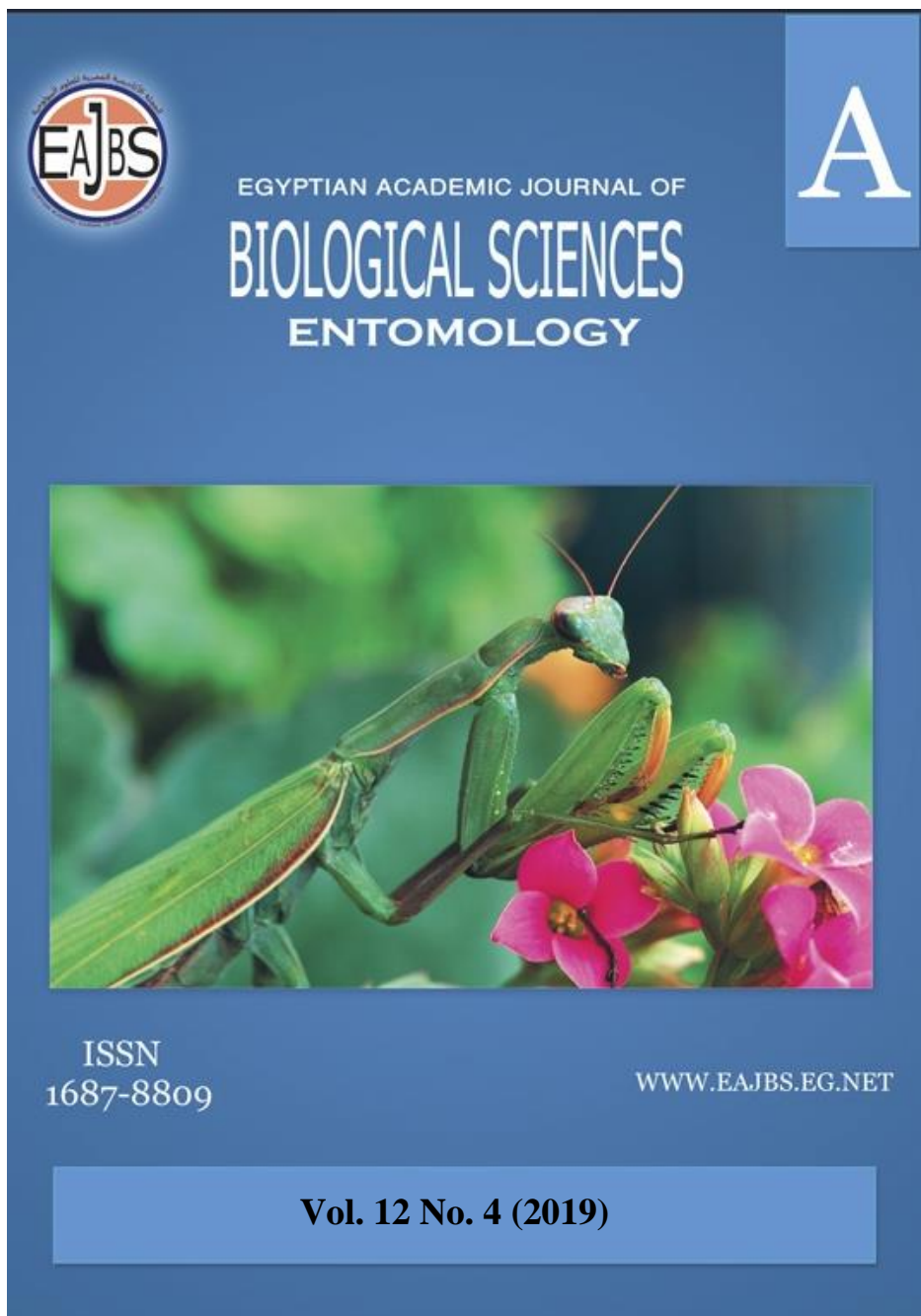


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## Taxonomic Revision of Subfamily Ocladiinae (Coleoptera: Brachyceridae) in Egypt

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### ABSTRACT

The gathered information indicated that subfamily Ocladiinae represented in Egypt by seven species within a single genus, *Ocladius* Schöenherr, 1825. The species of genus *Ocladius* (Coleoptera: Brachyceridae) received little attention in Egypt and the Palearctic region. Diagnoses to facilitate the identification of the subfamily and the genus were provided. Seven species of genus *Ocladius* keyed and illustrated to facilitate the accurate identification of the studied species. Taxonomic status of all categories were revived and updated according to most recent taxonomic catalogues.

