INTRODUCTION. Euphorinae is a large subfamily comprising approximately 53 genera, 34 of which are found in the New World.

PHYLOGENY. Molecular phylogenetic analyses by Sharanowski et al. (2011) and Stigenberg et al. (2015) concluded that neoneurines are nested inside the Euphorinae, corroborating the conclusion that the neoneurines should be classified as a tribe in the Euphorinae. Even before these publications Tobias (1966) and Belokobylskij (2000a) placed the neoneurines in the subfamily Euphorinae. Gómez Durán and van Achterberg (2011) have also adopted this placement.

BIOLOGY. Euphorines are primarily, solitary or (rarely) gregarious koinobiont endoparasitoids of adult insects including Coleoptera, Hymenoptera and Neuroptera, as well as of nymphal and adult Heteroptera and Psocoptera. Some of the parasitoids that attack Coleoptera can also be larval parasitoids, or attack the larval or pupal stage and emerge from the adult (details under the respective generic treatments). As a group, the subfamily members of Meteorini are endoparasitoids of larval Lepidoptera and Coleoptera. Euphorinae has a host range that is substantially broader than other braconid subfamilies. More information on euphorine biology is provided in Shaw and Huddleston (1991). Stigenberg (2015) elucidated the evolution of host associations and summarized the host data for all tribes.

COMMON GENERA. Leiophron, Meteorus, Microctonus, and Peristenus.

DISTRIBUTION. Cosmopolitan.

DISTINGUISHING FEATURES. The Euphorinae is diverse morphologically and difficult to diagnose. No members have crossvein 2cu-a in the forewing, however this absence is widespread in Braconidae. The first metasomal tergite is usually constricted, at least basally. Eyes are often situated low on the face relative to other braconids. Most members lack the second submarginal vein in the forewing (however see key below), and in these cases the RS vein is usually curves towards the anterior margin and ends well before the wing apex. No members have a metasomal carapace and many genera have unique forewing venation.
KEY TO NEW WORLD GENERA OF EUPHORINAE

1. A. Forewing venation unique as in image, with a distinct split in vein RS, which is tubular to wing margin, AND vein 1RS subequal to vein M. Nearctic. ........................................... *Neoneurus*  
   - B. Forewing venation unique as in image, with a hint of a split in the RS vein, which is not tubular to wing margin, AND vein 1RS subequal to vein M. Nearctic. ................................. *Elasmosoma*  
   C. Forewing venation of many other designs, lacking any sign of a split in the RS vein, AND vein 1RS much shorter than vein M or not differentiated from M. Nearctic or Neotropical .......... 2

\[\text{Image of wing venation for options A, B, and C.}\]

2(1). A. Forewing second submarginal cell present and closed distally...................................................... 3  
   - B. Forewing second submarginal cell absent, not closed or only partially closed distally ........... 6

\[\text{Image of wing venation for options A and B.}\]

3(2) A. First metasomal tergite much longer than wide and not more than 2x wider apically than basally ................................................................................................................................. 4  
   B. First metasomal tergite not so narrow and usually more than 2x wider apically than basally 5

\[\text{Image of metasomal tergite for options A and B.}\]
4(3)  A. second submarginal cell longer than wide, not triangular, and usually 5-sided. ..... *Aridelus*
B. second submarginal cell not longer than wide, triangular or almost so, and 3 or 4-sided ..... 


5(3)  A. Hind wing vein Rs bending towards anterior wing margin; very common. ..........*Meteorus*
B. Hind wing vein Rs bending away from anterior wing margin; relatively rare ............... *Zele*


6(2)  A. Propodeum with projections laterally; Neotropical. ............................................. 7
B. Propodeum lacking projections laterally, rather rounded or flat; widespread .............. 8


7(6)  A. Basal flagellomere about 5x longer than wide; face less rugose. ...................... *Yanayacu*
B. Basal flagellomere about 8x longer than wide; face more rugose-reticulate ........... *Betelgeuse*
8(6)  A. RS+M vein of forewing mostly or entirely absent. ................................................................. 9  
B. RS+M vein of forewing present ................................................................................................. 19

9(8)  A. Scape length less than 2.5 times scape width................................................................. 10  
B. Scape length about 3-3.5 times scape width; female with setose pads on underside of basal flagellomeres; male unknown................................................................. Marshiella  
C. Scape length more than 4 times scape width ................................................................. 18

