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ADDITION TO THE RECORDS OF SEXUALES OF APHIDS (HOMOPTERA : APHIDIDAE) FROM INDIA

By

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(With 4 Text-figures)

INTRODUCTION

Through the works of Basu and Raychaudhuri (1980), Singh *et al.* (1980) and Raychaudhuri *et al.* (1980) sexuales of 93 aphid species have been known to occur in India. These sexuales are represented either by male or oviparous female or by both the morphs.

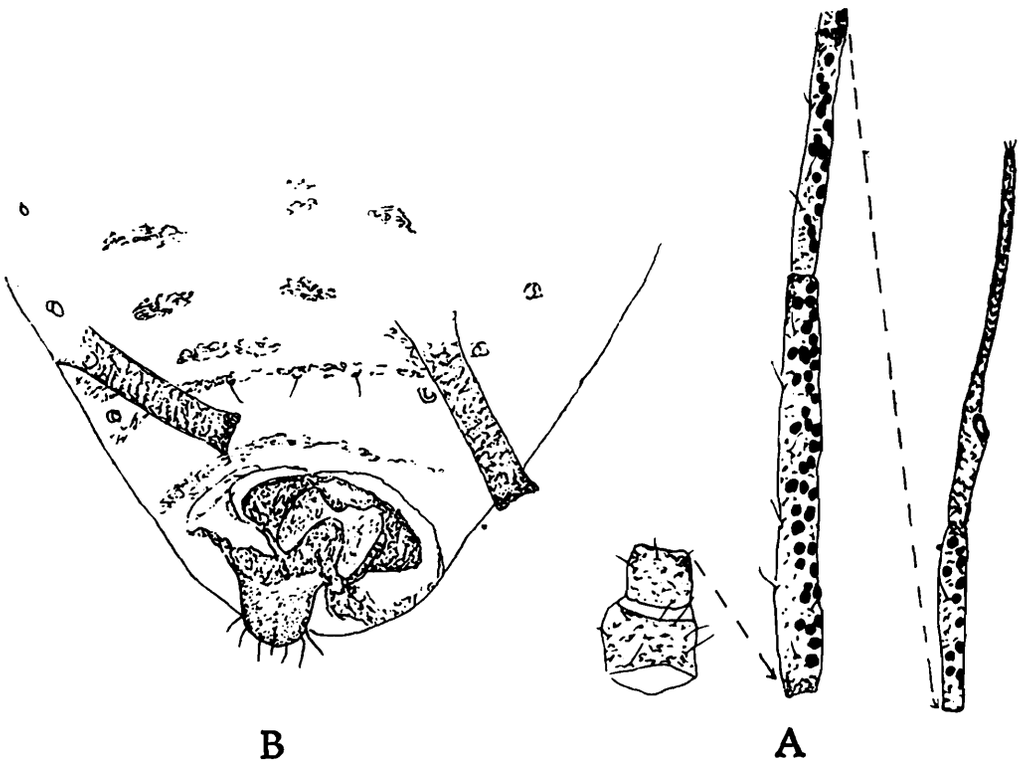
Further studies on the sexuales of Indian aphids have revealed the existence of males and/or apterous oviparous females of 3 more aphid species, viz. *Eumyzus darjeelingensis* Basu and Raychaudhuri, *Neomyzus circumflexus* (Buckton) and *Eulachnus thunbergii* (Wilson). Of these, alate males and apterous oviparous females of *Eumyzus darjeelingensis* Basu and Raychaudhuri and *Neomyzus circumflexus* (Buckton) were so far unknown. Apterous oviparous female of *Eulachnus thunbergii* (Wilson) was hitherto unknown from India. Find of sexuales of these species, besides parthenogenetic morphs suggests chances of completion of holocyclic life-cycle by these species under Indian climate. Sexuales of *Eumyzus darjeelingensis* and *Neomyzus circumflexus* are being described. Apterous oviparous female of *Eulachnus thunbergii* is also described because of lack of such description based on Indian material.

