

ARTICLE

Contribution to the knowledge of the Chalcididae, Leucospidae and Perilampidae fauna from Bingöl and Diyarbakır provinces of Turkey (Hymenoptera: Chalcidoidea)

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Abstract

This study is based upon material collected in Turkey (Diyarbakır and Bingöl provinces) between 2017 and 2020. In total, nine species belonging to four genera from three subfamilies in Chalcididae, one species belonging to one genus from Leucospidae and one species belonging to one genus from Perilampidae were listed. Among them, *Conura libanotica* (SCHMIEDEKNECHT, 1909) from the family Chalcididae was recorded, which is a first report for the Turkish fauna. Additionally, the male genitalia of six species of Chalcididae and Leucospidae families are illustrated for the first time.

Keywords | New records • additional records • *Conura libanotica* • genitalia

Contribution à la connaissance de la faune des Chalcididae, Leucospidae et Perilampidae des provinces de Bingöl et Diyarbakır en Turquie (Hymenoptera : Chalcidoidea)

Résumé

Cette étude est basée sur du matériel collecté en Turquie (provinces de Diyarbakır et Bingöl) entre 2017 et 2020. Au total, neuf espèces appartenant à quatre genres de trois sous-familles de Chalcididae, une espèce appartenant à un genre de Leucospidae et une espèce appartenant à un genre de Perilampidae ont été échantillonnées. Parmi ces espèces, *Conura libanotica* (SCHMIEDEKNECHT, 1909) de la famille des Chalcididae a été collectée, ce qui représente la première mention pour cette espèce pour la faune turque. Enfin, les genitalia des mâles de six espèces de Chalcididae et de Leucospidae sont illustrés ici pour la première fois.

Mots-clefs | Nouvelles données • Données additionnelles • *Conura libanotica* • genitalia



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INTRODUCTION

The superfamily Chalcidoidea is a megadiverse superfamily of Apocrita (Hymenoptera) composed of 23 families (HERATY *et al.*, 2013; ASKEW & MIFSUD, 2016). Members of the family Chalcididae are easily recognisable by the enlarged hind femora bearing a variety of teeth on the ventral edge, strong punctation of the thorax and a sharp posterior carina bordering the gena (NARENDRAN & VAN ACHTERBERG, 2016). Members of Chalcididae often develop on various other insects, mainly in their pupae (NARENDRAN & VAN ACHTERBERG, 2016). The family currently includes 87 genera and 1464 species placed in five subfamilies as follows: Chalcidinae (25 genera, 767 species), Dirhininae (three genera, 65 species), Epitraninae (one genus, 64 species),

Haltichellinae (55 genera, 560 species), Smicromorphinae (one genus, six species), unplaced (two genera, two species). The family Leucospidae currently includes four genera and 134 species. The most distinctive feature of specimens belonging to Leucospidae family is the same as Chalcididae. The family Perilampidae currently includes 15 genera and 277 species placed in three subfamilies as follows: Chrysolampinae (six genera, 63 species), Perilampinae (six genera, 202 species), Philomidinae (two genera, 11 species), unplaced (one genus, one species). The most distinctive features of individuals belonging to the family Perilampidae is that prepectus in same plane as, and fused with, pronotum in dorsal view with sides more or less parallel and medially

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clearly visible behind head. Currently, 66 species from these three families are described in Turkey: Chalcididae (41 species), Leucospidae (six species) and Perilampidae (19 species) (NOYES, 2022). Thus, the number of species of Chalcididae family reported from Turkey is increased to 42

by this current study.

This paper aims to current knowledge of Chalcididae, Leucospidae and Perilampidae (Hymenoptera: Chalcidoidea) in Turkey.

MATERIALS AND METHODS

The study was conducted in Diyarbakır and Bingöl provinces of eastern Turkey. The material was collected using a net trap in the different flowering seasons during 2017–2020. Determinations of all samples were made by Gérard DELVARE (France). Both classification and nomenclature followed ROSENHAUER, 1856; MASI, 1951; BOUČEK, 1952, 1992; DELVARE, 1992, 2017; ASKEW & SHAW, 2001; CRUAUD *et al.*, 2020 and

NOYES, 2022. Photographs of all species and male genitalia of adults were taken by using a digital camera attached to a stereomicroscope. The material is deposited in Emin KAPLAN's individual collection of the Department of Plant Protection, Faculty of Agriculture, Bingöl University (Bingöl, Turkey).

RESULTS

In total, 11 species from six genera (*Brachymeria* (WESTWOOD, 1829); *Conura* (SPINOLA, 1837); *Leucospis* (FABRICIUS, 1775); *Neochalcis* (KIRBY, 1883); *Psilochalcis* (KIEFFER, 1905); *Perilampus* (LATREILLE, 1809)) are listed. The list of species, distributional data and brief description of male genitalia are given below alphabetically.

Chalcididae

Brachymeriinae

Brachymeria WESTWOOD, 1829

Brachymeria femorata (PANZER, 1801) (figure 1)

Synonyms: *B. femorata immaculata* MASI, 1951; *B. ornatipes* (CAMERON, 1906); *C. ornatipes* (CAMERON, 1906) (NOYES, 2022).

Material examined (14 ♀♀): **Bingöl:** Büyükterkören, N 38° 50' 15.99", E 40° 34' 09.11", 1009 m, 24.V.2019, ♀; Çayağzı, N 38° 47' 44.47", E 40° 33' 15.35", 998 m, 20.V.2018, ♀; Köklü, N 38° 55' 38.44", E 40° 38' 40.46", 1088 m, 09.V.2018, ♀; Küçükterkören,

N 38° 51' 01.40", E 40° 30' 02.62", 1182 m, 19.V.2019, ♀; Üçyaka, N 38° 50' 57.05", E 40° 27' 09.72", 1701 m, 23.V.2019, ♀; Adaklı, Arica, N 39° 14' 00.32", E 40° 31' 38.49", 1324 m, 12.VI.2019, ♀; Genç, Yenisu Bucağı, N 38° 43' 14.96", E 40° 52' 45.08", 1615 m, 31.V.2020, ♀; **Diyarbakır:** Çermik, Asmalı, N 38° 11' 14.72", E 39° 31' 34.40", 707 m, 27.IV.2017, ♀; Dicle, Kaygısız, N 38° 19' 47.96", E 40° 18' 26.82", 767 m, 29.III.2019, ♀; Ergani, Kömürtaş, N 38° 14' 00.29", E 39° 47' 23.62", 838 m, 25.IV.2020, ♀; Salar, N 38° 15' 41.31", E 39° 41' 26.43", 899 m, 21.IV.2018, ♀; Yeşilyurt, N 38° 20' 06.24", E 40° 01' 53.98", 724 m, 19.IV.2018, ♀; Kocaköy, Yanıköy, N 38° 18' 55.71", E 40° 31' 21.30", 901 m, 01.IV.2019, ♀; Lice, Serin, N 38° 22' 45.02", E 40° 35' 00.90", 866 m, 18.IV.2019, ♀.

