

On the morphology of *Brachycaudus schwartzi* CB. and  
*B. amygdalinus* (Schout.) (Homoptera: Aphidinea)

By

E. DARWISH

(Received December 3, 1982)

**Abstract:** The apterous adult females and larval stages of *Brachycaudus schwartzi* CB. and *B. amygdalinus* (Schout.) were morphologically studied and described.

The morphological characteristics of *Brachycaudus* species are of special interest of the author (Darwish: 1982). The present work was carried out in the Hungarian Natural History Museum, to add new contribution to the available knowledge about the aphid *B. schwartzi* CB. and *B. amygdalinus* (Schout.) infesting peach and almond trees, respectively, in Hungary.

Van der GOOT (1913) mentioned in the original description that *Brachycaudus* adults have compound eyes with a visible triommatidion. Frontal tubercles small or absent, unguis from 1.5 to 6 times as long as basal part. First tarsal joint with 3:3:3 or 3:3:2 hairs, siphunculi cylindrical or tapering, 1/30 to 1/6 as long as the body and cauda short usually semi-circular; little if any longer than its basal width and bearing 4 to 13 hairs.

HABIB and EL-KADY (1961) described that the alate viviparous adult female of *B. amygdalinus* (Schout.) which was found in Egypt, with an antennal formula 6-3-4-5; unguis about 2.8 times as long as basal part; number of rhinaria on antennal joint III 10 to 13. First hind tarsal joint with 3 hairs. Siphunculi very short. Cauda semi-circular with about 6 hairs.

The synonyms of *B. schwartzi* CB. were described briefly by HILLE RIS LAMBERS (1947), NEVESKY (1951), THOMAS (1962), MOSTAFAWY (1967).

Material and Methods

Specimens were found in large numbers in two localities, Nagykövácsi (Julia-major) and Pilisvörösvár on peach on the 10th of July, 1981 and 24th of July, 1981, respectively, for *B. schwartzi* and in Pomáz on almond on the 4th of June, 1981 for *B. amygdalinus*. The aphids were collected in the field with the plant, then taken to the laboratory, where specimens were transferred into 70 % ethyl alcohol. For maceration the method mentioned by HILLE RIS LAMBERS (1951), and explained by van EMDEN (1972) was used. The specimens were mounted in BERLESE's fluid.

Measurements of 10 individuals from each locality and each instar were taken, and the means + standard error are given (shown) in Tables 1-3.

# DESCRIPTION OF DIFFERENT STAGES OF BRACHYCAUDUS SCHWARTZI

## I) Apterous viviparous female

In life olive green to olive greenish brown in colour, abdominal tergites forming a black or brown patch. In mounted specimens body elongate oval (Fig. 1), about 1.829 to 2.186 mm in length. Compound eyes about 3.2 times longer than triommatidion, consisting of about 60-72 ocelli. Frons slightly sinuated, median frontal tubercle a little posterior than lateral frontal tubercles. Antennae usually 6 jointed, about 0.45-0.74 times as long as the body, with joint I and II brown. Flagellum from the pale joint III and IV gradually darker towards the base of joint VI; processus terminalis gradually slightly paler towards apex. Length of antennal joint from the third to the sixth as: 0.260-0.370, 0.160-0.260, 0.110-0.150, 0.080-0.120 for the basal part and 0.275-0.380 for the unguis, respectively. Processus terminalis 2.3-4.8 times as long as base of joint VI, and 0.7-1.5 of the length of joint III. The third joint without secondary rhinaria and with 6-10 hairs. Tip of rostrum generally reaching beyond the middle coxae; ultimate rostral joint about 0.125-0.140 mm long, 0.9-1.1 times as long as second joint of hind tarsi.

