

**REVISION OF GENUS *BRACHYCAUDUS* AND NEW
RECORD SPECIES ADDED TO APHID FAUNA OF EGYPT
(HEMIPTERA: STERNORRHYNCHA: APHIDIDAE)**

A. H. Amin*, K. A. Draz and R. M. Tabikha****

* Plant Protection Department, Faculty of Agriculture, Ain Shams University, EGYPT.

** Pest Control and Environment Protection, Faculty of Agriculture, Alexandria University, Damanhour Branch, EGYPT.

[Amin, A. H., Draz, K. A. & Tabikha, R. M. 2013. Revision of genus *Brachycaudus* and new record species added to aphid fauna of Egypt (Hemiptera: Sternorrhyncha: Aphididae). *Munis Entomology & Zoology*, 8 (1): 262-266]

ABSTRACT: A new aphid species, *Brachycaudus (Appelia) shwartzi* (Borner) was recorded for the first time in Egypt during the present work. This species was heavily infested leaves of apricot, *Prunus armeniaca* and peaches *Prunus persica* during May, 2006 at El-Tahrir, El- Behera Governorate. Identification procedure was confirmed by Prof. R. Blackman at British Museum, in London. Brief verbal and drafting description for alate viviparous female of this new recorded species was carried out. Moreover a simple bracket key was constructed to identify the three recorded species of genus *Brachycaudus* in Egypt.

KEY WORDS: *Brachycaudus*, Aphididae, Egypt.

Family Aphididae is one of the most important groups of Aphidoidea which contain more than 4400 aphid species placed in 493 genera, and is considered as one of the most prolific groups of insects. They are capable not only rapid increase of population though parthenogenesis but also transmission of plant viral diseases and secreting honey dew which become suitable media for sooty moulds, so they are regarded as one of the most important groups of agricultural pests. In addition aphid attack many economic important host plants such as horticultural, forest trees and field crops (Minks & Harrewijn, 1989).

In Egypt, Willcocks (1922) recorded many Egyptian aphid species and stated that both color and host plant of specimen are very important in aphid taxonomy. Theoblad (1922) presented a survey for African aphid species with morphological description and illustration figures of collected materials from Egypt and other African countries. Moreover, he recorded genus *Brachycaudus* in Egypt for the first time then recorded *Brachycaudus helichrysi* (Kaltenbach) on artichoke under the name *Anuraphis cinerariae* and on cornflower under the name *Anuraphis cyani*. Hall (1926) found that both species are synonyms to *Anuraphis helichrysi*. Also, the same author recorded another species belonging to this genus (*Brachycaudus amygdalinus*) on *Rumex* sp. under the name *Anuraphis aegyptiaca*.

Habib & El-Kady (1961) constructed a key for the Egyptian aphid fauna, including 80 species with biometric data and drafting for most of these species. They surveyed two species of Genus *Brachycaudus* i.e. *B. amygdalinus* and *B. helichrysi*. El-Kady et al. (1969) surveyed aphid species, which attack stone fruit trees (apricot, peach and plum) in Giza. They found that *Pterochloroides persicae* infested the stems and branches of peach and plum trees, while *Hyalopterus pruni* infested the upper surface of apricot and peach leaves. They couldn't record *Myzus persicae* from the stone fruit trees.

Stoetzel & Miller (1998) gave a brief summary of taxonomic characters, food plants and world distribution of *Brachycaudus helichrysi*, *B. schwartzi*, *Hyalopterus pruni*, and *Myzus persicae*, and constructed pictorial and

dichotomous keys to identify of aphid species associated with peach trees in USA. While in central Poland Strazynski (2003) surveyed aphid species on plum orchard and recorded four species *i. e.* *Hyalopterus pruni*, *Rhopalosiphum nymphaeae*, *Brachycaudus cardui* and *B. helichrysi.*, during 1999. Finely, Andreev (2004) reviewed the main characters, which were used in the taxonomy of *Brachycaudus*.

The present work aims to revise genus *Brachycaudus* in Egypt and recorded a new species belonging to this genus, which is added to aphid fauna of Egypt. Verbal and drafting description for this species was given. Moreover a simple bracket key was constructed to identify the three aphid species belonging to this genus.

MATERIAL AND METHODS

Specimens (alate and apterus forms) of aphid species were collected from their host plants and put in glass jar covered with muslin cloth and transferred to the laboratory. Data about host plant, date of collection, locality and color of fresh specimen were recorded. In laboratory, five clones of aphid species with a part of host plant were preserved in glass jar covered with muslin under dark condition till alate forms appear. Alate forms of collected species were preserved in 70% ethyl alcohol and stored till mounting.

