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Taxonomic study of the family Scoliidae (Hymenoptera; Aculeata) in Iraq

Razzaq Shalan Augul*

Iraq Natural History Research Center and Museum, University of Baghdad, Iraq

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Key words: Aculeata, Hymenoptera, Iraq, Scoliidae, Wasps.

Abstract

In this study, 117 specimens of the hairy wasps (Hymenoptera: Scoliidae), collected from different region of Iraq are investigated. Five species belonging to three genera were determined; this species are: *Campsomeriella thoracica* (Fabricius), *Megascolia maculata* (Drury), *Scolia flaviceps* Eversmann, *S. turkestanica* Betrem, *S. hirta* (Schrank) and *S. schrenkii* (Eversmann). The last two species have been recorded for the first time in Iraq. Identification keys to genera, species and figured of male genitalia are illustrated.

***Corresponding Author:** Razzaq Shalan Augul ✉ razzaqshalan@gmail.com

Introduction

The family of Scoliidae represents one of the smaller groups within the superfamily Vespoidea, Members of both of them occur in the Palaearctic region, but only Scoliinae in the central Europe (Osten, 1999). Most of the species are distributed in tropical and subtropical regions; all species occurring in central Europe have their northern distribution border in the Palaearctic region (*Bańa et al.*, 1938).

Males and females are winged, males are slenderer with long antennae, female antennae are shorter and clubbed. Scoliidae were previously grouped with Tiphiidae, first together to one family Scoliidae (Clausen *et al*., 1932), later separated but still thought to be most related (Krombein *et al*., 1979). Recently, the group is mentioned to be more related to the true wasps, family of Vespidae (Goulet and Huber, 1993).
The following character states are typical for Scoliidae: distal parts of wings have longitudinal wrinkles, mesosternum and metasternum are divided by a transverse suture, and hind coxae are well-separated (Osten, 1999).

The members of this family are parasitoids of mature larvae of scarabaeid beetles; females search for larvae locating them by vibratory signals, paralyze the larva and lay eggs on its surface. Larvae feed usually in the soil on tissues of the scarabaeid larva (Clausen, 1940; O'Neill, 2001).

The species of Scoliidae distribute widespread in tropical and warmer temperate zones. The family Scoliidae contains about 560 valid species in 43 valid genera in currently two subfamilies: Proscoliinae and Scoliinae (Osten, 2005a), of which 69 species are present in the western Palaearctic region (Osten, 2000), but only Scoliinae in the Central European (Osten, 1999).

In Iraq, the family of Scoliidae they are not studied enough and restricted on the checklist of insect fauna, therefore, the present study is focused on a redescription of adult's morphology that have been collected from different regions.

Materials and methods

Specimens' collection

The wasps were collected at different localities from Iraq during April-October 2015. They were captured by sweep and aerial net. Specimens, pinned, labeled, mounted and put into collection boxes, subsequently; also, this study to rely on unidentified specimens that previously collected and stored in Iraq natural history museum, University of Baghdad.

Identification

The wasps were identified using published keys (Osten, 2000; Gadallah, 2004; Osten, 2004; Osten, 2005a). Classification and nomenclature data of Scoliidae suggested by Osten (2000; 2005 a, b). Dissecting microscope and camera digital are used to figured the species parts.

After identifying of specimens, they deposited in the Insect Collection of the Iraq Natural History Research Center and Museum, Baghdad University.

Results and discussion

Key to genera and species of Scoliidae:

Fore wings with two recurrent veins (fig.1 C) ..... Genus *Campsomeriella* ..... body entirely black, wings orange with dark or smoky apex in female(Fig.2 A); black with orange bands on abdomen, wings hyaline in male (fig.1 A) ... *C. thoracica* (Fabricius) ore wings with one recurrent veins (fig. 4 B)..... 2

Body relatively large; fore wing with three submarginal cells (fig. 4 B) ..... *Megascolia* Betrem ..... Head red, wing orange, scutellum reddish – yellow, two yellow big spots and well separated on T2 and T3; last tergites with reddish – yellow and densely recumbent hairs (fig.4 A) ..... female of *M. maculata* (Drury)

Body small to moderate; fore wing with two submarginal cells .....*Scolia* Fabricius..3

Antennae composed from 12 segments .... females ...4
Antennae composed from 13 segments ..... males 5
Generally Body shining black with red – brownish head and scapulae (fig.5 A, B) ..... *S. turkestanica* Betrem.

Generally Body dark- brown, with yellow colored on front, vertex and some tergites of abdomen (fig. 8A)..... *S. flaviceps* Eversmann.

Generally Body dark- brown, with yellow color on frons, vertex, tempora, scapulae and some tergites of abdomen (fig. 6A, C) ..... *S. flaviceps* Eversmann
Generally Body black , head and scapulae completely black 6

Gaster with two yellow and small spots on T3 only (fig. 9 A, B)..... *S. schrenkii* (Eversmann)

Gaster with yellow two small spots on T2, wide ribbons on T3 with median indentation anteriorly and narrow strip on posterior margin of T4 (fig. 11 A, B)..... *S. hirta* (Schrank)

Campsomeriella thoracica (Fabricius, 1787)
Scolia thoracica Fabricius, 1787.- Mant. Insect. I. p.281 n.10.

Synonym: *Scolia thoracica eriophora* Klug, 1832 (Osten, 2000; Osten *et al*., 2003).

Male: (fig. 1, 2)
Length: 12-19mm. Entirely black with exception: ivory color around of clypeus that leaves bell-shaped black area in middle; bases of mandibles, tegulae and veins dark brown; orange broad bands on posterior margin of abdominal tergites and hairs on this area; hairs white pale on head and shiny white on legs and abdomen, pubescences silvery, Tibiae and tarsi with dense transparent setae.

