

Key to the New World genera and subgenera of Cenocoeliinae (Hymenoptera: Ichneumonoidea: Braconidae) and synopses of the genera and subgenera

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Abstract

This is an updated overview of the New World (Western Hemisphere) members of Cenocoeliinae. It is a revision of the key by van Achterberg (1997) found in the manual of the New World genera and subgenera of Braconidae. It includes a key to the New World genera and a synopsis of each genus and subgenus. The synopses include the following sections: diagnosis, biology, diversity, distribution, publications, and notes. There are two genera in the New World and five worldwide. *Capitonius* Brullé and *Foenomorpha* Szépligeti are treated as junior synonyms of *Cenocoelius* and retained as subgenera.

van Achterberg, K. 1997. Subfamily Cenocoeliinae, pp.184-191. In: Wharton, R.A., Marsh, P.M. and Sharkey, M.J. (eds). Manual of the New World genera of Braconidae (Hymenoptera). Special Publication of the International Society of Hymenopterists, 439 pp.

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Introduction

This treatment of the New World genera of Cenocoeliinae is part of a comprehensive effort to treat all New World genera of Braconidae. To confirm a subfamily identification the key by Sharkey et al. (2023) may be used. Readers using that key will be automatically directed here if they obtain an identification of Cenocoeliinae. The present work includes a key to the New World genera and a synopsis of each genus. The synopses include the following sections: diagnosis, biology, diversity, distribution, publications, and notes. Cenocoeliinae is a small and rather uniform group, with species 3-11 mm long. There are five recognized genera worldwide, but the subfamily is in dire need of a comprehensive phylogenetic analysis. There are two genera (Table 1) and 72 described species in the New World and approximately 91 worldwide (Yu et al., 2016). Species diversity is highest in the Neotropics with hundreds of undescribed species.

Overview of the subfamily

Phylogeny

As part of a doctoral dissertation, Pitz (2006) conducted a phylogenetic analysis of the subfamily, but it remains unpublished. We set the generic limits used here based on his analysis.

Undoubtedly, there are morphologically definable monophyletic lineages within New World Cenocoeliinae, but evidence is lacking presently. Due to intermediates, about 7% of the New World species are difficult to place in either of the subgenera *Cenocoelius* Westwood or *Capitonius* Brullé, as there is not a known combination

of character states that distinguish the two universally. Here we employ a conservative approach and treat *Capitonius* as a junior synonym of *Cenocoelius* and recognize *Capitonius* and *Foenomorpha* Szépligeti as subgenera. *Aulacodes* Cresson was found by Pitz (2006) to be a derived member of *Capitonius*. Van Achterberg (1994) revised the world genera, but this is now in need of updating.

Biology

The limited information on the biology of Cenocoeliinae is summarized by Shaw and Huddleston (1991). As far as known, all species are solitary koinobiont endoparasitoids of coleopteran larvae with an endophytic way of life. Most of the host records for Nearctic species are from Cerambycidae. Less commonly Buprestidae are reported as hosts and some Neotropical species have been reared from seed-eating Curculionidae (Saffer, 1977, 1982).

Common genera

Capitonius is common in the Neotropics, and often collected due to the abundance of large colourful species.

Distribution

Worldwide but especially diverse in the Neotropics.

Distinguishing features

The metasoma is attached high above the hind coxae, a rare character within the Braconidae. Several other braconids also have this character; the few that occur in the New World can be separated by having cyclostome mouthparts (a few Doryctinae), or lacking a second submarginal cell in the forewing (a few *Urosigalphus* Ashmead species).

Notes: Van Achtenberg (1994) recognized two tribes; however, Ussurohelconini (Oriental, Southeast Palaearctic) is now placed in Helconini (Sharanowski et al. 2011). The Canadian, Mexican, and USA species of *Cenocoelius* are keyed in Saffer (1982). All images are by Sharkey and deposited in the Canadian National Collection (Ottawa, Canada) unless noted otherwise.