Head and thorax sclerotized and pigmented brown in colour. Legs, compound eyes, siphunculi, cauda, and genital plate brown. Transverse rows of indistinct imbrication on abdominal tergites anterior to the siphunculi. Metanotum fused with abdominal tergites I-VII forming a brown patch, the chitin structure of the abdominal tergites is striped and the segment limits obvious. Marginal tubercles absent on mesothorax; mesosternal processes conspicuous, oblong shaped. Marginal tubercles absent on metathorax and abdominal tergites; and spinal tubercles absent on abdominal tergites VII and VIII. Tergite VIII with 6 hairs, mostly with filamentary apices, placed in a row on posterior margin of sclerotic part of this segment; longest of these hairs 0.045-0.070 mm long, 1.5-2.3 times as long as basal diameter of antennal joint III. Longest hairs on antennal joint III 0.005-0.007 mm long, 0.16-0.23 times as long as the basal diameter of this joint. Siphunculi conical and smooth with faint traces of several imbrications, with a circular incision below the well developed flange, 0.110-0.160 mm long, about 0.05-0.09 of the body length, about 0.8-1.2 times the length of second joint of hind tarsi. Cauda dumpy, pentangular shaped, about 0.080-0.105 mm long, bearing 4-7 hairs, about 0.6 times as wide at base as its length. Legs bearing numerous fine hairs. Hind tarsal joint II about 0.130 to 0.140 mm long. First tarsal joints with 3,3,3 hairs (Table 1.).

As shown in Table 1. there are remarkable variations in the measurements of the various organs between the two localities (Measurements see Table 1.).

## II) The larval instars in Nagykövács

The first instar larva: In life yellow in colour. In mounted specimens body oval, very small about 0.770-0.885 mm long. Frons slightly sinuated, median frontal tubercle a little lower than lateral frontal tubercles. Head and pronotum sclerotized; meso- and metanotum membranous. Transverse rows of imbrication on abdominal tergites absent, membranous. Antennae usually 5 jointed, about 0.3-0.5 times as long as the body. Length of antennal joint from the third to the fifth as: 0.060-0.090, 0.040-0.050, 0.045-0.055 for the basal part and 0.090-0.095 mm for the unguis, without secondary rhinaria on the third joint. Processus terminalis 1.6-2.1 times as long as base of joint V, and 1.0-1.6 of the length of joint III. Tip of rostrum generally reaching to the middle of hind coxae; ultimate rostral joint about 0.090-0.095 mm long, 1.0-1.2 times as long as second joint of hind tarsi. Siphunculi cylindrical, very small, about 0.035-0.040 mm long, about 0.04-0.05 of the body length. Cauda semi-circular, very small, about 0.030 mm long, bearing 2 hairs, about 0.4 times as wide at base as its length. The larva in this instar has six well developed legs, bearing numerous fine hairs. Hind tarsal joint II about 0.080-0.090 mm long. First tarsal joint with 2,2,2 hairs (Measurements see Table 2.).

The second instar larva: In life yellow in colour. In mounted specimens body oval, about 0.910-1.209 mm long. Frons slightly sinuated, median frontal tubercle a little lower than lateral frontal tubercles. Head, pronotum, antennae and legs sclerotized; other thoracic tergites and abdominal ones colourless. Siphunculi and cauda brown. Transverse rows of imbrication on abdominal tergites absent. Antennae usually 5 jointed, about 0.3-0.6 times as long as the body. Length of antennal joint from the third to the fifth as: 0.085-0.155, 0.055-0.060, 0.050-0.070 for basal part and 0.090-0.155 for processus terminalis, without secondary rhinaria on the third joint.



