

REVIEW OF THE SOUTHERN PALAEARCTIC AND PALAEOTROPICAL LEAFHOPPER GENUS *HENGCHUNIA* VILBASTE (HOMOPTERA, CICADELLIDAE)

Asche, M. & M. D. Webb, 1994. Review of the southern Palaearctic and Palaeotropical leafhopper genus *Hengchunia* Vilbaste (Homoptera, Cicadellidae). – Tijdschrift voor Entomologie 137: 143-154, figs. 1-63 (ISSN 0040-7496). Published 15 December 1994.

The leafhopper genus *Pseupalus* Remane & Asche (Deltocephalinae: Paralimnini) is synonymized with *Hengchunia* Vilbaste syn. n. Four new species are described: *H. helleri* sp. n. from Cameroun and Zaire, *H. indica* sp. n. from India, *H. pakistanica* sp. n. from Pakistan and *H. javana* sp. n. from Indonesia: Java. *Hengchunia* now contains nine species which are probably all associated with the grass genus *Imperata*. The zoogeographical distribution of the species and their potential phylogenetic relationships are briefly discussed. Additions and amendments to Webb & Heller's (1990) check-list of Afrotropical and Oriental Paralimnini are made and include *Paralimnellus* Emeljanov (1972), oldest available name for *Bubulcus* Dlabola (1961) (junior homonym of *Bubulcus* Bonaparte 1854, Aves) and *Paralimnellus vittata* (Matsumura) comb. n. from *Henschia*.

Correspondence: Dr Manfred Asche, Am Schwanhof 2A, D-35037 Marburg, Germany.

Key words. – Homoptera; Auchenorrhyncha; Cicadellidae; Paralimnini; *Hengchunia*; *Pseupalus*; review; new species; South Palaearctic and Palaeotropical Region.

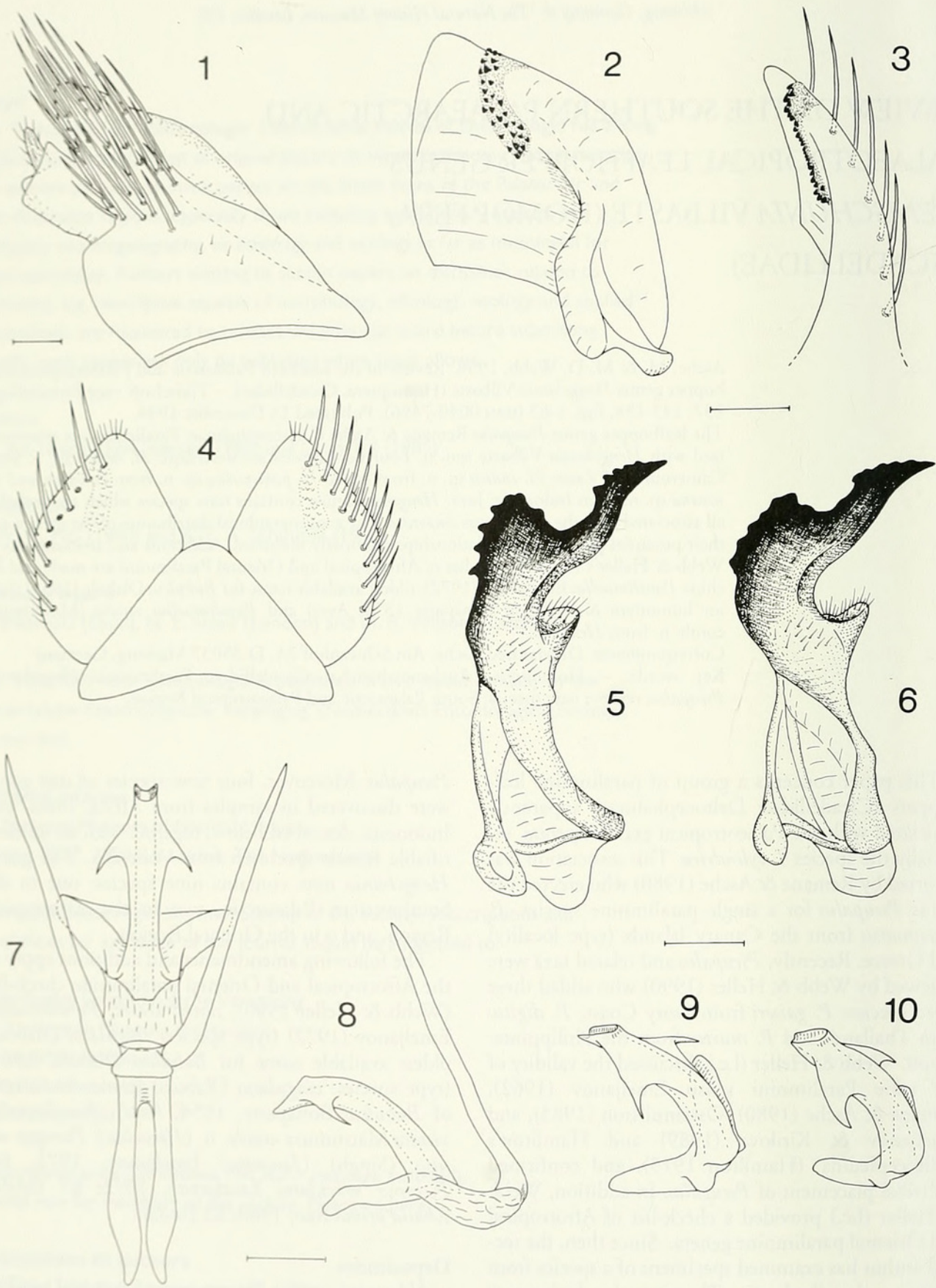
This paper concerns a group of paralimnine leafhoppers (Cicadellidae: Deltocephalinae) apparently associated with the Palaeotropical grass *Imperata*, especially the species *I. cylindrica*. This association was reported by Remane & Asche (1980) who erected the genus *Pseupalus* for a single paralimnine species, *P. graecanarus* from the Canary Islands (type locality) and Greece. Recently, *Pseupalus* and related taxa were reviewed by Webb & Heller (1990) who added three more species: *P. gaiseri* from Ivory Coast, *P. digitus* from Thailand, and *P. murtus* from the Philippines: Luzon. Webb & Heller (l.c.) discussed the validity of the tribe Paralimnini sensu Emeljanov (1962), Remane & Asche (1980), Ossiannilsson (1983), and Emeljanov & Kirilova (1989) and Hamilton's 'Deltocephalina' (Hamilton 1975), and confirmed the tribal placement of *Pseupalus*. In addition, Webb & Heller (l.c.) provided a check-list of Afrotropical and Oriental paralimnine genera. Since then, the second author has examined specimens of a species from Taiwan, described as *Thamnotettix koshunensis* Matsumura, for which Vilbaste (1969) had established the genus *Hengchunia*. A comparison revealed not only the placement of *Hengchunia* in the Oriental Paralimnini, but also its generic synonymy with

Pseupalus. Moreover, four new species of this genus were discovered in samples from Africa, India, and Indonesia, described below, together with an unidentifiable female specimen from Australia. The genus *Hengchunia* now contains nine species: one in the Southwestern Palaearctic, two in the Afrotropical Region, and 6 in the Oriental Region.

