

THE PAUROCEPHALA PSYLLOPTERA-COMPLEX (HEMIPTERA: PSYLLOIDEA: APHALARIDAE) IN THE PHILIPPINES WITH DESCRIPTION OF A NEW SPECIES¹

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ABSTRACT

Two subspecies of *Paurocephala psylloptera* are elevated to distinct species, namely, *P. maculipennis* Uichanco, **n. stat.** and *P. setifera* Crawford, **n. stat.** Another species, *P. sanchezi* **n.sp.**, is here described. A new host plant and new locality are recorded for *P. psylloptera* and *P. maculipennis*, respectively.

Key words: *Paurocephala*, *P. psylloptera*, *P. maculipennis*, *P. sanchezi* **n. sp.**, *P. setifera*, Hemiptera, Psylloidea, Aphalaridae

INTRODUCTION

Paurocephala psylloptera was first described by Crawford in 1913 and was designated the type-species of the genus. In the same work, he recognized a separate variety, *P. psylloptera* var. *setifera* Crawford (erroneously placed under *Pauropsylla triozyptera* Crawford), that according to him differs from the nominal species in having setigerous veins, more pubescent notum and stouter and longer forceps of male. Eight years later, Uichanco (1921) added another variety *P. psylloptera* var. *maculipennis*, distinguished from the nominal species principally by its strongly deflected head, brown pterostigma and darker brown abdomen that is concolorous with the notum. In the most recent treatment of Philippine psylloids including this species complex, Braza and Calilung (1981) recognized additional distinguishing morphological characters among these varieties. However, they designated these only as forms of *P. psylloptera*. On the other hand, these varieties/forms were given the rank of subspecies by Hodkinson (1983).

Morphological differences observed among these varieties were probably, in the opinion of Braza and Calilung (1981), and Hodkinson (1983), not sufficient to warrant species designation. However, based on detailed qualitative and quantitative morphological data, host plants and biological observations, the present authors believe that the three taxa represent distinct species. This view is supported by the studies of Yang *et al.* (1986) where *P. psylloptera* occurs only on *Celtis sinensis*, *Morus alba* and *Trema orientalis*, but not on *Ficus* species as reported in the Philippines. Based on host plant alternation studies, mating experiments, courtship behavior and acoustic analysis in addition to detailed morphological analysis of populations of alleged *P. psylloptera* on *Morus* and *Trema*, those previous authors showed the two populations to be two distinct species and different from *P. psylloptera*.

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Another supporting view was expressed by Hodkinson (1986) when he wrote that the wide range of host plants attributed to *P. psyллоptera* suggests that it may be a species complex. A fourth species showing very close affinity to *P. setifera* is described here as new to science.

KEY TO PHILIPPINE SPECIES OF *PAUROCEPHALA* CRAWFORD

1. Antennae as long as or slightly longer than width of head; forewings fumate.....
.....*artocarpae* Braza & Calilung
- Antennae more than 1 1/4 longer than width of head; forewings hyaline.....2
2. Dorsal epiphysis of metascutum erect and conical; meracanthi very long, about 5 times as long as thick *psyллоptera* Crawford
- Dorsal epiphysis of metascutum subconical; meracanthi less than 4 times as long as thick 3
3. Antennae about 2 times as long as width of head; male forceps nearly straight and parallel-sided..... *maculipennis* Uichanco, **n. stat.**
- Antennae less than 1 1/2 times as long as width of head; male forceps broader at middle, tapering towards apex..... 4
4. Pterostigma hyaline, veins setigerous, R usually shorter than M+Cu.....
..... *setifera* Crawford **n. stat.**
- Pterostigma dark, veins not setigerous; R as long as or longer than M+Cu....
..... *sanchezi* Navasero & Calilung, **n. sp.**

1. *PAUROCEPHALA MACULIPENNIS* Uichanco, **new status** Figure 1

Paurocephala psyллоptera maculipennis Uichanco, 1921; 276 (Type: on *Ficus nota*, Los Baños); Braza and Calilung, 1981: 333; Hodkinson, 1983: 321; Navasero and Calilung, 1998: 15.