10(9)  A. Forewing vein M+Cu complete and mostly or entirely tubular................................. 11  
B. Forewing vein M+Cu reduced, mostly or entirely not tubular........................................... 13
11(10). A. First metasomal tergite greatly constricted basally and lacking dorsope (pair of dorsal pits); Nearctic and Neotropical................................................................. 12
B. First metasomal tergite not greatly constricted basally and with large dorsope (pair of dorsal pits); Nearctic only................................................................. Spathicapis

12(11). A. Clypeus relatively narrow, its ventral margin smooth; common. ...................... Microctonus
B. Clypeus relatively wide; its ventral margin sculptured; rare.............................. Townesilitus

13(10). A. Forewing vein R absent distal to stigma. Forewing vein Rs not complete to wing margin. ..... Cosmophorus
B. Forewing vein R present distal to stigma. Forewing vein Rs complete to wing margin. ..... 14
14(13). B. Forewing crossvein m-cu present ................................. 15
   A. Forewing crossvein m-cu absent ........................................... Cryptoxilos (part)

15(14). A. Tarsal claws cleft. First metasomal tergum and sternum completely fused throughout entire length .................................................. 16
   B. Tarsal claws simple. First metasomal tergum and sternum not fused .......................... 17

16(15). A. Notauli present and distinct ........................................ Bracteodes
   B. Notauli absent ................................................................... Syntretus
17(15). A. First metasomal tergite not greatly narrowed basally .................................. *Centistes* (part)
B. First metasomal tergite greatly narrowed basally. ..................................................... 18

18(9). A. Shortest distance between eyes much longer than eye width in anterior view .. *Streblocera*
B. Shortest distance between eyes shorter than eye width in anterior view ............ *Ecclitura*

19(8). A. Forewing crossvein m-cu complete ........................................................................ 22
B. Forewing crossvein m-cu reduced or absent ............................................................... 20
20(19). A. Forewing vein 3RS complete or almost complete to wing margin ........................................ 21
B. Forewing vein 3RS reduced and less than ½ distance to wing margin .......... Holdawayella
C. Forewing vein 3RS absent except as a small stub distally ................................................................. Leiophron part (subgenus Euphoriella)

21(20). A. Female face with projections below antennae; eyes widely separated and not converging ...
......................................................................................................................................................... Plynops
B. Face without projections below antennae; eyes narrowly separated and converging ventrally
........................................................................................................................................................................... Cryptoxilos (part)

22(19). A. Antenna short with 7-9 flagellomeres. ................................................................. Ropalophorus
B. Antenna longer with many more than 9 flagellomeres .......................................................... 23
23(22). A. Forewing vein M+Cu complete and tubular................................................................. 24
   B. Forewing vein M+Cu reduced, not tubular for most of its length ............................... 27

24(23). A. First metasomal tergite wide, almost as wide as long..............................Centistoides
   B. First metasomal tergite long and thin apically and basally ..............................Orionis
   C. First metasomal tergite intermediate, much narrower at base than apex, but not nearly as
      long and thin as in B ........................................................................................................ 25

25(24). A. Forewing vein 2M reduced to a small stub......................................................... Perilitus
   B. Forewing vein 2M longer .............................................................................................. 26
26(25). A. Distance from stigma to RS is much less than half the distance from the stigma to the apex of the wing, i.e., RS ending far from the wing margin. ............................................. Dinocampus
B. Distance from stigma to RS is much greater than half the distance from the stigma to the apex of the wing, i.e., Rs ending near wing margin. ............................................. Litostolus

27(23). A. Scape length less than 2 times scape width. ................................................................. 28
B. Scape length more than 3 times scape width. ................................................................. Centistina

28(27). A. First metasomal tergite slender along its entire length, exceptionally long and thin. ................................................................. Wesmaelia
B. First metasomal tergite constricted near base and less than 3 times longer than apical width. .................................................................................. 31
C. First metasomal tergite slightly constricted near base, as wide near base as it is apically or almost so. ................................................................. 29
29(28). A. Tarsal claws cleft; hind coxa with a ventro-lateral tooth apically (may be small and difficult to see) ........................................................................................................... Allurus