The following amendments and additions apply to the Afrotropical and Oriental paralimnine check-list (Webb & Heller 1990), noted above: *Paralimnellus* Emeljanov (1972) (type species: *cingulatus* Dlabola) oldest available name for *Bubulcus* Dlabola (1961) (type species: *cingulatus* Dlabola) (junior homonym of *Bubulcus* Bonaparte, 1854, Aves); *Paralimnellus vittata* Matsumura comb. n. (*Henschia*); *Pteropyx acutus* (Singh) (*Jassargus*) Emeljanov, 1972: 66; *Pteropyx maculatus* Emeljanov, 1972: 67 (Mali); *Khasia prima* Rao, 1989: 82 (India).

Depositories

Abbreviations for depositories of material used in this paper: M. Asche & H. Hoch, Marburg, private collection (AH); Agricultural University Wageningen, The Netherlands (AUWN); The Natural History Museum, London, United Kingdom (BMNH); Musée



Figs. 1-10. *Hengchunia gaiseri* (Webb & Heller), paratype ♂ from Ivory Coast; Figs. 6, 10: ♂ from Sierra Leone. – 1, male pygophore, left lateral view; 2, left subgenital plate, dorsal view; 3, same, dorsolateral view; 4, subgenital plates, ventral view; 5, 6, left style, dorsal view; 7, aedeagus and connective, ventrocaudal view; 8, aedeagus, left lateral view; 9, 10, same, left lateral view, slightly bent to left side. Scales: 0.1 mm.

Royal de l'Afrique Centrale, Tervuren, Belgium (MRAC); Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium (ISNB); Entomological Institute, Hokkaido University, Sapporo, Japan (EI-HU); Staatliches Museum für Naturkunde Stuttgart, Germany (SMNS); University of Agricultural Sciences, Bangalore, India (UASB).

TAXONOMY

Hengchunia Vilbaste

Hengchunia Vilbaste, 1969: 8. – Type species by original designation: *Thamnotettix koshunensis* Matsumura.
Pseupalus Remane & Asche, 1980: 88, **syn. n.** – Type species by original designation: *Pseupalus graecanarus* Remane & Asche.

For relationship and diagnosis of *Hengchunia* see the corresponding paragraphs for *Pseupalus* in Webb & Heller (1990: 2, 3).

Key to the species of *Hengchunia* (males)
 (after Webb & Heller 1990, modified and supplemented)

1. Preatrium of aedeagus with a pair of long and slender processes (e.g., figs. 7, 8) 2
- Preatrium of aedeagus without a pair of processes (fig. 46) *H. pakistanica* sp. n.
2. Aedeagal shaft with four spinose processes apically (fig. 63) *H. koshunensis* (Matsumura)
- Aedeagal shaft with two or less spinose processes apically or subapically (e.g., fig. 7) 3
3. Aedeagal shaft with a single spinose process or lateral flanges subapically 4
- Aedeagal shaft with two spinose processes apically or subapically 5
4. Aedeagal shaft with a horn-shaped subapical process directed ventrad, dorsal side of shaft at mid-length with a bifurcate process and shortly basad of it with a single short process (figs. 32-34)
 *H. indica* sp.n.
- Aedeagal shaft with a subapical flange on each side, devoid of spinose processes (see Webb & Heller, 1990: 5, fig. 13)
 *H. graecanarus* (Remane & Asche)
5. Subgenital plates with distal margin slightly concave (fig. 14); aedeagal shaft medially on dorsal side with a group of 3 short spines (fig. 18) 6
- Subgenital plates with distal margin convex (e.g., figs. 2, 22); aedeagal shaft medially on dorsal side devoid of short spines (e.g., figs. 8, 26, 61) 8
7. Aedeagal shaft with apical processes almost directed laterad; mediodorsal processes comparatively distant from each other; style almost evenly tapering to apex without a subapical lobe (see

- Webb & Heller, 1990: 6 figs. 14, 15)
 *H. digitus* Webb & Heller
- Aedeagal shaft with apical processes directed ventrobasad; mediodorsal processes near to each other (fig. 18); style with a subapical lobe (fig. 16) ..
 *H. murtus* Webb & Heller
 - 8. Aedeagal shaft with processes apically, directed dorsocaudad, not reflected (figs. 60-62)
 *H. javana* sp. n.
 - Aedeagal shaft with processes subapically or medially, directed laterobasad (e.g., figs. 7, 25) 9
 - 9. Aedeagal shaft with processes located subapically (figs. 7-10) *H. gaiseri* Webb & Heller
 - Aedeagal shaft with processes located mediolateral (figs. 25, 26) *H. helleri* sp. n.

1. *Hengchunia koshunensis* (Matsumura)
 (fig. 60)

Thamnotettix koshunensis Matsumura, 1914: 178. Lectotype ♂, Taiwan (EIHU), here designated [examined].
Hengchunia koshunensis: Vilbaste 1969: 8, fig. 6: A-J.

Material examined. – Lectotype ♂, 'Formosa/Matsumura' and '5.vii.1906/Koshun' on reverse; 1 ♀, 1 ? (sex unknown). – Paralectotypes, originally on same mount as lectotype (re-mounted) (EIHU).

