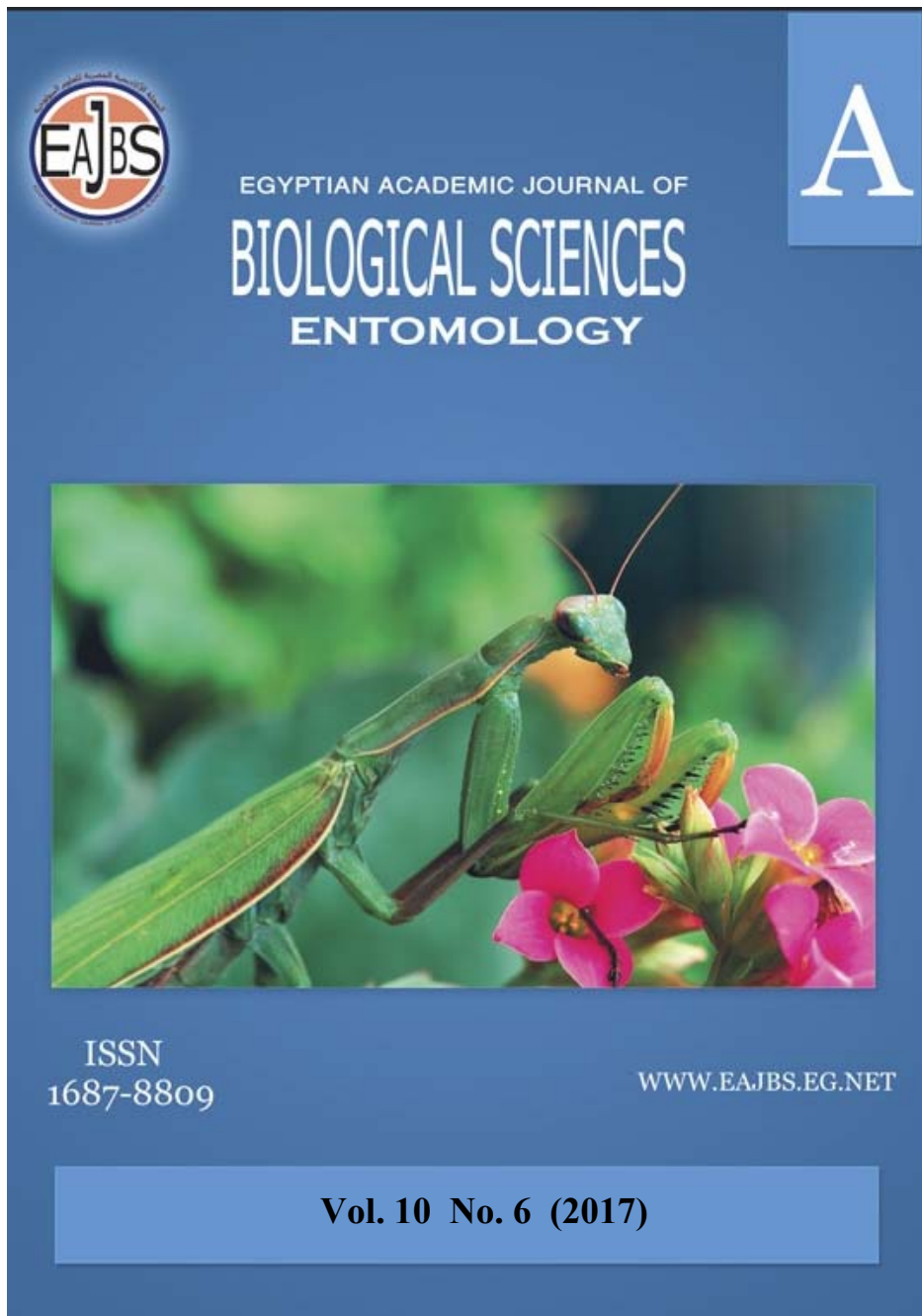
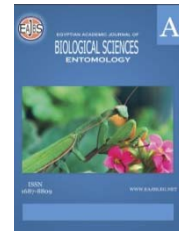


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Key For Identification Of The Species Included In The Genus *Chrysis* Linnaeus(Hymenoptera, Chrysididae) Of Egypt With A New Record

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ABSTRACT

Forty two species of the genus *Chrysis* Linnaeus, 1761 (Hymenoptera, Chryridoidea Latreille, 1802; Chrysididae Latreille, 1802; Chrysidini Latreille, 1802) from Egypt are taxonomically revised and keyed. The main Egyptian entomological collections were surveyed for *Chrysis* species, in addition to the specimens which were collected by using the sweeping net form different localities in Egypt. One chrysidid species is recorded for the first time from Egypt during the present work namely: *Chrysis elegans* Lepeletier. In addition, one species collected during the present work namely: *Chrysis pharaonum* Mocsáry has been previously recorded from Egypt, but not represented in the main Egyptian collections. The latest amendments and updates to the chrysidid nomenclature were taken into consideration. Diagnostic characters for all higher categories are presented.

