

TAXONOMIC STUDY OF GENUS *CERCERIS* LATREILLE, 1802
(HYMENOPTERA, CRABRONIDAE) IN IRAQ

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ABSTRACT

This study provides a Key to the species of *Cerceris* Latreille, 1802 (Hymenoptera, Crabronidae, Philanthinae) that were collected from different areas in Iraq. This is followed by a distribution list, including total species which had been registered for Iraq. Also this study includes some observations about the species that were recorded in previous checklists.

Key words: *Cerceris*, Crabronidae, Hymenoptera, Iraq, Philanthinae.

INTRODUCTION

Sphecidae, a large family and a paraphyletic entity based on some phylogenetic analysis, was subdivided into four families: Heterogynaidae, Ampulicidae, Sphecidae and Crabronidae (Bohart and Menke, 1976; Brothers, 1999; Melo, 1999). These wasps can be diagnosed by the posterior edge of the pronotum which is a straight line which terminates laterally into a rounded lobe that does not reach the tegula (Bohart and Menke, 1976).

Members of *Cerceris* Latreille, 1802 (Hymenoptera; Crabronidae), is the largest genus of this family, with over 864 described species (Pulawski, 2017). The genus has a cosmopolitan distribution, with species on every continent (Genaro, 2004). According to Bohart and Menke (1976), Roche and Gadallah (1999) and Guichard (1986) this genus was characterized from other forms by many morphological features: abdomen not petiolate, compound eyes without notch or they emarginated internally, prestigmal length of first submarginal cell much less than half total cell length, hind ocelli normal, recurrent veins 1m-cu and 2 m-cu received by the second and third submarginal cell respectively, apex of hind femur truncate or flattened, second submarginal cell of forewing with distinctly petiolate, medial vein of hind wing diverging after vein of cu-a.

Many species of *Cerceris* are solitary, but some of them are nesting sites or nesting communally; generally, the females of this genus dig a nest in the soil and provide it with living prey items that had been paralyzed with venom; their prey are usually beetles, and sometimes bees (Alexander and Asis, 1997; Genaro, 2004).

The aim of this study is to resolve the mistakes in some previous checklists and to design a key to the species which are collected during the current investigation.

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MATERIALS AND METHODS

The wasps were collected from different localities of Iraq that include the provinces of: Baghdad, Dohuk, Erbil, Maysan and Wasit during 2016.

Adult of wasps were collected by sweep nets, then mounted with insect pins and kept in insect boxes to be diagnosed. The genus of *Cerceris* and species were identified by using several taxonomic keys such as: Bohart and Menke (1976); Richards (1980); Schmidt (2000); Kazenas (2001) and Gadallah and Assery (2004); also they were compared with the diagnosed species stored in the Iraq Natural History Research Center and Museum, University of Baghdad.

The plates had been taken with a Samsung galaxy S4, GT-19500 and used binocular dissecting microscope (MB. MARIOBROMA.SRL, Roma) to magnificent the morphological features.

RESULTS AND DISCUSSION

In the present paper, a diagnostic key to species was made depending on the specimens collected in current investigations; these species include: *Cerceris sabulosa*, *C. hortivaga*, *C. bupresticida* and *C. rubida*. The other species that have not been obtained throughout the period of the investigations were referred to as a checklist and global distribution only.

Key to the collected species of *Cerceris* Latreille:

1. Basal of second gasteral sternites with semicircular plate (Pl. 1) 2
 . Basal of second gasteral sternites simple 3
2. Propodeal enclosure slightly ridged and less shiny (Pl. 2D). Male: mesopleuron and first gasteral tergite black (T1) (Pl. 2 C, D); fourth gasteral tergite (T4) bicolored, black anteriorly and yellow posteriorly (Pl. 2A) *C. sabulosa* (Panzer)
 . Propodeal enclosure smooth and shiny, especially at adjacent of median sulcus (Pl. 3C); Male: mesopleuron yellow (Pl. 3B); first gasteral tergite (T1) ferruginous (Pl. 3C); fourth gasteral tergite (T4) completely black (Pl. 3A); *C. hortivaga* Kohl
3. Propodeal enclosure ridged; scutellum black (Pl. 4A)..... *C. bupresticida* Dufour
 . Propodeal enclosure punctate; scutellum yellow (Pl. 4 C).....*C. rubida* (Jurine)

The Checklist of species including other species that were recorded previously from Iraq:

***Cerceris bupresticida* Dufour, 1841**(Pl. 4 A, B)

Cerceris bupresticida Dufour, L., 1841: Ann. Sei. Nat. Zool. (2) 15: 353

Distribution: Iraq (Morice, 1921); Southern Europe, Caucasus, North Africa, Israel, Iran, Afghanistan, Central Asia, Kazakhstan and Libya (Schmidt, 2000); Mongolia and North China (Tsuneki, 1971).

