	Intestine	Meyer 1932; Gibson & McCarthy 1987
<i>Moniliformis moniliformis</i>	<i>Phyllostomus hastatus</i>	Brazil	Intestine	Machado Filho 1946; Gibson & McCarthy 1987
<i>Neonicicola artibeii</i>	<i>Artibeus lituratus</i>	Paraguay	Small intestine	Smales 2007
CESTODA				
<i>Atriotaenia hastati</i>	<i>Phyllostomus hastatus</i>	Paraguay, Peru	Intestine	Vaucher 1982a; Vargas <i>et al.</i> 2009b
<i>Cyclospkjabinia</i> sp.	<i>Phyllostomus</i> sp.	Bolivia		Sawada & Harada 1986
<i>Hymenolepis dasypteri</i>	<i>Lasiurus ega argentinus</i>	Paraguay	Intestine	Vaucher 1985; Nama 1990
<i>Hymenolepis</i> sp.	<i>Noctilio leporinus</i>	Paraguay		Schmidt & Martin 1978
<i>Mathevoaenia boliviana</i>	<i>Glossophaga soricina</i>	Bolivia	Intestine	Sawada & Harada 1986; Sawada 1997
<i>Mathevoaenia immatura</i>	<i>Glossophaga soricina</i>	Brazil	Small intestine	Rêgo 1963
<i>Vampirolepis artibeii</i>	<i>Glossophaga soricina</i>	Peru	Intestine	Mendoza <i>et al.</i> 1997
<i>Vampirolepis bihamata</i>	<i>Micronycteris minuta</i>	Bolivia	Intestine	Sawada & Harada 1986; Sawada 1990, 1997
<i>Vampirolepis christensoni</i>	<i>Nyctinomops laticaudatus</i> , Molossidae gen. sp., Chiroptera gen. sp.	Brazil, Paraguay, Bolivia	Small intestine	Rêgo 1962; Travassos 1965
<i>Vampirolepis crassihamata</i>	<i>Molossus molossus</i>	Bolivia	Intestine	Sawada & Harada 1986; Sawada 1990, 1997
<i>Vampirolepis decipiens</i>	<i>Cynomops abraxas brachymeles</i> , <i>Eumops patagonicus</i> (as <i>E. bonariensis beckeri</i>), <i>E. glaucinus</i> , <i>E. perotis</i> , <i>Molossops temmincki</i> , <i>Pteronotus parnelli rubiginosus</i> (as <i>Chilonycteris rubiginosa</i>), <i>Eptesicus fuscus</i> , <i>Nyctinomops laticaudatus</i> , <i>Myotis albescens</i>	Brazil, Argentina, Paraguay	Intestine	Diesing 1850; Linstow 1904; Joyeux 1945; Rêgo 1962; Travassos 1965; Boero & Delpietro 1970; Vaucher, 1982b, 1986a; Nama 1990; Sawada 1990
<i>Vampirolepis elongata</i>	<i>Molossus rufus</i> , <i>Glossophaga soricina</i> , <i>Artibeus obscurus</i> (as <i>A. fuliginosus</i>), <i>A. planirostris</i> , <i>A. lituratus</i> , <i>Pygoderma bilabiatum</i> ; <i>Phyllostomus hastatus</i> , <i>Platyrrhinus helleri</i> , Chiroptera gen. sp.	Brazil, Argentina, Paraguay, Bolivia, Peru	Small intestine	Rêgo 1962; Sawada 1990; Travassos 1965; Boero & Delpietro 1970; Nama 1990; Vaucher 1982b, 1986a, 1992; Nogueira <i>et al.</i> 2004; Vargas <i>et al.</i> 2009b

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TABLE 1. (Continued)

