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NOTES ON THE LEAFHOPPER GENUS *PEDIOPSIS* (HEMIPTERA: CICADELLIDAE: MACROPSINAE) WITH DESCRIPTION OF ONE NEW SPECIES FROM CHINA

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ABSTRACT

A new leafhopper species *Pediopsis ningxiaensis* Dai & Li **sp. nov.** from Ningxia Province of China is described and illustrated, an updated checklist of the genus *Pediopsis* from the world is provided, along with a key for identification to distinguish males of species of the genus in different geographic regions.

Key Words: Auchenorrhyncha, taxonomy, distribution, China

RESUMEN

Se describe e ilustra una nueva especie de saltahojas, *Pediopsis ningxiaensis*, de la provincia de Ningxia de China. Se proporciona una lista de actualizada de las especies del género *Pediopsis* conocidas mundialmente, junto con una clave de identificación para distinguir los machos de las especies de este género de las diferentes regiones geográficas.

Palabras Clave: Auchenorrhyncha, taxonomía, distribución, China

The leafhopper genus *Pediopsis*, which belongs to the subfamily Macropsinae, was established by Burmeister (1838), as a subgenus of *Bythoscopus*. Subsequently Kirkaldy (1903) raised it to genus level and designated *Jassus tiliae* Germar, 1831 as the type species. Later, Anufriev (1971) described 1 new species from Russia. Hamilton (1980) in his world revision of the Macropsinae recorded 13 species of this genus, including 10 new combinations of species from the Australian region and 1 new species from China (Taiwan island). Tishechkin (1997) described 1 new species from Malaysia and later, Cai et al. (2005) described 1 new species from China (Shandong). So far, a total of 15 species of the genus *Pediopsis* are recorded from the world.

In the present paper, *Pediopsis ningxiaensis* Dai & Li **sp. nov.** is described and illustrated, and an updated checklist and distribution of the genus *Pediopsis* from the world is provided, along

with a key to distinguish different geographic regions species of the genus.

MATERIALS AND METHODS

Our classification system and morphological terminology follow Hamilton (1980). The type specimen of the new species is deposited in the Institute of Entomology, Guizhou University, Guiyang, China (GUGC). Color photos of the adult habitus of the *Pediopsis* species are shown in the supplementary material online in Florida Entomologist 96(3) (2013) at <http://purl.fcla.edu/fcla/entomologist/browse>).

GENUS *PEDIOPSIS* BURMEISTER

Type species: *Jassus tiliae* Germar, 1831, designated by Kirkaldy subsequently, 1903: 214.

Bythoscopus (Pediopsis) Burmeister, 1838: 11.
Pediopsis, promoted to status of generic level
by Kirkaldy, 1903: 214.

Diagnosis

Body stout. Head narrower than pronotum.
Crown short. Face flat or slightly inflated in pro-
file, wider than long, lora relatively large. Prono-
tum broad, declivous, striations on surface dense,
distinct, and oblique. Scutellum broad, triangular.
Hind tibia with 7-8 macrosetae on AD row,
occasionally 9. Forewings with 3 anteapical cells.

Male pygofer broad, apex acute or blunt,
without spines or processes. Subgenital plates
slender, usually with marginal setae. Dorsal con-
nectives strongly developed, slender, varying in
different species. Aedeagus tubular, shaft slen-
der, bent dorsally, gonopore usually apical. Styles
narrower, slender, tips upturned, stem generally
with a triangular protrusion on ventral margin.