Materials examined (3 males only): Dohuk province, Amadiya: 2 specimens, 31.VII.2016. Erbil prov., Rawanduz: 1 specimen, 2.VIII.2016.

***Cerceris chlorotica* Spinola, 1839**

Cerceris chlorotica Spinola, M., 1839: Ann. Soc. Ent. France 7: 496

Distribution: Iraq (Morice, 1921); North Africa, Sudan, Israel (Schmidt, 2000).

Note: Morice (1921) and Derwesh (1965) referred to this species from Iraq under the name of *Cerceris lutea* Taschenberg, 1875.

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***Cerceris hortivaga* Kohl, 1880**(Pl. 3)

Cerceris hortivaga Kohl, F. F. 1880: Z. Ferdinand. Innsbruck, (3) 24: 223.

Distribution: Iraq (Kaddou, 1967); East Siberia, China, Korea, Japan; in Europe this species distributes from South Russia to Bulgaria and South Tyrol, North to the Czech Republic and Alsace (Schmidt, 2000).

Materials examined (1 male only): Erbil prov., Rawanduz: 1 specimen, 2.VIII.2016.

***Cerceris luxuriosa* Dahlbom, 1845**

Cerceris luxuriosa Dahlbom, A. G. 1845: Hymenoptera Europaea, Lund: 498.

Distribution: Southern Egypt, Sudan and Iraq (Morice, 1921); Libya (Guiglia, 1932).

Note: This species was registered from Iraq by Morice (1921) and Derwesh (1965) under the name of *Cerceris subimpressa* Schletterer, 1887.

***Cerceris pallidula* Morice, 1897**

Cerceris pallidula Morice, F. D. 1897: Trans. Ent. Soc. London 1897: 302.

Distribution: Egypt, Israel; Iraq Morice (1921); Morocco, Algeria, Tunisia (Schmidt, 2000).

Notes: This species was registered from Iraq by Morice (1921) and Derwesh (1965) under the name *Cerceris annexa* Kohl, 1898; while this species currently is a subspecies under the species of *C. pallidula* (Pulawski, 2017).

***Cerceris quadricincta* (Panzer, 1799)**

Philanthus quadricinctus Panzer, G. W. F. 1799: Faunae Insectorum Germaniaeinitia. Nürnberg. 6. Jahrg. Heft 63:14.

Distribution: Iraq (Beaumont, 1961); this species distributes in Southern and Central Europe, North to Great Britain and Northern Germany; Morocco, Tunisia, Turkey, Israel, Iraq, Iran, Afghanistan, Central Asia, Kazakhstan, also in Corsica and Sardinia (Schmidt, 2000).

***Cerceris rubida* (Jurine, 1807)** (Pl. 4 C, D)

Philanthus rubidus Jurine, L., 1807: Nouvelle méthode de classer les Hyménoptères. Genf. Tom. I: Taf. 10.

Distribution: Iraq (Derwesh, 1965); South Europe, Central Europe (Slovakia, Hungary), Turkey, Cyprus, Ukraine, Russia, Caucasus, Morocco, Israel, Syria, Iran, Afghanistan, Central Asia, Mongolia, China and Japan (Schmidt, 2000).

Note: This species was recorded from Iraq by Derwesh (1965) under the subspecies *C. rubida conjuncta* Schiff.; but this subspecies is a synonym to subspecies *C. rubida conjuncta* Schletterer, 1887 (Pulawski, 2017); as well the subspecies *Cerceris rubida pumilio* Giner Marí, 1945 which is also distributed in Iraq, Jordan, Syria, Iran, Israel, Cyprus and Southern Turkey (Schmidt, 2000).

Materials examined (13 males only): Dohuk province, Amadiya: 4 specimens, 30.VII.2016; Sersank, 4 specimens, 31.VII.2016. Erbil prov., Rawanduz: 5 specimen, 2.VIII.2016.

***Cerceris sabulosa* (Panzer, 1799)** (Pl. 2)

Philanthus sabulosa Panzer, 1799: Fauna Germaniae, 12: 63.

Distribution: Iraq (Morice, 1921); Saudi Arabia (Guichard, 1993); South and Central Europe, North to South England, Caucasus, Iran, Central Asia, Mongolia, North China, Korea (Schmidt, 2000); Armenia, Austria, Bulgaria, Egypt, France, Germany, Hungary, Italy, Russia, Spain, Tajikistan, Turkey and Ukraine (Gadallah and Assery, 2004).

