

Synopsis of the Agathidinae (Hymenoptera: Braconidae) of America north of Mexico

M.J. Sharkey

Конспект таксонов подсемейства Agathidinae (Hymenoptera: Braconidae) фауны Америки севернее Мексики

М.Дж. Шарки

Department of Entomology, University of Kentucky, Lexington, Kentucky 40546, USA. E-mail: msharkey@uky.edu

Abstract. The species of the Agathidinae of America north of Mexico are reviewed and a check list is provided. A total of 99 species are recognized. One new synonymy is proposed: *Agathis malvacearum* Latreille 1805 = *Agathis metzneriae* Muesebeck 1967, syn. n. One name is replaced: *Agathis yui*, new name for *Bassus brevicornis* Muesebeck, 1927. Seven new combinations are proposed: *Bassus aciculatus* (Ashmead), *Bassus cupressi* (Muesebeck et Walkley), *Bassus semirubrus* (Brullé), *Coccygidium arizonensis* (Ashmead), *Coccygidium fascipennis* (Cresson), *Earinus rufofemoratus* (Muesebeck), *Earinus unicolor* (Schrottky). *Cremonops desertor* (Linnaeus) is recorded in the New World for the first time. A key to genera occurring in the region is provided and each genus is given a brief overview. The limits of the genus *Earinus* are expanded to include some species that lack a complete *RS+M* vein in the forewing.

Key words. Hymenoptera, Agathidinae, genera, species, new synonym, new combinations, America north of Mexico.

Резюме. Дается список 99 видов подсемейства Agathidinae, отмеченных в Америке севернее Мексики. Установлен новый синоним: *Agathis malvacearum* Latreille 1805 = *Agathis metzneriae* Muesebeck 1967, syn. n. Заменено видовое название: *Agathis yui* Sharkey, nomen nova pro *Bassus brevicornis* Muesebeck, 1927. Предлагается семь новых комбинаций: *Bassus aciculatus* (Ashmead), *Bassus cupressi* (Muesebeck et Walkley), *Bassus semirubrus* (Brullé), *Coccygidium arizonensis* (Ashmead), *Coccygidium fascipennis* (Cresson), *Earinus rufofemoratus* (Muesebeck) и *Earinus unicolor* (Schrottky). *Cremonops desertor* (Linnaeus) впервые указывается для фауны Нового Света. Дается определительная таблица родов этого региона, каждый род кратко обсуждается. Расширены границы рода *Earinus* благодаря включению в него нескольких видов без жилки *RS+M* в переднем крыле.

Ключевые слова. Hymenoptera, Agathidinae, роды, виды, новый синоним, новые комбинации, Америка севернее Мексики.

Introduction

Taxonomic studies of the insect fauna of the Nearctic region have largely been restricted to regional treatments delimited by the borders of Canada and the continental United States. There were cultural and practical reasons for restricting research to the confines of these political borders. These coun-

tries share a common language and a long history of taxonomic study. Furthermore, since the Canadian fauna is generally a subset of the fauna of the United States, it is relatively simple for American taxonomists to include the Canada fauna. Finally, restricting a study region to political borders is much easier than deciding on the southern limits of the Nearctic realm. To perpetuate this practice is not my wish but rather I attempt to summarize the current state of agathidine taxonomy in the region. Hopefully, in the future, students interested in North American Agathidinae and other braconid subfamilies will revise the fauna of monophyletic taxa or natural regions such as the New World or Nearctic realms. This appears to be the new paradigm, for example, Sharkey (1988) revised the species of *Alabagrus* of the New World. Pucci and Sharkey (2004) revised the species of *Agathirsia* of the New World, and a revision of *Crassomicrodus* of the New world is in progress (Figueroa, in prep.).

Starting points for systematic studies of the North American agathidine fauna are still Muesebeck's (1927) species-level revision of the subfamily, and Marsh's (1979) catalogue of the braconid fauna of North America north of Mexico. Since these publications appeared many new species have been described and generic concepts and nomenclature have changed, making Muesebeck's (1927) keys and Marsh's catalogue rather obsolete.

The purposes of this paper are to provide a new key to the agathidine genera found in the United States and Canada, to formally re-assign all described species to reflect modern generic concepts, and to list all species of Agathidinae known to occur in the region. Generic concepts are discussed below under each currently recognized genus. Seven new combinations, one new synonymy, and one new record for the fauna of Canada and the USA are reported.

This paper is dedicated to Professor Vladimir I. Tobias in recognition of the many important contributions that he has made towards our understanding of the biological and taxonomic diversity of the Braconidae.

Key to genera of Agathidinae

- 1. Foreclaw cleft (Fig. 2, d).....2
- Foreclaw simple (Fig. 2, c) or with a squared or rounded lobe (Fig. 2, b)3
- 2(1). Face elongate (Figs. 2, a; 8): base of foreclaw pectinate (Fig. 2, d), ovipositor sheath longer than half length of metasoma (Fig. 8)..... *Cremonops*
- Face not elongate (Fig. 7): base of foreclaw not pectinate: ovipositor sheath shorter than half length of metasoma (Fig. 7).....*Coccygidium*
- 3(1). Forewing vein (*RS+M*)_a complete (Fig. 9).....*Earinus* s. str.
- Forewing vein (*RS+M*)_a mostly absent (Fig. 6)4
- 4(3). Notauli completely absent (Fig. 9).....5

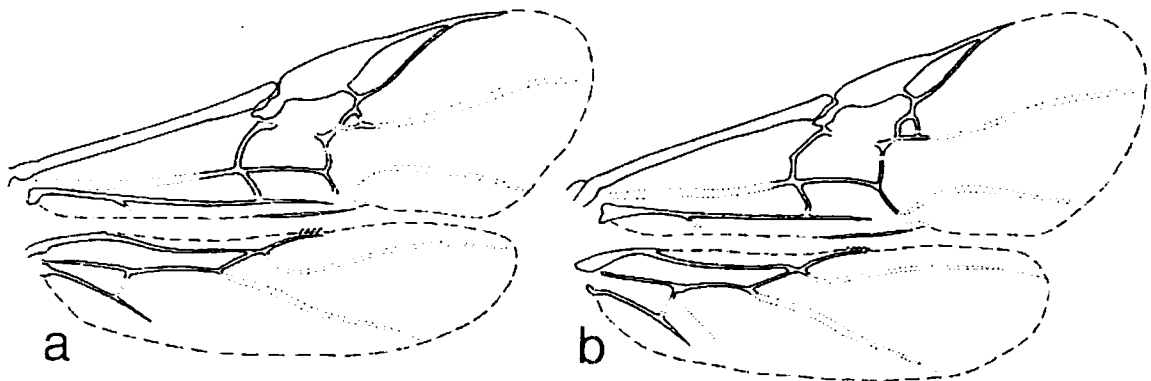


Fig. 1. Wings: a — *Agathirsia testacea*; b — *Crassomicrodus divisus*.

- Notauli present, at least anteriorly (Fig. 6)..... 6
- 5(4). Metasoma and hind coxa sharing a common opening on the mesosoma (Fig. 3, a)..... *Earinus* s. l.
- Metasoma and hind coxa separated by a sclerite (Fig. 3, b)..... *Bassus* (few species)
- 6(4). Frons margined with carina (Fig. 2, e)..... *Alabagrus*
- Frons lacking carina 7
- 7(6). Strong transverse carina on mesosoma between hind coxal insertions and metasomal insertion present (Fig. 3, b) *Bassus* (most species)
- Strong transverse carina on mesosoma between hind coxal insertions and metasoma insertion absent 8
- 8(7). Mandible dorsoventrally flattened or hidden by labrum; pegs at apex of hind tibia thick and conical.. 9
- Mandible not dorsoventrally flattened and always visible; pegs at apex of hind tibia hair-like, short and flattened, or absent..... 10
- 9(8). Face elongate (Fig. 4); third labial palpomere more than half the length of the fourth *Agathis*
- Face not elongate (Fig. 6); third labial palpomere less than half the length of the fourth *Bassus* (few species)
- 10(8). Mandible usually (>99%) without second mandibular tooth; hind tibial spines small and flattened; tarsal claws with basal lobe always present and usually large (Fig. 2, b)..... *Agathirsia*
- Mandible with second mandibular tooth; hind tibial spines hair-like or absent; tarsal claws usually simple, lacking a basal lobe (Fig. 2, c), rarely with a small basal lobe..... *Crassomicrodus*

Overview of Genera

Agathirsia Westwood, 1882 (Fig. 1, a)

Members of the genus *Agathirsia* are found only in the New World and the distribution of the genus is restricted to the United States and Mexico. Pucci and Sharkey (2004) revised the 31 known species.