### INTRODUCTION

Family Brachyceridae Billberg, 1820 (commonly known as obese weevils or lily weevils) is an old and small world family of weevils that was originally described as a tribe Brachycerides, it is belonging to superfamily Curculionoidea. Brachyceridae represented by about 150 genera and more than 1200 species worldwide, widely distributed in the Afrotropical region and dry subtropical areas of the Palearctic region Oberprieler *et al.* (2007); while in Egypt, Alferei (1976) recorded ten species within two genera. The majority of species live depending on the Liliaceae family, their larvae live in the bulbs and adults feed on the leaves of these plants. Some of them have been observed as a serious pest of garlic, onion, tulip and narcissus (Hoffmann, 1964); other species usually associated with Chenopodiaceae and live in arid or desert habitats (Meregalli *et al.*, 2001). The larvae of some species mating on species of Liliaceae. Brachyceridae raised to family rank by Thompson (1992). Alonso-Zarazaga and Lyal (1999), following Thompson's concept and included in its three subfamilies: Brachycerinae Billberg, Ocladiinae Lacordaire, and Microcerinae Lacordaire.

The most taxonomic work, carried out during an entomological expedition to Sinai, by Meregalli and Colonnelli (2005), several specimens were collected of a species of *Ocladius* Schöenherr, 1825 that could not be positively identified and indicated that the knowledge of the taxonomy of *Ocladius* colonising the Arabian area and the coasts of the Red Sea is unsatisfactory. This conclusion and revising the literatures prompted the authors to undertake a revision of the species of *Ocladius* present in Egypt and carried out the recent and suitable update and keyed the species to facilitate and ensure precise identification.

## MATERIALS AND METHODS

The taxonomic studies of the subfamily Ocladiinae in Egypt were initiated and carried out by revising and examining the specimens available in the main reference insect collections in Egypt, that are: Collection of Ministry of Agriculture, Plant Protection Research Institute, Collection of Alfieri, Al-Azhar University, Faculty of Agriculture, Collection of Egyptian Entomological Society, Collection of Faculty of Science, Cairo University and Collection of Faculty of Science, Ain Shams University. Recent taxonomic status is provided following Alonso Zarazaga and Lyal, (2002). Drawings for the main structures mostly used in the description were made by the help of a Stereoscopic binocular microscope.

## RESULTS

**Diagnostic characters of Family Brachyceridae:** body and rostrum robust, mostly slender; mandibles with laterobasal lamella covering the base of abductor tendon; labial palpi not inserted in pits; antennal scrobes distinct, antennae inserted elsewhere between base and apex, funicle often 7-segmented. Protibiae with the front face at apex flat, without dense setae; trochanters small; tarsomere 1 not widened, claw segment of tarsi not embrace the simple base of claws at apex in general. Ventrites 1 and 2 fused, 3<sup>rd</sup> to 5<sup>th</sup> ventrites deeply and similarly articulated to each other at base, 2<sup>nd</sup> and 5<sup>th</sup> ventrites often longer than each 3<sup>rd</sup> and 4<sup>th</sup> ventrites.

**Diagnostic characters of subfamily Ocladiinae:** rostrum in repose retractable in prosternal furrow; deciduous processes on mandibles present or absent (absent in tribe Ocladiini).

