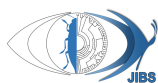


Short Article 

## Additions to the chalcidoid fauna (Hymenoptera: Chalcidoidea) of Iraq: New records of the genera *Chalcis* Fabricius, and *Iridophaga* Picard

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**ABSTRACT.** Chalcidoid wasps (Chalcidoidea) are the most diverse and biologically significant superfamily of Hymenoptera in terms of richness and ecological variation. Specimens of the *Chalcis sispes* (Linnaeus, 1760) (Hymenoptera: Chalcididae) and *Iridophaga lichtensteini* Picard, 1933 (Hymenoptera: Torymidae) were collected using sweep nets and identified for the first record from Iraq (Basrah environs). The study includes biological notes, key morphological characters, and supporting photographs of the species.

**KEYWORDS:** Diagnosis, Fauna, Parasitoid, Soldier flies, Western Asia

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## INTRODUCTION

The superfamily Chalcidoidea (Hymenoptera) comprises more than 27,000 known species, most of which are parasitoids that attack the egg, larval or pupal stage of their hosts (Heraty & Woolley 2025). The Chalcidoidea fauna (Hymenoptera) of Iraq remains poorly studied, though recent contributions by Iraqi researchers working at universities or in research institutes have expanded knowledge of these wasps. Early foundational work was conducted by Bouček (1951); Bouček & Sedivy (1954); Bouček (1956); Swailem et al. (1975); Al-Maliky & Al-Izzi (1986); Fry (1989), Askew & Shaw (2001), and more recently Mansowr et al. (2025a, 2025b). A significant study on the morphological characters of the subfamily Cratocentrinae Steffan, 1951 (Chalcididae) was recently conducted by Abul-Sood et al. (2018). The authors also reviewed the West Palearctic species of Cratocentrinae, and provided a description of two new species, namely *Cratocentrus inermus* Delvare, 2018 (Holotype ♀ from IRAQ and other material from IRAN: Fars, Neyriz, 1 ♀), and *Philocentrus papillus* Abul-Sood & Gadallah, 2018 from the United Arab Emirates.

To date, seven genera and fourteen species of the family Chalcididae have been reported from Iraq. The genera *Brachymeria* Westwood, 1829, and *Chalcis* include six and two species, respectively, while the remaining genera each have one species (Kareem et al. 2023; Mansowr et al. 2024). The species of *Chalcis* reported from Iraq include *C. myrifex* from Karbala Province (Kareem et al. 2022) and *C. biguttata* from Basrah governorate (Mansowr et al. 2024).

Also, the Torymid wasps in Iraq are poorly studied, and only 6 genera and species of them have been reported so far. The reported species include *Adontomerus amygdali* (Bouček, 1958) (Abdul-Rassoul & Mohammed 2017), *Erimerus indicus* (Rao & Bhatia, 1962) (Grissell 1995; Narendran et al. 2012); *Idiomacromerus longicarpus* Abdul-Rassoul, 2000, (Abdul-Rassoul 2000); *Monodontomerus obscurus* (Westwood 1833) (Abdul-Rassoul & Mahmoud 2017); *Oopristus turkestanicus* (Skriptshinsky, 1929) (Bouček 1988; Tarla et al. 2010) and *Podagrion pachymerum* (Walker, 1833) (Mansowr et al. 2023).

The primary objective of this study is to document and identify new insect records in Iraq, thereby expanding our understanding of the Chalcidoid wasp fauna in the region.

## MATERIAL AND METHODS

Specimens were collected from okra fields and the adjacent area of Basrah environs/ Iraq, using sweep nets and preserved in 70% ethanol until further processing. Following the methods of Noyes (1982), the specimens were prepared and mounted. For card-mounting, triangular cards were used, with water-soluble glue applied to fix the specimens onto these cards (Noyes, 1982). The morphological terminology and classification follow Bouček (1988) and Gibson et al. (1997). Identification was carried out using the taxonomic key by Bouček (1951). Voucher specimens were deposited at the Insect Collection of the Plant Protection Department of Urmia University (PPDUU) for future reference.

## RESULTS

### Class Insecta Linnaeus, 1758

### Order Hymenoptera Linnaeus, 1758

### Superfamily Chalcidoidea Latreille, 1817

### Family Chalcididae Latreille, 1817

### Genus *Chalcis* Fabricius, 1787

### *Chalcis sispes* (Linnaeus, 1771) (Fig. 1)

Syn.: *Chalcis clavipes* Fabricius, 1787; *Chalcis crassipes* Desmarest, 1875; *Smicra microstigma* Thomson, 1876.