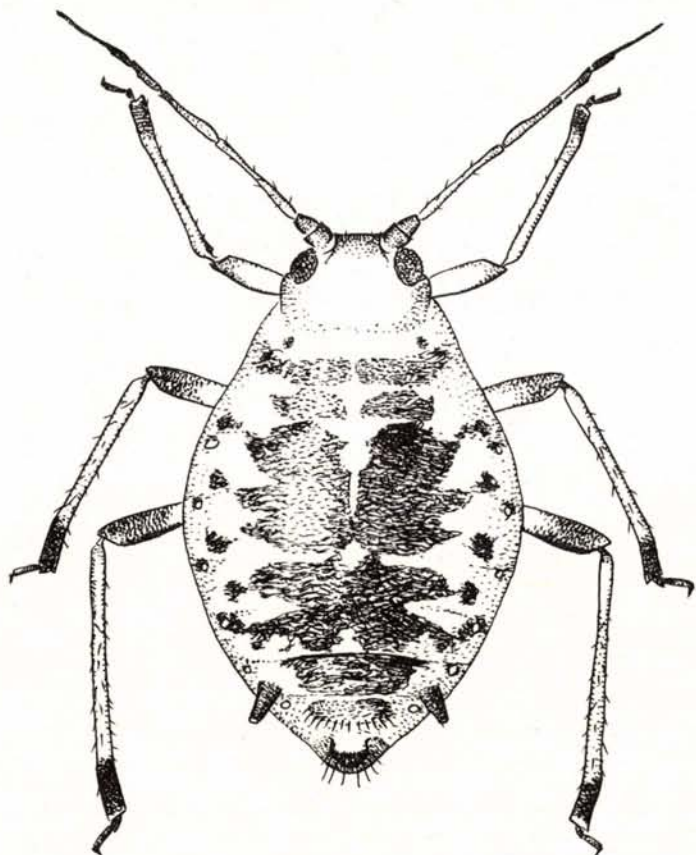


Fig. 1: The apterous viviparous adult female of *Brachycaudus schwartzi*

Processus terminalis 1.3-3.1 times as long as base of joint V, and 0.6-1.8 times of the length of joint III. Tip of rostrum generally reaching beyond the middle coxae; ultimate rostral joint about 0.100-0.105 mm long, about 1.0-1.1 as long as second joint of hind tarsi. Siphunculi short, conical, about 0.050-0.060 mm long, about 0.04-0.06 times as long as body length and about 0.5-0.7 times length of second joint of hind tarsi. Cauda semi-circular, about 0.030-0.045 mm long, bearing 4 hairs, 0.3-0.5 times as long as basal width. Legs bearing numerous fine hairs. Hind tarsal joint II about 0.090-0.100 mm long. First tarsal joints with 3, 3, 3 hairs (Measurements see Table 2).

The third instar larva: In life yellowish brown in colour. In mounted specimens body oval, about 1.224-1.426 mm long. Frons slightly sinuated, median frontal tubercle a little lower than lateral frontal tubercles. Head, pronotum, antennae, legs, siphunculi and cauda sclerotized; brown, other thoracic tergites and the abdominal ones colourless. Transverse rows of imbrication on abdominal tergites absent. Marginal tubercles absent on mesothorax; mesosternal processes absent. Tergite VIII bearing 6 hairs with filamentary apices, placed in a row on posterior margin

Table 1. Mean  $\pm$  S.E. of measurements in mm of apterous viviparous females of *Brachycaudus schwartzi* C.B. on Peach trees in Hungary

Locality	Body	Ant.	Siph.	Cauda	U.r. j.	H.t. II	Antennal joints				Sec. rhin. on III
							III	IV	V	VI	
Nagykovácsi	2.012	1.211	0.132	0.091	0.135	0.136	0.303	0.199	0.129	0.101 + 0.344	0
	$\pm$ 0.097	$\pm$ 0.099	$\pm$ 0.012	$\pm$ 0.010	$\pm$ 0.005	$\pm$ 0.005	$\pm$ 0.036	$\pm$ 0.021	$\pm$ 0.012	$\pm$ 0.011 $\pm$ 0.032	
Pilisvörösvár	1.957	1.216	0.145	0.086	0.129	0.133	0.319	0.211	0.130	0.101 + 0.335	0
	$\pm$ 0.088	$\pm$ 0.082	$\pm$ 0.007	$\pm$ 0.005	$\pm$ 0.002	$\pm$ 0.004	$\pm$ 0.023	$\pm$ 0.021	$\pm$ 0.008	$\pm$ 0.003 $\pm$ 0.020	

Abbreviations: Ant. = Antenna, Siph. = Siphunculus, U.r.j. = Ultimate rostral joint, H.t.II = Second joint of hind tarsus and  $\pm$  S.E. =  $\pm$  The value of Standard Error.  
Sec. rhin on III = Secondary rhinaria on the third antennal joint.

