



Three new species of *Aethina* Erichson, 1843 from China (Coleoptera: Nitidulidae: Nitidulinae)

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Abstract

Three new species of the subgenus *Aethina* Erichson, 1843 from China are described and illustrated. *Aethina* (*Aethina*) *arciformis* Zhang & Huang, **sp. nov.** is described from Shanghai and belongs to the *A. flavicollis* species-group. *Aethina* (*Aethina*) *montis* Zhang, Huang & Huang, **sp. nov.** is described from Fugong, Yunnan Province, and belongs to the *A. argus* species-group. *Aethina* (*Aethina*) *medogensis* Zhang & Huang, **sp. nov.** is described from Mêdog, Xizang autonomous region, and belongs to the *A. elongata* species-group.

Key words: Cucujoidea, Nitidulidae, Mêdog, morphology, taxonomy

Introduction

The genus *Aethina* Erichson, 1843, which includes 5 subgenera and nearly 100 species worldwide, is a large group within Nitidulinae. In the subgenus *Aethina*, 28 species have been described currently and most of them are only distributed in the Oriental and Palearctic regions, with particular concentration in China (Kirejtshuk 1986; Jelínek 1995; Kirejtshuk & Lawrence 1999; Jelínek & Audisio 2007; Lee et al. 2017; Chen et al. 2024). It can be distinguished from other subgenera of the genus by its medium-sized, flattened body, distinct pubescence, pygidium with eight arc-shaped depressions at the base, ovipositor not divided apically. Kirejtshuk (1986) conducted a review of this subgenus and divided it into 6 species groups. To date, 20 species of the subgenus *Aethina* have been recorded from China. In this paper, we described 3 new species of the subgenus *Aethina* updating it to 23 species distributed in China.

Material and methods

All specimens are deposited in the Museum of Entomology of the Northwest A&F University, Yangling, China (NWAUFU), Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZCAS) and Shanghai Mini Beasts Studio (SMBS—a workshop on entomology). The samples were preserved in 99% ethanol and were softened in 60°C water for 6 hours before dissection. Dissected genitalia were cleared of excess muscle tissue by boiling in 10% NaOH for 5 minutes. Cleaned genitalia were preserved in glycerol. All photographs of habitus were taken using a Canon EOS R7 digital camera with attached LAOWA LW-FF 25 mm f/2.8 2.5–5.0× Ultra Macro lens and M Plan

Apo 10×/0.28 objective lens. Images stacking was done using Helicon Focus 8.1.0 software. Images were retouched with Adobe Photoshop 2022.

Taxonomy

Aethina (Aethina) arciformis Zhang & Huang, sp. nov.

(Figs 1, 4, 5)

Type material. HOLOTYPE: CHINA: ♂: Shanghai city, ‘Shanghai Botanical Garden, 31°8'59"N, 121°26'17"E, 3.VIII.2025, Zhi-Zhou Yu leg. (上海市上海植物园)’ (NWAUFU). **PARATYPES:** CHINA: 4 ♂♂, 3 ♀♀, same data as holotype (NWAUFU); 1 ♀, same data as holotype (SMBS).

Diagnosis. *A. (A.) arciformis* Zhang & Huang, sp. nov. can be distinguished from other species of the *A. flavicollis* species-group by the shape of elytral spots, pronotum with 6 spots formed by black pubescence, red tibia and black femur, genitalia shape and gonocoxite obviously thickened. This species is similar to *A. (A.) flavicollis* Reitter, 1884, *A. (A.) kabakovi* Kirejtshuk, 1986 and *A. (A.) kirejtshuki* Jelínek, 1995, but *A. (A.) kabakovi* and *A. (A.) kirejtshuki* unspotted dorsally, *A. (A.) flavicollis* gonocoxite widely round.

Description. *Male.* Length 4.4 mm, width 2.5 mm. Body oval, moderately flat. Dorsal and ventral surface dark, tibia, antennae, pygidium, pronotal and elytral margins reddish brown, antennal club dark-brown. Each elytron with a C-shaped red spot, pronotum with 6 spots formed by black pubescence. Dorsal and ventral surface with golden and black pubescence (Fig. 1A, B).

Head and pronotal surfaces with dense, irregular punctures, larger than eye facet, interspaces smooth. Elytral surface with large and small circular punctures, large punctures ca. 0.6–1.2× diameter of eye-facets, separated by 0.8–1.7× diameters, dense small punctures between large punctures, interspaces smooth (Fig. 4A). Pygidial punctures similar to those of elytra. Mentum and submentum with shallow impressed and sparse punctures, 0.7–1.7× diameter of eye-facets, interspaces smooth. Prosternum with dense punctures centrally, becoming sparse laterally. Mesoventrite with sparsely large punctures, 0.4–1.5× diameter of eye-facets. Metaventrite with punctures in middle smaller and becoming gradually larger laterally, 0.6–1.3× diameter of eye-facets, interspaces smooth and shining. Abdominal ventrites with punctures in middle regular and sparse and becoming gradually irregular and dense laterally.