B. Tarsal claws simple; hind coxa without a ventro-lateral tooth apically .................................. 30

30(29). A.; Forewing 2M desclerotized and reduced to only a short stub or absent Mesosternum of ♀ sparsely setose and convex; Nearctic and Neotropical .......................................................... Centistes

- B.; Forewing 2M sclerotized and present as a short but distinct branch. Mesosternum of ♀ very densely felty setose and flattened; Nearctic only .............................................................. Pygostolus

31(28). A. Basal area of forewing glabrous (lacking setae) or almost so.......................... Leiophron (part)

B. Basal area of forewing setose ........................................................................................................ 32
32 (31). A. First metasomal tergite not fused or touching ventrally, OR fused or touching along most of its length. Frons smooth medially. .......................................................... *Leiophron* (part)
B. First metasomal tergite often fused or touching ventrally in anterior portion only. Frons with fine medio-longitudinal carina or rugosities. ....................................................... *Peristenus*
GENUS TREATMENTS

*Allurus* Foerster, 1863

**Diagnosis.** Tarsal claws cleft. Forewing vein 3RS complete. Forewing vein M+Cu reduced, not tubular for most of its length. RS+M vein of forewing present. Propodeum rounded. Hind coxa with ventral tooth, which may be small and difficult to see. First metasomal segment not greatly narrowed basally, i.e., widely attached to propodeum.

**Biology.** Parasitoids of adult Curculionidae (Jackson 1920, Aeschlimann 1980).

**Diversity.** Three described species one of which occurs in the Nearctic.

**Distribution.** Holarctic and Oriental realms.

**Publications.** Stigenberg and van Achterberg (2016) reviewed the genus.

*Allurus* sp.
**Aridelus** Marshall, 1887

**Diagnosis.** Second submarginal cell of forewing present. Mesosoma covered with coarse honey-combed, areolate sculpture.

**Biology.** Parasitoids of late instar nymphs and adults of Pentatomidae.

**Diversity.** About 50 species described worldwide, three Nearctic, and one Neotropical.

**Distribution.** Cosmopolitan, in the New World from Canada to Argentina.

**Publications.** Papp (1965) provided a key to species, many more, especially Oriental, species have been described since.

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*Aridelus* sp.
**Betelgeuse** Shaw, 1989


**Biology.** Unknown.

**Diversity.** Three described species, perhaps several more undescribed.

**Distribution.** Neotropical (Mexico).

**Publications.** Shaw (1989) erected the genus and Shaw (2002) added two species and provided a key.
**Bracteodes** de Saeger, 1946

**Diagnosis.** Notauli present and distinct. Tarsal claws cleft. Forewing vein M+Cu reduced, mostly or entirely not tubular. Scape length less than 2.5 times scape width. RS+M vein of forewing absent.

**Biology.** The African species *B. wittei* is a parasitoid of the Oriental honeybee, *Apis cerana*.

**Diversity.** The sole described species is Afrotropical. Shaw reported an undescribed species from the Southwestern USA and Mexico in the Euphorinae chapter in the last version of the Manual (Shaw, 1997).

**Distribution.** Afrotropical, southwestern USA and Mexico.

**Publications.** None of interest to the New World fauna except the details mentioned in the last version of the Euphorinae chapter of the Manual Shaw (1997).
**Centistes** Haliday, 1835

**Diagnosis.** First metasomal tergite not greatly narrowed basally. Tarsal claws simple. Forewing vein M+Cu reduced, mostly or entirely not tubular. 2M vein absent as a tubular vein or tubular portion present as a very short stub.

**Biology.** Parasitoids of adult beetles, especially Curculionidae, Chrysomelidae, and Carabidae (Shaw, 1995a).

**Diversity.** About 70 species described worldwide and approximately nine in the New World; many more are undescribed.

**Distribution.** Cosmopolitan with many undescribed Neotropical species.

**Publications.** Aguirre et al. (2016) revised the Costa Rican fauna, described 23 new species and provided a key to all Neotropical species.