INTRODUCTION

Cuckoo wasps (Chrysididae) are medium-sized and widespread family of Hymenoptera whose species are generally parasitoids or kleptoparasites of solitary wasps and bees (Parn *et al.* 2015); Phasmatodea and Lepidoptera (Kimsey and Bohart, 1991). The Chrysididae is a cosmopolitan family and have the greatest diversity in the Palaearctic region (Morgan, 1984).

Chrysidid species are usually thermophilous and search for sandy sites, clay brick walls, stone walls, wood steppes, rocky steppes, semi deserts, deserts and other places where their hosts live (Tyner, 2007).

Despite their attractive appearance, chrysidids have a reputation for being a taxonomically difficult group, and the biology of several species is still poorly known (Paukkunen, 2015).

Within the Chrysididae, the subfamily Chrysidinae is the largest, including 47 worldwide genera; *Chrysis* is the largest genus including about 1,000 species throughout the world (Kimsey and Bohart, 1991).

With more than a thousand currently recognized species, *Chrysis* is the largest and most heterogeneous genus of Chrysididae (Paukkunen, 2015).

Surveying the main Egyptian entomological collections revealed that chrysidid fauna represented in Egypt with 126 species belonging to 22 genera belong to subfamily chrysidinae divided to three tribes. Genus *Chrysis* are represented in Egypt with 42 species.

The Egyptian *Chrysis* fauna are poorly studied. Buysson (1908) divided the genus *Chrysis* into eight divisions according to the shape of apical margin and the number of teeth of T-III. Alfieri (1913) described briefly new variety, *Chrysis (Dichrysis) bihamata* Spinola var. nov. *innesi* Alfieri, collected from Mariout (Alex.), comparing it with the typical species. Storey (1912) in his professional list of Hymenoptera Tubulifera and Aculeata of the collection of the Ministry of Agriculture "Egypt" presented a list of species of genus *Chrysis* Linnaeus. Trautmann (1926) gave notes on identification and distribution of some species of genus *Chrysis* Linnaeus in the collection of Alfieri, Egypt.

The aim of this study is to present a simple dichotomous identification key for the Egyptian species included in genus *Chrysis* Linnaeus, as well as revised their taxonomic status and nomenclature.

MATERIALS AND METHODS

Different Egyptian entomological collections surveyed for *Chrysis* species and from which specimens are used for taxonomic studies. In addition specimens have been collected by sweeping net from different geographical region in Egypt. For every species, dry mounts were made, some specimens were used to make microscopic preparations.

Credit of identification and confirmation of the most chrysidid species within the scope of the present work due to the specialists of the Plant Protection Research Institute (Insect Identification Service); in addition the available recent identification keys and taxonomic investigations. Also, preliminary determination along with some materials were confirmed by Dr. Lynn Kimsey, Professor of Entomology, University of California at Davis (USA) and Dr. Franco Strumia, Università di Pisa, Centro Interdepartmental, Museo di Storia Naturale e del Territorio, (Italia).

Examination and illustrations of the external features of the specimens were achieved using a stereo-binocular microscope. Drawings of all preparations were made with the help of a square eyepiece, micrometer eyepiece and computer's Photoshop (version 7).

Terminology (after Kimsey and Bohart, 1990):

F-I-II, etc: Antennal articles (flagellomeres) following scape and pedicel.

MOD: Middle ocellus diameter.

RS: Radial sector when greatly shortened.

S-I-III, etc: Gastral sterna.

T-I-II, etc: Gastral terga beginning at the base.

TFC: Transverse frontal carina located on or just above brow.

RESULTS

Diagnosis of chrysidid wasps:

Head hypognathous. Antenna 11-segmented (flagellomeres). Pronotum with anterior flange, thus propleuron concealed in dorsal view; pronotum with posterolateral apex usually well separated from tegula but sometimes touching. Fore wings with five closed cells or less and the hind wings without closed cells.