Head widest between eyes, ca. 1.8× wider than long. Clypeus moderately notched medially. Pronotum widest near base, ca. 1.9× wider than long, anterior margin moderately trapezoidal depression, posterior margin undulated, not elongated to cover the base of scutellum, lateral margins arcuate. Scutellum sub-pentagonal. Elytra nearly square, length ca. 1.0× combined width, 2.0× longer than pronotum, anterior margin distinct, posterior margins widely round. Pygidium fully exposed with truncated apex. Antennal grooves distinct, posterior margins slightly convergent. Mentum pentagonal. Prosternum without distinct medial carina, prosternal process moderately expanded behind procoxae to prosternum posterior margin, and narrowing to apex. Mesoventrite distinctly carinate. Metaventrite disc slightly depressed, axillary space small, 0.5× length of metanepisternum. Distance between metacoxae ca. 2.3× width of distance between procoxae and 1.7× width of distance between mesocoxae. First abdominal ventrite longest, followed in length by hypopygidium, and ventrites 2–4 gradually longer. Anal sclerite and eighth abdominal ventrite with long fimbriae apically (Figs. 4D, 5M).

Antennae ca. 0.9× longer than wide. Antennal scape slightly triangular, pedicel almost cylindrical, antennomere 3 distinctly shorter than 4–5 combined, antennomeres 4–5 equal in length, antennomeres 6–8 gradually thickened; antennomere 8 obviously cup-shaped; antennal club symmetrical, ca. 0.3× total length of antennal; terminal antennomere slightly shorter than antennomeres 9–10 combined. Terminal maxillary palpomere elongate and subconical with truncate apically. Terminal labial palpomere slightly elongate and subconical with truncate apically. Protibia straight, outer apical angle obtuse, meso- and metatibiae triangular, outer apical angle square. Tarsus distinctly dilated, claws simple.

Male genitalia moderately sclerotized. Tegmen 2.2× longer than wide, lateral margins parallel at basal 1/2 and gradually narrowing apically, lateral margins with indistinct setae visible from basal 3/5 to apex, (Fig. 5A, B). Median lobe ca. 0.7× the length of tegmen, subparallel-sided and pointed apex, two sub-quadrilateral sclerite apically and two well sclerotized sickle-shaped sclerite basally. Ejaculatory rods straight and elongate, fused to weakly sclerotized basal piece (Fig. 5G).



FIGURE 1. Habitus of *A. (A.) arciformis* Zhang & Huang, **sp. nov.** **A, B.** Male habitus, dorsal and ventral. Scale bars: 1 mm.

Female. Pygidium differs from that in male, subtriangular with round apex. Ovipositor moderately sclerotized. Paraprocts narrow. Gonocoxite obviously thickened, basally straight and with moderately shorter gonostylus apically (Fig. 5J).

Bionomics. All specimens were collected from rotten bamboo shoots.

Distribution. China (Shanghai).

Etymology. The specific epithet is derived from the Latin words “*arci*” and “*formis*”, referring to the arch shaped red spots on the elytra.

Aethina (Aethina) montis* Zhang, Huang & Huang, **sp. nov.*

(Figs 2, 4, 5)

Type material. HOLOTYPE: CHINA: Yunnan Province: ♂, ‘Fugong County, Shiyueliang Town. 27°16'28"N, 98°53'30"E, 13.VI.2025, Yu-Jie Huang leg. (福贡县石月亮乡)’ (NWFU). **PARATYPES: CHINA:** 1 ♀, same data as holotype, but 6.VI.2025 (NWFU).

Diagnosis. *A. (A.) montis* Zhang, Huang & Huang, **sp. nov.** can be distinguished from other species of the *A. argus* species-group by the pronotum and shape of elytral spots, pronotal anterior margin slightly emarginated, terminal labial palpomere apically tilted and shape of the genitalia. This species is similar to *A. (A.) argus* Grouvelle, 1890 and *A. (A.) dundai* Jelinek, 1995, but can be distinguished by the following combination of characters: antennomeres 4 and 5 equal in length, prosternum apex, meso- and metaventrite dark, median lobe truncated apically.

Description. Male. Length 5.5 mm, width 2.8 mm. Body oval, moderately flat. Dorsal and ventral surfaces orange, prosternum apex, meso- and metaventrite black, legs and antennae yellow. Dorsal surface of pronotum and elytra with continuous black spots. Dorsal and ventral surfaces with golden pubescence, spots of pronotum and elytra with black and white pubescence (Fig. 2A, B).

Head and pronotal surface with dense, irregular punctures, punctures larger than eye facet, interspaces smooth. Elytral surface with large and small circular punctures, large punctures shallower and more sparsely distributed

than those on pronotum, separated by $2.0\times$ diameters, densely small punctures between large punctures, interspaces smooth (Fig. 4B). Pygidial punctures similar to those of elytra. Mentum and submentum with round punctures separated by $1.7\text{--}2.1\times$ diameters, interspaces smooth. Prosternum with round punctures gradually sparse toward margin. Mesoventrite with larger round punctures near the mesocoxae. Metaventrite with oval or round punctures, sparsely distributed on the disc and gradually denser toward the lateral margins; interspaces smooth. Abdominal ventrites with punctures finer than those on the metaventrite, punctures uniformly distributed on ventrites 1–4, separated by $2.3\times$ diameters, and sparser than those on the hypopygidium, punctures on hypopygidium with $1.3\times$ diameters apart, interspaces smooth.

