Review of the Bat Flies of Honduras, Central America (Diptera: Streblidae)

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Streblid bat flies are obligate and host-specific blood-feeding ectoparasites of bats. While the bat flies of some American countries are well studied (e.g., Panama, Venezuela), little is known about Honduran Streblidae. Accumulation of substantial numbers of specimens, from several different collections, has enabled a relatively thorough treatment of the fauna. This study is based on 2,236 specimens representing 17 genera and 43 species of Streblidae. Of those presently reported, 11 genera and 32 species are new records for Honduras, increasing the number of known genera and species by 65% and 74%, respectively. Collection and host data are listed for all known Honduran streblid bat fly species. Comments regarding host associations and specificity, geographic distribution, and taxonomic problems are given in the species accounts.

1. Introduction

Streblid bat flies are a worldwide group of obligate, blood-feeding ectoparasites of bats. The species tend to be host specific, with one fly species typically parasitizing one host species or a few closely related host species [1–3]. Some members of the streblid subfamily Nycterophilinae are rather less host specific, often parasitizing two or more genera of hosts [4]. Distributional evidence suggests that they cospeciate with host species of bat, producing parallel phylogenies of host and parasite [5]. Streblids are often absent from bat species that roost solitarily or in temporary roosts [6]. Conversely, bat fly richness per host species seems generally to increase with roost size, duration, and the number of bats roosting there [7, 8]. The dynamics associated with bat roosts as they pertain to the biology, ecology, and host specificity among streblid bat flies is a critically understudied area. Perhaps attributing to the fact that bat host species often harbor more than one species of Streblidae is the observation that some bat flies prefer particular areas (microhabitats, e.g., fur or wing membranes) on the host’s body [1, 9–11].

The taxonomy of Neotropical streblid genera relies primarily on overall body form, the presence or absence of a ctenidium along the posterovertral margin of the head, gross characteristics of the wings, leg chaetotaxy, and details of the thorax, especially the mesonotal and transverse sutures, and male reproductive structures. Generic identification can always be made using a stereozoom microscope. Species-level identifications may often be made using low magnification, but some species (especially Trichobius spp.) are best identified using slide-mounted specimens examined using a high-power compound microscope. A simplified key to New World genera is available in [12]. Other generic keys are available in [4, 13, 14]. The single best key to most New World streblid species is [4]. For species-level keys, see [13, 15–19]. Guerrero listed characteristics for 36 species of Trichobius [16].

Few Streblidae have been recorded previously from Honduras, largely due to the lack of ectoparasite sampling in the country. Honduran specimens have been previously reported in three publications. Wenzel et al. [1] reported Strebla guajiro (García & Casal) (as S. carolliae Wenzel) and S. wiedemanni Kolenati (as S. vespertilionis (Fabricius)). Wenzel [20] reported 12 species from Honduras but provided no data on specific records. Seven of the species are represented by specimens housed at the Field Museum of Natural History, Chicago (FMNH), and are considered valid records: Trichobius costalimai Guimaraes,
2. Materials and Methods

The bulk of the specimens treated in this paper were collected by the author during 2001, as part of a survey project led by R. D. Bradley of Texas Tech University and R. A. Van Den Bussche and M. Hamilton of Oklahoma State University. During this expedition, 964 bats were collected at 15 localities. Bats were collected with nylon mist nets and by hand and usually kept individually in cloth bags. Because ectoparasite collection was not the main focus of the expedition, not all captured bats were sampled for parasites, and there were instances when cross-host contamination of parasites was likely. These instances are noted in the species accounts and addressed in the discussion. Bats were anesthetized with ethyl ether and brushed for ectoparasites, which were stored in vials of 95% ethanol. Streblid flies were collected from 242 individual bats. Most of the flies were studied under a dissection microscope. Others were slide-mounted in Canada balsam for examination under a compound microscope. Confirmations of identifications were made by comparison of the Honduran specimens to type specimens and other reference collections housed at FMNH.

Specimens and specimen records for this project came from three primary sources. The TTU Honduras expedition yielded 381 records and 2051 specimens. Additionally, 47 records and 141 specimens were provided by T. J. McCarthy and R. P. Eckerlin, collected during the project “Mastozoología en el Núcleo de Centroamerica” (MANCA). Eighteen records and 44 specimens from the FMNH, representing new and previously reported specimens, were studied. Previously reported specimens (e.g., [1, 4, 20, 21]) were reexamined. Fly identifications were made by the author, but historical FMNH specimens were originally identified by R. L. Wenzel. Thus, a total of 446 records and 2,236 specimens of Streblidae were examined as the basis of this paper. Most fly specimens have been deposited in the FMNH, but representative MANCA specimens were deposited at Carnegie Museum (CM), Pittsburgh, PA, USA, and a synoptic collection was deposited at TTU. Bat host vouchers exist for most of the parasite records; all flies collected during the TTU project can be traced to host bat specimens in the mammal collections of TTU. Flies collected during the MANCA project can be traced to bat specimens housed at CM or the American Museum of Natural History (AMNH), New York. Nomenclature used for bats generally follows Simmons [24]. The accounts below provide an overview of each streblid genus known from Honduras, presented by subfamily. Species accounts list streblid species and primary reference, records from Honduras, and comments when relevant. A concise list of all streblid species known from Honduras appears in Appendix A. A list of Honduran bat fly host associations is presented in Appendix B. A gazetteer of collection localities is presented in Table 1, which corresponds to the map of collection localities (Figure 1). Unless indicated otherwise, fly specimens were collected by the author.

3. Species Accounts

3.1. Family Streblidae Kolenati, 1863

3.1.1. Subfamily Nycterophilinae Wenzel, 1966

Genus Nycterophilio Ferris, 1916


This genus comprises five described species: N. coxata Ferris, N. fairchildi Wenzel, N. mormoopis Wenzel, N. natali Wenzel, and N. parnelli Wenzel. Only N. coxata is known to occur in Honduras. Species in this genus are associated with bats of the families Mormoopidae, Natalidae, and Phyllostomidae (Leptonycteris Lydekker). Species of this genus are strongly compressed laterally, resembling fleas. The species are adapted to live inside the hair of their hosts [25].

Nycterophilio coxata Ferris


Honduran Records (362 Specimens)

COMAYAGUA: f1 from Sturnira lilium (E. Geoffroy), 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001.

COPÁN: m193, f64, 1 sex undetermined from Pteronotus parnelli (Gray), 20 km SE Santa Rosa de Copán, 17 July 2001.

OLANCHO: m1, f2 from P. parnelli, 4 km E Catacamas (Escuela de Sembrador), 20 July 2001.
In Honduras, the vast majority (99.7%) of N. coxata specimens were associated with the mormoopid bat P. parnellii. The single specimen from S. lilium is regarded as a contaminant, as a specimen of P. gymnonotus Natterer was collected on the same day.

3.1.2. Subfamily Streblinae Speiser, 1900

Genus Anastrebla Wenzel, 1966

**Anastrebla** Wenzel, 1966:627.


**Anastrebla modestini** Wenzel


**Honduran Record (1 Specimen)**


Elsewhere (e.g., Panama and Venezuela [1, 4]), this species is associated with *Anoura geoffroyi* Gray. Thus, its association with *G. soricina* is puzzling. Only one *A. geoffroyi* was collected on 18 July 2001.

**Genus Metelasmus Coquillett 1859**

**Metelasmus** Coquillett, 1907:292.

This genus comprises two species, *Metelasmus pseudopterus* and *M. wenzeli* Gracioli & Dick, and only the former is known from Honduras. *Metelasmus pseudopterus* parasitizes certain species of large *Artibeus* Leach, including *A. jamaicensis* Leach, *A. fimbriatus* Gray, and *A. planirostris* Spix. *Metelasmus wenzeli* parasitizes *Sturnira lilium* in eastern Paraguay and southern Brazil. An undescribed species, similar to *M. wenzeli*, is known from Guatemalan *Sturnira* sp. It is probable that this undescribed species also occurs in Honduras. Species of *Metelasmus* are the only vestigially winged members of the subfamily Streblinae. The species are dorsoventrally compressed and possess a ctenidium of rearward facing spines on the posteroventral margin of the head. The species appear to be adapted to live within the fur of their hosts [24].

