Charipinae (Hymenoptera: Cynipoidea: Figitidae) present in the Museum of Natural History of the University of Wroclaw, with an identification key for Polish species

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Abstract: Charipinae (Cynipoidea: Figitidae) deposited in the Museum of Natural History of Wroclaw University (Poland) have been studied. Seven species are recorded for the first time from Poland: Alloxysta brachyptera (Hartig, 1840), A. castanea (Hartig, 1841), A. citripes (Thomson, 1862), A. consobrina (Zetterstedt, 1838), A. mullensis (Cameron, 1883), A. nottoni Ferrer-Suay & Pujade-Villar, 2015 and Phaenoglyphis heterocera (Hartig, 1841). The presence of previously recorded species is confirmed and new records are specified. A key to all Charipinae species ever recorded in Poland is given.

Keywords: Charipinae, Figitidae, Poland, new localities

Introduction

The Charipinae (Cynipoidea, Figitidae) are small wasps (0.8–2.0 mm). They are mainly characterized by their smooth and shining body. Members of the subfamily Charipinae are widely distributed around the world (Ferrer-Suay et al. 2012). They are biologically characterized as hyperparasitoids of aphids via Aphidiinae (Ichneumonoidea, Braconidae) and Aphelininae (Chalcidoidea, Aphelinidae) and hyperparasitoids of psyllids via Encyrtidae (Chalcidoidea) (Menke & Evenhuis 1991). Alloxysta and Phaenoglyphis ( Förster, 1869) are the most numerous, and widely distributed genera within this subfamily.

The knowledge of Charipinae is continuously improving, when new material is collected and identified, new records usually appear. Recent records from Austria and the Palaearctic region proved that Charipinae are well represented in both, Palaearctic and central Europe (Ferrer-Suay et al. 2012, 2018a).

In this study material recently collected and deposited in the Museum of Natural History in the University of Wroclaw (Poland) was examined. Many species were previously recorded from Poland by Kierych (1979b), Barczak (1991) and Krawczyk et al. (2009). In total, in this study, 155 specimens have been examined, from three Charipinae genera (Alloxysta, Dilyta ( Förster, 1869) and Phaenoglyphis). The following species have been identified: Alloxysta arcuata (Kieffer, 1902), A. brachyptera (Hartig, 1840), A. brevis (Thomson, 1862), A. castanea (Hartig, 1841), A. citripes (Thomson, 1862), A. consobrina (Zetterstedt, 1838), A. fracticornis (Thomson, 1862), A. macrophadna (Hartig, 1841), A. mullensis (Cameron, 1883), A. nottoni Ferrer-Suay & Pujade-Villar, 2015, A. obscurata
Fig. 1. Some general body features: a) lower part of mesopleuron in *Phaenoglyphis*; b) lower part of mesopleuron in *Alloxysta*; c) metasoma of *Alloxysta*; d) metasoma of *Dilyta* (scale bar = 50µm).

(Hartig, 1840), *A. pilipennis* (Hartig, 1840), *A. pleuralis* (Cameron, 1879), *A. ramulifera* (Thomson, 1862), *A. sawoniewiczi* (Kierych, 1988), *A. victrix* (Westwood, 1833), *Dilyta subclavata* Förster, 1869, *Phaenoglyphis heterocera* (Hartig, 1841) and *P. villosa* (Hartig, 1841).

Seven new records from Poland are established, six species of *Alloxysta* and one of *Phaenoglyphis*. Information about these records and a key are given below.

**Material and Methods**

Specimens were mostly collected by a sweeping net; some were killed by ethyl acetate, and some put directly into 75% ethanol. Some specimens were pin-mounted directly from ethanol, but some were chemically dried (with hexamethyldisilazane).

All specimens mounted on cardboards, have been studied with a stereomicroscope (ZSM-2 Optika). The field-emission gun environmental scanning electron microscope (FEI Quanta 200 ESEM) was used for high-resolution imaging without gold-coating of the specimens.