Table 2. Mean  $\pm$  S.E. of measurements in mm of the larval instars of *Brachycaudus schwartzi* C.B. in Nagykovács on Peach trees

Instar	Body	Ant.	Siph.	Cauda	U.r. j.	H.t. II	Antennal joints				Sec. rhin. on III	
							III	IV	V	VI		
First	0.807	0.353	0.039	0.030	0.093	0.084	0.080	0.045	0.050	+ 0.089	-	0
	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$		
	0.038	0.021	0.002	0.000	0.003	0.003	0.009	0.003	0.003	0.006		
Second	1.026	0.481	0.059	0.040	0.101	0.099	0.134	0.059	0.059	+ 0.133	-	0
	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$		
	0.100	0.045	0.003	0.004	0.002	0.003	0.018	0.002	0.005	0.017		
Third	1.330	0.670	0.087	0.045	0.110	0.108	0.120	0.104	0.077	0.073	+ 0.186	0
	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	
	0.074	0.045	0.005	0.006	0.003	0.005	0.013	0.007	0.008	0.004	0.016	
Fourth	1.699	0.958	0.111	0.054	0.121	0.127	0.217	0.152	0.101	0.087	+ 0.274	0
	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	$\pm$	
	0.146	0.109	0.007	0.006	0.005	0.004	0.040	0.021	0.010	0.005	0.031	

Abbreviations see in Table 1.



part; about 0.45 mm long, 1.2 times as long as basal diameter of antennal joint III. Antennae usually 6 jointed, about 0.4-0.6 times as long as the body. Length of antennal joint from the third to the sixth as: 0.100-0.135, 0.100-0.120, 0.070-0.090, 0.070-0.080 for basal part and 0.155-0.210 for unguis, usually without secondary rhinaria on the third joint. Processus terminalis 1.9-3.0 times as long as base of joint VI, and 1.1-2.1 times of the length of joint III. Third antennal joint divides during moulting, giving the third and the fourth joint. Tip of rostrum generally reaching beyond the middle coxae; ultimate rostral joint about 0.105-0.115 mm long, about 0.9-1.2 as long as second joint of hind tarsi. Siphunculi conical, with a circular incision below the flange, about 0.080-0.090 mm long, about 0.06-0.07 times as long as body length and 0.7-0.9 times of second joint of hind tarsi. Cauda semi-circular about 0.035-0.055 mm long, about 0.3-0.5 times as long as its basal width, bearing 4-6 hairs. Legs bearing numerous fine hairs. Hind tarsal joint II about 0.100-0.115 mm long. First tarsal chaetotaxy: 3,3,3 (Measurements see Table 2.).

The fourth instar larva: In life yellowish brown or greenish brown in colour. In mounted specimens body oval, about 1.467-1.953 mm long. Dorsal sclerotization as in the third instar larva. Marginal tubercles and mesosternal processes absent on mesothorax. Tergite VIII bearing 6 hairs about 0.055-0.060 mm long, 1.4 times as long as basal diameter of antennal joint III. Antennae 6 jointed, about 0.4-0.8 times as long as the body. Length of antennal joint from the third to the sixth as: 0.130-0.260, 0.110-0.180, 0.080-0.120, 0.080-0.090 for basal part and 0.210-0.305 for unguis; usually without secondary rhinaria on the third joint. Processus terminalis 2.3-3.8 times as long as base of joint VI, and about 0.8-2.3 times of the length of joint III. Tip of rostrum generally reaching to the beyond of middle coxae; ultimate rostral joint about 0.110-0.125 mm long, about 0.8-1.0 as long as second joint of hind tarsi. Siphunculi conical, with a circular incision below the well developed flange, about 0.100-0.120 mm long, 0.05-0.08 times as long as body length and 0.8-1.0 times length of second joint of hind tarsi. Cauda semi-circular, about 0.045-0.060 mm long, about 0.4-0.5 times as long as its basal width, bearing 5-6 hairs. Hind tarsal joint II about 0.120-0.130 mm long. First tarsal chaetotaxy: 3,3,3 (Measurements see Table 2.).