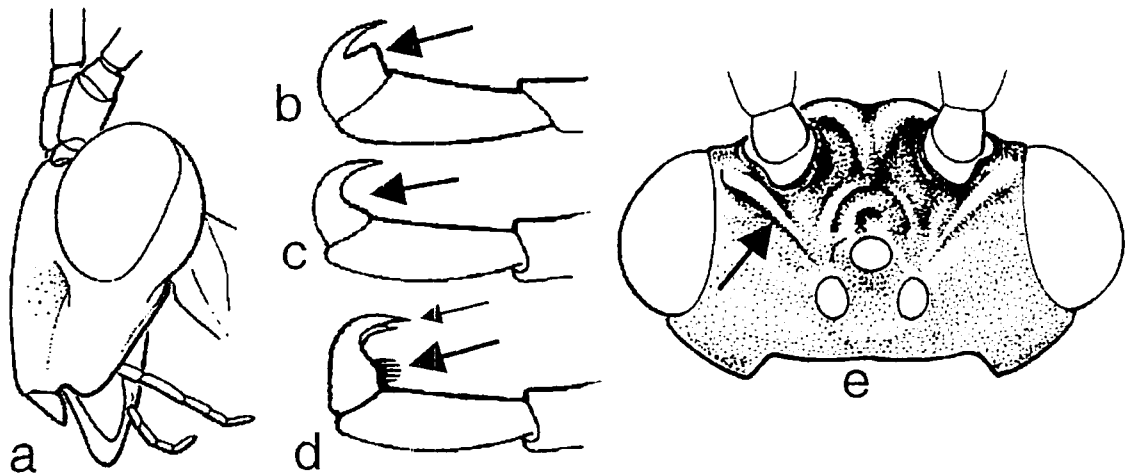


Fig. 2. Morphological features: a — head of *Zacremnops* sp. (lateral view), show the elongate gena, also present in species of *Cremnops* and most species of *Agathis*; b — tarsal claw with large basal lobe of *Bassus* sp.; c — simple tarsal claw lacking basal lobe of *Sesiocotomus* sp.; d — tarsal claw of *Cremnops* sp., showing cleft apex and basal pectination; e — head of *Pharpa* sp. (dorsal view), showing lateral carinae of frons, also present in species of *Alabagrus*.

eight of which are found in the United States, and included an updated key to distinguish *Bassus*, *Crassomicrodus*, *Agathis*, and *Agathirsia* from other agathidine genera found in the Nearctic region. This publication resolved some confusion concerning the limits between *Agathirsia* and *Crassomicrodus* and autapomorphies were proposed for each genus for the first time.

Agathis Latreille, 1804 (Fig. 4)

Agathis appears to be cosmopolitan, but I am unaware of any species from Australia and members may not occur there. Generally *Agathis* and *Bassus* have been treated as distinct genera: however Muesebeck (1927) synonymized the two and the Nearctic fauna have been treated together with *Bassus* under the name *Agathis* by Muesebeck (1927), Shenefelt (1970) and Marsh (1979). Recent studies of the Palearctic fauna (Telenga, 1955; Tobias, 1986; Nixon, 1986; Chou, Sharkey, 1989; Simbolotti, Achterberg, 1992, 1999; Sharkey, 1996) treat *Agathis* and *Bassus* as separate genera. Sharkey (1985) discussed the morphological characteristics of *Bassus* and *Agathis* and went as far as to place the genera in separate tribes in his analysis of the subfamily (Sharkey, 1992). The check-list in this paper separates the North American species into the genera *Agathis* and *Bassus* for the first time. Most species under *Agathis* in Marsh's (1979) catalogue are members of *Bassus*.

Since Muesebeck's (1927) paper, Sharkey and Mason (1986) synonymized *Anigmotomus* and its only included species *A. longipalpus* under *Agathis*.

Only seven species of *Agathis* are recorded in North America and this represents less (perhaps much less) than half of the common species. For this reason Muesebeck's (1927) key is quite inadequate. I warn the prospective student that the species limits of members of this genus may be difficult to ascertain.

Due to convergent morphologies, a few species of *Bassus* and *Agathis* are difficult to assign to genus. For example, I consider *Agathis pumilus* to be a member of *Agathis* whereas European authors (Nixon, 1986; Simbolotti, Achterberg, 1992, 1999) place it in *Bassus*. Undoubtedly, molecular studies will resolve this issue in the near future.

Alabagrus Enderlein, 1918 (Fig. 5)

Members of *Alabagrus* are restricted to the New World and are primarily Neotropical in distribution. *Alabagrus* was synonymized under *Agathis* until Sharkey (1988) revised the genus. In Muesebeck's (1927) key to *Agathis*, couplets 2–6 refer to species of *Alabagrus* but some of these names have been

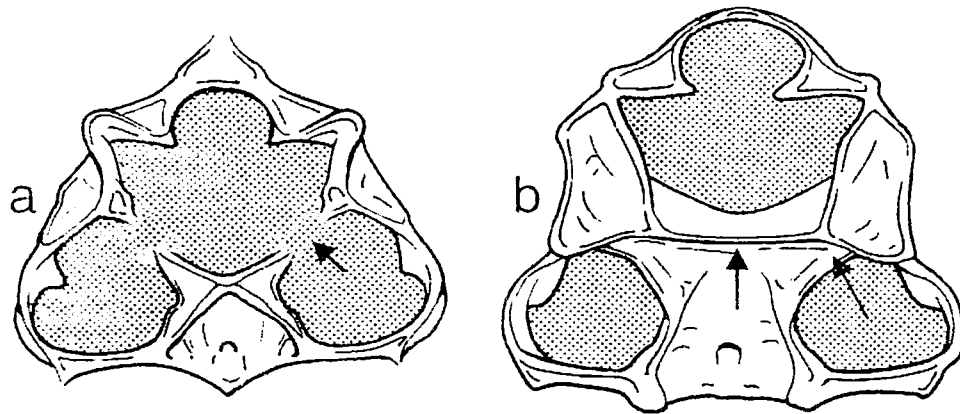


Fig. 3. Posterior views of mesosomata (hind legs and metasoma removed and darkened areas are the cavities — foramina — into which the legs and metasomata attach): a — typical of *Agathis* and *Earinus*, the metasomal and hind coxal cavities are united; b — *Bassus* sp., showing strong sclerotization (and carina) between the hind coxa cavities and that of the metasoma, in most species of *Bassus* the sclerite is not so wide.

synonymized by Sharkey (1988) and the key from this paper should be consulted for identification. Of the 104 included species only six have been found in the United States.

Bassus Fabricius, 1804 (Fig. 6)

In Muesebeck's (1927) key to "*Agathis*", the species of couplets 2–6 have been transferred to *Alabagrus* (Sharkey, 1988); those of couplets 31–32 are members of *Agathis* s. str.; and *A. rufofemoratus* (Muesebeck, 1927, couplet 10) is here transferred to *Earinus*. All other species belong to the poorly delimited, polyphyletic, genus *Bassus*. Eleven species of *Bassus* have been added as newly described species or as introduced exotics since Muesebeck's (1927) publication so it is of limited value.

Coccygidium Saussure, 1892 (Fig. 7)

This is a large cosmopolitan genus, primarily tropical in distribution, with only a small percentage of species occurring in temperate regions. Only two species are recorded from the United States. Both