**Metelasmus pseudopterus** Coquillett

**Metelasmus pseudopterus** Coquillett, 1907:292.

**Honduran Records (4 Specimens)**

ATLÁNTIDA: m1, fl from *Artibeus jamaicensis*, Jardín Botánico Lancetilla, 12 July 2001; fl from *Carollia sowelli* Baker et al., Jardín Botánico Lancetilla,
This species is a characteristic parasite of Artibeus jamaicensis in the Central and southern South America and of A. planirostris and A. fimbriatus in southern South America. Graciolli and Dick [26] discussed its association with A. lituratus.

Genus Paraeuctenodes Pessóa and Guimarães, 1937
Paraeuctenodes Pessóa & Guimarães, 1937:257.

Two described species belong to this genus, Paraeuctenodes longipes Pessóa & Guimarães and P. similis Wenzel, and only the former is known from Honduras. In Honduras and Venezuela [4], the primary host species of P. longipes are Glossophaga spp., while the primary host of P. similis is Carollia perspicillata (Linnaeus). Both species of Paraeuctenodes are dorsoventrally flattened and possess a ctenidium of rearward facing spines on the posteroventral margin of the head. These characteristics appear to adapt the species to live within the fur of their hosts [25].

Paraeuctenodes longipes Pessóa and Guimarães
Paraeuctenodes longipes Pessóa and Guimarães, 1937:258.

Honduran Records (3 Specimens)
COMAYAGUA: f1 from Glossophaga commissarisi Gardner, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001.
OLANCHO: m1, f1 from G. soricina, 4 km E Catacamas (Escuela de Sembrador), 20 July 2001.

Genus Strebla Wiedemann 1824
Strebla Wiedemann, 1824:19.

The genus Strebla comprises 25 described species and is second only to the genus Trichobius in number of species. Seven species of this genus are known to occur in Honduras. Species of Strebla are dorsoventrally flattened and possess a ctenidium of rearward facing spines on posteroventral margin of the head. This form appears to adapt species of Strebla to live inside the fur of the host [25].

Strebla chrotopteri Wenzel
Strebla chrotopteri Wenzel, 1976:144, Figures 60H, 64E.

Honduran Records (5 Specimens)

This species is known only from the phyllostomine bat C. auritus.

Strebla curvata Wenzel
Strebla curvata Wenzel, 1976:148, Figures 60D, 63F.

Honduran Records (7 Specimens)
ATLÁNTIDA: f1 from Artibeus lituratus, Jardín Botánico Lancetilla, 12 July 2001; m2 from Glossophaga soricina, Jardín Botánico Lancetilla, 13 July 2001.
COMAYAGUA: f2 from G. soricina, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001.
OLANCHO: f1 from G. soricina, 3 km N Catacamas (Escuela Nacional de Agricultura), 20 July 2001; f1 from G. soricina, 4 km E Catacamas (Escuela de Sembrador), 20 July 2001.

Strebla curvata is a characteristic parasite of Glossophaga spp., particularly G. soricina, in both Honduras and Venezuela [4]. The species is remarkably similar to a congener, S. guajiro, which is a characteristic parasite of species of Carollia Gray.

Strebla diphyllae Wenzel

Honduran Records (2 Specimens)
ATLÁNTIDA: m1, f1 from Diphylia ecaudata, Lancetilla, 9 August 1969, R. K. LaVal, leg.

Strebla guajiro (García & Casal)

Honduran Records (13 Specimens)
ATLÁNTIDA: f1 from Artibeus lituratus, Jardín Botánico Lancetilla, 12 July 2001; m1 from Carollia perspicillata, Jardín Botánico Lancetilla, 12 July 2001; m3 from C. sowelli, Jardín Botánico Lancetilla, 12 July 2001; m1, f2 from C. sowelli, Jardín Botánico Lancetilla, 14 July 2001.
OLANCHO: m1 from Glossophaga soricina, 3 km N Catacamas (Escuela Nacional de Agricultura), 20 July 2001.
ISLA ROATAN: m1 from unknown host, Coxen Hole, 9 January 1940, D. D. Davis, leg. (as S. carolliae Wenzel [1]).

The characteristic hosts of S. guajiro in Honduras were species of Carollia. In Venezuela, 98.5% of the 586 specimens collected there were taken from Carollia spp., and most of
Table 1: Gazetteer of Honduran bat fly collection localities. Locality numbers correspond to map (Figure 1). Latitude and longitude are in decimal degrees. Specific localities with identical locality numbers are close in proximity, not warranting separate placement on the map (Figure 1).

<table>
<thead>
<tr>
<th>Department</th>
<th>Locality</th>
<th>Specific locality</th>
<th>Lat</th>
<th>Long</th>
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<td>Atlántida</td>
<td>1</td>
<td>Jardín Botánico Lancetilla</td>
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<td>Lancetilla</td>
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<td>3</td>
<td>Comayagua (Senasa)</td>
<td>14.4551</td>
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<td>Siguatepeque</td>
<td>14.5902</td>
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<td>Comayagua</td>
<td>6</td>
<td>4.8 km N, 8.7 km W Comayagua (Playitas)</td>
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<td>−87.7023</td>
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<tr>
<td>Copán</td>
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<td>5 km NW Santa Rosa de Copán</td>
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<td>Cortés</td>
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<td>Omoa, Fortaleza de San Francisco de Omoa</td>
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<td>Cortés</td>
<td>11</td>
<td>Santo Domingo, Sierra Omoa, ∼5.5 km ESE Cuyamel</td>
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<td>−88.1439</td>
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<td>Francisco Morazán</td>
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<td>Parque Nacional La Tigra</td>
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<tr>
<td>Francisco Morazán</td>
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<td>Parque Zoología El Picacho</td>
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<td>−87.0236</td>
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<td>Francisco Morazán</td>
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<td>12 mi N Tegucigalpa</td>
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<td>3.5 mi N Gracias</td>
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<td>Danli: 78 mi ENE by E Río Coco</td>
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<td>Parque Nacional de La Muralla, Los Cuatro Pavos</td>
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<td>−85.8450</td>
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<tr>
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<td>4 km E Catacamas (Escuela de Sembrador)</td>
<td>14.8088</td>
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<td>Islas de la Bahía</td>
<td>21</td>
<td>Isla Roatán, Coxen Hole</td>
<td>16.3293</td>
<td>−86.5303</td>
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<tr>
<td>Valle</td>
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<td>13 km W, 3 km S Nacaome</td>
<td>13.5152</td>
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<tr>
<td>Valle</td>
<td>23</td>
<td>3 km N, 12.5 km SW San Lorenzo</td>
<td>13.4240</td>
<td>−87.5446</td>
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<tr>
<td>Valle</td>
<td>24</td>
<td>3 km N, 9 km SW San Lorenzo</td>
<td>13.4484</td>
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</table>

these were from *C. perspicillata* [4]. The single specimen from *A. lituratus* is regarded as a contaminant, as specimens of *C. perspicillata* were collected on the same day.

**Strebla hertigi Wenzel**


**Honduran Records (5 Specimens)**

FRANCISCO MORAZÓN: m2, f2 from *Phyllostomus discolor* Wagner, 12 mi N Tegucigalpa, no date, “GHJ”, leg. (20); data compiled by author.

VALLE: m1 from *P. discolor*, 3 km N, 12.5 km SW San Lorenzo, 7 July 2001.

Throughout its range, *Strebla hertigi* is a characteristic parasite of *P. discolor*. Within northern portions of its range, this species cooccurs with a congener, *S. mirabilis*, on the host species *P. hastatus* (Pallas). However, numerical dominance of each species varied depending on latitude [27]. No *P. hastatus* were collected during the present study, and no *S. mirabilis* were reported from any host species. Wenzel et al. [1] and Wenzel and Tipton [27] discussed the issue of competitive displacement for these species of *Strebla* on the host bats *P. discolor* and *P. hastatus*.

