



Two new species of the genus *Anabropsis* Rehn, 1901 (Orthoptera: Anostostomatidae) from Yunnan, China

HAO XU^{1,2} & FUMING SHI^{1*}¹The Key Laboratory of Zoological Systematics and Application of Hebei Province, College of Life Sciences, Institute of Life Science and Green Development, Hebei University, 071002, Baoding, P. R. China.²[✉ xuhao_xh@outlook.com](mailto:xuhao_xh@outlook.com); [ORCID](https://orcid.org/0009-0004-2497-1458) <https://orcid.org/0009-0004-2497-1458>*Corresponding author: [✉ shif_m@126.com](mailto:shif_m@126.com); [ORCID](https://orcid.org/0000-0002-4885-9012) <https://orcid.org/0000-0002-4885-9012>

Abstract

In this paper, two new species of the genus *Anabropsis* Rehn, 1901 from Yunnan, China, i.e. *Anabropsis* (*Apteranabropsis*) *papiliomaculata* **sp. nov.** and *Anabropsis* (*Paterdecolyus*) *dulongjiangensis* **sp. nov.** are described. In addition, the male of *Anabropsis* (*Pseudapteranabropsis*) *nigrimaculatis* Pang, Lu & Bian, 2023 is reported for the first time, and the species is transferred into *Anabropsis* (*Apteranabropsis*) Gorochov, 1988. All specimens are deposited in the Museum of Hebei University.

Key words: Anostostomatidae, new species, Yunnan, China

Introduction

The genus *Anabropsis* Rehn, 1901 was established with *Schoenobates mexicanus* Saussure, 1859 as type species. Griffini (1913) described *Paterdecolyus* Griffini, 1913 from India, with *Paterdecolyus panteli* Griffini, 1913 as type species. Gorochov (1988) reported a new genus *Apteranabropsis* Gorochov, 1988 with *Anabropsis miser* Bey-Bienko, 1968 as type species, and transferred *Anabropsis sinica* Bey-Bienko, 1962, *Anabropsis cervicornis* Karny, 1930, *Anabropsis frater* Brunner von Wattenwyl, 1888, *Anabropsis griffinii* Karny, 1930 and *Anabropsis tonkinensis* Rehn, 1906 into the genus. *Pteranabropsis* Gorochov, 1988 was established, which includes the only species *Anabropsis carli* Griffini, 1911. Shi & Bian (2016) established the genus *Brevipenna* Shi & Bian, 2016 with *B. falcata* Shi & Bian, 2016 as type species, which is similar to *Pteranabropsis* Gorochov, 1988, but it has obviously shorter wings. Gorochov (2021) restudied *Anabropsis* and proposed *Brevipenna* as a synonym of *Pteranabropsis*, and considered *Paterdecolyus*, *Apteranabropsis* and *Pteranabropsis* as subgenera. He established *Anabropsis* (*Carnabropsis*) Gorochov, 2021, and transferred *Pteranabropsis infuscata* Wang, Liu & Li, 2015, *Pteranabropsis karnyi* Wang, Liu & Li, 2015, *Pteranabropsis parallela* Wang, Liu & Li, 2015, *Pteranabropsis tenchongensis* Wang, Liu & Li, 2015, *Pteranabropsis crenatis* Song, Bian & Shi, 2016, *Pteranabropsis incisa* Song, Bian & Shi, 2016, *Pteranabropsis guadun* Ingrisch, 2019 and *Pteranabropsis pusilla* Ingrisch, 2019 into the subgenus. Pang *et al.* (2023) reviewed *Anabropsis*. *Anabropsis* (*Pseudapteranabropsis*) Pang, Lu & Bian, 2023 was proposed as a new subgenus with *Anabropsis* (*Apteranabropsis*) *shii* Lu, Lin, Liu, Liang & Bian, 2022 as the type species, *Anabropsis* (*Apteranabropsis*) *guangxiensis* (Bian & Shi, 2015) and *Anabropsis* (*Apteranabropsis*) *tonkinensis* Rehn, 1906 were transferred into the subgenus by the character of male paraproctal processes bifurcate in lateral view. Furthermore, they established a new subgenus *Anabropsis* (*Spinanabropsis*) Pang, Lu & Bian, 2023, which can be distinguished from other subgenera by all the femora being unarmed. *Anabropsis* (*Spinanabropsis*) *pengi* Pang, Lu & Bian, 2023 is the type species. Several species were transferred into the new subgenus, i.e. *Anabropsis* (*Apteranabropsis*) *cervicornis* Karny, 1930, *Anabropsis* (*Apteranabropsis*) *sinica* Bey-Bienko, 1962, *Anabropsis* (*Apteranabropsis*) *costulata* (Gorochov, 2001), *Anabropsis* (*Apteranabropsis*) *minuta* (Gorochov, 2001), *Anabropsis* (*Apteranabropsis*) *abramovi* Gorochov, 2021, *Anabropsis* (*Apteranabropsis*) *tarasovi* Gorochov, 2021 and *Anabropsis* (*Apteranabropsis*) *erythronota* Pang, Lu & Bian, 2023. To date, *Anabropsis* is divided into

