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(REVIEW ARTICLE)

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Inventory of the Megaspilidae family (Insecta: Hymenoptera)

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Abstract

The Megaspilidae Family is little known as a whole, however it is believed that the majority is parasitoid, especially of Hemiptera (Sternorrhyncha), and some hyperparasitoids. The remarkable diversity of hosts used by hyperparasitoids of the genus *Dendrocerus* seems to be centered on predators and parasitoids of Hemiptera of the suborder Sternorrhyncha (aphids and occasionally psyllids). Their hosts include Hymenoptera (Aphidiidae and more rarely Aphelinidae, Encyrtidae, Pteromalidae, Braconidae and Figitidae), Diptera ((pupae) Coleoptera Neuroptera and Mecoptera. They are hyperparasitoids, for example Braconidae in aphids; in addition to some being associated with ants. The objective of this work is to investigate the biology, ecology and biology of the Megaspilidae (Hymenoptera). To this end, a bibliographic survey of Megaspilidae was carried out in the years 1940 to 2021. Only complete articles published in scientific journals and expanded abstracts presented at national and international scientific events. Data were also obtained from platforms such as: Frontiers, Qeios, Biological Abstract, Publons, Dialnet, Microsoft Academic, Science and Scielo.

Keywords: Hyperparasitoids; *Dendrocerus*; Sternorrhyncha; Aphids; Parasitoids

1. Introduction

Many species (Megaspilidae Family) remain to be described; there could be more than a thousand species. It is a group not well studied, but most are thought to be parasitoids, especially of Sternorrhyncha Hemiptera (Figures 1, 2, 3, 4A, 4B, 4C and 4D) [1,2,3].

Source: https://bdj.pensoft.net/article/991/

Figure 1 Specimen of Megaspilidae Family

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Source: https://en.wikipedia.org/wiki/Megaspilidae

Figure 2 Specimen of Megaspilidae Family

Source: https://alchetron.com/Megaspilidae

Figure 3 Specimen of Megaspilidae Family

Source: https://alchetron.com/Megaspilidae

Figure 4A Specimen of Megaspilidae Family

Figure 4B Specimen of Megaspilidae Family

Source: https://www.scielo.br/j/bjb/a/wbg7WpMSZsPg9hRkPxb4Tmf/?lang=en

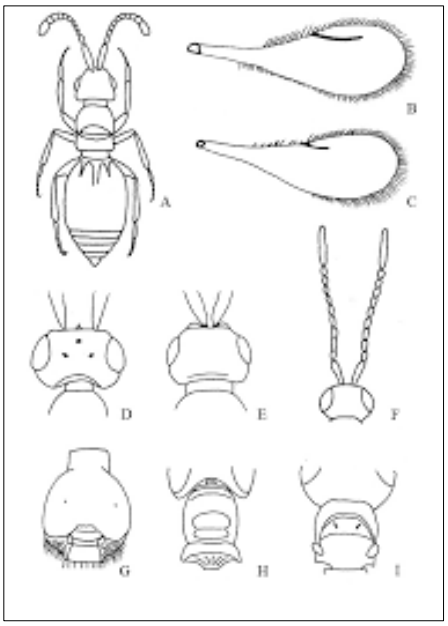
Figure 4C Female of *Conostigmus dahlbom*, 1858: A) Dorsal view; B) Lateral view; C) Head (lateral view); D) Mesosoma (dorsal view); E) Metasoma (dorsal view); F) Head (dorsal view); G) Fore and hind wings. Distribution of *Conostigmus* species of the Neotropical Region