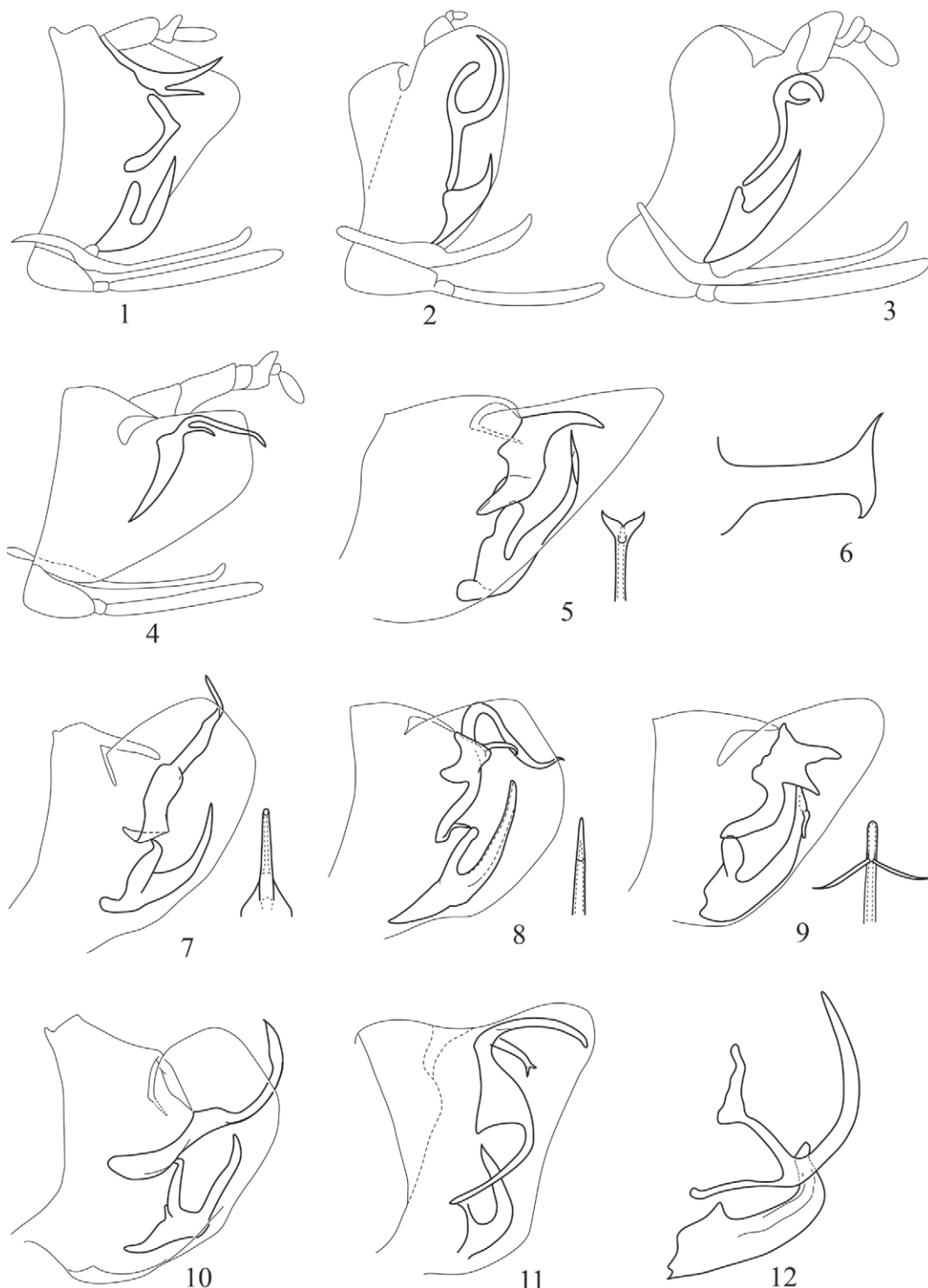
Distribution

Europe, Russia, China, Malaysia, New Guinea
and Australia.

KEY TO MALES OF SPECIES OF THE GENUS *PEDIOPSIS* RECORDED IN NEW GUINEA AND AUSTRALIA

Four species of the genus *Pediopsis* were recorded in New Guinea and 6 in Australia, but *P. filicis* (Evans, 1936) is excluded from the present key because currently it is known only by the female sex.

