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Leafhopper Subgenus Pediopsoides (Pediopsoides) (Hemiptera, Cicadellidae, Macropsinae) with Descriptions of Two New Species from Southern China

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LEAFHOPPER SUBGENUS *PEDIOPSOIDES* (*PEDIOPSOIDES*) (HEMIPTERA, CICADELLIDAE, MACROPSINAE) WITH DESCRIPTIONS OF TWO NEW SPECIES FROM SOUTHERN CHINA

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Abstract

Two new species of leafhopper subgenus *Pediopsoides* (*Pediopsoides*) Matsumura, 1912 *P.* (*P.*) *bispinata* Li, Dai & Li **sp. nov.** and *P.* (*P.*) *nigrolabium* Li, Dai & Li **sp. nov.** from southern China, are described and illustrated. An updated checklist and distribution of the subgenus from the world is provided, along with a key to distinguish all species of the subgenus.

Key Words: Hemiptera, Macropsini, distributions, morphology, identification

Resumen

Se describen e ilustran dos nuevas especies de subgénero *Pediopsoides* (*Pediopsoides*) Matsumura, 1912 *P.* (*P.*) *bispinata* Li, Dai y Li **sp. nov.** and *P.* (*P.*) *nigrolabium* Li, Dai y Li **sp. nov.** del sur de China. Se ofrece Una lista de control y distribución de este subgénero del mundo, junto con una clave para distinguir todas las especies del subgenera.

The leafhopper genus *Pediopsoides* (Cicadellidae: Macropsinae: Macropsini) was primitively established by Matsumura (1912) for the single species, *Pediopsoides formosanus* Matsumura, 1912, from the Taiwan province of China. However, it was not recognized for a long time and excluded in the work of Evans (1947) and Metcalf (Fascicle-VI, Cicadelloidea: part 13, Macropsidae) (but as a synonym of genus *Iassus* in Fascicle-VI, Cicadelloidea: part 15, Iassidae) (1966a, b). Hamilton (1980) revised the genus *Pediopsoides* on the level of generic status, and separated to 5 subgenera, nominate subgenus *Pediopsoides* (*Pediopsoides*), *P.* (*Celopsis*), *P.* (*Sispocnis*), *P.* (*Nanopsis*), *P.* (*Kiamoncopsis*), and proposed 9 new combinations and 1 new synonymy of species, including 1 new combination in this nominate subgenus, *P.* (*Pediopsoides*). Later, Huang & Viraktamath (1993) transferred *Pediopsis femorata* Hamilton, 1980 into this subgenus, Viraktamath (1996) described a new species *P.* (*P.*) *kodaiana* from Tamil Nadu of India, and recently Zhang (2010) described a new species from Yunnan province of China. So far, there are 5 species of the subgenus were known from the world.

In the present paper, 2 new species, *Pediopsoides* (*Pediopsoides*) *bispinata* Li, Dai & Li **sp. nov.** and *P.* (*P.*) *nigrolabium* Li, Dai & Li **sp. nov.**, from Guangxi province (Oriental region) of southern China are described and illustrated (Figs. 1-27), an updated checklist and distribution of the nominate subgenus *Pediopsoides* (*Pediopsoides*) from the world is provided, along with a key to all species of the nominate subgenus.

The morphological terminology follows Hamilton (1980).

The type specimens of the new species are all deposited in the Institute of Entomology, Guizhou University, Guiyang, China (GUGC).