seven subgenera, excluding *Anabropsis* (*Anabropsis*), the other six subgenera with 27 species and one subspecies are distributed in China (Bey-Bienko, 1962; Gorochoy, 1988, 1998, 2001, 2010, 2021; Wang *et al.*, 2015; Bian & Shi, 2015, 2019; Shi & Bian, 2016; Song *et al.*, 2016; Ingrisch, 2019; Lu & Lin *et al.*, 2022; Lu & Zhang *et al.*, 2022; Pang *et al.*, 2023; Bian, 2024a, 2024b). The characters of wings, tibial tympana, metasternal processes, male paraproctal outgrowths and subgenital plate are important intersubgeneric differences. In this study, two new species *Anabropsis* (*Apteranabropsis*) *papiliomaculata* **sp. nov.** and *Anabropsis* (*Paterdecolyus*) *dulongjiangensis* **sp. nov.** are reported from Yunnan, China. The male of *Anabropsis* (*Pseudapteranabropsis*) *nigrimaculatis* Pang, Lu & Bian, 2023 is described for the first time, and the species is transferred into *Anabropsis* (*Apteranabropsis*) Gorochoy, 1988.

Materials and methods

All specimens were examined with a Nikon SMZ800 stereomicroscope. Images were captured with a Leica DFC450 microsystem and M205A digital imaging system. All examined materials are deposited in the Museum of Hebei University, China.

The following abbreviations are used in the descriptions: body length (BL)—in male, the distance from the apex of fastigium verticis to the posterior margin of tenth abdominal tergite; in female, the distance from the apex of the fastigium verticis to the apex of the epiproct; pronotum length (PL)—the distance from the anterior margin of pronotum to the posterior margin along the midline; hind femur length (HFL)—the distance from the base of hind femur to the apex of genicular lobe; hind tibia length (HT)—from the base of the hind tibia to the apex; ovipositor length (OvL)—the distance from the base of subgenital plate to the apex of ovipositor.

Taxonomy

Anabropsis (*Apteranabropsis*) *papiliomaculata* **sp. nov.**, Chinese name 蝶斑黯蝽 (Figure 1)

Description. Male. Body medium-sized for the genus.

Head. Fastigium verticis protruding forwards, compressed laterally, about half as broad as scape, dorsal surface with a distinct longitudinal furrow along the midline. Occiput with an indistinct median carina. Ocelli conspicuous, elliptic, width about 1/2 of length (Fig. 1A–C, H–J).

Thorax. Pronotum glabrous, without longitudinal median carina (Fig. 1A, H), lateral lobes longer than deep, ventral margin oblique, humeral sinus absent. Wings absent, but with distinct wing rudiments of fore and hind wings (Fig. 1B, I). Prosternum with 1 pair of processes, basal area stout, apical area digitiform; mesosternum with 1 pair of processes, basal area stout, apical area spiny; metasternum with 1 pair of triangular processes, internal margins nearly straight, external margins slightly expanded, apices obtuse (Fig. 1G).

Legs. Fore coxa with 1 stout spine on anterior surface; mid coxa with a smaller spine on external surface. Fore and mid femora unarmed on ventral surfaces; hind femur with 4–6 spines on internal margin of ventral surface, external margin unarmed, genicular lobe with an internal spinule on apex. Fore tibia with an articulated spine near the middle of dorsal surface, 4 pairs of articulated spines on ventral surface, 1 pair of apical spurs on both dorsal and ventral surfaces separately, dorsal apical spurs longer than ventral ones; basal area of fore tibia with an oval, developed internal tympanum, the external one reduced. Mid tibia with 3 articulated spines on internal margin and 2 articulated spines on external margin of dorsal surface, 4 pairs of articulated spines on ventral surface, and 1 pair of apical spurs on both dorsal and ventral surfaces separately, dorsal apical spurs longer than ventral ones. Hind tibia with 9 pairs of spines on dorsal surface, 1 articulated spinule on internal margin and 2 articulated spinules on external margin of ventral surface, 1 pair of apical spurs on dorsal surface and 3 pairs of apical spurs on ventral surface, dorsal apical spurs longer than ventral ones.

