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Review of Subfamily Brachycerinae (Coleoptera: Brachyceridae) in Egypt

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ABSTRACT

The gathered information indicated that subfamily Brachycerinae is represented in Egypt by a single genus, *Brachycerus* that contains 8 species. Their diagnostic characters were introduced in this work according to previous investigators. This study was planned to identify and to determine the recent taxonomic status of Brachycerides species for the first time in Egypt. An illustrated key was given for all Brachycerides species.

INTRODUCTION

Brachyceridae is an old World family of weevils that was originally described as a tribe ("Brachycerides") and raised to family rank by Thompson (1992); Kuschel's, (1995) demoted Brachyceridae to a subfamily of Curculionidae; Alonso-Zarazaga and Lyal (1999) restored family status to Brachyceridae following Thompson's (1992) concept.

Morrone, (1997) included Brachyceridae four subfamilies: (Brachycerinae, Microcerinae, Cryptolarynginae, and Desmidophorinae); Alonso-Zarazaga and Lyal (1999) included in it three subfamilies: Brachycerinae Billberg, Ocladiinae Lacordaire, and Microcerinae Lacordaire; (Marvaldi, 1997, Oberprieler, 2004; Morimoto and Kojima, 2006; Oberprieler *et al.*, 2007) only one subfamily, Brachycerinae.

The subfamily Brachycerinae (Oberprieler *et al.*, 2007), comprises four tribes: Brachycerini & Brotheini & Byrsopini and the Protomantini only the first tribe represented in Egypt.

The literature on the Brachycerides indicates that they are closely associated with geophytes. Larval development takes place in the soil or inside the bulbs of plants of the Liliaceae, Amaryllidaceae, Araceae, and Orchidaceae. Certain species such as *Brachycerus plicatus* are known as agricultural pests, damaging garlic, onion, and cultivated bulb flowers, such as *Amaryllis*, *Gladiolus*, *Hyacinthus*, *Muscari*, *Narcissus*, *Tulipa*, and *Zantedeschia*; few species are potential biocontrol agents of *Asparagus* weeds (Liliaceae).

The subfamily Brachycerinae, with about 1200 species from twelve genera which occur in the old world (Oberprieler *et al.*, 2007). *Brachycerus* comprises about 500 species that are restricted to the old world.

This subfamily is distinguishable by the combination of the following features: a relatively short and thick rostrum, not sexually dimorphic. Most species possess a deciduous mandibular cusp used by newly emerged adults to escape from the pupal cell. The cusp is subsequently lost, leaving a scar on the mandibles. Robust, apterous, ground-dwelling, usually coarsely-sculptured weevils. With straight (non-geniculate) antennae. Epistome usually uneven, raised or impressed in relation to the surrounding area; mandibles usually multisetose, dorsoventrally flattened and strongly extending anteriorly. With short trochanters. Male genitalia of orthocerous type. Ventrite 9 of male with bladal part extensively sclerotised, the arms pigmented, broad, usually discontinuous with apodeme.

MATERIALS AND METHODS

The present taxonomic work started by examination of the Egyptian Reference Insect Collections for materials regarded as Brachycerinae. These collections are: Collection of Ministry of Agriculture, Plant Protection Research Institute (MAC); Collection of Egyptian Entomological Society (EESC); Collection of Faculty of Science, Cairo University (CUC) and Collection of Faculty of Science, Ain Shams University (ASUC). A field survey of *Brachycerus* was undertaken over a great area of the Egyptian territories and covered the main geographical zones

RESULTS AND DISCUSSION

Subfamily Brachycerinae Billberg, 1820:

Brachycerus Olivier, 1789: 36

Brachycerinae is characterised by a relatively short and thick rostrum, not sexually dimorphic. Most species possess a deciduous mandibular cusp used by newly emerged adults to escape from the pupal cell. The cusp is subsequently lost, leaving a scar on the mandibles Morrone (1997).

Brachycerus are characterised by body, appendages and elytra black. Large, stout, globose, coarsely sculptured weevils and/or wrinkles. Head and legs covered by erect black bristles. Rostrum robust, short, usually expanded laterally into more or less huge carinae or obtuse projection over antennal scrobe, separated from frons by a dorsolateral groove. Antennal scrobe lateral or lateroventral and deep. Antenna, short and stout, not geniculated, nine-segmented, scape sometimes twice as long as wide, segments 2–8 wider than long or subequal, club ovate, not subdivided, with oblong apicolateral setose groove. Frons medially with longitudinal ridge of various shape and convexity. Eyes surrounded by eye orbit, projecting or not, dorsal to frons (lateral view).