Taxonomy

Subfamily Macropsinae Evans

Tribe Macropsini Evans

Genus *Pediopsoides* Matsumura

Subgenus *Pediopsoides* (*Pediopsoides*) Matsumura

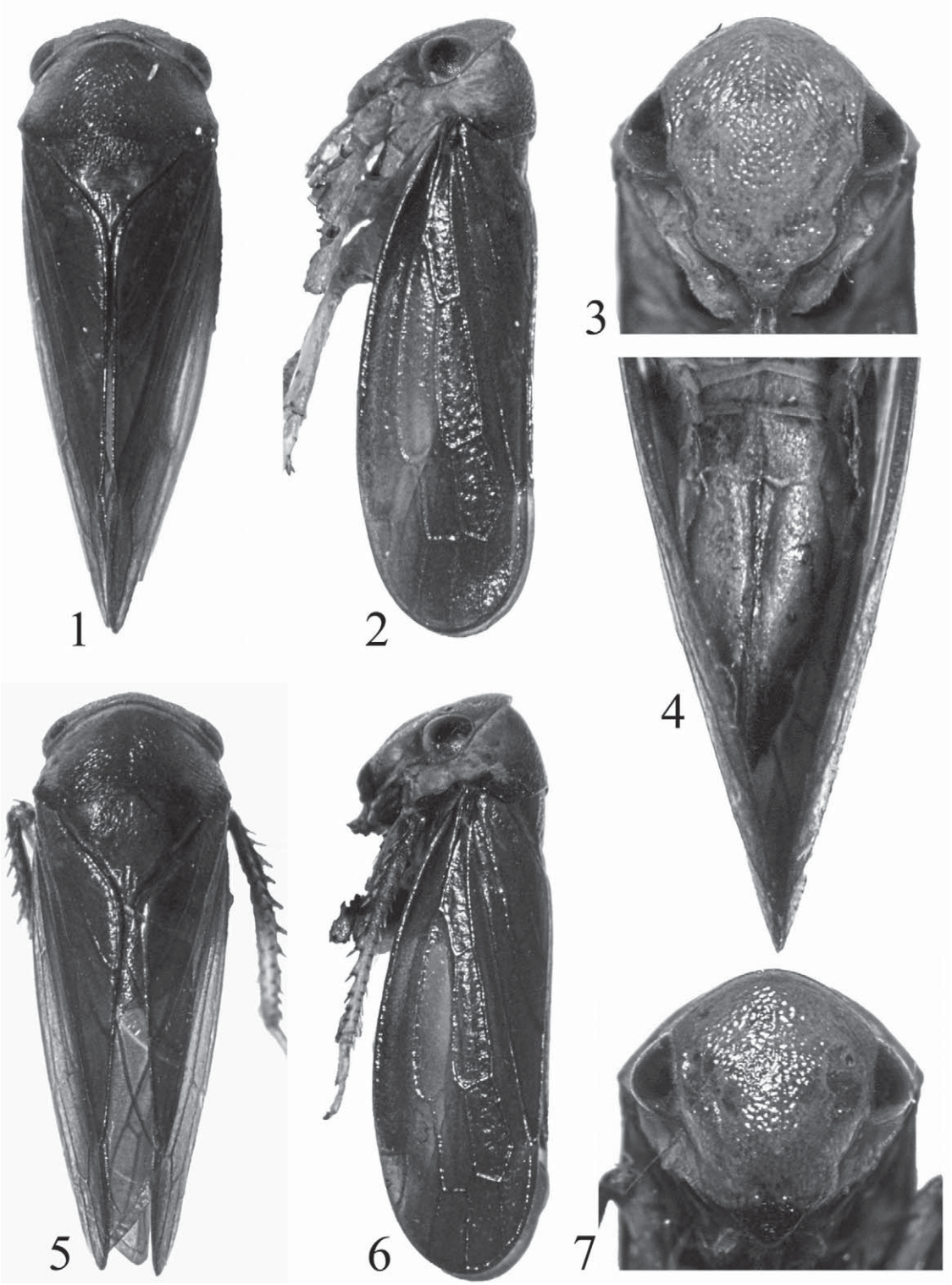
Pediopsoides Matsumura, 1912: 305. Type species: *Pediopsoides formosanus*, Matsumura, 1912, by original designation.

Pediopsoides (*Pediopsoides*), Hamilton, 1980: 896.