Morphological terms used are taken from Paretas-Martínez et al. (2007). Measurements include abbreviations from F1–F12 (first and subsequent flagellomeres). The width of the forewing radial cell is measured from the margin of the wing to the base of Rs vein. Females and males are morphologically identical except where indicated.
Results

Figure 1 shows the shape of Alloxysta and Dilyta metasoma, as well as Alloxysta and Phaenoglyphis mesopleura. For better comparison, antennae of all the Alloxysta species cited here are grouped in Fig. 2a–l and all radial cells in Fig. 3a–l. Information on the distribution, description and hosts of each species is available on www.charipinaedatabase.com.

- **Alloxysta arcuata** (Kieffer, 1902)

  Material studied. (3♀) Poland, Wrocław, Świny, decid. forest 20.08.2016, leg. P. Jałoszyński: 1♀; Poland, Włocławek, pine forest with *Padus*, W of city, 4.08.2017, leg. P. Jałoszyński: 1♀; Poland, Wrocław ante herbarium, 16.07.2017, leg. P. Jałoszyński: 1♀.

  Distribution. Paelearctic, Oriental and Neotropical. Already cited in Poland by Ferrer-Suay et al. (2018a).

- **Alloxysta brachyptera** (Hartig, 1840)

  Material studied. (37♀, 27♂) Poland, Wrocław, Świny, 23.08.2018, meadows, grass & *Tanacetum*, leg. P. Jałoszyński: 5♀, 4♂; Poland, Wrocław, Świny, 23.08.2018, meadows, grass & *Tanacetum*, leg. P. Jałoszyński: 32♀, 22♂; Poland, Włocławek, pine forest W of city, 7–8.09.2018, leg. P. Jałoszyński: 1♂.

  Distribution. Paelearctic. NEW RECORD from Poland.

- **Alloxysta brevis** (Thomson, 1862)

  Material studied. (11♀) Poland, Promno ad Poznań, 14.09.2014, leg. P. Jałoszyński: 1♀; PL
27.06.2015, FV08, 49.544N/22.514E NE of Ropieńka, meadow/slope, 580 m, leg. P. Jałoszyński: 1♀; Poland, Wrocław, Świniary, 10.07.2016, leg. P. Jałoszyński: 1♂; Poland, Wrocławek, pine forest W of city, 22.05.2017, leg. P. Jałoszyński: 1♀; Poland, Wrocław ante herbarium, 16.07.2017, leg. P. Jałoszyński: 1♂; Poland, Wrocław ante herbarium, 16.07.2017, leg. P. Jałoszyński: 1♀; PL, 22.5.2018, YR14, 50.057N/17.995E, Gipsowa Góra ad Kietrz, leg. P. Jałoszyński: 1♀; Poland, Wrocław, Świniary, 23.08.2018, meadows, grass & *Tanacetum*, leg. P. Jałoszyński: 1♀; Poland, Wrocław, pine forest W of city, 7–8.09.2018, leg. P. Jałoszyński: 2♀; Japan, Ibaraki Pref., Tsukuba city, central and northern ārks, suburbs, 6.06.2018, leg. P. Jałoszyński: 1♀.

Distribution. Eastern Paelearctic and Holarctic. Already cited in Poland by Barczak (1991).

- *Alloxysta castanea* (Hartig, 1841)