Diagnosis. Body dark brown to black, fuscous and large; veins dark brown, darker from base of costa up to nodal break including R and Cu₂, pterostigma dark brown to black. R_s strongly deflected upward, M₁₊₂ 1.75 times as long as M₃₊₄, R 1.5 times as long as M+Cu. Dorsal epiphysis of metascutum blunt and broad at base. First hind tarsal segment 1.32 times as long as second. Meracanthi about 2.5 times as long as thick.

Material examined. 16 males and 13 females, on *Ficus nota*, Mt. Banahaw, Dolores, Quezon (new locality record), 08 May 1991 (M.V. Navasero). 5 males and 4 females on same host plant, College, Laguna, 24 September 1984 (M.V. Navasero, P-025).

Host plant. *Ficus nota* (Blanco) Merr. (Moraceae).

Distribution. Philippines (College, Laguna; Mt. Banahaw, Quezon).

Remarks. Uichanco (1921) described this species as a form of *P. psyллоptera* citing a few minor characters by which it differs from the typical species such as the dark pterostigma, darker brown abdomen and strongly deflected head. Braza and Calilung (1981) added the longer antennae in relation to width of head, larger and fuscous body and shorter forceps. However, it differs from *P. psyллоptera* and *P. setifera* in other major characters that include the shape and venation of forewings, shape of dorsal epiphysis of metascutum, length of meracanthi, relative length of first and second hind tarsal segments and the shape of male proctiger.