Source: Copyright © 2020 Morgan Bannard

Figure 4D Vista frontal Megaspilidae

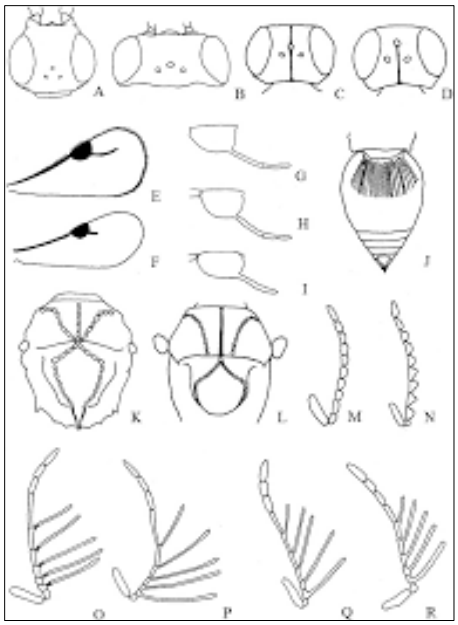
1.1. Description

Diagnostic characters: metatibia with 2 spurs; anterior portion of metasoma with neck-shaped constriction; antenna with 11 articles in both male and female; forewing, when developed, usually with a large stigma; mesoscutum usually with 3 longitudinal grooves. Mecopterans, brachypterous or apterans. They measure from 1.0 to 4.0 mm and are black, brown or yellow, non-metallic (Figures 5, 6, 7, 8, 9, 10, 11 and 12) [4,5,6].



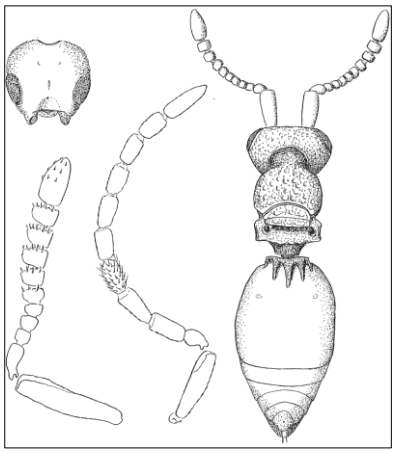
Source: Adapted from Dessert 1987

Figure 5 Details of structure of the members of the subfamily Lagynodinae: A Dorsal view of a female *Lagynodes* sp. B *Lagynodes pallidus* (Boheman, 1832) ♂ C *Lagynodes acuticornis* (Kieffer, 1906) ♂ D *Lagynodes ocellifer* Dessart, 1977 ♀ E *Lagynodes pallidus* (Boheman, 1832) ♀ F *Lagynodes* ♂ G *Lagynodes acuticornis* (Kieffer, 1906) ♀ H *Lagynodes obscuriceps* Dessart 1981 ♀ I *Lagynodes botulife* sp. nov. ♀



Source: Adapted from Pezzini et al. 2014

Figure 6 Details of structure of the members of Megaspilinae: A *Conostigmus* sp. B *Dendrocerus* sp. C *Dendrocerus phallocrates* sp, nov. ♂ ♀ D *Dendrocerus zoticus* Dessart, 1995 ♂ E *Conostigmus* sp. or *Dendrocerus* sp. F *Trichosteresis glabra* (Boheman, 1832) ♂ ♀ G *Dendrocerus aphidum* (Rondani, 1877) ♂ ♀ H *Dendrocerus carpenteri* (Curtis, 1829) ♂ ♀ I *Dendrocerus ciuthan* Dessart 1994 ♀ J *Dendrocerus sylviae* Dessart & Cancemi, 1987 ♀ K *Conostigmus binasutus* Dessart & Cancemi, 1986 ♂ L *Conostigmus yunquensis* Ogloblin, 1957 ♂ ♀ M P*enmaricus* group N *Carpenteri* group O-P-Q-R *Halidayi* group O *Dendrocerus mexicali* sp. nov. ♂ P *Dendrocerus araucanus* Dessart 1999 ♂ Q *Dendrocerus ranquel* sp. nov. ♂ R *Dendrocerus riograndensis* Pezzini & Köhler, 2014 ♂



Source: http://www.waspweb.org/Ceraphronoidea/Megaspilidae/index.htm

Figure 7 Subfamily Lagynodinae

Source: http://www.waspweb.org/Ceraphronoidea/Megaspilidae/index.htm

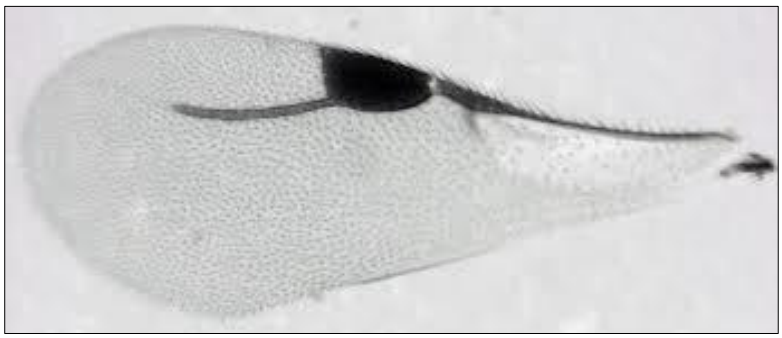
Figure 8 Subfamily Megaspilinae

Source: Photo by C. Trietsch (CC BY 2.0)