Distribution: Bosnia Hercegovina, Bulgaria, Caucasus, China, Croatia, Cyprus, Czech Republic, Czechoslovakia, Egypt, Europe, France, Germany, Greece, Hungary, India, Indonesia, Iran, Iraq, Israel, Italy, Kazakhstan, Macedonia, Moldova, Mongolia, Pakistan, Philippines, Poland, Romania, Russia, Serbia, Slovakia, Spain, Switzerland, Turkey, Ukraine, United Kingdom, England, USSR, Central Asia, Yugoslavia, Yugoslavia (NOYES, 2022).

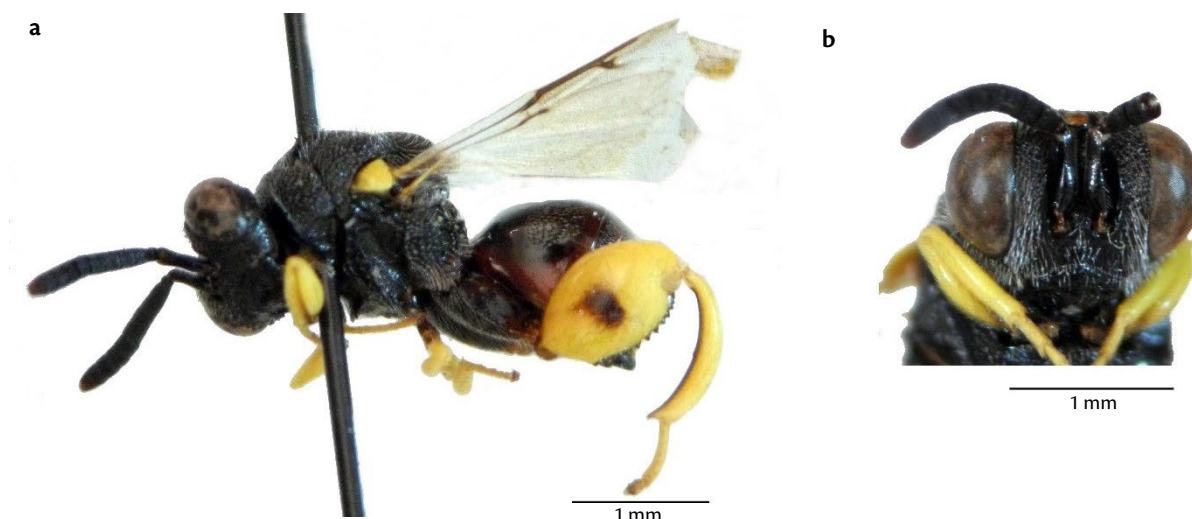


Figure 1. *Brachymeria femorata* (PANZER, 1801) ♀. a. Lateral view. b. Frontal view.

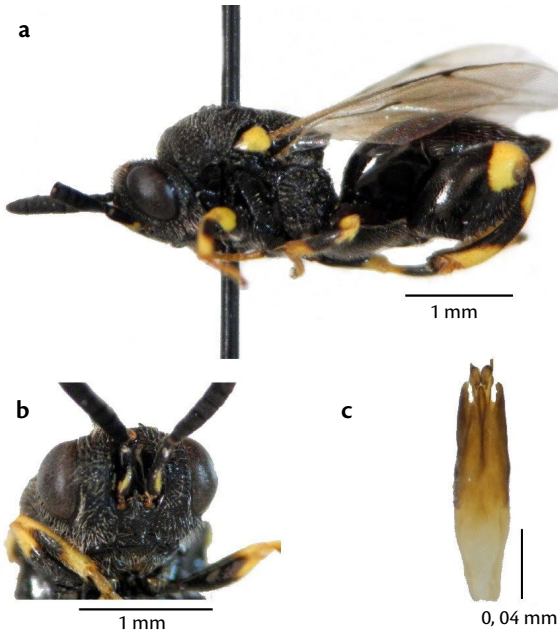
Brachymeria minuta (LINNAEUS, 1767) (figure 2)

Figure 2. *Brachymeria minuta* (LINNAEUS, 1767) ♀. a. Female lateral view. b. Female face. c. Male genitalia.

Synonyms: *Brachymeria fumata* (THOMSON, 1876), *B. paraplesia* (CRAWFORD, 1910), *B. picea* (NIKOLSKAYA, 1952), *B. pusilla* (FABRICIUS, 1787), *B. puttorensis* JOSEPH, NARENDRAN & JOY, 1971, *B. puttorensis longigastralis* JOSEPH, NARENDRAN & JOY, 1971, *B. scrobiculata* FOERSTER, 1859, *Chalcis fumata* THOMSON, 1876, *C. jezoensis* MATSUMURA, 1912, *C. minuta alborufa* MASI, 1916, *C. paraplesia* CRAWFORD, 1910, *C. pusilla* FABRICIUS, 1787, *C. scrobiculata* FOERSTER, 1859, *C. tricolor* FOERSTER, 1859, *Evania saltatrix* CUVIER, 1833, *Haltichella pusilla* FABRICIUS, 1787, *Sphex femoralis* GEOFFROY, 1785 and *Vespa femoralis* GEOFFROY, 1785 (NOYES, 2022).

Material examined (14 ♀♀, 9 ♂♂): **Bingöl:** Çayağzı, N 38° 48' 39.03", E 40° 33' 22.21", 1017 m, 31.V.2020, ♀; Çeltiksuyu, N 38° 52' 16.89", E 40° 33' 45.63", 1017 m, 04.V.2018, ♀; Düzyayla, N 38° 48' 05.38", E 40° 28' 57.28", 1373 m, 06.V.2018, ♂; Ekinyolu, N 38° 53' 53.54", E 40° 34' 31.81", 1033 m, 17.V.2018, ♂; Göltepesi, N