Parasite	Host(s)	Locality	Site	Reference(s)
<i>Vampirolepis pandonensis</i>	<i>Eptesicus furinatus</i>	Bolivia	Intestine	Sawada & Harada 1986; Sawada 1990, 1997
<i>Vampirolepis phyllostomi</i>	<i>Phyllostomus hastatus hastatus</i> , <i>Eumops bonariensis beckeri</i>	Peru, Paraguay, Bolivia	Intestine	Vaucher 1982b; Sawada & Harada 1986; Sawada 1990; Nama 1990
<i>Vampirolepis promopsis</i>	<i>Promops centralis</i>	Paraguay	Intestine	Vaucher 1986a
<i>Vampirolepis santacruzensis</i>	<i>Molossus molossus</i>	Bolivia	Intestine	Sawada & Harada 1986; Sawada 1990, 1997
<i>Vampirolepis</i> sp.	<i>Artibeus fraterculus</i> , <i>Noctilio leporinus</i>	Peru, Bolivia	Intestine	Sawada & Harada 1986; Sawada 1990; Vargas <i>et al.</i> 2009b
<i>Vampirolepis temmincki</i>	<i>Molossops temmincki</i>	Paraguay	Intestine	Vaucher 1986a, 1992; Sawada 1990; Nama 1990
TREMATODA				
<i>Acanthatrium fugleri</i>	<i>Molossus molossus</i>	Ecuador	Small intestine	Marshall & Miller 1979
<i>Anenterotrema eduardocaballeroi</i>	<i>Molossus rufus rufus</i> , <i>M. molossus</i> , <i>Phyllostomus elongatus</i> , <i>P. hastatus</i> , <i>Eumops glaucinus</i> , <i>Eumops</i> sp., <i>Histiotus velatus</i>	Brazil, Colombia	Small intestine	Freitas 1960; Caballero 1961; Caballero & Caballero 1969; Freitas & Dobbin Jr. 1962; Travassos <i>et al.</i> 1969; Thatcher 1993; Lunaschi 2002; Caro <i>et al.</i> 2003
<i>Anenterotrema liliputianum</i>	<i>Histiotus velatus</i> , <i>Molossus molossus</i> (also as <i>M. obscurus</i>), <i>M. rufus</i> (also as <i>M. ater</i>), Molossidae gen. sp., <i>Molossops temminckii</i> , <i>Myotis nigricans</i> , <i>Phyllostomus elongatus</i> , <i>Peropteryx macrotis</i>	Brazil, Argentina	Small intestine	Travassos 1928; Freitas 1961; Freitas & Dobbin Jr. 1962; Caballero & Caballero 1969; Travassos <i>et al.</i> 1969; Thatcher 1993; Ferreira & Brasil- Sato 1998; Lunaschi & Notarnicola 2010
<i>Anenterotrema mesolecitha</i>	<i>Carollia perspicillata perspicillata</i>	Ecuador	Small intestine	Marshall & Miller 1979
<i>Anenterotrema</i> sp.	<i>Anoura caudifer</i> , <i>Saccopteryx bilineata</i>	Brazil	Small intestine	Santos & Gibson 1998
<i>Apharyngotrema apharyngotrema</i>	<i>Molossus molossus</i>	Ecuador	Small intestine	Marshall & Miller 1979
<i>Apharyngotrema lenti</i>	<i>Anoura caudifer</i> , <i>Saccopteryx bilineata</i>	Brazil	Gall-bladder	Santos & Gibson 1998
<i>Castroia amplicava</i>	Molossidae gen. sp., <i>Peropteryx kappleri</i>	Colombia, Brazil	Intestine	Travassos 1928; Martin 1969; Travassos <i>et al.</i> 1969; Thatcher 1993; Caro <i>et al.</i> 2003
<i>Castroia silvai</i>	<i>Anoura caudifer</i> , <i>Peropteryx macrotis</i> , <i>P. kappleri</i>	Colombia	Small intestine	Travassos 1928; Martin 1969; Travassos <i>et al.</i> 1969; Vélez & Thatcher 1992a
<i>Chiropterotrema antioquiense</i>	<i>Carollia perspicillata perspicillata</i>	Brazil, Colombia	Small intestine	Vélez & Thatcher 1992a; Boeger <i>et al.</i> 1985
<i>Gymnoacetabulum talaveraense</i>	<i>Molossus molossus</i> , <i>Tadarida brasiliensis</i> , <i>Myotis levis</i>	Argentina	Intestine	Lunaschi 2002; Lunaschi & Drago 2007; Drago <i>et al.</i> 2007; Lunaschi & Notarnicola 2010
<i>Hasstilesia tricolor</i>	<i>Artibeus anderseni</i> , <i>A. lituratus</i> , <i>A. obscurus</i> , <i>Chiroderma trinitatum</i> , <i>Mesophylla macconnelli</i> , <i>Vampyressa</i> (<i>Vampyriscus</i>) <i>bidens</i> , <i>Vampyrodus caraccioli</i>	Brazil	Small intestine	Nogueira <i>et al.</i> 2004

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TABLE 1. (Continued)