Note: Derwesh (1965) referred to this species in his checklist under the species synonyms *Philanthus emarginatus* Panzer, 1799 and *Cerceris emarginata* (Panzer, 1799).

Materials examined (15 specimens): Baghdad province, Bab Al-Mudham: 2 males, 1 female, 31.IX.2016. Erbil prov., Rawanduz: 1 male, 2 females, 2.VIII.2016. Dohuk prov. Solaf, 2

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females, 30.VII.2016. Maysan province, 3 females. Wasit province: Al-Zubaidiya, 4 females, 11.IX.2016.

***Cerceris spinipectus* F. Smith, 1856**

Cerceris spinipectus Smith, F. 1856: Catalogue of Hymenopterous Insects. IV: 443.

Distribution: Iraq (Morice, 1921); Arabia, Central Asia, Caucasus, Armenia, Iran, Greece, North Africa, Egypt, Israel, Cyprus, Turkey, Palestine, Uzbekistan, Turkmenistan and Afghanistan (Schmidt, 2000).

***Cerceris tricolorata* Spinola, 1839**

Cerceris tricolorata Spinola, M. 1839: Ann. Soc. Entomol. France 7: 493

Distribution: Iraq (Morice, 1921); Arabian Peninsula (Guichard, 1993); North Africa, Chad, Israel, Pakistan (Schmidt, 2000).

Note: This species was recorded from Iraq by Morice (1921) and then Derwesh (1965) under the name of *Cerceris insignis* Klug, 1845; while Beaumont (1961) referred to its presence in Iraq under the current name.

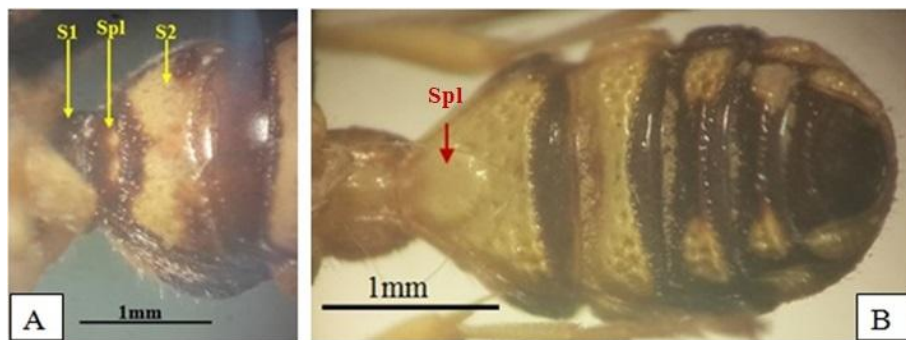


Plate (1): Male of *Cerceris sabulosa* (A) and *C. hortivaga*.
(S: sternite; Spl: semicircular plate)

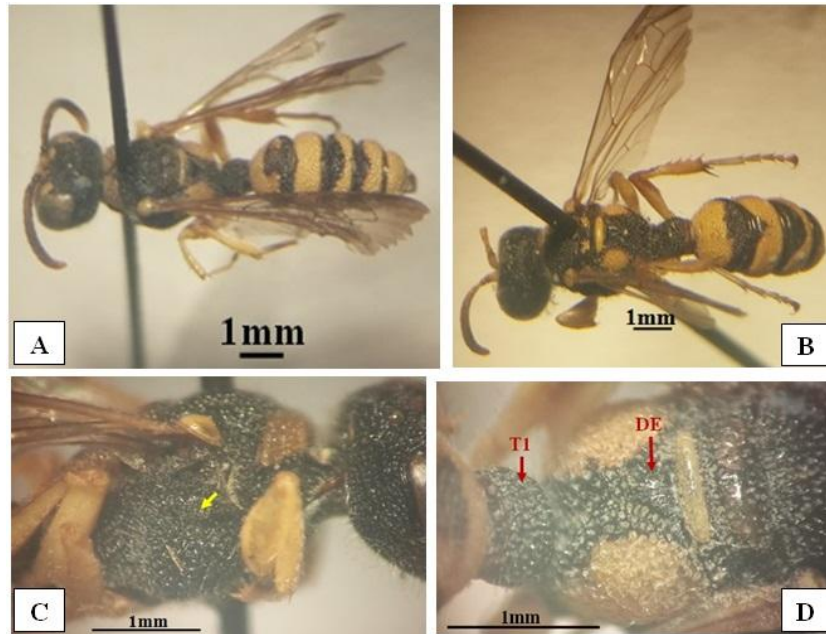


Plate (2): *Cerceris sabulosa* (A) male, (B) female (C) lateral view of thorax (yellow pointer on mesopleuron) (D) dorsal surface of propodeum and first gaster tergite. (T: tergite; DE: dorsal enclosure)