**Strebla galindoi Wenzel**


**Honduran Records (1 Specimen)**

ATLÁNTIDA: m1 from *Tonatia saurophila* Koopman & Williams, Jardín Botánico Lancetilla, 12 July 2001.

**Strebla kohlsi Wenzel**

*Strebla kohlsi* Wenzel, 1966:618. Figure 123C.

**Honduran Records (5 Specimens)**

ATLÁNTIDA: m3, f2 from *Lophostoma silvicolum* d’Orbigny, Jardín Botánico Lancetilla, 14 July 2001.
Strebla wiedemanni Kolenati

**Hippobosca vespertilionis** Fabricius, 1805:339. Suppressed by the ICZN, 1936:29.

*Strebla wiedemanni* Kolenati, 1856:46.

**Honduran Records (69 Specimens)**

ATLÁNTIDA: m1, f1 from *Desmodus rotundus* (E. Geoffroy), Lancetilla, 1 August 1969, R. Valdez, leg. (as *S. vespertilionis* (Fabricius) [1]; data compiled by author); m25, f17 from *D. rotundus*, Jardin Botanico Lancetilla, 12 July 2001; m11, f7 from *D. rotundus*, Jardin Botanico Lancetilla, 15 July 2001.

COPÁN: m2 from *D. rotundus*, no specific locality, May 1938, M. Ennis, leg. (as *S. vespertilionis* [1]; data compiled by author).

FRANCISCO MORAZÓN: m1 from *D. rotundus*, Parque Nacional La Tigra, 6 July 2001.

LEMPIRA: f1 from *D. rotundus*, 3.5 mi N Gracias, 8 January 1938, P. O. McGrew, leg. (as *S. vespertilionis* [1]; data compiled by author); m2 from *D. rotundus*, Parque Nacional Celaque, Centro de Visitantes, 11 October 1992, J. V. Planz, leg.

VALLE: f1 from *D. rotundus*, 13 km W, 3 km S Nacaome, 9 July 2001.

The characteristic host of *Strebla wiedemanni* in Honduras and elsewhere in the New World is the common vampire bat *Desmodus rotundus*.

3.1.3. **Subfamily Trichobinae** Jobling, 1936

**Genus Anatrichobius** Wenzel, 1966


This genus comprises two described species, *Anatrichobius scorzai* Wenzel and *A. passosi* Gracioli, only the former of which occurs in Honduras. These species are among the few New World streblids associated with vespertilionid bats. *Anatrichobius* spp. are restricted to species of the genus *Myotis* Kaup and appear restricted to elevations from 600 to 1900 m [28].

Anatrichobius scorzai Wenzel


**Honduran Records (6 Specimens)**

FRANCISCO MORAZÁN: m1, f1 from *Myotis keaysi* (J. A. Allen (RKL 2495-2521)), 1 km W Talanga, 26 July 1969, R. K. LaVal, leg. [4].

OLANCHO: m3, f1 from *M. keaysi* (CM 118609), Parque Nacional de La Muralla, Los Cuatro Pavos, 18 October 1992, T. J. McCarthy, leg.

Elevational data for these records are not available, but they were likely collected in the Honduran highlands. The elevation of Talanga is approximately 840 m, while Parque Nacional de La Muralla is a montane reserve, the highest point being 1,986 m.

**Genus Aspidoptera** Coquillett, 1899

Aspidoptera Coquillett, 1899:334.

This genus comprises three species, *Aspidoptera delatorrei* Wenzel, *A. falcata*, and *A. phyllostomatis* [4, 23]; the latter two occur in Honduras. Species of this genus are restricted to phyllostomid bats of the subfamily Stenodermatinae.

Aspidoptera falcata Wenzel

Aspidoptera falcata Wenzel, 1976:104, Figure 42A.

**Honduran Records (39 Specimens)**

ATLÁNTIDA: m1, f1 from *Sturnira lilium*, Jardin Botanico Lancetilla, 12 July 2001.

COMAYAGUA: m9, f7 from *S. lilium*, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001.


OLANCHO: f1 from *Noctilio leporinus* (Linnaeus), 4 km E Catacamas (Escuela de Sembrador), 17 July 2001; m2, f1 from *S. lilium*, 4 km E Catacamas (Escuela de Sembrador), 19 July 2001; f1 from *S. lilium*, 3 km N Catacamas (Escuela Nacional de Agricultura), 20 July 2001.

VALLE: f1 from *S. lilium*, 13 km W, 3 km S Nacaome, 10 July 2001.

*Aspidoptera falcata* is a characteristic parasite of several species of *Sturnira* Gray, including *S. lilium*, *S. ludovici*, and *S. tildae* de la Torre. In Venezuela, 99.0% of the 755 *A. falcata* specimens collected there were taken from these three species of *Sturnira* [4]. The record from the fishing bat *Noctilio leporinus* almost certainly resulted from sampling contamination. *Aspidoptera falcata* is morphologically very similar to *A. delatorrei* and can be positively identified only by examining the postgonites (falciform in *A. falcata*).

**Aspidoptera phyllostomatis** (Perty)

Lipoptena phyllostomatis Perty, 1833:190, Figure 17, Plate 37.
Honduran Records (14 Specimens)

ATLÁNTIDA: m5, f5 from Artibeus jamaicensis, Jardin Botanico Lancetilla, 12 July 2001; f1 from Glossophaga soricina, Jardin Botanico Lancetilla, 13 July 2001; m1, f2 from A. lituratus, Jardin Botanico Lancetilla, 13 July 2001.

The primary hosts of Aspidoptera phyllostomatis in Paraguay were Artibeus fimbriatus and A. planirostris, collectively hosting 93.1% of the 29 specimens. The remaining 2 of 29 (6.9%) specimens were collected from 2 individuals of A. lituratus. The association between Aspidoptera phyllostomatis and Artibeus lituratus may be real, albeit rare. In Venezuela, 95.5% of Aspidoptera phyllostomatis were associated with Artibeus jamaicensis/planirostris, but Wenzel [4] did not consider A. lituratus to be a host of this fly species.

Genus Exastinion Wenzel, 1966


This genus comprises three species, Exastinion clovisi (Pessôa & Guimarães), E. deceptivum Wenzel, and E. ocultatum Wenzel, of which only the former is known to occur in Honduras. All species in this genus parasitize species of Anoura Gray. Both E. clovisi and E. deceptivum occur on A. geoffroyi, but in some locations (e.g., Manu, Peru) the former species parasitizes hosts from lower elevations (1000–1920 m) while the latter species parasitizes hosts from higher elevations (1920–4137 m). There are to my knowledge no instances of cooccurrence of these species on the same individual bat (C. W. Dick, unpublished data).

Exastinion clovisi (Pessôa & Guimarães)

Aspidoptera clovisi (Pessôa & Guimarães), 1937:262. Figures 5-6.

Honduran Records (5 Specimens)

COMAYAGUA: m1, f2 from Anoura geoffroyi, Siguatepeque, 18 July 2001.
FRANCISCO MORAZÁN; m1, f1 from A. geoffroyi, 12 mi N Tegucigalpa, 8 June 1963, D. C. Carter, leg. ([20]; data compiled by author).

In Venezuela, 98.8% of the 340 E. clovisi were collected from A. geoffroyi, A. latidens Handley, and A. caudifex (E. Geoffroy), in descending order.

Genus Mastoptera Wenzel, 1966


This genus comprises two described species, Mastoptera guimaraesii Wenzel and M. minuta (Costa Lima), and appears to be restricted to phyllostomid bats of the subfamily Phyllostominae. This genus contains the smallest of New World streblid species, with some specimens of M. minuta measuring only 0.73 mm in total length [12]. The genus is in need of revision [4].

Mastoptera guimaraesi Wenzel


Honduran Records (3 Specimens)

ATLÁNTIDA: m1, f2 from Phyllostomus hastatus, Lancetilla, 9 August 1969, R. Valdez & R. K. LaVal, leg.

In Panama [1] and Venezuela [4], the characteristic host of this species is Phyllostomus hastatus.

Mastoptera minuta (Costa Lima)

Aspidoptera minuta Costa Lima, 1921:21, Figure 2, Plate 2.