Parasite	Host(s)	Locality	Site	Reference(s)
<i>Limatulus umbilicatum</i>	<i>Sturnira lilium</i>	Colombia, Argentina	Small intestine	Vélez & Thatcher 1992a; Lunaschi <i>et al.</i> 2003; Drago <i>et al.</i> 2007
<i>Maxbraunium tubiporum</i>	<i>Lasturus blossevillii</i>	Brazil	Intestine	Braun 1900; Travassos <i>et al.</i> 1969; Thatcher 1993
<i>Metadelphis alvarengai</i>	<i>Eptesicus furlinalis</i>	Brazil	Intestine	Travassos 1955; Travassos <i>et al.</i> 1969; Thatcher 1993
<i>Neodiplostomum vaucheri</i>	<i>Chrotopterus auritus</i>	Peru	Intestine	Dubois 1983
<i>Nudacotyle carollia</i>	<i>Carollia perspicillata perspicillata</i>	Ecuador, Colombia	Small intestine	Vélez & Thatcher 1992b
<i>Nudacotyle novicia</i>	<i>Aribeus lituratus, Molossus molossus</i>	Ecuador, Colombia	Small intestine	Marshall & Miller 1979; Caro <i>et al.</i> 2003
<i>Ochoterenatrema caballeroi</i>	<i>Cynomops planirostris, Molossops sp.</i>	Brazil	Intestine	Freitas 1957; Travassos <i>et al.</i> 1969; Thatcher 1993
<i>Ochoterenatrema diminutum</i>	<i>Myotis nigricans, Molossus molossus</i>	Brazil	Intestine	Ferreira & Brasil-Sato 1998
<i>Ochoterenatrema fraternum</i>	<i>Tadarida brasiliensis</i>	Peru	Intestine	Freitas & Ibañez 1963; Caballero & Caballero 1969; Tantaléan <i>et al.</i> 1992; Thatcher 1993
<i>Ochoterenatrema labda</i>	<i>Myotis levis, Tadarida brasiliensis</i>	Argentina	Anterior intestine	Drago <i>et al.</i> 2007; Lunaschi & Notarnicola 2010
<i>Parabascus cephalolecithus</i>	<i>Carollia castanea</i>	Ecuador	Small intestine	Marshall & Miller 1979
<i>Parabascus limatus</i>	<i>Molossus sp., Myotis nigricans, Tadarida brasiliensis</i>	Brazil, Paraguay, Argentina	Small intestine	Braun 1900; Travassos 1921; Lent <i>et al.</i> 1945; Lunaschi 2004; Drago <i>et al.</i> 2007; Lunaschi & Drago 2007
<i>Paralecithodendrium aranhai</i>	<i>Nyctinomops laticaudatus, Molossus molossus</i>	Paraguay	Small intestine	Lent <i>et al.</i> 1945; Travassos <i>et al.</i> 1969; Thatcher 1993
<i>Paralecithodendrium brachycolon</i>	<i>Molossus molossus, Molossus rufus rufus</i>	Brazil	Small intestine	Freitas & Dobbin Jr. 1960b, 1962; Caballero & Caballero 1969; Travassos <i>et al.</i> 1969
<i>Paralecithodendrium buongermimii</i>	<i>Molossus molossus, M. rufus (as M. ater)</i>	Brazil, Paraguay	Small intestine	Lent <i>et al.</i> 1946; Dubois 1960; Travassos <i>et al.</i> 1969; Ferreira & Brasil-Sato 1998
<i>Parametadelphis compactus</i>	<i>Glyphonycteris (as Micronycteris) behnii</i>	Brazil	Small intestine	Travassos 1955; Travassos <i>et al.</i> 1969; Thatcher 1993
<i>Paralecithodendrium conturbatum</i>	<i>Noctilio albiventris, Molossus molossus, Myotis nigricans, Tadarida brasiliensis</i>	Brazil, Ecuador, Argentina	Small intestine	Freitas 1960; Travassos & Freitas 1964; Travassos <i>et al.</i> 1969; Caballero & Caballero 1969; Marshall & Miller 1979; Thatcher 1993; Boero & Led 1971; Lunaschi & Drago 2007
<i>Paralecithodendrium cordiforme</i>	<i>Molossus molossus (also as M. major), Miniopterus schreibersii</i>	Brazil, Colombia	Small intestine	Braun 1900; Travassos 1921; Dubois 1960; Travassos <i>et al.</i> 1969; Thatcher 1993; Caro <i>et al.</i> 2003
<i>Paralecithodendrium megovarium</i>	<i>Molossus molossus</i>	Ecuador	Small intestine	Marshall & Miller 1979

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TABLE 1. (Continued)