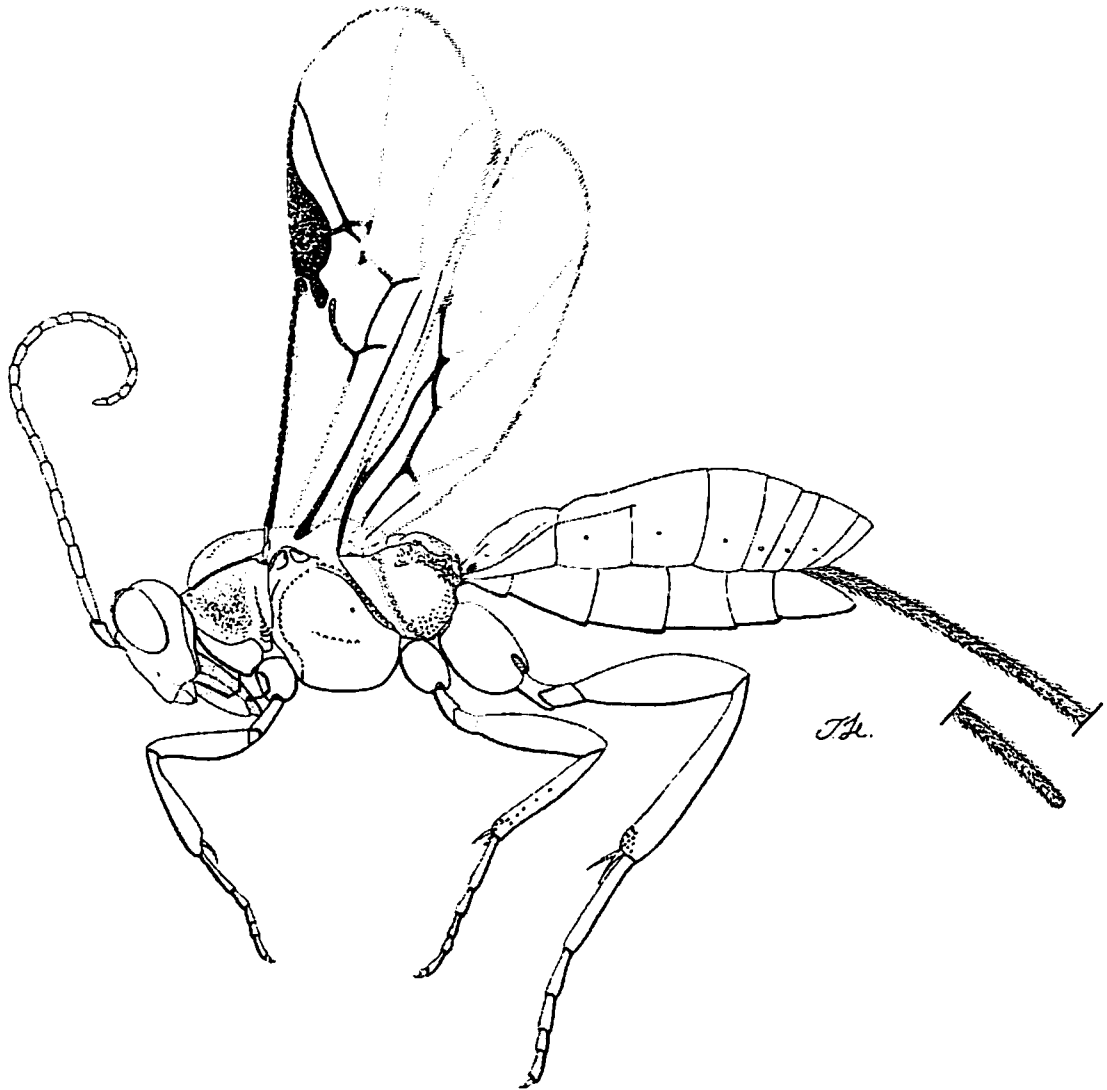


Fig. 4. Lateral habitus of *Agathis* sp.

were placed in the genus *Zelomorpha*, which Chou and Sharkey (1989) synonymized under *Coccygidium*. Sarmiento (in prep.) is currently revising the New World members of the genus and estimates (pers. comm.) that five to ten species occur in southern areas of the United States.

Crassomicrodus Ashmead, 1900 (Fig. 1, b)

Members of *Crassomicrodus* are found almost exclusively in North America with the highest species diversity occurring in Mexico. One undescribed species is found in the dry northeastern coastal region of Colombia, and presumably adjacent regions of northwestern Venezuela. Eight species are re-

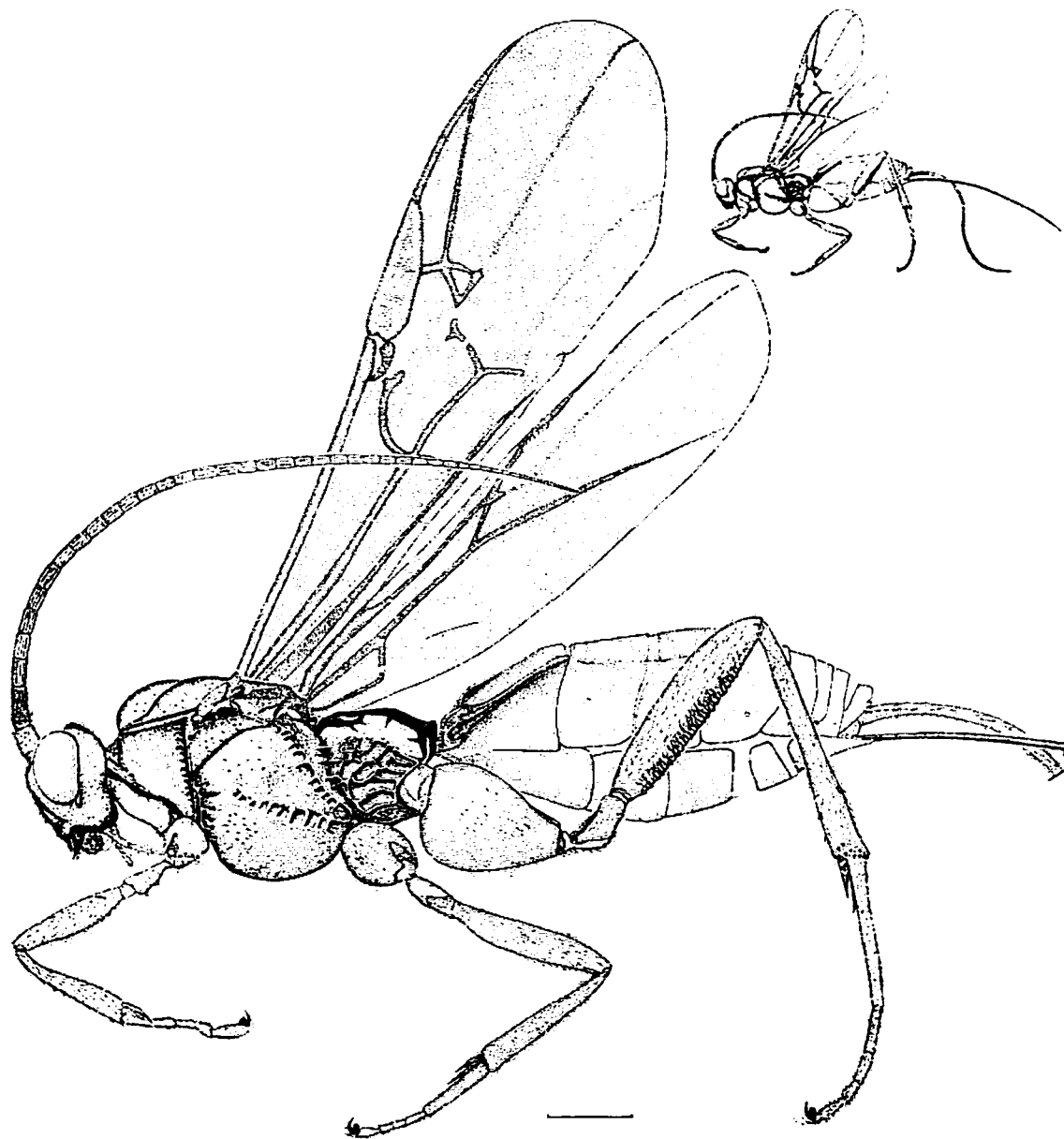


Fig. 5. Lateral habitus of *Alabagrus texanus*.

corded in North America, with seven described and keyed in Muesebeck's (1927) key. All species of *Crassomicrodus* are currently being revised (Figuroa, in prep.), and this revision will result in the synonymy of two presently recognized species found in the United States and 8 to 10 newly described species for the United States (Figuroa, pers. comm.).

Cretnops Förster, 1862 (Fig. 8)

The North American members of this large cosmopolitan genus have been revised twice, once by Morrison (1917) under the name *Bracon* and the second time by Marsh (1961). Fifteen species are currently recognized in the United States and Canada. All are described and keyed in Marsh's (1961) revision except for *Cretnops desertor*, a Palearctic species recorded here for the first time as occurring in the New World. Specimens have been collected in Ottawa, Canada, and Washington, D.C. USA. Marsh's (1961) key works well for those species with distinct morphological autapomorphies; however, I have difficulty placing many of the specimens that I try to identify.