The material are deposited in the Aphid Research Unit, Entomology Laboratory, Zoology Department, Calcutta University.

Eumyzus darjeelingensis Basu and Raychaudhuri, 1974

Alate male : Body 1.50—1.83 mm long with 0.60—0.78 mm as its maximum width. Antennae (Text-fig. 1A) 6-segmented, 0.87—1.14× body ; segment III, IV and V respectively with 36—40, 17—22 and 9—22 circular secondary rhinaria distributed over their entire length. Ultimate rostral segment bearing 2 secondary hairs. Dorsal abdominal hairs on tuberculate bases, the longest one on anterior, 7th and 8th tergites about 0.81—1.0, 0.70—0.72 and 0.80—0.90×basal diameter of antennal segment III respectively. Siphunculi 0.12—0.16 × body

and 2.60—3.0 × cauda bearing 7 hairs. Male genitalia well developed (Text-fig. 1B). Other characters as in alate viviparous female (Basu and Raychaudhuri, 1974).



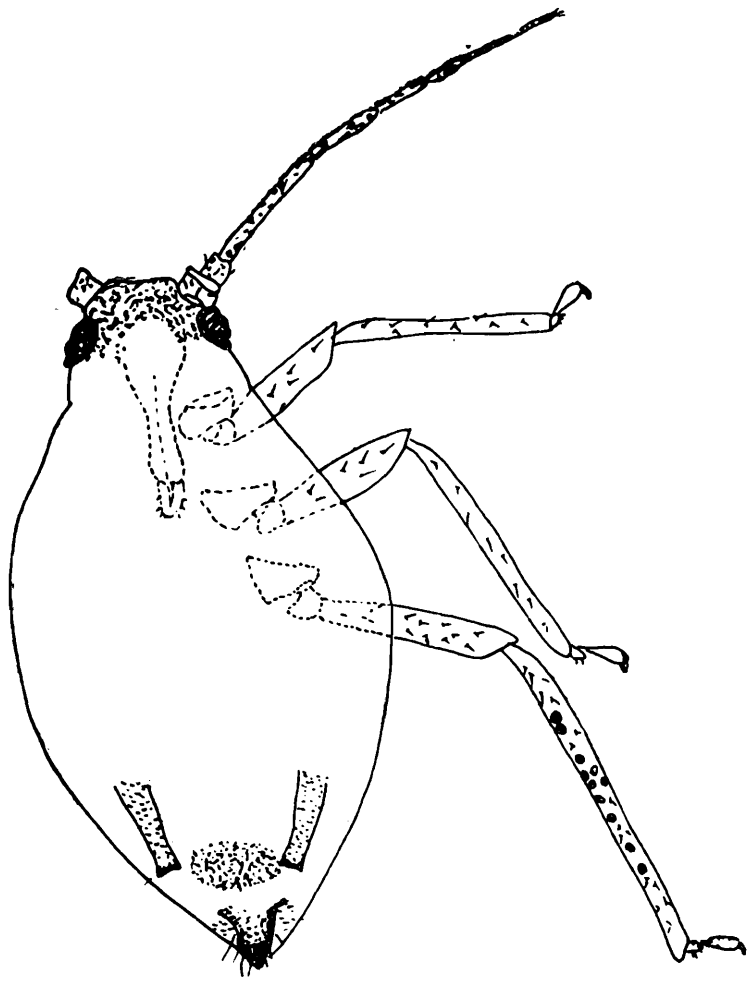
Text-fig. 1. *Eumyzus darjeelingensis* Basu and Raychaudhuri : Alate male
A. Antenna
B. Posterior portion of abdomen showing male genitalia

Measurements of one alate male in mm : Length of body 1.80, width 0.79 ; antenna 1.77, segments III : IV : V : VI 0.52 : 0.36 : 0.22 : 0.13+0.36 ; ultimate rostral segment 0.11 ; second-segment of hind tarsus 0.11 ; siphunculus 0.22 ; cauda 0.07.