**Material examined.** 1♂, IRAQ - Basrah Province, Basrah, 30°55'56.6"N, 47°14'00.6"E, 3 m a.s.l., 23.X.2024; lgt.: F. Alag.

**Measurements.** Body length 7.0 mm (Fig. 1A), fore wing length 6.0 mm, width: 2.0 mm (Fig. 1D).

**Comparative diagnosis.** *Male.* Much resembles that of *Chalcis myrifex* (Sulzer, 1776). But it differs in the following characters: In this species, body densely covered with short to medium-length white setae (in other Palaearctic species, body pilosity may vary, but such dense white setae are not consistently observed). Antennal scape broadened towards the apex, but not spatulate (Fig. 1B) (in *C. myrifex*, the scape is flatly enlarged apically, differing in shape); flagellum narrowed towards the end (similarly observed in *C. myrifex*, although the flagellum is thicker overall). Hind femur with two inner apical teeth, the first slightly longer than the second (other Palaearctic species generally have more than ten apical dents on the hind femur, which are situated closer together). Also, in *C. myrifex*, the basal dent of the posterior femur is small, indicating a different dentition pattern. Fore wing infumated, with the wing blade black; submarginal vein 2.0 times as long as the marginal vein, post marginal vein 0.9 times as long as the marginal vein (Fig. 1D). Metasoma with thorax 2.7 times as long as the petiole and 1.7 times as long as broad.

**Coloration.** Body black with a metallic tinge on petiole and gaster (Fig. 1A, F); antenna black, although some specimens with ventral margin of first three funiculars fulvous to ochraceous (Fig. 1A, B); legs testaceous to bronzy, except for black coxae and hind femora; hind tibiae bronzy, with the apical one-fifths black and a pale to yellowish subapical spot adjacent to black area (Fig. 1A, E). (in other Palaearctic species, the posterior femur lacks red coloration and is black with yellow or white spots; in contrast, *C. sispes* shows the posterior femur predominantly red or yellowish-red, often with a small yellowish spot on the outer surface before the black apex, and the underside bears fewer than eight

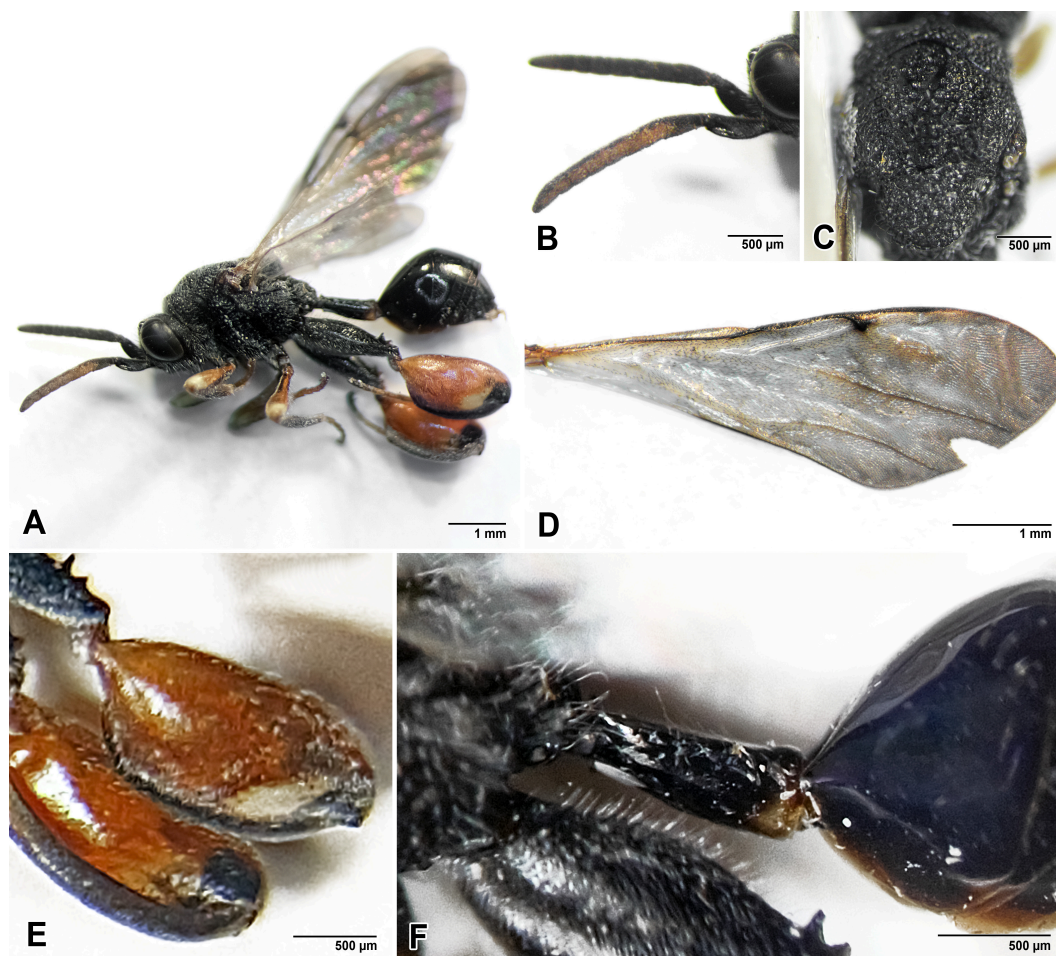
widely spaced dents. Additionally, unlike the two light facial spots seen in other species, *C. sispes* has a completely black face and petiole without such markings (Bouček 1951). In summary, *Chalcis sispes* is clearly distinguished from other Palearctic *Chalcis* species by the reduced number and spacing of teeth on the hind femur, unique coloration patterns (especially the reddish posterior femur and unspotted black face), and specific male genital structures. Compared to *Chalcis myrifex*, *C. sispes* differs in the shape of the antennal scape (non-spatulate vs. flatly enlarged), in femoral dentition (two distinct apical teeth vs. small basal dent), and in the structure of the last sternite (broadly shallowly incised vs. rounded triangular incision).