Earinus Wesmael, 1837 (Fig. 9)

The traditional limits of *Earinus* have confined members to those that occur in the Holarctic region and that have a complete *Rs+M* vein in the forewing. A complete *Rs+M* vein, since it is found in all near relatives of the Agathidinae including members of *Pselaphanus* and Sigalphinae, is almost certainly a plesiomorphic character state within the context of the Agathidinae. The sole autapomorphies for the Earinini, to which *Earinus* belongs, are the absence of notauli and the loss of the posterior transverse carinae of the propodeum. The later is shared with the Agathidini, but perhaps convergently (Sharkey, 1992). The only genera presently included in the Earinini are *Sesioctonus* and *Earinus*. Briceco (2003) revised the species of *Sesioctonus*, an exclusively Neotropical genus. Species of *Sesioctonus* share a derived condition of the tarsal claws which are long and simple, lacking a basal lobe. All other species of

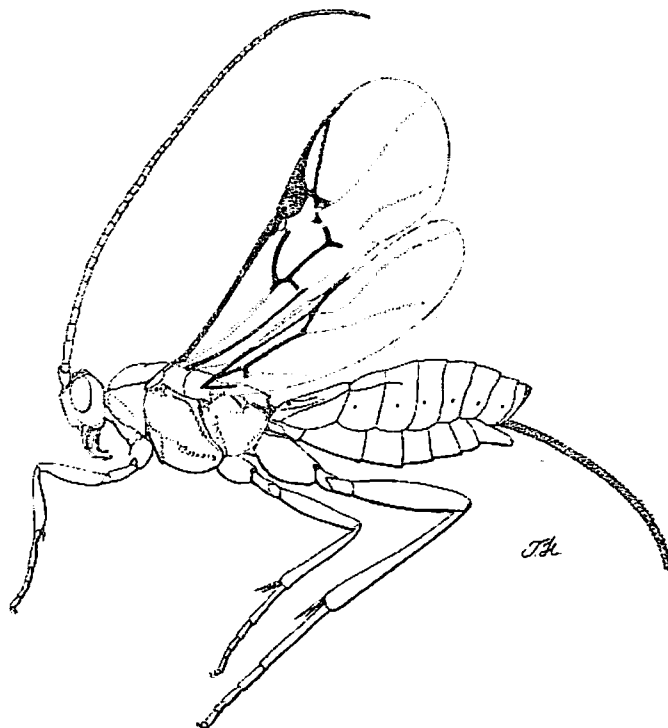


Fig. 6. Lateral habitus of *Bassus spiracularis*.

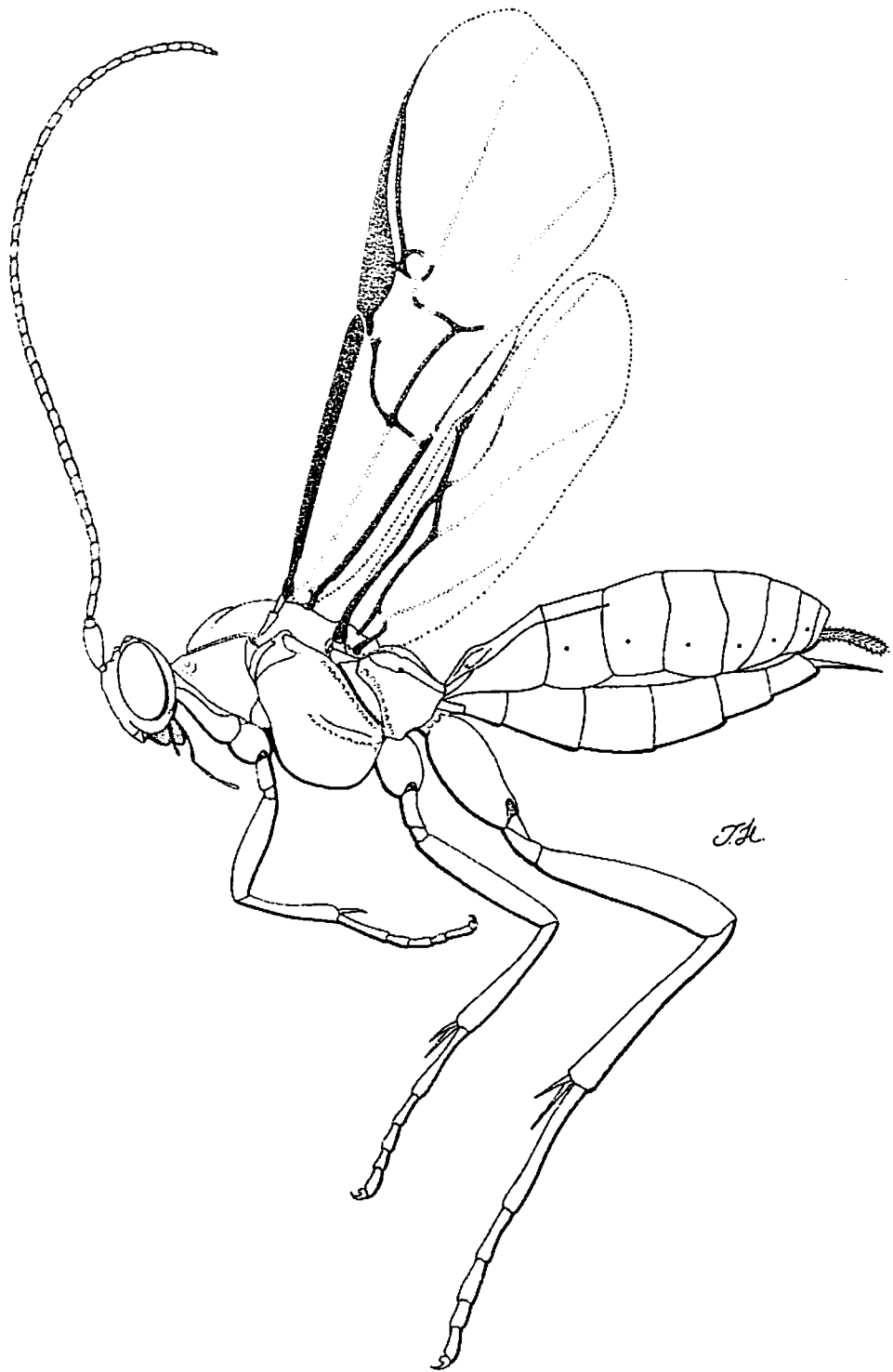


Fig. 7. Lateral habitus of *Coccygidium* sp.

the Earinini I place in the genus *Earinus* which is not diagnosed by autapomorphic characters. They can be separated from all other Agathidinae, including *Sesioctonus* with the following combination of characters: third labial palpomere not greatly reduced, at least half as long as the fourth palpomere; notauli absent (Fig. 9); hind coxa and metasoma sharing a common opening on the mesosoma (Fig. 3. a); tarsal claws with a basal lobe (Fig. 2, b). As defined here, the species diversity of *Earinus* is highest in northern and southern temperate regions as well as high altitude areas of the Neotropical region.

There were two described species of *Earinus* in Canada and the USA but the aforementioned modification of the genus concept adds another two species. Intraspecific variation of north-temperate species of *Earinus* is high and there may several more undescribed species in the United States and Canada.

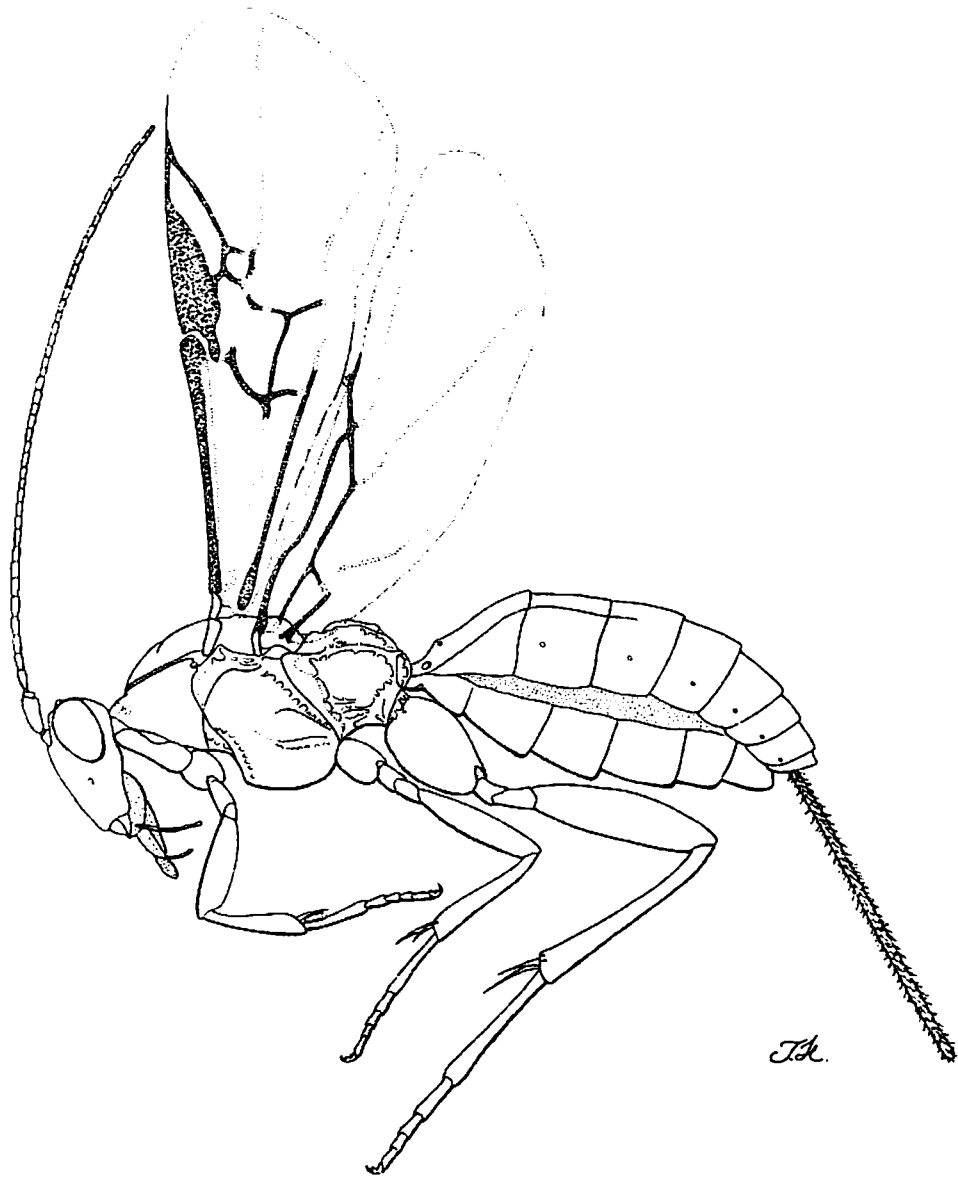


Fig. 8. Lateral habitus of *Cretnops* sp.