Apterous oviparous female : Body 1.63-1.87 mm long with 0.82-1.0 mm as its maximum width. Antennae 6-segmented, 0.64—0.70 × body ; flagellum without any secondary rhinaria. Ultimate rostral segment 0.90—1.03 × second segment of hind tarsus and bears 2 secondary hairs. Dorsum of abdomen pale and scabrous ; dorsal hairs on tuberculate bases ; the longest one on anterior, 7th and 8th tergites about 1.0—1.11, 0.88—1.42, 1.28—1.57 × basal diameter of antennal segment III respectively. Siphunculi 0.12—0.13 × the body and 1.54—1.66 × cauda bearing 7—11 hairs. Hind tibiae bearing 6-15 pseudosensoria distributed on middle portion only (Text-fig. 2). Otherwise as in apterous viviparous famale (Basu and Raychaudhuri, 1974).

Measurements of one apterous oviparous female : Length of body 1.80, width 0.97 ; antenna 1.26, segments III : IV : V : VI 0.39 : 0.21 : 0.15 : 0.10+0.25 ; ultimate rostral segment 0.10 ; second segment of hind tarsus 0.10 ; siphunculus 0.22 ; cauda 0.15.

Collection data : 3 alate viviparous ♀ ♀, 1 apterous oviparous ♀, 2 **alate** ♂ ♂ and 14 nymphs from indet host plant, India : West Bengal : **Kalimpong** : Monsung, 8. iv. 71, coll. *M. R. Ghosh* ; 25 apterous ♀ ♀, 2 **alate** ♂ ♂ and 4 nymphs from an indet host plant, India ; West Bengal : **Darjeeling**, 17. iv. 70, coll. *M. R. Ghosh.*



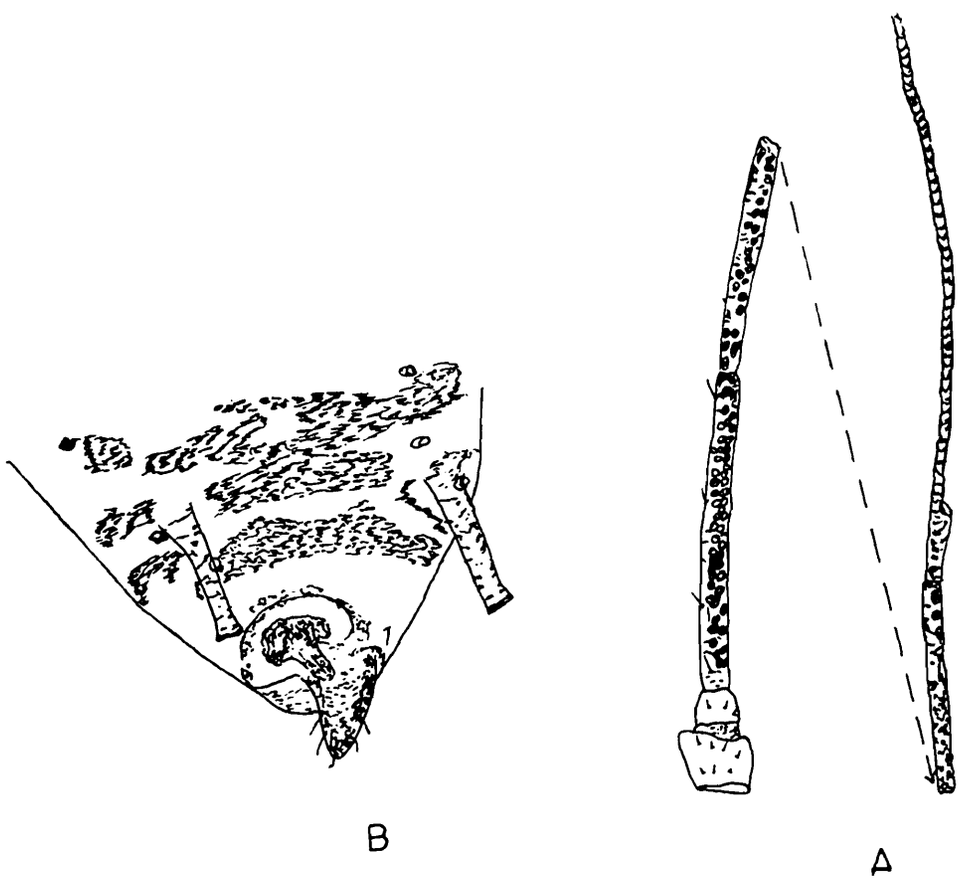
Text-fig. 2. *Eumyzus derjeelingensis* Basu and Raychaudhuri : Apterous ovipara Whole body with hind tibiae showing pseudosensoria