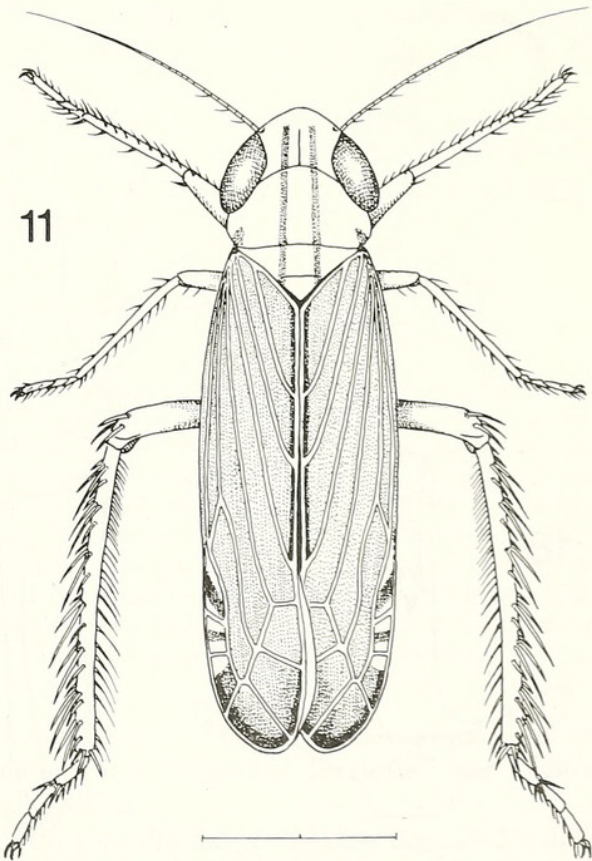
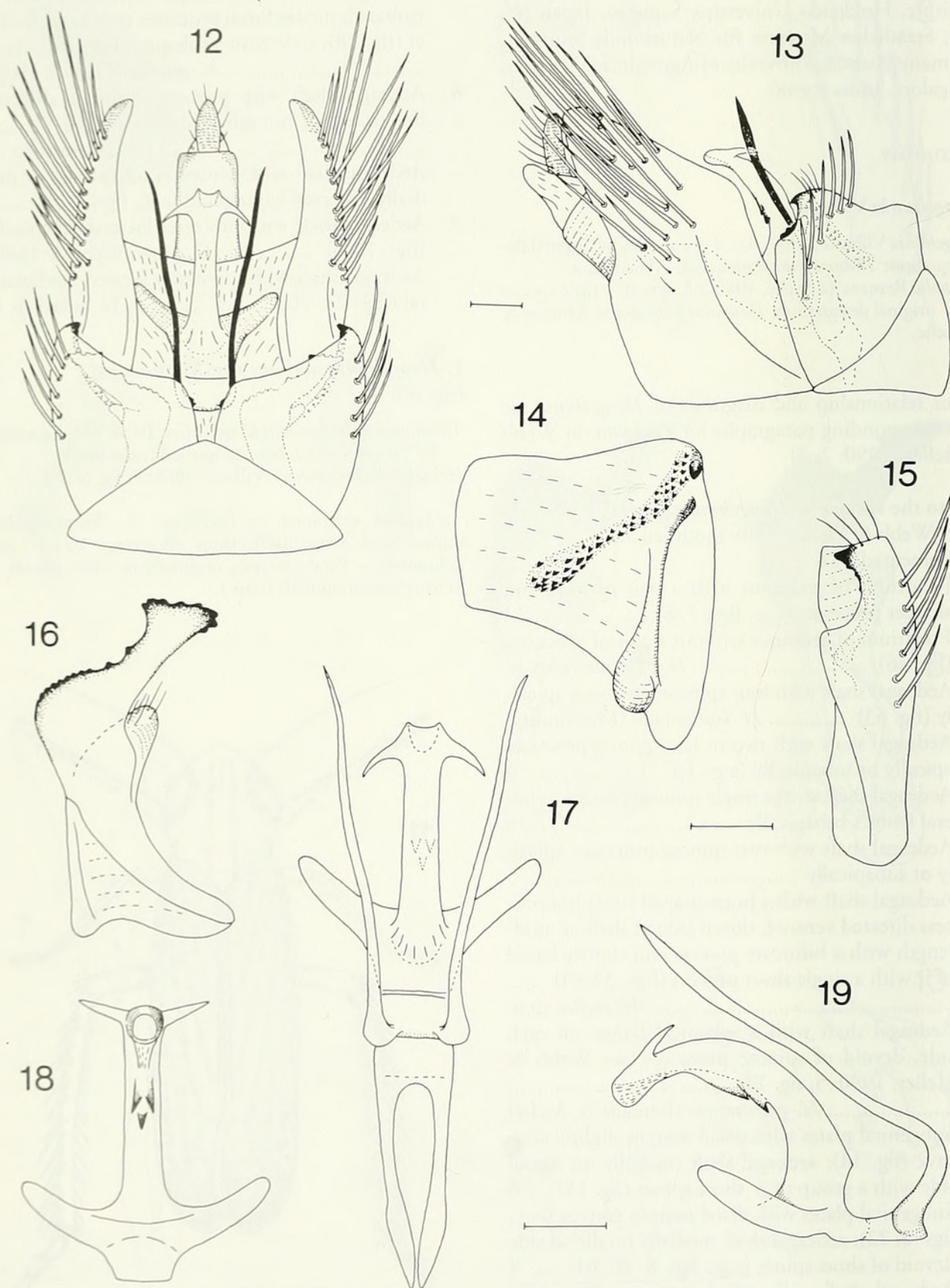


Fig. 11. *Hengchunia murtus* (Webb & Heller), ♂ from Sulawesi. – 11, habitus. Scale: 1.0 mm.



Figs. 12-19. *Hengchunia murtus* (Webb & Heller), ♂ from Sulawesi. – 12, male genitalia, ventral view; 13, same, left lateral view; 14, left subgenital plate, dorsal view; 15, same, dorsolateral view; 16, left style, dorsal view; 17, aedeagus and connective, ventrocaudal view; 18, aedeagus, dorsal view; 19, same, left lateral view. Scales: 0.1 mm.

Remarks. – *H. koshunensis* can be separated from the other *Hengchunia* species by the crown-shaped apex of the aedeagal shaft consisting of two pairs of spines: a pair of longer spines directed ventrad and a pair of shorter spines directed dorsad (not vice versa as noted in Vilbaste 1969: 8).

Distribution. – This species is only known from Taiwan (Matsumura 1914; Vilbaste 1969).

2. *Hengchunia graecanarus* (Remane & Asche) **comb. n.**

Pseupalus graecanarus Remane & Asche, 1980: 90, fig. 16 a-l. Holotype ♂, Canary Is, (Remane coll.) [examined]. – Webb & Heller 1990: 5, fig. 13. .

Material examined (additional to the type material of Remane & Asche 1980). – 2♂, 5♀, S Greece, Peloponnessos, Skala nr Gythion, on *Imperata cylindrica*, 6.x.1981, M. Asche & H. Hoch. – 9♂, 26♀, NW Greece, Corfu I., Aghios Stephanos, coastal biotopes with *Imperata cylindrica*, 14.x.1981, M. Asche & H. Hoch. – 3♂, 1♀, NW Greece, 27 km S. Igoumenitsa, S. Kastri, on *Imperata cylindrica*, 10.viii.1983, M. Asche & H. Hoch (AH).

Remarks. – Within the genus, *H. graecanarus* displays a unique configuration of the aedeagus with subapical flanges at the shaft instead of spinose processes.

Distribution. – This species is known from the type-locality in the Canary Islands: Gran Canaria, and from several localities in Greece (Remane & Asche 1980). According to the distribution of its host plant, *Imperata cylindrica*, a wider distribution at least in the Mediterranean Region is possible.

3. *Hengchunia digitus* (Webb & Heller) **comb. n.**

Pseupalus digitus Webb & Heller, 1990: 4, figs. 14-18. Holotype ♂, Thailand (BMNH) [examined].

Remarks. – No material additional to the type material has been examined.

H. digitus closely resembles *H. murtus* in the shape of the subgenital plates (including the toothed area) and aedeagus but the aedeagal shaft is straighter and has the three mediodorsal spines less closely adjacent and the style apex narrower.