Figure 9 A malformed *Conostigmus* specimen

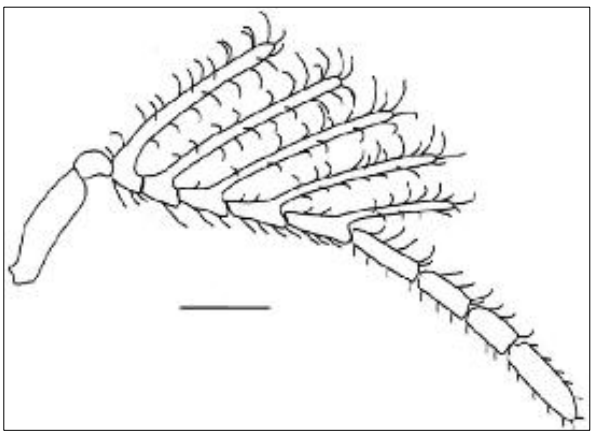
Source: https://www.flickr.com/photos/69610519@N08/21976326341/

Figure 10 *Edithvale*-Australia Insects (Hymenoptera Ceraphronoidea Megaspilidae a003 P1030575



Source: https://www.biodiversity4all.org/taxa/367445-Megaspilidae

Figure 11 Megaspilidae Wing Family

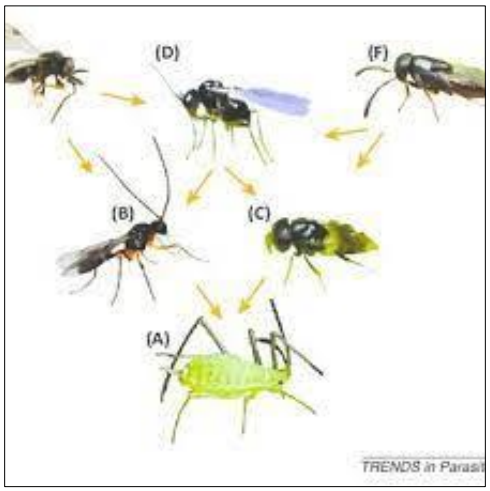


Source: https://www.semanticscholar.org/paper/A-new-species-of-Dendrocerus-(Hymenoptera%2C-from-Pezzini-Zilch/e038b7825f98a24c065634d7835385c9b68cf537

Figure 12 Detail of male antenna *Dendrocerus riograndensis* Pezzini & Köhler, 2014

1.2. Biology

This group is little known as a whole, however it is believed that the majority is parasitoid, especially of Hemiptera (Sternorrhyncha), and some hyperparasitoids (Figure 13).



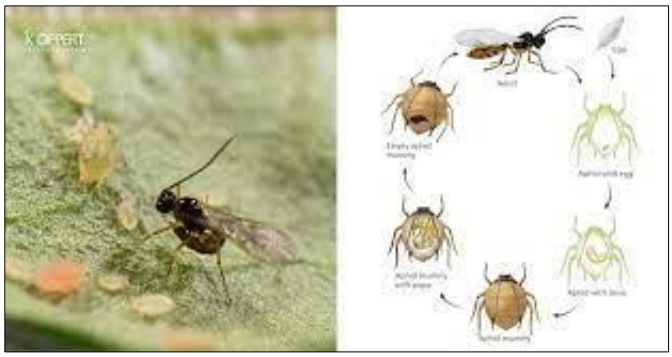
Source: Image credits: Shipher Wu (A), Jarmo Holopainen (B), Yusei Hara (C, F), Urs Wyss (D), and Claude Pilon (L)

Figure 13 Feeding links in aphid–parasitoid food web; the aphid host (A) is attacked by two clades of primary parasitoid (B), Braconidae, Aphidiinae, and (C) Aphelinidae, which themselves are attacked by 'true' hyperparasitoids (D) Cynipidae, Alloxystinae, and after mummification by a guild of 'mummy parasitoids' including the genera of Megaspilidae (E) and Encyrtidae