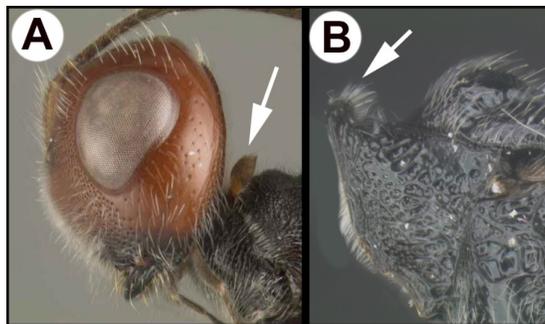
Table 1. List of New World genera and subgenera of Cenocoeliinae.

<i>Cenocoelius</i> Haliday, 1840
<i>Cenocoelius</i> (<i>Capitonius</i>) Brullé, 1846
<i>Cenocoelius</i> (<i>Cenocoelius</i>) Haliday, 1840
<i>Cenocoelius</i> (<i>Foenomorpha</i>) Szépligeti, 1840
<i>Evaniomorpha</i> Szépligeti, 1901

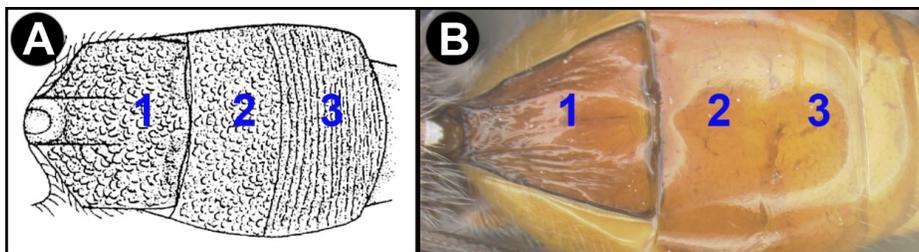
Key to the New World genera and subgenera of Cenocoeliinae

Clicking the hyperlinked text in the key below will take the reader to the corresponding couplet or genus synopsis.

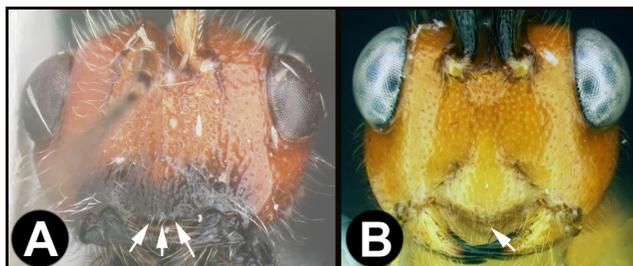
- 1. A. Anterior margin of pronotum curled posteriorly..... [Cenocoelius \(*Foenomorpha*\)](#)
- B. Anterior margin of pronotum not curled posteriorly..... [2](#)



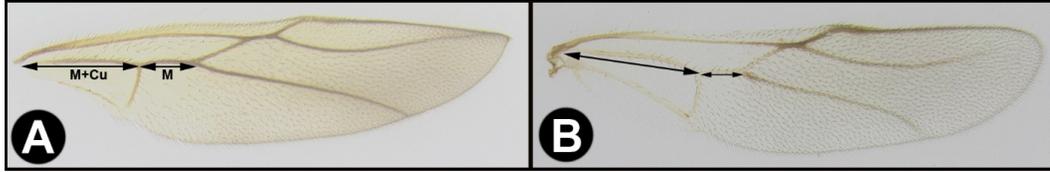
- 2(1). A. Metasomal tergum 3 coarsely sculptured (image modified from van Achtenberg, 1997). [Evaniomorpha](#)
- B. Tergum 3 smooth. [3](#)



- 3(2). A. Ventral margin of clypeus with 2 or 3 blunt tubercles..... [Cenocoelius \(*Cenocoelius*\)](#) (in part)
- B. Ventral margin of clypeus with 1 blunt tubercle or lacking tubercles. [4](#)



- 4(3). A. Ratio of hind wing veins $M+Cu/1M = 1.0-3.0$, if over 2.7, metasoma with first median tergite reddish with remaining median tergites melanic; vertex usually (98%) with depression posterior to median ocellus. *Cenocoelius (Capitonius)* (in part)
- B. Ratio of hind wing veins $M+Cu/1M > 2.8$, often as much as 6.5; vertex lacking depression posterior to median ocellus. *Cenocoelius (Cenocoelius)* (in part)



Generic and subgeneric treatments

***Cenocoelius (Capitonius)* Brullé, 1846 n. stat.**

Fig. 1

Diagnosis. Some species cannot be distinguished from members of subgenus *Cenocoelius*; however, the key above works in more than 90% of the cases.