Species check-list

A total of 99 species of Agathidinae are recognized belonging to the genera *Agathirsia* (8), *Agathis* (8), *Alabagrus* (6), *Bassus* (48), *Crassomicrodus* (8), *Coccygidium* (2), *Cretnops* (15), and *Earinus* (4).

A species name with an asterisk (*) beside it refers to one that is also found in the Palaearctic region.

Agathirsia Westwood, 1882

bifidilingua Pucci and Sharkey

Agathirsia bifidilingua Pucci and Sharkey, 2004: 87.

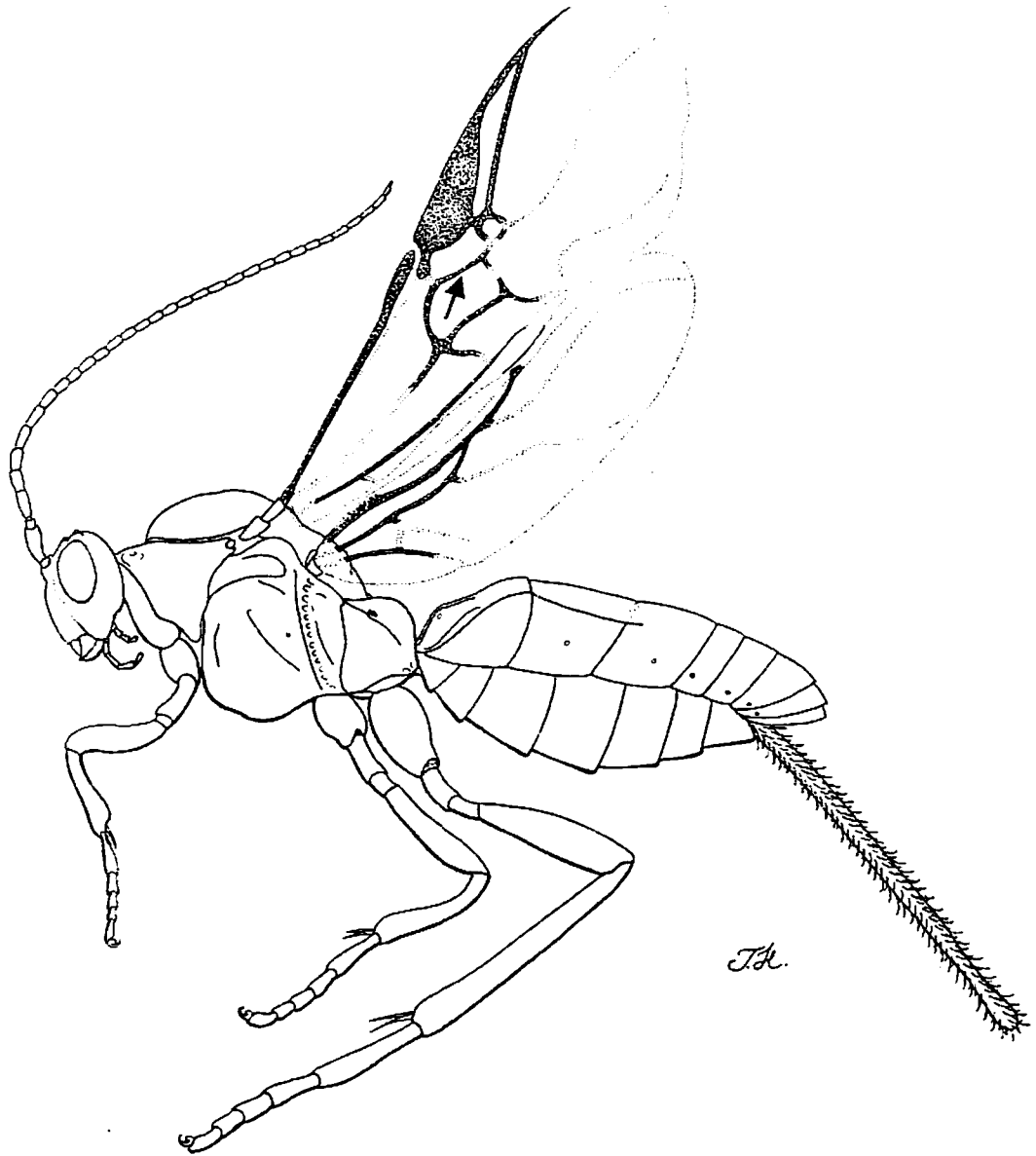


Fig. 9. Lateral habitus of *Earinus* sp.

cressoni Muesebeck and Walkley

Agathirsia cressoni Muesebeck and Walkley, 1951: 116.

Microdus thoracicus Cresson, 1872: 181 (preoccupied by Nees von Esenbeck, 1834).

dauidi Pucci and Sharkey

Agathirsia dauidi Pucci and Sharkey, 2004: 91.

foveiseris Pucci and Sharkey

Agathirsia foveiseris Pucci and Sharkey, 2004: 92.

nigricauda (Viereck)

Crassomicrodus nigricaudus Viereck, 1905: 288.

ninesevensi Pucci and Sharkey

Agathirsia ninesevensi Pucci and Sharkey, 2004: 99.

testacea Muesebeck

Agathirsia testacea Muesebeck, 1927: 13.

tiro Pucci and Sharkey

Agathirsia tiro Pucci and Sharkey, 2004: 105.

Agathis Latreille, 1804

Doubtful record: Agathis areolata Spinola, 1851. Recorded by Tooker and Hanks (2000) based on historical records. The species is otherwise known only from its type locality in Chile. The record is almost certainly based on a misidentification.

gibbosa (Say)

Bassus gibbosus Say, 1835: 250.

= *Microdus castaneicinctus* Viereck 1905: 276.

= *Microdus dispar* Provancher, 1886: 138.

= *Microdus meridionalis* Viereck, 1903: 95.

= *Microdus pygmaeus* Cresson, 1872: 182.

= *Agathis scrutator* Provancher, 1886: 137.

= *Microdus wichitaensis* Viereck, 1905: 276.

longipalpus (Cresson)

Microdus longipalpus Cresson, 1865: 299.

malvacearum Latreille*

Agathis malvacearum Latreille, 1805: 175.

Ichneumon panzeri Jurine, 1807: 113 (unnecessary new name for *A. malvacearum*).

= *Agathis metzneriae* Muesebeck, 1967: 95 (in: Juhala, 1967), syn. n.

Note. I have compared the type species with numerous specimens from Europe identified as *A. malvacearum*. The host plant (the common burdock) and host moth, *Metzneria lappella* L. of the Nearctic wasps are both Palearctic natives, and *A. malvacearum* is recorded (Shenefelt, 1970) as a parasitoid of the same species of moth in Europe.

pumilus (Ratzburg)*

Microdus pumilus Ratzeburg, 1844: 57.

Note. European authors (Nixon, 1986; Simbolotti, Acherberg, 1992) consider this species to be a member of *Bassus*.

rubripes Cresson

Agathis rubripes Cresson, 1872: 183.

thompsoni Sharkey

Agathis thompsoni Sharkey, 1987.

tibiator Provancher

- Agathis tibiator* Provancher, 1880: 177.
= *Agathis parvus* Viereck, 1903: 95.
= *Bracon solidaginus* Viereck, 1917: 321.

yui, new name

Replacement name for *B. brevicornis* Muesebeck 1927; *B. brevicornis* preoccupied in *Bassus* by *brevicornis*, Nees von Esenbeck, 1812 (now in *Dinotrema*).

Note. Named in honor of Dicky Yu, for his diligent work on a catalog of the Braconidae, and for pointing out this homonym to me.