### **Genus: *Ocladius* Schöenherr, 1825**

#### **Diagnosis:**

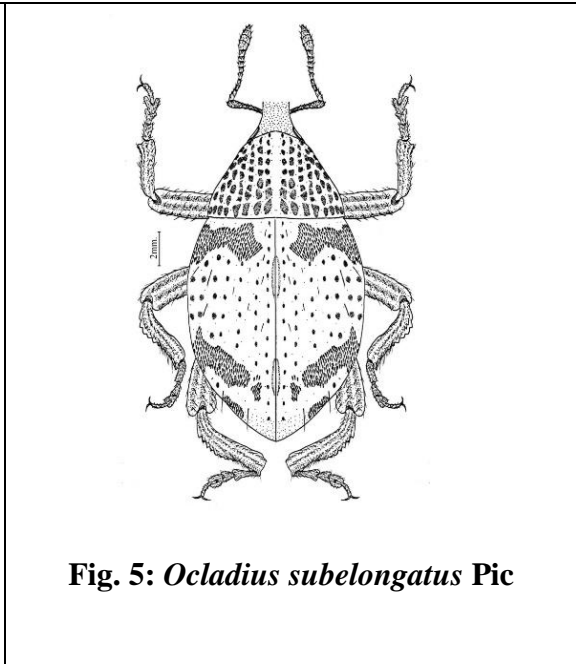
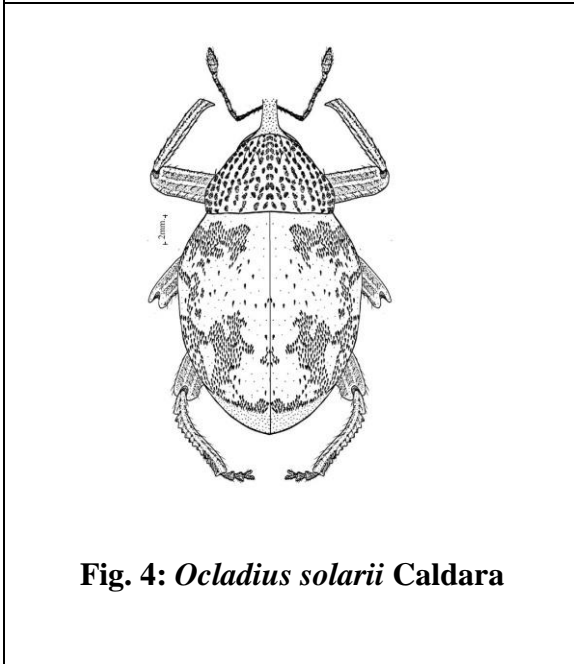
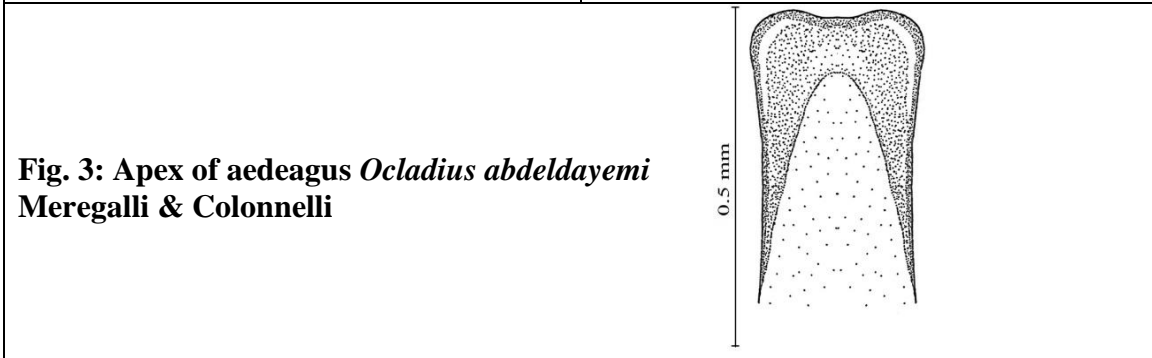
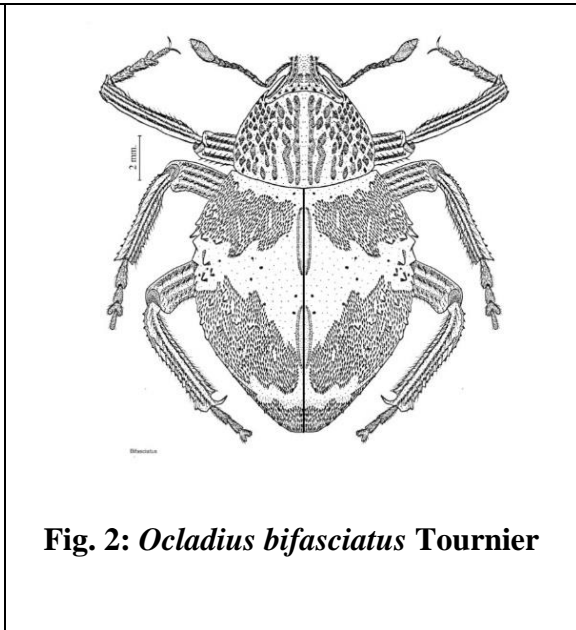
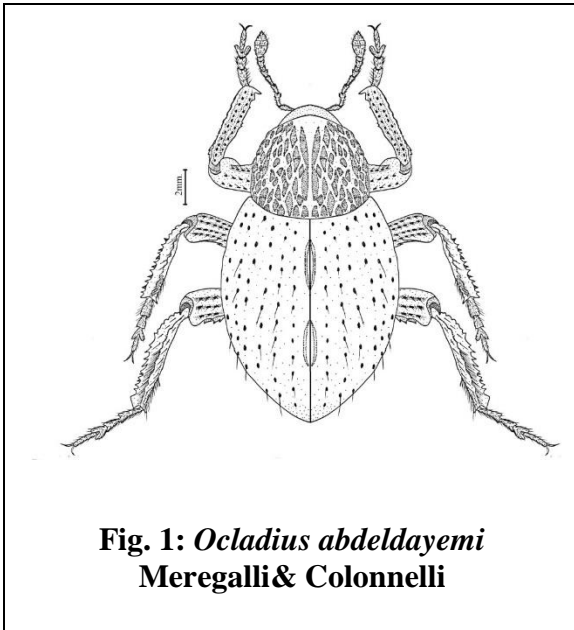
Head: Rostrum slender, curved, with three typical dorsal glossy lines, often keel-like, separated by furrows; from the centre to sides, central line, dorsal furrows, dorso-lateral keels, dorso-lateral furrows, lateral keels and lateral-basal furrows. Scrobes lateral, rectilinear, upper margin usually slightly keeled and downwards directed. Antennae slender, geniculate, usually inserted at mid-length of the rostrum (female) or slightly beyond (male); funicle 7-segmented; club apparently 4-segmented as annulus on the last segment is clearly distinct. Pronotum: Convex; sculpture extremely variable: from smooth, with sparsely scattered shallow punctures, to deeply roughly punctured, often with longitudinal glossy lines or keels, separated by deep furrows. Elytra: Convex, ovoid to spherical, with sides usually compressed in the apical two-thirds; intervals usually flat or nearly so, interval 7 often slightly carinate or keeled; nine striae, rarely impressed, usually formed by a row of punctures. Suture has a specialised locking structure composed of blunt denticles alternating on each elytron, similar to a zipper. Scutellum not visible. Legs: Fore coxae cylindrical, strongly sculptured; middle coxae cylindrical, aligned to the fore coxae; hind coxae very small, rounded; femora and tibiae straight, compressed, femora with a ventral furrow; middle and hind tibiae with one or two rows of usually sharp denticles. Tarsi slender; segment 1 longer than segment 2; segment 3 narrow and only slightly widened or more broadly lobed; underside of the tarsal segments with dense yellow setae; segment 3, if lobed, with a spongy pad. Ventrites 1 and 2 fused, bulging in lateral view. Aedeagus of orthocerous type.