P. maculipennis nymphs infest only young and fully expanded leaves of the

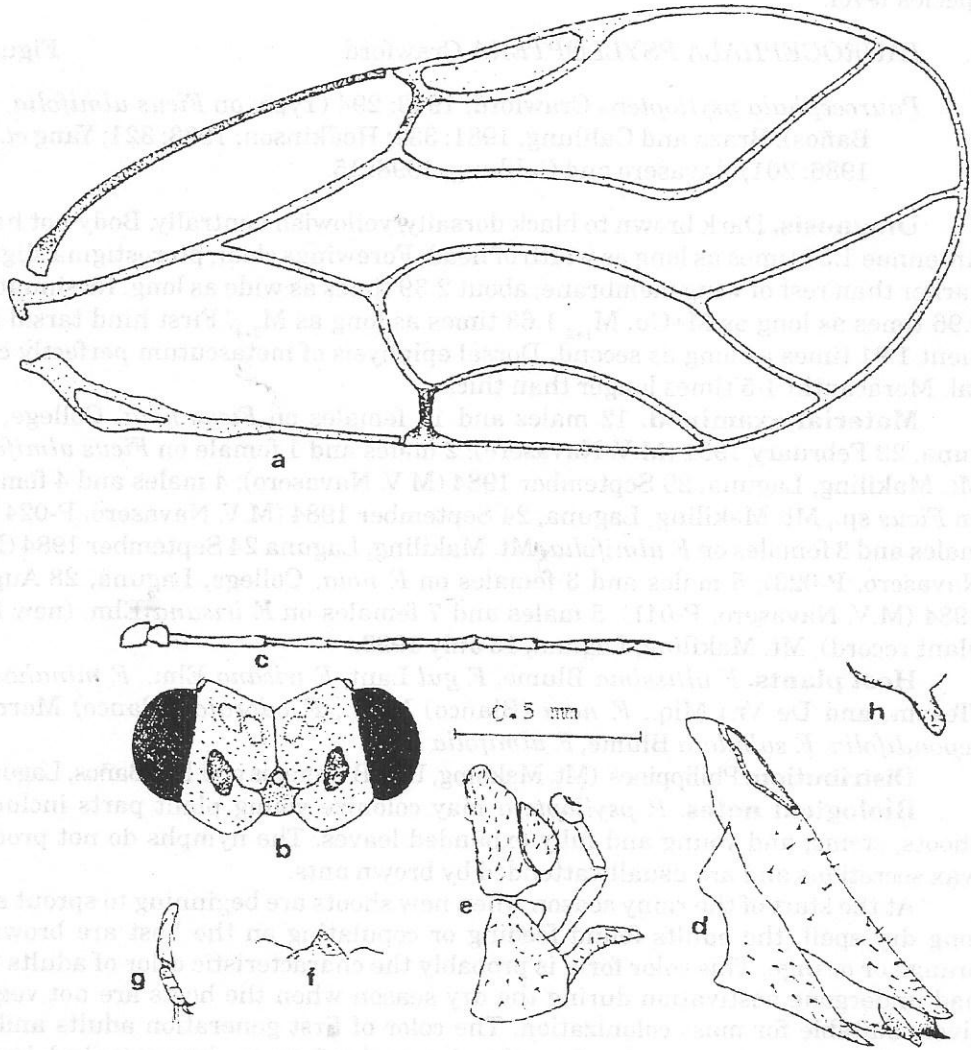


Figure 1. *Paurocephala maculipennis* Uichanco, n. stat.: a) forewing; b) head; c) antenna; d) female genitalia; e) male genitalia; f) conical process of metascutum (side view); g) hind tarsal segments h) meracanthus.

host. They produce flocculent waxy secretions covering their body, a habit not observed on *P. psylloptera*. Small honeydew droplets are sometimes trapped on these wax secretions. Furthermore, *P. maculipennis* infests only *F. nota* but not other *Ficus* spp. within the range of host plant of *P. psylloptera*. These distinct morphological traits and biological habits are the bases for elevating this subspecies to species level.

2. *PAUROCEPHALA PSYLLOPTERA* Crawford

Figure 2

Paurocephala psylloptera Crawford, 1913: 294 (Type: on *Ficus ulmifolia*, Los Baños); Braza and Calilung, 1981: 332; Hodkinson, 1983: 321; Yang *et al.*, 1986: 201; Navasero and Calilung, 1998: 15.

Diagnosis. Dark brown to black dorsally, yellowish ventrally. Body not hairy. Antennae 1.57 times as long as width of head. Forewings clear, pterostigma slightly darker than rest of wing membrane; about 2.39 times as wide as long. Rs sinuate, R 0.96 times as long as M+Cu, M_{1+2} 1.63 times as long as M_{3+4} . First hind tarsal segment 1.91 times as long as second. Dorsal epiphysis of metascutum perfectly conical. Meracanthi 4-5 times longer than thick.

Material examined. 12 males and 14 females on *Ficus nota*, College, Laguna, 22 February 1991 (M.V. Navasero); 2 males and 1 female on *Ficus ulmifolia*, Mt. Makiling, Laguna, 29 September 1984 (M.V. Navasero); 4 males and 4 females on *Ficus* sp., Mt. Makiling, Laguna, 24 September 1984 (M.V. Navasero, P-024); 13 males and 3 females on *F. ulmifolia*, Mt. Makiling, Laguna 24 September 1984 (M.V. Navasero, P-023); 5 males and 3 females on *F. nota*, College, Laguna, 28 August 1984 (M.V. Navasero, P-011). 5 males and 7 females on *F. irisana* Elm. (new host plant record), Mt. Makiling, Laguna, 16 July 1999.

Host plants. *F. altissima* Blume, *F. gul* Lant, *F. irisana* Elm., *F. minahassae* (Tesym. and De Vr.) Miq., *F. nota* (Blanco) Merr., *F. odorata* (Blanco) Merr., *F. repondifolia*, *F. subulata* Blume, *F. ulmifolia* Lam.

Distribution. Philippines (Mt. Makiling, UPLB Campus and Los Baños, Laguna).

Biological notes. *P. psylloptera* may colonize young plant parts including shoots, stems, and young and fully expanded leaves. The nymphs do not produce wax secretions and are usually attended by brown ants.

At the start of the rainy season when new shoots are beginning to sprout after long dry spell, the adults found feeding or copulating on the host are brownish orange or orange. This color form is probably the characteristic color of adults that had undergone aestivation during the dry season when the hosts are not vegetatively suitable for mass colonization. The color of first generation adults and the succeeding generations arising from the above color form are brown to dark brown.

3. *PAUROCEPHALA SANCHEZI*, new species

Figure 3

Description. General color dark brown. Head with 4 pairs of light brown spots, 3 on vertex and 1 on genae just below antennal socket. Abdomen greenish ventrad. Forewings hyaline, pterostigma dark brown.