Note : Basu and Raychaudhuri (1974) while describing the species **by** apterous and alate viviparous females collected at Darjeeling, West **Bengal** stated that the species infested *Hydrangea paniculate.* Unfortunately the host plant of the sexuale morphs collected at Kalimpong and **Darjeeling**, West Bengal could not be determined.

Neomyzus circumflexus (Buckton, 1876)

Alate male : Body 1.75-2.25 mm long with 0.61-0.93 mm as its **maximum** width. Head dark brown, spinulose, with well developed **lateral** frontal tubercles. Antennae 6-segmented (Text-fig. 3A), 0.99-1.44× **the body**, dark brown except the very base of segment III which is pale

brown ; flagellum very sparsely imbricated except on segment VI which with normal imbrications, segments III, IV and V respectively with 34-64, 15-43 and 6-14 small, circular secondary rhinaria distributed irregularly over entire length ; processus terminalis 3.50-6.50 × the base of segment VI. Ultimate rostral segment 1.08-1.34 × second segment of hind tarsus and bears 2-3 secondary hairs. Dorsum of abdomen with pleural and marginal sclerotic patches on tergites 2-6, those on tergite 7 fuse to form a transverse band, tergite 8 with only a faint spinal



Text-fig. 3. *Neomyzus circumflexus* (Buckton) : Alate male

A. Antenna

B. Posterior portion of abdomen showing male genitalia

band ; dorsal hairs short, longest one on anterior and 8th tergites about 0.33-0.45 and 0.63-1.0 × basal diameter of antennal segment III respectively. Siphunculi cylindrical, about 0.13-0.15 × the body and 1.99-2.37 × cauda bearing 4-6 hairs. Male genitalia as in Text-fig. 3B.

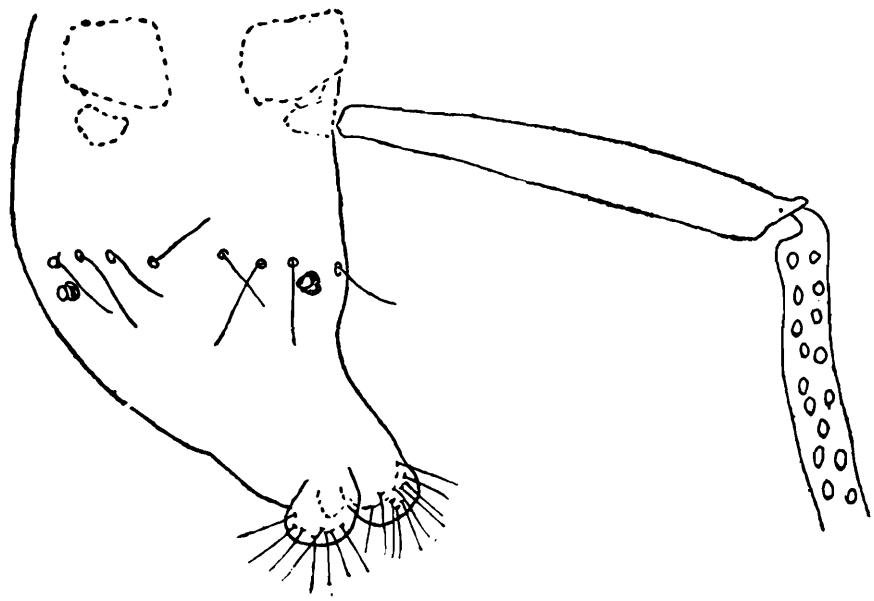
Measurements of one alate male in mm : Length of body 2.25, width 0.93 ; antenna 3.25, segments III : IV : V : VI 0.70 : 0.64 : 0.46 : 0.18+ 0.99 ; ultimate rostral segment 0.13 ; second segment of hind tarsus 0.09 ; siphunculus 0.31 ; cauda 0.16.