**Note.** The subgenus *Syrrhizus* Foerster has a reduced forewing RS+M vein.

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*Centistes* sp.
**Centistina** Enderlein, 1912

**Diagnosis.** Scape 4 or more times longer than wide. Clypeus relatively wide; scape relatively thin compared to *Dinocampus*. Antenna with many more than 8 flagellomeres. Forewing vein M+Cu complete and tubular. RS+M vein of forewing present. Propodeum rounded in lateral view.

**Biology.** Unknown

**Diversity.** Six described species, and not a lot more undescribed

**Distribution.** Afrotropical, Neotropical, and southwestern Nearctic. Only two species are described from the New World, both are from Costa Rica.

**Publications.** Van Achterberg and Shaw (2000) described the two Costa Rican species.

**Note.** The genus *Eodinocampus* Belokobytskij (2000a) is a junior synonym, synonymized by Belokobytskij (2001).
**Centistoides** van Achterberg, 1992

**Diagnosis.** Dorsope absent. Maxillary palp with 3 segments; labial palp with 1 segment. Female hypopygium deeply incised medially. Forewing vein 2M sclerotized and present as a short but distinct branch. Forewing 3RS fully developed. First metasomal tergum not greatly constricted basally, almost as wide basally as apically.

**Biology.** Unknown

**Diversity.** Two described species, rare.

**Distribution.** Neotropical, only known from Surinam and Brazil.

**Publications.** Van Achterberg (1992a) erected the genus. Alemeida and Pentiado-Dias (2018) described the Brazilian species and distinguished it from the Surinam species.
**Chrysopophthorus** Goidanich, 1948

**Diagnosis.** Forewing r-m present, thus second submarginal cell present. Mesosoma without honey-combed or areolate sculpture except on propodeum. Mesoscutum punctate and with distinct notauli. First metasomal tergite as long as or longer than remainder of metasoma.

**Biology.** Parasitoids of adult Chrysopidae.

**Diversity.** Eight described species, one Nearctic and three Neotropical.

**Distribution.** Cosmopolitan.

**Publications.** Mason (1964) provided a key to the New World species. Van Achterberg (1994) revised the Palearctic species and summarized what is known of their biology.
**Cosmophorus** Ratzeburg, 1848

**Diagnosis.** Antennal bases prominent, anterior margin raised in two rounded projections. Labrum large and occupying the large space between mandibles and clypeus. Antennae each inserted on large protuberances.

**Biology.** Parasitoids of adult Scolytinae (Curculionidae).

**Diversity.** 33 described species including five Nearctic species. None of the Neotropical species is described.

**Distribution.** Cosmopolitan.

**Publications.** The Nearctic species are found in old and scattered publications.
**Cryptoxilos** Viereck, 1911

**Diagnosis.** Eyes converging ventrally. Wing venation reduced with the m-cu crossvein absent.

**Biology.** Parasitoids of adult Scolytinae (Curculionidae).

**Diversity.** Eight described species, including three from the Nearctic and one from the Neotropical realm.

**Distribution.** All realms except Afrotropical and Australian.

**Publications.** Deyrup (1981) gives a description of the biology of *C. lymantori* and provides a diagnosis to separate the two Nearctic species.

*Cryptoxilos sp.*
**Dinocampus** Foerster, 1863

**Diagnosis.** Scape more than 2.5 x longer than wide. Labial palp with 2 segments. Distance from stigma to RS is much less than half the distance from the stigma to the apex of the wing, i.e., RS ending far from the wing margin.


**Diversity:** One described species.

**Distribution.** Cosmopolitan.

**Publications.** None except the biology references above.
Ecclitura Kokujev, 1902

**Diagnosis.** Scape more about 5 x longer than wide, but unlike *Streblocera* it lacks a basolateral spine or carina. Forewing vein RS+M absent.

**Biology.** Unknown.

**Diversity:** Three described species. Two from the Palearctic and one from Brazil. The few North American species are not described.

**Distribution.** Holarctic, Neotropical.

**Publications.** De Almeida et al. (2019) described the Brazilian species.
Elasmosoma Ruthe, 1858

**Diagnosis.** The forewing venation of *Elasmosoma* and *Neoneurus* are similar and unique amongst the Euphorinae and indeed the Hymenoptera. The two genera may be distinguished with a number of characters including the forewing of *Elasmosoma* having RS desclerotized or absent apically, usually indicated apically only by spectral venation.

