

**FURTHER CONTRIBUTION ON THE PSYLLIDS (INSECTA :  
HOMOPTERA) OF ASSAM AND MEGHALAYA WITH  
DESCRIPTION OF NEW SPECIES**

**A. R. LAHIRI AND S. BISWAS**  
*Zoological Survey of India, Calcutta*

**INTRODUCTION**

Till date, only ten Psyllid species have been reported from the states of Assam and Meghalaya of North Eastern India by Mathur (1975) and Lahiri and Biswas (1979 a, b). In course of further surveys in these states a few more Psyllid species could be unearthed and the same have been reported in the present paper. These include two species new to science and another three, which were earlier not known in the area under study. Relevant collection data, biological information and morphological notes of taxonomic importance have been provided in the text together with keys for identification of the species studied.

**SYSTEMATIC ACCOUNT**

**Key To The Subfamilies Of The Family PSYLLIDAE**

1. Frons clearly visible as a small sclerite and bearing the front ocellus at its extremity ..... Pauropsyllinae (Genus *Paurocephala* Crawford)  
Frons visible only as a narrow border around front ocellus .....2
2. Head proper deeply cleft in front; proximal tarsus of hind leg bearing single claw ..... Ciriacreminae (Genus *Mesohomotoma* Kuwayama)  
Head proper not cleft in front, although the divergent genal cones may give the impression of a cleft; proximal tarsus of hind leg clawless or bearing a pair of claws .....3
3. Media and cubitus forming a common (cubital) stem at base in forewing; proximal tarsus of hindleg bearing a pair of claws.....  
.....Psyllinae (Genus *Psylla* Geoffroy)  
In forewing, cubital stem absent, radius, media and cubitus arising from a common point; proximal tarsus of hindleg clawless .....  
.....Trioziinae (Genus *Trioza* Foerster)

**Subfamily PAUROPSYLLINAE**

**1. *Paurocephala phalaki* Mathur**

1975. *Paurocephala phalki* Mathur, *Psyllidae of the Indian subcontinent*, p. 58.

*Specimens examined* : India : Assam : Jatinga, 3 ♂♂, 6 ♀♀, 20-25. ix. 1978, ex 'Fig tree', coll. S. Biswas.

*Measurements* (in mm, for males and females respectively) : Length of body : 2.00, 2.00; length of forewing : 2.10, 2.00 - 2.10; length of antennae : 0.85, 0.80; width of head with eyes 0.50, 0.60; width of vertex between eyes : 0.20, 0.25.

Present find of this species at Jatinga extends its distribution to middle Assam from Teesta village, West Bengal, the type locality. Specimens studied agree well with the description of the species provided by Mathur (1975) except being a little larger in size. The nymphs were noticed on the undersurface of tender leaves, frequented by adults. The leaves thus infected, bore very fine powdery secretion and were deformed in shape.

*Distribution* : Eastern India : West Bengal and Assam.

#### Subfamily CIRIACREMINAE

##### 2. *Mesohomatoma lutheri* (Enderlin)

1918. *Udamostigma lutheri* Enderlin, *Zool. Jb.*, 41 : 484.

1925. *Mesohomatoma lutheri* (Enderlin) : Crawford, *Proc. Hawaii. ent. Soc.*, 6 : 32.

*Specimens examined* : India : Assam : Jatinga, 5 ♂♂, 2 ♀♀, 4 nymphs, 20-25. ix. 1978, ex 'small shrub', coll. S. Biswas.

*Measurements* (in mm, for males and females respectively) : Length of body : 2.94-3.16, 2.27-3.88; length of forewing : 3.83-3.94, 4.30-4.55; length of antennae : 2.16-2.27; 2.22-2.50; width of head with eyes : 0.66, 0.63 - 0.72; width of vertex between eyes : 0.38, 0.38-0.44.

The species is recorded here for the first time from Assam. Specimens under study, but for a little variation in size, agree well with the description of the species provided by Mathur (1975). They were noticed to infest the stems of host plants from tips nearly to the ground. the agile nymphs as well as freshly emerged adults were covered with whitish secretion.