Collection data : 1 apterous viviparous ♀, 2 alate viviparous ♀♀, 2 alate ♂♂ and 8 nymphs from *Zanthoxylum oxiphyllum* (Rutaceae), India : West Bengal : Kalimpong : Algarha, 6. xi. 70, coll. *M. R. Ghosh.*

Note : *Neomyzus circumflexus* (Buckton) is a widely distributed species. Hille Ris Lambers (1949) and Eastop (1966) are of the opinion that the species reproduces anholocycally. But the find of alate males along with viviparous females on a plant of Rutaceae suggests that the species may produce sexuales under certain condition.

Eulachnus thunbergii (Wilson, 1919)

Apterous oviparous female : Body 2.40 mm long with 0.78 mm as maximum width. Head pale brown, smooth ; frons weakly convex ; dorsal cephalic hairs long, fine and arising from sclerotic bases, longest one being about 3.63 – 3.81 × basal diameter of antennal segment III. Antennae 6—segmented, 0.53× body ; segments I and II concolorous with head ; flagellum pale, sparsely imbricated, less so on segments III and IV, without secondary rhinaria ; flagellar hairs like those on cephalic dorsum. Ultimate rostral segment about 0.55 × second segment of hind



Text-fig. 4. *Eulachnus thunbergii* (Wilson) : Apterous ovipara Posterior portion of body with hind tibia (partly broken) showing pseudosensoria.

tarsus bearing 2 secondary hairs. Dorsum of abdomen pale, smooth, bearing numerous long hairs arising from sclerotic bases, the longest one on anterior and 8th tergites being 3.50 and 3.80 × basal diameter of antennal segment III respectively. Siphunculi ring like, without hairs. Cauda semilunar, bearing numerous hairs. Hind tibiae partly broken bearing numerous pseudosensoria (Text-fig. 4). Other characters as in apterae viviparae.

Measurements of the apterous oviparous female : Length of body 2.40, width 0.78 ; antenna 1.29, antennal segments III : IV : V : VI 0.40 : 0.21 : 0.25 : 0.18+0.6 ; ultimate rostral segment 0.09 ; second segment of hind tarsus 0.16 ; siphuncular pore 0.02.

Collection data : 3 apterous viviparous ♀ ♀ and 1 apterous oviparous ♀ from *Pinus* sp. (Abietaceae), India : Meghalaya : Shillong : Umpling : 10. xii. 70, coll. *R. C. Basu.*

Note : The oviparous female is reported for the first time from India. In view of non-availability of a good description of the ovipara detailed description of the same is provided here.

Summary

This paper reports hitherto unknown alate male and apterous oviparous female of *Eumyzus darjeelingensis* Basu and Raychaudhuri and alate male of *Neomyzus circumflexus* (Buckton). Besides, apterous oviparous female of *Eulachnus thunbergii* (Wilson) is reported for the first time from India.

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