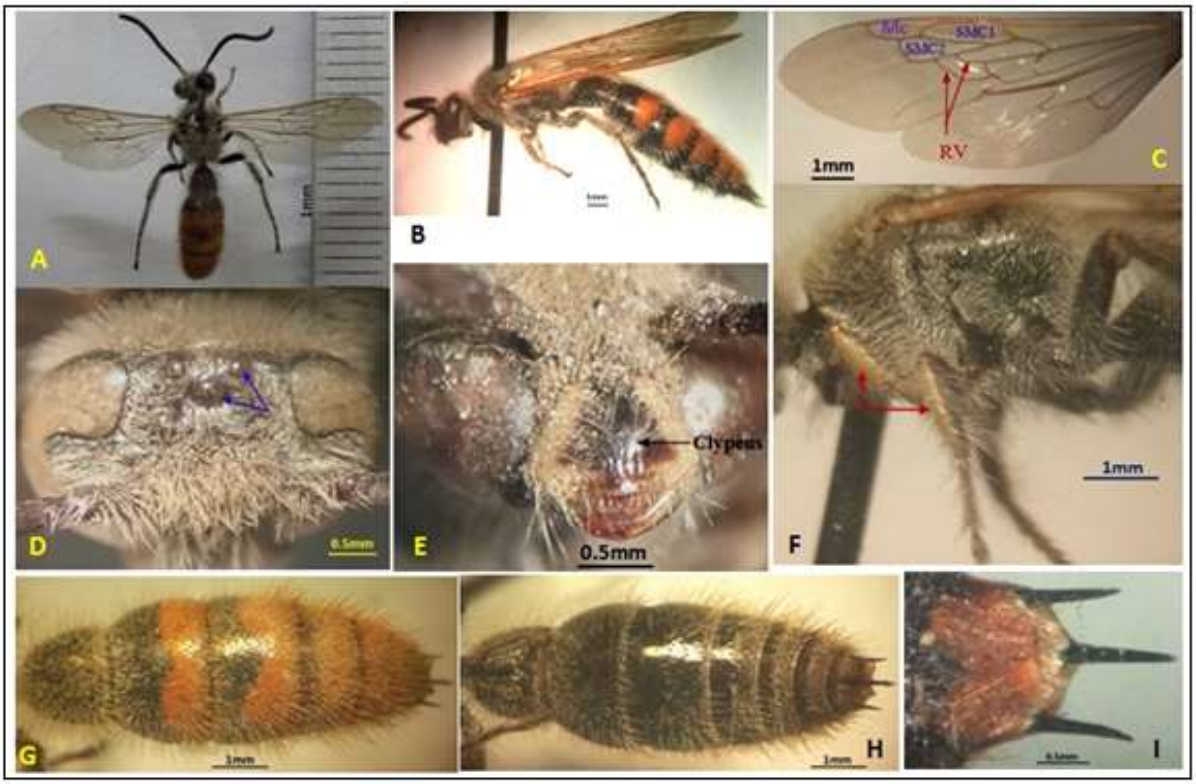

Fig. 1. Male of C. *thoracica* A) habit, dorsal view B) habit, side view C) wings D) head, upper parts of frontal side (pointer on ocelli) E) head, lower parts of frontal side F) lateral side of thorax showing fore and mid tibiae G) dorsal side of gaster H) ventral side of gaster I) pygidial plate.

Face clothed with long hairs and mixed with densely pubescences with exception middle of clypeus, anterior margin of clypeus rounded, clypeus slightly swollen when seen from the side view; mandibles without teeth, frontal fissure absent, anterior ocellus bigger than posterior ocelli, distance between posterior ocelli slightly wider than distance between one ocellus and compound eye. Antennae longer and thinner compared with female, apex of terminal flagellomere truncate.

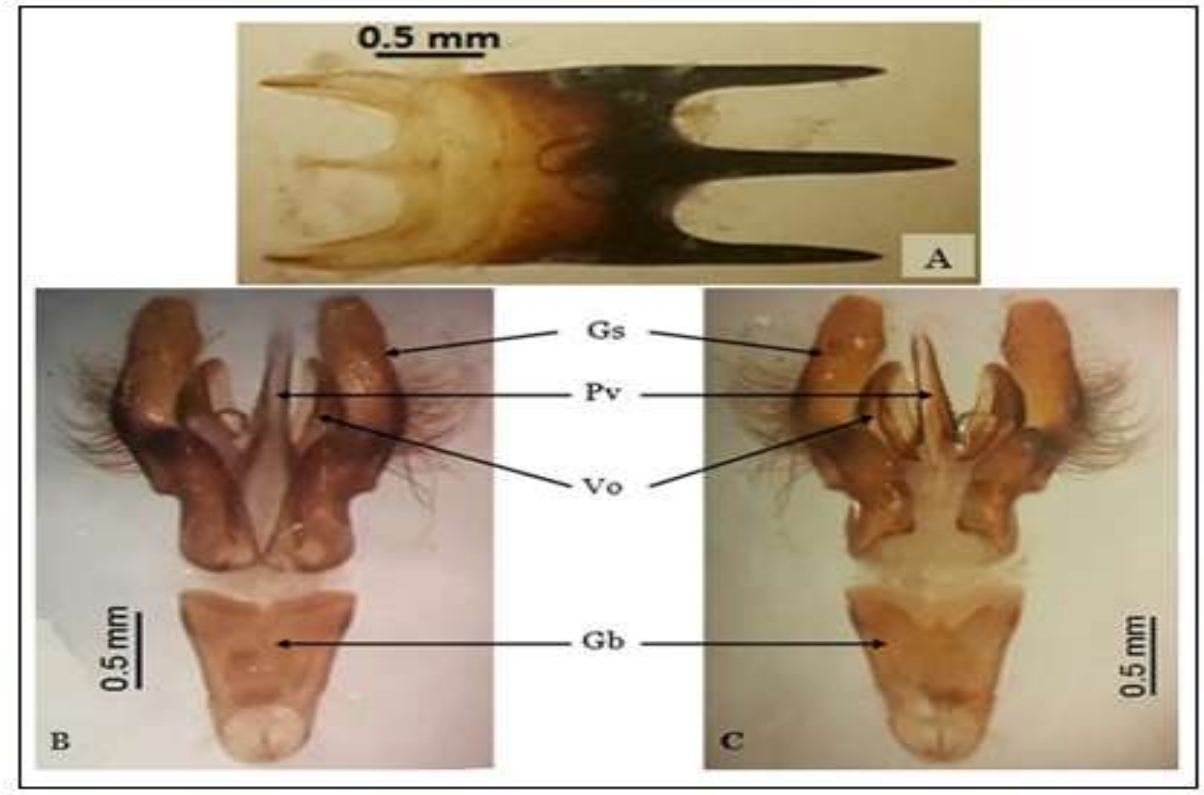

Fig. 2. Male of C. thoracica A) last sternite B, C) genitalia: dorsal view, B and ventral view, C.

Thorax covered by densely, long and erect hairs mixed with densely silvery pubescences, therefore; the sculptures inconspicuous. Legs also hairy and with transparent spicules on apices of tibiae and tarsomeres, claws simple, pulvilli well developed. T1 with small orange spot, T2-T7 with wide orange banded; clearly constriction between first and second abdominal segments; tergites covered with dense, regular and erect hairs, becoming more stout and regular on posterior margins of T2-T7; Pygideal plate red with rough surface. S1 and S2 covered by moderate and erect white pale hairs becoming less on first half and more regular and long on last half from S3-S6, S7 dull and clothed by shorter hairs, posterior margin with well spaced, three processes and finger-like, the middle is longer than lateral (fig. 2 A). Genitalia are shown in figure (2, C and D).

Female: (fig. 3)

Length: 16-24mm.body, hairs and pubescences entirely black with exception: mandibles dark brown; pubescences orange with golden tinge on face, occiput; Pale yellow on scape and pedicel. Wings orange at basal half, black with violet tinge apically.