- 1. Dorsal portion of dorsal connective bifurcated to 2 slender branches (New Guinea) 2
- Dorsal portion of dorsal connective not bifurcated to 2 slender branches, branches stout if present (Australia) 5
- 2. Dorsal connective with 2 branches closer with each other 3
- Dorsal connective with 2 branches distant with each other 4
- 3. Dorsal connective with dorsal branch pointed dorsally (Fig. 1) *P. eliptaminensis* (Evans)
- Dorsal connective with dorsal branch pointed ventrally (Fig. 4) *P. kassamensis* (Evans)
- 4. Dorsal connective with dorsal branch longer than ventral one (Fig. 3) *P. completa* (Evans)
- Dorsal connective with dorsal branch shorter than ventral one (Fig. 2) *P. flavobrunnea* (Evans)
- 5. Aedeagal shaft with pair of processes 6
- Aedeagal shaft without any process 7
- 6. Aedeagal processes subapical (Fig. 9) *P. nikitini* (Evans)
- Aedeagal processes apical (Fig. 5) *P. lutea* (Evans)
- 7. Dorsal connective with slender dorsal portion, tip tapered to pointed 8
- Dorsal connective with stout dorsal portion, tip dorsoventrally elongate (Fig. 6) *P. emmae* (Evans)
- 8. Dorsal connective with additional small process at middle, dorsal end twisted ventrocaudally (Fig. 8) *P. mandurae* (Evans)
- Dorsal connective without additional small process at middle, dorsal end twisted dorsally (Fig. 7). *P. thymele* (Kirkaldy)