Distribution. – This species has been reported only from Thailand (Webb & Heller 1990).

4. *Hengchunia gaiseri* (Webb & Heller) **comb. n.** (figs. 1-10)

Pseupalus gaiseri Webb & Heller, 1990: 4, figs. 1-12. Holotype ♂, Ivory Coast (SMNS) [examined].

Remarks. – No material additional to the type material has been examined.

H. gaiseri is similar (and probably closely related) to *H. helleri* (see below). It differs from this species in the distally more pointed subgenital plates and in the position of the lateral spinose aedeagal processes which are located subapically in *H. gaiseri* and in midlength of shaft in *H. helleri*.

Distribution. – Although this species was described from Ivory Coast it is likely that a similar male specimen from Sierra Leone is conspecific (Webb & Heller 1990: 4).

5. *Hengchunia murtus* (Webb & Heller) **comb. n.** (figs. 11-19)

Pseupalus murtus Webb & Heller, 1990: 6. Holotype ♂, Philippines (BMNH) [examined].

Material examined (additional to the type material of Webb & Heller 1990). – Indonesia: Sulawesi: 1♂, Sulawesi Utara, Dumoga Bone National Park, rainforest near basecamp Toraut, 19.x.1985; 1♂, *ibid.*, banks of Toraut river; 1♂, *ibid.*, light trap near basecamp, 7.xii.1985; 1♂, 2♀, *ibid.*, trail to Tumpah river, 23.xi.1985; 1♂, *ibid.*, trail to Tumpah river uphill to ca. 400 m, 20.x.1985; 1♀, *ibid.*, banks of Tumpah river; 1♂, Molosso I., opposite Lolok (N.-coast), 11.xi.1985; all: on *Imperata* grass, Project Wallace Expedition, M. Asche & H. Hoch (AH, BMNH).

Remarks. – *H. murtus* closely resembles *H. digitus* in the shape of the male genitalia (see under *H. digitus*).

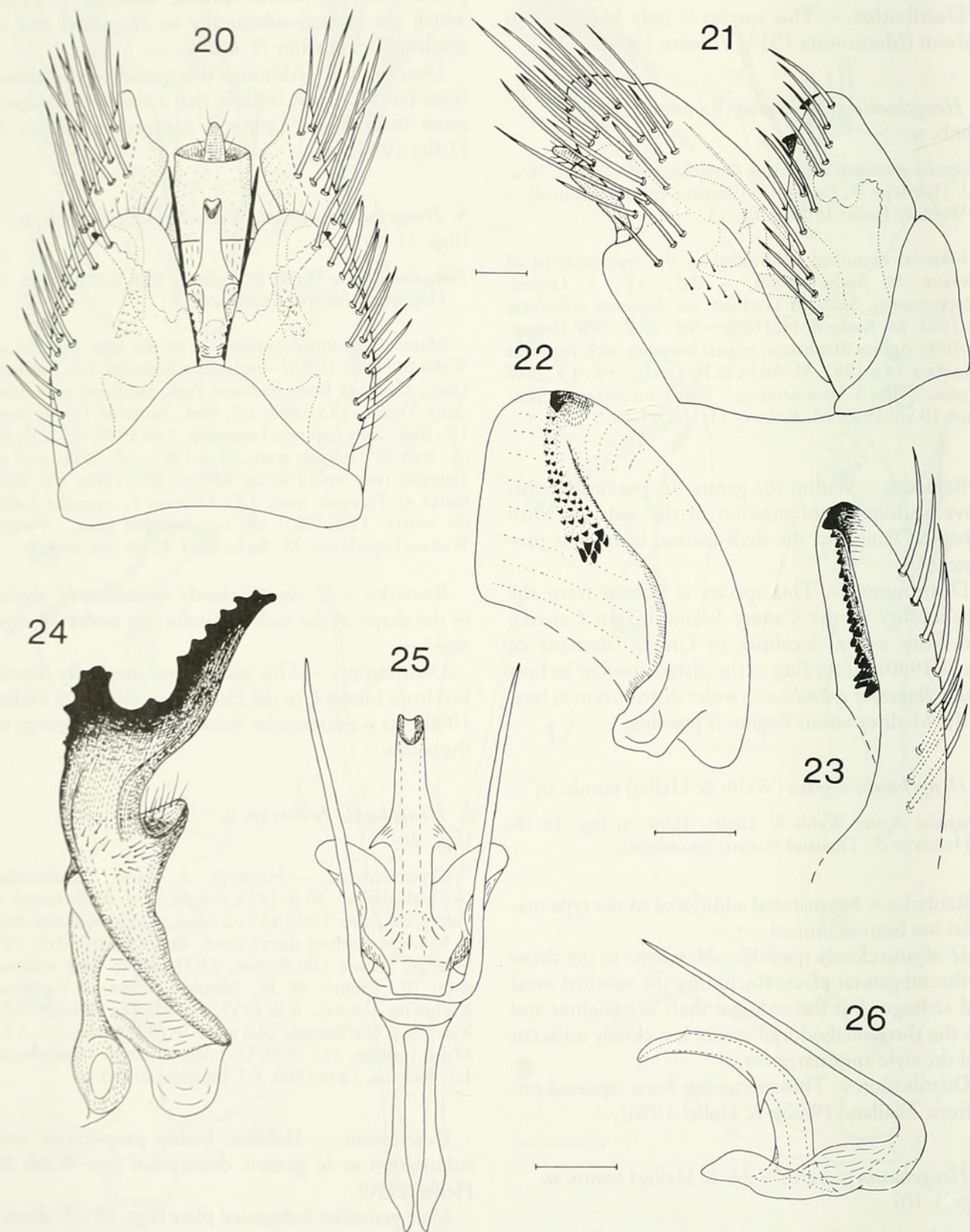
Distribution. – This species was originally described from Luzon I. in the Philippines (Webb & Heller 1990). Its occurrence in Sulawesi extends its range to the south.