Frontal fissure absent, ocelli equally in size, distance between posterior ocelli less than distance between one ocellus and compound eye, Small and scattered punctures on upper parts of frons especially around on triangle ocelli. Median disc of clypeus bare, anterior margin rounded; mandible relatively large, strong and simple, sickle-shaped like; Antennae shorter and thicker compared with male, flagellum curved, apex of AS 12 truncate.

Fig. 3. Female of C. *thoracica* A) habit B) head, frontal view C) dorsal side of thorax D) lateral side of thorax E) dorsal side of gaster F) ventral side of gaster G) pygidial plate.

Scutum, scutellum covered with decumbent hairs and scattered large punctures, becoming fine on metanotum. Metanotum with fine and short erect hairs, dorsal side of propodeum with fine and short erect hairs, mixed with fine pubescences on posterior parts. Mesopleuron with finely punctured and covered with long and erect scattered hairs, especially on the lower parts; metapleura bare, upper parts of meso and metapleura shiny and impunctate; lateral side of propodeum with scattered, erect and short hairs. Legs densely covered with black spines becoming more strength, regular and short on outer sides of mid and hind tibiae; hind tibial spurs transparent, claws simple, pulvilli well developed. T1 covered with dense and erect hairs, short and less on T2, T3. T6 with short and erect moderate densely hairs, becoming more regular, densely and decumbent hairs; pygideal plate with very short spinules. Sternites shining, S1 with densely and erect hairs, shorter and less on S2; S3-S5 with semierect, stout hairs, becoming regular in two rows, pre and terminal fringes; S6 covered with recumbent, densely and short hairs, ending with two short and stout spines laterally.

Materials Examined: (18♂♂, 24♀♀) Baghdad province: *Sulaikh* district, 1♂, 25.Apr.1982; Jaddria, 1♂, 2.Sep.1982, 2♀♀, 18.Sept.2015; Bab Al-Muadham, 5♀♀, 20.Sep.2015; Al- Madaen, 4♂♂, 3♀♀, 3.8.2015; Wasit province: Al-Zubaidya, 1♂, 21.Apr.2010, 1♂, 16. Sep.2015, 2♂♂, 23.Sep.2015, 3♀♀, 18.Sep.2015; Aziziya, 3♀♀, 27.Sep.2012; Al-

Zubaidya - Sherhan village, 5♂♂, 1♀,23.Jul.2015 ; Diyala province, Adhaim, 1♂, 19.Jul.2011; Maysan province, Hawizeh Marshes,*Umm An-Ni'aaj*, 2♂♂, 3♀♀, 9.Jun.2015; Kirkuk province, Tuz Khormato, 2♀♀, 23.Apr.2014; *Salah Eldin province*; Baiji, 2♀♀, 11.Jul.1968.

Distribution: Saudi Arabia (Shalaby, 1961); Iran (Chahartaghi Abineh, 2002), Oman (Osten, 2005c); according to Fallahzadeh and Saghaei (2010) this species found in: Crete, Cyprus, Dodecanese Is., Greek mainland, Italian mainland, Malta, North Aegean Is., North Africa (Morocco), Sicily, Spanish mainland, Syria and Turkey. In Iraq, it was previously recorded under the name of *Campsomeris thoracica eriophora* Klug (Khalaf, 1959).

Megascolia maculata (Drury, 1773)
Synonym in Iraq checklists:
Scolia haemorrhoidalis Fabricius, 1787
Male: unknown
Female: (fig.4).

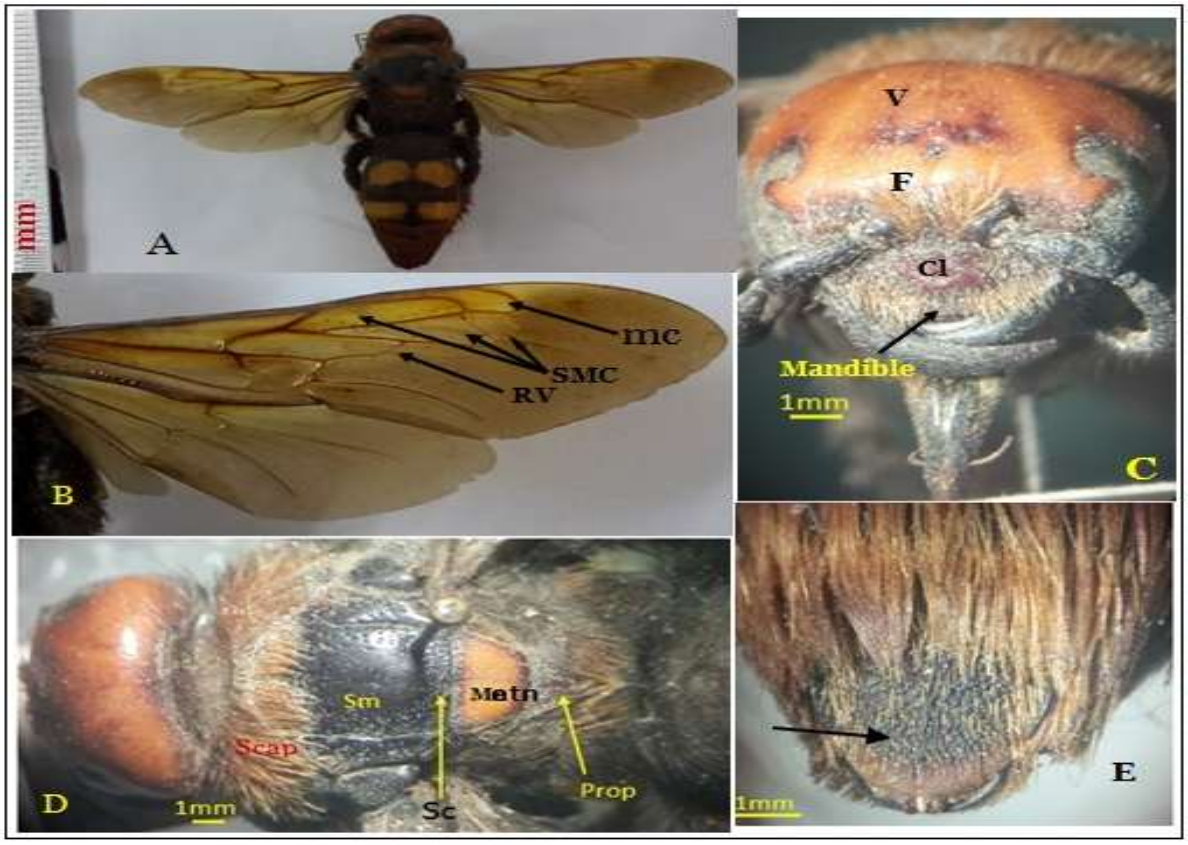

Fig. 4. Female of *Megascolia maculata* A) habit B) wings C) head, frontal view D) dorsal view of thorax E) pygidial plate.