38° 57' 05.89", E 40° 35' 40.86", 1496 m, 22.V.2019, ♀; Sancaklı, N 38° 56' 28.29", E 40° 28' 37.45", 1451 m, 22.V.2019, ♂; Yeşilköy, N 38° 50' 20.35", E 40° 29' 44.38", 1280 m, 31.V.2020, ♂; Adaklı, N 39° 12' 59.81", E 40° 28' 09.21", 1360 m, 12.VI.2019, ♀; Hasbağlar, N 39° 11' 01.77", E 40° 22' 23.77", 1569 m, 12.VI.2019, ♂; Karlıova, N 39° 23' 10.37", E 40° 54' 34.28", 1794 m, 06.VI.2018, ♂; Kiğı, Dallica, N 39° 15' 32.11", E 40° 19' 04.67", 1358 m, 13.VI.2019, ♀; Solhan, Kale, N 38° 47' 17.38", E 41° 02' 28.54", 1312 m, 25.V.2019, ♀; Yayladere, Günlük, N 39° 10' 09.98", E 40° 08' 20.42", 1156 m, 13.VI.2019, ♀; Zeyneli, N 39° 11' 49.13", E 40° 11' 51.78", 1202 m, 13.VI.2019, ♀; Yolgüden, N 39° 10' 28.62", E 40° 04' 20.21", 1509 m, 13.VI.2018, ♀; Yedisu, Kabaoluk, N 39° 25' 55.09", E 40° 29' 59.21", 1412 m, 06.VI.2018, ♀; **Diyarbakır:** Çermik, Karakaya, N 38° 02' 48.67", E 39° 19' 62.05", 553 m, 14.IV.2018, ♂; Ergani, Boğazköy, N 38° 15' 45.62", E 39° 41' 21.63", 890 m, 24.III.2019, ♀; Hani, Belen, N 38° 24' 55.61", E 40° 22' 14.45", 931 m, 27.III.2019, ♀; Kocaköy, N 38° 18' 32.65", E 40° 32' 24.30", 901 m, 01.IV.2019, ♂; Lice, Budak, N 38° 24' 14.68", E 40° 45' 51.13", 786 m, 11.IV.2019, ♂; Çavundur, N 38° 19' 34.16", E 40° 40' 31.58", 975 m, 01.IV.2019, ♀; Silvan, Ormandışı, N 38° 14' 50.54", E 41° 00' 35.29", 771 m, 22.V.2020, ♀.

Distribution: Australia, Bosnia Hercegovina, Bulgaria, Caucasus, Croatia, Cyprus, Czech Republic, Czechoslovakia, Egypt, Europe, France, Germany, Hungary, India, Iran, Israel, Italy, Japan, Kazakhstan, Malaysia, Moldova, Netherlands, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syria, Thailand, Turkey, Ukraine, United Kingdom, England, Scotland, USSR, Central Asia, Siberia, Uzbekistan, Vietnam, Yugoslavia (NOYES, 2022).

Brachymeria rugulosa (FÖRSTER, 1859) (figure 3)

Material examined (8 ♀♀): **Bingöl:** Bilaloğlu, N 38° 55' 34.87", E 40° 23' 14.72", 1288 m, 15.V.2019, ♀; Büyükterkören, N 38° 50' 15.99", E 40° 34' 09.11", 1009 m, 24.V.2019, ♀; Genç, Döşekkaya, N 38° 38' 11.11", E 40° 23' 07.23", 1015 m, 16.V.2019, ♀; Karlıova, Derinçay, N 39° 08' 27.79", E 40° 51' 49.92", 1678 m, 31.V.2019, ♀; Diyarbakır: Dicle, Acar, N 38° 21' 28.03", E 40° 11' 08.74", 728 m, 28.III.2019, ♀; Hani, Topçular, N 38° 27' 51.53", E 40° 24' 31.26", 930 m, 27.III.2019, ♀; Lice, Bağlan, N 38° 19' 48.65", E 40° 43' 28.15", 934 m, 11.IV.2019, ♀; Silvan, Fisat, N 38° 16' 14.90", E 40° 55' 58.22", 999 m, 05.IV.2019, ♀.

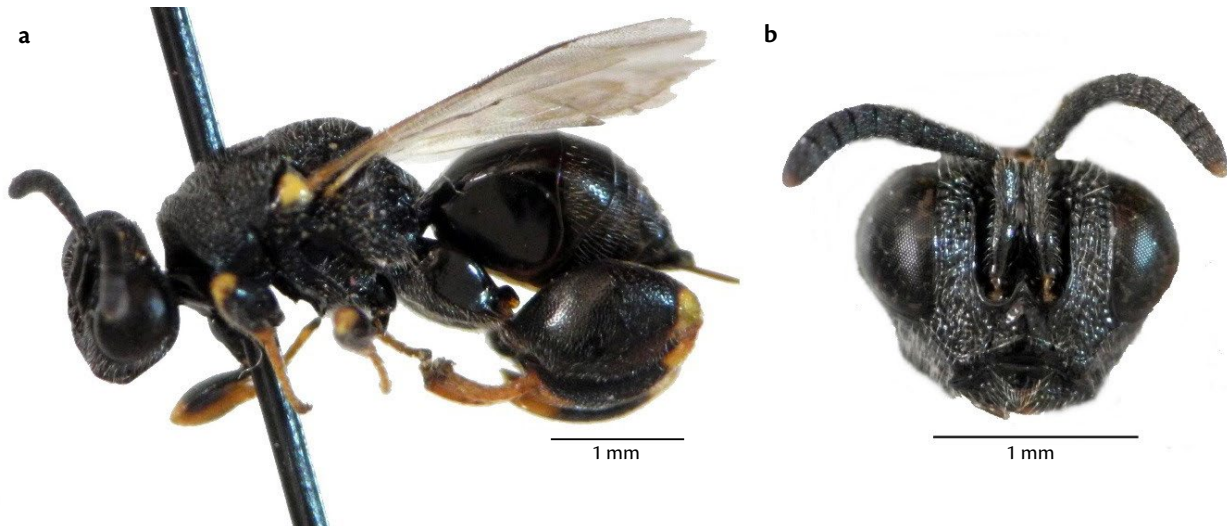


Figure 3. *Brachymeria rugulosa* (FÖRSTER, 1859) ♀. a. Lateral view. b. Face.

Distribution: Austria, Bulgaria, Croatia, Czech Republic, Czechoslovakia, France, Germany, Greece, Hungary, Iran, Italy, Macedonia, Moldova, Romania, Serbia, Slovakia, Slovenia, Spain, Turkey, Turkmenistan, Yugoslavia (NOYES, 2022).

Remarks: *Brachymeria rugulosa* (FÖRSTER, 1859) was very similar to previously as defined *Brachymeria zelihae* (KAPLAN & YILDIRIM, 2022). However, this species differentiated from *B. zelihae* with some morphological differences such as mandible black with reddish apex, clypeus quite wide, the last segment of flagellum is not hemispherical, frons wide with white bristles densely, flagellum brownish black, sterna completely black (KAPLAN & YILDIRIM, 2022).

Brachymeria tibialis (WALKER, 1834) (figure 4)

Synonym: *Brachymeria intermedia* (NEES, 1834), *B. intermedia scirropoda* (FOERSTER, 1859), *B. intermedia turkestanica* (MASI, 1951), *B. scirropoda* (FOERSTER, 1859), *Chalcis boops* (THOMSON, 1876), *C. cingulata* (WALKER, 1834), *C. distinguenda* (WALKER, 1834), *C. intermedia* (NEES, 1834), *C. rufifemorata* (ROSENHAUER, 1856), *C. scirropoda* (FOERSTER, 1859) and *Oncochalcis quettaensis* (CAMERON, 1906) (NOYES, 2022).