Biology. There are no definitive host records for members of the genus; however, rearings by van der Ent and Shaw (1999) suggest a species of Buprestidae may be a host for one species.

Diversity. Only a few species are found in the Nearctic. The genus is very species-rich in the Neotropics but with few described species.

Distribution. Restricted to the Neotropics and southern Nearctic.

Publications. Pitz and Sharkey (2007) described three aberrant species and speculated on their biology. Members of *Nuessleinia* Kittel were found by Pitz (2006) (as *Aulacodes*) to be derived members of *Capitonius*. *Nuessleinia* is a replacement name for *Aulacodes* which was preoccupied by *Aulacodes* Guenée (Kittel, 2016).

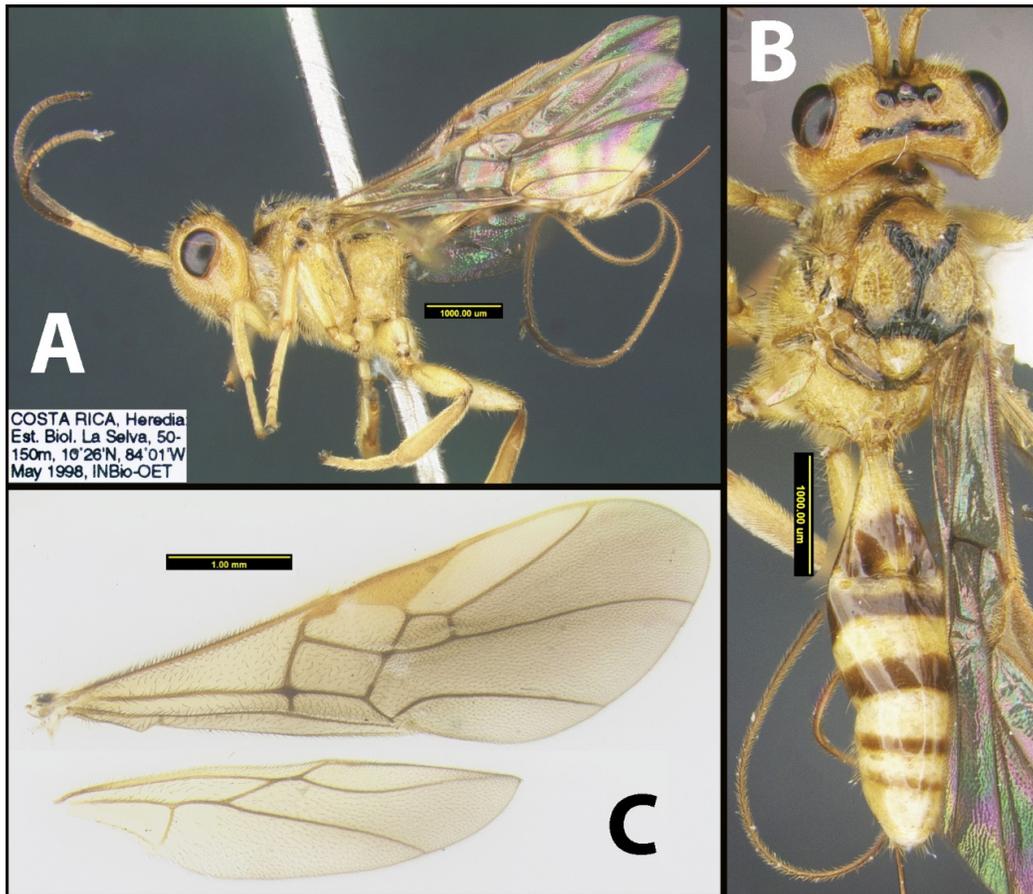


Figure 1. *Cenocoelius (Capitonius)* sp.