Length 32-38 mm; color: generally black with the exception: frons, vertex, tempora, scape, pedicel and scutellum reddish brown; metanotum, upper part of metapleuron and internal sides of legs are dark brown; wings orange with apex smoky; T2 and T3 with large two yellow spots, very closely on T2 and well spaced on T3; S1-S3 dark ferruginous; hairs reddish brown with golden tinge, with exception hairs on T1 and scattered on legs are black.

Clypeus slightly convex, curly and punctuation; hairs long, erect and restricted on lateral sides of clypeus, between bases of antennae and dorsal side of head. Frontal fissure absent, anterior ocellus lager than posterior, distance between posterior ocelli more less than distance between one ocellus and compound eye, Small and scattered punctures on frons. Mandibles relatively large, strong, simple and sickle-shaped like; Antennal segment with same thick, flagellum curved,

apex of terminal flagellomere truncate. Scutum shining at central disc, with densely moderately size punctures at sided, scutellum with slightly median longitudinal furrow and with scattered small punctures; Metanotum with long, densely and decumbent hairs that leave median part bare and can be determine scattered small punctures; dorsal side of propodeum with long and densely recumbent hairs on first half, less hairs and shorter with rugosed and dull on posterior parts.

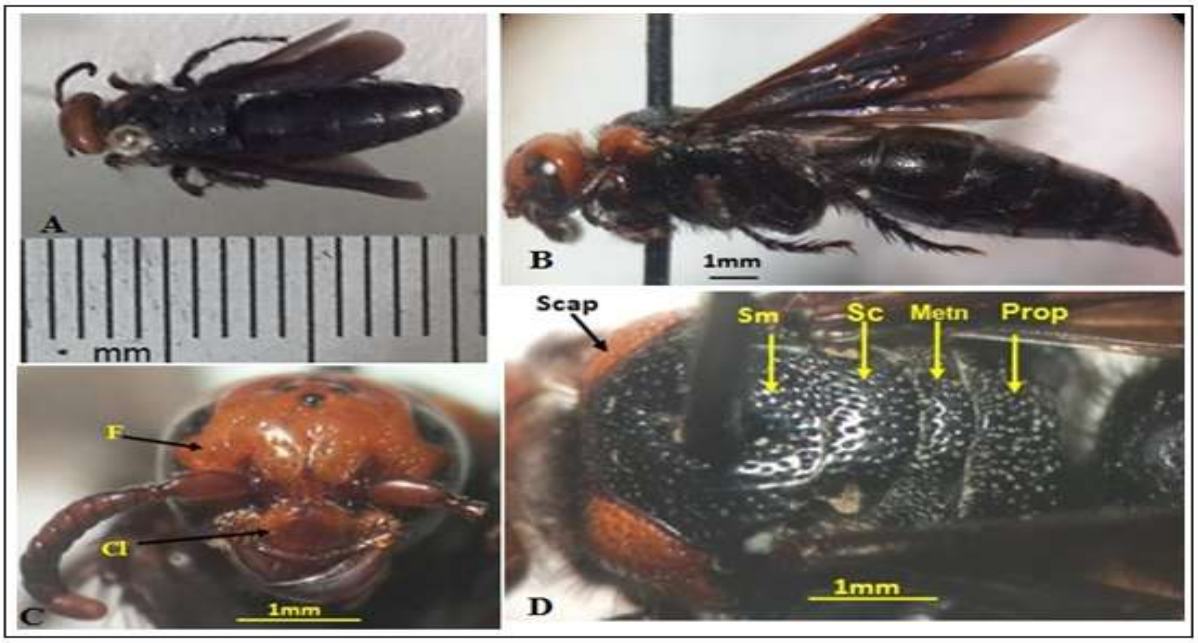

Fig. 5. Female of Sc. *turkestanica* A) habit, dorsal view B) habit, side view C) head, frontal view D) thorax, dorsal view.

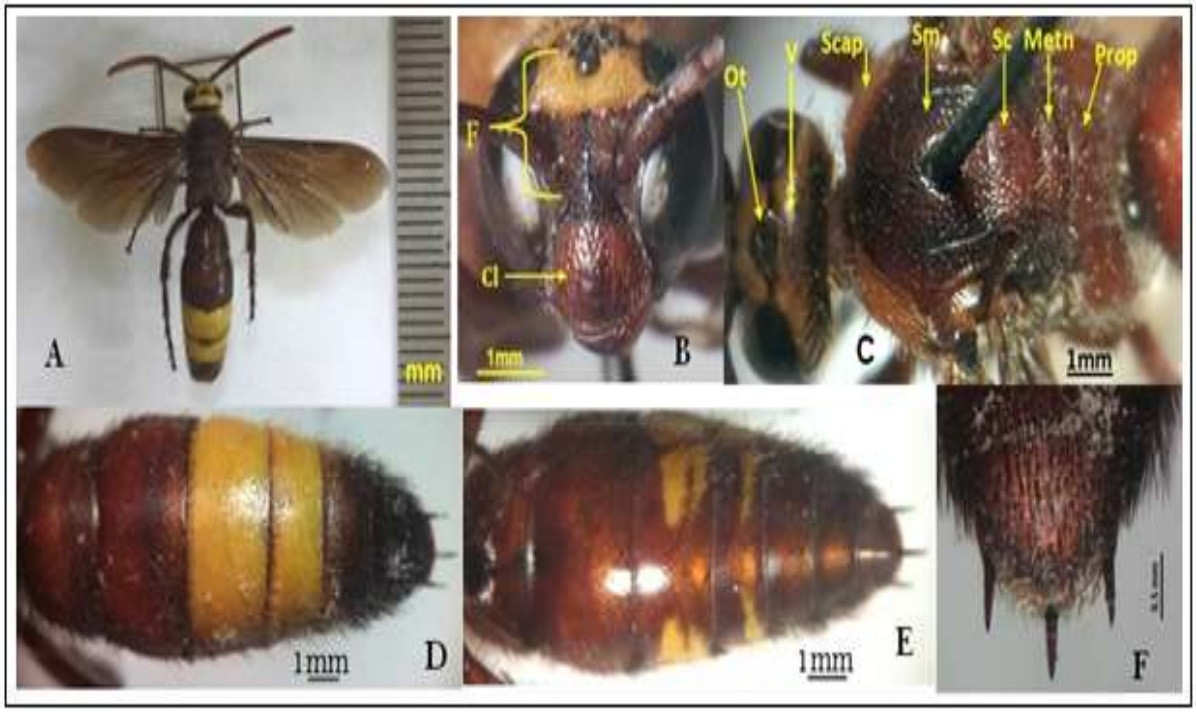

Fig. 6. Male of Sc. *flaviceps* A) habit B) head, frontal view C) head and thorax, dorsal view D) gaster, dorsal view E) gaster, ventral view F) pygidial plate.