#### DESCRIPTION OF DIFFERENT STAGES OF BRACHYCAUDUS AMYGDALINUS

##### 1) Apterous viviparous female

In life light green in colour, abdominal tergites forming a small black patch. In mounted specimens body broadly oval (Fig. 2.), about 1.829 to 2.402 mm in length. Compound eyes about 3.3 times longer than trichmatidion, consisting of about 56 to 78 ocelli. Frons slightly sinuated, median frontal tubercle a little higher than lateral frontal tubercles. Antennae usually 6 jointed, about 0.33 to 0.65 times as long as the body, with joint I and II brown. Flagellum from the pale joint III and IV gradually darker towards the base of joint VI; processus terminalis gradually slightly paler towards apex. Length of antennal joint from the third to the sixth as: 0.205-0.320, 0.110-0.165, 0.085-0.120, 0.080-0.100 for the basal part and 0.170-0.268 for the unguis, respectively. Processus terminalis 1.7-3.4 times as long as base of joint VI, 0.5-1.3 of the length of joint III. The third joint with 0-13 secondary rhinaria and with 6-11 hairs. Tip of rostrum generally reaching beyond the middle coxae; ultimate rostral joint about 0.085-0.095 mm long, 0.6-0.8 times as long as second joint of hind tarsi.

Head and thorax sclerotized and pigmented brown in colour. Legs, compound eyes, siphunculi, cauda and genital plate brown. Transverse rows of indistinct imbrication on abdominal tergites anterior to the siphunculi. Metanotum fused with abdominal tergites I-V forming a brown patch. Marginal tubercles present on mesothorax, pear shaped; mesosternal processes conspicuous, oblong. Marginal tubercles present on metathorax, oval shaped, and absent on abdominal tergites; and spinal tubercles absent on abdominal tergites VII and VIII. Tergite VIII with 8-9 hairs, mostly with filamentary apices, placed in a row on posterior margin of sclerotic part of this segment; longest of these hairs 0.080 mm long, 2.7 times as long as basal diameter of antennal joint III. Longest hairs on antennal joint III 0.015-0.020 mm long, 0.5-0.7 times as long as the basal diameter of this joint. Siphunculi conical shaped, short and smooth with faint traces of several imbrications, with a circular incision below the well developed flange, 0.090-0.110 mm long, about 0.04-0.06 of the body length and about 0.7-0.9 times the length of second joint of hind tarsi. Cauda short, semi-circular shaped, about 0.050-0.080 mm long, bearing 4-6 hairs, about 0.3-0.6 times as wide at base as its length. Legs bearing numerous fine hairs. Hind tarsal joint II about 0.120-0.135 mm long. First tarsal joints with 3,3,2 hairs (Measurements see Table 3.).

Table 3. Mean  $\pm$  S.E. of measurements in mm of apterous viviparous females and larval instars of *Brachycaudus amygdalinus* (Schout.) on almond trees in Pomáz

Stage	Body	Ant.	Siph.	Cauda	U.r.j.	H.t. II	Antennal joints				Sec. rhin. on III
							III	IV	V	VI	
First instar	0.675	0.305	0.033	0.028	0.076	0.080	0.064	0.040	0.050 + 0.078	-	0 0
	$\pm$ 0.025	$\pm$ 0.007	$\pm$ 0.002	$\pm$ 0.004	$\pm$ 0.002	$\pm$ 0.000	$\pm$ 0.004	$\pm$ 0.001	$\pm$ 0.000 $\pm$ 0.002		
Second instar	0.963	0.406	0.051	0.040	0.077	0.090	0.111	0.047	0.055 + 0.104	-	0 0
	$\pm$ 0.037	$\pm$ 0.013	$\pm$ 0.002	$\pm$ 0.001	$\pm$ 0.001	$\pm$ 0.000	$\pm$ 0.008	$\pm$ 0.002	$\pm$ 0.002 $\pm$ 0.005		
Third instar	1.349	0.537	0.069	0.040	0.078	0.110	0.180	0.059	0.070 + 0.119	-	0 0
	$\pm$ 0.038	$\pm$ 0.012	$\pm$ 0.001	$\pm$ 0.000	$\pm$ 0.001	$\pm$ 0.000	$\pm$ 0.006	$\pm$ 0.001	$\pm$ 0.000 $\pm$ 0.005		
Fourth instar	1.626	0.683	0.085	0.053	0.081	0.123	0.173	0.096	0.076	0.085 + 0.151	0 0
	$\pm$ 0.031	$\pm$ 0.033	$\pm$ 0.003	$\pm$ 0.002	$\pm$ 0.000	$\pm$ 0.002	$\pm$ 0.013	$\pm$ 0.006	$\pm$ 0.005	$\pm$ 0.002 $\pm$ 0.007	
Apterous viviparous female	2.110	0.930	0.108	0.065	0.091	0.128	0.264	0.141	0.100	0.093 + 0.208	4 3
	$\pm$ 0.054	$\pm$ 0.060	$\pm$ 0.002	$\pm$ 0.003	$\pm$ 0.001	$\pm$ 0.002	$\pm$ 0.011	$\pm$ 0.006	$\pm$ 0.004	$\pm$ 0.003 $\pm$ 0.010	