Abdomen. Posterior margin of ninth abdominal tergite with a broad and shallow concavity in the middle, and a pair of semi-circular lateral processes (Fig. 1E). Posterior area of tenth abdominal tergite with a pair of sclerotized hooks

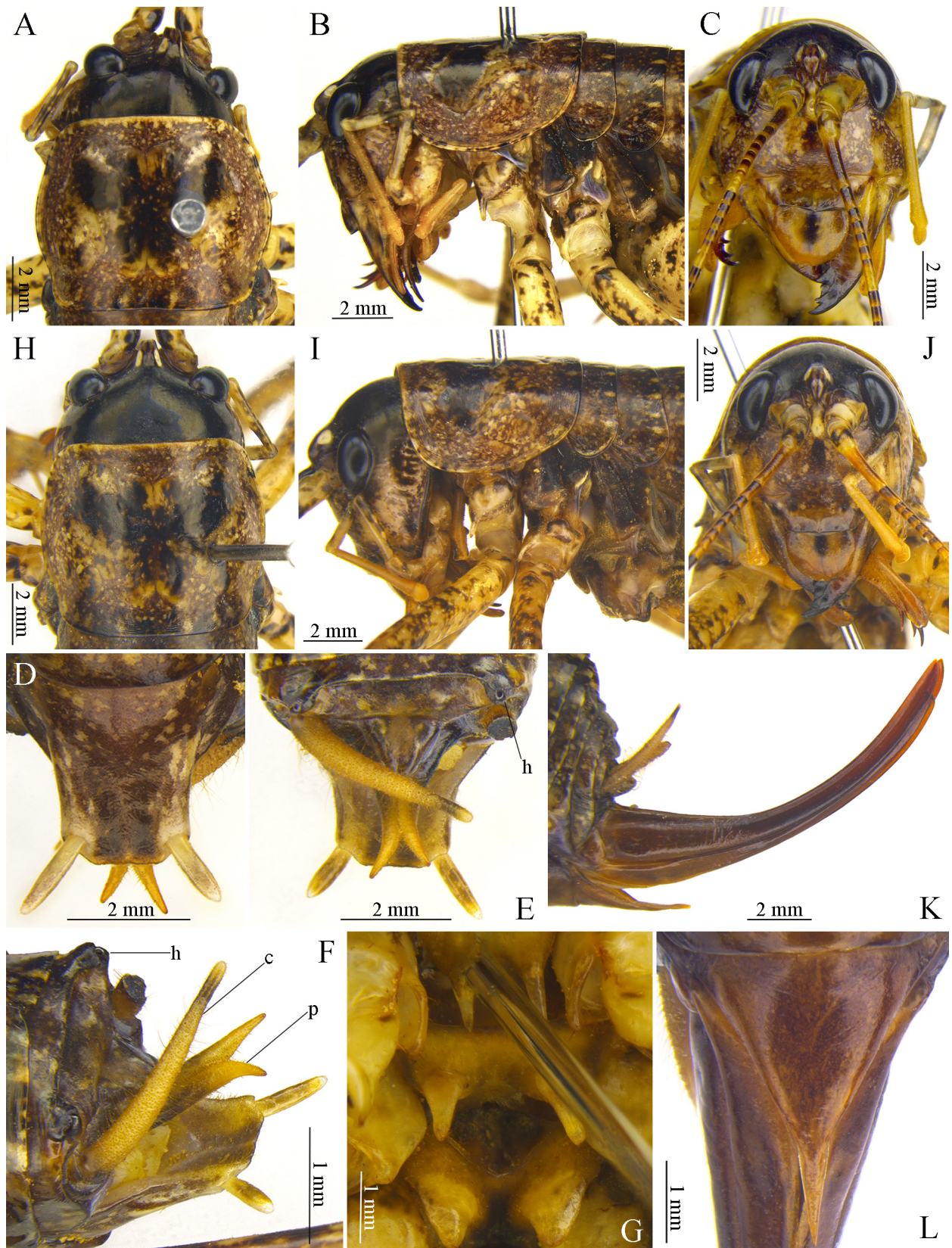


FIGURE 1. *Anabropsis (Apteranabropsis) papiliomaculata* sp. nov.: A–B, H–I. head and pronotum: A, H. dorsal view; B, I. lateral view; C, J. anterior view of head; D–F, K–L. abdominal apex: D, L. ventral view; E. dorsal view; F. lateral view; G. thoracic sterna; K. lateral view of ovipositor. A–G. male; H–L. female. Abbreviation: c. cercus; h. hooks on tenth abdominal tergite; p. paraproctal processes.

on lateral margins, which upcurved and contiguous with the lateral processes of ninth abdominal tergite (Fig. 1F). Epiproct linguiform. Cerci conical, directed upwards, basal area stout, apical area thin, apices obtuse. Paraproct with 1 pair of long processes, basal area stout and connected, separating at the apical third and curved externally, apical area thin, apices obtuse, sclerotized, as long as cerci (Fig. 1E, F). Basal area of subgenital plate broad, apical area rectangular, posterior margin straight, apical area of subgenital plate width about 3/4 of its length. Styli cylindrical on ventral surface near lateral margins of subgenital plate, apices subacute (Fig. 1D).

Female. Body is generally similar to that of male. Subgenital plate roughly triangular, basal area broad, narrowing, apex acute (Fig. 1L). Ovipositor sclerotized, obviously upcurved, narrowing, basal area stout, dorsal valvulae with apices subacute, obviously longer than ventral ones (Fig. 1K).

Coloration. Body brown with black spots. Scape and pedicel yellowish, with dark spots on internal sides, pedicel brownish with dark brown rings. Eyes dark brown, ocelli yellowish. Occiput black. Pronotum yellow-brown, with a butterfly-shaped black large spot in the middle of disc, posterior margin of pronotum dark brown, with irregular yellowish spots. Posterior margins of meso-, metanotum and abdominal tergites with irregular yellowish spots. Thoracic and abdominal sternites yellow-brown. Ventral surface of male subgenital plate dark brown, lateral area pale. Female subgenital plate brown. Legs yellow, with brown spots.