Honduran Records (5 Specimens)

ATLÁNTIDA: m4, f1 from Lophostoma silvicolum, Jardin Botanico Lancetilla, 14 July 2001.

In Venezuela, the characteristic host of M. minuta is Lophostoma silvicolum (d’Orbigny) [4]. The taxonomy of Mastoptera species is complex and poorly understood, and Wenzel [4] noted that there were undescribed species within M. minuta.

Mastoptera sp. (Minuta Complex)

Honduran Records (23 Specimens)

ATLÁNTIDA: m14, f9 from Lophostoma brasiliense Peters, Jardin Botanico Lancetilla, 13 July 2001.

The 23 Honduran specimens were collected from one host individual of L. brasiliense. The taxonomy of Mastoptera species is complex and poorly understood, and Wenzel [4] noted that there were undescribed species within M. minuta. Here I refer specimens to M. minuta species complex. The group is in need of revision.

Genus Megistopoda Macquart, 1852

Megistopoda Macquart, 1852:332.

This genus comprises three described species: Megistopoda aranea, M. proxima, and M. theodori [4]. Wenzel [4] noted that the taxonomy of this genus is confused and in need of revision, as there are undescribed species within this genus. Wenzel [4] questioned the distinctness of M. theodori and stated that it might be synonymous with M. proxima. I consider the two species to be distinct (see M. theodori account below), but note that the proxima group of species contains several undescribed species. Megistopoda of the aranea type possess extremely elongated hind legs and very narrow wings and parasitize species of Artibeus (but not Dermanura spp.). Megistopoda of the proxima type (including M. theodori) possess less elongated hind legs and broader wings and parasitize species of Sturnira. However, recent specimens from western Ecuador document the existence of two other undescribed aranea type species, one from the west...
slopes endemic *Artibeus fraterculus* Anthony and one from *Platyrrhinus dorsalis* (Thomas) (C. W. Dick, unpublished data). Collectively, species of *Megistopoda* are restricted to phyllostomid bats of the subfamily Stenodermatinae. All species possess elongated hind legs and a shield-like ventral thorax, which adapt them for movement over the fur of their hosts [25].

*Megistopoda aranea* (Coquillett)

*Pterellipsis aranea* Coquillett, 1899:344.

**Honduran Records (31 Specimens)**

**ATLÁNTIDA:** m4, f2 from *Artibeus jamaicensis*, Jardin Botanico Lancetilla, 12 July 2001; m1 from *A. lituratus*, Jardin Botanico Lancetilla, 12 July 2001; m1 from *Glossophaga soricina*, Jardin Botanico Lancetilla, 15 July 2001.

**LEMPIRA:** m5, f2 from *A. jamaicensis*, Parque Nacional Celaque, Centro de Visitantes, 17 February 1998, R. P. Eckerlin, leg.

**OLANCHO:** m1 from *A. jamaicensis*, 4 km E Catacamas (Escuela de Sembrador), 19 July 2001; m1, f1 from *A. jamaicensis*, 4 km E Catacamas (Escuela de Sembrador), 20 July 2001; m1 from *A. jamaicensis*, 3 km E Catacamas (Escuela Nacional de Agricultura), 20 July 2001; m5, f2 from *A. intermedius* J. A. Allen, 3 km N Catacamas (Escuela Nacional de Agricultura), 20 July 2001.

**ISLA ROATAN:** m2, f2 from *A. jamaicensis*, “west end of island,” 13 January 1994, R. P. Eckerlin, leg.

**Unidentified Location:** f1 from *A. jamaicensis*, “Tapasuna,” 1 December–1 January 1937–1938, P. O. McGrew, leg. ([20]; data compiled by author)

This species is a stenoxenous parasite of certain species of large *Artibeus*. In Venezuela, 97% of the 546 specimens collected were associated with *A. jamaicensis/planirostris* [4]. In Paraguay, however, the primary hosts were *Artibeus fimбриatus* (70.2% of 104 specimens) and *A. planirostris* (27.9%).

*Megistopoda proxima* (Seguy)


**Honduran Records (58 Specimens)**

**ATLÁNTIDA:** m1 from *Sturnira lilium*, Jardin Botanico Lancetilla, 12 July 2001; f1 from *Artibeus lituratus*, Jardin Botanico Lancetilla, 12 July 2001; m1, f1 from *A. lituratus*, Jardin Botanico Lancetilla, 14 July 2001; m1 from *Dermanura (= Artibeus) phaeotis* (Miller), Jardin Botanico Lancetilla, 13 July 2001.

**COMAYAGUA:** m17, f13 from *S. lilium*, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001; m2, 1 sex undetermined from *Glossophaga commissarisi*, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001.

OLANCHO: m2 from *S. lilium*, Danali, 78 mi ENE by E Rio Coco, 15 May 1963, D. C. Carter, leg. ([20]; data compiled by author); m2, f5 from *S. lilium*, 4 km E Catacamas (Escuela de Sembrador), 19 July 2001; f1 from *G. soricina*, 4 km E Catacamas (Escuela de Sembrador), 19 July 2001.

**VALLE:** m6, f4 from *S. lilium*, 13 km W, 3 km S Nacaome, 10 July 2001.

The characteristic host of *M. proxima* in Paraguay was *S. lilium* (hosting 98.1% of 372 specimens) [29]. In Venezuela, all of the 965 specimens were from *S. lilium*, but specimens from hosts other than *S. lilium* were simply referred to the *M. proxima* complex. *Megistopoda proxima* as currently described represents a complex of species [4], and in general, the true *M. proxima* are specific to *S. lilium*. This group of bat flies has not been studied in detail.

*Megistopoda theodori* Wenzel

*Megistopoda theodori* Wenzel, 1966:545. Figure 100B.

**Honduran Records (52 Specimens)**

**ATLÁNTIDA:** f1 from *Uroderma bilobatum* Peters, Jardin Botanico Lancetilla, 14 July 2001.

**FRANCISCO MORAZON:** m10, f8 from *Sturnira ludovici*, Parque Nacional La Tigra, 6 July 2001.


Wenzel [4] debated the validity of *M. theodori* and stated that it may be synonymous with *M. proxima*. A final decision was deferred until further studies had been undertaken. Moreover, Wenzel [4] stated that flies currently referred to *M. proxima* represent a complex of closely related species and that each host species may indeed harbor a distinct species of *Megistopoda*. Recent study concurs with [4] in this regard. It is clear that a thorough revision of *Megistopoda* is needed in order to resolve these issues. Although the thorax shows marked lateral compression as in *M. proxima*, the dorsal thoracic plate is less humped. I refer specimens from *S. ludovici* to *M. theodori*. 
Genus Neotrichobius Wenzel & Aitken, 1966


Four described species belong to this genus and include Neotrichobius bisetosus Wenzel, N. delicatus Machado-Allison, N. ectophyllae Wenzel, and N. stenopterus Wenzel & Aitken. Only the last species is known from Honduras. An undescribed species of Neotrichobius has been collected from Mesophylla macconnelli Thomas in La Selva, Costa Rica [30], and in Ecuador (C. W. Dick, unpublished data). Neotrichobius delicatus may represent a complex of species [4]. Neotrichobius spp. are typically associated with phyllostomid bats of the subfamily Stenodermatinae and with Rhinophylla pumilio Peters (Rhinophyllinae).

Neotrichobius stenopterus Wenzel & Aitken


Honduran Records (3 Specimens)

ATLÁNTIDA: f1 from Dermanura (= Artibeus) toleteus (Saussure), Jardin Botanico Lancetilla, 12 July 2001; m2 from D. phaeotis, Jardin Botanico Lancetilla, 13 July 2001.

Genus Noctiliostrebla Wenzel 1966


This genus comprises four recognized species: Noctiliostrebla aitkeni Wenzel, N. dubia (Rudow), N. maaai Wenzel, and N. traubi Wenzel [4, 23]. Species of this genus are restricted to fishing or bulldog bats of the genus Noctilio Linnaeus (family Noctilionidae). Two species are known from N. leporinus and two from N. albiventris Desmarest, but based on data from Venezuela, the two species infesting each host species never cooccur on the same host individual [25]. Noctiliostrebla spp. possess vestigial wings and are rather similar in overall morphology.