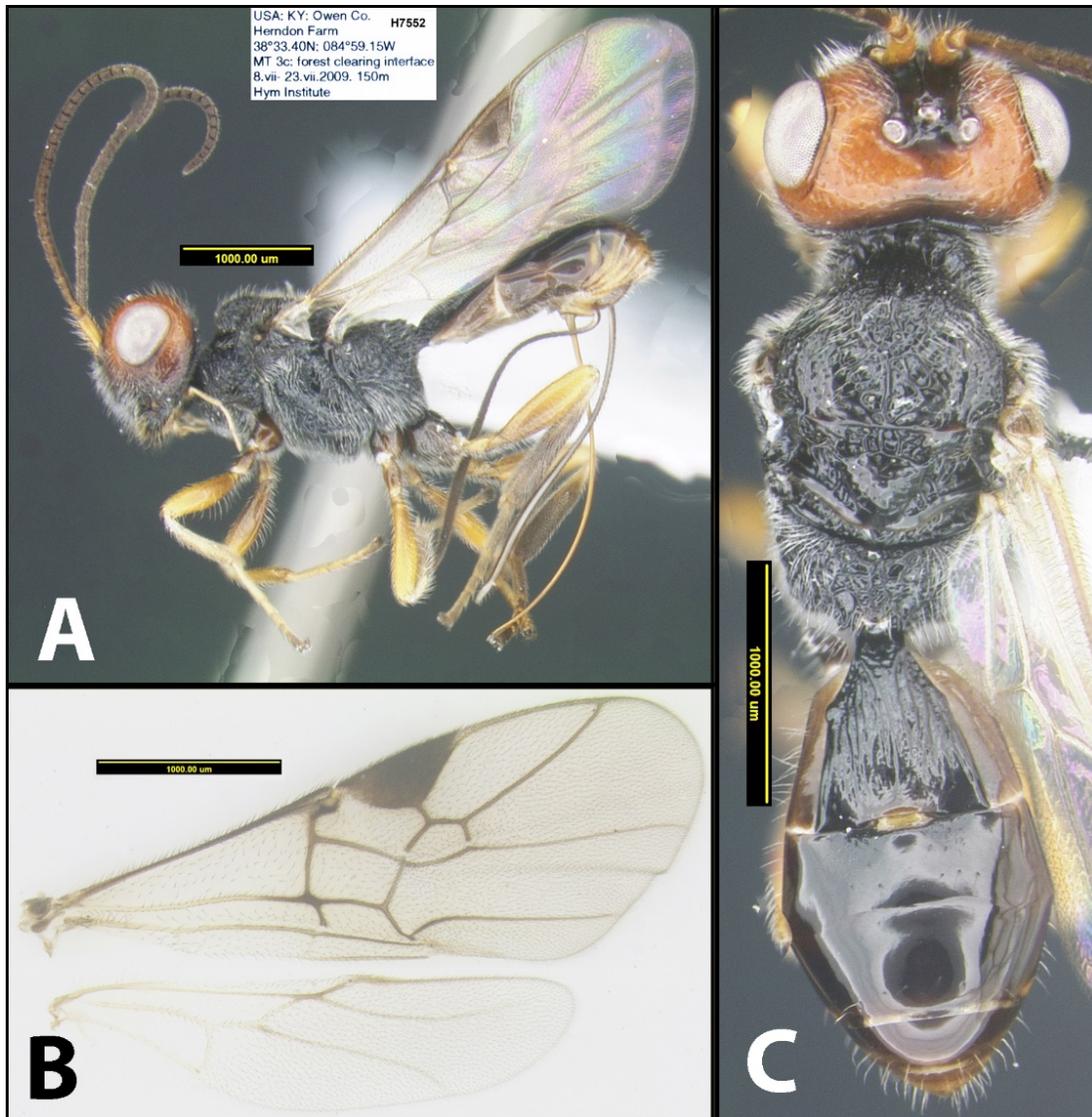


Figure 2. *Cenocoelius (Cenocoelius) ashmeadi* Dalla Torre.