Parasite	Host(s)	Locality	Site	Reference(s)
<i>Postorhynchigenes paraguayensis</i>	<i>Eumops bonariensis beckeri</i> , <i>Noctilio leporinus</i>	Brazil, Paraguay	Intestine	Fischthal & Martin 1978; Boeger <i>et al.</i> 1985
<i>Rhopalias coronatus</i>	<i>Carollia perspicillata</i>	Ecuador	Small intestine	Marshall & Miller 1979
<i>Topsiturvitrema verticalata</i>	<i>Carollia perspicillata perspicillata</i> , <i>Myotis levis</i>	Colombia, Argentina	Small intestine	Vélez & Thatcher 1992a; Lunaschi 2006; Lunaschi & Drago 2007
<i>Tremajoannes buckleyi</i>	<i>Pteronotus davyi fulvus</i> , <i>Mormoops megalophylla</i> , <i>Molossus molossus</i>	Ecuador, Colombia	Small intestine	Saoud 1964; Caballero & Caballero 1969; Martin 1969; Marshall & Miller 1979
<i>Urotrema scabridum</i>	<i>Noctilio albiventris</i> , <i>Noctilio</i> sp., <i>Myotis nigricans</i> , <i>M. ater</i> (as <i>M. chiloensis ater</i> – syn. of <i>M. chiloensis</i> or <i>M. levis</i>), <i>M. levis</i> , <i>Molossops temminckii</i> , <i>Molossus molossus</i> , <i>M. rufus</i> , <i>Molossus</i> sp., <i>Eumops bonariensis</i> , <i>Lasiurus cinereus</i> , <i>Lasiurus intermedius</i> , <i>Lasiurus (Dasypterus)</i> sp., <i>Promops nasutus</i> , <i>P. centralis</i> , <i>Phyllostomus</i> sp., <i>Tadarida brasiliensis</i>	Brazil, Paraguay, Ecuador, Uruguay, Argentina, Colombia	Small intestine; large intestine	Braun 1900; Lent <i>et al.</i> 1945; Freitas & Dobbin Jr. 1962; Travassos & Freitas 1964; Mañé-Garzón & Telias 1965; Travassos <i>et al.</i> 1969; Caballero & Caballero 1969; Marshall & Miller 1979; Thatcher 1993; Caro <i>et al.</i> 2003; Drago <i>et al.</i> 2007; Lunaschi & Notarnicola 2010
Negative result				
No helminth eggs found in faeces	<i>Carollia perspicillata</i> , <i>Sturnira lilium</i> , <i>Artibeus lituratus</i> , <i>A. obscurus</i> , <i>Platyrrhinus recifinus</i>	Brazil		Pinheiro <i>et al.</i> , 2013

TABLE 2. Host-parasite list of South America bats with their helminth species.

Emballonuridae Gervais		
<i>Peropteryx kappleri</i> Peters	Trematoda	<i>Castroia amplicava</i> , <i>C. silvai</i> , <i>Limatulium gastroides</i>
<i>Peropteryx macrotis</i> (Wagner)	Trematoda	<i>Anenterotrema liliputianum</i> , <i>Castroia silvai</i>
<i>Rhynchonycteris naso</i> (Wied-Neuwied)	Cestoda	<i>Vampirolepis mazanensis</i>
<i>Saccopteryx bilineata</i> (Temminck)	Nematoda	<i>Allintoshius</i> sp.
	Cestoda	<i>Vampirolepis mazanensis</i>
<i>Saccopteryx leptura</i> (Schreber)	Trematoda	<i>Anenterotrema</i> sp., <i>Apharyngotrema lenti</i>
	Nematoda	<i>Lukonema lukoschusi</i>
Molossidae Gervais		
<i>Cynomops abrasus</i> (Temminck)	Nematoda	<i>Molostromylus mbopi</i>
<i>Cynomops abrasus brachymeles</i> (Peters)	Cestoda	<i>Vampirolepis decipiens</i>
<i>Cynomops planirostris</i> (Peters)	Nematoda	<i>Molostromylus mbopi</i>
	Trematoda	<i>Ochoterenatrema caballeri</i>
<i>Eumops bonariensis</i> (Peters)	Trematoda	<i>Urotrema scabridum</i>
<i>Eumops glaucinus</i> (Wagner)	Cestoda	<i>Vampirolepis decipiens</i>
	Trematoda	<i>Anenterotrema eduardocaballeri</i>
<i>Eumops patagonicus</i> Thomas (as <i>E. bonariensis</i> beckeri Sanborn)	Cestoda	<i>Vampirolepis decipiens</i> , <i>V. guarany</i> , <i>V. phyllostomi</i>
<i>Eumops perotis</i> (Schinz)	Trematoda	<i>Postorchigenes paraguayensis</i>
	Nematoda	<i>Anoplostromylus paradoxus</i> , <i>Litomosoides molossi</i> , <i>Pterygodermatites elegans</i>
<i>Eumops</i> sp.	Cestoda	<i>Vampirolepis decipiens</i>
<i>Molossops temminckii</i> (Burmeister)	Trematoda	<i>Anenterotrema eduardocaballeri</i>
	Nematoda	<i>Allintoshius</i> sp., <i>Molostromylus acanthocolpos</i> , <i>M. mbopi</i>
	Cestoda	<i>Vampirolepis decipiens</i> , <i>V. temmincki</i>
<i>Molossops</i> sp.	Trematoda	<i>Anenterotrema liliputianum</i> , <i>Urotrema scabridum</i>
<i>Molossus currentium</i> Thomas (as <i>M. bondae</i> Allen)	Trematoda	<i>Ochoterenatrema caballeri</i>
	Nematoda	<i>Anchotheca cubana</i> , <i>Litomosoides molossi</i>

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TABLE 2. (Continued)