Head strongly deflexed, smoothly rounded anteriorly and slightly narrower than thorax. Vertex 2 times as long as broad, reticulate; posterior margin slightly emarginate. Genae swollen beneath antennal insertions but not produced into cones. Antennae 1.4 times as long as width of head, slender with 2 short terminal setae.

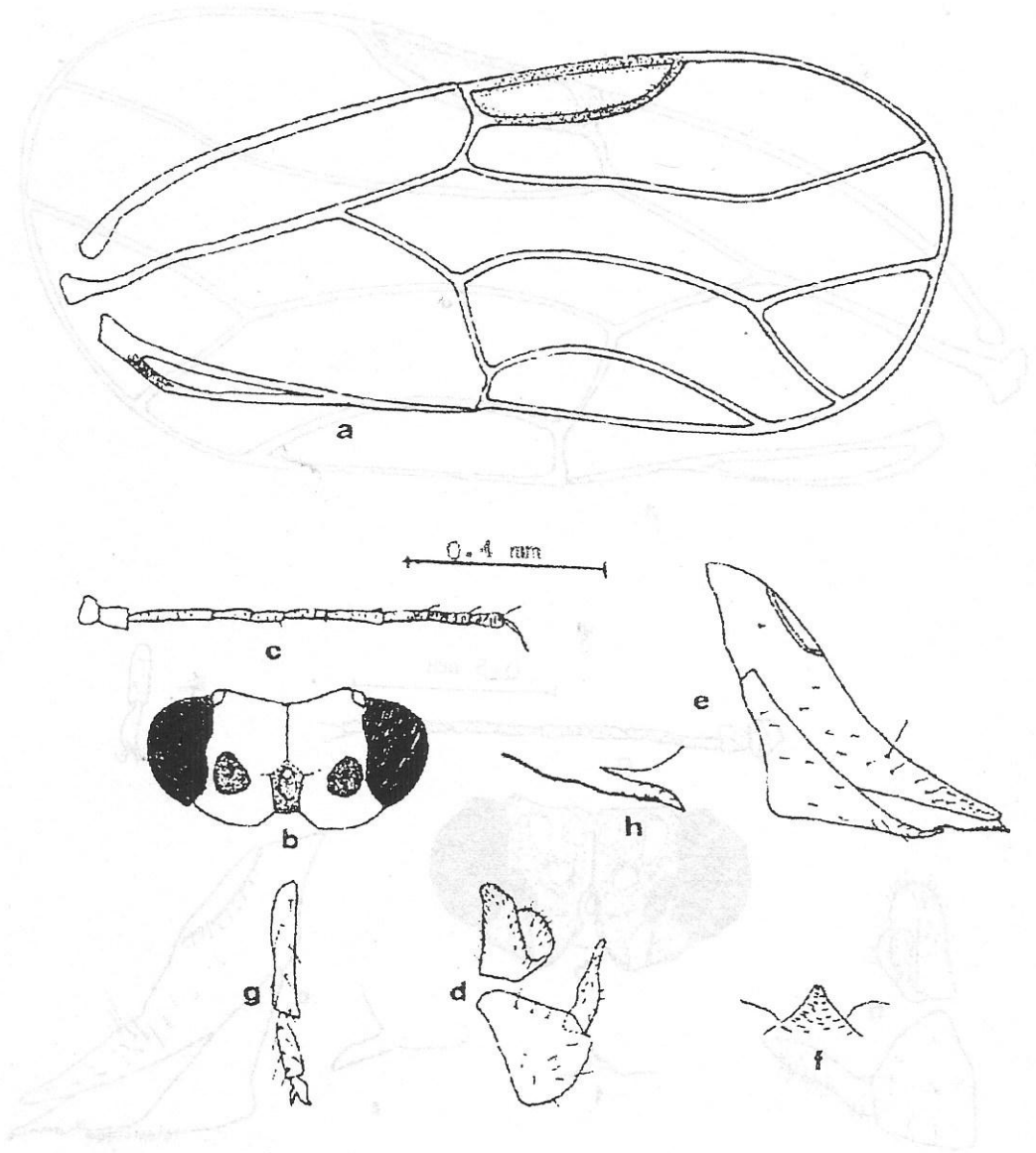


Figure 2. *Paurocephala psyллоptera* Crawford: a) forewing; b) head; c) antenna; d) male genitalia; e) female genitalia; f) conical process of metascutum (side view); g) hind tarsal segments; h) meracanthus.