***Cenocoelius (Cenocoelius)* Haliday, 1840
n. subg.**

Fig. 2

Diagnosis. Some species cannot be distinguished from members of the subgenus *Capitonius*; however, the key above works in more than 90% of the cases.

Biology. Most commonly reared from Cerambycidae, but other families include Buprestidae, and wood-boring members of the Curculionidae, including scolytines.

Diversity. There are 27 species described from Mexico and the Neotropics, and 10 from the USA and Canada. There are many more undescribed Neotropical species but the subgenus is not as species-rich as the subgenus *Capitonius*.

Distribution. Worldwide.

Publications. Saffer (1982) revised the Nearctic and Mexican species. The few described Neotropical species south of Mexico are in scattered old literature.

***Cenocoelius (Foenomorpha)* Szépligeti,
1840**

Fig. 3

Diagnosis. Anterodorsal portion of pronotum produced as a curl of cuticle that projects dorsally and posteriorly (Couplet 1A; Fig. 3A).

Biology. Unknown.

Diversity. There are 20 species described from Mexico and the Neotropics, and 10 from the USA and Canada. There are many more undescribed Neotropical species but the genus is not as species-rich as the subgenus *Capitonius*.

Distribution. Neotropical, Mexico through much of South America.

Publications. Pitz (2010) revised the subgenus and included 20 species and a key.