Measurements (mm). BL: ♂24.0, ♀22.0. PL: ♂6.3, ♀6.2. HFL: ♂23.2, ♀21.8. HT: ♂22.0, ♀21.5. OvL: 14.6.

Material examined. Holotype: male, Fenshuiling, Jinping, Yunnan, 2024.VI.15, collected by Hao Xu. Paratype: 1 female, Fenshuiling, Jinping, Yunnan, 2024.VI.15, collected by Hao Xu.

Distribution. China (Yunnan).

Discussion. The new species is similar to *Anabropsis* (*Apteranabropsis*) *ailaoshanica* Gorochov, 2021, but disc of pronotum with a large butterfly-shaped black spot, external tympanum of foretibia reduced, basal areas of male paraproctal processes connected, male subgenital plate short and broad, width about 3/4 of length, and spiny apical area of female subgenital plate short, about 1/3 of length.

Etymology. The new species is named for a large butterfly-shaped black spot on disc of pronotum.

***Anabropsis* (*Paterdecolyus*) *dulongjiangensis* sp. nov., Chinese name 独龙江黯蚤**
(Figure 2)

Description. Male. Body medium-sized for the genus.

Head. Fastigium verticis protruding forwards, compressed laterally, about half as broad as scape, dorsal surface with a distinct longitudinal furrow in the midline. Occiput with an indistinct median carina. Ocelli conspicuous, elliptic, width about 1/2 of length (Fig. 2A–C, H–J).

Thorax. Pronotum glabrous, without longitudinal median carina (Fig. 2A, H), lateral lobes longer than deep, ventral margin oblique, humeral sinus absent. Wings absent, but with indistinct wing rudiments (Fig. 2B, I). Prosternum with 1 pair of processes, basal area stout, apical area spiny; mesosternum with 1 pair of processes, basal area stout, apical area thin, digitiform; metasternum with 1 pair of triangular processes, internal margins nearly straight, external margins slightly expanded, apices obtuse (Fig. 2G).