**Biology.** Parasitoids of adult formicine ants (Poinar, 2004). Gómez Durán and van Achterberg (2011) described the oviposition behaviour and link to a film clip showing this. (Search for *Elasmosoma* on YouTube.)

**Diversity:** 19 described species, six of which are Nearctic.

**Distribution.** Holarctic and northern Oriental.

**Publications.** Shaw (2007) provides a key to Nearctic species.

**Note.** Stigenberg et al. (2015) showed that the Neoneurini (*Elasmosoma* and *Neoneurus*) belong in the Euphorinae. Previously the tribe had subfamily status, Neoneurinae.

*Elasmosoma* sp.
**Holdawayella** Loan, 1967

**Diagnosis.** The forewing venation is unique amongst the Euphorinae.

**Biology.** Parasitoids of late instar nymphs and adults of Tingidae.

**Diversity:** 2 described Nearctic species, and at least one undescribed Neotropical species.

**Distribution.** Holarctic and Neotropical.

**Publications.** Loan et al. (1971) distinguished the two Nearctic species.
Leiophron Nees, 1816

Diagnosis. Basal cell of forewing usually mostly or entirely glabrous (90%). First metasomal segment with tergum and sternum entirely separate, not fused ventrally at the base of the segment, or rarely fused throughout entire length. RS vein of forewing ending nearer stigma than apex of wing. (RS+M)a vein of forewing present. In specimens formerly placed in Euphoriella Ashmead the RS vein of the forewing is mostly absent and present only as a small stub on the wing margin. M+Cu vein of forewing mostly or entirely weak and non-tubular.

Biology. Parasitoids of late instar nymphs and adults of Miridae and Psocoptera.

Diversity. Over 200 described species, about 70 in the Nearctic and a handful in the neotropics. Hundreds more species are undescribed.

Distribution. Cosmopolitan, except Australia.


**Litostolus** van Achterberg, 1985

**Diagnosis.** Distance from stigma to RS is much greater than half the distance from the stigma to the apex of the wing, i.e., RS ending near wing margin. Forewing vein 2M long, not simply as a stub. First metasomal tergum much wider apically than at base. Forewing vein M+Cu complete and tubular. Forewing crossvein m-cu complete. RS+M vein of forewing present. Propodeum lacking projections laterally, rather rounded or flat. Forewing second submarginal cell absent, not closed or only partially closed distally.

**Biology.** Unknown.

**Diversity.** Only one species is described occurring in USA and Canada. There are probably a dozen or more undescribed New World species.

**Distribution.** Restricted to the New World, Canada to Brazil.

**Publications.** Van Achterberg (1985) described the sole species.

Litostolus sp.
Marshiella Shaw, 1985

**Diagnosis.** Scape length about 3-3.5 times scape width. Female with setose pads on underside of basal flagellomeres. Male unknown.

**Biology.** Reared from Anthicidae (Coleoptera).

**Diversity.** 10 described species, perhaps that many more undescribed.

**Distribution.** Holarctic, Nearctic, Neotropical (Canada to Brazil) and Oriental.

**Publications.** Shaw and Marsh (2000) revised the genus *Marshiella*, described three new species, and provided a key to New World species. De Almeida et al. (2019) described a new species from Brazil.
**Meteorus** Haliday, 1835

**Diagnosis.** Forewing second submarginal cell present (very exceptionally absent) and 4-sided. First metasomal tergite usually more than 2x wider apically than basally. Hind wing vein RS bending towards anterior wing margin.

**Biology.** Endoparasitoids of larval Coleoptera and Lepidoptera.

**Diversity.** Over 300 described species, about 40 in the Nearctic and 70 in the Neotropics. Hundreds more species remain undescribed.

**Distribution.** Cosmopolitan.

**Publications.** The Nearctic species have not been revised since Muesebeck’s (1923) treatment. Species descriptions of new Nearctic species have been published in scattered publications since then. Aguirre et al. (2015) summarized the described Neotropical species, added 11 new species and included a key to species.

*Metoeorus* sp.
**Microctonus** Wesmael, 1835

**Diagnosis.** Petiole greatly constricted basally and lacking dorsope (dorsal pits). Forewing vein M+Cu absent. Scape length less than 2.5 times scape width. RS+M vein of forewing mostly or entirely absent.