Preserved alate forms of aphid species were cleaned with distilled water for several times, then macerated in sodium hydroxide solution 10 % overnight (in cases of black specimens, the specimens were boiled in water bath 80–90 °C for 15 minutes). After maceration, the specimens were washed with distilled water, for several times then dehydrated in ascending concentrations series of ethyl alcohol (30, 50, 60, 70, 80, 85, 90 and 95%). For clearing specimen, it was soaked in freshly chloral phenol (1 Phenol: 1 Choral hydrate) for 15 min. cleared specimen was transferred to clean slide glass with 2 drops of Swan's gum chloral media (20 ml distilled water + 60 Chloral hydrate + 10 ml Glucose + 5 ml Glacial acetic acid + 15 gm Gum Arabic), then covered with clean cover slip. Slides were left on hot plate for few days till drying.

Mounted specimens were identified by using professional taxonomic keys of aphids such as (Habib & El-Kady, 1961, Blackman & Eastop, 1984 and 2000) to identify species. Identification procedure of this new recorded species was confirmed by. Prof. Roger Blackman, Professor of Aphidology, Natural History Museum, London, UK. Moreover a simple bracket key was constructed to identify different species of Genus *Brachycaudus* in Egypt.

Genus *Brachycaudus* van der Goot, 1913

The genus containing 44 palaeartic and one American species. It was characterized by the rounded spiracular apterus, short cauda, and subapical annular incision below the siphuncular flange. Fourteen species live on or alternate from *Prunus*. Each of species *B. helichrysi* and *B. cardui* alternate from *Prunus* to Compositae and Boraginaceae.

Brachycaudus (Appelia) shwartzi (Borner, 1931)

During the present work, this species was recorded for the first time in Egypt on apricot, *Prunus armeniaca* and peaches *Prunus persicae* with high density, attacking their leaves during May, 2006 at El-Tahrir, El- Behera Governorate.

Fresh material:

Adult apterae shiny yellow brown to dark, while alate forms dark brown; immature stages yellow brown, body oval shape; attacking peach and apricot leaves during spring season, causing curling and distortion of leaves; length of alate ranging 1.54-1.80 mm, and apterae ranging 1.71-2.20 mm.

Mounted Material (Plate, I):

Head: Frontal tubercles not developed; compound eyes with triommatidium; apical rostral segment blunt nearly as long as siphunculi; antennal formula 6-3-4-5, unguis about 4.4 (3.3 - 5.5) times as long as basal part, secondary rhinariae circular in shape, number of secondary rhinariae on 3rd antennal segment 23 (20-29), on 4th antennal segment 9 (7-12) and on 5th antennal segment 1 (0-2).

Thorax: Medium vein of fore wings twice branched; first hind tarsal segment bearing two hairs; second tarsal segment about as long as each of siphunculi or apical rostral segment.

Abdomen: with well developed dorsal black patches, sclerotization partly divided segments and not extended to laterally spiracles especially on anterior abdomen tergites, lateral sclerites especially pre and post siphunculi sclerites present and attached with dorsal patches; siphunculi cylinder in shape with dark color, and longer than cauda in length; cauda helmet – shape, almost its basal width longer than its length, bearing six hairs.

Material: Ten specimens were collected from leaves of apricot, *Prunus armeniaca* and peaches *Prunus persica*, during May, 2006 at El-Tahrir, El-Behera Governorate. (Author collection).

Identification key of Species of Genus *Brachycaudus* in Egypt

Genus *Brachycaudus* represented in Egypt by two species i.e. *B. amygdalinus* and *B. helichrysi* (Habib & El-Kady, 1961). During the present work *B. schwartzi* was recorded for the first time in Egypt. So the following key was constructed to identify three different species belonging to genus *Brachycaudus*.

Key to species of genus *Brachycaudus* in Egypt.

- 1. Siphunculi shorter than cauda in length.....***amygdalinus***
 -- Siphunculi longer than cauda in length.....**2**
- 2. Basal width of cauda longer than its length; siphunculi cylinder shape.....
***schwartzi***
 -- Basal width of cauda shorter than or as long as its length; siphunculi tapering to its tip.....***helichrysi***

ACKNOWLEDGEMENT

Sincere thanks due to Prof. Roger Blackman, Professor of Aphidology, Natural History Museum, London, UK. For his kind assistance in confirming identification of newly recorded species of aphid in Egypt.