Description

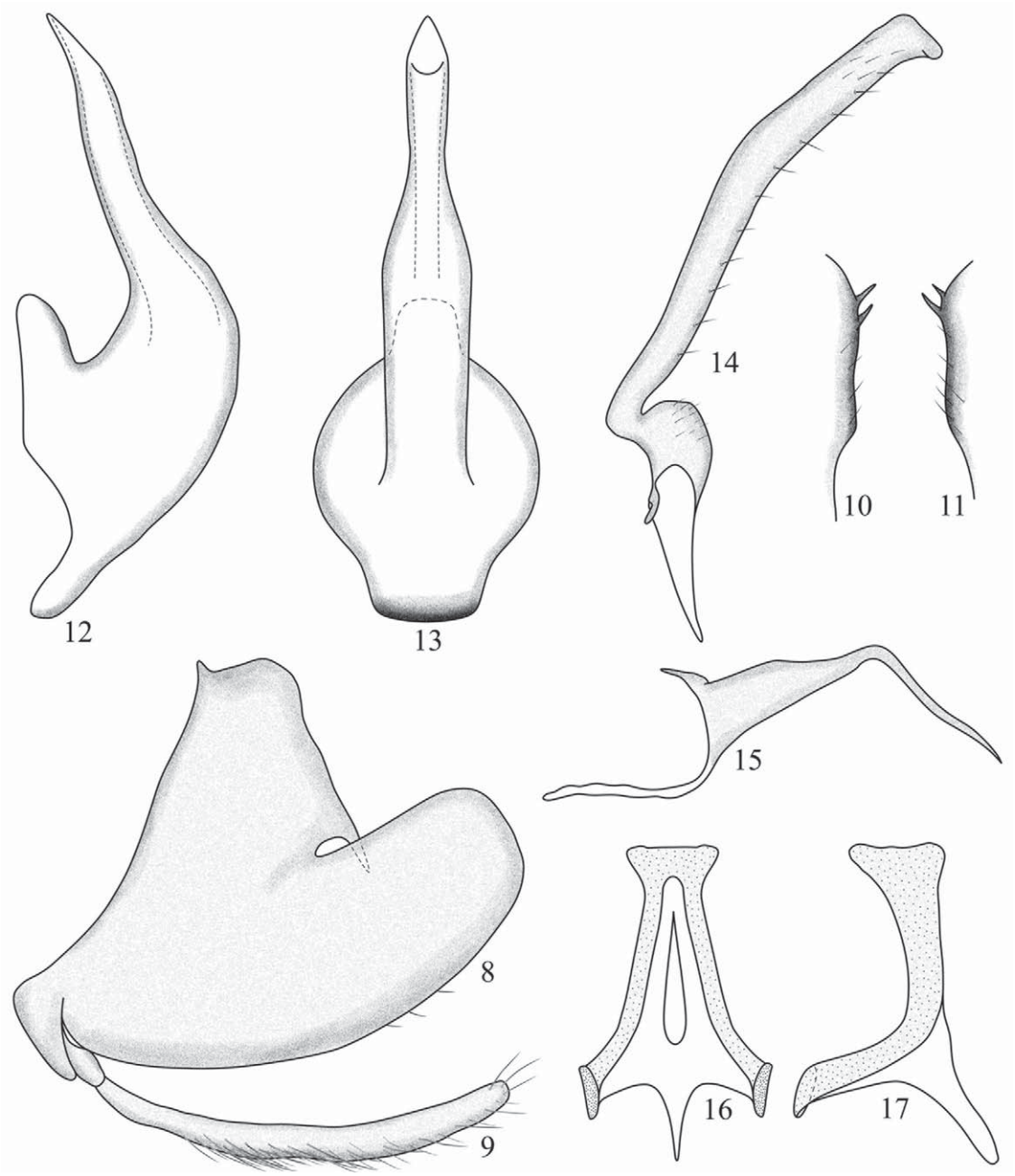
Head narrower than pronotum (occasionally as wide as pronotum in species *P.* (*P.*) *kodaiana*).