6. *Hengchunia helleri* sp. n. (figs. 20-26)

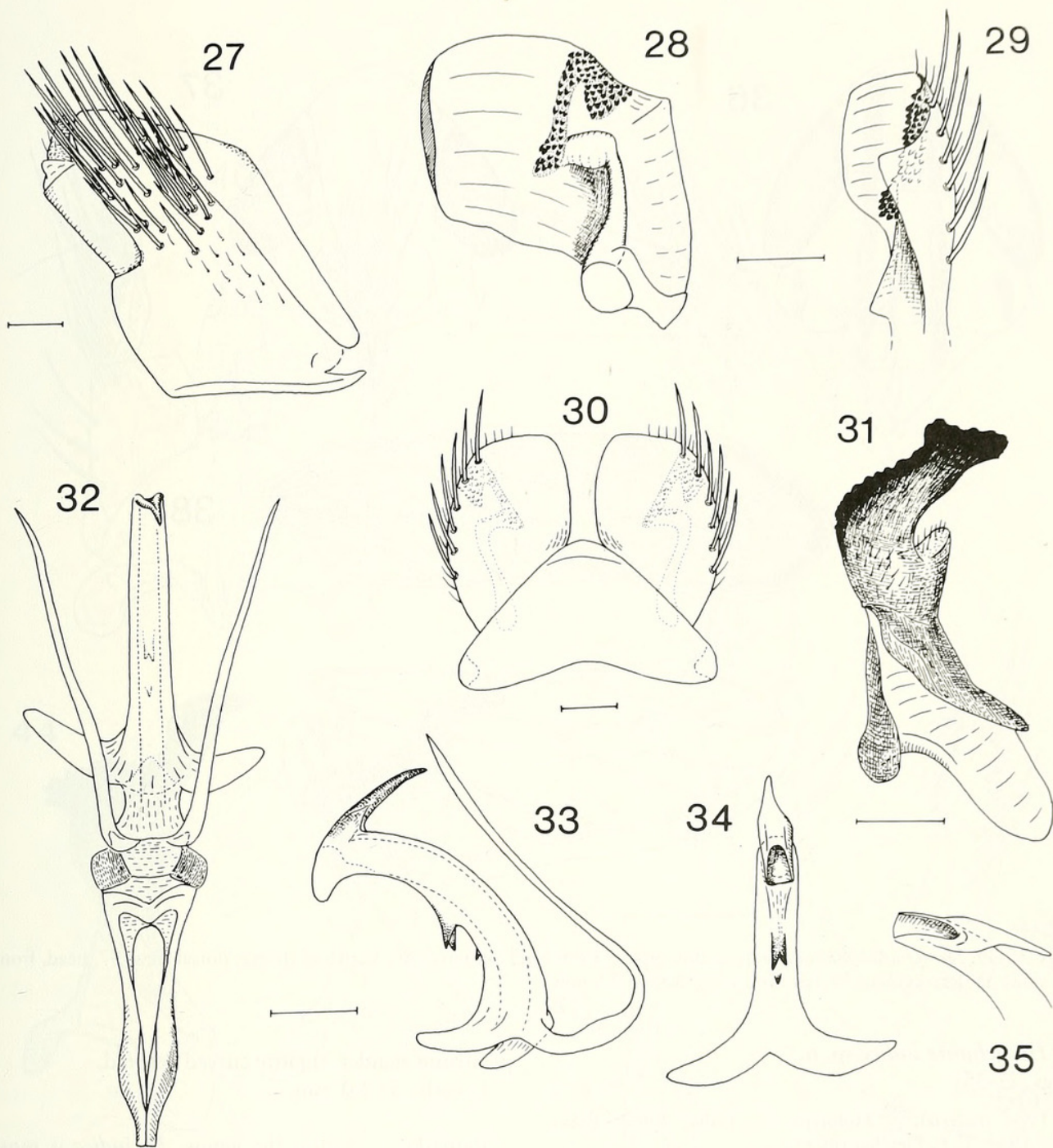
Type material. – Holotype ♂: Zaire, Lubumbasha (= Elisabethville), 30.iii.1939, at light, H.-J. Brédo (ISNB). – Paratypes: Zaire: 19♂, 43♀, 2? (sex unknown), same data as holotype (various dates) (ISNB, MRAC, BMNH); 3♂, 3♀, Libenge, Savane Liki-Bembe, 23-28.ii.1948 (one without date) (R. Cremer & M. Neuman, (ISNB); 1♀, Kivu, Kayimvira (Uvira), ii-iii.1955, G. Marlier (MRAC); 2♂, Kinchassa, Waelbroeck, 24.ii and 3.iv.1899 (ISNB); 1♂, 1♀, Maka, Lualaba, 25.i.1939, H.-J. Brédo (ISNB). – Cameroun: 1♂, Bertoua, 14.ix.1960, F.J. Breteler (AUWN).

Description. – Habitus, bodily proportions and colouration as in generic description (see Webb & Heller 1990).

Male genitalia: Subgenital plate (figs. 20-23) distally broadly rounded; toothed area rather long, extending from apex to about half of the length of the subgenital plate mediobasad, apical tooth and basal teeth



Figs. 20-26. *Hengchunia helleri* sp.n., paratype ♂ from Cameroun. – 20, male genitalia, ventral view; 21, same, left lateral view; 22, left subgenital plate, dorsal view; 23, same, dorsolateral view; 24, left style, dorsal view; 25, aedeagus and connective, ventrocaudal view; 26, aedeagus, left lateral view. Scales: 0.1 mm.



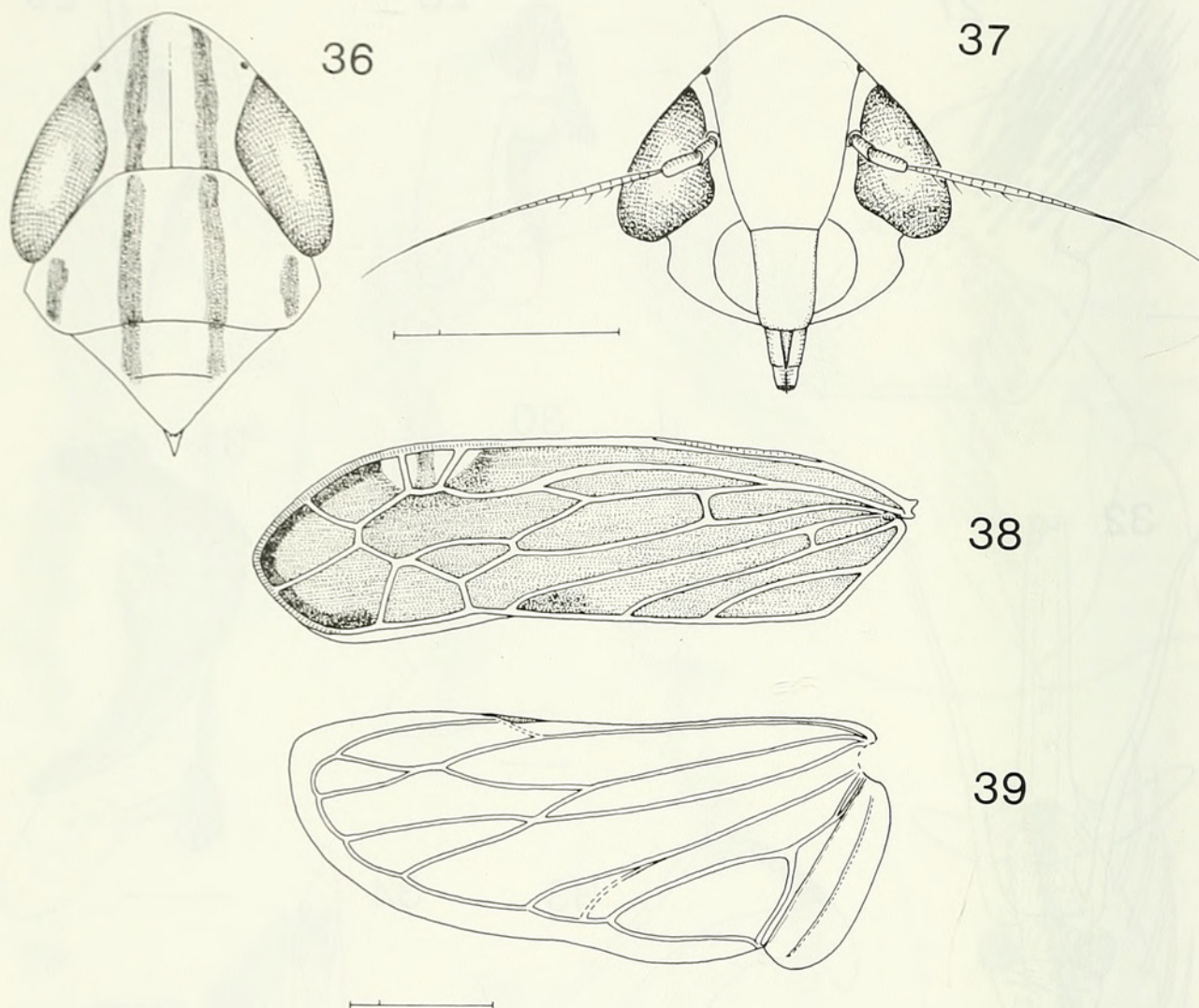
Figs. 27-35. *Hengchunia indica* sp.n., holotype ♂ from India. — 27, male pygophore, left lateral view; 28, left subgenital plate, dorsal view; 29, same, dorsolateral view; 30, subgenital plates, ventral view; 31, left style, dorsal view; 32, aedeagus and connective, ventrocaudal view; 33, aedeagus, left lateral view; 34, same, dorsal view; 35, apex of aedeagus, left dorsocaudal view. Scales: 0.1 mm.