Material examined (143 ♀♀, 8 ♂♂): **Bingöl:** Beyaztoprak, N 38° 54' 35.93", E 40° 37' 04.20", 1065 m, 26.V.2019, 6 ♀; Bilaloğlu, N 38° 55' 34.87", E 40° 23' 14.72", 1288 m, 15.V.2019, ♀; Çayağzı, N 38° 46' 58.60", E 40° 33' 26.53", 992 m, 20.V.2019, 8 ♀; Çayboyu, N 38° 54' 00.51", E 40° 30' 43.78", 1079 m, 26.V.2019, 2 ♀; Çeltiksuyu, N 38° 51' 06.77", E 40° 33' 56.61", 1013 m, 24.V.2019, 2 ♀; Dikköy, N 38° 49' 21.02", E 40° 40' 33.96", 1010 m, 18.V.2019, ♀; Gözeler, N 38° 51' 17.14", E 40° 40' 36.42", 1153 m, 25.V.2019, ♀; Gümüşlü, N 38° 46' 01.07", E 40° 28' 21.97", 1124 m, 23.V.2019, 6 ♀; Güveçli, N 38° 51' 17.54", E 40° 31' 57.43", 1050 m, 19.V.2019, 5 ♀; İnalı, N 38° 52' 22.49", E 40° 32' 05.49", 1053 m, 19.V.2019, ♀; Kaleönü, N 38° 53' 29.47", E 40° 35' 49.73", 1045 m, 21.V.2019, 2 ♀; Komgeçit, N 38° 47' 23.71", E 40° 36' 33.81", 996 m, 24.V.2019, 2 ♀; Küçükterkören, N 38° 51' 01.40", E 40° 30' 02.62", 1182 m, 19.V.2019, ♀; Topalan, N 38° 55' 10.17", E 40° 25' 49.20", 1260 m, 15.V.2019, ♀; Yayla Bucağı, N 38° 38' 26.93", E 40° 30' 49.41", 1275 m, 16.V.2019, ♀; Yeniköy, N 38° 50' 47.74", E 40° 37' 49.49", 1080 m, 25.V.2019, 10 ♀; Genç, Çobançeşmesi, N 38° 32' 35.75", E 40° 16' 48.42", 868 m, 17.V.2019, 8 ♀; Dikpınar, N 38° 43' 24.50", E 40° 18' 35.18", 975 m, 17.V.2019, ♀; Doğanlar, N 38° 42' 51.19", E 40° 32' 44.66", 1164 m, 16.V.2019, ♀; Sürekli, N 38° 46' 25.37", E 40° 36' 49.76", 1095 m, 18.V.2019, ♀; Şehitköy, N 38° 41' 05.12", E 40° 28' 52.53", 1198 m, 16.V.2019, 2 ♀; Yiğitbaşı, N 38° 44' 48.62", E 40° 45' 47.77", 1695 m, 21.VII.2017, ♂; Karlıova, Toklular, N 39° 15' 31.26", E 40° 59' 05.09", 1787 m, 28.V.2017, ♂; Kiği, Duranlar, N 39° 15' 46.46", E 40° 21' 01.32", 1207 m, 13.VI.2019, ♀; Solhan, Bozkanat, N 38° 52' 15.36", E 40° 53' 33.49", 1118 m, 26.V.2019, ♀; Çavuşlar, N 38° 54' 53.36", E 40° 47' 02.73", 1472 m, 31.V.2019, 2 ♂; Oymapınar, N 38° 51' 03.96", E 40° 58' 48.67", 1183 m, 26.V.2019, ♀; Yenidal, N 38° 54' 29.31", E 40° 55' 54.28", 1114 m, 18.V.2019, 2 ♀; Yayladere, Yolgüden, N 39° 11' 33.44", E 40° 04' 18.44", 1385 m, 30.V.2017, ♂; Diyarbakır: Abbas Harabesi, N 37° 57' 57.43", E 40° 23' 31.40", 590 m, 30.IV.2017, ♀; Develi, N 37° 50' 07.13", E 40° 05' 24.18", 778 m, 30.IV.2017, ♂; Dicle, N 37° 52' 25.03", E 40° 15' 52.80", 594 m, 21.III.2019, 4 ♀; Esenbağ, N 38° 00' 55.71", E 40° 22' 21.78", 612 m, 21.III.2019, 2 ♀; Kıtılbil, N 37° 55' 10.26", E 40° 15' 01.06", 586 m, 21.III.2019, ♀; Mermer, N 38° 10' 17.25", E 40° 27' 46.01", 771 m, 01.IV.2019, ♀; Yarımca, N 38° 03' 54.31", E 40° 22' 01.59", 651 m, 21.III.2019, 2 ♀; Yukarıkılıçtaşı, N