**Distribution.** *Chalcis sispes* is widely distributed across the European parts of Palearctic region including Bosnia-Herzegovina, Bulgaria, Caucasus, Croatia, Czech Republic, Czech Republic, England, Europe, Finland, France, Germany, Hungary, Ireland, Italy, Leningrad, Moldova, Mongolia, Netherlands, Norway, Poland, Primor'ye, Romania, Serbia, Siberia, Slovakia, Sweden, Transcaucasus, Tunisia, United Kingdom (UCD Community 2023), and Iran (Lotfalizadeh et al. 2012).

### *Chalcis myrifex* (Sulzer, 1776)

**Material examined.** 1♀ 1♂, IRAQ - Basrah Province, Basrah, 30°55'56.6"N, 47°14'00.6"E, 3 m a.s.l., 23.x.2024; lgt.: F. Alag.

**Distribution.** This species has been reported from the European parts of the Palearctic region, Iraq (Karbala province), North Africa (Tunisia and Morocco), and North America (USA) (Peck 1963; Kissayi et al. 2019; Kareem et al. 2022; UCD Community 2023).



**Figure 1.** Male of *Chalcis sispes* (Linnaeus, 1760). **A.** General habitus, lateral view; **B.** Antennae; **C.** Thorax, dorsal view; **D.** Fore wing; **E.** Hind femur; **F.** Petiole, lateral view.