**Biology.** Endoparasitoids of adult and sometimes larval beetles, especially Curculionidae, Chrysomelidae, and Carabidae.

**Diversity.** 31 described Nearctic species and a handful of described Neotropical species; many more undescribed species.

**Distribution.** Cosmopolitan.

**Publications.** Pucci (2013) revised the Canadian and USA species.

**Note.** Stigenberg et al. (2015) showed that *Microctonus* is nested within a polyphyletic *Perilitus* but decided not to sink the genus but rather they suggested, “Further study may indicate that the best solution is to restrict *Perilitus* to European species, retain *Microctonus* as a separate genus, and create a new genus for the non-European members of *Perilitus*”. Some authors such as van Achterberg et al. (2000) and Belokobylskij (2000) treated *Microctonus* as a subgenus of *Perilitus*.

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*Microctonus* sp.
Myiocephalus Marshall, 1898

**Diagnosis.** Head triangular in frontal view; eyes bulging and head much wider than long in dorsal view. First metasomal tergite greatly narrowed basally. Tarsal claws simple. Forewing crossvein m-cu present. Forewing vein RS complete to wing margin. Forewing vein M+Cu reduced, mostly or entirely not tubular. Scape length less than 2.5 times scape width. RS+M vein of forewing absent. Forewing second submarginal cell absent.

**Biology.** Biology: associated with ants, but not reared Donisthorpe (1927).

**Diversity.** Five described species, one Nearctic (M. laticeps) and four others restricted to the Palaearctic.

**Distribution.** Holarctic.

**Publications.** Tan et al. (2019) reinstated M. laticeps and Li et al. (2020) included a key to separate the species.

**Note.** Foissner and van Achterberg (1997) showed that the genus name Loxocephalus was preoccupied and corrected the name to Myiocephalus.
**Neoneurus** Haliday, 1838

**Diagnosis.** The forewing venation of *Elasmosoma* and *Neoneurus* are similar and unique amongst the Euphorinae and indeed the Hymenoptera. The two genera may be distinguished with a number of characters including the forewing of *Neoneurus* having RS sclerotized and present apically.

**Biology.** Endoparasitoids of adult ants of the genus *Formica*. Gómez Durán and van Achterberg (2011) document the oviposition behaviour of three genera of Neoneurini, including *Neoneurus*. They include links to film clips of the behaviour which can be viewed on YouTube (search for any of the three genera, *Elasmosoma, Kollasmosoma* or *Neoneurus*). Shaw (1993) discussed the behaviour of *Neoneurus mantis*.

**Diversity.** Sixteen species described, seven in the Nearctic.

**Distribution.** Holarctic.

**Publications.** Shaw (1992) revised the Nearctic species.

*Neoneurus* sp.
Orionis Shaw, 1987

**Diagnosis.** First metasomal tergite constricted near base and 5 or more times longer than apical width. Scape length less than 2.5 times scape width. Forewing vein M+Cu complete and tubular. RS+M vein of forewing complete. Second submarginal cell absent.

**Biology.** Unknown.

**Diversity.** Five described species, four of which are Neotropical; there are not many more species undescribed.

**Distribution.** Neotropical and Oriental.

**Publications.** Bortoni et al. (2016) revised the species and provided a key.
**Perilitus** Nees, 1819

**Diagnosis.** Petiole greatly constricted basally and lacking dorsope (dorsal pits). Forewing vein M+Cu complete and tubular. Scape length less than 2.5 times scape width. RS+M vein of forewing mostly or entirely absent.

**Biology.** Endoparasitoids of adult and sometimes larval beetles, especially Curculionidae, Chrysomelidae, and Carabidae.

**Diversity.** About 10 described New World species.

**Distribution.** Cosmopolitan, but see below.

**Publications.** There are no revisionary treatments of the few described New World species

**Note.** Stigenberg et al. (2015) showed that *Microctonus* is nested within a polyphyletic *Perilitus* but decided not to sink the genus but rather they suggested, “Further study may indicate that the best solution is to restrict *Perilitus* to European species, retain *Microctonus* as a separate genus, and create a new genus for the non-European members of *Perilitus*”. Some authors such as van Achterberg et al. (2000) and Belokobylskij (2000) treated *Microctonus* as a subgenus of *Perilitus*.