strongest. Style (fig. 24) with short inner and long outer apophysis, the latter continuously tapering to apex, distal margin with about 7 tooth-like projections. Aedeagus (figs. 25, 26) with shaft short, evenly curved dorsad, on both sides at midlength a spinose process which is directed basad; phallotreme apically, exposed to the ventrocaudal side; processes of preatrium long and slender, straight.

Length: ♂: 3.5-3.6 mm, ♀: 3.8 mm.

Remarks. — *H. helleri* is similar (and probably closely related) to *H. gaiseri*; it can be distinguished mainly by the shape of the subgenital plates which are apically less pointed than in *H. gaiseri* and which bear a more extended toothed area, as well as by the position of the aedeagal processes which arise at midlength of the shaft (not subapically as in *H. gaiseri*).

Distribution. — The occurrence of *H. helleri* in Zaire and Cameroun may indicate a wider distribution, at least in Central- and West Africa.



Figs. 36-39. *Hengchunia pakistanica* sp.n., holotype ♂ from NE Pakistan. – 36, head and thorax, dorsal view; 37, head, frontal view; 38, left tegmen; 39, left hind wing. Scales: 0.5 mm.

7. *Hengchunia indica* sp. n.
(figs. 27-35)

Type material. – Holotype ♂: India, Bihar, Pusa, 14.v.1931, T. B. Fletcher (BMNH).

Description. – Habitus, bodily proportions, and colouration as in generic description (see Webb & Heller 1990).

Male genitalia: Subgenital plate (figs. 27-30) rather stout with distal margin very little convex, almost truncate; toothed area with a triangular portion at margin and an arm-like extension directed mediobasad. Style (fig. 31) comparatively short and stout, devoid of a mediobasal apophysis, subapically with a short lobe-like projection. Aedeagus (figs. 32-35) with shaft evenly curved dorsad; ventrobasad of the apical phallotreme with a gently curved horn-shaped process which arises on a broad base; medially on dorsal side of shaft a longer, apically bifurcate process, and basad of it a shorter single process; processes of

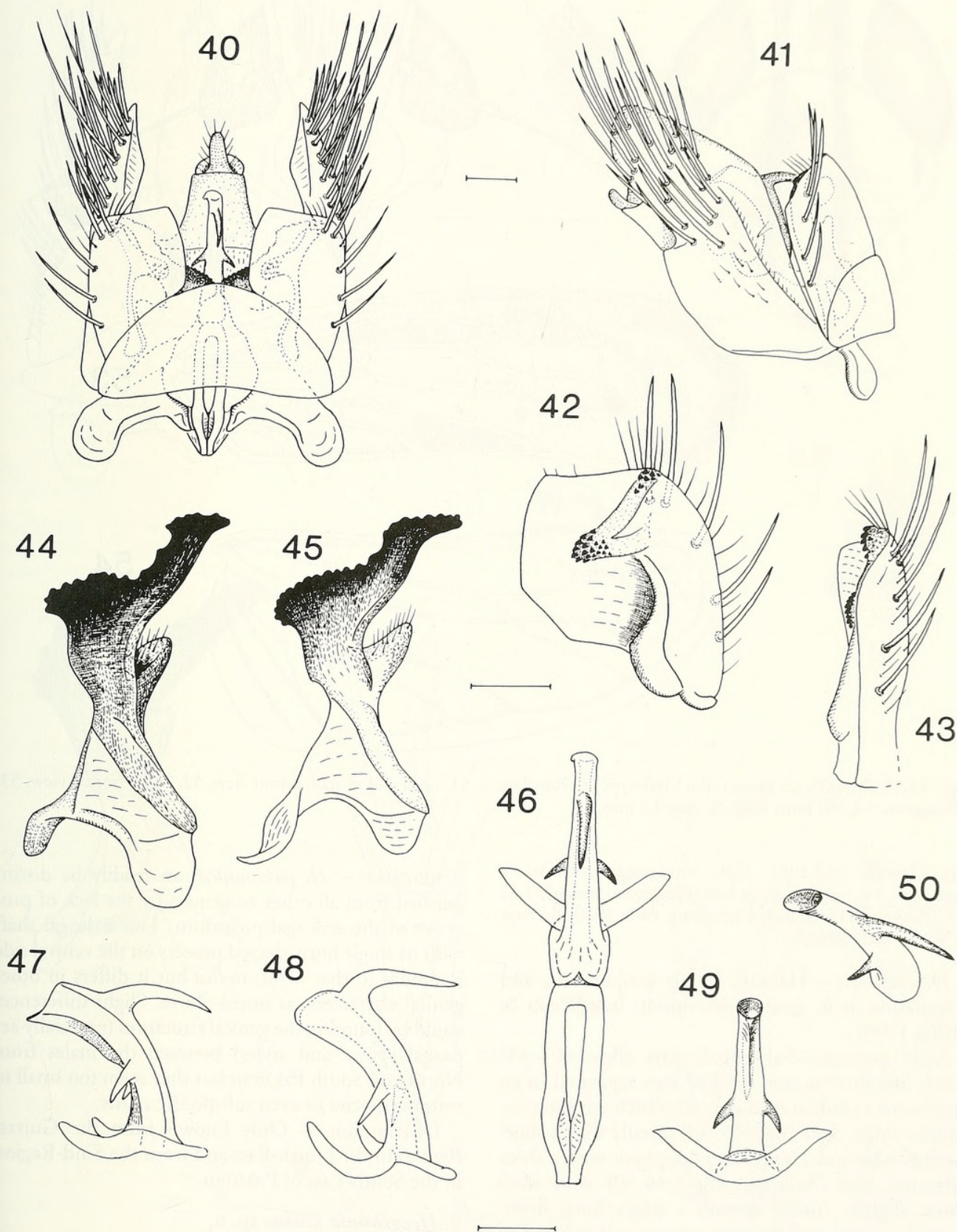
preatrium slender, slightly curved ventrad.
Length: ♂: 3.0 mm.