<i>Molossus molossus</i> (Pallas) (some as <i>M. m. crassicaudatus</i> Geoffroy, <i>M. major</i> Kerr and <i>M. obscurus</i> Geoffroy)	Nematoda Cestoda Trematoda	<i>Aonchotheca cubana</i> , <i>Litomosoides molossi</i> <i>Vampirolepis crassihamata</i> , <i>V. guarany</i> , <i>V. longisaccata</i> , <i>V. santacruzensis</i> <i>Acanthatrium fugleri</i> , <i>Anenterotrema eduardocaballeri</i> , <i>A. liliputia</i> , <i>Apharyngotrema apharyngotrema</i> , <i>Gymnoacetabulum talaverense</i> , <i>Limatulum gastroides</i> , <i>Nudacotyle novicia</i> , <i>Ochoterenatrema minutum</i> , <i>Paralecithodendrium aranhai</i> , <i>P. brachycolon</i> , <i>P. buongerminni</i> , <i>P. conurbatum</i> , <i>P. cordiforme</i> , <i>P. megovarium</i> , <i>Paralecithodendrium</i> sp., <i>Plagiorchis parumbursatus</i> , <i>Tremajoannes buckleyi</i> , <i>Urotrema scabridum</i> <i>Aonchotheca magnifica</i> , <i>Pterothominx angrensis</i> , <i>Paralecithodendrium brachycolon</i> <i>Vampirolepis elongata</i> <i>Anenterotrema eduardocaballeri</i> , <i>A. liliputia</i> , <i>Paralecithodendrium buongerminni</i> , <i>Urotrema scabridum</i> <i>Parabascus limatulus</i> , <i>Urotrema scabridum</i> <i>Anoplostrongylus paradoxus</i> , <i>Aonchotheca pulchra</i> , <i>Litomosoides chandleri</i> , <i>Tenoranema rivarolai</i> <i>Vampirolepis christensoni</i> , <i>V. decipiens</i> <i>Paralecithodendrium aranhai</i> <i>Aonchotheca pulchra</i> <i>Vampirolepis promopsis</i> <i>Urotrema scabridum</i> <i>Urotrema scabridum</i> <i>Aonchotheca pereirai</i> <i>Vampirolepis christensoni</i> <i>Anenterotrema liliputianum</i> , <i>Castroia amplicava</i> , <i>Limatulum oklahomense</i>
<i>Molossus rufus</i> Geoffroy (some as <i>M. ater</i> Geoffroy)	Nematoda Cestoda Trematoda	
<i>Molossus</i> sp.	Trematoda	
<i>Nyctinomops laticaudatus</i> (Geoffroy)	Nematoda Cestoda Trematoda	
<i>Nyctinomops macrotis</i> (Gray)	Nematoda	
<i>Promops centralis</i> Thomas	Cestoda Trematoda	
<i>Promops nasutus</i> (Spix)	Trematoda	
Molossidae gen. sp.	Nematoda Cestoda Trematoda	
Mormoopidae Saussure		
<i>Mormoops megalophylla</i> (Peters)	Trematoda	<i>Tremajoannes buckleyi</i>
<i>Pteronotus dayyi fulvus</i> Thomas	Trematoda	<i>Tremajoannes buckleyi</i>
<i>Pteronotus parnellii</i> Gray	Nematoda	<i>Litomosoides yutaensis</i> , <i>Parahisiostrongylus octacanthus</i> , <i>Websternema parnellii</i>
<i>Pteronotus parnellii rubiginosus</i> (Wagner) (as <i>Chilomycteris rubiginosa</i> Wagner)	Cestoda	<i>Vampirolepis decipiens</i>

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TABLE 2. (Continued)