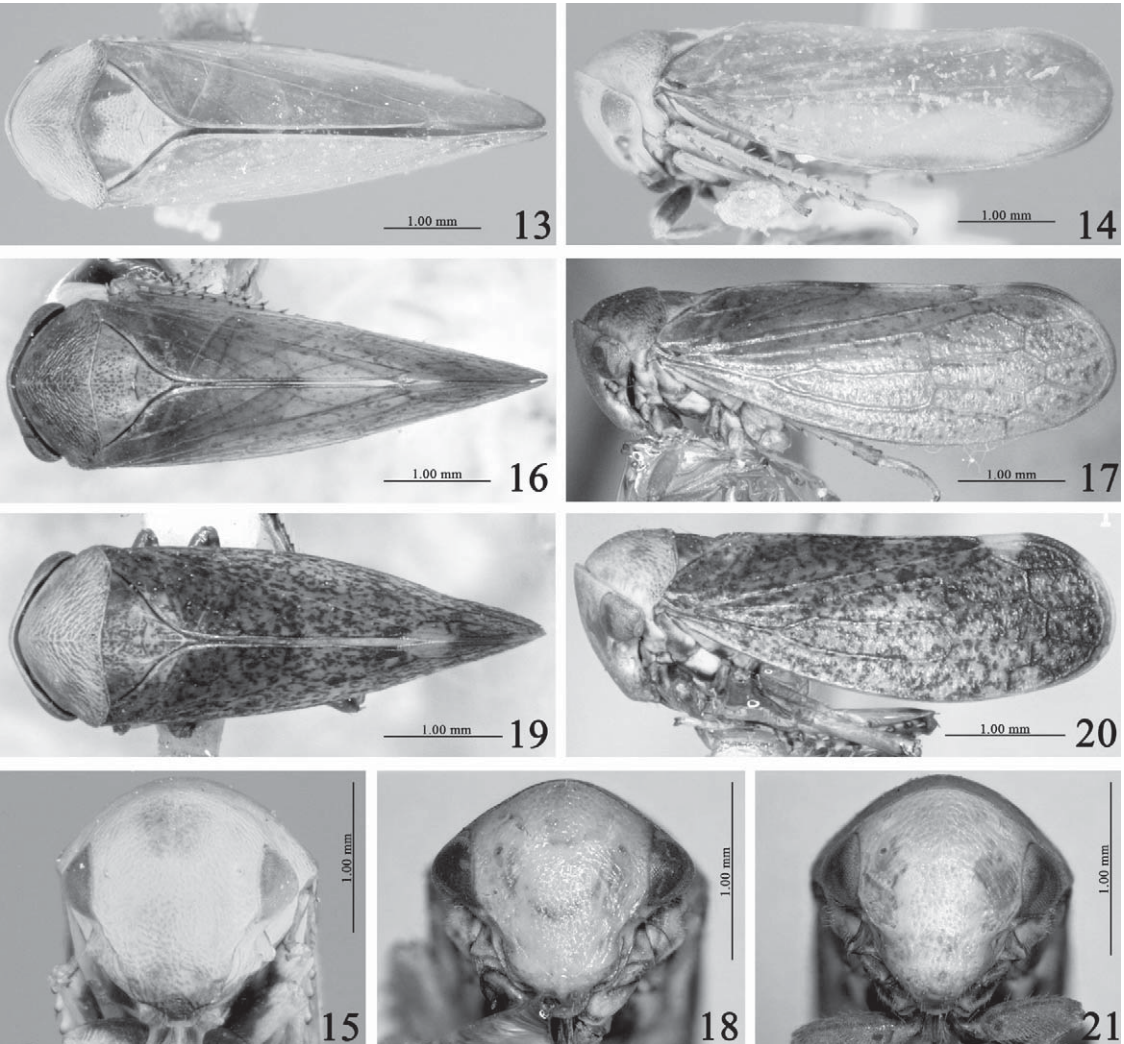


Figs. 1-12. Aedeagus and dorsal connective of *Pediopsis* species, lateral view and partly ventral view. 1. *P. eliptaminensis* (Evans); 2. *P. flavobrunnea* (Evans); 3. *P. completa* (Evans); 4. *P. kassamensis* (Evans); 5. *P. lutea* (Evans); 6. *P. emmae* (Evans); 7. *P. thymele* (Kirkaldy); 8. *P. manduræ* (Evans); 9. *P. nikitini* (Evans); 10. *P. tiliae* (Germar); 11. *P. cudraniae* Cai & Wang; 12. *P. malayana* Tishechkin. (1-4, 6. After Evans 1971; 5, 7-10. After Hamilton 1980; 11. After Cai et al. 2005; 12. After Tishechkin 1997)

KEY TO MALES OF SPECIES OF THE GENUS *PEDIOPSIS* KNOWN IN CHINA, EUROPE AND MALAYSIA

Currently 3 species of the genus *Pediopsis* are known in China including the new species described here, 2 in Europe (including 1 in Russia) and 1 in Malaysia. *Pediopsis femorata* Hamilton, 1980, which occurs in Taiwan, is also known only by the female sex, and therefore is not included in the present key.

- 1. Dorsal connective with dorsal portion pointed ventrally 2
- Dorsal connective with dorsal portion pointed dorsally 4
- 2. Dorsal part of dorsal connective tapered to apex, indistinctly bifurcated (Fig. 11)
..... *P. cudraniae* Cai & Wang
- Dorsal part of dorsal connective slightly tumid subapically, not bifurcated 3
- 3. Aedeagal shaft slender, dorsal connective inconspicuously inflated near dorsal end (Figs. 32 and 34)
..... *P. kurentsovi* Anufriev



Figs. 13-21. Adults habitus of *Pediopsis* species, dorsal, lateral and facial view. 13-15. *P. femorata* Hamilton, female, (photos provided by R. L. Blinn, NCSU); 16-18. *P. ningxiaensis* **sp. nov.**, male; 19-21. *P. kurentsovi* Anufriev. Note: This plate is shown in color in Suppl. Figs. 13-22 online in Florida Entomologist 96(3) (2013) at <http://purl.fcla.edu/fcla/entomologist/browse>).

- . Aedeagal shaft stout, dorsal connective inconspicuously inflated near dorsal end (Figs. 29 and 31) *Pediopsis ningxiaensis* Dai & Li **sp. nov.**
- 4. In lateral view, aedeagal shaft strongly sinuated, apical 1/3 of shaft angled as right angle, then directed caudally (Fig. 8) (Fig. 12) *P. malayana* Tishechkin
- . In lateral view, aedeagal shaft slightly sinuated, not angled (Fig. 10) *P. tiliae* (Germar)