*Distribution* : India : Maharashtra, West Bengal, Assam. Outside India : Molucca, Ceylon.

#### Subfamily PSYLLINAE

##### Key To The Species Of The Genus *Psylla* Geoffroy

1. Hind tibiae with 4 apical spines; antennae 1.50 mm or more in length..  
.....*Shillongensis* sp. nov.
- Hind tibiae with 5 apical spines; antennae 1.20 mm or less in length...2
2. Hind tibiae with a basal spur. In forewing, Cu<sub>1</sub> equidistant from media and inner wing margin at the point of maximum width of the 1st cell...  
.....*simlae* complex

Hind tibiae without a basal spur. In forewing,  $Cu_1$  nearer media than inner wing margin at the point of maximum width of the 1st cell .....

..... *murrayi* Mathur

### 3. *Psylla murrayi* Mathur

1935. *Psylla murrayi* Mathur, *Indian Forest Rec.*, 1 : 62.

*Specimens examined* : India : Meghalaya : Shillong, 1 ♂, 4 ♀♀, 11 nymphs, 15. iv. 1978, ex *Helicia erratica* HKF, coll. S. Biswas.

*Measurements* (in mm, for males and females respectively) : length of body : 1.75-2.50, 2.75-3.20; length of forewing : 2.75-3.00, 2.50-3.00; length of antennae : 0.83-0.94, 0.86-0.90; width of head with eyes : 0.44-0.52, 0.50-0.52; width of vertex between eyes 0.25-0.27, 0.25-0.27.

This species, earlier reported from Shillong by Lahiri and Biswas (1979a, b) is recorded here from a new host plant. Its nymphs are found in open galls. The specimens studied exhibit a range of proportionately larger body parts and a few examples vary further from the description of the species provided by Mathur (1975) in having black intersegmental joints.

*Distribution* : India : Meghalaya, Uttar Pradesh.

### 4. *Psylla shillongensis* sp. nov.

(Plate I)

*Specimens examined* : Holotype ♂, India : Meghalaya : Shillong, 15. iv. 1978, coll. S. Biswas (Regd. No. 1188/H<sub>15</sub>); Paratype ♂, mounted on slide, body parts dissected, other date same as Holotype (Regd. No. 1189/H<sub>15</sub>).

*Measurements* (in mm) : Length of body 2.88-3.10; length of forewing 2.44-2.90; length of antennae 1.50 - 1.60; width of head with eyes 0.77-0.85; width of vertex between eyes 0.41-0.50.

*Colouration* : Yellowish, thorax comparatively darker on dorsum; hind margin of occiput and anterior margin of thorax on either side narrowly black; third antennal segment black at apex, subsequent segments somewhat similar, but apical black area progressively greater in extent from fourth segment onward; two apical segments completely black. Wings hyaline, transparent.

*Structure* : Robust in built. Head (Fig. a) large, slightly broader than thorax, moderately deflexed, pubescence restricted to genal cones; vertex twice as broad as long, swollen a little on either side of the median suture, posterior margin arcuate; frons visible in front as a small sclerite bearing anterior ocellus; genal cones moderately large, about 0.22 mm long, smaller than vertex in length, sparsely hairy with moderately long hairs, contiguous at base, divergent apically, obtusely rounded at apex.

*Antennae* (Fig. b) long, ten segmented, basal two segments robust, cylindrical,

remaining segments slender. Second and penultimate segments are subequal and smaller than the rest; first segment a little longer than the second, third segment longest; fourth to eighth segments are subequal to each other, each being a little shorter than the third segment in length; terminal segment a little longer than the penultimate segment and with two unequal spines at apex.