Material studied. (16♀, 4♂) Poland, Wrocław, Świniary, 17.08.2014, leg. P. Jałoszyński: 1♂; PL 24.06.2015 FV07/EV97, 49.428N/22.395E, 350 m, Zwierzyń ad Lesko meadows at San river, leg. P. Jałoszyński: 3♀; Poland, Wrocław, Świniary, decid. forest, 20.08.2016, leg. P. Jałoszyński: 1♀; Poland, Wrocław, Świniary – Widawa, 11.06.2017, forest & meadows along river, leg. P. Jałoszyński: 2♀, 1♂; Poland, Wrocławek, pine forest with *Padus*, W of city, 4.08.2017, leg. P. Jałoszyński: 1♀; Poland, Promno ad Poznań, 10.07.2017, mixed shady forest, leg. P. Jałoszyński: 3♀; PL, 22.5.2018, YR14, 50.057N/17.995E, Gipsowa Góra ad Kietrz, leg. P. Jałoszyński: 1♀; Poland, Wrocław, *Pinus* forest, 22.06.2018, leg. P. Jałoszyński: 1♂; PL 8-929.6.2018, XS36, 51.149N/16.951E, Wrocław (Maślice), ul. Gosławicka, wał Śleży, czerpak, leg. M. Wanat: 1♂; Poland, Wrocław, Świniary, 23.08.2018, meadows, grass & *Tanacetum*, leg. P. Jałoszyński: 1♀; PL 24.7.2018, XS36, 51.149N/16.951E, Wrocław (Maślice), ul. Gosławicka, wał Śleży, czerpak, leg. M. Wanat: 1♂; Japan, Ibaraki Pref., Tsukuba city, central and northern ārks, suburbs, 6.06.2018, leg. P. Jałoszyński: 1♀; Japan, Kanagawa Pref., Arashiyama ad Sagamiko, *Magnolia* forest, 5.05.2018, leg. P. Jałoszyński: 1♂; Japan, Emime Pref. Keyakidaira, Kumakogen, 33°28'37.4"N 132°58'38"E, 11.05.2018, primeval dec. forest, leg. P. Jałoszyński: 1♀.

Distribution. Paelearctic and Neotropic region. NEW RECORD from Poland.

- *Alloxysta circumscripta* (Hartig, 1841)

Distribution. Europe. Already cited from Poland by Kierych (1979b). No material examined at the Museum of Natural History of the University of Wrocław.

- *Alloxysta citripes* (Thomson, 1862)

Material studied. (1♂) Poland, Wrocław, Świniary, decid. forest, 20.08.2016, leg. P. Jałoszyński: 1♂.

Distribution. Paelearctic. NEW RECORD from Poland.

- *Alloxysta consobrina* (Zetterstedt, 1838)

Material studied. (4♀, 1♂) Poland, Promno ad Poznań, 1.06.2015, leg. P. Jałoszyński: 1♀; Poland, Wrocław, Świniary – Widawa, #3, 12.05.2017, along railway, leg. P. Jałoszyński: 1♂; Poland, Wrocławek, pine forest W of city, 22.05.2017, leg. P. Jałoszyński-śki: 1♂; Poland, Wrocław, pine forest W of city, 7–8.09.2018, leg. P. Jałoszyński: 1♂; PL 24.7.2018, XS36, 51.149N/16.951E, Wrocław (Maślice) ul. Gosławicka, wał Śleży, czerpak, leg. M. Wanat: 1♀.

Distribution. Cosmopolitan. NEW RECORD from Poland.

- *Alloxysta fracticornis* (Thomson, 1862)

Material studied. (1♀, 4♂) PL 19.7.2014, WS64, 50.924N/15.941E, Wojcieszów ad. Góra Milek Res., Leg. P. Jałoszyński: 1♂; Poland, Biebrza NP, Barwik, 53.3652N/22.5439E, sifted, river bank, leg. M. Wanat: 1♂; Poland, Promno ad Poznań, 1.06.2015,
Alloxysta macrophadna (Hartig, 1841)

Material studied. (1♀, 2♂) PL 19.7.2014, WS64, 50.924N/15.941E, Wojcieszów ad. Góra Milek Res., Leg. P. Jałoszyński: 1♂; Poland, Wrocław ante herbarium, 28.09.2014, leg. P. Jałoszyński: 1♂; Poland, Promno ad Poznań, 10.07.2017, meadow with Cirsium oleraceum, leg. P. Jałoszyński: 1♀.

Distribution. Palaeartic. Already cited from Poland by Barczak (1991).

Alloxysta mullensis (Cameron, 1883)

Material studied. (7♀) Poland, Wrocław, Świninary – Wisława, 18.05.2017 along railway, leg. P. Jałoszyński: 1♀; Poland, Wrocław ante herbarium, 6.06.2017, leg. P. Jałoszyński: 2♂; PL 8-929.6.2018, XS36, 51.149N/16.951E, Wrocław (Maślce), ul. Gosławicka, wał Śleży, czerpak, leg. M. Wanat: 1♀; Poland, Wrocław Świninary, 23.08.2018, meadows, grass & Tanacetum, leg. P. Jałoszyński: 2♂; Poland, Wrocław, Świninary, 23.08.2018, meadows, grass & Tanacetum, leg. P. Jałoszyński: 1♀.