Source: https://www.researchgate.net/figure/Figures-1-3-Dendrocerus-carpenteri-1-Antennae-2-Notaulices-3-Pterostigma_fig1_303181351

Figure 14 *Dendrocerus carpenteri* (Curtis, 1829) (1 - Antennae; 2 - Notaulices; 3 - Pterostigma). *Dendrocerus carpenteri* (Curtis, 1829) as a parasitoid of *Aphidius ervi* Haliday, 1834 (Hymenoptera: Braconidae: Aphidiinae) in alfalfa *Medicago sativa* L. (Fabaceae) fields in Brazil

The remarkable diversity of hosts used by hyperparasitoids of the genus *Dendrocerus* seems to be centered on predators and parasitoids of Hemiptera of the suborder Sternorrhyncha (aphids and occasionally psyllids). Their hosts include Hymenoptera (Aphidiidae and more rarely Aphelinidae, Encyrtidae, Pteromalidae, Braconidae and Figitidae), Diptera ((pupae) Coleoptera Neuroptera and Mecoptera (Figures 14 and 15) [7,8,9,10].



Source: https://www.facebook.com/Koppert.Pt/posts/806533796419522/

Figure 15 Life cycle *Aphidius ervi* Haliday, 1834. This parasitoid wasp specializes in biological control of aphids. In a few seconds it deposits the eggs inside the aphid, the eggs hatch and the larvae feed on the host's organism until it becomes a mummy. *Aphidius ervi* then opens a hole in the aphid's carapace and emerges as an adult wasp, ready to lay eggs in other aphids

1.3. Geographical distribution

The family has a cosmopolitan distribution [11].

1.3.1. Taxonomy

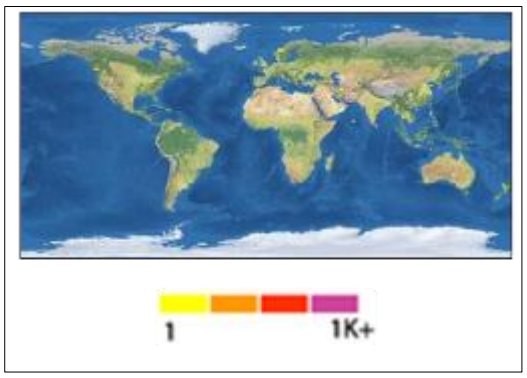
The family has a cosmopolitan distribution, with about 450 described species, divided into 9 genera.

1.3.2. Subfamilies

Lagynodinae and Megaspilinae: Distribution Worldwide. Biology ectoparasitoids of fly pupa (Diptera) or hyperparasitoids of Hymenoptera (Figures 16, 17 and 18).

Source: http://v3.boldsystems.org/index.php/Taxbrowser_Taxonpage?taxid=375027

Figure 16 Subfamily of Lagynodinae



Source: http://v3.boldsystems.org/index.php/Taxbrowser_Taxonpage?taxid=375027

Figure 17 Collected from 2 countries. Top 20: Show All Countries pand List: Canada 9 and Norway 8

Source: http://www.waspweb.org/ceraphronoidea/Megaspilidae/Megaspilinae/index.htm

Figure 18 Subfamily Megaspilinae

Genus: *Conostigmus, Dendrocerus*: Ectoparasitoids of fly pupa (Diptera) or hyperparasitoids of Hymenoptera. *Megaspilus* and *Platyceraphron* (Figures 19, 20 and 21).

Source: http://www.waspweb.org/ceraphronoidea/Megaspilidae/Megaspilinae/index.htm

Figure 19 Genus *Conostigmus* Dahlbom, 1858

Source: http://www.waspweb.org/ceraphronoidea/Megaspilidae/Megaspilinae/index.htm

Figure 20 Genus *Dendrocerus* Ratzeburg, 1852

Source: https://www.researchgate.net/figure/Platyceraphron-muscidarum-Kieffer-1906-from-MRI-Nesset-Botnahaugen-Photo-AS_fig1_312219718

Figure 21 Genus *Platyceraphron* Kieffer, 1906

For Brazil there is a record of two genera (one species each): *Dendrocerus sylviae* Dessart & Cancemi, 1987 and *Trichosteresis glabra* (Boheman, 1832). This last genus was registered for Brazil only with material from the collection of the Museu de Zoologia da USP (Macedo and Kawada, 2013). No MZUSP, specimens of Conostigmus are still deposited (Figure 22) [12,13,14,15,16,17].