#### **Key to species *Ocladius* of Egypt**

1. Elytra without scales (Fig. 1). Apex of aedeagus short, distinctly widened (Fig.3) ..... *O. abdeldayemi* Meregalli & Colonnelli, 2006
- Elytra with scales (Fig.2)..... **2**
- 2(1). Punctures on the striae indistinct, barely visible or completely absent (Fig. 4)... **3**

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- Punctures on the striae always distinct, more or less deeply impressed (Fig. 5).....5
- 3(2). Pronotum with oval punctures more or less aligned in rows, not forming longitudinal furrows (Fig. 6). Scales on elytra scattered not arranged in bands. the Apex of aedeagus as illustrated in (Fig. 8) .....***O. solaria* Caldara, 1976**
- Pronotum with deep longitudinal furrows separated by narrow keel-like interspaces (Fig.7).....4
- 4(3). Elytra sub-spherical, with orange scales; dull integument, with distinct microscopic sculpture; interval 7 preceded by a minute raised granule (Fig. 9); sides widely rounded; tarsi short, segment 3 small, scarcely lobed (Fig. 10). Apex of aedeagus sub-truncate (Fig.12) .....***O. aegyptiacus* Tournier, 1875**
- Elytra widely ovate, but not sub-spherical, with whitish or yellow scales; glossy integument, microscopic sculpture barely distinct; intervals with spaced microscopic granules; interval 7 often with a small irregular carinula along its middle part (Fig. 2); sides not regularly widened, slightly more linear at middle; tarsi normally developed (Fig. 11). Apex of aedeagus more or less regularly-rounded (Fig.13) .....***O. bifasciatus* Tournier, 1875**
- 5(2). Distance between two Punctures at the same stria narrow (punctures dense on the same stria) (Fig.14). Sides of aedeagus, in dorsal view, slightly sinuate towards apex (Fig.15).....***O. aidhabensis* Meregalli& Colonnelli, 2006**
- Distances between two Punctures at the same stria wide (punctures few on the same stria) (Fig. 5).....**6**
- 6(5). The lifted setae on elytra shorter than the interval width (Fig. 16). Interval 7 with minute granules (Fig. 16). Apex of aedeagus as illustrated in (Fig. 17).....***O. barani* Pasco, 1874**
- The lifted setae on elytra longer than interval width (Fig. 5). Interval 7 without minute granules (Fig. 5). Apex of aedeagus as illustrated in (Fig. 18).....***O. subelongatus* Pic, 1905**



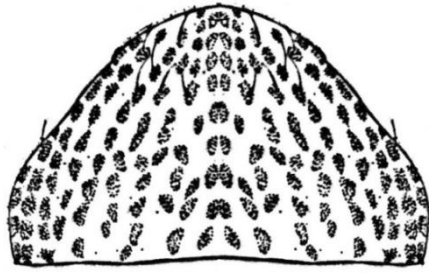


Fig. 6: pronotum of *Ocladius solarii*  
Caldara

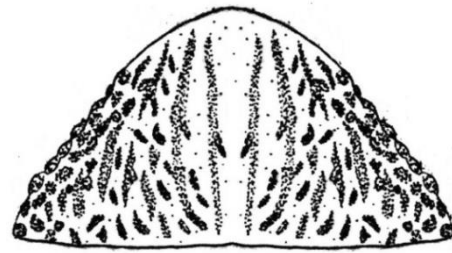


Fig. 7: pronotum of *Ocladius aegyptiacus*  
Tournier

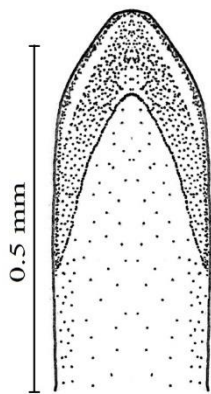


Fig. 8: Apex of aedeagus of *Ocladius solarii*  
Caldara

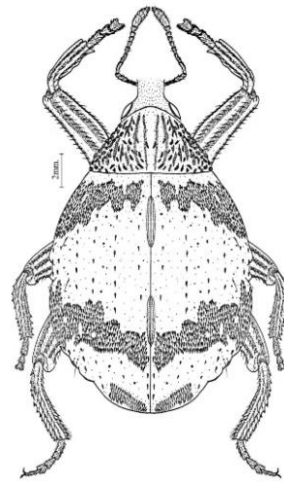


Fig. 9: *Ocladius aegyptiacus*  
Tournier



Fig. 10: Tarsiof *Ocladius aegyptiacus*  
Tournier

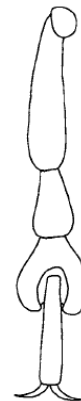
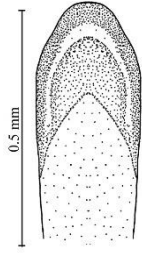
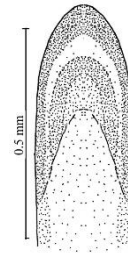


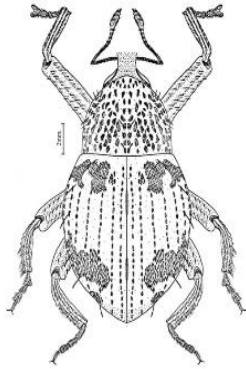
Fig. 11: Tarsiof *Ocladius bifasciatus*  
Tournier



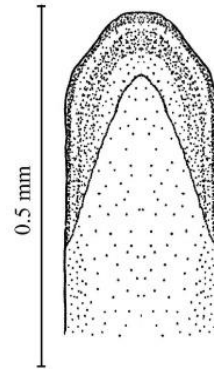
**Fig. 12:** Apex of aedeagus of *Ocladius aegyptiacus* Tournier