Key For Identification Of The Species Included In The Genus *Chrysis* Linnaeus²⁹

Reduction of visible abdominal segments to five or less. Both sexes macropterous, rarely brachypterous or apterous. Sexual dimorphism usually very slight.

Subfamily Chrysidinae:

It is the largest subfamily of Chrysididae, comprising about 80 percent of the family. Members of this subfamily can be recognized by their bright metallic colouration (with few rare exceptions) and are commonly encountered in all zoogeographic regions. They are generally nest parasites of wasps and bees.

Face somewhat concave, usually with well-developed scapal basin and transverse frontal carina (TFC). Labial palpus usually three-segmented but sometimes absent or one-segmented. Maxillary palpus usually five-segmented but rarely may be three-, two- or one-segmented. Occipital carina absent, often replaced by transverse preoccipital welt terminating laterally in hook or lobe, located just above occiput. Pronotum broad and subquadrate dorsally, usually concave or with a broad shallow pit laterally, pronotal anterior declivity often with 1–4 pits. Metanotum evenly convex or with medial tooth or projection, usually with carinate lateral angle or tooth adjacent to propodeal angle. Tegula usually unmodified covering fore wing base only, less commonly enlarged and covering both wing bases or reduced and partly covered by notum. Propodeum abruptly declivitous posteriorly, without dorsal surface, with well-developed lateral angle. Forewing venation complete with closed marginal (radial), discoidal and subdiscoidal cells, or reduced with these cells incomplete or absent. Abdomen with two, three or four external terga in males and two or three in females; apical tergum often dentate. Abdominal venter flat or concave; laterotergite clearly indicated by sulcus.

Tribe: Chrysidini :

Mandibles relatively slender with one or two subapical tooth or with subapical notch. Mesopleuron with scrobal sulcus, when present horizontally bisecting pleuron. Scutellum with lateral lobe (tubercle) on wing fossa. Fore wing usually with sclerotized discoidal cell. Tarsal claws edentate. Tegula unmodified, covering fore wing base only. Abdomen with three exposed terga and sterna in both sexes; Third tergum (T.III) usually with subapical pit row and dentate or at least medially notched apical margin.

Genus *Chrysis* Linnaeus, 1761:

Other names applied to this genus (after Kimsey and Bohart, 1990):

Euchroeus Latreille, 1809; *Pyria* Lepeletier and Serville, 1825; *Pyrochloris* Klug, 1839; *Platycelia* Dahlbom, 1845; *Spintharis* Klug, 1845; *Chrysogona* Förster, 1853; *Pyrosoma* Dahlbom, 1854; *Nemophora* Dahlbom, 1854; *Poeciloechroa* Dahlbom, 1854; *Dichrysis* Lichtenstein, 1876; *Tetrachrysis* Lichtenstein, 1876; *Hexachrysis* Lichtenstein, 1876; *Chryaspis* Saussure, 1887; *Heptachrysis* Mocsáry, 1889; *Cephalochrysis* Semenov, 1910; *Eurychrysis* Bischoff, 1910; *Pseudotetrachrysis* Bischoff, 1910; *Pseudogonochrysis* Bischoff, 1910; *Pseudohexachrysis* Bischoff, 1910; *Octochrysis* Mocsáry, 1914; *Chrysidium* Brauns, 1928; *Heterochrysis* Brauns, 1928; *Cornuchrysis* Balthasar, 1953; *Glossochrysis* Semenov, 1954a; *Gonodontochrysis* Semenov, 1954a; *Actinochrysis* Haupt, 1956; *Cymatochrysis* Haupt, 1956; *Ischnochrysis* Haupt, 1956; *Acanthochrysis* Haupt, 1956.

Generic diagnosis: Along with the size of *Chrysis* spp., there is a great amount of variation. All *Chrysis* spp. have RS. with apex of sclerotized part at least 2 middle ocellus diameter (MOD) from anterior margin of fore wing; or if not, discoidal cell incomplete, with one or both outer veins not entirely sclerotized. Face often with hollowed scapal basin, often with polished or cross-ridged median area. Brow usually with a single TFC or none. Gena with one carina or rarely none. Propodeal

lateral angle triangular. T.III apical rim less commonly evenly rounded and edentate (sometimes drawn out into a blunt point) or with 2, 4, or 6, sometimes broadly rounded medially. In addition, a tiny median projection may occur in several species on the distal margin of T.III.