Noctilionidae Gray			
<i>Noctilio albigentris</i> Desmarest	Nematoda	<i>Tricholeiperia proencal</i>	
<i>Noctilio leporinus</i> (Linnaeus)	Trematoda	<i>Paralecithodendrium conturbatum</i> , <i>Urotrema scabridum</i>	
<i>Noctilio labialis</i> Kerr (= <i>N. leporinus</i> or <i>N. albigentris</i>)	Nematoda	<i>Tricholeiperia proencal</i>	
<i>Noctilio</i> sp.	Cestoda	<i>Hymenolepis</i> sp., <i>Vampirolepis</i> sp.	
	Trematoda	<i>Postorchigenes paraguayensis</i>	
	Nematoda	<i>Lukonema lukoschusi</i>	
	Trematoda	<i>Urotrema scabridum</i>	
Phyllostomidae Gray			
<i>Anoura caudifer</i> (Geoffroy)	Nematoda	<i>Capillaria</i> sp., <i>Litomosoides brasiliensis</i>	
<i>Anoura geoffroyi</i> Gray	Trematoda	<i>Anenterotrema</i> sp., <i>Apharyngotrema lenti</i> , <i>Castroia silvai</i>	
<i>Artibeus anderseni</i> Osgood	Nematoda	<i>Litomosoides brasiliensis</i> , <i>L. hamletti</i>	
<i>Artibeus cinereus</i> (Gervais)	Nematoda	<i>Cheiropterონema globocephala</i>	
<i>Artibeus fraterculus</i> Anthony	Trematoda	<i>Hasstilesia tricolor</i>	
<i>Artibeus jamaicensis</i> Leach	Nematoda	<i>Cheiropterონema globocephala</i> , <i>Litomosoides artibe</i>	
<i>Artibeus lituratus</i> (Olfers)	Cestoda	<i>Vampirolepis</i> sp.	
	Nematoda	<i>Capillaria</i> sp., <i>Cheiropterონema globocephala</i> , <i>Histiostrongylus paradoxus</i> , <i>Litomosoides chandleri</i> , <i>L. colombiensis</i> , <i>L. hamletti</i> , <i>Tricholeiperia proencal</i>	
	Nematoda	<i>Bitigitcauda vivipara</i> , <i>Cheiropterონema globocephala</i>	
	Acanthocephala	<i>Neonicola artibe</i>	
	Cestoda	<i>Vampirolepis elongata</i>	
	Trematoda	<i>Hasstilesia tricolor</i> , <i>Nudacotyle novicia</i>	
<i>Artibeus obscurus</i> (Schinz) (sometimes as <i>A. Fuliginosus</i> Gray)	Nematoda	<i>Cheiropterონema globocephala</i>	
	Cestoda	<i>Vampirolepis elongata</i>	
	Trematoda	<i>Hasstilesia tricolor</i>	
<i>Artibeus planirostris</i> (Spix)	Nematoda	<i>Cheiropterონema globocephala</i> , <i>C. striatum</i> , <i>Cheiropterონema</i> sp., <i>Litomosoides chandleri</i>	
<i>Artibeus watsoni</i> Thomas	Cestoda	<i>Vampirolepis elongata</i>	
<i>Artibeus</i> sp.	Nematoda	<i>Cheiropterონema globocephala</i>	
	Nematoda	<i>Litomosoides artibe</i>	

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TABLE 2. (Continued)

<i>Carollia brevicauda</i> (Schinz)	Nematoda	<i>Carostromyglus touzeti</i> , <i>Histiostrongylus</i> sp., <i>Litomosoides brasiliensis</i>
<i>Carollia castanea</i> Allen	Nematoda	<i>Allintoshius</i> sp., <i>Carostromyglus touzeti</i> , <i>Litomosoides brasiliensis</i>
	Trematoda	<i>Parabascus cephalolecithus</i>
<i>Carollia perspicillata</i> (Linnaeus)	Nematoda	<i>Capillaria</i> sp., <i>Carostromyglus touzeti</i> , <i>Cheiropteronema</i> sp., <i>Histiostrongylus</i> sp., <i>Litomosoides brasiliensis</i> , <i>L. hamletti</i> , <i>L. teshi</i> , <i>Lukonema lukoschusi</i>
	Trematoda	<i>Anenterotrema mesolecitha</i> , <i>Chiropterotrema antioquiense</i> , <i>Nudacoyule carollia</i> , <i>Rhopalias coronatus</i> , <i>Topsiturvitrema verticalia</i>
<i>Carollia</i> sp.	Nematoda	<i>Litomosoides brasiliensis</i> , <i>L. carolliae venezuelensis</i>
<i>Chiroderma trinitatum</i> Goodwin	Trematoda	<i>Hasstilesia tricolor</i>
<i>Chiropterus auritus</i> (Peters)	Trematoda	<i>Neodiplostomum vaucheri</i>
<i>Desmodus rotundus</i> (Geoffroy)	Nematoda	<i>Biacantha desmoda</i> , <i>B. normaliae</i> , <i>Lukonema lukoschusi</i>
<i>Glossophaga soricina</i> (Pallas)	Nematoda	<i>Anchotheca parca</i> , <i>Bidigiticauda embryophilum</i> , <i>Litomosoides brasiliensis</i> , <i>L. guiterasi</i> , <i>L. hamletti</i>
	Cestoda	<i>Mathevoataenia boliviana</i> , <i>M. immature</i> , <i>Vampirolepis artibeii</i> , <i>V. elongata</i>
<i>Glossophaga</i> sp.	Nematoda	<i>Litomosoides brasiliensis</i> , <i>L. hamletti</i>
<i>Glyphonycteris</i> (as <i>Micronycteris</i>) <i>behni</i> (Peters)	Trematoda	<i>Parametadelphis compactus</i>
<i>Lionycteris spurrelli</i> Thomas	Nematoda	<i>Litomosoides brasiliensis</i>
<i>Lonchophylla robusta</i> Miller	Nematoda	<i>Litomosoides hamletti</i> , <i>Pseudocapillaria pusilla</i>
	Trematoda	<i>Limatulum gastroides</i>
<i>Lonchophylla thomasi</i> Allen	Nematoda	<i>Litomosoides brasiliensis</i>
<i>Lophostoma</i> (as <i>Tonatia</i>) <i>carrikeri</i> (Allen)	Nematoda	<i>Lukonema lukoschusi</i>
<i>Lophostoma silvicolum occidentale</i> Davis & Carter	Nematoda	<i>Tricholeiperia peruensis</i>
<i>Mesophylla macconnelli</i> Thomas	Trematoda	<i>Hasstilesia tricolor</i>
<i>Micronycteris megalotis</i> (Gray)	Nematoda	<i>Rictularia</i> sp.
<i>Micronycteris minuta</i> (Gervais)	Cestoda	<i>Vampirolepis bihamata</i>
<i>Micronycteris schmidtorum</i> Sanborn	Nematoda	<i>Torrestrongylus</i> sp.
<i>Phyllonycteris poeyi</i> Gundlach	Nematoda	<i>Litomosoides chandleri</i>
<i>Phyllostomus discolor</i> Wagner	Nematoda	<i>Histiostrongylus coronatus</i> , <i>Litomosoides brasiliensis</i>
<i>Phyllostomus elongatus</i> (Geoffroy)	Nematoda	<i>Litomosoides brasiliensis</i>
	Trematoda	<i>Anenterotrema eduardocaballeroi</i> , <i>A. liliputianum</i>