37° 57' 18.21", E 40° 15' 22.53", 608 m, 21.III.2019, ♀; Bismil, Çavuşlu, N 37° 57' 37.68", E 40° 38' 04.14", 619 m, 19.III.2019, 2 ♀; Göksu, N 37° 50' 00.00", E 40° 31' 40.57", 550 m, 19.III.2019, ♀; Köseli, N 37° 50' 46.56", E 40° 36' 21.68", 545 m, 26.IV.2019, ♀; Tatlıçayır, N 37° 59' 33.41", E 40° 36' 24.42", 620 m, 19.III.2019, ♀; Çermik, N 38° 67' 30.98", E 39° 27' 42.06", 766 m, 24.III.2019, ♀; Bahçe, N 38° 06' 55.82", E 39° 23' 43.79", 833 m, 14.IV.2019, 3 ♀; Başarı Bucağı, N 38° 09' 16.86", E 39° 34' 28.52", 699 m, 15.IV.2018, ♀; Çınar, Şükürlü, N 37° 48' 59.13", E 40° 21' 03.14", 646 m, 19.III.2019, ♀; Çüngüş, Geçitköy, N 38° 10' 54.32", E 39° 15' 30.04", 572 m, 24.III.2019, ♀; Oyuklu, N 38° 12' 32.95", E 39° 22' 09.37", 1007 m, 24.III.2019, ♀; Yenice, N 38° 17' 05.68", E 39° 15' 23.99", 1181 m, 24.III.2019, ♀; Dicle, Gölbaşı, N 38° 19' 50.01", E 40° 62' 06.03", 747 m, 28.III.2019, ♀; Kaygısız, N 38° 19' 47.96", E 40° 18' 26.82", 767 m, 29.III.2019, ♀; Taşağıl, N 38° 22' 26.49", E 40° 01' 09.52", 1026 m, 27.III.2019, 2 ♀; Tepebaşı, N 38° 19' 44.36", E 40° 10' 37.62", 782 m, 28.III.2019, ♀; Yokuşlu, N 38° 24' 21.66", E 40° 00' 56.08", 798 m, 28.III.2019, ♀; Eğil, N 38° 14' 36.41", E 40° 08' 52.32", 878 m, 28.III.2019, ♀; Ergani, N 38° 15' 45.62", E 39° 41' 21.63", 890 m, 24.III.2019, ♀; Değirmendere, N 38° 20' 48.68", E 39° 42' 45.71", 866 m, 24.III.2019, ♀; Yolbulan, N 38° 13' 40.57", E 39° 37' 10.46", 983 m, 21.IV.2018, ♀; Yolköprü, N 38° 15' 09.42", E 39° 41' 59.21", 871 m, 24.III.2019, 2 ♀, ♂; Hani, N 38° 22' 10.25", E 40° 24' 08.00", 842 m, 30.IV.2019, ♀; Belen, N 38° 24' 55.61", E 40° 22' 14.45", 931 m, 27.III.2019, ♀; Hazro, Bağyurdu, N 38° 16' 09.87", E 40° 50' 45.99", 1021 m, 04.IV.2019, 2 ♀; Ormankaya, N 38° 18' 13.20", E 40° 44' 29.38", 1099 m, 19.IV.2019, ♀; Kocaköy, N 38° 16' 16.78", E 40° 32' 38.13", 888 m, 01.IV.2019, 3 ♀; Yukarıturalı, N 38° 28' 22.43", E 40° 27' 13.81", 988 m, 27.III.2019, ♀; Kulp, Hamzalı Bucağı, N 38° 18' 47.22", E 41° 10' 59.06", 731 m, 12.IV.2019, ♀; Karabulak, N 38° 29' 57.77", E 41° 03' 50.42", 985 m, 12.IV.2019, ♀; Taşköprü, N 38° 21' 14.98", E 40° 55' 57.30", 860 m, 12.IV.2019, 2 ♀; Lice, Angül, N 38° 24' 18.81", E 40° 33' 55.14", 879 m, 18.IV.2019, ♀; Arıklı, N 38° 24' 05.39", E 40° 36' 22.12", 954 m, 18.IV.2019, ♀; Budak, N 38° 24' 14.68", E 40° 45' 51.13", 786 m, 11.IV.2019, ♀; Çavundur, N 38° 19' 36.25", E 40° 40' 53.59", 1040 m, 19.IV.2019, ♀; Dallica, N 38° 23' 36.64", E 40° 47' 27.94", 790 m, 20.IV.2019, ♀; Kabakaya, N 38° 20' 12.94", E 40° 44' 06.70", 839 m, 11.IV.2019, ♀; Kutlu, N 38° 21' 05.57", E 40° 47' 52.24", 792 m, 20.IV.2019, ♀; Oyuklu, N 38° 19' 55.42", E 40° 45' 05.76", 925 m, 11.IV.2019, ♀; Savat Bucağı, N 38° 21' 03.07", E 40° 39' 10.00", 923 m, 19.IV.2019, ♀; Uçarlı, N 38° 20' 53.88", E 40° 35' 38.95", 995 m, 01.IV.2019, ♀; Silvan, Ari, N 38° 11' 34.88", E 41° 03' 47.12", 947 m, 05.IV.2019, ♀; Boyunlu, N 38° 13' 35.54", E 41° 00' 00.17", 1076 m, 15.V.2017, ♂; Bayrambaşı, N 38° 15' 23.65", E 40° 57' 57.13", 1033 m, 05.IV.2019, ♀; Fisat, N 38° 16' 14.90", E 40° 55' 58.22", 999 m, 05.IV.2019, ♀; Ormandışı, N 38° 14' 37.23", E 41° 01' 45.69", 724 m, 05.IV.2019, 2 ♀.

Distribution: Albania, Algeria, Armenia, Austria, Azerbaijan, Bosnia Hercegovina, Bulgaria, Canada, Caucasus, Croatia, Cyprus, Czech Republic, Czechoslovakia, Europe, France, Corsica, Germany, Greece, Hungary, India, Jammu & Kashmir, Iran, Iraq, Israel, Italy, Kazakhstan, Lebanon, Macedonia, Moldova, Morocco, Nearctic, Netherlands, North Africa, Pakistan, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syria, Tunisia, Turkey, Ukraine, United Kingdom, England, United States of America, USSR, Central Asia, Siberia, Uzbekistan, Yugoslavia, Yugoslavia (NOYES, 2022).

Remarks: *Brachymeria tibialis* has been known for a long time as *B. intermedia* (NEES) until BOUČEK (1992) re-established the first name because of anteriority. The sample

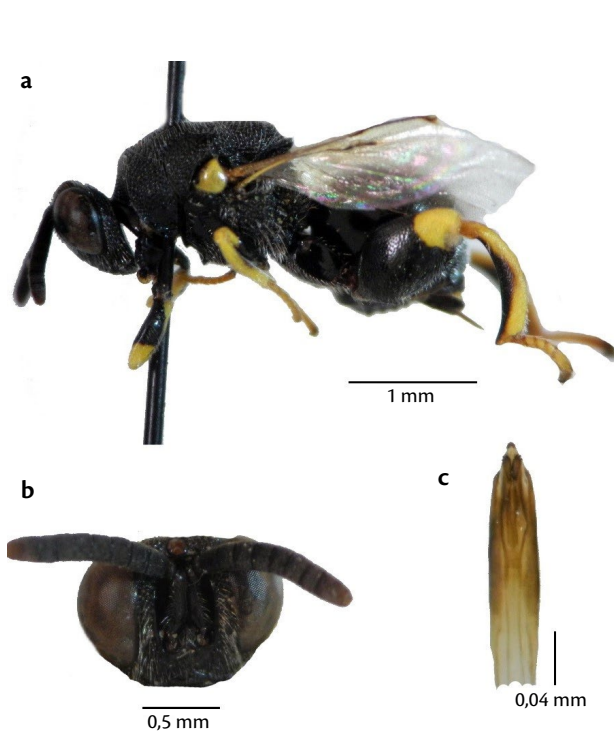


Figure 4. *Brachymeria tibialis* (WALKER, 1834) ♀.
a. Female lateral view. b. Female face. c. Male genitalia.