Distribution. Palaeartic and Neotropical. NEW RECORD from Poland.

Alloxysta obscurata (Hartig, 1840)

Material studied. (1♀) PL 8-929.6.2018, XS36, 51.149N/16.951E, Wrocław (Maślce), ul. Gosławicka, wał Śleży, czerpak, leg. M. Wanat: 1♀.

Distribution. Holarctic. Already cited in Poland by Kierych (1979b) and Ferrer-Suay et al. (2018b).

Alloxysta pilipennis (Hartig, 1840)

Material studied. (1♀) Poland, Wrocław, Świninary – Widawa, #1, 12.05.2017, along railway, leg. P. Jałoszyński: 1♀.

Distribution. Holarctic and Neotropical. Already cited in Poland by Kierych (1979b).

Alloxysta pleuralis (Cameron, 1879)

Material studied. (4♀) PL 27.06.2015 FV08, 49.548N/22.521E, Ropieńka – Wojkówka meadow along road, 620 m, leg. P. Jałoszyński: 2♀; Poland, Wrocław, Świninary, decid. forest 20.08.2016, leg. P. Jałoszyński: 1♀; Poland, Wrocław, ante herbarium, 6.06.2017, leg. P. Jałoszyński: 1♀.

Distribution. Palaeartic. Already cited in Poland by Barczak (1991).

Alloxysta ramulifera (Thomson, 1862)

Material studied. (4♀) Poland, Wrocław, Świninary, decid. forest, 20.08.2016, leg. P. Jałoszyński: 1♀; Poland, Włocławek, pine forest with Padus, W of city, 4.08.2017, leg. P. Jałoszyński: 1♀; Poland, Włocławek, pine forest W of city, 22.05.2017, leg. P. Jałoszyński: 1♀; Poland, Włocławek, Pinus forest, 22.06.2018, leg. P. Jałoszyński: 1♀.

Distribution. Palaeartic. Already cited from Poland by Kierych (1979b).

Alloxysta sawoniewiczii (Kierych, 1988)

Material studied. (3♀) Japan, Ibaraki Pref., Tsukuba city, central and northern árks, suburbs, 6.06.2018, leg. P. Jałoszyński: 1♀; Japan, Ibaraki, Pref. Shishitsuka (halfway Tsukuba – Tsuchiura), 1.05.2018, dec. forest & bomboo, leg. P. Jałoszyński: 2♀.

Distribution. Palaeartic. Already cited from Poland (Kierych 1988).

Alloxysta victrix (Westwood, 1833)

Material studied. (11♀, 3♂) Switzerland, Geneva, Banks of Arve Riv. near route de Florissant, 23–24.07.2018, leg. P. Jałoszyński: 1♂; Poland, Wrocław, Świninary, 11.06.2016, leg. P. Jałoszyński: 1♀; Poland, Wrocław, Świninary, decid. forest 20.08.2016, leg. P. Jałoszyński: 1♂; Poland, Włocławek, pine forest W of city, 22.05.2017, leg. P. Jałoszyński: 1♀; Poland, Wrocław, Świninary – Widawa, 11.06.2017, forest & meadows along river, leg. P. Jałoszyński: 1♀, 1♂; Poland, Wrocław, ante herbarium, 16.07.2017, leg.
Figure 3. Types of radial cell: a) P. villosa; b) A. citripes; c) A. castanea; d) A. macrophadna; e) A. obscurata; f) A. circumscripta; g) A. consobrina; h) A. ramulifera; i) A. pilipennis; j) A. arcurata; k) A. fracticornis; l) A. mullensis (Scale bar = 50µm).