Abbreviations: Ant. = Antenna, Siph. = Siphunculus, U.r.j. = Ultimate rostral joint, H.t.II = Second joint of hind tarsus and S.E. =  $\pm$  Sec.rhin.on III = Secondary rhinaria on the third antennal joint.



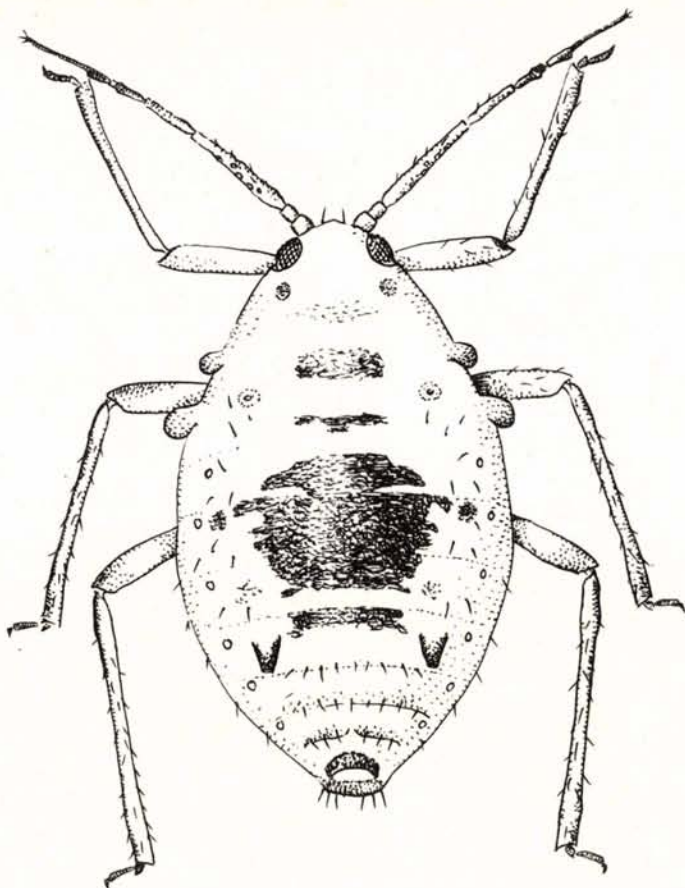


Fig. 2: The apterous viviparous adult female of *Brachycaudus amygdalinus*

## II) The larval instars

The first instar larva: In life yellow in colour. In mounted specimens body oval, very small about 0.574-0.806 mm long. Frons slightly sinuated, median frontal tubercle a little higher than lateral frontal tubercles. Head and pronotum sclerotized; meso and metanotum membranous. Transverse rows of imbrication on abdominal tergites absent, membranous. Abdominal tergites bearing numerous fine hairs, longest hairs about 0.040 mm long. Antennae usually 5 jointed, about 0.3-0.6 times as long as the body. Length of antennal joint from the third to the fifth as: 0.040-0.085, 0.030-0.050, 0.045-0.050 for the basal part and 0.075-0.090 mm for the unguis, without secondary rhinaria on the third joint. Processus terminalis 1.5-2.0 times as long as base of joint V, and 0.9-2.3 of the length of joint III. Tip of rostrum generally reaching to the end of hind coxae; ultimate rostral joint about 0.065-0.080 mm long, 0.8-1.0 times as long as second joint of hind tarsi. Siphunculi cylindrical, very small, about 0.030 to 0.040 mm long, about 0.04-0.07 of the body length. Cauda semi-circular, very small, about 0.020-0.040 mm long, bearing 2 hairs, about 0.3-0.6 times as wide at base as its length. Legs bearing numerous fine hairs longest hairs 0.040 mm long. Hind tarsal joint II about 0.80 mm long. First tarsal joint with 3,3,2 hairs. (Measurements see Table 3.).