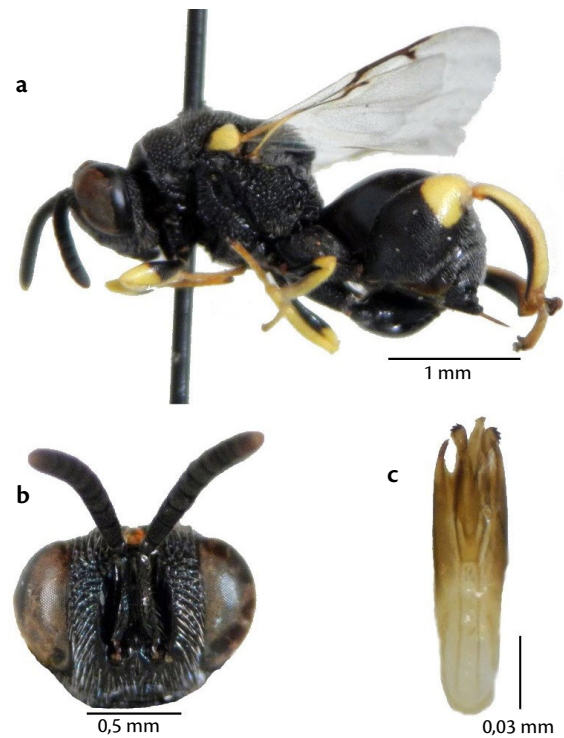


Figure 5. *Brachymeria nr tibialis* (WALKER, 1834) ♀.
a. Female lateral view. b. Female frontal view. c. Male genitalia.

from Turkey includes the three phenotypes. Firstly, there is the nominal one, which is present in most of Europe. It has a reduced apical yellow spot on the metafemur. In the *rufofemorata* phenotype, described from Andalusia by ROSENHAUER (1856), the basal black part of the metafemur is reddish instead of black. Additionally, the apical yellow part is broader than in the nominal phenotype. In the *turkestanika* phenotype, described by MASİ (1951) from Turkestan, the apical yellow part is equally expanded, but the basal part of the metafemur black. These phenotypes can be found simultaneously at the same location (G. DELVARE *pers. comm.*).

Brachymeria nr tibialis (WALKER) (figure 5)

Material examined (11 ♀♀, 1 ♂♂): **Bingöl:** Ağaçeli, N 38° 55' 44.45", E 40° 42' 18.73", 1257 m, 05.V.2018, ♀; Ekinyolu, N 38° 53' 50.54", E 40° 36' 06.38", 1046 m, 26.V.2019, ♀; İnaali, N 38° 52' 22.49", E 40° 32' 05.49", 1053 m, 19.V.2019, ♀; Ormanardı, N 38° 49' 33.98", E 40° 30' 43.33", 1203 m, 06.V.2018, ♀; Yayla Bucağı, N 38° 38' 20.25", E 40° 31' 57.34", 1369 m, 16.V.2019, ♀; Karliova, Boncukgöze, N 39° 14' 12.70", E 40° 58' 39.08", 1760 m, 03.VI.2018, ♀; Kaynarpinar, N 39° 22' 29.88", E 40° 44' 21.98", 1885 m, 28.V.2017, ♂; **Diyarbakır:** Çermik, Kulaç, N 38° 06' 01.66", E 39° 21' 51.76", 1095 m, 24.III.2019, ♀; Hani, Akçayurt, N 38° 28' 21.76", E 40° 21' 55.14", 1188 m, 27.III.2019, ♀; Lice, Kutlu, N 38° 21' 36.47", E 40° 46' 45.42", 798 m, 12.IV.2019, ♀; Silvan, Arı, N 38° 11' 34.88", E 41° 03' 47.12", 947 m, 05.IV.2019, ♀; Babakaya, N 38° 15' 09.18", E 41° 01' 25.08", 777 m, 15.V.2017, ♀.

Remarks: *Brachymeria nr tibialis* is currently being described and thus does not appear in the literature. As ASKEW & SHAW (2001) show it, some differences between the specimens reared from *Zygaena* spp. and those from other hosts. These specimens are now considered to belong to a different species based on further morphological differences. *Brachymeria nr tibialis* is already known from Turkey where

it was reared from *Zygaena* (G. DELVARE, *pers. comm.*).

Chalcidinae

Conura SPINOLA, 1837

Conura libanotica (SCHMIEDEKNECHT, 1909) (figure 6)

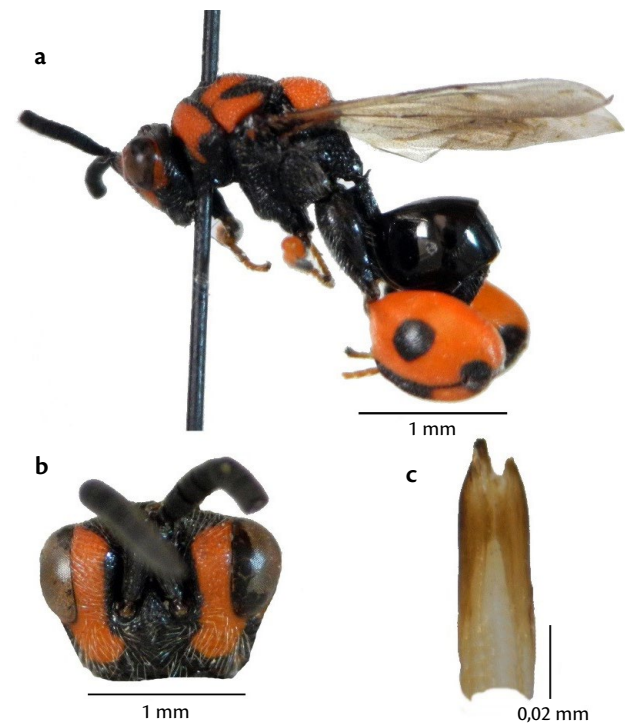


Figure 6. *Conura libanotica* (SCHMIEDEKNECHT, 1909) ♀.
a. Female lateral view. b. Female face. c. Male genitalia.

Material examined (16 ♀, 3 ♂): **Bingöl:** Altınışik, N 38° 49' 41.39", E 40° 27' 31.72", 1511 m, 23.V.2019, ♀; Erentepe, N 38° 48' 32.68", E 40° 28' 10.84", 1477 m, 23.V.2019, ♀; Garip, N 38° 47'