P. Jałoszyński: 1♀; Poland, Włocławek, Pinus forest, 22.06.2018, leg. P. Jałoszyński: 3♀; PL 8-929.6.2018, XS36, 51.149N/16.951E, Wrocław (Maślice), ul. Gosławicka, wał Śleży, czerpak, leg. M. Wanat: 1♀; PL 5.7.2018, XS36, 51.149N/16.9516E, Wrocław (Maślice), ul. Gosławicka, wał Śleży, czerpak, leg. M. Wanat: 1♀, 1♂; PL 24.7.2018, XS36, 51.149N/16.951E, Wrocław (Maślice), ul. Gosławicka, wał Śleży, czerpak, leg. M. Wanat: 1♀.

Distribution. Cosmopolitan. Already cited in Poland by Kierych (1979b) and Krawczyk et al. (2009).

- **Dilyta subclavata** Förster, 1869
  Material studied. (2♀, 1♂) Switzerland, Geneva, Banks of Arve Riv. near route de Florissant, 23–24.07.2018, leg. P. Jałoszyński: 1♀; Poland, Włocławek, pine forest with Padus, W of city, 4.08.2017, leg. P. Jałoszyński: 1♂; Poland, Włocławek, pine forest W of city, 7–8.09.2018, leg. P. Jałoszyński: 1♀.
  Distribution. Holarctic. Already cited in Poland by Kierych (1979a).

- **Phaenoglyphis heterocera** (Hartig, 1841)
  Material studied. (2♀) Poland, Wrocław, ante herbarium, 6.06.2017, leg. P. Jałoszyński: 1♀.
  Distribution. Paelearctic. NEW RECORD from Poland.

- **Phaenoglyphis villosa** (Hartig, 1841)
  Material studied. (2♀, 2♂) Spain, Catalonia, Barcelona, 21–25.04.2015, 41.390283, 2.102205, xerophilic hillside, leg. P. Jałoszyński: 1♀; PL 16.7.2018, XS36, 51.149N/16.951E, Wrocław (Maślice), ul. Gosławicka, wał Śleży, czerpak, leg. M. Wanat: 1♂; PL 19.07.2014, WS64, 50.924N/15.941E, Wojcieszów ad. Góra Milek Res., leg. P. Jałoszyński: 1♀; Poland, Wrocław, Świniary – Wdawa, 11.06.2017, forest & meadows along river, leg. P. Jałoszyński: 1♂.
  Distribution. Cosmopolitan. Already cited in Poland by Kierych (1979b).

- **Phaenoglyphis xanthochroa** Förster, 1869
  Distribution. Paelearctic. Already cited from Poland by Krawczyk et al. (2009). No material examined from Museum of Natural History of the University of Wrocław.
Discussion

Taking into account the difficulty of Charipinae taxonomy (Ferrer-Suay et al. 2019), it is important to notice that previous records by Kierych (1979b), Barczak (1991) and Krawczyk et al. (2009) from Poland were correct, as they have been cross-checked with the material recently collected and deposited in the Museum of Natural History of Wroclaw University (Poland).

Charipinae is a worldwide distributed subfamily, well represented in the Palaearctic region and particularly in the Central Europe, where it has been extensively studied. However, as it was stated in our previous works, it is important to examine more material in other collections in order to improve the distribution records of Charipinae. By doing so, their distributional patterns become more precise every time.

Comprehensive and updated information about this subfamily can be found in Ferrer-Suay et al. (in prep), and complete worldwide identification key in Ferrer-Suay et al. (2019). Here a key of the Charipinae species of Poland is presented:

1. Metasoma with a single tergal plate (Fig. 1d)  
2. Metasoma with two large visible terga, subequal in length along middorsal line, but basal tergite 1/4–1/3 smaller than second in lateral view (Fig. 1c)  
3. Radial cell partially open along anterior margin (Fig. 3a)  
4. Radial cell closed

1A. Metasoma with two large visible terga, subequal in length along middorsal line, but basal tergite 1/4–1/3 smaller than second in lateral view (Fig. 1c)  
2A. Mesopleuron lacks horizontal sulcus (Fig. 1b)  
3A. Radial cell closed

1. Metasoma with a single tergal plate (Fig. 1d)  
2. Lower part of mesopleuron with horizontal sulcus (Fig. 1a)  
3. Radial cell partially open along anterior margin (Fig. 3a)  
4. Radial cell closed