*Thorax* finely reticulate, moderately large and arched. Prescutum large, a little broader than long, broadest in the middle, anterior and posterior margins subrounded, lateral margins subtriangular; scutum broad, nearly twice as broad as long, subequal in length to prescutum, gradually sloping and subrounded both anteriorly and posteriorly, with a pair of prominent submedian ridges; scutellum small, a little broader than long but more broad anteriorly; postscutellum of metathorax moderately large.

*Legs*. (Fig. c) quite long, pubescent with moderately long hairs besides minute points arranged in rows; femora of fore- and middle legs shorter than tibiae, hind femur almost as long as hind tibia, all tibiae with a comb of setae at apex; hind tibiae with a moderately large basal spur and four black tooth like spines at apex, basal tarsal segment of hindleg smaller than apical, bearing one tooth like spine at apex, apical tarsal segment ending in a pair of claw like spines; meracanthus long, slender and acutely pointed.

*Forewings* (Fig. d) large, hyaline, transparent, a little more than twice as long as broad, thickly beset with minute points, elongate ovate, rounded at apex; basal vein a little longer than radius, Rs quite long and a little undulated; R nearly twice as long as  $R_1$  and nearly one and a half times as long as cubital petiole; pterostigma small, narrowed apically; first marginal cell a little broader than, but subequal in length to second marginal cell;  $Cu_1$  nearer to media than inner wing margin at the point of maximum width of 1st cell; veins armed with small setae, anterior margin with longer setae.

*Hindwings* (Fig. e) also large, membrane thickly beset with minute points, costal margin armed with a few simple hooked setae in the basal third.

*Abdomen* longer than broad, finely and sparsely pubescent and also beset with minute points.

*Genitalia* : Male genital segment smaller than abdomen. Anal valve simple, pyriform, about 0.25 mm long, longer than parameres, gradually narrowed apically, truncate at apex, anterior margin straight, posterior margin convex basally, outer surface thickly beset with minute points and sparsely so with moderately long setae; parameres (Fig. f) about 0.20 mm long, almost even in width; ending in a sharp, black, incurved point, outer surface with small scattered setae, inner surface with longer setae; hypandrium simple, of usual shape, bearing simple sparse setae; aedeagus (Fig. g) quite long; sperm pump as figured (Fig. h).

**Biology** : Poorly known, only two males of this apparently rare species having been collected from an unknown host plant.

**Comparison** : *P. shillongensis* comes close to *P. viburni* Loew in having a small basal spur to hind tibiae, femora shorter than tibiae in fore and middle legs and few other characters. But it differs from the same in having hind femur almost as long as hind tibia, tibia and basal tarsal segment with four and one apical spines respectively, details of wing venation, shape of the genal cones and that of male genitalia, besides being larger in size.

**Distribution** : Eastern India : Meghalaya.

### 5. *Psylla simlæ* complex (Plates II & III)

**Specimens examined** : India : Meghalaya : Shillong, 7 ♂♂, 4 ♀♀, and 2 nymphs, 25.vii.1978, ex '*Bauhinia purpuria*' coll. A. R. Lahiri; Assam : Jatinga, 6 ♂♂, and 8 nymphs, 20 - 25.ix. 1978, ex '*Bauhinia sp.*' coll. S. Biswas.

**Measurements** (in mm, for males and females respectively) : Length of body : 2.25 - 2.40, 2.70-2.80; length of forewing : 1.90-2.00, 2.20-2.30; length of antennae : 1.00-1.05, 1.05-1.15; width of head with eyes : 0.55 - 0.60; width of vertex between eyes : 0.35, 0.40.

Text figures of specimens studied (adults of either sex as well as nymphs) clearly indicates them to be very close to *P. nr. simlæ* Crawford described by Mathur (1975) in general body features. They also agree in having same host plant (*Bauhinia* spp.). However the adults under study in particular, differ from Mathur's *nr. simlæ* Crawford in having longer body and also in respect of black markings. While specimens collected from Jatinga are almost unmarked with black (restricted to narrow strips at apposed edges of genae), the shillong specimens are more extensively marked with black than what was described by Mathur (1975) for '*nr. simlæ*'. Thus, in Shillong specimens, genae save at extreme bases, antennae but for basal three segments, a narrow stripe across hind margin of occiput with a forwardly directed variable median projection and all abdominal sutures are black, so also are the dorsal plate and the tip of ventral plate of female genitalia, the parameres and the distal half of subgenital valve of male genitalia.