Legs. Fore coxa with 1 stout spine on anterior surface; mid coxa with a smaller spine on external surface. Fore and mid femora unarmed on ventral surfaces; hind femur with 4–5 spines on internal margin and 3 spines on external margin of ventral surface, genicular lobe with an internal spinule on apex. Fore tibia with an articulated spine near the middle of dorsal surface, 4 pairs of articulated spines on ventral surface, 1 pair of apical spurs on both dorsal and ventral surfaces separately, dorsal apical spurs longer than ventral ones, basal area with an oval, developed internal tympanum, the external one reduced. Mid tibia with 3 articulated spines on internal margin and 2 articulated spines on external margin of dorsal surface, 4 pairs of articulated spines on ventral surface, and 1 pair of apical spurs on both dorsal and ventral surfaces separately, dorsal apical spurs longer than ventral ones. Hind tibia with 12 pairs of spines on dorsal surface, 1 articulated spinule on internal margin and 2 articulated spinules on external margin of ventral surface, 1 pair of apical spurs on dorsal surface and 3 pairs of apical spurs on ventral surface, dorsal apical spurs longer than ventral ones.

Abdomen. Posterior margin of ninth abdominal tergite shallowly concave, with a pair of indistinct flabellate lateral processes (Fig. 2E). Posterior area of tenth abdominal tergite with a pair of sclerotized hooks on lateral margins, curved inwards and upwards, separated from the processes of ninth abdominal tergite (Fig. 2F). Epiproct

linguiform, with a median concavity. Cerci conical, directed upwards, basal area stout, apical area thin, apices obtuse. Paraproct with 1 pair of long processes, basal area stout, other area narrowing, upcurved. Basal area of subgenital plate broad, apical area rectangular, with a pair of lateral carinae, posterior margin concave, apical area of subgenital plate width about 1/2 of its length. Styli on posterior margin of subgenital plate, apices obtuse (Fig. 2D).



FIGURE 2. *Anabropsis (Paterdecolyus) dulongjiangensis* sp. nov.: A–B, H–I. head and pronotum: A, H. dorsal view; B, I. lateral view; C, J. anterior view of head; D–F, K–L. abdominal apex: D, L. ventral view; E. dorsal view; F. lateral view; G. metasternum; K. lateral view of ovipositor. A–G. male; H–L. female.

Female. Body is generally similar to that of male. Subgenital plate triangular, lateral margin nearly straight, apex acute (Fig. 2L). Ovipositor sclerotized, obviously upcurved, basal area stout, narrowing toward apical area, apices of dorsal valvulae acute, dorsal valvulae obviously longer than ventral ones (Fig. 2K).

Coloration. Body brown with black spots. Scape and pedicel yellowish with dark spots on internal sides, pedicel brownish with dark brown rings. Eyes dark brown, ocelli yellowish. Occiput lateral sides dark brown. Pronotum brownish, posterior margin dark brown, with irregular pale spots, disc of pronotum with a yellowish longitudinal stripe in the middle, anterior area broad, posterior area narrow, do not extend to the posterior margin of pronotum. Posterior margins of meso-, metanotum and abdominal tergites with irregular yellowish spots. Thoracic and abdominal sternites yellow-brown. Ventral surface of male subgenital plate dark brown in the middle, lateral carinae pale brown. Female subgenital plate brown. Legs yellow with brown spots.

Measurements (mm). BL: ♂20.5, ♀24.3–25.5. PL: ♂6.0, ♀6.3–6.9. HFL: ♂20.3, ♀20.0–21.8. HT: ♂20.6, ♀19.0–20.8. OvL: 8.1–9.3.

Material examined. Holotype: male, Dulongjiang, Gongshan, Yunnan, 2024.VI.23, collected by Hao Xu. Paratypes: 5 females, Dulongjiang, Gongshan, Yunnan, 2024.VI.23, collected by Hao Xu.

Disrtibution. China (Yunnan).

Discussion. The new species is similar to *Anabropsis (Paterdecolyus) magnimaculatus* (Bian & Shi, 2019), but pronotum with an incomplete longitudinal yellow stripe on the disc, without black spots, posterior margin of male subgenital plate concave.

Etymology. The new species is named for the type locality.

Anabropsis (Apteranabropsis) nigrimaculatis Pang, Lu & Bian, 2023

(Figure 3)

Anabropsis (Pseudapteranabropsis) nigrimaculatis Pang, Lu & Bian, 2023, *Zootaxa*, 5318(2): 260

Description. Male. Body medium-sized for the genus.