Noctiliostrebla traubi Wenzel


Honduran Records (34 Specimens)

OLANCHO: m1 from Noctilio leporinus, 4 km E Catacamas (Escuela de Sembrador), 17 July 2001; m13, f17 from N. leporinus, 4 km E Catacamas (Escuela de Sembrador), 19 July 2001.

The characteristic host of Noctilio leporinus in Honduras and elsewhere is the fishing bat Noctilio leporinus.

Paradyschiria fusca Speiser

Paradyschiria fusca Speiser, 1900:56, Figure 1, Plate 3.

Honduran Records (43 Specimens)

OLANCHO: m8, f5 from Noctilio leporinus, 4 km E Catacamas (Escuela de Sembrador), 17 July 2001; m13, f17 from N. leporinus, 4 km E Catacamas (Escuela de Sembrador), 19 July 2001.

The characteristic host of P. fusca in Honduras and elsewhere is the fishing bat Noctilio leporinus.

Genus Noctilio albiventris Wenzel 1966

This genus comprises five species: Paradyschiria curvata Wenzel, P. fusca Speiser, P. lineata Kessel, P. parvula Falcoz, and P. parvuloides Wenzel [4, 23]. Species of this genus are wholly restricted to fishing or bulldog bats of the genus Noctilio (family Noctilionidae). Two species parasitize only N. leporinus, while three species parasitize only N. albiventris. As with Noctiliostrebla spp., species of Venezuelan Paradyschiria never appear to cooccur on the same host individual [25]. Paradyschiria spp. are the only wingless streblid bat flies.

Paradyschiria fusca Speiser

Paradyschiria fusca Speiser, 1900:56, Figure 1, Plate 3.

Honduran Records (43 Specimens)

OLANCHO: m8, f2 from Noctilio albiventris, 4 km E Catacamas (Escuela de Sembrador), 19 July 2001.

The characteristic host of P. parvula in Honduras and elsewhere is Noctilio albiventris.

Genus Paratrichobius Costa Lima, 1921


This genus comprises six described species, Paratrichobius americanus Peterson & Ross, P. dunni (Curran), P. longicrus (Ribeiro), P. lowei Wenzel, P. salvini Wenzel, and P. sanchezi Wenzel. All are known to be associated with bats of the phyllostomid subfamily Stenodermatinae. Paratrichobius spp. are fully winged but possess a shield-like ventral thorax very long hind legs; these characteristics appear to adapt these species to life in the fur and facilitate their evasive behavior of movement over the top of the fur. The taxonomy of this genus is confused and a revision is needed; in particular, the nominal species P. longicrus and P. salvini are most likely species complexes [4].

Paratrichobius dunni (Curran)

Speiseria dunni Curran, 1935:7, Figure 6.

Honduran Records (3 Specimens)

ATLÁNTIDA: f1 from Dermanura (= Artibeus) phaeotis, Jardin Botanico Lancetilla, 13 July 2001; m1, f1 from Uroderma bilobatum, Jardin Botanico Lancetilla, 14 July 2001.
More than 98% of the 102 *P. dunni* collected in Venezuela were taken from *Uroderma bilobatum* and *U. magnirostrum* Davis [4]. Species of *Dermanura* host a unique species, *P. lowei*, and the present records from *D. phacotis* are probably contaminants.

Paratrichobius longicus (Miranda Ribeiro)


Honduran Records (14 Specimens)


COMAYAGUA: m1 from *A. intermedius*, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001; f1, f1 from *A. intermedius*, Siguatepeque, 18 July 2001.


VALLE: f1 from *A. lituratus*, 13 km W, 3 km S Nacoame, 10 July 2001.

As in Venezuela [4], the characteristic host of *Paratrichobius longicus* in Paraguay is *Artibeus lituratus* (hosting 156 of 159 specimens; 98.1%) [29]. Honduran records from hosts other than *A. lituratus* and *A. intermedius* are suspect. Simmons [24] considered *A. intermedius* a junior synonym of *A. literatus*. *Artibeus lituratus* is not known to harbor parasites of the genus *Megistopoda*, which are characteristic parasites of other species of *Artibeus* and *Sturnira* spp. *Paratrichobius* and *Megistopoda* may be ecological equivalents, being fairly similar in gross morphology with long hind legs. They differ, however, in that *Paratrichobius* spp. have fully functional wings while *Megistopoda* spp. have reduced and nonfunctional "strap-like" wings.

Paratrichobius sp. (salvini complex)

Honduran Records (1 Specimen)

ATLÁNTIDA: m1 from Platyrrhinus helleri (Peters), Jardín Botánico Lancetilla, 12 July 2001.

*Paratrichobius salvini* was described from the host Cro订单mana salvini Dobson [1]. Forms from *C. villosum* Peters, *C. trinitatum* Goodwin, Platyrrhinus brachycephalus (Rouk & Carter), and *P. helleri* are very similar to *Paratrichobius salvini* and were placed into the *P. salvini* species complex [4].

Genus Speiseria Kessel, 1925

*Speiseria* Kessel, 1925:19.

This genus comprises three described species: *Speiseria ambigua*, *S. magnioculus* Wenzel, and *S. peytonae* (Wenzel). *Speiseria ambigua* and *S. peytonae* are associated with bats of the genus *Carollia* (phyllostomid subfamily Carolliiinae), while *S. magnioculus* is associated with *Trachops cirrhosus* (Spix) (phyllostomid subfamily Phyllotominae). Species are fully winged with long legs and are found in the furred regions of their hosts.

Speiseria ambigua Kessel

*Speiseria ambigua* Kessel, 1925:20, Figures 1-2, Plate 1.

Honduran Records (9 Specimens)


In Venezuela, *Speiseria ambigua* is a parasite of *Carollia perspicillata*, as 96% of those collected in Venezuela were from 220 *C. perspicillata*. *Carollia brevicauda* is host to *S. peytonae*; the specimens from *C. sowelli* cannot be distinguished from *S. ambigua*.

Speiseria peytonae Wenzel

*Speiseria peytonae* Wenzel, 1976:127. Figure 52B (emended by Wenzel, 1984).

Honduran Records (1 Specimen)

LEMPIRA: m1 from Carollia brevicauda, Parque Nacional Celaque, Centro de Visitantes, 17 February 1998, R. P. Eckerlin, leg.

Males of *S. peytonae* are easily distinguished from those of *S. ambigua* by the form of the genitalia.

Genus Trichobioides Wenzel, 1966


This genus contains only one described species, *T. perspicillatus*.

Trichobioides perspicillatus (Pessôa & Galvão)

*Trichobioides perspicillatus* (Pessôa & Galvão) Wenzel, 1966:511, Figures 81, 82A.

Honduran Records (37 Specimens)

ATLÁNTIDA: f1 from Phyllostomus discolor, Lancetilla, 6 August 1969, R. Valdez and R. K. LaVal, leg. ([20]; data compiled by author)

COPÁN: m10, f8 from *P. discolor*, 20 km SE Santa Rosa de Copán, 17 July 2001.

CORTÉS: m1 from *P. discolor*, Santo Domingo, 5.5 km ESE Cuyamel, 8 August 1988, T. J. McCarthy, leg.

VALLE: m3, f3 from *P. discolor*, 3 km N, 12.5 km SW San Lorenzo, 7 July 2001; m5, f2 from *P. discolor*, 13 km W, 3 km S Nacaome, 10 July 2001.

This species is a characteristic parasite of the phyllostomine bat *Phyllostomus discolor*. It is not known to occur on either of the other two species of *Phyllostomus*: *P. elongatus* (E. Geoffroy) and *P. hastatus*. All 37 Honduran specimens were collected from *P. discolor*, as were 97% of the 689 specimens collected in Venezuela [4].

**Genus Trichobius Gervais, 1844**

*Trichobius* Gervais, 1844:14.