The second instar larva: In life yellow in colour. In mounted specimens body oval, about 0.760-1.085 mm long. Frons slightly sinuated, median frontal tubercle a little higher than lateral frontal tubercles. Head, pronotum, antennae, legs, siphunculi and cauda sclerotized; other thoracic tergites and abdominal ones colourless. Transverse rows of imbrication on abdominal tergites absent. Abdominal tergites bearing numerous fine hairs about 0.040 mm long. Antennae usually 5 jointed, about 0.3-0.6 times as long as the body. Length of antennal joint from the third to the fifth as: 0.080-0.150, 0.040-0.060, 0.050-0.060 for basal part and 0.080-0.130 for process terminalis. Third antennal joint without secondary rhinaria and bearing 2-4 hairs. Processus terminalis 1.3-2.6 times as long as base of joint V, and 0.5-1.6 times of the length of joint III. Tip of rostrum generally reaching to the middle of hind coxae; ultimate rostral joint about 0.070-0.080 mm long, about 0.8-0.9 times as long as second joint of hind tarsi. Siphunculi short, conical, about 0.045-0.060 mm long, about 0.04-0.08 times as long as body length and about 0.5-0.7 times length of second joint of hind tarsi. Cauda semi-circular, about 0.035-0.045 mm long, bearing 2 hairs, 0.4-0.6 times as long as basal width. Hind tarsal joint II about 0.090 mm long. First tarsal joint with 3,3,2 hairs. (Measurements see Table 3.).

The third instar larva: In life yellowish green or green in colour. In mounted specimens body oval, about 1.178 to 1.566 mm long. Frons slightly sinuated, median frontal tubercle a little higher than lateral frontal tubercles. Head, pronotum, antennae, legs, siphunculi and cauda sclerotized; brown, other thoracic tergites and the abdominal ones colourless. Transverse rows of imbrication on abdominal tergites absent. Abdominal tergites bearing numerous fine hairs about 0.030-0.040 mm long. Marginal tubercles present on mesothorax, pear shaped; mesosternal processes absent. Tergite VIII bearing 6-7 hairs with filamentary apices, placed in a row on posterior margin part; about 0.050 mm long, 1-3 times as long as basal diameter of antennal joint III. Antennae usually 5 jointed, about 0.3-0.5 times as long as the body. Length of antennal joint from the third to the fifth as: 0.150 to 0.200, 0.050-0.065, 0.070 for basal part and 0.090-0.135 for unguis, usually without secondary rhinaria on the third joint. Processus terminalis 1.3-1.9 times as long as base of joint V, and 0.5-0.9 times of the length of joint III. Tip of rostrum generally reaching to the top of hind coxae; ultimate rostral joint about 0.070-0.080 mm long, about 0.7 times as long as second joint of hind tarsi. Siphunculi conical, with a circular incision below the flange, about 0.065-0.070 mm long, about 0.04-0.06 times as long as body length and 0.6 times of second joint of hind tarsi. Cauda semi-circular about 0.040 mm long, about 0.5 times as long as its basal width, bearing 4 hairs. Legs bearing numerous fine hairs. Hind tarsal joint II about 0.110 mm long. First tarsal chaetotaxy: 3,3,2. (Measurements see Table 3.).

The fourth instar larva: In life green in colour. In mounted specimens body oval, about 1.519 to 1.829 mm long. Dorsal sclerotization as in the third instar larva. Tergite VIII bearing 7 hairs about 0.060 mm long, 2.0 times as long as basal diameter of antennal joint III. Antennae 6 jointed, about 0.3-0.5 times as long as the body. Length of antennal joint from the third to the sixth as: 0.110-0.230, 0.070-0.130, 0.060-0.105, 0.070-0.090 for basal part and 0.125-0.180 for unguis; usually without secondary rhinaria on the third joint. Processus terminalis 1.4-2.6 times as long as base of joint VI, and about 0.5-1.6 times of the length of joint III. Third antennal joint divides during moulting, giving the third and the fourth joint. Tip of rostrum generally reaching beyond the middle coxae; ultimate rostral joint about 0.080-0.085 mm long, about 0.6-0.8 times as long as second joint of hind tarsi. Siphunculi conical, with a circular incision below the flange, about 0.070-0.090 mm long, about 0.04-0.06 times as long as body length and 0.5-0.8 times of second joint of hind tarsi. Cauda semi-circular about 0.050-0.060 mm long, about 0.5-0.6 times as long as its basal width, bearing 4 hairs. Hind tarsal joint II about 0.110-0.130 mm long. First tarsal chaetotaxy: 3,3,2. (Measurements see Table 3.).