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Figs. 1-7. *Pediopsoides* (*Pediopsoides*) *bispinata* and *P.* (*P.*) *nigrolabium*. 1-4. *P.* (*P.*) *bispinata*. 1. Dorsal habitus, male; 2. Lateral habitus; 3. Face; 4. Female 7th sternite, ventral view; 5-7. *P.* (*P.*) *nigrolabium*; 5. Dorsal habitus, male; 6. Lateral habitus; 7. Face.

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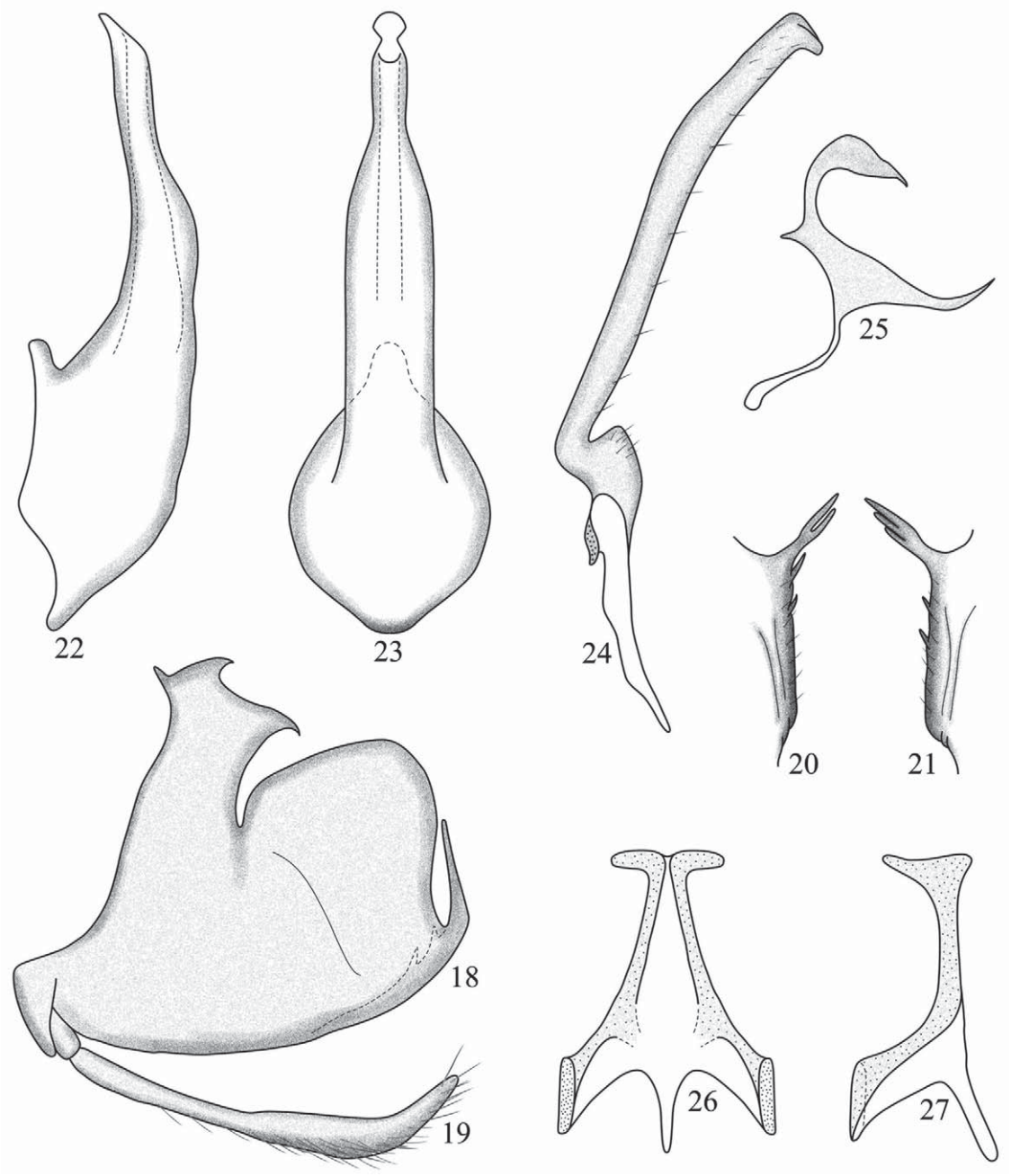