The genus *Trichobius* currently comprises 68 described species and is the most diverse genus of the family Streblidae. The most recently described species were *T. machadoallisoni* Guerrero and *T. anducei* Guerrero [31]. Members of this genus parasitize a wide variety of bats, including representatives of the families Emballonuridae, Furipteridae, Molossidae, Mormoopidae, Natalidae, and Phyllostomidae. The genus has been divided into nine species groups or complexes [1, 4]: *palidus* group (1 species), *caecus* group (7 species), *uniformis* group (4 species), *major* group (18 species), *longipes* group (8 species), *dugesii* group *dugesii* complex (12 species), *dugesii* group *parasiticus* complex (9 species), *phylllostomae* group (5 species), and the *dunni* group (4 species). Some of the described species of *Trichobius* are very distinct morphologically. Based on host associations and morphological affinities to other streblid genera, some workers feel that some if not all of the *Trichobius* species groups should be described as distinct genera (R. L. Wenzel, pers. commun.). The *T. phylllostomae* group has, based on morphological analysis, been shown to form a monophyletic group [32]. Yet other species are very similar morphologically and can be positively identified only by microslide mounting and examining under the high magnification of a compound microscope. The entire genus is in need of revision; it is predicted that the genus as currently constituted is widely paraphyletic. Thirteen species of *Trichobius* are known to occur in Honduras.

**Trichobius caecus Edwards**


*Honduran Records (62 Specimens)*


COPÁN: m17, f21, 6 sex undetermined from *P. parnellii*, 20 km SE Santa Rosa de Copán, 17 July 2001; m2 from *Phyllostomus discolor*, 20 km SE Santa Rosa de Copán, 17 July 2001.

OLANCHO: m5, f1 from *Pteronotus parnellii*, 4 km E Catacamas (Escuela de Sembrador), 20 July 2001.

**Trichobius caecus** is a member of the *caecus* group of species [4]. In Venezuela, 97% of the 1,592 collected specimens were taken from the mormoopid bat *P. parnellii*.

**Trichobius costalimai Guimarães**

*Trichobius costalimai* Guimarães, 1938:660, Figure 10, Plate 3.

*Honduran Records (75 Specimens)*

ATLÁNTIDA: f2 from *Phyllostomus discolor*, Lancetilla, 6 August 1969, R. Valdez and R. K. LaVal, leg. ([20]; data compiled by author).

COPÁN: m21, f10 from *P. discolor*, 20 km SE Santa Rosa de Copán, 17 July 2001.

CORTÉS: m1 from *P. discolor*, Santo Domingo, 5.5 km ESE Cuyamel, 8 August 1988, T. J. McCarthy, leg.

FRANCISCO MORAZÓN: m2, f1 from *P. discolor*, 12 mi N Tegucigalpa, no date, "GH", leg. ([20]; data compiled by author).

VALLE: m5, f5, 1 sex undetermined from *P. discolor*, 3 km N, 12.5 km SW San Lorenzo, 7 July 2001; m10, f11 from *P. discolor*, 13 km W, 3 km S Nacaome, 10 July 2001.

**Trichobius costalimai** is a member of the *longipes* group of species [4]. In Honduras, this species was collected only from *Phyllostomus discolor*; in Venezuela, 96% of the 2,154 specimens collected were taken from *P. discolor*.

**Trichobius diphyllae Wenzel**

*Trichobius diphyllae* Wenzel, 1966: 492, Figures 68B, 73A.

*Honduran Records (2 Specimens)*


**Trichobius diphyllae** is a member of the parasiticus complex of the *dugesii* species group [4].

**Trichobius dugesii Townsend**

*Trichobius dugesii* Townsend, 1891:106.

*Honduran Records (97 Specimens)*


COMAYAGUA: f1 from *G. soricina*, 4.8 km N, 8.7 km W Comayagua (Playitas), 7 July 2001; f8 from *G. soricina*, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001.

OLANCHO: m3, f3 from G. soricina, 3 km N Catacamas (Escuela Nacional de Agricultura), 20 July 2001, C. W. Dick, leg.; f1 from G. soricina, 4 km E Catacamas (Escuela de Sembrador), 19 July 2001; m3 from G. soricina, 4 km E Catacamas (Escuela de Sembrador), 20 July 2001.

VALLE: m1 from G. commissarisi, 3 km N, 12.5 km SW San Lorenzo, 7 July 2001; m1 from G. leachii Gray, 3 km N, 9 km SW San Lorenzo, 8 July 2001; m1, f1 from G. soricina, 3 km N, 9 km SW San Lorenzo, 8 July 2001; m1, f1 from G. soricina, 13 km W, 3 km S Nacaome, 9 July 2001.

Trichobius dugesii is a member of the dugesii complex of the dugesii group. The species appears to be stenoxenous, parasitizing several species of the glossophagine bat Glossophaga. In Honduras, it was collected from G. commissarisi, G. leachii, and G. soricina; in Venezuela, 97.7% of the 354 specimens collected were taken from G. longirostris Miller and G. soricina. The species cooccurs with a congener, T. uniformis.

Trichobius galei Wenzel


Honduran Records (7 Specimens)

FRANCISCO MORAZON: m3, f3 from Natalus stramineus Gray, Parque Nacional La Tigra, 6 July 2001.

VALLE: m1 from Glossophaga soricina, 13 km W, 3 km S Nacaome, 9 July 2001.

Trichobius galei is a member of the caecus group of species [4]. Species of this group parasitize bats of the families Emballonuridae and Natalidae. In Panama [1] and Paraguay [29], T. galei was restricted to N. stramineus. In Venezuela, however, 98.5% of the 277 specimens collected were taken from the congener N. tumidirostris [4]. The Honduran record from G. soricina probably represents a contaminant.

Trichobius hirsutulus Bequaert

Trichobius hirsutulus Bequaert, 1933:572. Figures 30A, B.

Honduran Records (10 Specimens)

CORTÉS: m5, f5 from Myotis keaysi, Santo Domingo, 5.5 km ESE Cuyamel, 8 August 1988, T. J. McCarthy; leg.

Trichobius hirsutulus is a member of the major group of species. The major group of species is the only true “northern” radiation of Streblidae; species are known from North America, Mexico, Central America, and Antilles, but none from farther south than Peru. Previous to this report, the species was known only from México (Tamaulipas and Yucatán), from the vespertilionid Myotis nigricans Schinz.

Trichobius intermedius Peterson & Hürka

Trichobius intermedius Peterson & Hürka, 1974:1049.

Honduran Records (64 Specimens)

COMAYAGUA: m7, f3 from Artibeus intermedius, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001; m2 from Sturnira lilium, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001; m1, f1 from Glossophaga commissarisi, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001.

VALLE: m2, f1 from A. litturatus, 13 km W, 3 km S Nacaome, 10 July 2001; m25, f21 from Artibeus inopinatus Davis and Carter, 13 km W, 3 km S Nacaome, 9 July 2001.

SIN DEPARTAMENTO: m1 from A. jamaicensis, “Tapasuna”, 1 December 1938, P. O. McGrew, leg. [21].

Trichobius intermedius is a member of the dugesii complex of the dugesii group of species. Throughout its range from Mexico, Antilles, to northern Central America, it is a characteristic parasite of large Artibeus species, particularly A. jamaicensis. Honduras appears to contain the terminus of its southern distribution. Extensive surveys have been undertaken in Costa Rica (C. W. Dick, R. M. Timm, R. L. Wenzel, unpublished data), Nicaragua (C. W. Dick, unpublished data), and Panama [1], but no T. intermedius were present in these collections.

Trichobius joblingi Wenzel


Honduran Records (142 Specimens)

ATLÁNTIDA: m1 from Carollia castanea H. Allen, Jardín Botánico Lancetilla, 12 July 2001; m6, f1 from C. perspicillata, Jardín Botánico Lancetilla, 12 July 2001; m23, f13 from C. sowelli, Jardín Botánico Lancetilla, 12 July 2001; m17, f6 from C. sowelli, Jardín Botánico Lancetilla, 14 July 2001; m32, f24 from C. sowelli, Jardín Botánico Lancetilla, 15 July 2001; m1, f4 from C. subrufa, Jardín Botánico Lancetilla, 12 July 2001; m2, f2 from C. subrufa, Jardín Botánico Lancetilla, 15 July 2001.