Hosts: Members of this genus parasitize a wide range of hymenopterous hosts including Sphecidae (*Philanthus*, *Cerceris* and *Mscophus*), Eumenidae (*Eumenes*, *Delta*, *Ancistrocerus*, *Gymnomerus* and *Symmorphus*) and Masaridae. In addition, megachilid bee genera, *Anthidium* and *Rhodanthidium*.

World distribution: Widely distributed in all zoogeographical regions. The majority of species are restricted to the Holarctic and Afrotropical regions.

Key to the species of genus *Chrysis* Linnaeus

- 1- T.III apex edentate, sometimes feebly notched medially, slightly sinuate or drawn out into a blunt point.....**2**
 - T.III apex with 2, 4, or 6 teeth or/and obtuse angles or lobes.....**6**
 2(1) First tergum (T.I) with a pair of prominent submedial humps at front of dorsal area; S.II spots nearly kidney-shape, narrowly separated by metallic stripe.....***mochii* (Zimmermann)**
 - T.I at most feebly lobate at the anterior declivity, but without such humps; S.II spots part of transverse band or semi-circular, fused or narrowly separated by metallic stripe.....**3**
 3(2) Clypeus sharply incised apically in inverted V-shape; second gastral sternum (S.II) spots semi-circular and fused; female F.I length versus width (L/W) about 3.75.....***rubricata* Mocsáry**
 - Clypeus with straight apical margin; S.II spots part of transverse band, fused or narrowly separated by metallic stripe; female F.I L/W 1.5–2.5.....**4**
 4(3) small insect, about 3.5 mm in length; tergites brassy green; TFC absent; scapal basin cross-ridged medially; T.III apical margin sinuate; S.II spots narrowly separated by metallic stripe.....***leachii* Shuckard**
 - Moderate to large insects, 7–10 mm in length; tergites red (with slight greenish tint on T-I anterior declivity and blackish tint on T.III apical rim; TFC at least weak-developed; scapal basin smooth or punctate medially.....**5**
 5(4) Malar space about 1.5 MOD; subantennal space about 0.75 MOD; mandible edentate subapically; fore wing M vein arising parallel with cu-a; female T.III apex drawn out into a blunt point; male scapal basin with medial smooth stripe.....***germari* Wesmeal**
 - Malar space about 0.75 MOD; subantennal space about 1.25 MOD; mandible with subapical small tooth; fore wing M vein arising before cu-a; female T.III apex evenly rounded; male scapal basin entirely punctate.....***elegans* Lepeletier**
 6(1) T.III with a pair of apicolateral teeth or obtuse angles, leaving the area in-between straight or slightly convex.....**7**
 - T.III apex with 4 or 6 teeth or/and obtuse angles or lobes.....**9**
 7(6) TFC distinct; malar space about 0.75 MOD; T.III lateral edge with angle well beyond middle, followed by well-marked concavity; S.II spots quadrangular.....***atechka* Buysson**
 - TFC weak or absent; malar space about 1.25 MOD; T.III lateral edge simple (rather straight); S.II spots nearly subovoid**8**
 8(7) Mid ocellus faintly lidded; TFC weak broadly M-like; T.III apicolateral teeth sharp.....***bihamata* Spinola**
 - Mid ocellus not lidded; TFC absent; T.III apicolateral teeth not more than extremely obtuse angles.....***puella* Buysson**