Figs. 8-17. *Pediopsoides* (*Pediopsoides*) *bispinata* Li, Dai & Li **sp. nov.** 8. Male pygofer side, lateral view; 9. Subgenital plate, lateral view; 10-11. Ventral margin of male pygofer; 12. Aedeagus, lateral view; 13. Aedeagus, ventral view; 14. Style, dorsal view; 15. Dorsal connective, lateral view; 16. Connective, dorsal view; 17. Connective, lateral view.

Crown more or less shorter centrally than laterally. Face as long as wide across eyes, occasionally narrower, slightly convex in profile. Lora small relatively, concealed by prominent lobes of frontoclypeus in male individuals, relatively large in female individuals. Clypellus slightly tapered apically. Pronotum broad, striations oblique, dense, obscure. Hind tibial macrosetae 7 ± 1. Forewings with 2 anteapical cells, appendix narrow.

Genitalia. Male pygofer broad without articulated lobes, ventral margin produced with simple spines or processes. Subgenital plates slender,

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Figs. 18-27. *Pediopsoides* (*Pediopsoides*) *nigrolabium* Li, Dai & Li **sp. nov.** 18. Male pygofer side, lateral view; 19. Subgenital plate, lateral view; 20-21. Ventral margin of male pygofer; 22. Aedeagus, lateral view; 23. Aedeagus, ventral view; 24. Style, dorsal view; 25. Dorsal connective, lateral view; 26. Connective, dorsal view; 27. Connective, lateral view.

with marginal setae usually. Dorsal connectives strongly developed, sinuated laterally, generally projecting past caudal margin of pygofer, varies with species. Aedeagus tubular, stout, tapering, directed dorsad (Figs. 28-35), gonopore usually apical. Style narrower, slender, tip upturned apically. Female seventh sternite more or less trapezoidal, posterior margin sinuated usually.

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Distribution.

All known species are distributed in the Oriental region, mainly in southern China, Guangxi and Taiwan provinces; the remaining species are found in Japan and India (Fig. 36).

Diagnosis.

The subgenus *Pediopsoides* (*Pediopsoides*) can be distinguished from all other subgenera by that, dorsal connectives are fused to tenth tergite in subgenus *P*. (*Celopsis*), male pygofer spine bifid or with rounded lobe on inner margin basally in subgenus *P*. (*Sispocnis*), male pygofer with a small secondary pygofer spine posteriorly in subgenus *P*. (*Nanopsis*), male pygofer spine multifid rather than bifid in subgenus *P*. (*Kiamoncopsis*).

Updated Checklist of Species of Subgenus *Pediopsoides* (*Pediopsoides*) from the World

Pediopsoides (*Pediopsoides*) *bispinata* Li, Dai & Li **sp. nov.**

Distribution. China (Guangxi prov.).

Pediopsoides (*Pediopsoides*) *femorata* Huang & Viraktamath

Pediopsoides (*Pediopsoides*) *femorata*, Huang & Viraktamath, 1993: 365.

Distribution. China (Taiwan prov.).

Pediopsoides (*Pediopsoides*) *formosanus* Matsumura

Pediopsoides formosanus Matsumura, 1912: 306.

Bythoscopus formosanus, Schumacher, 1915: 101.

Distribution. China (Taiwan prov.).

Pediopsoides (*Pediopsoides*) *jingdongensis* Zhang

Pediopsoides (*Pediopsoides*) *jingdongensis* Zhang, 2010: 58.

Distribution. China (Yunnan prov.).

Pediopsoides (*Pediopsoides*) *kodaiana* Viraktamath

Pediopsoides (*Pediopsoides*) *kodaiana* Viraktamath, 1996: 188.

Distribution. India (Tamil Nadu).