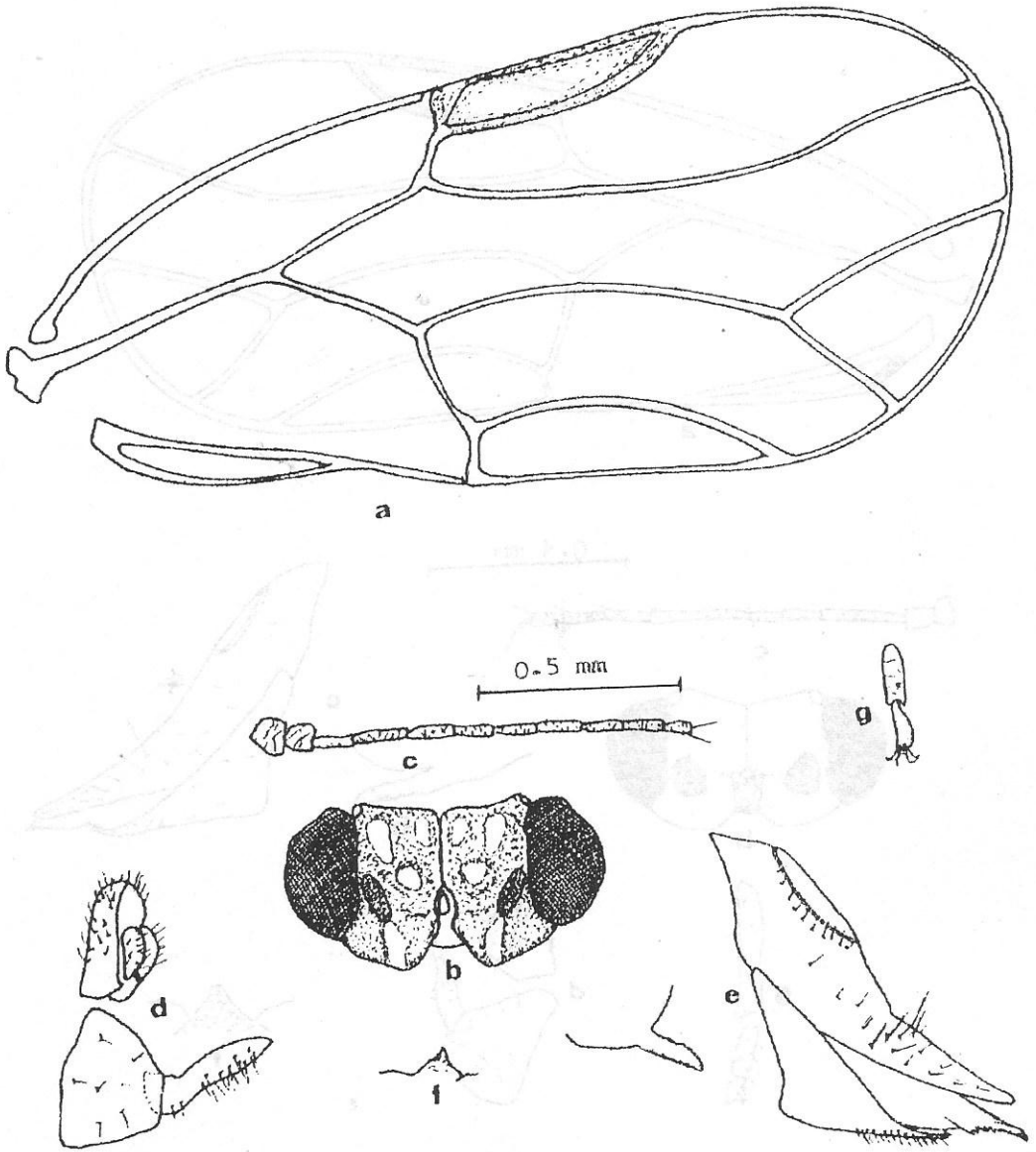


Figure 3. *Paurocephala sanchezi*, n. sp.: a) forewing; b) head; c) antenna; d) male genitalia; e) female genitalia; f) conical process of metascutum (side view); g) hind tarsal segments; h) meracanthus.