Remarks. – Within the genus, *H. indica* is most similar to *H. pakistanica* (see below) with which it shares the short and distally truncate subgenital plates and a single horn-shaped aedeagal process basad of the phallotreme on the ventral side. However, it differs considerably from this species in the shape of the toothed area of the subgenital plates and in details of the aedeagus, especially by the presence of paired processes of the preatrium which are entirely missing (probably reduced) in *H. pakistanica*.

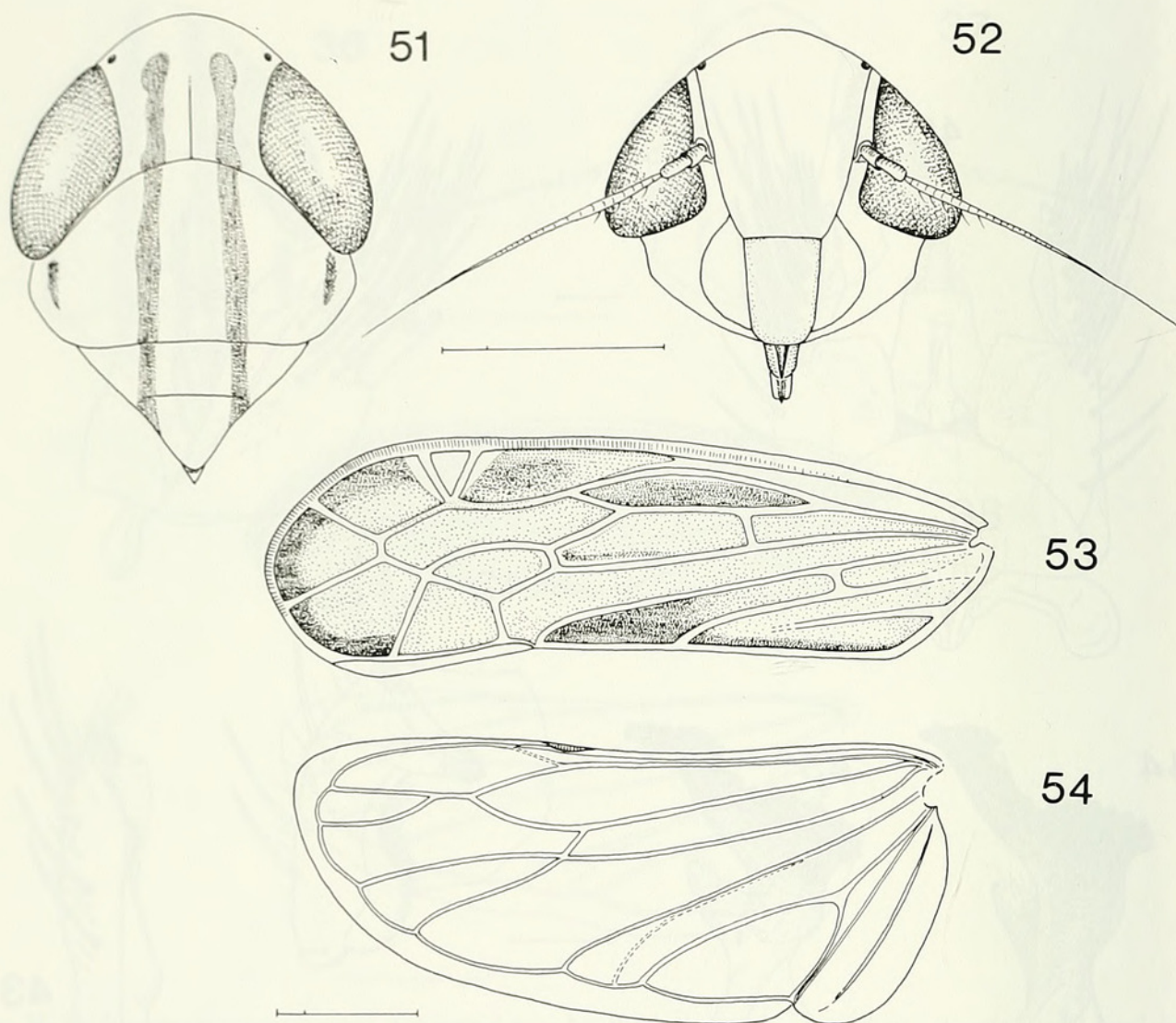
Distribution. – Only known from the Bihar-Region in North India.

8. *Hengchunia pakistanica* sp. n.
(figs. 36-50)

Type material. – Holotype ♂: Pakistan, Gujrat (= Guja-



Figs. 40-50. *Hengchunia pakistanica* sp.n., holotype ♂ from NE Pakistan; Figs. 45, 48: paratype ♂ from SE Pakistan. — 40, male genitalia, ventrocaudal view; 41, same, left lateral view; 42, left subgenital plate, dorsal view; 43, same, dorsolateral view; 44, 45, left style, dorsal view; 46, aedeagus and connective, ventrocaudal view; 47, 48, aedeagus, left lateral view; 49, same, dorsal view; 50, apex of aedeagus, left dorsocaudal view. Scales: 0.1 mm.



Figs. 51-54. *Hengchunia javana* sp.n., holotype ♂ from Java. – 51, head and thorax, dorsal view; 52, head, frontal view; 53, left tegmen; 54, left hind wing. Scales: 0.5 mm.

rat), Nausari, 16.i.1981, C.A. Viraktamath (BMNH). – Paratypes: 4♀, same data as holotype (UASB, BMNH); 1♂, 1♀, Pakistan, Hyderabad, Patanduru, vii-ix.1980, Bernays & Woodhead (BMNH).

Description. – Habitus, bodily proportions, and colouration as in generic description (see Webb & Heller 1990).

Male genitalia: Subgenital plate (figs. 40- 43) short, distally truncate, toothed area separated in an apical and a median field of teeth which are connected by a ridge. Style (figs. 44, 45) distally with a short median edge and a long outer apophysis with a short subapical lobe. Aedeagus (figs. 46-50) with shaft short, slightly curved dorsad; a single long, horn-shaped, ventrobasad directed process arising basad of phallotreme on the ventral side; shaft submedially with a pair of lateral processes; preatrium devoid of elongate paired processes.