Mathur (1975) having not been satisfied in their identity had placed his specimens only as '*nr. simlæ*' Crawford. Taking into consideration Mathur's observation and variations noted in course of present study, it appears reasonable that *P. simlæ* Crawford is probably a widely distributed polytypic species composed of populations differing in size as well as in markings.

**Biology** : The nymphs are found along the mid-rib on upper surfaces of leaves covered with very thin whitish powdery secretion, apparently causing no serious injury to the host plant. The adults lay their eggs within the folded and newly emerging tender leaves and sometimes also use such situation as shelters.

*Distribution* : India : Uttar Pradesh, Meghalaya, Assam.

Subfamily TRIOZINAE

Key To The Species Of The Genus *Trioza* Foerster

Radial sector long, greatly deflexed and extending almost upto the end of second marginal cell; genal cones largs, about three fourth as long as total length of vertex and occiput .....*gigantea* complex

Radial sector short, curved to costa and extending at most upto the base of second marginal cell; genal cones short and only about one third as long as the total length of vertex and occiput... *heptaphleuruma* sp. nov.

6. *Trioza heptaphleuruma* sp. nov.

(Plate - IV)

*Specimens examined* : Holotype ♂, India : Meghalaya : Shillong, 15.iv.1978, ex. 'Heptaphleuruma hypoleucum', coll. S. Biswas; Allotype ♀, same data as Holotype; (Holotype and Allotype Mounted on slide, Regd. No. 1190/H<sub>15</sub>); Paratypes, 1 ♂, 2 ♀♀; data same as Holotype (1 ♂ and 1 ♀ dissected and mounted on slides, Regd. No. 1191/H<sub>15</sub>; 1 ♀ in tube, Regd. No. 1192/H<sub>15</sub>).

*Measurements* (in mm, for males and females respectively) : Length of head 3.00-3.35, 3.50; length of forewing 3.65-3.90, 3.10-4.00; length of antennae 1.40, 2.40-2.50; width of head with eyes 0.70 0.75, 0.70; width of vertex between eyes 0.40-0.45, 0.45.

*Colouration* : Males black with antennae, occiput, legs but for the femora and beneath abdomen pale brown; females yellowish all over.

*Structure* : Head (Fig. a) large, sparsely pubescent with long setae; vertex twice as long as broad, finely rugulose, a little swollen on either side of the middle line, gently descending forwards on either side, with a deep foveal impression at the base of each antenna, posterior margin gently arcuate; anterior ocellus visible from above; postocellar region a little elevated; genal cones short, subtriangular, divergent forwards, subacute at apex, with some of the apical setae longer than the rest. Eyes moderately large.

*Antennae* (Fig. b) long, slender and imbricate except the basal two robust and subequal segments which are smaller than other segments, third segment longest, fourth segment a little less than half the length of third segment and subequal to segments fifth, seventh and eight, sixth segment about half the length of third segment, ninth and tenth segments subequal in length, each being about one third the length of third segment; third to seventh segments each bearing a subapical setae on either side, ninth and tenth segments each bearing only a single subapical setae; four sensoria present, one each on third fourth, sixth and eighth segments.

*Thorax* large, sparsely pubescent with moderately long hairs, reticulate; prothorax as wide as, and synthorax much wider than the head. Prothorax strongly convex with a foveal impression on either side; prescutum large, a little broader than long, broadest in the middle, gradually narrowed and arcuate both anteriorly and posteriorly, but more markedly so anteriorly, angulated laterally; scutum large, about twice as broad as long, broadest before middle; angulated laterally, a little smaller than the prescutum in length, but nearly twice as broad as the latter; scutellum small, trapezoidal, broadened anteriorly with prominent antero-lateral angles.