Head. Fastigium verticis protruding forwards, compressed laterally, about half as broad as scape, dorsal surface with a distinct longitudinal furrow in the midline. Occiput with an indistinct median carina. Eyes hemispherical. Ocelli distinct, lateral ocelli elliptic, width about 1/2 of length, median ocellus elliptic, width about 4/5 of length (Fig. 3A–C, H–J).

Thorax. Pronotum glabrous, without longitudinal carina (Fig. 3A, H), lateral lobes longer than deep, ventral margin oblique, humeral sinus absent. Wings absent, but with indistinct wing rudiments (Fig. 3B, I). Prosternum with 1 pair of processes, basal area stout, apical area spiny; mesosternum with 1 pair of processes, basal area stout, apical area thin, digitiform; metasternum with a pair of triangular processes, internal margin nearly straight, external margin slightly expanded, apices obtuse (Fig. 3G).

Legs. Fore coxa with 1 stout spine on anterior surface; mid coxa with a smaller spine on external surface. Fore and mid femora unarmed on ventral surfaces; hind femur with 4 spines on internal margin and 3–4 spines on external margin of ventral surface. Fore tibia with an articulated spine near the middle of dorsal surface, 4 pairs of articulated spines on ventral surface, 1 pair of apical spurs on both dorsal and ventral surfaces separately, dorsal apical spurs longer than ventral ones, basal area with 1 pair of oval, developed tympana on both internal and external sides. Mid tibia with 3 articulated spines on internal margin and 2 articulated spines on external margin of dorsal surface, 4 pairs of articulated spines on ventral surface, and 1 pair of apical spurs on both dorsal and ventral surfaces separately, dorsal apical spurs longer than ventral ones. Hind tibia with 10 pairs of spines on dorsal surface, 1 articulated spinule on internal margin and 3 articulated spinules on external margin of ventral surface, 1 pair of apical spurs on dorsal surface and 3 pairs of apical spurs on ventral surface, dorsal apical spurs longer than ventral ones.

Abdomen. Posterior margin of ninth abdominal tergite nearly straight, lateral margins with a pair of long processes, internal margins of the processes nearly straight, external margins convex, apical area narrow, directing backwards (Fig. 3E). Posterior area of tenth abdominal tergite with a pair of sclerotized hooks on lateral sides, upcurved, and contiguous with the processes of ninth abdominal tergite (Fig. 3F). Epiproct linguiform, with a longitudinal median concavity. Cerci conical, directed upwards, basal area stout, apical area thin, apices obtuse.

Paraproct with 1 pair of long processes, separating at basal area, apical area acute, sclerotized, shorter than cerci (Fig. 3E, F). Basal half area of subgenital plate broad, apical half area nearly rectangular, with obtuse lateral carinae, posterior margin straight, width of subgenital plate about 1/2 of length. Apical area of subgenital plate with a pair of cylindrical styli on ventral margin laterally, apices obtuse (Fig. 3D).