Mesopleuron, lower part of metapleuron and lateral side with long and densely suberect hairs that mixed with shorter and fine hairs, upper part of metapleuron shiny and bare. Legs strong and hairy; tarsi with stout spines; fore leg with tarsal rake composed from many shiny brown spines on outer side of tarsomere 1-4(4,2,2,2 spines sequentially), outer claw on internal side of tibial apex clearly curved in last half; mid and hind tibiae with strong, regular and short spines. T1 covered with dense, long and recumbent black hairs, and less on T2, T3-T6 with short and erect moderate densely hairs, scattered, short, recumbent reddish brown with golden tinge on most of T2-T3 and becoming more regular, longer and densely as fringe on posterior margins, remainder tergites with densely, long and recumbent hairs; Pygideal plate roughly with many goldenish brown and very short spicules, posterior margin rounded. Median parts of S1-2 with moderately densely hairs and becoming more densely on median parts of S3-S6, recumbent and regular as fringes on S2-S6. Lateral spines on ending of S6 indistinctly.

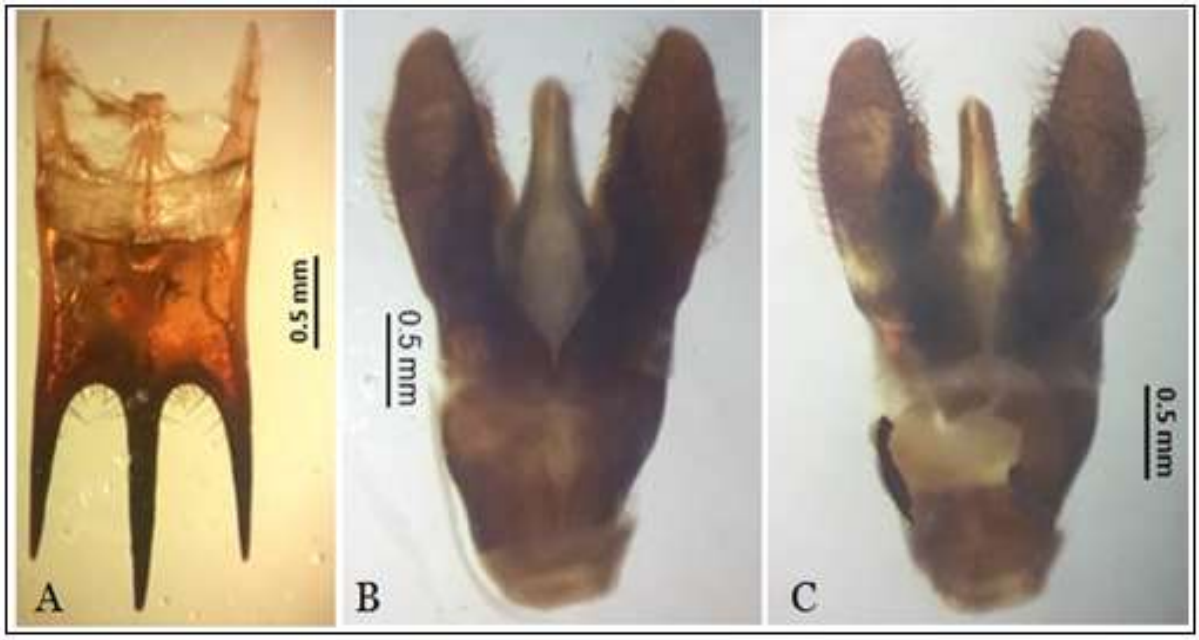

Fig. 7. Male of Sc. *flaviceps* A) last sternite B) genitalia, dorsal view C) genitalia, ventral view.

Materials Examined: (6 ♀♀); Duhok; Sersank, 3♀♀, 2. Jul.1977; Erbil province: Hasarost mountain range,3 ♀♀, 14.Jul.1977.

Distribution: Iraq (Derwesh, 1965); Iran (Esmaili & Rastegar, 1974); Turkey (Tkalcu, 1987); Greece (Osten & Arens, 2004); Albania, Austria, Bulgaria, Crete, Croatia, French, Hungary, Macedonia, North Africa, Romania, Russia, Turkmenistan and Slovenia (Bogusch *et al.*, 2011).

Scolia turkestanica Betrem, 1935
Male: unknown
Female: (fig. 5).

Length: 14 mm, Color: Generally shiny black with exception: head, antennae and scapulae are reddish brown; legs and bases of abdominal sternites dark ferruginous; hairs black with exception: scattered and suberect moderately long hair goldenish- brown on head, scapulae with dark brown and erect moderately long hairs; Wings dark with noticeably bluish-purple reflection. Head with scattered and small punctures, frontal fissure absent, a longitudinal black carina between antennal bases present; middle clypeus slightly convex, depression laterally; distinguished depression curved line behind posterior ocelli, triangle black brown and usually consist line between eyes at posterior ocelli, anterior ocellus bigger than

posterior ocelli, distance between posterior ocelli more less than distance between one posterior ocellus and inner margin of compound eye; antennal flagellomeres short and thicker, last tarsomere elongate with truncate apex; mandibles strongly with acute apices.

Thorax and propodeum with densely large punctures that leave clearly and regular distance, pronotum covered by moderately dense, medium and erect hairs; scutum, scutellum, metanotum and dorsum surface of propodeum bare; mesopleuron, metapleuron, lateral side of propodeum with scattered, short and erect hairs. Legs with fewer, medium and erect hairs and becoming stout and mixed with spinules on mid and hind tarsi; outer surface of fore tarsomeres (1-4) with a tarsal rake that consist from four spines on first tarsomere and two on second to fourth tarsomeres; outer surfaces of mid and hind tibiae with stuff, black and short spines becoming longer on hind tibiae. Inner spur slightly curved and shorter than external spur on the apex of hind tibia; claws simple, pulvilli moderately developed. Tergites covered with moderately dense, short and erect hairs; posterior margins from T2 to T6 with fringed hairs, first half of T4-T6 bare; pygideal plate rugosed and covered with short, thin and ferruginous spicules, posterior margin rounded; S1-S5 with longer and stouter hairs compared with hairs on tergites, erect on posterior half, S2-S5 with fringed composed from decumbent hairs; S6 with short and erect hairs becoming more stout on last half, ending with two small spicules laterally.