Eyes subhemispherical; anterior ocellus moderate in size, posterior pair smaller. Frons visible as a narrow sclerite bearing anterior ocellus.

Thorax strongly arched, slightly thicker than broad. Pronotum short, descending behind head. Metascutellum with dorsal epiphysis acutely pointed, constricted near apex and skewed caudad. Forewings 2.4 times as wide as long; R as long as to slightly longer than M+Cu; Rs long, slightly sinuate, M_{1+2} 1.66 times as long as M_{3+4} . Pterostigma narrower and shorter than cubital cell, legs long and slender; first hind tarsal segment 1.55 times as long as second.

Abdomen slender, slightly longer than thorax. Male genital segment short. Proctiger almost as long as forceps, narrow and beset with medium-sized setae, secondary lobes small. Forceps densely pubescent with hairs very long on caudal margin, broader at base, constricted at basal 1/3 and broadly tapering towards apex. Female genital segment large, about half as long as rest of abdomen, deflected to almost vertical. Dorsal valve long, 1.5 times as long as ventral valve, apical 1/3 slightly deflected away from ventral valve, narrowly tapering towards apex. Ovipositor moderately exerted.

Material examined. HOLOTYPE: male on *Celtis luzonica*, Mt. Makiling, Laguna, 10 February 1991 (M.V. Navasero); PARATYPES: 1 male and 1 female, same data as for holotype; 7 males and 5 females on same host and locality, 06 March 1985 (M.V. Navasero). All types in the Entomological Museum, UPLB Museum of Natural History.

Host plant. *Celtis luzonica* Warb. (Ulmaceae)

Biological notes. Nymphs feed on the undersurface of young leaves along the midribs and on succulent shoots. Adults are found mostly on the very young leaves of the host.

Remarks. This is very similar to *P. setifera* except for the very darkened pterostigma, absence of setae on veins, longer M_{1+2} , and lower ratio between first and second hind tarsal segment. It also has a different host plant.

Etymology. This species is named for Dr. Fernando F. Sanchez, Professor, Department of Entomology and founder of the National Crop Protection Center, College of Agriculture, University of the Philippines Los Baños.

4. *PAUROCEPHALA SETIFERA* Crawford, **new status**

Figure 4

Pauropsylla triozyptera setifera Crawford, 1913: 297 (Type: on *Columbia* (?) *serratifolia*, Los Baños, Laguna, Philippines).

Paurocephala psyloptera setifera Crawford, 1919: 150; Braza and Calilung, 1981: 333; Hodkinson, 1983: 321; Navasero and Calilung, 1998: 15.

Diagnosis. Dark brown dorsally and yellowish-orange ventrally. Body sparsely pubescent. Antennae 1.40 times as long as width of head. Forewings 2.38 times as wide as long, hyaline; veins light brown, setigerous; Rs smoothly curved, R slightly shorter than M+Cu, M_{1+2} 1.57 times as long as M_{3+4} ; pterostigma hyaline. Dorsal epiphysis of metascutum acutely pointed and skewed caudad. First hind tarsal segment 1.60 times as long as second. Meracanthi 3 times as thick as long.

Material examined. 13 males and 28 females on *Trema orientalis*, College, Laguna, 03 August 1991 (M.V. Navasero); 6 males and 4 females on same host plant, Nueva Viscaya (new locality record), 27 August 1984 (M.V. Navasero, P-016).