Source: https://bugguide.net/node/view/1351164

Figure 22 Specimens of *Trichosteresis glabra* (Boheman, 1832)

Objective

The objective of this work is to investigate the biology, ecology and biology of the Megaspilidae (Insecta: Hymenoptera)

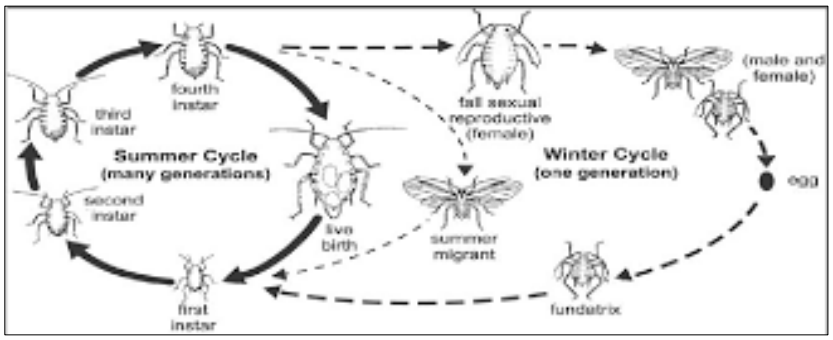
2. Methods

The method used to prepare this mini review was Marchiori 2021 methodology [18].

3. Studies conducted and selected

3.1. Study 1

In this work, the influence of urbanization on the complex of natural enemies (predators, parasitoids and hyperparasitoids) of the aphid *Aphis gossypii* Glover, 1877 (Hemiptera: Aphididae) that feeds on jacaranda flowers *Jacaranda mimosifolia* D. Don. (Bignoniaceae) throughout an urbanization gradient (Figure 23) [19].



Source: https://www.semanticscholar.org/paper/The-Effects-of-Controlling-the-Aphis-gossypii-on-of-Kang-Youn/77020332f4a0bc424e558469dc7bbbc81811fde8

Figure 23 General life cycle of aphids. Asexual reproduction occurs during most of the year (summer cycle). Some aphid species produce a generation of sexual individuals that produce overwintering eggs as shown in the winter cycle

For this purpose, seven sites were chosen in the city of Córdoba (Argentina) with different degrees of urbanization, selecting three jacaranda trees with aphids in each site to carry out the samplings (Figure 24) [19].

Source: https://www.manejebem.com.br/doenca/praga-pulgao-das-inflorescencias-aphis-gossypii

Figure 24 Pest - Blossom aphid - *Aphis gossypii* Glover, 1877 (Hemiptera: Aphididae) Crops: Melon, Avocado, Cocoa, Pineapple, Papaya, Cotton, Zucchini, Cucumber, Potato, Pumpkin, Mango, Passion Fruit, Peanut, Watermelon and Sunflower

A total of 230 natural enemies corresponding to 14 species were obtained, among which predators were found of the Family Coccinellidae (6 spp.), Syrphidae (3 spp.), Chrysopidae (1 sp.), parasitoids of the families Braconidae (1 sp) and Aphelinidae (1 sp.) and hyperparasitoids of the Families Megaspilidae (1 sp.) and Pteromalidae (1 sp.). The results indicated that urbanization in general did not produce significant effects on the community of natural enemies (Figure 25) [19].

Source: https://blog.pensoft.net/tag/megaspilidae/

Figure 25 Specimen of Megaspilidae Family

Only species richness showed a marginally significant increase towards more urbanized sites, probably due to the coexistence of exotic species, generalists and specialists even in more urbanized sites. The values of relative richness and relative abundance of native natural enemies were always less than 41%, showing that exotic species were dominant in each of the sites studied (Figure 26).

Source: https://www.naturezabela.com.br/2016/11/jacaranda-jacaranda-mimosifolia-d-don.html

Figure 26 *Jacaranda mimosifolia* D. Don. (Bignoniaceae)

The lack of relationship between predator-prey and parasitism rates with the urban gradient suggests that natural enemy communities in general have the potential to affect phytophagous insect populations, regardless of variations in urban disturbance. In the case of the composition of natural enemies in each site, it depended to a greater extent on the geographical distances between the sites than on urbanization [19].