Checklist and Distributions of Species of the Genus *Pediopsis*

- P. completa* (Evans) Distribution: New Guinea (Wau).
- P. cudraniae* Cai & Wang Distribution: China (Shandong Province).
- P. eliptaminensis* (Evans) Distribution: New Guinea (Eliptamin Valley).
- P. emmae* (Evans) Distribution: Australia (New South Wales).
- P. flavobrunnea* (Evans) Distribution: New Guinea (Daulo Pass, Simbai, Chimbu Valley).
- P. kassamensis* (Evans) Distribution: New Guinea (Kassam, Wau).
- P. kurentsovi* Anufriev Distribution: Russia (Maritime Province).
- P. lutea* (Evans) Distribution: Western Australia (Bruce Rock).
- P. malayana* Tishechkin Distribution: Malaysia (Fahang).
- P. manduræ* (Evans) Distribution: Western Australia (Mandurah).
- P. ningxiaensis* Dai & Li Distribution: China (Ningxia).
- P. nikitini* (Evans) Distribution: Australia (New South Wales).
- P. thymele* (Kirkaldy) Distribution: Australia (Queensland).
- P. tiliae* (Germar) Distribution: Widespread in Europe, European part of Russia, North America (records from Tishechkin 1997).
- P. filicis* Evans. Distribution: Australia (Victoria).
- P. femorata* Hamilton. Distribution: China (Taiwan).

Pediopsis ningxiaensis Dai & Li **sp. nov.** (Figs. 16-18, 22-31)

Measurement

Length including tegmen : ♂, 5.1 mm.

Description

Body (Figs. 16-18) yellowish. Head and face yellowish brown, ocelli and clypellus dark brown,

eyes dark red. Pronotum yellowish, striations on surface dark brown. Scutellum orange, with dark brown maculae except in bilateral corners and around coalescent suture between mesonotum and scutellum. Forewings brown, spotted with brown maculae. Legs yellowish with brown mottles.

Head (Fig. 16) including eyes clearly narrower than pronotum, produced forward. Face (Fig. 18) across eyes wider than long, relatively smooth; frons with longitudinal carina; distance between ocelli nearly 5 times as wide as that between ocellus and adjacent eye; clypellus small, tapered. Pronotum (Fig. 16) broad, 2.2 times as long as wide, with median longitudinal carina medially, posterior margin slightly concave, striations on surface dense, oblique. Scutellum (Fig. 16) triangular, coalescent suture between mesonotum and scutellum distinct, bisegmented. Forewings (Fig. 17) transparent, with 3 anteapical cells. Hind tibia with 9 macroseta on AD row. 2nd tergal apodemes (Fig. 22) wider, parallel margined, tips truncate, relatively closer; 2nd sternal apodemes (Fig. 23) broader basally, tapering, tips sharpened or slightly blunt.

Male Genitalia. Pygofer (Fig. 24) broader, nearly square, surface with few small setae, unarmed. Subgenital plates (Fig. 25) slender with marginal setae, of equidistance to ventral margin of pygofer. Styles (Fig. 26) slender, lateral margins with few fine setae, ventral margin with triangular protrusion near middle, tips narrowed and truncate. Connective (Figs. 27 and 28) stout, with finger-like protrusion in middle, both lateral arms short, bent to dorsum. Aedeagus (Figs. 29 and 30) tubular, dorsally twisted, aedeagal shaft nearly of same width from base to rounded apex; gonopore apical. Dorsal connectives (Fig. 31) narrow, apex slightly inflated, then sharpened.