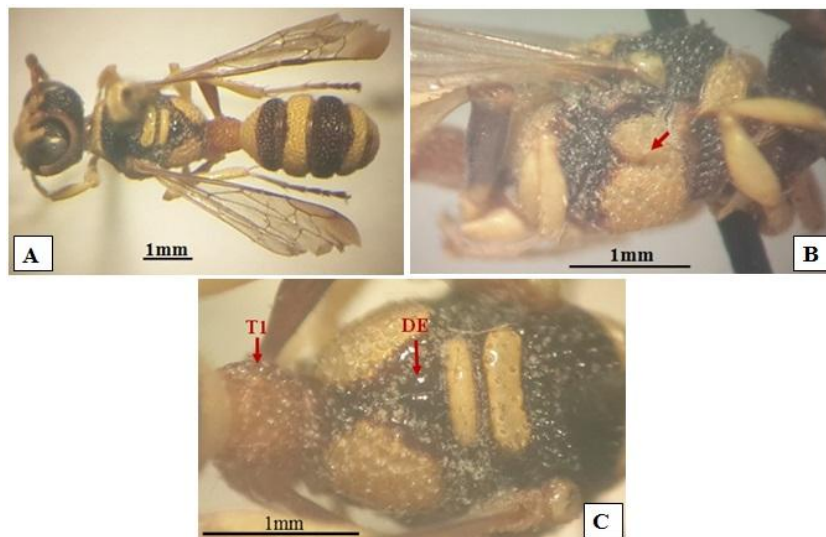


Plate (3): Male of *Cerceris hortivaga* (A) habit, (B) lateral view of thorax (red pointer on mesopleuron) (C) dorsal surface of propodeum and first gaster tergite. (T: tergite; DE: dorsal enclosure)

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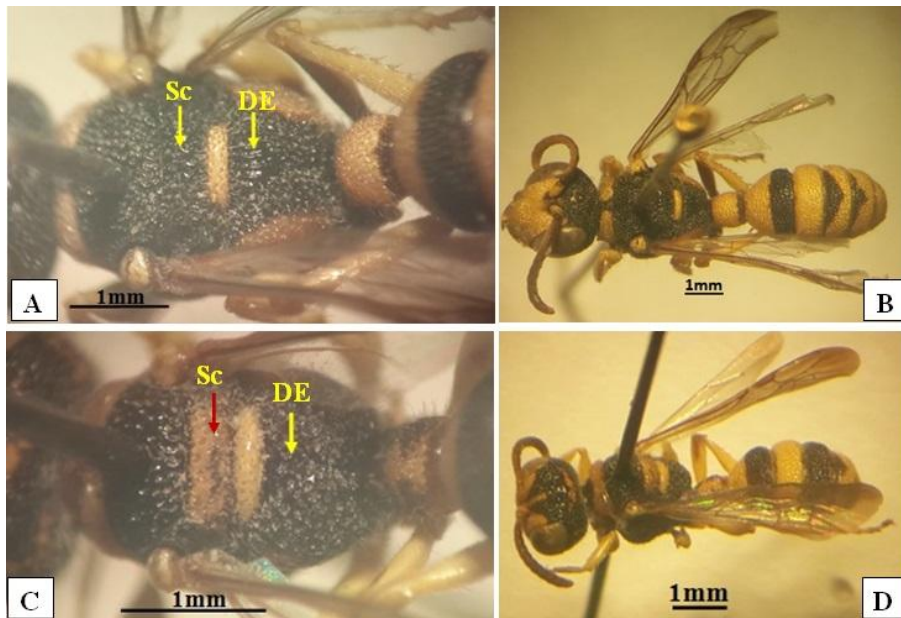


Plate (4): Male of *Cerceris bupresticida* (A) dorsal view of posterior surface of thorax (B) habitat; male of *C. rubida* (C) dorsal view of posterior surface of thorax (D) habitat. (Sc: scutellum; DE: dorsal enclosure)

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دراسة تصنيفية للجنس *Cerceris* Latreille, 1802
(Hymenoptera, Crabronidae)
في العراق

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الخلاصة

صمم مفتاح لعزل انواع الجنس *Cerceris* Latreille, 1802 من رتبة Hymenoptera عائلة Crabronidae عويلة Philanthinae ، التي جمعت من مناطق مختلفة من العراق خلال هذه الدراسة، تلاه قائمة للأنواع المسجلة سابقاً في العراق مع ملاحظات عن الانواع المذكورة في القوائم السابقة.