## Family Torymidae Walker, 1833

### Genus *Iridophaga* Picard, 1833

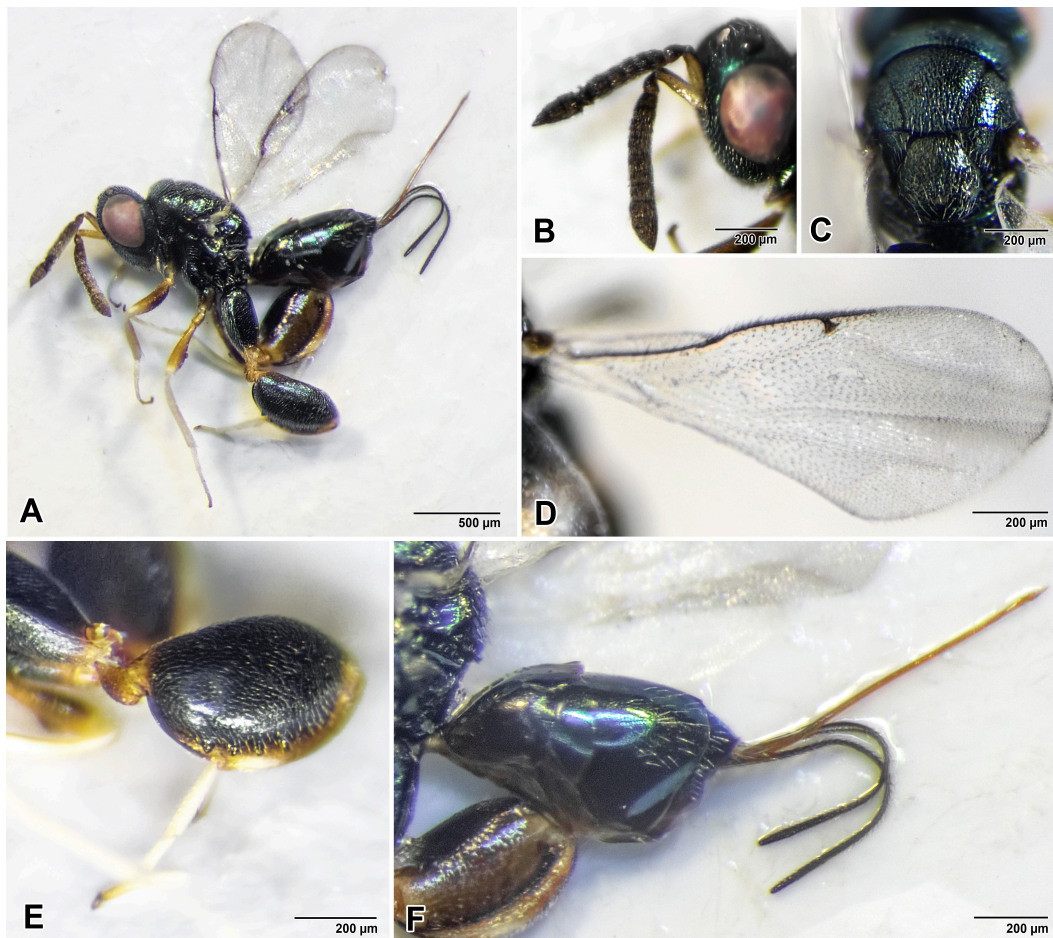
Type species *Iridophaga lichtensteini* Picard, 1933.

#### *Iridophaga lichtensteini* Picard, 1933 (Fig. 2)

**Material examined.** 1♀, IRAQ - Basrah Province, Basrah, 30°55'56.6"N, 47°14'00.6"E, 3 m a.s.l., 23.X.2024; lgt.: F. Alag.

**Measurements.** Body length: 1.7 mm; ovipositor length: 1.0 mm (Fig. 2A), fore wing length: 1.3 mm; width: 0.6 mm (Fig. 2D).

**Comparative diagnosis.** *Female.* Body metallic green, with hind coxa and femur concolorous with thorax. The following parts testaceous: apical half of fore and mid coxa, tibia, three basal tarsomeres, scape, and ovipositor. Pedicel and flagellomeres bronzy to dark-brown (Fig. 2A, B). (In contrast, *Iridophaga korsakowi* shows a metallic green body with hind coxae metallic but hind femora bronze-green with white apices. Fore and mid legs are whitish, slightly darkened on the middle of femora; antennae pale yellowish-white with slightly darkened scape dorsally; ovipositor pale reddish and very long, about 1.5 times body length, flagellum pale yellowish-white with slight darkening on scape dorsally. Metasoma with indistinct petiole (Fig. 2F). Malar sulcus absent. Funicular segments transverse. Fore wing hyaline, 2.2 times as long as broad (Fig. 2D). Hind femur with 7 teeth on outer margin (Fig. 2E). Ovipositor 1.2 times as long as metasoma (Fig. 2F). Propodeum 0.75 times as long as mesoscutellum with coarser reticulation than the latter (Fig. 2C). In *I. korsakowi*, flagellum formed of transverse articles widening gradually toward apex. Hind femur with 8 ventral teeth, ovipositor about 1.5 times longer than body.



**Figure 2.** Female of *Iridophaga lichtensteini* Picard, 1933. **A.** General habitus, lateral view; **B.** Head and antennae; **C.** Thorax, dorsal view; **D.** fore wing; **E.** Hind tibia; **F.** Metasoma and ovipositor, in lateral view.