Pediopsoides (*Pediopsoides*) *nigrolabium* Li, Dai & Li **sp. nov.**

Distribution. China (Guangxi prov.).

Pediopsoides (*Pediopsoides*) *satsumensis* (Matsumura)

Pediopsis satsumensis Matsumura, 1912: 311.

Pediopsoides (*Pediopsoides*) *satsumensis*, Hamilton, 1980: 896.

Distribution. Japan (Kiushu).

Key to Males of Species of the Subgenus *Pediopsoides* (*Pediopsoides*)

P. (*P*.) *formosanus* Matsumura 1912 is excluded from the key because only the female is known.

1. Aedeagal shaft with paired symmetrical processes subapically or apically (Figs. 30-35). 2

— Aedeagal shaft without any processes or spines (Figs. 12-13, 22-23, 28-29). 4

2. Aedeagal shaft with paired symmetrical processes apically (Figs. 34-35) . . . *P*. (*P*.) *jingdongensis*

— Aedeagal shaft with paired symmetrical processes subapically (Figs. 30-33) 3

3. Processes on aedeagal shaft pointed caudally (Figs. 32-33) . . . . . *P*. (*P*.) *kodaiana*

— Processes on aedeagal shaft pointed ventrally (Figs. 30-31). . . . . *P*. (*P*.) *femorata*

4. Aedeagal shaft stout, inflated subapically (Figs. 28-29). . . . . *P*. (*P*.) *satsumensis*

— Aedeagal shaft slender, not inflated or inconspicuous (Figs. 12-13, 22-23). 5

5. Aedeagal shaft weakly directed dorsad, apex of aedeagal shaft lobe shaped (Figs. 22-23). . . . . *P*. (*P*.) *nigrolabium* **sp. nov.**

— Aedeagal shaft strongly directed dorsad, apex of aedeagal shaft tapering to point, without any process (Figs. 12-13). . . . . *P*. (*P*.) *bispinata* **sp. nov.**

Pediopsoides (*Pediopsoides*) *bispinata* Li, Dai & Li **sp. nov.** (Figs. 1-4, 8-17)

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Description

Body darker, ventral aspect greenish or more light (Figs. 1-4). Head and face green, clypellus slightly brown, eyes black. Pronotum darker, both lateral regions near eyes dark to green. Scutellum dark brown. Forewings darker. Legs light brown.

Head distinctly narrower than pronotum, arched forward slightly. Frons with a slight longitudinal carina, ocelli located between eyes, separated by nearly 6 times the distance from ocellus to adjacent eye, lora small in males, clypellus small, tapered. Pronotum broad, slightly concave on posterior margin, striae on surface dense, oblique, obscure. Scutellum triangular, small comparatively, mid length shorter than pronotum slightly, with one heavy notch on posterior region. Forewings opaque, with 2 anteapical cells.

Male genitalia. Pygofer (Fig. 8) slightly elongate, ventral margin with two small spines and several setae (Figs. 10 and 11), tenth tergite large. Subgenital plates slender with marginal setae (Fig. 9). Aedeagus tubular, broader basally, shaft tapering, strongly twisted to dorsum, median shaft slightly inflated, then suddenly narrower in ventral aspect, apex tapering to point, gonopore apical (Figs. 12 and 13). Dorsal connectives (Fig. 15) strongly developed, apically produced as a slender process which definitely directed ventrad and exceeds caudal margin of pygofer. Style relatively stout, margin with some setae, slightly expanded from base to apex, apically with a digitate shaped protrusion, upturned (Fig. 14). Connective stout, with a finger-like protrusion in middle, both lateral arms twisted dorsad (Figs. 16 and 17)

Female. Body coloration and appearance similar to male, but more stout. Seventh sternite broad, trapezoidal, posterior margin sinuated, "W" shaped, length of midline about 2 times as long as sixth sternite, ovipositor strongly projecting beyond pygofer (Fig. 4).

Measurement. Length (including tegmen):♂, 4.8-5.0 mm, ♀, 5.2-5.3 mm.