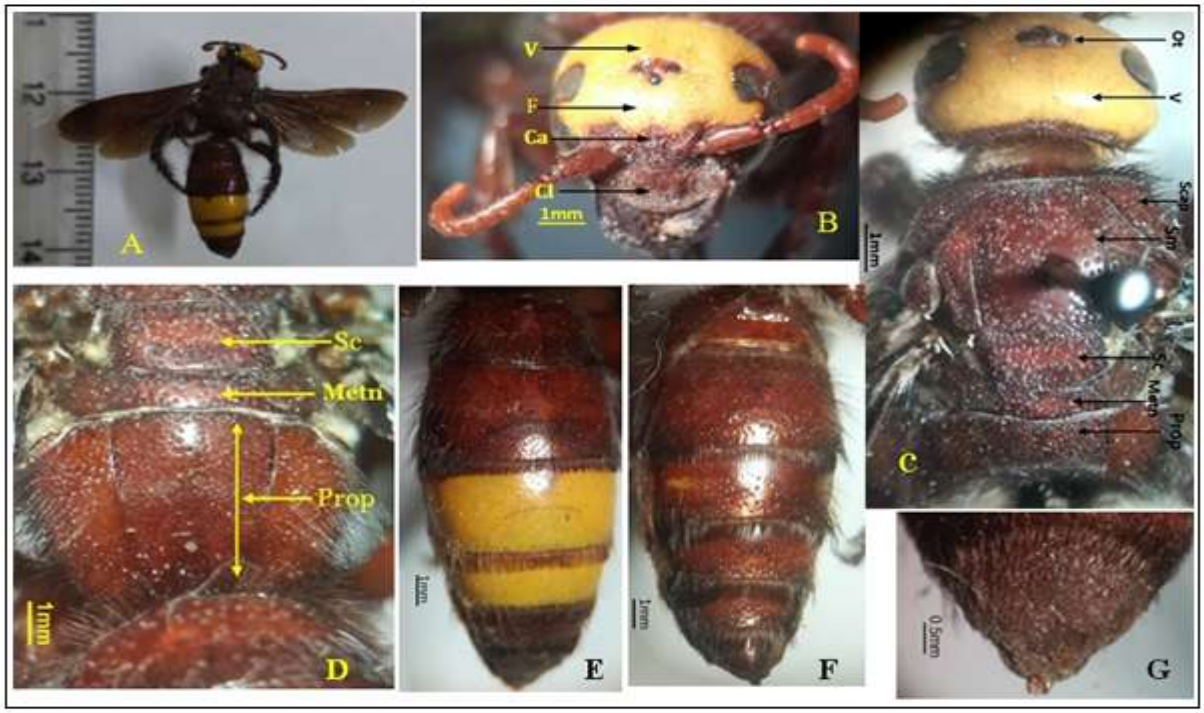

Fig. 8. Female of Sc. *flaviceps* A) habit B) head, frontal view C) dorsal view of head and thorax D) dorsal view of posterior thorax with propodeum E,F) gaster, dorsal and ventral respectively G) pygidial plate.

Materials Examined (2 ♀♀): Maysan province; Hawizeh Marshes, *Umm An-Ni'aaj*, 9.Jun.2015.

Distribution: Iran (Steinberg, 1962); Turkey (Osten & Özbek, 1999); Armenia, Iraq, Turkmenistan and Uzbekistan (Osten *et al.*, 2003); Kirgizstan, Tadzhikistan (Osten, 2005a).

Scolia flaviceps Eversmann, 1846

Male: (fig.6).

Length: 13-22 mm, Color: entirely blackish - brown with exception the following parts are glossy yellow: upper parts of frons, vertex, temporae, scapulae, T3, T4, small spots on lateral sides of T5, spots on lateral

sides of S3, one and very small patch at lateral sides of S4; apical half of mandibles black; last three of flagellomeres light brown; hairs black brown with exception hairs on head with fine erect pale hairs , golden and suberect on distance between antennal bases and stouter on clypeus, , golden on scapulae, T3 and T4 pale yellow color. Wings dark brown with slightly bluish-purple reflection. Head densely punctured, frontal fissure absent, a longitudinal black carina between antennal bases present; middle of clypeus clearly convex in side view; ocelli triangle black brown and usually consist line between eyes at posterior ocelli, anterior ocellus bigger than posterior ocelli, distance between posterior ocelli wider than distance between one posterior ocellus and inner margin of compound eye; terminal flagellomere truncate at apex; pronotum with dense erect and fine hairs.

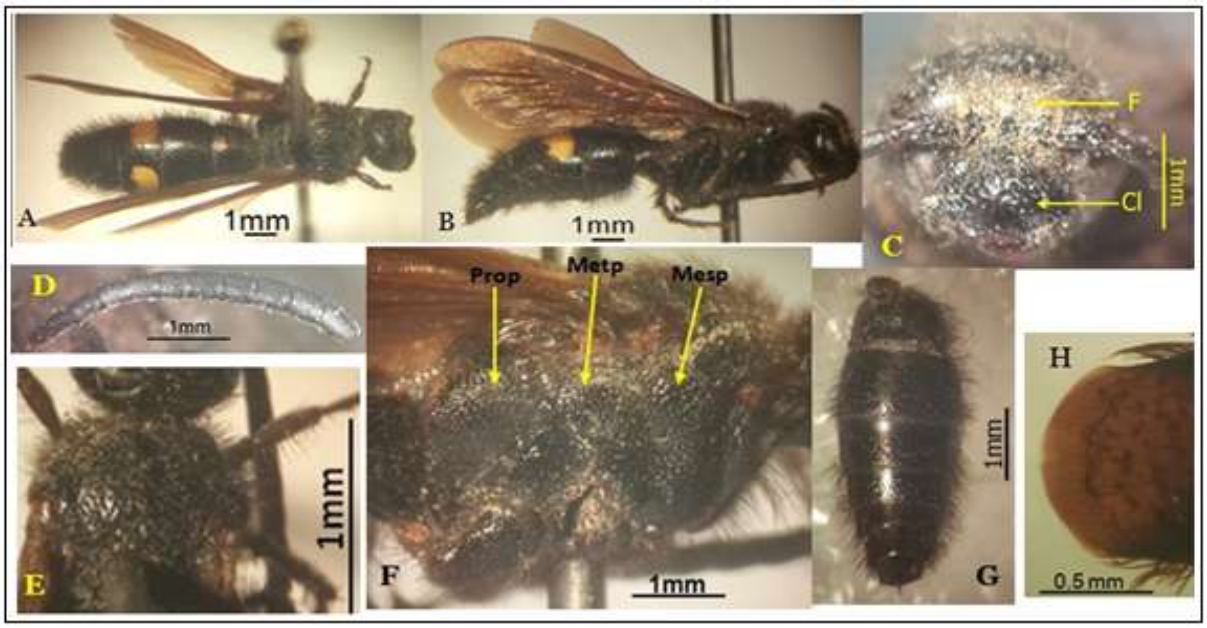

Fig. 9. Male of Sc. *schrenkii* A) habit, dorsal view B) habit, lateral view C) head, frontal view D) flagellum E) scutum F) thorax, lateral view G) gaster, ventral view H) pygidial plate.