Pronotum: lateral lobe usually wide, blunt, and rounded, but in some species slender and pointed. Pronotal disc with pair of median and pair of lateromedian longitudinal ridges. Elytra: Interstriae arranged in longitudinal ridges, sequential or subdivided into more or less prominent tubercles; interstriae 1–5 are well seen in dorsal view are named: 1- sutural ridge, 2- subsutural ridge, 3- median ridge, 4- sublateral ridge, 5- lateral ridge. Scutellum absent. Legs: covered by long, erect bristles; femora not dentated; tibiae dilated distally, bearing mucro and uncus and tarsal segments subcylindrical, ventrally with pair of bristle tufts, onychium as long as or slightly shorter than all tarsal segments; claws widely separated at the base, not toothed. Venter coarsely punctured. Ventrite 9 of males with bladal part extensively sclerotised, the arms pigmented, broad, usually discontinuous with apodeme Klimaszewski & Watt (1997).

Key to *Brachycerus* species in Egypt

- 1- Lateral lobe of pronotum pointed (Fig. 1)2
 - Lateral lobe of pronotum more or less blunt (Fig. 2).....3
 2- Lateral lobe of pronotum with a very short pointed process (Fig. 1), elytral ridges entire, with lateral branches forming net pattern, except for lateral ridge, extended into sharp tubercles apically. (Fig. 4)..... ***Brachycerus spinicollis* Bedel, 1874**
 - Lateral lobe of pronotum with a long pointed process (Fig. 3). Elytral ridges entire with distinct tubercles, variable in size, larger tubercles especially in sutural and median ridges (Fig. 5)..... ***Brachycerus normandi* Desbrochers des Loges, 1898**
 3- Lateral lobe of pronotum distinctly rounded. Both median and Latero-median ridges on pronotum with deep punctures, vary in dense and size (Fig. 6) ***Brachycerus cinereus* Olivier, 1807**
 - Lateral lobe of pronotum angular. Both median and lateromedian ridges on pronotum smooth or with sparse punctures (Fig. 7)4
 4- Median groove on pronotum with longitudinal carina (Fig. 8).....5
 - Median groove on pronotum without longitudinal carina (Fig. 7).....6
 5- Anterior margin of pronotum deeply bi-emarginated (Fig. 9). Only both sublateral and subsutural ridges on elytra indistinct, the other ridges are distinct (Fig.10)..... ***Brachycerus plicatus* Gyllenhal, 1833**
 - Anterior margin of pronotum slightly round (Fig. 8). All elytral ridges on elytra are distinct, tuberculated with pointed tips (Fig. 11).....
***Brachycerus perlatus* A. Solari & F. Solari, 1922**
 6- First antennal segment not longer than the second (Fig. 12) Median ridge on pronotum more or less flat, deeper anteriorly prominent posteriorly
 ***Brachycerus gibbosus* Haaf, 1957**
 - First antennal segment longer than the second (Fig. 13). Median ridge on pronotum not flat, deeply concave anteriorly.....7
 7- Median ridge on pronotum, swollen in the median third, its posterior end not projecting beyond posterior margin of pronotum (Fig. 14). Median ridge on elytra more prominent and more often subdivided into round tubercles bearing tufts of bristles at apical third (Fig. 15)..... ***Brachycerus aegyptiacus* Olivier, 1807**
 - Median ridge on pronotum connected to each other in the middle by two reaching parts of ridges so median groove not distinct appears as three pits (Fig. 7). Median ridge on elytra more prominent subdivided into round tubercles without tufts of bristles at apical third (Fig. 16)..... ***Brachycerus junix* Lichtenstein, 1796**

Fig. 1: *Brachycerus spinicollis* Bedel

Fig. 2: *Brachycerus aegyptiacus* Olivier

Fig. 3: *Brachycerus normandi* Desbrochers des Loges

Fig. 4: *Brachycerus spinicollis* Bedel

Fig. 5: *Brachycerus normandi* Desbrochers des Loge

Fig. 6: *Brachycerus cinereus* Olivier

Fig. 7: *Brachycerus junix* Lichtenstein

Fig. 8: *Brachycerus perlatus* A. Solari & F. Solari

Fig. 9: *Brachycerus plicatus* Gyllenhal

Fig. 10: *Brachycerus plicatus* Gyllenhal

Fig. 11: *Brachycerus perlatus* A. Solari & F. Solari

Fig. 12: *Brachycerus gibbosus* Haaf

Fig. 13: *Brachycerus aegyptiacus* Olivier

Fig. 14: *Brachycerus aegyptiacus* Olivier

Fig. 15: *Brachycerus aegyptiacus* Olivier

Fig. 16: *Brachycerus junix* Lichtenstein

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