Distribution. Philippines (Nueva Vizcaya; Mt. Makiling, UPLB Campus and

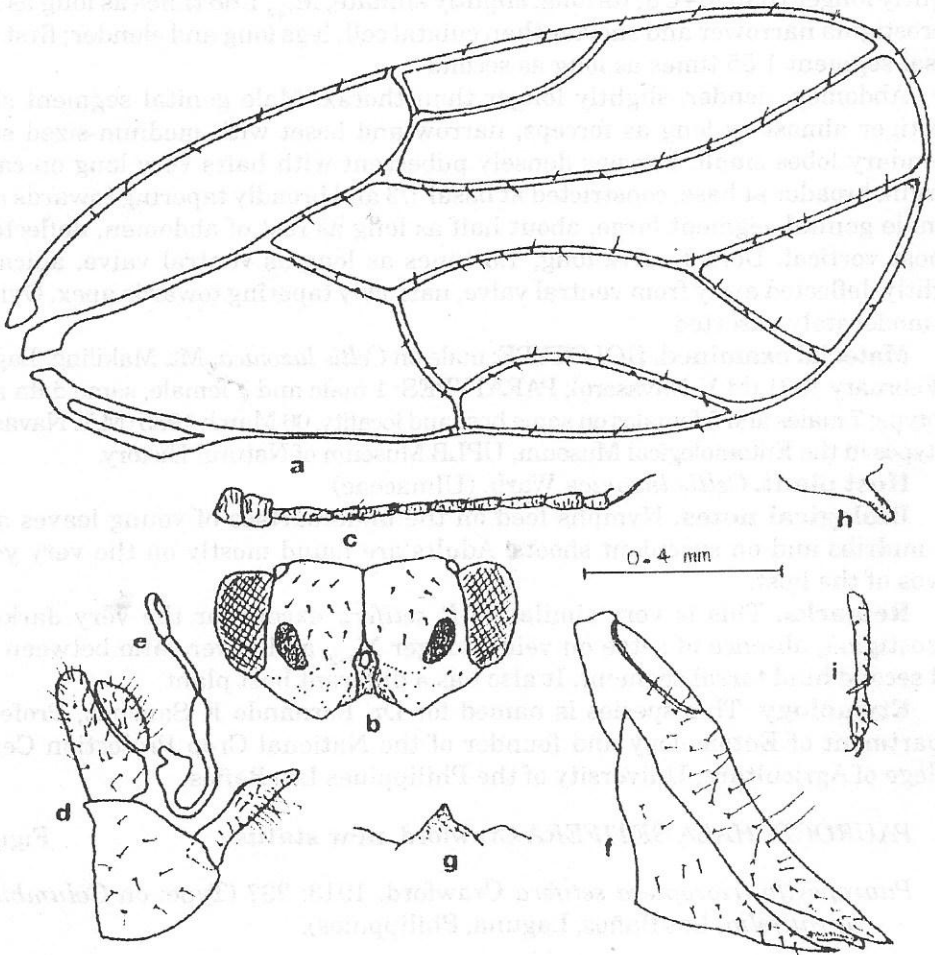


Figure 4. *Paurocephala setifera* Crawford, n. stat.: a) forewing; b) head; c) antenna; d) male genitalia; e) aedeagus; f) female genitalia; g) conical process of metascutum (side view); h) meracanthus; i) hind tarsal segments.

Los Baños, Laguna; Bicol National Park, Camarines Sur; Sorsogon, Sorsogon).

Host plant. *Trema orientalis* (L.) Blume (Ulmaceae); *Colona serratifolia* (Cav.) DC (Tiliaceae), erroneous record.

Remarks. This is another form of *P. psylloptera* which is elevated to species level in this paper. It differs from *P. psylloptera* s. str. in having shorter forewings, sparsely pubescent body, stouter forceps and hairy at caudal margin, shorter antennae, R and M+Cu stem subequal, higher ratio between M_{1+2} and M_{3+4} , forewings more angulate at anterior apical margin, dorsal epiphysis of metascutum acutely pointed and skewed caudad, meracanthi shorter and lower ratio between the length of first and second hind tarsal segments.

The original host plant record, *Colona* (?*Columbia*) *serratifolia*, appears to be an erroneous record. We have not observed *P. setifera* naturally feeding on the said plant. Instead, a new species of *Haplaphalara* (to be described in a future paper) was found associated with it. *T. orientalis*, as reported by Braza and Calilung (1981), is most probably the correct host plant record for *P. setifera*.

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