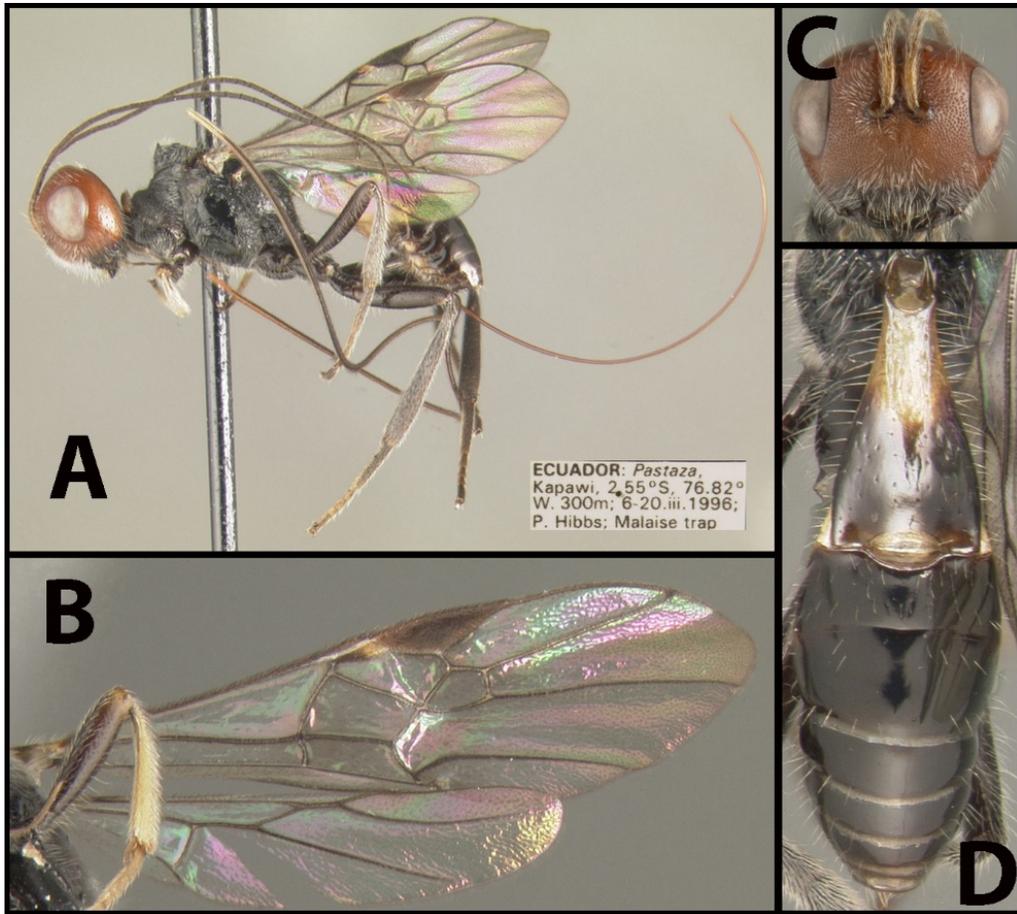


Figure 3. *Cenocoelius (Foenomorpha) boringi* (Pitz). Images by Pitz.

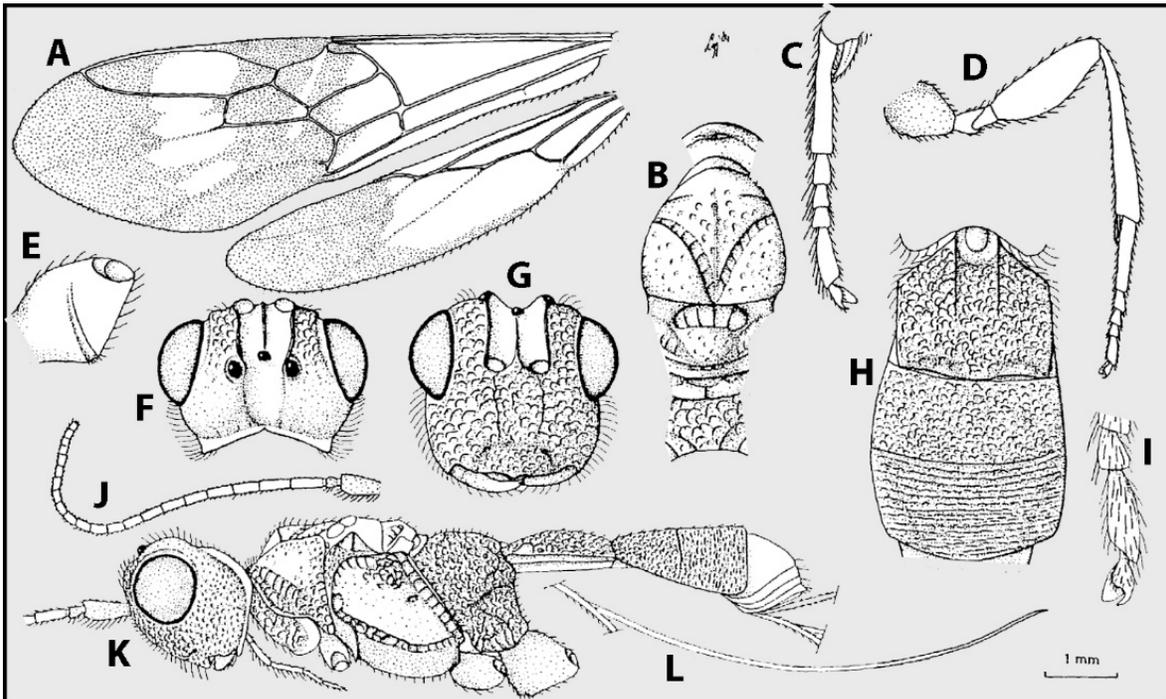


Figure 4. *Evaniomorpha munda* Szépligeti (modified from van Achterberg, 1994).

***Evaniomorpha* Szépligeti, 1901**

Fig. 4

Diagnosis. Metasomal tergum three with acute lateral edges and roughly sculptured (Fig. 4 H, K). Second submarginal cell of forewing 5-sided (Fig. 4A).

Biology. Unknown.

Diversity. There is only one described species, *E. munda*, and no undescribed species are known.

Distribution. Brazil.

Publications. Van Achterberg (1994) treated the genus in his revision of the subfamily and illustrated the type specimen (Fig. 4).

Acknowledgements

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