14.91", E 40° 33' 28.95", 995 m, 24.V.2019, ♀; Gözütok, N 38° 46' 51.24", E 40° 41' 07.08", 1283 m, 18.V.2019, ♂; Haziran, N 38° 49' 13.15", E 40° 26' 57.10", 1672 m, 23.V.2019, ♀; Kardeşler, N 38° 54' 53.33", E 40° 37' 24.74", 1068 m, 17.V.2018, ♀; Kuşburnu, N 38° 54' 19.64", E 40° 48' 13.49", 1584 m, 25.V.2019, ♀; Sudüğünü, N 39° 04' 04.56", E 40° 24' 03.92", 1567 m, 12.VI.2019, ♀; Yamaç Bucağı, N 38° 46' 12.67", E 40° 25' 59.75", 1364 m, 23.V.2019, ♀; Yukarıgaçeli, N 38° 58' 41.92", E 40° 42' 36.27", 1422 m, 26.V.2019, ♀; Adaklı, Güngörsün, N 39° 15' 20.29", E 40° 28' 18.93", 1539 m, 12.VI.2019, ♀; Topağaçlar, N 39° 12' 21.20", E 40° 26' 59.27", 1393 m, 12.VI.2019, ♀; Genç, Çanakçı, N 38° 47' 07.85", E 40° 43' 50.07", 1312 m, 18.V.2019, ♀; Direkli, N 38° 36' 27.32", E 40° 22' 16.12", 988 m, 16.V.2019, ♀; Solhan, N 38° 45' 18.50", E 41° 05' 48.16", 1491 m, 25.V.2019, ♀; Yedisu, Kabaoluk, N 39° 25' 53.77", E 40° 30' 14.53", 1442 m, 02.VI.2019, ♀; **Diyarbakır:** Bismil, Tatlıçayır, N 37° 59' 33.41", E 40° 36' 24.42", 620 m, 19.III.2019, ♂; Dicle, Kurudere, N 38° 23' 48.08", E 40° 01' 26.60", 995 m, 28.III.2019, ♂; Lice, Türel, N 38° 25' 09.84", E 40° 53' 54.09", 798 m, 12.IV.2019, ♀.

Distribution: Lebanon (NOYES, 2022).

Remarks: This species is a new record for the Turkish fauna. *Conura libanotica* is presently known from the type and original description only. The species belongs to the *xanthostigma* subgroup of the same nominal group as defined by DELVARE (1992). Based on a rearing of an undescribed species from China and *Conura xanthostigma* (DALMAN, 1820) (mentioned in BOUČEK, 1952), *Conura* spp. are koinobiont parasitoids of Argidae (Symphyta).

Haltichellinae

Neochalcis KIRBY, 1883

Neochalcis barbara (BENOIST, 1921) (figure 7)

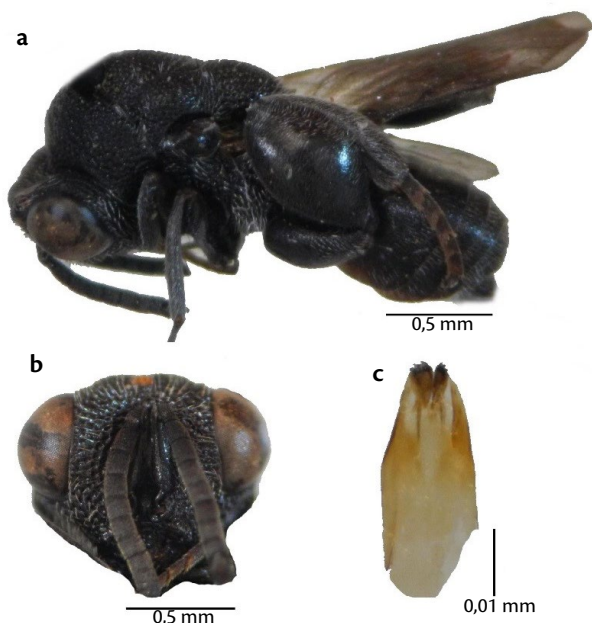


Figure 7. *Neochalcis barbara* (BENOIST, 1921) ♂.
a. Female lateral view. b. Female face. c. Male genitalia.

Synonym: *Neochalcis fertoni* (KIEFFER, 1899) (NOYES, 2022).

Material examined (1 ♂): **Bingöl:** Arıclar, N 39° 03' 15.65", E 40° 18' 41.02", 1562 m, 27.V.2017, ♂.

Distribution: Algeria, Croatia, Cyprus, Czech Republic, Czechoslovakia, Europe, France, Hungary, Iran, Italy, Kazakhstan, Macedonia, Moldova, Morocco, North Africa, Russia, Slovakia, Spain, Tunisia, Turkey, United Kingdom, England, USSR (NOYES, 2022).

Psilochalcis KIEFFER, 1905

Psilochalcis immaculata (ROSSI, 1792) (figure 8)

Synonym: *Haltichella aterrima* SPINOLA, 1811; *Invreia nigerrima* MASI, 1929; *I. nigerrima* MASI, 1929 (NOYES, 2022).

Material examined (1 ♀): **Bingöl:** Yayladere, Aydınlar, N 39° 10' 24.61", E 40° 03' 53.16", 1626 m, 14.VI.2018, ♀.

Distribution: Albania, Caucasus, Croatia, Cyprus, Europe, France, Greece, Israel, Italy, Kazakhstan, Macedonia, Turkey (NOYES, 2022).

Remarks: *Psilochalcis immaculata* has been known for a long time as *Invreia nigerrima* MASI. The systematics of this group of Hybothoracinae (Chalcididae) is complicate because several generic synonymies were made (DELVARE, 2017) which are presently challenged by a recent study (CRUAUD *et al.*, 2020) using massive molecular data. Resulting from it, the genera *Peltochalcidia* and *Invreia* must be revalidated and *Parinvreia*, originally described as a subgenus of *Invreia*, upgraded to generic level. The synonymy of *I. nigerrima* with *P. immaculata* was known both to STEFFAN, according to notes written by him, and to BOUČEK according to a specimen identified as such by him (G. DELVARE, *pers. comm.*).

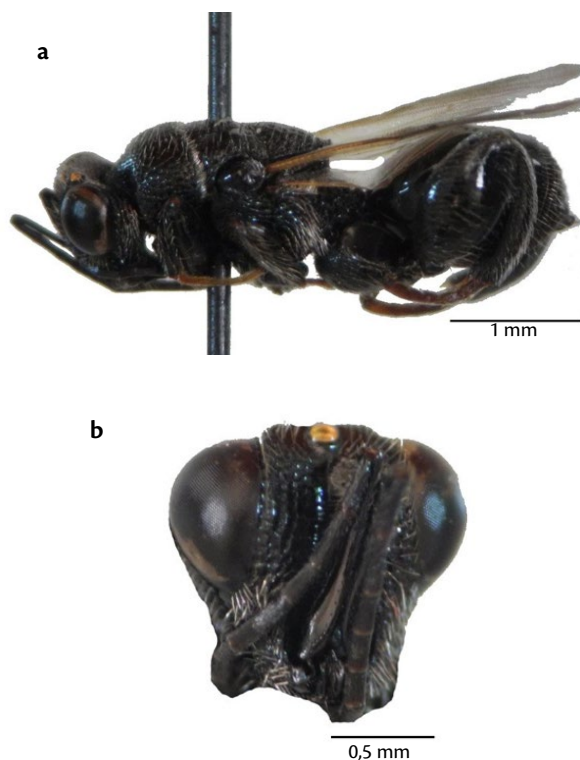


Figure 8. *Psilochalcis immaculata* (ROSSI, 1792) ♀.
a. Lateral view. b. Face.