Key For Identification Of The Species Included In The Genus *Chrysis* Linnaeus

- 9(6) T.III apex with 4 teeth or/and obtuse angles or lobes.....**10**
 - T.III apex with 6 teeth**40**
- 10(9) T.III lateral edge with tooth or abrupt swelling on basal fourth.....**11**
 - T.III lateral edge without tooth or abrupt swelling on basal fourth.....**12**
- 11(10) Abdominal tergites contrasting in coloration with the head and thoracic dorsum (tergites coppery red, head and thoracic dorsum dark purplish blue); brow with crescent-like TFC; apical margin of clypeus straight; mesopleuron with strong bi-dentate projection below scrobal sulcus; T.III with medial longitudinal ridge; T.III lateral edge with abrupt swelling in basal third.....
*inaequalis* **Dahlbom**
 - Abdominal tergites light green and not contrasting in coloration with the head and thoracic dorsum; brow with bi-convex TFC; apical margin of clypeus strongly incised in wide inverted V-shape; mesopleuron edentate; T.III without medial longitudinal ridge; T.III lateral edge with obtuse tooth or hook in basal third.....
*macrodon* **Mocsáry**
- 12(10) TFC represented by a pair of small submedial tubercles; metanotum strongly projecting posteriorly into pointed mucro; T.III lateral edge with sharp medial denticle.....*lincea* **Fabricius**
 - TFC varies but not as above or absent; metanotum evenly convex; T.III lateral edge without median denticle (at most gently curved or obtuse angled at or beyond the middle.....**13**
- 13(12) T.III apex with middle pair of teeth, obtuse angles or lobes projecting well beyond lateral ones.....**14**
 - T.III with middle pair of teeth, obtuse angles or lobes not projecting markedly beyond lateral pair.....**17**
- 14(13) Lateral pair of teeth mount-like.....**15**
 - Lateral pair of teeth sharp.....**16**
- 15(14) Abdominal tergites strongly contrasting in coloration with the head and thoracic dorsum (tergites coppery red with slightly greenish tint on T.I and T.II, head and thoracic dorsum green to bluish green); scapal basin cross-ridged medially, reticulate-punctate laterally; fore wing M vein meet M+Cu before cu-a.....*aestiva* **Dahlbom**
 - Abdominal tergites not contrasting in coloration with the head and thoracic dorsum (general colour dark green to purple); scapal basin completely reticulate-punctate; fore wing M vein meet M+Cu parallel with cu-a.....*opacula* **Buysson**
- 16(14) General colour bluish green with purplish tint; pronotal medial groove weak; T.III apicomedial teeth rather sharp, long and widely separated; the extreme edge of T.III dark.....*friesei* **Buysson**
 - Colour contrasting on the different parts of the body from light green or golden green to brassy or coppery green; pronotal medial groove absent; T.III apicomedial teeth rounded, short and close together (represented by bi-lobate projection); the extreme edge of T.III hyaline.....*grohamanni* **Dahlbom**
- 17(13) T.III apex with medial pair of distinctly obtuse angles or lobes.....**18**
 - T.III apex with medial pair of sharp teeth or acute angles.....**21**
- 18(17) T.I and T.II with evidence of brassy to coppery red colour; T.II posterolateral corner sharply pointed posteriorly.....*elegantula* **Spinola**
 - Abdominal tergites without evidence of brassy or coppery red colour particularly on T.I and T.II; T.II posterolateral corner obtuse.....**19**
- 19(18) Mid ocellus faintly lidded; malar space about 1.75 MOD; S.II spots nearly oblong*viridissima* **Klug**

- Mid ocellus plainly lidded; malar space shorter, about 1 MOD; S.II spots rounded20
- 20(19) Omaulus and verticaulus distinctly weak-developed; T.III apical margin with short and broadly rounded four lobes (essentially middle pair).....*laetabilis* **Buysson**
- Omaulus and verticaulus well-developed; T.III apical margin with slightly longer obtusely angulate four teeth.....*palliditarsis* **Spinola**
- 21(17) Mesopleuron dentate on lower part.....22
- Mesopleuron edentate.....23
- 22(21) Lower part of mesopleuron with large tooth along omaulus.....*chlorospila* **Klug**
- Lower part of mesopleuron with two teeth, one along verticaulus and the other at the position of junction of verticaulus with omaulus.....*angolensis* **Radoszkowski**
- 23(21) Head venter without tooth at the end of preoccipital carina; female head unusually greatly enlarged; mandible strongly broadened subapically in females, slight in males; genal carina absent; pronotal humeral angle strongly projecting outward causing deep concavity at the sides; interval between medial pair of teeth on T.III (interval one) about 1.75 times as wide as interval between medial and lateral ones (interval two).....*ehrenbergi* (**Dahlbom**)
- Head venter with tooth at the end of preoccipital carina; male and female head normally sized; mandible unmodified; genal carina weak to well-developed; pronotal humeral not projecting outward; generally, intervals one and two are equal, rarely interval one narrower or slightly wider than interval two.....24
- 24(23) Antennal sockets unusually close together.....25
- Antennal sockets considerably widely separated.....29
- 25(24) Apical margin of clypeus strongly incised in inverted V-shape; T.III apex with very small tubercle between medial part of teeth.....*eatoni* **Buysson**
- Apical margin of clypeus slightly concave or convex or straight; T.III apex without tubercle between medial pair of teeth.....26
- 26(25) TFC sharply well-developed and has two branches extended dorsally.....*humeralis* **Klug**
- TFC absent or extremely weak-developed, without such branches.....27
- 27(26) Apical margin of clypeus slightly concave; subantennal space about 1.5 MOD; T.III lateral edge slightly sinuate; S.II spots large, nearly ovoid and narrowly separated.....*pharonum* **Mocsáry**
- Apical margin of clypeus slightly convex or straight; subantennal space longer, 1.75–2 MOD; T.III lateral edge obtusely angled beyond middle; S.II spots small to moderate, rounded and widely separated.....28
- 28(27) General colour bright green; clypeal apical margin slightly convex; tegulae green; TFC absent; M vein meet M+Cu parallel with cu-a; sublaterally, the area in front of dorsal surface of T.I punctate; T.III subapical pit row weak (pits widely separated).....*plusia* **Mocsáry**
- Colouration varies from green or golden green to coppery on the different parts of the body; clypeal apical margin straight; tegulae shining brown; TFC weak-developed; M vein meet M+Cu before cu-a; sublaterally, the area in front of dorsal surface of T.I smooth; T.III subapical pit row absent.....*pallidicornis* **Spinola**
- 29(24) Scapal basin cross-ridged medially and reticulate-punctate laterally.....30