***Alabagrus* Enderlein, 1918**

Doubtful record: *Alabagrus varipes* (Cresson) from Mount Washington. New Hampshire by Slosson (1892) as *Agathis varipes*. Records for this species are otherwise restricted to the Greater Antilles, and the implied disjunct is unlikely. The record is almost certainly the result of a misidentification.

***imitatus* (Cresson)**

- Microdus imitatus* Cresson, 1873: 51.
= *Microdus nigrotrochantericus* Viereck, 1905: 275.
= *Bassus floridanus* Muesebeck, 1927: 31.

***marginatifrons* (Muesebeck)**

Bassus marginatifrons Muesebeck, 1927: 30.

***sanctus* (Say)**

Bassus sanctus Say, 1935: 249.

***stigma* (Brullé)**

- Agathis stigma* Brullé, 1846: 501.
= *Microdus stigmaterus* Cresson, 1865: 65.
= *Microdus diatraeae* Turner, 1918: 82.
= *Alabagrus citreistigma* Enderlein, 1920: 203.
= *Microdus crossi* Brethes, 1927: 163.
= *Microdus sacchari* Myers, 1931: 274.

***texanus* (Cresson)**

Microdus texanus Cresson, 1872: 181.

***xolotl* Sharkey**

Alabagrus xolotl Sharkey, 1988: 414.

***Bassus* Fabricius, 1804**

***abdominalis* Muesebeck**

Bassus abdominalis Muesebeck, 1927: 35.

***aciculatus* (Ashmead), comb. n.**

Microdus aciculatus Ashmead, 1889: 639.

***acrobasidis* (Cushman)**

Bassus acrobasidis Cushman, 1920: 289.

***agathoides* Newton et Sharkey**

Bassus agathoides Newton et Sharkey, 2000: 285.

***agilis* (Cresson)**

- Microdus agilis* Cresson, 1873: 52.
= *Agathis quaesitor* Provancher, 1880: 176.

- annulipes* (Cresson)**
Microdus annulipes Cresson, 1873: 53.
 = *Microdus albocinctus* Ashmead, 1889: 639.
 = *Microdus earinoides* Cresson, 1873: 54.
 = *Microdus grapholithae* Ashmead, 1889: 639.
 = *Bassus waldeni* Viereck, 1917: 229.
- atripes* (Cresson)**
Agathis atripes Cresson, 1865: 296.
- arthurellus* Sharkey**
Bassus arthurellus Sharkey, 1985: 1500.
- azygos* (Viereck)**
Lytopylus azygos Viereck, 1905: 267.
 = *Microdus agathoides* Viereck, 1905: 277.
- bakeri* Muesebeck**
Bassus bakeri Muesebeck, 1927: 42.
- binominatus* (Muesebeck)**
Agathis binominata Muesebeck, 1958:26 (replacement name for *M. bicolor* Provancher).
Microdus bicolor Provancher, 1880: 179 (occupied by *M. bicolor* Brullé).
- brooksi* Sharkey**
Bassus brooksi Sharkey, 1998 (in: Janzen et al., 1998): 33.
- buttricki* Viereck**
Bassus (Lytopylus) buttricki Viereck, 1917: 229.
- calcaratus* (Cresson)**
Microdus calcaratus Cresson, 1873: 51.
- californicus* Muesebeck**
Bassus californicus Muesebeck, 1927: 64.
- cinctus* (Cresson)**
Microdus cinctus Cresson, 1873: 53.
Microdus pimploides Viereck, 1905: 276.
 = *Bassus winkleyi* Viereck, 1917: 229.
- cingulipes* (Nees von Esenbeck)***
Microdus cingulipes Nees von Esenbeck, 1812: 189.
 Note. Introduced to Canada, establishment not confirmed.
- coleophorae* Rohwer**
Bassus coleophorae Rohwer, 1915: 230.
 = *Bassus pyrifolii* Viereck, 1917: 229.
- conspicuus* (Wesmael)***
Microdus (Therophilus) conspicuus Wesmael, 1837: 17.
 = *Earinus zonatus* Marshall, 1885: 268.
 = *Bassus carpocapsae* Cushman, 1915: 508.
 = *Bassus variabilis* Chou et Sharkey, 1989: 173.
- crassicornis* Muesebeck**
Bassus crassicornis Muesebeck, 1927: 43.
- cupressi* (Muesebeck and Walkley), comb. n.**
Bassus parvus Muesebeck, 1932: 331 (preoccupied in *Agathis* by *A. parvus* Viereck).
Agathis cupressi Muesebeck et Walkley, 1951: 119 (replacement name).

- difficilis* Muesebeck
Bassus difficilis Muesebeck, 1927: 46.
- dimidiator* (Nees von Esenbeck)*
Microdus dimidiator Nees von Esenbeck, 1834: 146.
= *Microdus cingulator* Ratzburg, 1852: 46.
= *Microdus laticinctus* Cresson, 1873: 53.
= *Microdus earinoides* Du Porte, 1915: 76.
= *Microdus ocellanae* Richardson, 1913: 211.
- discolor* (Cresson)
Microdus discolor Cresson, 1873: 52.
= *Bassus brittoni* Viereck, 1917: 37.
- erythrogaster* Viereck
Bassus (Aerophilopsis) erythrogaster Viereck, 1913: 555.
- festivus* (Muesebeck)*
Agathis festiva Muesebeck, 1953: 149.
= *Microdus oranae* Watanabe, 1970: 123.
= *Microdus kovalevi* Tobias, 1976: 100.
= *Microdus quadratus* Tobias, 1976: 103.
- immaculatus* Gahan
Bassus immaculatus Gahan, 1919: 118.
- laticeps* Muesebeck
Bassus laticeps Muesebeck, 1927: 27.
- malivorellae* Shenefelt
Agathis malivorellae Shenefelt, 1970: 342 (new name for *B. brevicauda* Muesebeck, not *B. brevicauda* Reinhard).
Bassus brevicauda Muesebeck, 1932: 332.
- nigricoxus* (Provancher)
Microdus nigricoxus Provancher, 1886: 138.
- nigripes* (Cresson)
Agathis nigripes Cresson, 1865: 297.
= *Agathis nigriceps* Provancher, 1895: 97.
= *Agathis wyomingensis* Viereck, 1905: 284.
- ninanae* Muesebeck
Bassus ninanae Muesebeck, 1927: 48.
- nucicola* Muesebeck
Bassus nucicola Muesebeck, 1940: 91.
- perforator* Provancher
Agathis perforator Provancher, 1880: 177.
= *Bracon branfordensis* Viereck, 1917: 231.
= *Agathis femorator* Provancher, 1880: 177.
= *Bracon sassacus* Viereck, 1917: 230.
- petiolatus* Muesebeck
Bassus petiolatus Muesebeck, 1932: 330.
- pini* Muesebeck
Bassus pini Muesebeck, 1940: 92.

quebecensis (Provancher)

Microdus quebecensis Provancher, 1880: 178.

reticulatus Muesebeck

Bassus reticulatus Muesebeck, 1932: 332.

rufipes (Nees von Esenbeck)

Microdus rufipes Nees von Esenbeck, 1812: 189.

= *Bassus diversus* Muesebeck, 1933: 48.

= *Braunsia germanica* Enderlein, 1904: 436.

rugareolatus Viereck

Bassus (Lytopylus) rugareolatus Viereck, 1917: 229.

semirubrus (Brullé), comb. n.

Agathis semirubra Brullé, 1846: 494.

simillimus (Cresson)

Microdus simillimus Cresson, 1873: 51.

spiracularis Muesebeck

Bassus spiracularis Muesebeck, 1927: 38.

tenuiceps Muesebeck

Bassus tenuiceps Muesebeck, 1927: 47.

terminatus (Cresson)

Microdus terminatus Cresson, 1865: 298.

= *Orgilus terminalis* Ashmead, 1889: 640.

tumidulus (Nees von Esenbeck)*

Microdus tumidulus Nees von Esenbeck, 1812: 189.

= *Microdus annae* Enderlein, 1908: 223.

= *Microdus victoris* Telenga, 1955: 288.

= *Microdus anuphrievi* Tobias, 1986: 288.

Note. Introduced to Ontario, Canada, but establishment unconfirmed.

usitatus Gahan

Bassus usitatus Gahan, 1919: 119.

verticalis (Cresson)

Microdus verticalis Cresson, 1872: 182.

***Coccygidium* Saussure, 1892**

arizonensis (Ashmead), comb. n.

Zelomorpha arizonensis Ashmead, 1900: 129.

fuscipennis (Cresson), comb. n.

Microdus fuscipennis Cresson, 1865: 65.

***Crassomicrodus* Ashmead, 1900**

apicipennis Muesebeck

Crassomicrodus apicipennis Muesebeck, 1927: 18.

divisus (Cresson)

Microdus divisus Cresson, 1873: 52.