*Perilitus* sp.
**Peristenus** Foerster, 1863

**Diagnosis.** Frons with medio-longitudinal carina or rugulae. Basal cell of forewing usually setose, though less so than other forewing cells. First metasomal tergite frequently fused or touching ventrally in anterior portion only. RS vein of forewing ending nearer stigma than apex of wing. (RS+M)a vein of forewing present.

**Biology.** Parasitoids of late instar nymphs and adults of Miridae.

**Diversity.** About 140 described species, about 40 of these in the Nearctic. None described from the neotropics, but undescribed species occur there. Hundreds more species are undescribed.

**Distribution.** Cosmopolitan, except Australia.

*Plynops* Shaw, 1996

**Diagnosis.** Face with projections below antennae. Forewing venation unique, similar or identical to that in the plate below.

**Biology.** Unknown, but they are likely parasitoids of bark-beetles.

**Diversity.** 10 described species and about that number are probably undescribed.

**Distribution.** Restricted to the New World from southern Florida to Brazil.

**Publications.** Shaw (1996) erected the genus and described and keyed the 10 species.

*Plynops* sp.
**Pygostolus** Haliday, 1833

**Diagnosis.** Forewing vein 2M sclerotized and present as a short but distinct branch. Tarsal claws simple. Females of most species have the venter of the metasoma flattened and setose. Petiole slightly constricted near base, as wide near base as it is apically or almost so. Forewing vein M+Cu reduced, not tubular for most of its length. RS+M vein of forewing present.

**Biology.** Usually endoparasitoids of adult Curculionidae, but larval or pupal stages may also be attacked with emergence always coming from the adult (van Achterberg, 1992b).

**Diversity.** Fourteen described (extant) species, four of which occur in the Nearctic. These same four also occur in the Palaearctic (van Achterberg, 1992b).

**Distribution.** Holarctic and Neotropical.

**Publications.** Van Achterberg (1992b) revised the Holarctic species.
**Ropalophorus** Curtis, 1837

**Diagnosis.** The slightly swollen and short antennae with about 8 flagellomeres are unique among the Euphorinae.

**Biology.** Endoparasitoids of adult Scolytidae (Yang and Song, 2003).

**Diversity.** Four described species.

**Distribution.** Holarctic, three species in China and one, *Ropalophorus clavicornis*, both in the Nearctic and Palaearctic.

**Publications.** Yang and Song (2003) provide a key to the world species.
**Spathicopis** van Achterberg, 1977

**Diagnosis.** Petiole with large dorsope (dorsal pits). Forewing vein M+Cu reduced, mostly or entirely not tubular. Scape length less than 2.5 times scape width. RS+M vein of forewing absent.

**Biology.** Unknown.

**Diversity.** One described species and a few others undescribed.

**Distribution.** Oriental and Afrotropical (new records), Holarctic (U.S.A. and Canada in the Nearctic).

**Publications.** Van Achterberg (1977) described the sole species.

*Spathicopis* sp.
**Streblocera** Westwood, 1833

**Diagnosis.** Shortest distance between eyes much longer than eye width in anterior view. Scape length more than 4 times scape width. RS+M vein of forewing mostly or entirely absent. Propodeum lacking projections laterally, rather rounded. The scapes of females of most species are raptorial, whereas all males have elongated but otherwise unmodified scapes.

**Biology.** Endoparasitoids of adult Chrysomelidae, summarized in Chen and van Achterberg (1997).

**Diversity.** More than 100 described species worldwide, but few in the New World and these are restricted to the Neotropics. *Streblocera garleppi* (Enderlein, 1912), formerly *Lecythodella garleppi*, from Peru is the only described New World species. There are a handful of others undescribed.

**Distribution.** Pantropical and Palaearctic.

**Publications.** Only the original description of *Lecythodella garleppi* by Enderlein (1912).

**Notes.** A species of *Streblocera* from Canada described by Walley and MacKay (1963) was transferred to *Marshiella, M. pulvillicornis* (Walley & Mackay, 1963) by Shaw (1985). *Lecythodella* is now considered a subgenus of *Streblocera*. Females lack the typical raptorial antennae of other members of the genus.
**Syntretus** Foerster, 1863

**Diagnosis.** Notauli absent. Tarsal claws cleft. Forewing vein M+Cu reduced, mostly or entirely not tubular. RS+M vein of forewing mostly or entirely absent.