Key For Identification Of The Species Included In The Genus *Chrysis* Linnaeus 33

- Scapal basin completely reticulate-punctate or at most smooth on medial third.....**33**
- 30(29) Abdominal tergites fairly contrasting in colouration with the head and thoracic dorsum (tergites varies from brassy green on T.I and T.III to coppery on T.II, head and thoracic dorsum bluish green); S.II spots diverging posteriorly (oblique).....***taczanovskii* Radoszkowski**
- Abdominal tergites not contrasting in colouration with the head and thoracic dorsum (general colour graduate from green, dark green to bluish green); S.II spots parallel.....**31**
- 31(30) T.III with strong medial longitudinal ridge extending nearly up to the apical rim; T.III subreticulate to sparsely punctate; male first flagellomere (F.I) and F.II not shorter than F.III.....***albipilis* Mocsáry**
- T.III without more than a trace of medial ridge, or completely absent; T.III reticulate-punctate; male F.I and F.II shorter than F.III.....**32**
- 32(31) Malar space 0.5–0.75 MOD; face converging below eyes in frontal view; pronotum subreticulate-punctate, with interspaces between punctures micro-sculptured; T.II with weak to well-developed medial longitudinal ridge.....***coelestina* Klug**
- Malar space greatly longer, about 1.5 MOD; face parallel-sided below eyes in frontal view; pronotum reticulate-punctate; T.II without medial longitudinal ridge.....***kokandica* Radoszkowski**
- 33(29) Mid ocellus plainly lidded or faintly so.....**34**
- Mid ocellus not lidded.....**38**
- 34(33) Large insect, about 13.5 mm in length; general colour dark purple (males with reddish tint on vertex and scutum); malar space about 2 MOD.....***syriaca* Guerin**
- Moderate in size, 6–7 mm in length; colouration varies but not as above; malar space up to 1.5 MOD.....**35**
- 35(34) Abdominal tergites with distinctive colour pattern, each tergite much darker anteriorly than posteriorly, the dark areas restricted to T.I anterior declivity, a bi-lobed area occupying about the basal half of T-II and the whole of T.III except rather triangular area in the middle near the apical rim.....**36**
- Abdominal tergites without such colour pattern.....**37**
- 36(35) T.II and T.III apically coppery red; scapal basin completely reticulate-punctate; malar space about 1.5 MOD; mandible with subapical tooth; male F.I and F.II not shorter than F.III; medial longitudinal profile of T.III feebly convex.....***aurifascia* Brullé**
- T.II and T.III apically light green; scapal basin polished on medial third; malar space greatly shorter, about 0.5 MOD; mandible edentate; male F.I and F.II shorter than F.III; medial longitudinal profile of T.III strongly convex.....***blanchardi* Lucas**
- 37(35) T.III apical rim contrasting in colouration with remaining of tergum (T.III apical rim bluish green, remaining of tergum red); malar space very short, less than 0.25 MOD; T.III apicolateral teeth obtuse; T.III lateral edge with an obtuse angle in front of lateral tooth.....***zobeida* Buysson**
- T.III apical rim not contrasting in colouration with remaining of tergum (both are green); malar space about 0.5 MOD; T.III apicolateral teeth sharp; T.III lateral edge without such angle.....***maculicornis* Klug**
- 38(33) Abdominal tergites brassy green in females, dark green with to purplish blue in males; TFC inverted U-shape (slightly angled medially to upward in males);