Material Examined

Holotype:♂, China: Guangxi Province, Wuming County, Damingshan Nature Reserve, 15 May 2011, collected by Yu Xiaofei; Paratypes: 3♀♀ 2♂♂, data same as holotype.

Distribution

China (Guangxi Province).

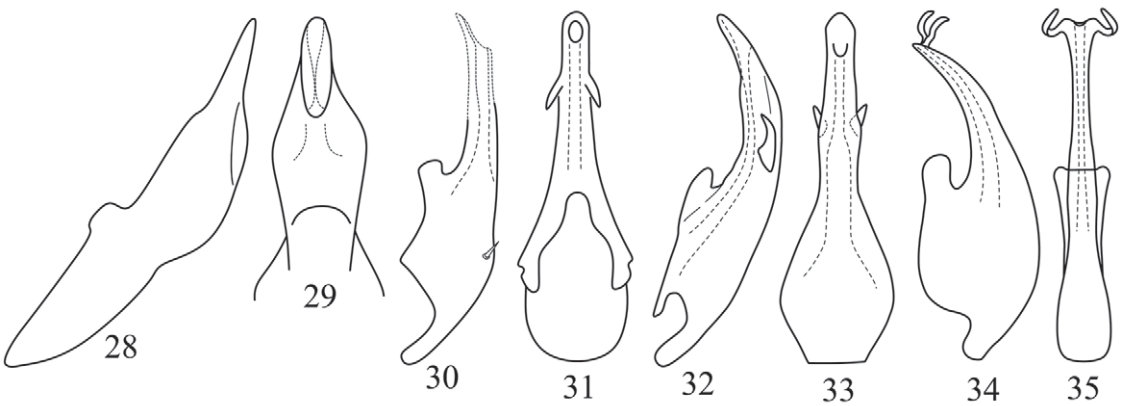
Remarks

This new species is similar to *P.* (*P.*) *kodaiana* Viraktamath, 1996 but can be distinguished from the latter in the ventral margin of male pygofer has only 2 small spines, aedeagal shaft is without any processes, gonopore is apical; dorsal connectives also differ in shape, and body coloration is also discrepant.

Etymology

This new species name is derived from the Latin words "*bi-*" and "*spinatus*", indicating that the ventral margin of male pygofer has 2 small spines.

Pediopsoides (*Pediopsoides*) *nigrolabium* Li, Dai & Li **sp. nov.** (Figs. 5-7, 18-27)



Figs. 28-35. Aedeagus of subgenus *Pediopsoides* (*Pediopsoides*), lateral and ventral view. 28-29. *P.* (*P.*) *satsumensis* (Matsumura, 1912) (after Hamilton, 1980); 30-31. *P.* (*P.*) *femorata* Huang & Viraktamath, 1993 (after Huang & Viraktamath, 1993); 32-33. *P.* (*P.*) *kodaiana* Viraktamath, 1996 (after Viraktamath, 1996); 34-35. *P.* (P.) *jingdongensis* Zhang, 2010 (after Zhang, 2010).