**Fig. 13:** Apex of aedeagus of *Ocladius bifasciatus* Tournier

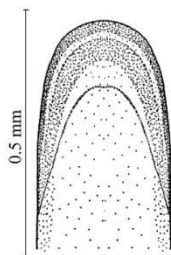
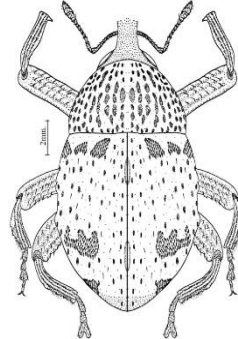


**Fig. 14:** *Ocladius aidhabensis* Meregalli & Colonnelli

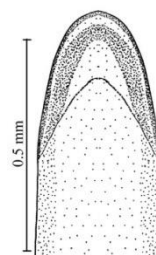


**Fig. 15:** Apex of aedeagus *Ocladius aidhabensis* Meregalli & Colonnelli

**Fig. 16:** *Ocladius barani* Pascoe



**Fig. 17:** Apex of aedeagus *Ocladius barani* Pascoe



**Fig. 18:** Apex of aedeagus *Ocladius subelongatus* Pic

## DISCUSSION

Schönherr (1825) placed his new genus *Ocladius* in Gonatoceri, Mecorhynchi, division Cryptorhynchides, subsequently, Lacordaire (1866) placed *Ocladius* in the tribe Cryptorhynchides, subtribe Ithyporides. The inclusion of Ocladiini in Cryptorhynchinae as a tribe or, as in Hustache (1936), a subtribe of Ithyporini, remained basically unchanged until Kuschel (1987) formally transferred *Ocladius* from Cryptorhynchinae: Ithyporini to Erihinae sensu Kuschel (1971). Later on, Thompson (1992) promoted Ocladiini to a tribe of Brachyceridae, based on the structure of the male genitalia and male sternite VIII. Kuschel (1995) demoted Brachyceridae (including Ocladiini) to a subfamily of Curculionidae. Alonso-Zarazaga & Lyal (1999) restored family status to Brachyceridae, with the subfamily Ocladiinae included in it. Some peculiar morphological features of *Ocladius*, such as aspect and sculpture of rostrum, pronotum and legs and the special locking structure of the elytral suture, prompted Meregalli *et al.* (2001) to remove Ocladiinae from Brachyceridae, provisionally restoring them as a subfamily of Curculionidae (sensu Alonso-Zarazaga & Lyal 1999). Marvaldi *et al.* (2002) included a species of *Ocladius* as one of 100 curculionoid exemplars in a cladistic analysis based on 18S rDNA sequences plus larval and adult morphology. *Ocladius* clustered basally in Curculionidae, and as a sister taxon to the rest of the Curculionidae. Marvaldi *et al.* (2002) reinforced this hypothesis by stating that basal Curculionidae, including *Ocladius*, are associated with monocotyledons. However, as regards *Ocladius*, this observation is only based on a single indication by Howden (1986) and is contradicted by other data.

In Egypt, Alfieri (1976) classified genus *Ocladius* within family curculionidae. *Ocladius* represented in Alfieri (1976) by 3 species but now represented by 7 species.

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#### ARABIC SUMMARY

مراجعة تصنيفيه على تحت فصيله **Ocladiinae** (رتبة: غمدية الأجنحة – فصيلة: **Brachyceridae**) في مصر .

وداد، أ. عطوة<sup>1</sup> -- منال، أ. الشاعر<sup>1</sup> -- فاطمه، ز. حامد<sup>1</sup>

1- قسم علم الحيوان والحشرات- كلية العلوم (بنات)- جامعة الأزهر

دلت المعلومات التي تم جمعها عن تحت فصيلة **Ocladiinae** انها ممثلة في مصر بسبعة أنواع ضمن جنس واحد، **Ocladius Schönherr, 1825**. كما لوحظ أن أنواع الجنس لم تلق سوى القليل من الاهتمام في مصر. إشملت الدراسة على وصف لتحت الفصيلة والجنس. كما تضمنت مفتاح تصنيفي لسبعة أنواع من جنس **Ocladius** لتسهيل تعريفها مصحوب برسوم توضيحية وتحديث للوضع التصنيفي لجميع المراتب وفقاً لأحدث كتالوجات التصنيف.