- scapal basin polished on medial third; male F.I and F.II shorter than F.III; T.III apical teeth very long.....*quadrispina* **Buysson**
- Abdominal tergites red (males sometimes have greenish T.I anterior declivity); TFC M-like or biconvex; scapal basin completely reticulate-punctate (sometimes with extremely narrow medial polished strip); F.I and F.II not shorter than F.III in both sexes; T.III apical teeth moderately long.....39
- 39(38) Median part of scutum bluish green; TFC strongly prominent, bi-convex-shape; mandible edentate; malar space about 1 MOD; clypeus strongly convex in the middle; propodeal lateral angle obtuse apically; T.II with extremely well-developed medial longitudinal ridge; T.II posterolateral corner sharply pointed; S-II spots moderately sized, sub-basal and well-separated.....*ignita* (**Linnaeus**)
- Median part of scutum black; TFC less prominence, broadly M-like; mandible with subapical tooth; malar space about 1.5 MOD; clypeus flat; propodeal lateral angle subacute apically; T.II without more than a trace of medial longitudinal ridge; T.II posterolateral corner obtuse; S.II spots large, basal and narrowly separated.....*comparata* **Lepeletier**
- 40(9) T.III apical teeth double-edged; metanotum strongly projecting posteriorly into U-shaped mucro; mesopleuron armed with four teeth below scrobal sulcus.....*stilboides* **Spinola**
- T.III apical teeth single-edged; metanotum evenly convex; mesopleuron with or without tooth below scrobal sulcus41
- 41(40) Mesopleuron with large obtuse tooth below scrobal sulcus; propodeal lateral angle with ventral lobe; T.III apicolateral pair of teeth acutely angled, medial two pairs sharp, each tooth of six has a conspicuous distal hair tuft; T.III lateral edge straight.....*intricata* **Bullè**
- Mesopleuron edentate (at most coarsely sculptured on lower part); propodeal lateral angle without ventral lobe; all T.III apical teeth acutely angled and without such hair tuft; T.III lateral edge feebly concave distally.....*jousseau mei* **Buysson**

DISCUSSION

Hymenopterists argued that if undescribed species of Hymenoptera were added to the world list, the Hymenoptera would be more species-rich than all other insect orders (e.g., Grissell, 1999). Upon the results of this paper, the total number of Egyptian species of genus *Chrysis* Linnaeus 42 species. This study added one species, *Chrysis elegans* Lepeletier from tribe Chrysidini, as new record for the Egyptian chrysidid fauna and added specimens of *Chrysis pharaonum* Mocsáry to the Egyptian entomological collections, where, it has not been represented in the Egyptian insect collections although it was recorded from Egypt by Buysson (1908) in his monograph on the chrysidids of Egypt.

The key will hopefully arouse more interest in chrysidids among entomologists, and provide a basis for further, more detailed studies on the distribution, biology and morphology of Egyptian species (Paukkunen, 2015).

The taxonomic revision carried out to genus *chrysis* during the present study leads to changes in taxonomic status as well as nomenclature as follow:

Previously, the earlier authors placed the chrysidid species representing to Egyptian fauna in three subfamilies, Ellampinae, Euchrysidinae and Parnopinae. Recently, according to the world revision of chrysidid wasps by Kimsey and Bohart (1990), these species arranged in three tribes, Elampini, Chrysidini and Parnopini, all

Key For Identification Of The Species Included In The Genus *Chrysis* Linnaeus 35

assigned to subfamily Chrysidinae, and so on, genus *chrysis* became assigned to to tribe Chrysidini within subfamily Chrysidinae.

Two *Chrysis* species were subjected to change in both the generic and specific names and dropped as synonyms: *C. foveata* Dahlbom changed to *Chrysura trimaculata* (Förster) and *C. pustulosa* Abeille changed to *Chrysura radians* (Harris).

Five species: *austriaca* (Fabricius), *dichroa* (Dahlbom), *oraniensis* (Lucas), *osiris* (Buysson) and *varicornis* (Spinola) were transferred from genus *Chrysis* Linnaeus to genus *Chrysura* Dahlbom.