OLANCHO: m3 from C. sowelli, 4 km E Catacamas (Escuela de Sembrador), 20 July 2001.

Trichobius joblingi is a member of the dugesii complex of the dugesii complex of species. The species is a characteristic parasite of C. perspicillata throughout the extent of its range.
**Trichobius longipes Rudow**

*Trichobius longipes Rudow, 1871:121.*

**Honduran Record (3 Specimens)**


CORTÉS: m1 from *Phyllotis hastatus*, Omoa, Fortaleza de San Francisco de Omoa, 6 August 1988, T. J. McCarthy, leg.

**Trichobius parasiticus Gervais**

*Trichobius parasiticus Gervais, 1844:14, Plate 43.*

**Honduran Records (858 Specimens)**


OLANCHO: m1, f2 from *Rhynchonycteris naso* (Wied-Neuwied), 4 km E Catacamas (Escuela de Sembrador), 19 July 2001.

VALENCE: m4 from *D. rotundus*, 13 km W, 3 km S Nacoame, 9 July 2001.

**Trichobius parasiticus** is a characteristic parasite of the common vampire bat, *Desmodus rotundus*. Wenzel et al. [1] reported that on *D. rotundus*, *T. furmani* replaces *T. parasiticus* in some parts of South America.

**Trichobius sparsus Kessel, 1925**

*Trichobius sparsus Kessel, 1925:17. Figures 7, 10.*

**Honduran Records (16 Specimens)**


The association with *C. sowelli* is suspect; in Venezuela, all but one of 112 specimens were associated with *P. parrnelli* [4]. The Jardín Botánico specimens were found on one bat of each species previously stated, captured at the same time in the same mist net.

**Trichobius uniformis Curran**

*Trichobius uniformis Curran, 1935:10, Figure 8.*

**Honduran Records (37 Specimens)**


COMAYAGUA: f1 from *G. soricina*, 4.8 km N, 8.7 km W Comayagua (Playitas), 9 July 2001; m1 from *G. commissarisi*, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001; f3 from *G. soricina*, 4.8 km N, 8.7 km W Comayagua (Playitas), 10 July 2001.

LEMPIRA: m1, f1 from *G. commissarisi*, Parque Nacional Celaque, Centro de Visitantes, 11 October 1992, J. V. Planz, leg.

OLANCHO: m3, f5 from *G. soricina*, 3 km N Catacamas (Escuela Nacional de Agricultura), 20 July 2001; m2, f1 from *G. soricina*, 4 km E Catacamases (Escuela de Sembrador), 20 July 2001.

VALLE: m1 from *G. soricina*, 13 km W, 3 km S Nacoame, 9 July 2001.

This bat fly cooccurs on *G. soricina* with another congener, *T. dugesii*.

**Trichobius Undescribed Species from Tonatia saurophila**

**Honduran Records (5 Specimens)**


The existence of an undescribed species of *Trichobius* from the bat *Tonatia saurophila* was first noted by Wenzel (pers. comm.) and later by Miller and Tschapka [30]. Because a long series of specimens are known from Costa Rica (ca. 50 specimens), this species will be described elsewhere, in a treatment of the Costa Rican fauna.

4. Discussion

This paper provides the most comprehensive treatment to date of streblid bat flies known from Honduras and adds 11 genera (65%) and 32 species (74%) to the known Honduran fauna. From this treatment of a small but biologically important family of Diptera, it is clear that a great need exists in Honduras for systematic biodiversity surveys, during which museum specimens are prepared and identified and the rich fauna of Honduras is more fully described and explained.
The need for baseline information on Honduran Streblidae cannot be overemphasized. At this time, 17 genera and 43 described species of streblid bat flies have been documented to occur in Honduras.

Streblid species richness in Honduras compares relatively well to other neotropical localities. Although relatively few comprehensive treatments of streblid flies exist for neotropical countries, those that do exist are insightful. In Panama, approximately 100 bat species were sampled yielding 66 fly species [1]. In Venezuela, approximately 130 bat species were sampled yielding 115 fly species [4]. In Paraguay, 54 bat species were sampled, yielding 31 fly species [29]. In the present study, approximately 45 species of bats were sampled, yielding 43 fly species. These trends in fly species richness relative to host species richness comport previous findings of positive correlation between fly and host richness values [29]. A relatively comprehensive treatment of Guatemalan bat flies yielded a fly species richness of 40 species, comparable to Honduras. However, the number of bats sampled for the Guatemalan collection is unknown [22].

The International Union for Conservation of Nature [33] lists 96 species of Chiroptera for Honduras. This is nearly identical to the 95 bat species reported for Guatemala [34]. Given the number of bat species in Honduras and assuming (1) that each of these is in fact host to fly species known from those hosts from other neotropical localities and (2) that each bat species is parasitized by unique species of Streblidae (e.g., [2, 3, 35]), it is possible to estimate the streblid bat fly species potentially in Honduras. Following neotropical host-parasite associations summarized in [4, 23], I estimate that the number of species in Honduras may be up to four times higher (ca. 170 spp.) than the number reported here.

Future work must be conducted in Honduras, particularly work that involves the collection of bats and their ectoparasites. Even simple specimen collection surveys would facilitate reasonable estimates of Honduras’ biodiversity. Although Honduras is incredibly rich in biodiversity, knowledge of this biodiversity is little developed. Particularly in the light of pressure to modify natural habitat to suit ever expanding material needs of humankind, the time is right to make biodiversity surveys of Honduras, in order to assess and conserve its unique and important biodiversity.

Appendices

A. Concise List of the 17 Genera and 43 Species of Streblid Bat Flies Known to Occur in Honduras

New records (11 genera and 32 species) for Honduras are indicated by an asterisk as follows:

*Anastrebla modestini* Wenzel, 1966
*Anatrichobius scorzai* Wenzel, 1966
*Aspidoptera falcata* Wenzel, 1976
*Aspidoptera phyllostomatis* (Perty), 1833
*Exastinion clovisi* (Pessôa & Guimarães), 1937

*Mastoptera guimaraesi* Wenzel, 1966
*Mastoptera minuta* (Costa Lima), 1921
*Mastoptera sp.* (minuta complex)

*Megistopoda aranea* (Coquillett), 1899
*Megistopoda proxima* (Séguy), 1926
*Megistopoda theodori* Wenzel, 1966
*Metelasmus pseudopterus* Coquillett, 1907
*Neotrichobius stenopterus* Wenzel & Aitken, 1966
*Noctiliostrebla traubii* Wenzel, 1966
*Nycterophila coxata* Ferris, 1916
*Paradyschiria fusca* Speiser, 1900
*Paradyschiria parvuloides* Wenzel, 1966
*Paraenectenodes longipes* Pessôa & Guimarães, 1937
*Paratrichobius dumnii* (Curran), 1935
*Paratrichobius longicrus* (Miranda Ribeiro), 1907
*Paratrichobius sp.* (salvini complex)
*Speiseria ambigua* Kessel, 1925
*Speiseria peytonae* Wenzel, 1976
*Strebla chrotopteri* Wenzel, 1976
*Strebla curvata* Wenzel, 1976
*Strebla diphyllae* Wenzel, 1966
*Strebla galindoi* Wenzel, 1966
*Strebla guajiro* (García & Casal), 1965

*Strebla hertigi* Wenzel, 1966
*Strebla kohlsi* Wenzel, 1966
*Strebla wiedemannii* Kolenati, 1856
*Trichobioideis perspicillatus* (Pessôa & Galvão), 1937
*Trichobius caccus* Edwards, 1918
*Trichobius costalimai* Guimarães, 1938
*Trichobius diphyllae* Wenzel, 1966
*Trichobius dugesii* Townsend, 1891
*Trichobius galei* Wenzel, 1966
*Trichobius hirsutulus* Bequaert, 1933
*Trichobius intermedius* Peterson & Hurka, 1974
*Trichobius joblingi* Wenzel, 1966
*Trichobius longipes* (Rudow), 1871
*Trichobius parascticus* Gervais, 1844
*Trichobius sparsus* Kessel, 1925
*Trichobius uniformis* Curran, 1935
*Trichobius undescribed species (dugesii group) from Tonatia saurophila.*
### B. List of 43 Streblid Bat Fly Species Known from Honduras, with Bat Host Associations