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TABLE 2. (Continued)

<i>Phyllostomus hastatus</i> (Pallas)	Nematoda	<i>Histiostrongylus</i> sp., <i>Litomosoides brasiliensis</i> , <i>Parahistiostrongylus octacanthus</i> , <i>Stilestrongylus octacanthus</i>
	Acanthocephala	<i>Moniliformis moniliformis</i>
	Cestoda	<i>Atriotaeonia hastati</i> , <i>Pygoderma bilabiatum</i> , <i>Vampirolepis phyllostomi</i>
	Trematoda	<i>Anenterotrema eduardocaballeri</i>
<i>Phyllostomus</i> sp.	Nematoda	<i>Litomosoides brasiliensis</i> , <i>L. serpicula</i>
	Cestoda	<i>Cycloskrjabinita</i> sp.
	Trematoda	<i>Urotrema scabridum</i>
<i>Platyrrhinus</i> (as <i>Vampyrops dorsalis</i> Thomas)	Nematoda	<i>Litomosoides colombiensis</i>
<i>Platyrrhinus</i> (sometimes as <i>Vampyrops helleri</i> (Peters))	Nematoda	<i>Litomosoides colombiensis</i>
<i>Pygoderma bilabiatum</i> (Wagner)	Cestoda	<i>Vampirolepis elongata</i>
<i>Sturnira bidens</i> Thomas	Cestoda	<i>Vampirolepis elongata</i>
<i>Sturnira erythromos</i> Tschudi	Nematoda	<i>Torrestrongylus</i> sp.
<i>Sturnira liliium</i> (Geoffroy)	Nematoda	<i>Capillaria</i> sp.
	Nematoda	<i>Cheiropterona globocephala</i> , <i>Litomosoides brasiliensis</i> , <i>L. caliensis</i> , <i>L. chandleri</i> , <i>L. guiterasi</i> , <i>Litomosoides</i> sp., <i>Pseudocapillaria pusilla</i>
<i>Sturnira magna</i> de al Torre	Trematoda	<i>Limatulum umbilicatum</i>
<i>Sturnira oporaphilum</i> Tschudi	Nematoda	<i>Capillaria</i> sp.
<i>Sturnira tildae</i> de al Torre	Nematoda	<i>Litomosoides chandleri</i>
<i>Tadarida brasiliensis</i> (Geoffroy)	Nematoda	<i>Litomosoides caliensis</i>
	Nematoda	<i>Allintoshius parallintoshius</i> , <i>Anoplostrongylus paradoxus</i> , <i>Anchotheca pulchra</i> , <i>Capillaria</i> sp., <i>Rictularia</i> sp.
<i>Trachops cirrhosus</i> (Spix)	Trematoda	<i>Gymnoacetabulum talaveraense</i> , <i>Ochoterenatrema fraternum</i> , <i>O. labda</i> , <i>Parabascus limatulus</i> , <i>Paralecithodendrium conturbatum</i> , <i>Urotrema scabridum</i>
<i>Vampyressa</i> (<i>Vampyriscus</i>) <i>bidens</i> (Dobson)	Nematoda	<i>Capillaria</i> sp., <i>Litomosoides brasiliensis</i> , <i>L. solarii</i> , <i>Tricholeiperia leiperi</i>
<i>Vampyrodex caraccioli</i> (Tomas)	Trematoda	<i>Hasstilesia tricolor</i>
<i>Vampyrum spectrum</i> (Linnaeus)	Trematoda	<i>Hasstilesia tricolor</i>
Phyllostomidae gen. sp.	Acanthocephala	<i>Moniliformis convolutum</i>
	Nematoda	<i>Anoplostrongylus paradoxus</i>
Vespertilionidae Gray		
<i>Eptesicus brasiliensis melanopterus</i> Jentink	Nematoda	<i>Lukonema lukoschusi</i>