Three species: *humboldti* (Dahlbom), *incrassata* (Spinola) and *uniformis* (Dahlbom) were transferred from genus *Chrysis* Linnaeus to genus *pseudospinolia* Linsenmaier.

Three species: *innesi* (Buysson), *vagans* (Radoszkowski) and *varicolor* (Spinola) were transferred from genus *Chrysis* Linnaeus to genus *Spintharina* Semenov.

Two species transferred from genus *Chrysis* Linnaeus to other genera: *inops* (Gribodo) to genus *Praestochrysis* Linsenmaier, *scioensis* (Gribodo) to *Trichrysis* Lichtenstein.

mochii (Zimmermann) transferred from genus *Gonochrysis* Zimmermann to genus *Chrysis* Linnaeus.

Twelve *Chrysis* species subjected to change in specific name and dropped as synonyms *Chrysis*: *acceptabilis* Radoszkowski changed to *C. kokandica* Rado., *C. aegyptiaca* Buysson to *C. minutissima* Rado., *C. andreana* Buysson to *C. macrodon* Moscáry, *C. angularis* Moscáry to *C. nitidula* Fabricius, *C. diversa* Dahlbom to *C. palliditarsis* Spinola, *C. episcopalis* Spinola to *C. syriaca* Guérin, *C. fasciolata* Klug to *C. viridissima* Klug, *C. fuscipennis* Brullé to *C. angolensis* Rado., *C. octavii* Buysson to *C. chlorospila* Klug, *C. proxima* Cameron to *C. intricate* Brullé, *C. teilhardi* Buysson to *C. quadripina* Buysson, *C. vestita* Buysson to *C. humeralis* Klug. Four species were recorded from Egypt in combination with varieties: *Chrysis blanchardi* var. *rubescens* Buysson, *C. grohmanni* var. *bolivari* Mercet, *C. grohmanni* var. *cyanea* Trautmann and *C. ignita* var. *infuscate* Moscáry, these species were corrected to appear without such varieties and dropped as synonyms to the typical species.

Paukkunen (2015) applied a combination of several variable and non-unique characters to identify Nordic and Baltic countries species of genus *Chrysis*, such as the closed or nearly closed forewing marginal cell, the usually four- or six-toothed posterior margin of T3, and the usually distinct transverse frontal carina on the frons; these characters are so far similar to those used in the current study.

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ARABIC SUMMARY

مفتاح تصنيفي للأنواع التابعة لجنس كريسيس (رتبة غشائية الأجنحة، فصيلة كريسيديدي) في مصر و تسجيل جديد لأحد الأنواع

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فصيلة كريسيديدي، أو ما يسمى بالزنابير الذهبية، تمثل مجموعة كبيرة من رتبة غشائية الأجنحة، عالمية الانتشار و ذات طبيعة إنفرادية، تتباين أنواعها كثيرا في الشكل و الحجم ولكنها تتشابه إلى حد كبير في اللون، كما أنها تتفق في الطباع، و تعتبر أفراد هذه الفصيلة من المتطفلات في طورها اليرقي، و تتخذ من النحل و بعض أنواع الزنابير الأخرى عوائل لها.

تتول البحث الحالي مراجعة لأنواع الزنابير الذهبية (رتبة غشائية الأجنحة) في مصر وذلك بفحص ودراسة العينات الموجودة بالمجاميع الحشرية الرئيسية وكذلك العينات التي تم جمعها من مناطق مختلفة ممثلة للبيئة في مصر. تضمنت الدراسة عرض الصفات المميزة لتحت فصيلة كريسيديني و قبيلة كريسيديني و جنس كريسيس و تسجيل الأسماء المترادفة للجنس. كما تم إنشاء مفتاح تصنيفي لإثنين و أربعين نوع تابعين لجنس كريسيس. نتيجة للدراسة الحالية فقد تم تحديث العديد من الأسماء كالتالي:

- تغيير الشقين النوعي و الجنسي لنوعين.
- نقل ثلاثة عشرة نوعا من جنس لآخر.
- اثنا عشر اسما اعتبرت اسما مترادفة.
- ترقية أربعة أسماء من variety لأنواع.
- تم إضافة النوع (*Chrysis elegans* Lepeletier) كتسجيل جديد للفونة المصرية. كما تم إضافة عينات في المجموعات الحشرية للنوع (*Chrysis pharaonum* Mocsáry) حيث لم تكن متوافرة من قبل.