**Biology.** Endoparasitoids of adult Ichneumonidae and Apidae.

**Diversity.** 62 described species, 7 in the Nearctic and 7 in the Neotropical region. Many other species are undescribed.

**Distribution.** Cosmopolitan.

**Publications.** Papp and Shaw (2000) revised the species of the subgenus *Falcosyntretus* Tobias from the New World with five new species and a key to species. Van Achterberg and Haeselbarth (2003) revised the *Syntretus* species of Europe, summarized the taxonomy and biology of the genus. There are no recent treatments of the Nearctic species.

**Note.** Van Achterberg and Haeselbarth (2003) treated *Falcosyntretus* as a junior synonym of *Syntretus.*
**Townesilitus** Haeselbarth and Loan, 1983

**Diagnosis.** Very similar to *Microctonus*. Ventral margin of clypeus sculptured. Head circular in frontal view and eyes not bulging in dorsal view. First metasomal tergite greatly narrowed basally. Tarsal claws simple. Forewing vein M+Cu mostly or entirely tubular. Scape length less than 2.5 times scape width. RS+M vein of forewing mostly or entirely absent.

**Biology.** Endoparasitoids of adult flea beetles (Alticini: Chrysomelidae) (Stigenberg, 2017).

**Diversity.** 12 described species, including three Nearctic species. Perhaps a dozen more undescribed Nearctic species.

**Distribution.** Holarctic, Neotropical and Oriental.

**Publications.** No general treatments for the Nearctic region. Most species were originally described under *Microctonus*.

*Townesilitus* sp.
**Wesmaelia Foerster, 1863**

**Diagnosis.** First metasomal tergite exceptionally long and thin throughout its length. Forewing second submarginal cell absent. RS vein of forewing ending well before wing apex.

**Biology.** Endoparasitoids of late instar nymphs and adults of Nabidae (Hendrick and Stern, 1970).

**Diversity.** About 12 described species. There may be that many or more undescribed. One Nearctic and one Neotropical species described.

**Distribution.** Cosmopolitan, except Australian and African realms.

**Publications.** Shaw (1997), described a species from Costa Rica and provided a key to the two New World species.

*Wesmaelia sp.*
**Yanayacu** Zhang and Chen, 2015

**Diagnosis.** Basal flagellomere about 5x longer than wide. Propodeum with projections laterally.

**Biology.** Unknown.

**Diversity.** Only known by the type species. Few others expected to be discovered.

**Distribution.** Neotropical.

**Publications.** Shaw (2012) erected the genus as *Napo* and described the sole species. The mating and defensive behavior of *Yanayacu townsendi* (as *Napo townsendi*) was explored by Robinson et al. (2015).

**Note.** Chen (2015) showed that the generic name *Napo* was preoccupied by a dletocephaline leafhopper genus and changed the name of the braconid genus to *Yanayacu* Zhang and Chen, 2015.
**Zele Curtis, 1832**

**Diagnosis.** Forewing second submarginal cell present and 4-sided. Hind wing vein RS bending away from anterior wing margin.

**Biology.** Endoparasitoids of lepidopteran larvae.

**Diversity.** About 30 described species, about 13 in the New World. A few dozen may be undescribed.

**Distribution.** Cosmopolitan, except Australia.

**Publications.** Muesebeck (1923) revised the USA and Canadian species under *Meteorus*. Van Achterberg (1979) revised the world species, and in 1984 he added more species.

**Note.** Stigenberg et al. (2015) and previous authors (e.g., Maetô) showed that *Zele* is nested within *Meteorus* and may not deserve generic status. However, they suggest the solution may be to break *Meteorus* into two genera, instead of sinking *Zele*.

![Zele sp.](image)
REFERENCES

Note: The underlined references contain direct links to the articles.


De Almeida LFV, Souza-Gessner CDS, Penteado-Dias AM. 2019. Three new species of the subfamily Euphorinae (Hymenoptera: Braconidae) from Brazil. *Zootaxa* 4638:4638.2.5. DOI: 10.11646/zootaxa.4638.2.5.