3.2. Study 2

The present study aimed to diagnose the occurrence and flight activity of natural enemies (parasitoids) in apple orchards in Vacaria, RS [20].

The study was carried out at the Experimental Station for Tempered Fruits at Embrapa grape and wine (EEFT), in Vacaria, RS, in two apple orchards cultivar fuji, from October 2007 to January 2008, with Malaise flight interception traps). In apple orchards in Vacaria, RS (Figure 27) [20].

Source: https://www.embrapa.br/en/uva-e-vinho/dados-meteorologicos/vacaria

Figure 27 Embrapa Grape and Wine Seasoned Fruit Cultivation Experimental Station (EEFT), in Vacaria in two apple orchards cultivate fuji

Sampling was carried out at intervals weekly, for periods of uninterrupted 24 hours, removing the insects from the flask to collect at the following times: 20:00; 02h; 8 am and 2 pm (Figure 28).

Source: https://www.embrapa.br/en/busca-de-noticias/-/noticia/46436340/embrapa-promove-evento-de-recomendacoes-tecnicas-para-cultura-da-macieira-em-vacaria

Figure 28 Apple orchards cultivate fuji

In orchard 1, 25 taxa of parasitoids belonging to the order Hymenoptera were captured, highlighting the abundance of the families Ichneumonidae (26), Figitidae (Eucoilinae) (79), Scelionidae (37) and Mymaridae (28) In orchard 1, 25 taxa of parasitoids belonging to the order Hymenoptera were captured, highlighting in abundance the families Ichneumonidae (26), Figitidae (Eucoilinae) (79), Scelionidae (37) and Mymaridae (28) (Figure 29) [20].

Source: http://tereshkin.info/species/Malaise-trap.htm

Figure 29 Malaise trap

In orchard 2, 17 taxa were diagnosed, with emphasis on the families Ichneumonidae (105), subfamily Ophioninae (33) and Bethylidae (19). Ichneumonidae showed greater flight activity during the daytime period (8am to 8pm) while Bethylidae a significantly higher from 2 pm to 8 pm (Figure 30) [20].

Source: https://www.biodiversidadvirtual.org/insectarium/Megaspilidae-img191692.html

Figure 30 Specimen Megaspilidae Family

In such Families and subfamilies are found species of parasitoids associated with caterpillars of the families Noctuidae and Geometridae, which allows for a glimpse of biological control actions also for the group "large caterpillars" (Table 1).

Table 1 Percentage of parasitoid families and subfamilies captured in Malaise trap in apple orchard I, as a function of collection time. Vacaria, RS, 2007/2008

Collection time ranges				
Táxons	**2pm to 8pm**	**20 to 02**	**0.00b**	**8 am to 2 pm**
Megaspilidae	100a	0.00b	0.00b	0.00b

Values followed by different letters in the line differ statistically by the Test of Goodman at the 5% significance level

3.3. Study 3

The objectives of this study were to study the species of aphids in alfalfa and their hyperparasitoids [21].

Pest control with the use of parasitoids can be impaired by the depressant action of hyperparasitoids, microhymenopterans of different families such as: Encyrtidae, Eulophidae, Pteromalidae, Charipidae and Megaspilidae [21].

The present work was carried out in the experimental field of alfalfa (creole variety) in Embrapa Pecuária Sudeste CPPSE, located in the city of São Carlos, SP (Figure 31).

Source: https://www.embrapa.br/en/pecuaria-sudeste

Figure 31 Embrapa Pecuária Sudeste CPPSE, located in the city of São Carlos, SP

We collected 28 hyperparasitoids associated with this parasitoides that were found from *Aphis craccivora* Koch, 1854 (Hemiptera: Aphididae) were not identified. Forty-one mummies gave rise to 32 individuals of *Dendrocerus carpenteri* (Curtis, 1829) (Hymenoptera: Megaspilidae) (Figures 32, 33 and 34) [21].