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TABLE 2. (Continued)

<i>Eptesicus furnalis</i> (d'Orbigny)	Nematoda	<i>Allintoshius bioccai</i> , <i>A. parallintoshius</i>
	Cestoda	<i>Vampirolepis guarany</i> , <i>V. pandonensis</i>
	Trematoda	<i>Metadelphis alvarengai</i>
<i>Eptesicus fuscus</i> (Beauvois)	Nematoda	<i>Litomosoides hamletti</i>
	Cestoda	<i>Vampirolepis decipiens</i>
<i>Histiopus velatus</i> (Geoffroy)	Trematoda	<i>Anenterotrema educardocaballeri</i> , <i>A. liliputianum</i>
<i>Lasius blossevillii</i> (Lesson & Garnot)	Trematoda	<i>Maxbraunium tubiporum</i>
<i>Lasius cinereus</i> (Beauvois)	Trematoda	<i>Urotrema scabridum</i>
<i>Lasius ega</i> (Gervais)	Nematoda	<i>Litomosoides chandleri</i> , <i>L. salazari</i>
<i>Lasius ega argentinus</i> Thomas	Cestoda	<i>Hymenolepis dasypteri</i> , <i>Vampirolepis guarany</i>
<i>Lasius intermedius</i> (Allen)	Trematoda	<i>Postorchiogenes mbopi</i>
<i>Lasius (Dasypterus)</i> sp.	Trematoda	<i>Urotrema scabridum</i>
<i>Miniopterus schreibersii</i> (Kuhl)	Trematoda	<i>Urotrema scabridum</i>
<i>Myotis albescens</i> (Geoffroy)	Nematoda	<i>Paralecithodendrium cordiforme</i>
	Cestoda	<i>Allintoshius parallintoshius</i>
<i>Myotis ater</i> (Peters) (as <i>M. chiloensis ater</i> – syn. of <i>M. chiloensis</i> (Waterhouse) or <i>M. levis</i>)	Trematoda	<i>Vampirolepis decipiens</i>
<i>Myotis keaysi</i> Allen	Nematoda	<i>Urotrema scabridum</i>
<i>Myotis levis</i> (Geoffroy)	Nematoda	<i>Seuratium</i> sp.
	Nematoda	<i>Allintoshius parallintoshius</i>
<i>Myotis nigricans</i> (Schimz)	Trematoda	<i>Gymnoacetabulum talaveraense</i> , <i>Limatulum brevicocum</i> , <i>Ochoterenatrema labda</i> , <i>Topsiturvirema verticalia</i> , <i>Urotrema scabridum</i>
	Nematoda	<i>Allintoshius nudicaudatus</i> , <i>A. parallintoshius</i> , <i>A. urumiac</i> , <i>Histiostrongylus coronatus</i> , <i>Litomosoides molossi</i> , <i>Migonella fracchii</i> , <i>Pterothominx brevidelephus</i> , <i>Richardia</i> sp.
<i>Myotis riparius</i> Handley	Trematoda	<i>Anenterotrema liliputianum</i> , <i>Limatulum oklahomense</i> , <i>Ochoterenatrema diminutum</i> , <i>Parabascus limatus</i> , <i>Paralecithodendrium conturbatum</i> , <i>Urotrema scabridum</i>
<i>Myotis ruber</i> (Geoffroy)	Nematoda	<i>Allintoshius parallintoshius</i> , <i>Litomosoides</i> sp.
<i>Myotis</i> sp.	Nematoda	<i>Allintoshius parallintoshius</i>
	Nematoda	<i>Histiostrongylus coronatus</i> , <i>Litomosoides brasiliensis</i>
Chiroptera gen. sp.	Nematoda	<i>Aonchotheca pinto</i> , <i>Aonchotheca</i> sp., <i>Physaloptera</i> sp. (juv.)
	Cestoda	<i>Vampirolepis christensoni</i> , <i>V. elongata</i>

groups which involve insects as intermediate hosts. Consequently, it would appear that the endoparasitic fauna of this group in South America appears rather depauperate when compared to the rich ectoparasitic fauna reported by Frank *et al.* (2014), i.e. 273 species. Thus, in terms of those chiropteran taxa examined so far, the diversity of helminth parasites is only slightly greater than that of their hosts.

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