1A. Metasoma with two large visible terga, subequal in length along middorsal line, but basal tergite 1/4–1/3 smaller than second in lateral view (Fig. 1c)  
2A. Mesopleuron lacks horizontal sulcus (Fig. 1b)  
3A. Radial cell closed

1. Metasoma with a single tergal plate (Fig. 1d)  
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3A. Radial cell closed

1. Metasoma with a single tergal plate (Fig. 1d)  
2. Lower part of mesopleuron with horizontal sulcus (Fig. 1a)  
3. Radial cell partially open along anterior margin (Fig. 3a)  
4. Radial cell closed

1A. Metasoma with two large visible terga, subequal in length along middorsal line, but basal tergite 1/4–1/3 smaller than second in lateral view (Fig. 1c)  
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3A. Radial cell closed

1. Metasoma with a single tergal plate (Fig. 1d)  
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2A. Mesopleuron lacks horizontal sulcus (Fig. 1b)  
3A. Radial cell closed

1. Metasoma with a single tergal plate (Fig. 1d)  
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4. Radial cell closed

1A. Metasoma with two large visible terga, subequal in length along middorsal line, but basal tergite 1/4–1/3 smaller than second in lateral view (Fig. 1c)  
2A. Mesopleuron lacks horizontal sulcus (Fig. 1b)  
3A. Radial cell closed

1. Metasoma with a single tergal plate (Fig. 1d)  
2. Lower part of mesopleuron with horizontal sulcus (Fig. 1a)  
3. Radial cell partially open along anterior margin (Fig. 3a)  
4. Radial cell closed

1A. Metasoma with two large visible terga, subequal in length along middorsal line, but basal tergite 1/4–1/3 smaller than second in lateral view (Fig. 1c)  
2A. Mesopleuron lacks horizontal sulcus (Fig. 1b)  
3A. Radial cell closed
13A. Female: rhinaria and club shaped begin in F3 or F4; F1 longer than pedicel and F2, F2 subequal to F3 (Fig. 2g). Male: F1–F3 curved

14. Rhinaria and club shaped begin in F5; propodeal carinae narrow and well defined at upper half, wide and forming a plate at lower half with sharp margins

14A. Rhinaria and club shaped begin in F3 or F4; propodeal carinae form a complete plate with curved or slightly curved margins

15. Pronotal carinae present

15A. Pronotal carinae absent

16. Rhinaria and club shaped begin in F4; F1 longer than F2, F2 subequal to F3 (Fig. 2h); with two small carinae on the pronotum, sometimes difficult to see; propodeum with two carinae separated by setae on the first third and forming a plate in the two last thirds; radial cell 2.0 times as long as wide (Fig. 3h)

A. ramulifera

16A. Rhinaria and club shaped begin in F3; without the combination of features explained above.

17. F1 longer than pedicel (Fig. 2i)

17A. F1 shorter or subequal to pedicel (Fig. 2j)

18. F1 longer than pedicel. Female: F3 shorter than F4 (Fig. 2k). Male: rhinaria and club shaped begin in F3, F1–F3 subequal in length, F3 shorter than F4, F3 curved in male

A. fracticornis

18A. F1 shorter or subequal to pedicel; without the combination of features explained above

19. F1 subequal to pedicel; F1 longer than F2, F2 subequal to F3 (Fig. 2l)

A. mullensis

19A. F1 shorter than pedicel, F1–F3 subequal in length, sometimes F1 slightly longer

A. brevis

Acknowledgements

We would like to thank Paweł Jałoszyński for inviting us to revise the Charipinae material deposited in the Museum of Natural History in the University of Wroclaw (Poland).

References

Barczak T. 1991. The alloxystids as hyperparasitoids of the *Aphis fabae* group in Poland (Hym., Cynipoidea: Alloxystidae; Hom.: Aphididae). *Polish Journal of Entomology*, 61: 85–95.

Cameron P. 1879. On some new or little known British Hymenoptera. *Transactions of the Entomological Society of London*, 1879: 107–119.

Cameron P. 1883. Descriptions of sixteen new species of parasitic Cynipidae, chiefly from Scotland. *Transactions of the Entomological Society of London*, 16(4): 365–374.