The morphological features of *B. amygdalinus* (Schout.) illustrated some remarkable variation as compared to that of *B. cardui* (L.) and *B. schwartzi* CB as described by DARWISH (1982) in both life and mounted specimens. In this respect, in the first instar larva of *B. amygdalinus* the number of joints of antenna was 5 as in *B. schwartzi* versus 4 in *B. cardui*. In apterous viviparous adult female of *B. amygdalinus* the III antennal joint was with 0-13 secondary rhinaria versus with 0-4 secondary rhinaria in *B. cardui* and versus without secondary rhinaria in *B. schwartzi*. The first tarsal chaetotaxy in *B. amygdalinus* was 3,3,2 in all stages contrary to that in *B. cardui* which was 2,2,2 in all stages and in *B. schwartzi* was 3,3,3 in all stages except the first instar larva which was 2,2,2.



# REFERENCES

- DARWISH, E.T.E. (1982): Morphology of *Brachycaudus cardui* (L.) (Homoptera, Aphididae) on some host plants in Hungary. - *Folia ent. hung.* 43 (1): 9-14.
- DONCASTER, J.P. (1973): G.B. Bucton's works on Aphidoidea (Hemiptera). - *Bull. Br. Mus. Ent.* 28 (2): 1-109.
- EASTOP, V.F. & HILLE RIS LAMBERS, D. (1976): Survey of the world's aphids. - Dr.W.Junk b.v., Publishers, the Hague: 573 pp.
- HABIB, A. & EL-KADY, E.A. (1961): The Aphididae of Egypt, (Hemiptera-Homoptera). - *Bull.Soc. ent. Egypte*, 45 (1): 1-137.
- HEIE, O.E. (1980): The Aphidoidea (Hemiptera) of Fennoscandia and Denmark. I. General part: The families Mindaridae, Homaphididae, Theloxidae, Anoecidae and Pemphigidae. - *Fauna ent. Scandinav.*, 9: 1-238.
- HILLE RIS LAMBERS, D. (1947): On some mainly western European aphids. *Zoöl. Meded., Leiden*, 28: 291-333.
- HILLE RIS LAMBERS, D. (1951): On mounting aphids and other soft-skinned insects. - *Ent. Ber.* 298, XIII: 55-58.
- HILLE RIS LAMBERS, D. (1960): Additions to the aphid fauna of Greenland. - *Meddr Grönland*, 159 (5): 1-18.
- MOSTAFAWY, M. (1967): Morphologie, Biologie und Phytopathologische Bedeutung der Gattung *Appelia* CB. (Aphidoidea: Aphididae). I. - *Z. angew. Zool.* 54 (3): 373-432.
- NEVSKY, V.P. (1951): K Poznoniju fauny tlej (Homoptera, Aphidoidea) Juznogo Kazachstana. - *Trudyvsesoj. Ent. obsc.*, 43: 37-64.
- SZALAY-MARZSÓ, L. (1969): *Levéltetvek a kertészetben.* - Akadémiai Kiadó, Budapest, 186 pp.
- THOMAS, K.H. (1962): Die Blattlaus des Formenkreises *Brachycaudus prunicola* (Kalt.). - *Wiss. der Univ. Rostock*, 11: 325-342.
- VAN DER GOOT, P. (1913): Zur Systematik der Aphiden. - *Tijdschr. Ent.*, 56: 69-155.
- VAN EMDEN, H.F. (1972): *Aphid Technology.* - (Text book), Academic press London and New York, York.: 1-344, spec: 1-9.

Author's present address: E.T.E. DARWISH  
 Zoological Department  
 Hungarian Natural History Museum  
 Baross u. 13  
H-1088 Budapest  
 HUNGARY