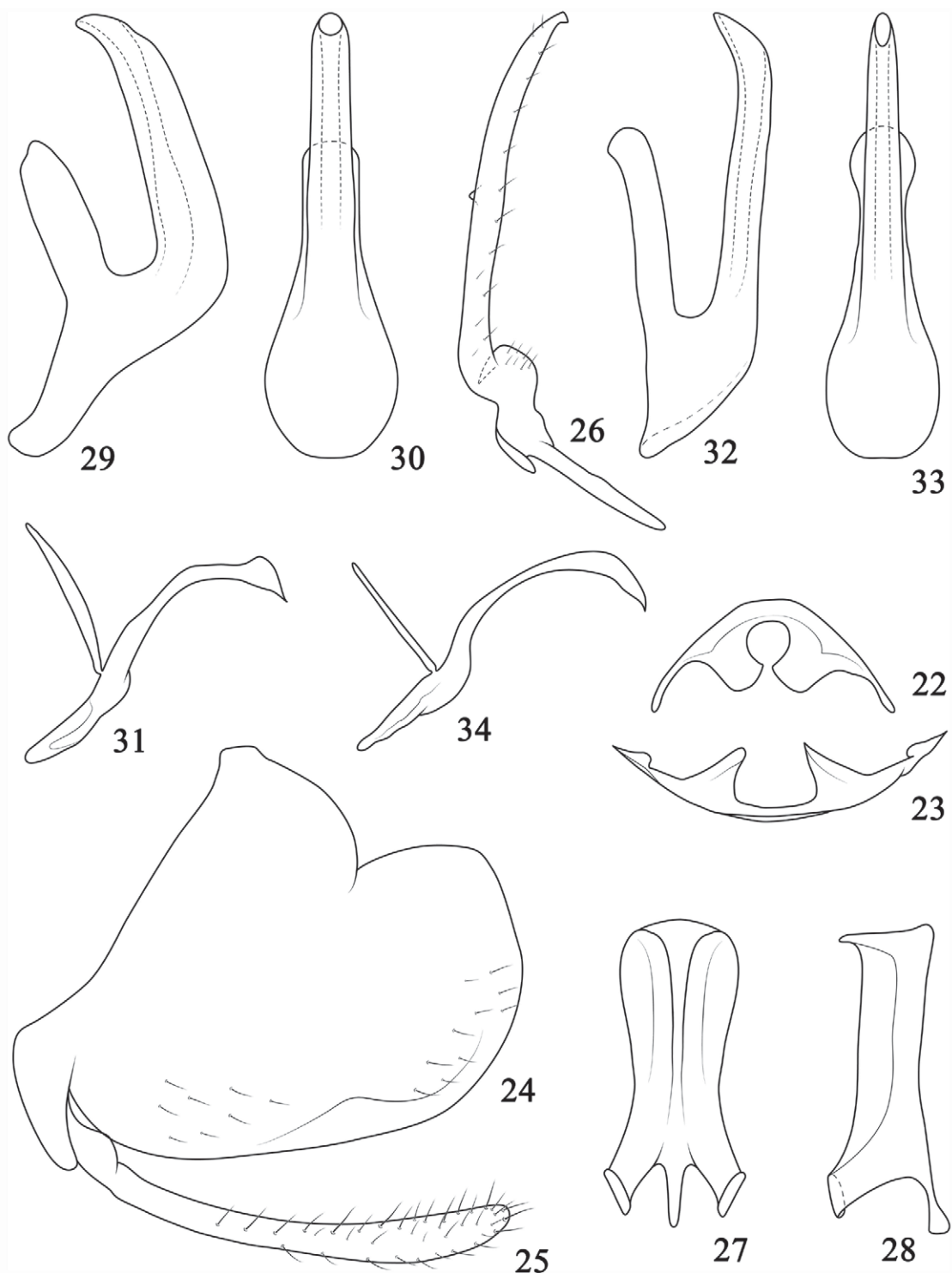
Female. Unknown.

Type Material

HOLOTYPE: ♂, CHINA: Ningxia Province, Liupanshan, 2050 m, 29-VII-2008, collected by Song Qiong-Zhang (GUGC).

Distribution

China (Ningxia Province).



Figs. 22-34. Male genitalia of *Pediopsis* species. 22-31. *P. ningxiaensis* **sp. nov.** 32-34. *P. kurentsovi* Anufriev. 22. Apodemes of male 2nd abdominal tergite; 23. Apodemes of male 2nd abdominal sternite; 24. Male pygofer side, lateral view; 25. Subgenital plate, lateral view; 26. Style, dorsal view; 27. Connective, dorsal view; 28. Connective, lateral view; 29, 32. Aedeagus, lateral view; 30, 33. Aedeagus, ventral view; 31, 34. Dorsal connective, lateral view.

Etymology

The new species name refers to the type locality, Ningxia.