Ferrer-Suay M, Paretas-Martínez J, Selfa J, Pujade-Villar J. 2012. Taxonomic and synonymic world catalogue of the Charipinae and notes about this subfamily (Hymenoptera: Cynipoidea: Figitidae). *Zootaxa*, 3376: 1–92.

Ferrer-Suay M, Selfa J, Pujade-Villar J. 2018a. Palaearctic species of Charipinae (Hymenoptera, Figitidae): two new species, synthesis and identification key. *European Journal of Taxonomy*, 427: 1–110.

Ferrr-Suay M, Selfa J, Paretas-Martínez J, Sello J, Pujade-Villar J. 2018b. Worldwide revision of the genus *Phaenoglyphis* Förster, 1869 (Hymenoptera, Cynipoidea, Figitidae, Charipinae). *Insect Systematics & Evolution*, 50(2): 1–62. https://doi.org/10.1163/1876312X00002177

Ferrer-Suay M, Selfa J, Pujade-Villar J. 2019. A proposal of Charipinae’s keys for the world fauna (Hymenoptera: Cynipoidea: Figitidae). *Zookeys*, 822: 79–139.

Ferrer-Suay M, Selfa J, Pujade-Villar J. Overview of the subfamily Charipinae (hymenoptera: cynipoidea: figitidae): hyperparasitoids affecting the aphid biological control. (in prep.)

Förster A. 1869. Ueber die Gallwespen. *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien*, 19: 327–370.

Hartig T. 1840. Ueber die Familie der Gallwespen. *Zeitschrift für Entomologie* (German), 2: 176–210.

Hartig T. 1841. Erster nachtrag zur naturgeschichte der Gallwespen. *Zeitschrift für Entomologie*, 3: 322–358.
Kieffer JJ. 1902. Description de quelques Cynipides nouveaux ou peu connus et de deux de leurs parasites (Hymenopteres). *Bulletin de la Société d’Histoire Naturelle de Metz*, 10: 1–18.

Kierych E. 1979a. Notes on the genera *Dilyta* Förster, 1869 and *Glyptoxysta* Thomson, 1877. (Hymenoptera, Cynipoidea, Alloxystidae). Pt. 1. *Annales Zoologici*, 34(15): 453–460.

Kierych E. 1979b. Galasówkowate Cynipoidea. In: Szelęgiewicz H. (Ed.). *Katalog Fauny Polski, Część XXVI, Zeszyt 2, Nr 33*. Polska Akademia Nauk, Instytut Zoologii, Warszawa, 103 pp.

Kierych E. 1988. A new genus and a new species of cynipoids (Hymenoptera, Cynipoidea, Charipidae) from Poland. *Annales Zoologici*, 41: 351–354.

Krawczyk A, Hurej M, Jackowski J. 2009. Hyperparasitoids of aphids on maize in Opole region in Poland. *Polish Journal of Entomology*, 78(2): 161–168.

Menke AS, Evenhuis HH. 1991. North American Charipidae: key to genera, nomenclature, species checklists, and a new species of *Dilyta* Förster (Hymenoptera: Cynipoidea). *Proceedings of the Entomological Society of Washington*, 93: 136–158.

Paretas-Martínez J, Arnedo MA, Melika G, Selfa J, Seco-Fernández MV, Fülöp D, Pujade-Villar J. 2007. Phylogeny of the parasitic wasp subfamily Charipinae (Hymenoptera, Cynipoidea, Figitidae). *Zoologica Scripta*, 36: 153–172.

Thomson CG. 1862. Forsok till uppställning och beskrifning af Sveriges Figiter. Öfversigt af Kongl. Svenska Vetenskaps-Akad.: s förhandl, 18: 395–420.

Westwood JO. 1833. Notice of the habits of a Cynipidous insect parasitic upon the *Aphis rosae* with descriptions of several other parasitic Hymenoptera. *Magazine of Natural History*, 6: 491–497.

Zetterstedt JW. 1838. *Insecta Lapponica descripta: Hymenoptera*. Voss, Lipsiae. pp. 315–476.