In Summary, *Iridophaga lichtensteini* and *I. korsakowi* are closely related species distinguished by several subtle morphological traits. While both exhibit metallic green coloration, *I. lichtensteini* has uniformly colored hind coxae and femora matching the thorax, unlike the bronze-green and white-tipped hind femora seen in *I. korsakowi*. Antennal coloration and structure also differ, with *I. lichtensteini* displaying darker pedicels and flagellomeres compared to the lighter, thickened flagellum of *I. korsakowi*. The number of teeth on the hind femur and the relative length of the ovipositor provide further differentiation, as does the proportion and sculpturing of the propodeum relative to the mesoscutellum. These distinctions, though subtle, are consistent and critical for accurate identification within this genus.

**Distribution.** This species has been reported from the Canary Islands, France, Kazakhstan, Spain (UCD Community 2023), and Iran (Lotfalizadeh & Gharali 2005).

## DISCUSSION

Within the genus *Chalcis*, two species, *C. myrifex* and *C. biguttata* have been reported from Iraq (Kareem et al. 2022; Mansowr et al. 2024). With the report of *C. sispes* in this study, the known species of *Chalcis* in Iraq now total three. In the present study, specimens of *Chalcis myrifex* were collected from the Basrah environs, marking the first record of this species in Basrah Province and the second record in Iraq, following its earlier report from Al-Husayniya District, Karbala Province (Kareem et al. 2022). The biological associations of *C. myrifex* (Sulzer, 1776) (Kareem et al. 2022) and *C. sispes* in Iraq are unknown. However, Michael (2008) reported the soldier fly, *Stratiomys longicornis* (Scopoli, 1763) (Diptera: Stratiomyidae) as a host for *C. myrifex* in Austria. *Chalcis biguttata* Spinola, 1808, and *C. sispes* are primary parasitoids of some species of Stratiomyidae (UCD Community 2023).

The genus *Iridophaga* comprises two species worldwide: *Iridophaga korsakowi* Picard, 1936, and *I. lichtensteini* (UCD Community 2023). *Iridophaga lichtensteini* has been reported as a parasitoid of mantid oothecae, including those of *Iris oratoria* (Linnaeus, 1758) (UCD Community 2023) and *Empusa fasciata* Brulle, 1832, as well as *Elaea* sp. in Iran (Mirzaee et al. 2022). No evidence for the occurrence of *Iridophaga* species in Iraq was found in the reviewed literature. Therefore, *I. lichtensteini* represents the first record of the genus *Iridophaga* in Iraq.

Only six species of Torymidae, belonging to six genera, have been reported from Iraq (Mansowr et al. 2023). With the new finding of *I. lichtensteini*, the total number of known Torymidae in Iraq increases to seven. Given Iraq's extensive geographical range and diverse topography, climate, and vegetation, the country is expected to have a high diversity of insect species. Further surveys across different regions of Iraq will likely lead to the identification of many additional species of insects.

## AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: F. Alag and A.D. Shaaban: Fieldwork, sampling, and writing the manuscript; Y. Karimpour: mounting and initial identification of specimens; writing and revising the manuscript. The authors read and approved the final version of the manuscript.

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## AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in the Collection of the Plant Protection Department of Urmia University and are available from the curator upon request.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

## CONSENT FOR PUBLICATION

Not applicable.

## CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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## اطلاعات جدید از فون بال غشاییان بالاخانواده Chalcidoidea (Hymenoptera) در عراق: گزارش جدید از گونه‌های جنس *Chalcis* Fabricius و *Iridophaga* Picard

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**چکیده:** زنبورهای بالاخانواده Chalcidoidea از نظر تنوع زیستی از مهم‌ترین بالاخانواده‌های راسته بال‌غشاییان هستند. نمونه‌هایی از زنبورهای *Chalcis sispes* (Linnaeus, 1760) (Hymenoptera: Chalcididae) و *Iridophaga lichtensteini* Picard, 1933 (Hymenoptera: Torymidae) با استفاده از تور حشره‌گیری از اطراف بصره جمع‌آوری و برای اولین بار از کشور عراق گزارش می‌شوند. برخی ویژگی‌های زیستی و شکل‌شناسی این دو گونه به همراه تصاویری از آنها ارائه شد.

**ویراستار علمی:**  
حسین لطفعلی‌زاده

**دریافت:** ۱۹ اردیبهشت ۱۴۰۴

**ویرایش:** ۳۱ مرداد ۱۴۰۴

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**واژگان کلیدی:** تشخیص، فون، انگل‌واره، مگس‌سرباز، آسیای غربی