Psilochalcis rufitarsis (ILLIGER, 1807) (figure 9)

Synonym: *C. vicina* FONSCOLOMBE, 1832; *Euchalcis vicina*

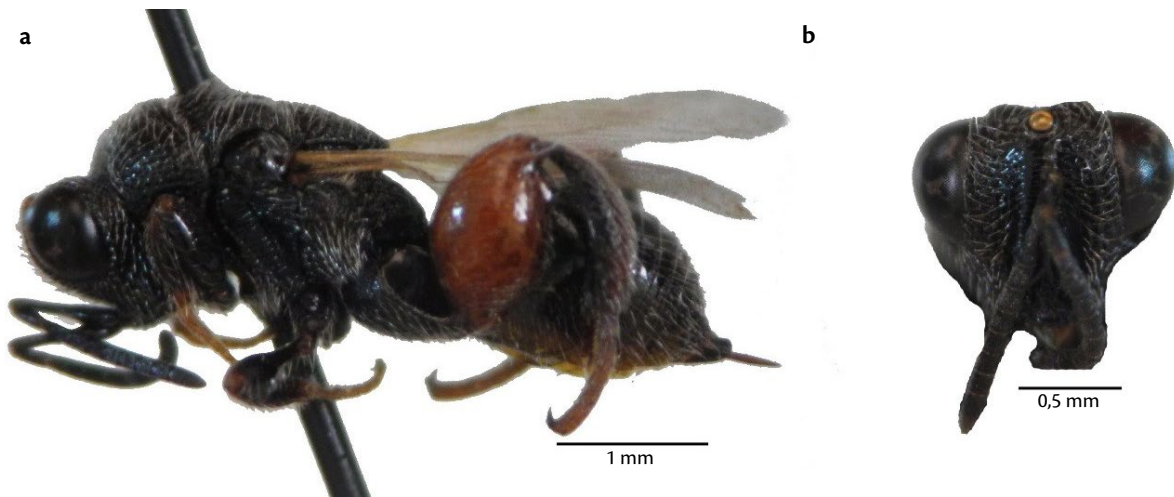


Figure 9. *Psilochalcis rufitarsis* (ILLIGER, 1807) ♀. a. Lateral view. b. Face.

(FONSCOLOMBE, 1832); *Hockeria nigra* WALKER, 1834; *Invreia frequens* MASI, 1929; *I. (Parinvreia) frequens* MASI, 1929; *Sphex monstrosa* (VILLERS, 1789) (NOYES, 2022).

Material examined (1 ♀): **Bingöl**: Akdurmuş, N 38° 50' 40.56", E 40° 28' 30.44", 1467 m, 23.V.2019, ♀.

Distribution: Croatia, Cyprus, Europe, France, Hungary, Iran, Italy, Kazakhstan, Moldova, Slovakia, Spain, Sweden, Syria, Turkey, Ukraine, USSR, Central Asia (NOYES, 2022).

Leucospidae

Leucospis FABRICIUS, 1775

Leucospis dorsigera FABRICIUS, 1775 (figure 10)

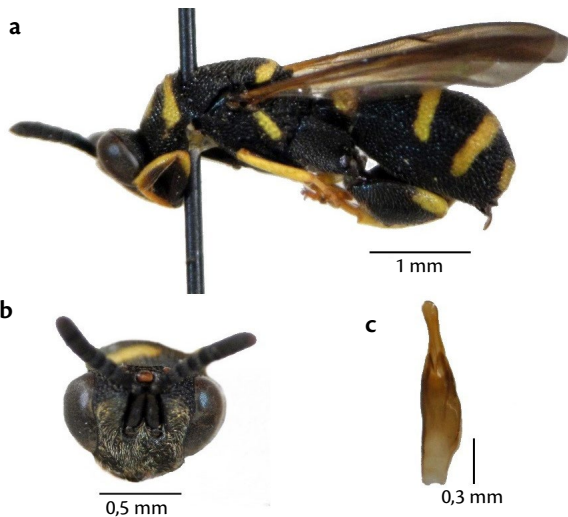


Figure 10. *Leucospis dorsigera* FABRICIUS, 1775 ♂. a. Female lateral view. b. Female face. c. Male genitalia

Synonym: *Coelogaster passaviensis* SCHRANK, 1782; *Leucospis algerica* WALKER, 1862; *L. assimilis* WESTWOOD, 1834; *L. coelogaster* HOCHENWARTH, 1785; *L. dispar* FABRICIUS, 1804; *L. dorsalis* FABRICIUS; *L. dubia* SCHRANK, 1802; *L. fuesslini* HAGENBACH, 1822; *L. intermedia* SPINOLA, 1808; *L. lepida* CHEVRIER, 1872; *L. ligustica* NEES, 1834; *L. scutellata* SPINOLA, 1838; *L. sicelis* WESTWOOD, 1834; *L. spinolae* WESTWOOD, 1834; *L. turcestanica* RADOSZKOWSKI ; *L. turkestanica*

RADOSZKOWSKI, 1886; *L. vicina* FONSCOLOMBE, 1840 (NOYES, 2022).

Material examined (1 ♂): **Bingöl**: Kılçadır, N 38° 46' 21.51", E 40° 28' 51.09", 1160 m, 06.V.2018, ♂.

Distribution: Afghanistan, Algeria, Austria, Bulgaria, Caucasus, Croatia, Cyprus, Czech Republic, Czechoslovakia, Egypt, Europe, France, Germany, Greece, Hungary, Iran, Israel, Italy, Sicily, Kazakhstan, Macedonia, Moldova, North Africa, Poland, Romania, Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, Turkmenistan, Ukraine, USSR (NOYES, 2022).

Perilampidae

Perilampus LATREILLE, 1809

Perilampus aeneus (ROSSI, 1790) (figure 11)



Figure 11. *Perilampus aeneus* (ROSSI, 1790) ♀. a. Lateral view. b. Face.

Synonym: *C. italica* (FABRICIUS, 1793); *Cynips italica* FABRICIUS, 1793; *Diplolepis italica* (FABRICIUS, 1793); *O. italicus* (FABRICIUS, 1793); *P. italicus* (FABRICIUS, 1793) (NOYES, 2022).

Material examined (1 specimen): Bingöl: Elmali, N 39° 01' 00.57", E 40° 43' 12.15", 1286 m, 05.V.2018, 1 specimen.

Distribution: Bosnia Hercegovina, Croatia, Czech Republic, Europe, Germany, Hungary, Italy, Moldova, Netherlands, Russia, Serbia, Slovakia, Spain, Sweden, Turkey, United Kingdom, USSR (NOYES, 2022).

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