Source: https://www.researchgate.net/figure/A-Apterous-aphid-species-Aphis-craccivora-left-and-A-fabae-right-collected-from_fig1_339111681

Figure 32 from *Aphis craccivora* Koch, 1854 (Hemiptera: Aphididae). A) *Apterous* aphid species *Aphis craccivora* Koch, 1854 ... (left), and Aphis fabae Scopoli, 1763 (right), collected from a locust tree (*Robinia* sp.). (B) Virus-like symptoms induced on common bean *Phaseolus vulgaris* L. (Fabaceae)leaves inoculated by the aphids: isolate Th-W2259, left, and isolate Th-W2260, right

Source: https://www.researchgate.net/figure/Dendrocerus-carpenteri-Curtis-1829-female-A-dorsal-habitus-B-head-and-mesosoma_fig3_355754677

Figure 33 *Dendrocerus carpenteri* (Curtis, 1829), female A dorsal habitus B head and mesosoma, dorsal view C lateral habitus D head and mesosome, lateral view E head, anterior view F wings G netasoma, dorsal view

Source: https://www.flickr.com/photos/koppert/2773683689

Figure 34 Specimens of *Dendrocerus carpenteri* (Curtis, 1829)

The remarkable diversity of hosts used by hyperparasitoids of the genus *Dendrocerus* seems to be centered on predators and parasitoids of Hemiptera of the suborder *Sternorrhyncha* (aphids and occasionally psyllids). Their hosts include Hymenoptera (Aphidiidae and more rarely Aphelinidae, Encyrtidae, Pteromalidae and Figitidae), Diptera and Coleoptera [21].

3.4. Study 4

In order to evaluate the occurrence of parasitoid Hymenoptera associated with aphid fauna in the State of São Paulo. Aphid colonies were collected on their host plants in several municipalities (Figure 35) [22].

Source: Dr Dirk Sanders

Figure 35 This picture shows the species *Dendrocerus carpenteri* (Curtis, 1829) (Hymenoptera: Megaspilidae) (female laying an egg inside an aphid mummy that contains a parasitoid larva)

Several specimens of *Dendrocerus carpenteri* (Curtis, 1829) were obtained (61), which are listed below together with the species of aphids and host plants in São Paulo, SP (Figure 36).

Source: https://www.discoverlife.org/mp/20q?search=Dendrocerus+carpenteri

Figure 36 Map of the geographic distribution of *Dendrocerus carpenteri* (Curtis, 1829)

Several species of aphids were born from samples in which *D. carpenteri* occurred. All these species of parasitoids have already been found as a host of a hyperparasitoid of several species of aphids. through primary parasitoids of the Subfamily Aphidiinae (Hymenoptera: Braconidae) (Figure 37) [22].

Source: https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/aphidiinae

Figure 37 Subfamily Aphidiinae (Hymenoptera: Braconidae)

3.5. Study 5

Megaspilidae: Classification and checklist of Afrotropical megaspilid wasps (Figure 38, 39, 40, 41, 42, 43, 44, 45 and 46) [23,24].

Source: Photographs © Simon van Noort (Iziko Museums of South Africa) - http://www.waspweb.org/Classification/index.htm

Figure 38 Megaspilidae classification and checklist of Afrotropical megaspilid wasps

Subfamily Lagynodinae

Genus *Lagynodes* Forster, 1840

Source: https://commons.wikimedia.org/wiki/Category:Lagynodes_hecaterapterus

Figure 39 Genus *Lagynodes* Forster, 1840

Lagynodes luciae Dessert, 1990 (Burkina Faso)

Subfamily Megaspilinae

Genus *Conostigmus* Dahlbom, 1858

Source: https://bugguide.net/node/view/474728

Figure 40 Genus *Conostigmus* Dahlbom, 1858 and apterous *Conostigmus*

Conostigmus babaiax Dessert, 1997 (Madagascar)

Conostigmus ballescoracas Dessert, 1997 (Madagascar)

Conostigmus bucephalus Mikó and Trietsch, 2016 (Madagascar)

Source: http://www.waspweb.org/Ceraphronoidea/Megaspilidae/Megaspilinae/Conostigmus/Conostigmus_bucephalus.htm