Numbers in parentheses indicate (1) the number of individual flies collected of that fly species and on that host species and (2) the percentage of the total fly individuals collected that were associated with that host species. Associations noted by asterisks are generally considered accidental or contamination transfers and are determined by reference to general patterns of host association among neotropical streblid flies [1, 2, 4, 29]; refer to species accounts for additional information:

<table>
<thead>
<tr>
<th>Species</th>
<th>Number Collected</th>
<th>Percentage of Total Flies Associated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anastrebla modestini</td>
<td>(1)</td>
<td>(100%)</td>
</tr>
<tr>
<td>Glossophaga soricina</td>
<td>(1) (100%)</td>
<td></td>
</tr>
<tr>
<td>Anatrichobius scorzai</td>
<td>(6 specimens)</td>
<td></td>
</tr>
<tr>
<td>Myotis keaysi</td>
<td>(6) (100%)</td>
<td></td>
</tr>
<tr>
<td>Aspidoptera falcata</td>
<td>(39)</td>
<td></td>
</tr>
<tr>
<td>S. ludovici</td>
<td>(15) (38.5%)</td>
<td></td>
</tr>
<tr>
<td>*Noctilio leporinus</td>
<td>(1) (2.5%)</td>
<td></td>
</tr>
<tr>
<td>Aspidoptera phyllostomatis</td>
<td>(14)</td>
<td></td>
</tr>
<tr>
<td>*A. lituratus</td>
<td>(3) (21.4%)</td>
<td></td>
</tr>
<tr>
<td>*Glossophaga soricina</td>
<td>(1) (71%)</td>
<td></td>
</tr>
<tr>
<td>Exastinion clovisi</td>
<td>(5)</td>
<td>(100%)</td>
</tr>
<tr>
<td>Anoura geoffroyi</td>
<td>(5)</td>
<td>(100%)</td>
</tr>
<tr>
<td>Mastoptera guimaraesi</td>
<td>(3)</td>
<td>(100%)</td>
</tr>
<tr>
<td>Phyllostomus hastatus</td>
<td>(3)</td>
<td>(100%)</td>
</tr>
<tr>
<td>Mastoptera minuta</td>
<td>(5)</td>
<td>(100%)</td>
</tr>
<tr>
<td>Lophostoma silvicolum</td>
<td>(5)</td>
<td>(100%)</td>
</tr>
<tr>
<td>Mastoptera sp. (23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lophostoma brasiliense</td>
<td>(23) (100%)</td>
<td></td>
</tr>
<tr>
<td>Megistopoda aranea</td>
<td>(31)</td>
<td></td>
</tr>
<tr>
<td>*A. lituratus</td>
<td>(7) (22.6%)</td>
<td></td>
</tr>
<tr>
<td>*Glossophaga soricina</td>
<td>(1) (3.2%)</td>
<td></td>
</tr>
<tr>
<td>Megistopoda proxima</td>
<td>(58)</td>
<td></td>
</tr>
<tr>
<td>S. ludovici</td>
<td>(51) (98.1%)</td>
<td></td>
</tr>
<tr>
<td>*Uroderma bilobatum</td>
<td>(1) (1.9%)</td>
<td></td>
</tr>
<tr>
<td>Megistopoda theodori</td>
<td>(52)</td>
<td></td>
</tr>
<tr>
<td>Metelasmus pseudopterus</td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>*Artibeus jamaicensis</td>
<td>(2) (50%)</td>
<td></td>
</tr>
<tr>
<td>A. lituratus</td>
<td>(1) (25%)</td>
<td></td>
</tr>
<tr>
<td>Neotrichobius stenopterus</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Dermanura phaeotis</td>
<td>(2) (67%)</td>
<td></td>
</tr>
<tr>
<td>D. tolteus</td>
<td>(1) (33%)</td>
<td></td>
</tr>
<tr>
<td>Noctiliostrebla traubi</td>
<td>(34)</td>
<td></td>
</tr>
<tr>
<td>Noctilio leporinus</td>
<td>(34) (100%)</td>
<td></td>
</tr>
<tr>
<td>Nycterophilia coxata</td>
<td>(362)</td>
<td></td>
</tr>
<tr>
<td>Pteronotus parnellii</td>
<td>(361) (99.7%)</td>
<td></td>
</tr>
<tr>
<td>*Sturnira lilium</td>
<td>(1) (0.3%)</td>
<td></td>
</tr>
<tr>
<td>Paradyschiria fusca</td>
<td>(43)</td>
<td></td>
</tr>
<tr>
<td>Noctilio leporinus</td>
<td>(43) (100%)</td>
<td></td>
</tr>
<tr>
<td>Paradyschiria parvuiloides</td>
<td>(10)</td>
<td></td>
</tr>
<tr>
<td>Noctilio albiventris</td>
<td>(10) (100%)</td>
<td></td>
</tr>
<tr>
<td>Paraeuctenodes longipes</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Glossophaga commisarisi</td>
<td>(2) (67%)</td>
<td></td>
</tr>
<tr>
<td>G. soricina</td>
<td>(1) (33%)</td>
<td></td>
</tr>
<tr>
<td>Paratrichobius dunnii</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Uroderma bilobatum</td>
<td>(2) (67%)</td>
<td></td>
</tr>
<tr>
<td>*Dermanura phaeotis</td>
<td>(1) (33%)</td>
<td></td>
</tr>
<tr>
<td>Paratrichobius longicus</td>
<td>(14)</td>
<td></td>
</tr>
<tr>
<td>*A. intermedius</td>
<td>(4) (29%)</td>
<td></td>
</tr>
<tr>
<td>*Sturnira ludovici</td>
<td>(2) (14%)</td>
<td></td>
</tr>
<tr>
<td>Paratrichobius sp. (salvini complex)</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>Platyrhinchus helleri</td>
<td>(1) (100%)</td>
<td></td>
</tr>
<tr>
<td>Speiseria ambigua</td>
<td>(9)</td>
<td></td>
</tr>
<tr>
<td>Carollia sowerll</td>
<td>(8) (89%)</td>
<td></td>
</tr>
<tr>
<td>*Mimon cozumelae</td>
<td>(1) (11%)</td>
<td></td>
</tr>
<tr>
<td>Speiseria peytonae</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>Carollia brevicauda</td>
<td>(1) (100%)</td>
<td></td>
</tr>
<tr>
<td>Strebla chrotoperi</td>
<td>(5)</td>
<td></td>
</tr>
<tr>
<td>Chrotoperus auritus</td>
<td>(5) (100%)</td>
<td></td>
</tr>
<tr>
<td>Strebla curvata</td>
<td>(7)</td>
<td></td>
</tr>
<tr>
<td>*Glossophaga soricina</td>
<td>(6) (86%)</td>
<td></td>
</tr>
<tr>
<td>Strebla diphyllae</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>Diphylla ecaudata</td>
<td>(2) (100%)</td>
<td></td>
</tr>
<tr>
<td>Strebla galindoi</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>Tonatia saurophila</td>
<td>(1) (100%)</td>
<td></td>
</tr>
<tr>
<td>Strebla guajiro</td>
<td>(13)</td>
<td></td>
</tr>
<tr>
<td>Carollia sowerll</td>
<td>(6) (46%)</td>
<td></td>
</tr>
</tbody>
</table>
Trichobius parasiticus (857)
  *Desmodus rotundus (842) (98.3%)
  *Pteronotus pternelli (10) (1.2%)
  *Rhynchonycteris naso (3) (0.1%)
  *Phyllostomus discolor (1) (0.1%)
  *Artibeus intermedius (1) (0.1%)

Trichobius sparsus (16)
  *Carollia sowelli (11) (69%)
  *Pteronotus pternelli (5) (31%)

Trichobius uniformis (37)
  *Glossophaga soricina (29) (78%)
  G. commissarisi (6) (16%)
  *Artibeus lituratus (1) (3%)
  *Mimon cozumelae (1) (3%)

Trichobius undescribed species (dugesii group) (5)
  Tonatia saurophila (5) (100%).

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