= *Orgilus rileyi* Ashmead, 1889: 640.

- fulvescens* (Cresson)
Microdus fulvescens Cresson, 1865: 297.
- medius* (Cresson)
Microdus medius Cresson, 1865: 298.
- muesebecki* Marsh
Crassomicrodus muesebecki Marsh, 1960: 153.
- nigriceps* (Cresson)
Microdus nigriceps Cresson, 1872: 182.
- nigrithorax* Muesebeck
Crassomicrodus nigrithorax Muesebeck, 1927: 17.
- pallens* (Cresson)
Microdus pallens Cresson, 1873: 53.

Cremonops Förster, 1862

- ashmeadi* (Morrison)
Bracon ashmeadi Morrison, 1917: 329.
- californicus* (Morrison)
Bracon californicus Morrison, 1917: 331.
= *Bracon aionos* Shenefelt, 1937: 205.
- comstocki* (Morrison)
Bracon comstocki Morrison, 1917: 323.
- crassifemur* (Muesebeck)
Bracon crassifemur Muesebeck, 1927: 9.
- desertor* (Linnaeus)*, new record.
Ichneumon desertor Linnaeus, 1758: 563.
Bracon deflagrator Spinola, 1808: 101 (unnecessary new name).
- haematodes* (Brullé)
Agathis haematodes Brullé, 1846: 495.
= *Agathis liberator* Brullé, 1846: 502.
= *Agathis meabilis* Cresson, 1872: 183.
- kelloggii* (Morrison)
Bracon kelloggii Morrison, 1917: 327.
- melanoptera* Ashmead
Cremonops melanoptera Ashmead, 1895: 125.
- montrealensis* (Morrison)
Bracon montrealensis Morrison, 1917: 326.
- nigrosternum* (Morrison)
Bracon nigrosternum Morrison, 1917: 322.
= *Bracon szépligetii* Morrison, 1917: 334.
- shenefelti* Marsh
Cremonops shenefelti Marsh, 1961: 857.
- slossonae* (Morrison)
Bracon slossonae Morrison, 1917: 318.

virginiensis (Morrison)

Bracon virginiensis Morrison, 1917: 341.

vulgaris (Cresson)

Agathis vulgaris Cresson, 1865: 295.

= *Agathis exoratus* Cresson, 1872: 182.

= *Agathis media* Cresson, 1865: 295.

washingtonensis (Shenefelt)

Bracon washingtonensis Shenefelt, 1937: 206.

Earinus Wesmael, 1837

limitaris (Say)

Bassus limitaris Say, 1835: 250.

rufofemoratus (Muesebeck), comb. n.

Bassus rufofemoratus Muesebeck, 1927: 36.

unicolor (Schrottky), comb. n.

Orgilus unicolor Schrottky, 1902: 102.

Agathis unicolorata Shenefelt, 1970: 364 (Unnecessary new name for *O. unicolor* Schrottky).

Note. Argentinean species released in California but establishment not confirmed.

zeirapherae Walley

Earinus zeirapherae Walley, 1935: 55.

Acknowledgements

Thanks to Debra Murray and Dicky Yu for reviewing the text, to Dan Crowds for his technical help, and to Sergey Belokobylskij for his editorial comments and for inviting me to submit this paper. Support was provided by NSF grants DEB-0205982 and DEB-0334945 and Kentucky Agricultural Experiment Station number 04-08-028.

References

- Ashmead W. H. (1888) 1889. Descriptions of new Braconidae in the collection of the U. S. National Museum. *Proc. U.S. Nat. Mus.* 11: 611–671.
- Ashmead W. H. (1894) 1895. Some parasitic Hymenoptera from lower California. *Proc. Calif. Acad. Sci.* 4: 122–129.
- Ashmead W. H. 1900. Classification of the Ichneumon flies, or the superfamily Ichneumonoidea. *Proc. U.S. Nat. Mus.* 23: 1–220.
- Bréthes J. 1927. Parasites and hyperparasites of *Diatraea saccharalis* in Tucumán sugarcane. *Bull. entomol. Res.* 18: 205–207.
- Briceño G. R. A. 2003. Taxonomic revision of the genus *Sesioctonus* Viereck (Hymenoptera: Braconidae: Agathidinae). *J. Hym. Res.* 12: 238–271.
- Brullé M. A. 1846. Des Hyménoptères. In: Lepeletier de Saint-Fargeau A. (ed.). *Histoires naturelles des insectes*. 4: 1–680. Paris.
- Chou L. Y., Sharkey M. J. 1989. The Braconidae (Hymenoptera) of Taiwan. Agathidinae. *J. Taiwan. Mus.* 42: 147–223.
- Cresson E. T. 1865. Catalogue of the Hymenoptera in the collection of the Entomological Society of Philadelphia, from the Colorado Territory. *Proc. entomol. Soc. Philad.* 4: 242–313, 426–488.
- Cresson E. T. 1872. Descriptions of North American Hymenoptera, No. 3, 4. *Canad. Entomol.* 4: 81–84, 226–231.
- Cresson E. T. 1873. Descriptions of North American Hymenoptera. *Canad. Entomol.* 5: 51–54, 66–69, 81–85.
- Cushman R. A. 1915. Descriptions of six new species of ichneumon-flies. *Proc. U.S. Nat. Mus.* 48: 507–513.
- Cushman R. A. 1920. North American ichneumon-flies, new and described, with taxonomic nomenclatorial notes. *Proc. U.S. Nat. Mus.* 58: 251–292.

- Du Porte E. M. 1915. Some insect parasites of the bud moth. *Rep. Quebec Soc. Prot. Pl.* 7: 76–77.
- Enderlein G. 1904. Die Braconiden-Gattung *Braunsia* Kriechb. *Zool Jb. (Syst.)* 20: 429–452.
- Enderlein G. 1908. Biologisch-faunistische Moor- und Dünen-Studien. *Beitrag Kenntnis biosynöc. Regionen Westpreußen. Ber. westpreuss. bot.-zool. Ver.* 30: 54–238.
- Enderlein G. (1918) 1920. Zur Kenntnis außereuropäischer Braconiden. *Arch. Naturgesch. (A)* 84(11): 51–224.
- Figueroa J.I. (In prep.). A revision of the species of *Crassomicrodus* Ashmead (Hymenoptera: Braconidae: Agathidinae).
- Gahan A.B. 1919. New reared parasitic Hymenoptera, with some notes on synonymy. *Proc. U.S. Natn Mus.* 55: 113–128.
- Janzen D.H., Sharkey M.J., Burns J.M. 1998. Parasitization biology of a new species of Braconidae (Hymenoptera) feeding on larvae of Costa Rican dry forest skippers (Lepidoptera: Hesperidae: Pyrginae). *Trop. Lepid.* 9(2): 33–41.
- Juhala C. 1967. Notes on parasitic Hymenoptera associated with a gelechiid moth, *Metzneria lappella*, in the common Burdock, and a description of a new species of *Agathis* (Braconidae). *Ann. entomol. Soc. Amer.* 60: 95–97.
- Jurine L. 1807. *Nouvelle méthode de classer les Hyménoptères et les Diptères*. Genève: Paschoud. 319 pp.
- Latreille P.A. 1805. *Histoire naturelle, générale et particulière des crustacés et des insectes. Ouvrage faisant suite aux oeuvres de LeClerc de Buffon et partie du cours complet d'Histoire naturelle rédigé p. C. S. Sonnini*. Paris: Dufart. 13: 1–432.
- Linné C. von. 1758. *Systema naturae, per regna tria naturae secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Regnum Animale. I. Ed. 10*. Holmiae: L. Salvii. 823 pp.
- Marsh P.M. 1960. A new species of *Crassomicrodus* Asmead. *Pan-Pacif. Entomol.* 36, 153–154.
- Marsh P.M. 1961. A taxonomic study of the genus *Cremonops* Foerster in America north of Mexico (Hymenoptera, Braconidae). *Ann. entomol. Soc. Amer.* 54: 851–861.
- Marsh P.M. 1979. Braconidae. In: Krombein K.V., Hurd, P.D., Smith, D.R., Burks B.D. (eds). *Catalogue of Hymenoptera in America north of Mexico. I: Symphyta and Apocrita*: 144–294. Washington.
- Marshall T.A. 1885. Monograph of British Braconidae. Part I. *Trans. roy. entomol. Soc. London 1885*: 1–280.
- Morrison H. 1917. Monograph of the Nearctic Hymenoptera of the genus *Bracon* Fabricius. *Proc. U.S. Natn Mus.* 52: 305–343.
- Muesebeck C.F.W. 1927. A revision of the parasitic wasps of the subfamily Braconinae occurring in America north of Mexico. *Proc. U.S. Natn Mus.* 69(16): 1–73.
- Muesebeck C.F.W. 1932. Four new North American species of *Bassus* Fabricius (Hymenoptera: Braconidae), with notes on the genotype. *J. Wash. Acad. Sci.* 22: 329–333.
- Muesebeck C.F.W. 1933. Five new hymenopterous parasites of the Oriental fruit moth. *Proc. entomol. Soc. Wash.* 35: 48–54.
- Muesebeck C.F.W. 1940. Two new reared species of *Bassus* (Hymenoptera: Braconidae). *Proc. entomol. Soc. Wash.* 42: 91–93.
- Muesebeck C.F.W. 1953. Three new reared Braconidae. *Proc. entomol. Soc. Wash.* 55: 149–151.
- Muesebeck C.F.W. 1958. Braconidae. In: Krombein K.V. (ed). *Hymenoptera of America north of Mexico. Synoptic Catalogue. Agri. Monogr.* 2(1): 18–36.
- Muesebeck C.F.W., Walkley L. 1951. Braconidae. In: Muesebeck C.F.W., Krombein K.V., Townes H.K. (eds). *Hymenoptera of America north of Mexico. Synoptic Catalogue. Agri. Monogr.* 2: 90–184.
- Myers J.G. 1931. Descriptions and records of parasitic Hymenoptera from British Guiana and the West Indies. *Bull. entomol. Res.* 22: 267–277;
- Nees von Esenbeck C.G. 1812. Ichneumonides adsciti, in genera et familias divisi. *Mag. Ges. Naturf. Fr. Berlin.* 6: 183–222.
- Nees von Esenbeck C.G. 1834. *Hymenopterorum Ichneumonibus affinium monographiae, genera Europaea et species illustrantes*. Stuttgart: Tübingen, Cotta. 1: 1–320; 2: 1–448.
- Newton B.L., Sharkey M.J. 2000. A new species of *Bassus* (Hymenoptera: Braconidae: Agathidinae) parasitic on *Samea multiplicalis*, a natural control agent of waterlettuce. *Florida Entomol.* 83: 284–289.
- Nixon G.F.J. 1986. A revision of the European Agathidinae (Hymenoptera: Braconidae). *Bull. Brit. Mus. (Nat. Hist.)* 52: 183–242.
- Provancher L. 1880. Faune Canadienne: les insectes Hyménoptères. *Nat. canad.* 12: 130–147, 161–180.
- Provancher L. 1886. *Additions au Vol. II. De la faune entomologique du Canada, traitant les Hyménoptères*. Quebec: C. Darveau. 472 pp.
- Provancher L. 1895. Les dernières descriptions de l'Abbé Provancher. *Nat. canad.* 22: 79–96.