Thorax densely punctures (less, fine punctures and more shining on metapleuron) and covered by medium and recumbent hairs mixed becoming erect on scutellum, metanotum and propodeum. Legs with densely and erect black hairs, outer surface of mid and hind tibiae with stuff, black and short spines. Claws simple, pulvilli well developed. T1, T2 densely covered with suberect black and short hairs, T3-4 with dense yellowish hairs that present only at lateral sides of T5, other tergites with longer black hairs. Posterior margins of T2-6 with black fringes, first half of last three tergites bare; pygideal plate covered with short and recumbent thin spicules; S1 and S2 with dense, recumbent and black hairs; S2-S6 with fringes and recumbent black hairs, fine and suberect on other surfaces of sternites, spots on lateral surface of S 3 and S4 with yellow and erect hairs. Last sternite (S7) with well spaced, three processes and finger-like, middle process slightly longer than laterally; male genitalia are shown in fig.7.

Female: (fig. 8)

Length: 20-28 mm, Color: entirely blackish brown with exception the following parts are glossy yellow: frons, vertex, T3, T4; mandibles very blackish brown; flagellomeres light brown; metanotum light red hairs generally black with exception hairs on T3 and T4 pale yellow color, pale on frons and vertex. Wings dark brown with slightly purplish-blue color, especially in recent specimens. Frons with scattered punctured becoming smoother and more shinning at vertex, clypeus slightly convex and densely punctures

; ocelli triangle yellow, ocelli similar in size, distance between posterior ocelli very narrow compared with distance between one posterior ocellus and inner margin of compound eye; terminal flagellomere truncate at apex. Pronotum with dense erect and fine hairs; anterior margin of scutum, dorsal surface of propodeum and mesopleuron with long, dense and erect hairs; less, shorter and recumbent in other parts of scutum, scutellum, metanotum, metapleuron and lateral sides of propodeum. Scutum, scutellum and metanotum with large punctures that leave wide distance; metapleuron and lateral side of propodeum more shining than other parts.

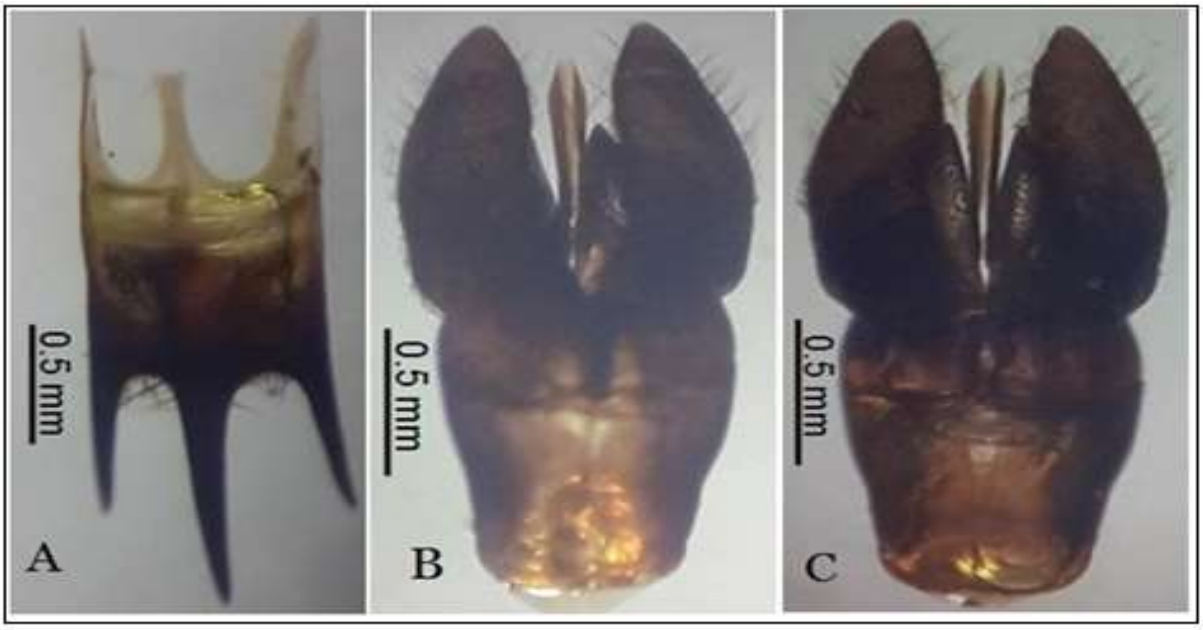

Fig. 10. Male of Sc. *schrenkii* A) last sternite B) dorsal view of genitalia C) ventral view of genitalia.

Legs with dense and erect black hairs, especially on mid and hind legs and becoming longer; outer surface of mid and hind tibiae with stuff, black and short spines; claws simple, pulvilli well developed.

T1 with small tubercle at median of anterior part and densely covered with suberect black and long hairs, becoming recumbent and stouter on T2-6; posterior margins of T1-5 with regular fringed composed from black stout and recumbent hairs; Pygideal plate roughly and covered with short and recumbent spinules, posterior margin rounded. Abdominal sternites S1 and S2 with dense, suberect and black hairs, becoming less and longer on S2-S5; S2-S5 with fringes and recumbent black and stouter hairs, fine and suberect on last sternite, small spots on lateral surface of S 3 in some specimens.

Material Examined: (26 ♂♂, 34♀♀) Baghdad province: Jaddria,2 ♂♂, 3♀♀,13.Apr.1989, Waziriya, 1♀, Jun.1980, 1♀, 12.Jul.1968 ; Al- Madaen, 2♂♂, 2♀♀, 18.Apr.2015; Kirkuk prov.: Altun Kupri, 3 ♂♂, 4♀♀,21.Jul.2011; Wasit province: Aziziyah, 3♀♀, 1.May.2013, 2♀♀, 8.Jun.2015; Al-Zubaidya- Sherhan village, 2♂♂,6♀♀, 23.Jul.2011, 2♂♂, 21.May.2015; Shaik Saad, 10♂♂, 14.Jul. 1989; Diyala province: Adhaim, 2♂♂,1♀, 19.Jul.2011; Maysan province, Hawizeh Marshes,*Umm An-Ni'aaj*, 2♂♂,7♀♀, 9.Jun.2015; Saladin province, Tuz Khormato, 4♀♀, 23.Apr.2014; Al Muthanna Province, Sawa Lake, 1♂, 17.May.1974.

Distribution: Iran, Afghanistan, Iraq, Oman (Betrem, 1935); Turkey (Madl, 1997); Crete, Tadzhikistan, Turkmenistan, Uzbekistan, Central Asia, Cyprus (Osten, 1999); France, Italy, Egypt (Osten, 2000); United Emirates (Osten *et al.*, 2003); Greece (Osten & Arens, 2004) and Saudi Arabia (Gadallah, 2004).

Fig. 11. Male of Sc. *hirta* A) habit, dorsal view B) habit, lateral view C) head, frontal view D) flagellum E) head and thorax, dorsal view F) gaster, ventral view G) pygidial plate.