Figure 41 *Conostigmus bucephalus* Mikó and Trietsch, 2016

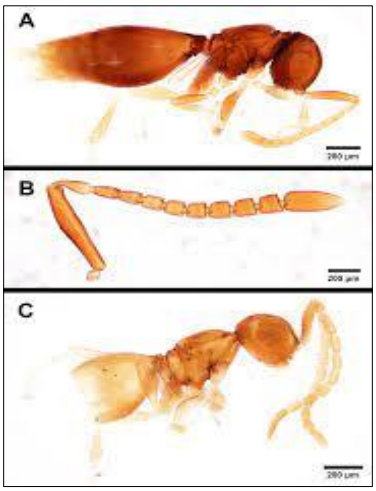
- *Conostigmus clavatus* Mikó and Trietsch, 2016 (Madagascar)
- *Conostigmus confluens* Dessert, 1974
- *Conostigmus flagellaris* Dessert, 1997 (Madagascar)
- *Conostigmus fianarantsoaensis* Mikó and Trietsch, 2016 (Madagascar)
- *Conostigmus gusztavi* Dessert, 1974 (Madagascar)
- *Conostigmus irsac* Dessert, 1997 (Madagascar)
- *Conostigmus longulus* Dessert, 1997 (Madagascar)
- *Conostigmus lucidus* Mikó and Trietsch, 2016 (Madagascar)
- *Conostigmus macrocupula* Mikó and Trietsch, 2016 (Madagascar)
- *Conostigmus madagascariensis* Mikó and Trietsch, 2016 (Madagascar)
- *Conostigmus missyhazenae* Mikó and Trietsch, 2016 (Madagascar)

Source: http://www.waspweb.org/Ceraphronoidea/Megaspilidae/Megaspilinae/Conostigmus/Conostigmus_missyhazenae.htm

Figure 42 *Conostigmus missyhazenae* Mikó and Trietsch, 2016

Conostigmus nandobini Dessert, 1979 (Somalia)

Conostigmus *pedester* Kieffer, 1913 (Kenya)



Source: https://www.researchgate.net/figure/Conostigmus-pedester-kieffer-1913-A-B-Lectotype-A-Specimen-in-ethanol-lateral_fig19_331411329

Figure 43 *Conostigmus pedester* kieffer, 1913. A-B. Lectotype, ♀. A. Specimen in ethanol, lateral view. B. Left antenna. C. Paralectotype, ♂

Conostigmus pseudobabaiax Mikó and Trietsch, 2016 (Madagascar)

Source: http://www.waspweb.org/Ceraphronoidea/Megaspilidae/Megaspilinae/Conostigmus/Conostigmus_pseudobabaiax.htm

Figure 44 *Conostigmus pseudobabaiax* Mikó and Trietsch, 2016 (Madagascar)

- *Conostigmus seychellensis* Kieffer, 1912 (Seychelles)
- *Conostigmus triangularis* (Thomson, 1858)
- *Conostigmus toliaraensis* Mikó and Trietsch, 2016 (Madagascar)
- *Conostigmus vestitus* Dessert, 1997 (Madagascar)
- Genus *Dendrocerus* Ratzeburg, 1852
- *Dendrocerus aequatorialis* Dessert, 1999
- *Dendrocerus africana* (Risbec, 1958)
- *Dendrocerus aliberti* (Risbec, 1950)
- *Dendrocerus angustus* Dessert, 1999
- *Dendrocerus anneckei* Dessert, 1985
- *Dendrocerus caelebs* (Dessart, 1999)
- *Dendrocerus incertissimus* Dessert, 1999
- *Dendrocerus molestus* Dessert, 1999
- *Dendrocerus perlucidus* Alekseev, 1983
- *Dendrocerus rodhaini* (Bequaert, 1913)
- *Dendrocerus wollastoni* (Dodd, 1920) (Reunion)
- Genus *Trichosteresis* Forster, 1856

Source: https://bugguide.net/node/view/750985/bgpage

Figure 45 Genus *Trichosteresis* Forster, 1856

*Trichosteresis glabra (*Boheman, 1832)

Source: https://bugguide.net/node/view/1351161

Figure 46 *Trichosteresis glabra* (Boheman, 1832)

4. Conclusion

The Megaspilidae Family is little known as a whole, however it is believed that the majority is parasitoid, especially of Hemiptera (Sternorrhyncha), and some hyperparasitoids. The remarkable diversity of hosts used by hyperparasitoids of the genus *Dendrocerus* seems to be centered on predators and parasitoids of Hemiptera of the suborder Sternorrhyncha (aphids and occasionally psyllids). Their hosts include Hymenoptera (Aphidiidae and more rarely Aphelinidae, Encyrtidae, Pteromalidae, Braconidae and Figitidae), Diptera ((pupae) Coleoptera Neuroptera and Mecoptera.

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