- Pucci T., Sharkey M.J. 2004. A revision of *Agathirsia* Westwood (Hymenoptera: Braconidae: Agathidinae) with notes on mouthpart morphology. *J. Hym. Res.* 13: 64–119.
- Ratzeburg J.T.C. 1844. Über Entwicklug, Leben und Bedeutung der Ichneumonien. *Stett. entomol. Ztg.* 5: 199–202.
- Ratzeburg J.T.C. 1852. *Die Ichneumonien der Forstinsection in forstlicher und entomologischer Beziehung. Ein Anhang zur Abbildung und Beschreibung der Forstinsecten.* Berlin: Nicolai, 3: 1–272.
- Richardson C.H. 1913. A new braconid of the genus *Microdus* from Canada. *Canad. Entomol.* 45: 211–212.
- Rohwer S.A. 1915. Descriptions of new species of Hymenoptera. *Proc. U.S. Natn Mus.* 49: 205–249.
- Sarmiento C. (In prep.). Taxonomic revision of the New World species of *Coccygidium* Saussure (Hymenoptera: Braconidae: Agathidinae).
- Say T. 1835. Descriptions of new species of North American Hymenoptera, and observations on some already described. *Boston J. nat. Hist.* 1: 209–305.
- Schrottky C. 1902. Neue argentinische Hymenopteren. *Ann. Mus. nac. Hist. nat. B. Aires (3)* 1: 91–117; *An. Mus. argent. Cienc. nat.*, 7: 91–117.
- Sharkey M.J. 1985. Notes on the genera *Bassus* Fabricius and *Agathis* Latreille, and description of *Bassus arthurel-lus* n. sp. *Canad. Entomol.* 117: 1497–1502.
- Sharkey M.J. 1987. *Agathis thompsoni* n. sp., a Nearctic species of Agathidinae (Hymenoptera: Braconidae) parasitic on *Greya subalba* (Braun) (Lepidoptera: Incurvariidae). *Proc. entomol. Soc. Wash.* 89: 47–50.
- Sharkey M.J. 1988. A taxonomic revision of *Alabagrus* (Hymenoptera: Braconidae). *Bull. Brit. Mus. (Nat. Hist.)*, 57: 1–137.
- Sharkey M.J. 1992. Cladistics and tribal classification of the Agathidinae (Hymenoptera: Braconidae). *J. Nat. Hist.* 26: 425–447.
- Sharkey M.J. 1996. The Agathidinae (Hymenoptera: Braconidae) of Japan. *Bull. Natn Inst. Agro-env. Sci.* 13: 1–100.
- Sharkey M.J., Mason W.R.M. 1986. The generic validity of *Aenigmostomus* and *Asiacardiachiles* (Hymenoptera: Braconidae). *Proc. entomol. Soc. Wash.* 88: 300–302.
- Shenefelt R.D. 1937. Braconinae from Washington State. *Canad. Entomol.* 69: 205–207.
- Shenefelt R.D. 1970. Braconidae 3, Agathidinae. In: Ferrière Ch., Vecht J. van der (eds). *Hymenopterorum Catalogus (nova editio)*. 6: 307–428. 's-Gravenhage: Junk.
- Simbolotti G., Achterberg C. van. 1992. Revision of the West Palearctic species of the genus *Bassus* Fabricius (Hymenoptera: Braconidae). *Zool. Verhandl.* 281: 1–80.
- Simbolotti G., Achterberg C. van. 1999. Revision of the West Palearctic species of the genus *Agathis* Latreille (Hymenoptera: Braconidae: Agathidinae). *Zool. Verhandl.* 325: 1–167.
- Slosson A.T. 1892. Additional list of insects taken in alpine region of Mt. Washington. *Entomol. News.* 3: 4–8.
- Spinola M. 1808. *Insectorum Liguriaae species novae aut rariores, quas in agro Ligustico nuper detexit, descripsit, et iconibus illustravit (Hymenoptera)*. 2 ovl. Genuae: A. Koenig. 262 pp.
- Telenga N.A. 1955. *Fauna of the USSR. Hymenoptera. Fam. Braconidae, subfam. Microgasterinae, subfam. Agathidinae.* 5(4). Moscow-Leningrad: AN SSSR Publishing House. 312 pp. (In Russian).
- Tobias V.I. 1976. To the knowledge of the Far Eastern species of the genus *Microdus* Nees (Hymenoptera, Braconidae). *Insects of the Far East*: 96–106. (In Russian).
- Tobias V.I. 1986. Agathidinae. In: Medvedev G.S. (ed.). *Key to the Insects of the European part of the USSR. Hymenoptera.* 3(4): 276–291. Leningrad: Nauka. (In Russian).
- Tooker J.F., Hanks L.M. 2000. Flowering plant hosts of adult hymenopteran parasitoids of central Illinois. *Ann. Entomol. Soc. Amer.* 93: 580–588.
- Turner R.E. 1918. On Braconidae parasitic on *Diatraea saccharalis* in Demerara. *Bull. entomol. Res.* 9: 81–82.
- Viereck H.L. 1903. Hymenoptera of Beulah, New Mexico. *Trans. Amer. entomol. Soc.* 29: 43–100.
- Viereck H.L. 1905. Notes and descriptions of Hymenoptera from the western United States, in the collection of the University of Kansas. *Trans. Kansas Acad. Sci.* 19: 264–326.
- Viereck H.L. 1913. Descriptions of ten new genera and twenty-three new species of ichneumon-flies. *Proc. U.S. Natn Mus.* 44: 555–568.
- Viereck H.L. (1916) 1917. The Hymenoptera or wasp-like insects of Connecticut. Part III. *Bull. Conn. St. Geol. nat. Hist. Surv.* 22: 1–824.
- Walley G.S. 1935. Five new species of Braconidae with host records of additional species. *Canad. Entomol.* 67: 55–61.
- Watanabe C. 1970. Notes on the braconid parasites of lepidopterous leaf-rollers with descriptions of two new species (Hymenoptera: Braconidae). *Mushi.* 43: 121–126.
- Wesmael C. 1837. Monographie des Braconides de Belgique. *Nouv. Mém. Acad. Sci. roy. Bruxelles.* 10: 5–68.