Scolia schrenkii (Eversmann, 1846)

Male :(Fig. 9)

Length: 11-13 mm, Color: body and hairs completely black with exception: T3 with two yellow spots and well spaced, hairs yellow on these spots; wings dark brown. Clypeus slightly convex with large punctures that leave well space, covered with scattered, short and erect hairs; frons and vertex with densely, large and closely punctures; anterior ocellus bigger than posterior ocelli, distance between posterior ocelli subequal to distance between one posterior ocellus and inner margin of compound eye; antennal flagellomeres becoming longer and wider gradually to direct the apex, last tarsomere with truncate apex.Dorsum of thorax and propodeum with moderately dense, erect and medium hairs with the background slightly shiny; punctures as in female of *Sc. turkestanica*. Meso, metapleuron and lateral side of propodeum more shiny with regular, densely and large punctures covered by hairs shorter and less than the dorsum of the thorax. Legs hairy and mixed with short spines on tarsi becoming shorter and regular on mid and hind tibiae; outer spur slightly curved and shorter than internal spur on the apex of hind tibia; claws simple, pulvilli moderately developed. In general gaster (tergites and sternites) with erect, more and longer hairs than thorax, posterior margin of tergites without fringes; pygideal plate black with dark ferruginous reflection and covered with short and sub erect hairs, posterior margin rounded with three spines, middle strong and longer than lateral spines. S2-S6 with fringes composed from suberect hairs. Last sternite (S7) with scattered, short and erect hairs, posterior margin with three stout and long finger-like processes, the middle clearly longer than lateral spines; genitalia is shown in fig. 10.

Female: unknown.

Material Examined (3 ♂♂): Erbil province: Hasarost mountain range, 2 ♂♂, 14.Jul.1977; Nineveh province, Mosul, 1♂, 24.Jul.1969.

Distribution: Kazakhstan, Kirgizstan, Afghanistan, Turkmenistan, Uzbekistan, Tajikistan (Betrem, 1935; Osten, 2005a); newly recorded to Iraq.

Scolia hirta (Schrank, 1781)

Male :(fig.11)

Length: 13-15 mm, Color: entirely black with exception: yellow color on T2-T4 as following: two spots and well separated on T2, broad stripe on T3 with evidently indentation anteriorly, middle of T4

with transverse thin band; legs with dark ferruginous in some parts; other characters similar to male of *Sc. schrenkii* with exception: distance between posterior ocelli wider than distance between one posterior ocellus and inner margin of compound eye; flagellomeres gradually thicker, breadth clearly wider than long. S 7 ending with three, long processes and finger-like, middle spine slightly longer than lateral compared with *Sc. schrenkii* species (fig. 12. A); genitalia is shown in Figure 12 B and C.

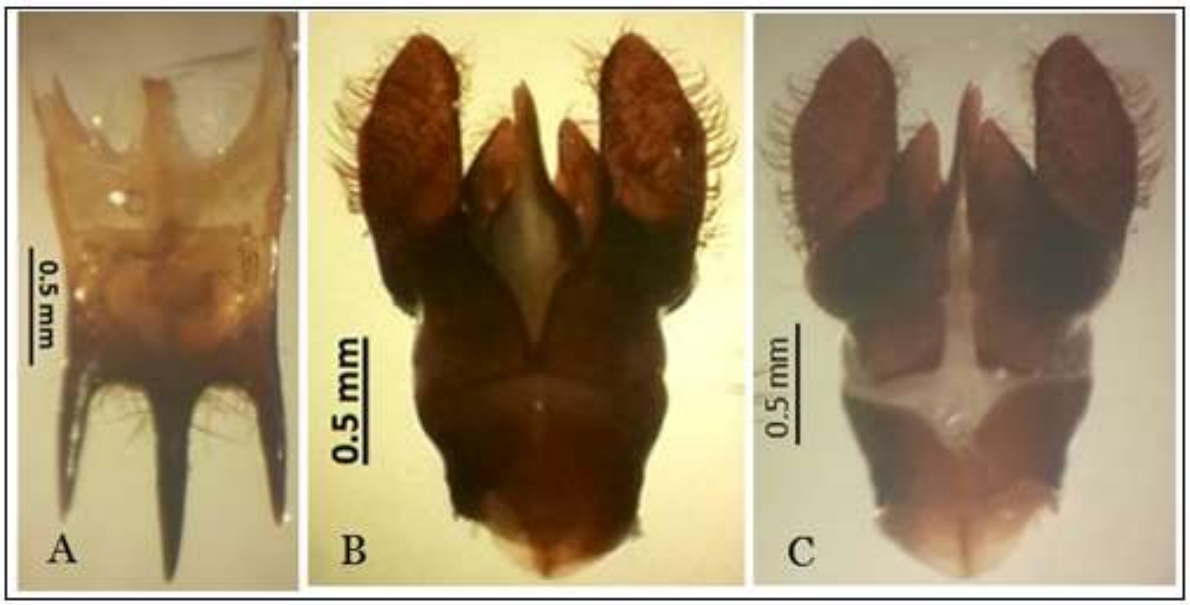

Fig. 12. Male of Sc. *hirta* A) last sternite B) genitalia, dorsal view C) genitalia, ventral view.

Female: unknown.

Material Examined (4 ♂♂): Erbil province: Hasarost Mountain range, 3 ♂♂, 19.Jul.1971; Saladin province, Tuz Khormato, 1♂, 24.Jul.1988.

Distribution : Iran (Betrem, 1935); Poland (Pulawski, 1964); North Africa, Kazakhstan, Lebanon, Turkmenistan, South Russia, Ukraine, From Portugal to Kazakhstan and Siberia (Osten, 1994, 1997); Turkey (Osten & Özbek, 1999); Mediterranean region and Sweden (Osten, 2000); Israel and Jordan (Osten, 2002); Greece (Osten & Arens, 2004); Italy (Schedl, 2006); Czech Republic and Slovakia (Bogusch, 2007), newly recorded in Iraq.

Conclusion

In this study 6 species from 3 genera belonging to Scoliidae family were identified. From the faunistically standpoint the results could be concluded are as follows: *Scolia schrenkii* (Eversmann) and *Sc. hirta* (Schrank) have been known as newly recorded from Iraq, depending on the previous available literatures.

In this area, it is possible to say that Iraq has suffered for a long time and the absence of induction as a result of the passage of the country in several wars; these conditions have directly or indirectly contributed to the occurrence of environmental changes and thus obtain changes in number and population of species. As a result, this study it proposes to conduct taxonomic, ecological and biological studies in the future about this group of wasps, because of their importance in the field of biological control of many pests, especially the *palm* stalk borers, as well as to know the actual number of species, the previous studies have reported very few and over it a long time.

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Abbreviation

As: antennal segment, Cl: clypeus, Ca: carina, F: frons, Gb: gonobase, Gs: gonostyle, Mc: marginal cell, Mesp: mesopleuron, Metn: metanotum, Metp: metapleuron, Oi: ocellar triangular, Prop: propodeum, Pv: penis valve, RV: recurrent vein, S: abdominal sternite, Sc: scutellum, Scap: scapula, Sm: scutum, SMC: submarginal cell T: abdominal tergite, V: vertex, Vo: volsella.

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