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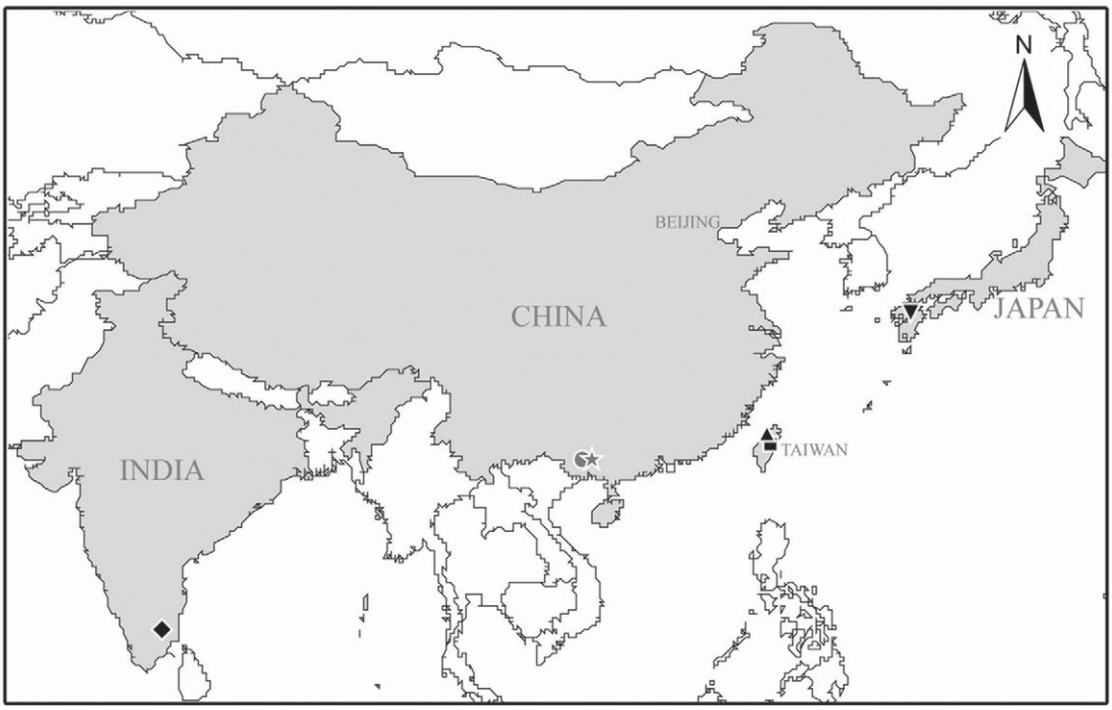


Fig. 36. Distribution of subgenus *Pediopsoides* (*Pediopsoides*) species in the word (new species were marked with red symbols). *P.* (*P.*) *bispinata* Li, Dai & Li **sp. nov.** (●); *P.* (*P.*) *femorata* Huang & Viraktamath (▲); *P.* (*P.*) *formosanus* Matsumura (■); *P.* (*P.*) *kodaiana* Viraktamath (♦); *P.* (*P.*) *satsumensis* (Matsumura) (▼); *P.* (*P.*) *nigrolabium* Li, Dai & Li **sp. nov.** (★).

Description

Body coloration and appearance similar to *P.* (*P.*) *bispinata* Li, Dai & Li **sp. nov.**, but ventral aspect of body black, head and face yellowish brown, clypellus black, both lateral regions near eyes of pronotum dark to brown, and body more stout (Figs. 5-7).

Male genitalia. Pygofer broad, nearly square, ventral margin with long dichotomous or trichotomous process, two small spines with several setae (Figs. 18, 20-21). Subgenital plates slender, apical half with marginal setae, apex twisted to dorsum (Fig. 19). Aedeagus tubular, broader basally, shaft tapering to point, sinuated, apex sharpened laterally, ventrally apical half narrower, tip lobe shaped, gonopore apical (Figs. 22 and 23). Dorsal connectives strongly developed, apices with 2 processes, upper one stout, end twisted ventrally, lower one slender, end twisted to dorsum, slightly projecting from caudal margin of pygofer (Fig. 25). Styles and connective resemble *P.* (*P.*) *bispinata* **sp. nov.**, but more slender or narrower (Figs. 24, 26-27).

Female. Unknown.

Measurement. Length (including tegmen):♂, 5.5 mm.

Material Examined

Holotype:♂, China: Guangxi Province, Wuming County, Damingshan Nature Reserve, 15 May 2011, collected by Yu Xiaofei.

Distribution

China (Guangxi Province).

Remarks

This new species is similar to *P.* (*P.*) *bispinata* Li, Dai & Li **sp. nov.**, but can be distinguished from the latter in the clypeus black, the ventral margin of male pygofer has a long process with two or three spines, dorsal connective also differs in shape.

Etymology

The new species name is derived from the Latin words "*nigro*" and "*labium*", indicating that the clypellus is black.

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