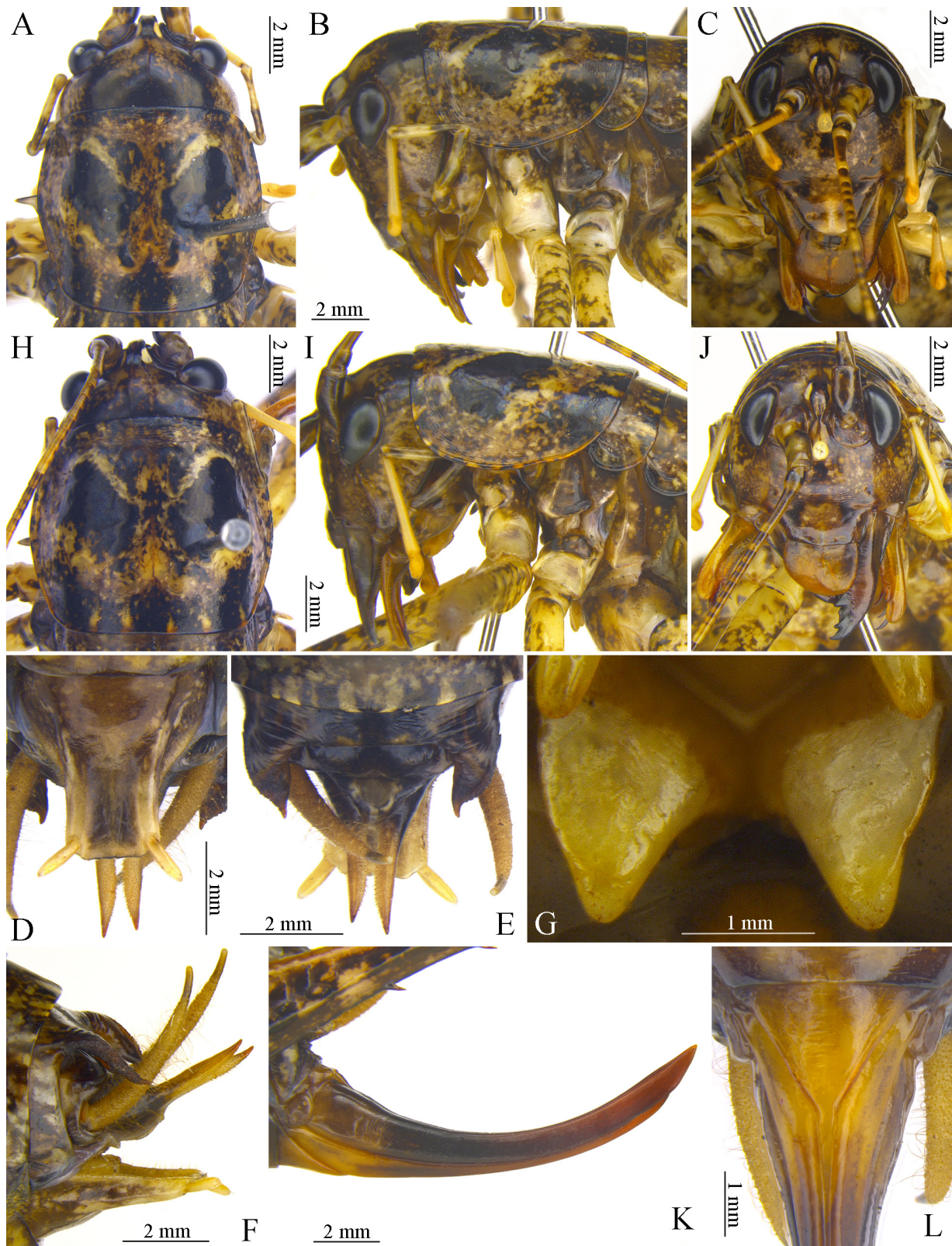


FIGURE 3. *Anabropsis (Apteranabropsis) nigrimaculatis* Pang, Lu & Bian, 2023: A–B, H–I. head and pronotum: A, H. dorsal view; B, I. lateral view; C, J. anterior view of head; D–F, K–L. abdominal apex: D, L. ventral view; E. dorsal view; F. lateral view; G. metasternum; K. lateral view of ovipositor. A–G. male; H–L. female.

Coloration. Body brown with black spots. Scape and pedicel yellowish, with dark spots on internal sides, pedicel brownish with dark brown rings. Eyes dark brown, ocelli yellowish. Occiput yellow, lateral sides dark brown. Pronotum brown, with a pair of large black spots on disc, anterior and posterior margins dark brown with irregular yellow spots. Posterior margins of meso-, metanotum and abdominal tergites dark brown, with irregular yellowish spots. Thoracic and abdominal sternites pale brown. Ventral surface of male subgenital plate dark brown, posterior margin and lateral carinae yellow. Female subgenital plate brown. Legs yellow, with brown spots.

Measurements (mm). BL: ♂28.0. PL: ♂7.9. HFL: ♂25.3. HT: ♂24.0.

Material examined. 1 male and 4 females, Gulinjing, Maguan, Yunnan (type locality), 2024.VI.19, collected by Hao Xu.

Disrtibution. China (Yunnan).

Discussion. The species was originally described based on 3 females. In this study, the male of *Anabropsis* (*Pseudapteranabropsis*) *nigrimaculatis* Pang, Lu & Bian, 2023 is described for the first time. According to Pang *et al.* (2023), the subgenus *Anabropsis* (*Pseudapteranabropsis*) is bifurcated on apices of paraproctal processes in lateral view, which is obviously different from the male description provided here. Therefore, we propose transferring the species to the subgenus *Anabropsis* (*Apteranabropsis*) based on the characters that apices of male paraproctal processes unbranched in lateral view and the ventral surfaces of hind femora armed.

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