Discussion

Pediopsis ningxiaensis Dai & Li **sp. nov.** is similar to *P. femorata* in having the same number of hind tibial macrosetae, but differs in body form and coloration. It also resembles *P. tiliae* (Germar, 1831) and *P. kurentsovi* Anufriev, 1971, but can be distinguished from *P. tiliae* by the aedeagal shaft being much stouter than in the latter, dorsal connectives not projecting beyond caudal margin of pygofer and directed ventrally (directed dorsally in *P. tiliae*) with subapex definitely inflated and tip sharpened; and lacks sinuated aedeagal shaft. *Pediopsis ningxiaensis* can be distinguished from *P. kurentsovi* in that *P. ningxiaensis* has a stouter aedeagal shaft, conspicuously inflated dorsal connective near dorsal end, and less brown marked forewings and body coloration.

Pediopsis femorata was described based on the female by Hamilton (1980), later it was transferred to subgenus *Pediopsoides* (*Pediopsoides*) Matsumura, 1912 and the male individual was described and illustrated by Huang & Viraktamath (1993). The external morphological characters and original description of *femorata* distal lateral lobes of frontoclypeus not expanded; striations on pronotum are distinct and oblique; forewings with 3 anteapical cells are consistent with those of the genus *Pediopsis*.

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REFERENCES CITED

- ANUFRIEV, G. A. 1971. New and little-known leafhoppers (Homoptera, Auchenorrhyncha) from the Far East of the U.S.S.R. and neighboring countries. Entomol. Obozr. 50(1): 95-116. [in Russian with English summary]
- ANUFRIEV, G. A. 1976. Notes on the genus *Psammotettix* HPT. With descriptions of two new species from Siberia and the Far East (Homoptera, Cicadellidae). Reichenbachia 16(9): 129-134.
- BURMEISTER, H. C. C. 1838. Genera Insectorum Iconibus Illustravit et Descripsit, Rhynchota. 48 pp.
- CAI, P., WANG, Z. Q., LIU, C. H., AND YAN, J. H. 2005. A new species of leafhopper injurious to Tricuspid Cudrania (Homoptera: Cicadellidae: Macropsinae). Canye Kexue, 31(2): 206-207. [in Chinese with English summary]
- EVANS, J. W. 1936. The Bythoscopidae of Australia (Homoptera, Jassoidea). Papers and Proc. R. Soc. Tasmania, 1935, 61-83.
- EVANS, J. W. 1966. The leafhoppers and froghoppers of Australia and New Zealand (Homoptera: Cicadelloidea and Cercopoidea). Australian Mus. Mem. 12: 1-347.
- EVANS, J. W. 1971. Leafhoppers from New Guinea and Australia belonging to the subfamilies Macropsinae and Agalliinae with notes on the position of *Nionia* Ball and *Magnentius* Pruthi (Homoptera: Cicadelloidea). Pacific Insects 13(2): 343-360.
- GERMAR, E. F. 1831. *Cercopis mactata* Germ. *Tettigonia concinna* Germ. Augsti Ahrensii Fauna Insectorum Europae. 14: 11-15.
- HAMILTON, K. G. A. 1980. Contributions to the study of the world Macropsini (Rhynchota: Homoptera: Cicadellidae). Canadian Entomol. 112: 875-932.
- HUANG, K. W., AND VIRAKTAMATH, C. A. 1993. The Macropsinae leafhoppers (Homoptera: Cicadellidae) of Taiwan. Chinese J. Entomol. 13: 361-373.
- KIRKALDY, G. W. 1903. On the nomenclature of the genera of the Rhynchota; Heteroptera, and Auchenorrhynchos Homoptera - Part V. The Entomologist 36: 213-216.
- KIRKALDY, G. W. 1907. Leafhoppers supplement (Hemiptera). Bull. Hawaiian Sugar Planters Assoc. Div. Entomol. 3: 1-20.
- MATSUMURA, S. 1912. Die Acocephalinen und Bythoscopinen Japans. J. College Agric., Tohoku Imperial University, Sapporo, Japan 4(7): 279-325.
- TISHECHKIN, D. YU. 1997. A new species of the genus *Pediopsis* (Homoptera: Cicadinea: Cicadellidae: Macropsinae) from Malaysia. Russian Entomol. J. 6(3-4): 29-30.