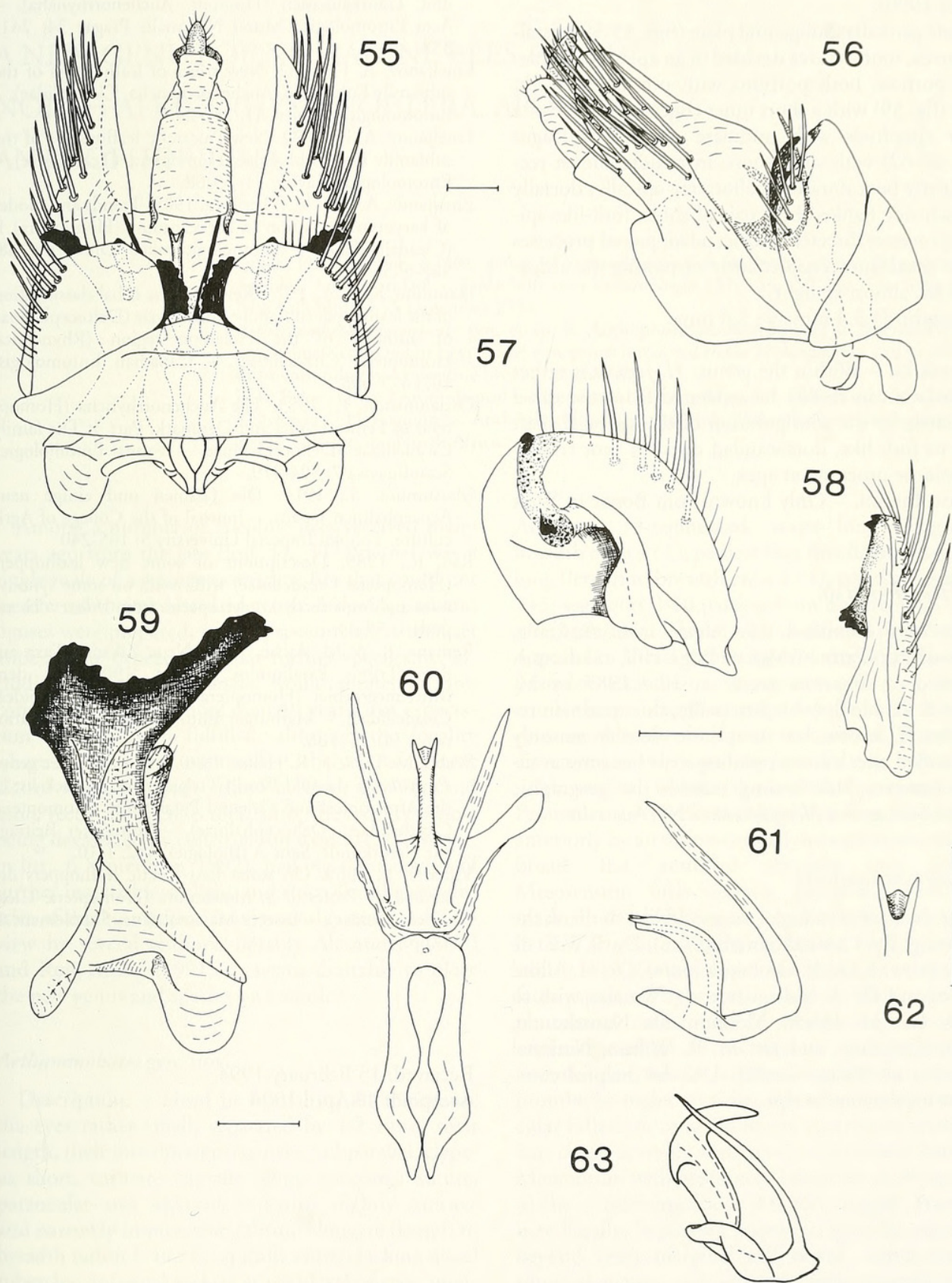
Length: ♂: 3.0 mm, ♀: 3.1-3.3 mm.

Remarks. – *H. pakistanica* can readily be distinguished from all other congeners by the lack of processes of the aedeagal preatrium. The aedeagal shaft with its single horn-shaped process on the ventral side is similar to that of *H. indica* but it differs in other genital characters, as noted above. Slight differences could be found in the genital structures (especially aedeagal spines and styles) between the males from North and South Pakistan but they seem too small to warrant species or even subspecific status.

Distribution. – Only known from the Gujrat-Region in the North-East and from the Sind-Region in the South-East of Pakistan.

9. *Hengchunia javana* sp. n. (figs. 51-62)

Type material. – Holotype ♂: Indonesia: Java, Bogor, on *Imperata*, 24.xi.1989, M.R. Wilson (BMNH). – Paratype: 1♀, same data as holotype (BMNH).



Figs. 55-63. *Hengchunia* species. — 55-62. *Hengchunia javana* sp.n., holotype ♂ from Java; 55, male genitalia, ventrocaudal view; 56, same, left lateral view; 57, left subgenital plate, dorsal view; 58, same, dorsolateral view; 59, left style, dorsal view; 60, aedeagus and connective, ventrocaudal view; 61, aedeagus, left lateral view; 62, apex of aedeagus, ventrocaudal view. Scales: 0.1 mm. 63; *H. kosbunensis* (Matsumura), aedeagus, redrawn and modified from Vilbaste, 1969, Fig. 6 E.

Description. – Habitus, bodily proportions, and colouration as in generic description (see Webb & Heller 1990).

Male genitalia: Subgenital plate (figs. 55-58) distally convex, toothed area divided in an apical and a median portion, both portions with prominent teeth. Style (fig. 59) with a short inner edge and an elongate outer apophysis with undulate margin. Aedeagus (figs. 60-62) with shaft short, in middle almost rectangularly bent dorsad; phallosome apically, dorsally on each side flanked by a pair of short, fork-like spinose processes directed dorsocaudad; paired processes of the preatrium conspicuously surpassing the aedeagal shaft, almost straight.

Length: ♂: 3.4 mm; ♀: 3.6 mm.

Remarks. – Within the genus, *H. javana* is rather isolated. It can readily be separated from the other congeners by the configuration of the aedeagal shaft with its fork-like, dorsocaudad directed (not reflected) spinose processes at apex.

Distribution. – Only known from Bogor in West Java.

10. *Hengchunia* sp.

We have examined one female from Australia, Queensland, Cairns (ridge at Edge Hill, rainforest), collected on *Imperata* grass, on 10.vi.1987 by M. Asche & H. Hoch (AH). Externally, this specimen resembles *H. murtus*, but its specific identity can only be clarified after a corresponding male becomes available; however, this finding extends the geographic range of the genus *Hengchunia* to NE Australia.

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