*Legs* (Fig. c) large, densely beset with moderately long hairs as well as thick points arranged in transverse rows; femora shorter than tibiae, tibiae with apical comb of setae, hind tibiae with three to four very weak basal spurs and three robust apical spines; tarsal segments subequal in length.

*Forewings* (Fig. d) long, almost thrice as long as broad, transparent and hyaline, broadest at about middle, subacute at apex; R, M and Cu arising at the same point; cubitus about two-third as long as the basal vein and almost thrice as long as radius; second marginal cell almost as long as, but wider than first marginal cell; outer wing margin armed with closely spaced microscopic setae from base up to the termination of radius; membrane marked by clouding of points at three narrowly triangular spaces on the inner wing margin, one each being at about the middle of the two marginal cells, the third in the intervening space.

*Hindwings* (Fig. e) much smaller than the forewings; membrane uniformly beset with minute points; outer wing margin in basal third armed with a few small simple setae.

*Abdomen* moderately large, rugulose, sparsely beset with moderately large setae ventrally.

*Genitalia* : Male genital segment smaller than abdomen; anal valve (fig. f) about 0.40 mm long, sides gently convergent anteriorly, anterior margin almost straight, posterior margin broadly and convexly rounded, outer surface along the lateral margins bearing a few long setae; parameres (fig. f) about 0.60 mm long, slender, sides gently converging to apex, apical fourth curved inwards, the apex ending in a robust black tooth, outer surface sparsely beset with small setae, the inner surface beset with closely set longer setae; hypandrium small, semicircular, sparsely beset with small hairs; aedeagus as shown in (Fig. g).

*Female genitalia* (Fig. h) smaller than abdomen, rugulose and sparsely pubescent, more densely so in distal half with hairs of different size. Dorsal plate longer than ventral, gradually sloping caudally, acutely pointed at apex, circum-anal ring quite long, composed of a single row of pores and encircled with a row of regularly spaced small setae; ventral plate broad at base, subacute at apex; ovipositor acutely pointed at apex.

*Biology* : Nymphs of *T. heptaphleuruma* sp. nov. was noticed to heavily infest the young shoots of its host-plant.

*Comparison* : *T. heptaphleuruma* sp. nov. comes very close to *T. zambolinae* Crawford in colouration, wing venation and some of the general structures, but differs from the same in being larger in size and in detail body features specially genitalia.

*Distribution* : Eastern India : Meghalaya.

### 7. *Trioza gigantea curta* Mathur

1975. *Trioza gigantea curta* Mathur, Psyllidae of the Indian subcontinent, : 375; Lahiri and Biwas, 1979, *Bull. zool. Surv. India*, 2 : 66.

*Specimens examined* : India : Meghalaya : Sumer crossing, G. S. Road, 1 ♂, 1 ♀, ex "Schima wallichii", coll. A. R. Lahiri.

*Measurements* (in mm, for males and females respectively) : Length of body : 1.83-2.22, 1.61-2.11; length of forewings 3.05, 3.05-3.22; length of antennae : 0.86-1.00, 0.83-0.94; width of head with eyes : 0.38-0.52, 0.30-0.52; width of vertex between eyes; 0.22-0.27, 0.19-0.30.

From Meghalaya this subspecies was first reported from Shillong by Lahiri and Biswas (1975a). Further collection suggest however that the subspecies is of common occurrence in many parts of Khasi hills.

*Distribution* : Eastern India : Meghalaya and West Bengal.

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### SUMMARY

Two Psyllid species, viz. *Psylla shillongensis* and *Trioza heptaphleuruma* have been described from the states of Assam and Meghalaya in North Eastern India together with the report of occurrence of another five Psyllid species in these states. Newly recorded species are three, viz. *Paurocephala phalaki* Mathur, *Mesohomatoma lutheri* (Enderlin) and *Psylla simlae* complex.

### REFERENCES

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