LITERATURE CITED

- Andreev, A.** 2004. The subgeneric classification of *Brachycaudus* van der Goot. Aphids in a new millennium. Proceedings of the Sixth International Symposium on Aphids, Rennes, France, 111-117.
- Blackman, R. L. & Eastop, V. S.** 1984. Aphids on the world's crops: An Identification and Information Guide (text book). John Wiley & Sons; 465 pp.
- Blackman, R. L. & Eastop, V. S.** 2000. Aphids on the world's crops: An Identification and Information Guide (text book). John Wiley & Sons; 413 pp.
- El-Kady, E. A., Hassan, M. D. & Attia, A. A.** 1969. A survey of the different species of aphids attacking certain stone-fruit trees at Giza (U.A.R.). Res. Bull. Ain Shams Univ., Fac. of Agri., 19: 1-10.
- Habib, A. & El-Kady, E. A.** 1961. The Aphididae of Egypt. Bull. Soc. Entomol. Egypte, 45: 1-137.
- Hall, W. J.** 1926. Notes of Aphididae of Egypt. Tec. Sci. Serv., Min. Agric. Egypt. Bull., 68: 1-62.
- Minks, A. K. & Harrewijn, P.** 1989. World crop pests, 2C, Aphid their biology, natural enemies and control. Volumec. Elsevier. Netherland. 312 pp.
- Stoetzel, M. B. & Miller, G. L.** 1998. Aphids (Homoptera: Aphididae) colonizing peach in the United States or with potential for introduction. Florida Entomologist, 81 (3): 325-345.
- Strazynski, P.** 2003. Aphids on plum trees (*Prunus domestica*). Ochrona Roslin, 47 (5): 27-28.
- Theoblad, F. V.** 1922. New Aphididae found in Egypt. Bull. Ent. Res, VII, P.39.
- Willcocks, F. C.** 1922. A survey of the more important economic insects and mites of Egypt. Royal Agriculture Society Cairo, Bulletin; 1: 482 pp.

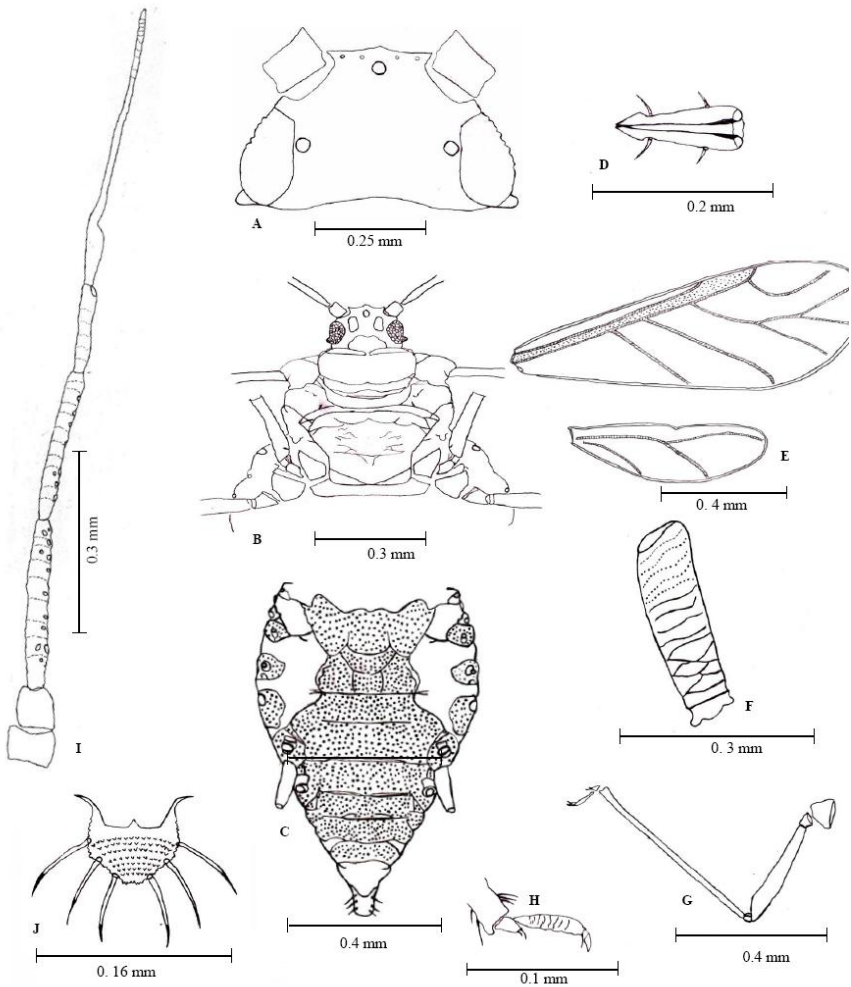


Plate I. Alate Viviparous female of *Brachycaudus (Appelia) shwartzii* (Borner). A. Head (Dorsal view); B. Head and thorax (Ventral view); C. Abdomen (Dorsal view); D. Apical rostral segment (Dorsal view); E. Fore and Hind wings; F. Siphunculi; G. Hind leg; H. Hind tarsus; I. Antenna; J. Cauda (Dorsal view).