Head widest between eyes, ca. $2.0\times$ wider than long. Clypeus deeply notched medially. Pronotum truncated, widest basally, ca. $1.9\times$ wider than long, almost as wide as the width of base of elytra, anterior margin slightly emarginated, posterior margin bisinuate, not elongated to cover the base of scutellum, lateral margin sloping and arched, anterior angles widely round, posterior angles prominent; Scutellum nearly circular, length $0.5\times$ width. Elytra nearly square, length $0.9\times$ combined width, $1.9\times$ longer than pronotum, anterior margin distinct, posterior margin widely rounded. Pygidium fully exposed with truncated apex. Antennal grooves deep and long, posterior margins slightly convergent. Mentum sub-pentagonal. Prosternum without distinct medial carina, prosternal process straight, slightly elongated beyond the base of procoxae, slightly widened near the top, and blunt apically. Mesoventrite slightly carinate. Metaventrite disc slightly depressed, caudal marginal line behind the mesocoxae sinuate. Distance between metacoxae $2.0\times$ width of distance between procoxae and $1.7\times$ width of distance between mesocoxae. First abdominal ventrite longest, followed in length by hypopygidium, and ventrites 2–4 gradually longer. Anal sclerite and eighth abdominal ventrite with distinct fimbriae apically (Figs. 4E, 5O).

Antennae shorter than head width. Antennal scape swollen to hemispherical, pedicel nearly cylindrical, antennomere 3 distinctly shorter than 4–5 combined, antennomeres 4–5 equal in length; antennomeres 6–8 gradually shorter; antennomere 8 obviously disc-shaped; antennal club loose, ca. $0.3\times$ total length of antennal, terminal antennomere distinctly shorter than antennomeres 9–10 combined. Terminal maxillary palpomere slender, cylindrical with constricted apex. Terminal labial palpomere subcylindrical with tilted apically. All legs flat and stout. Protibia triangular, outer apical angles of tibiae square, without distinct teeth. Tarsus expanded, claws simple.



FIGURE 2. Habitus of *A. (A.) montis* Zhang, Huang & Huang, **sp. nov.** **A, B.** Male habitus, dorsal and ventral. Scale bars: 1 mm.

Male genitalia well sclerotized. Tegmen 2.3× longer than wide, lateral margins subparallel, lateral fringe of setae visible from apical 2/3 to apex, (Fig. 5C, D). Median lobe ca. 0.7× the length of tegmen, parallel-sided and round apex, two semicircular sclerite apically and two irregular sclerite basally (Fig. 5H). Ejaculatory rods short, not fused to basal piece. Basal piece irregularly shaped, each with two elongated components at both base and apex (Fig. 5N).

Female. Pygidium differs from that in male, subtriangular with round apex. Ovipositor moderately sclerotized. Paraprocts large. Gonocoxite slender, basally straight and with moderately longer gonostylus apically (Fig. 5K).

Distribution. China (Yunnan).

Etymology. The specific name is derived from the Latin word “*mont*”, meaning “mountain”, referring to the distinctive mountain formed markings on the pronotum.

***Aethina (Aethina) medogensis* Zhang & Huang, sp. nov.**

(Figs 3–5)

Type material. HOLOTYPE: CHINA: Xizang Autonomous Region: ♂, ‘Médog County, Zhai’bung Town, Dêrkog Village, N29.20102°, E95.15776°, 1467m, 10D.VIII.2019, Hongbin Liang, Zhuo Ma leg, IOZ(E)2445890. (墨脱县背崩乡)’ (IZCAS). PARATYPES: CHINA: 5 ♂♂, 2 ♀♀: same data as holotype, IOZ(E)2445891, IOZ(E)2445893–894, IOZ(E)2445896–897, IOZ(E)2445906, IOZ(E)2445908 (IZCAS); 1 ♂, 1 ♀: same data as holotype, but Hao-Dong Yi leg, IOZ(E)2445933 and IOZ(E)2445961 (IZCAS).

Diagnosis. *A. (A.) medogensis* Zhang & Huang, sp. nov. can be distinguished from other species of the *A. elongata* species-group by rather flat and concolorous dorsally, female pygidium sub-pentagonal with sharp apex, thin femur, sparse pubescence and genitalia shape. This species is similar to *A. (A.) humeralis* (Grouvelle, 1890), *A. (A.) lindskogi* Kirejtshuk, 1986, *A. (A.) ocularis* Jelinek, 1978, but unspotted dorsally.

Description. *Male.* Length 4.0 mm, width 2.0 mm. Body oval, rather flat. Dorsal and ventral surface dark-brown, legs and antennae yellow, antennal club dark-brown. Dorsal and ventral surfaces with long and golden pubescence (Fig. 3A, B).



FIGURE 3. Habitus of *A. (A.) medogensis* Zhang & Huang, sp. nov. **A, B.** Male habitus, dorsal and ventral. Scale bars: 1 mm.

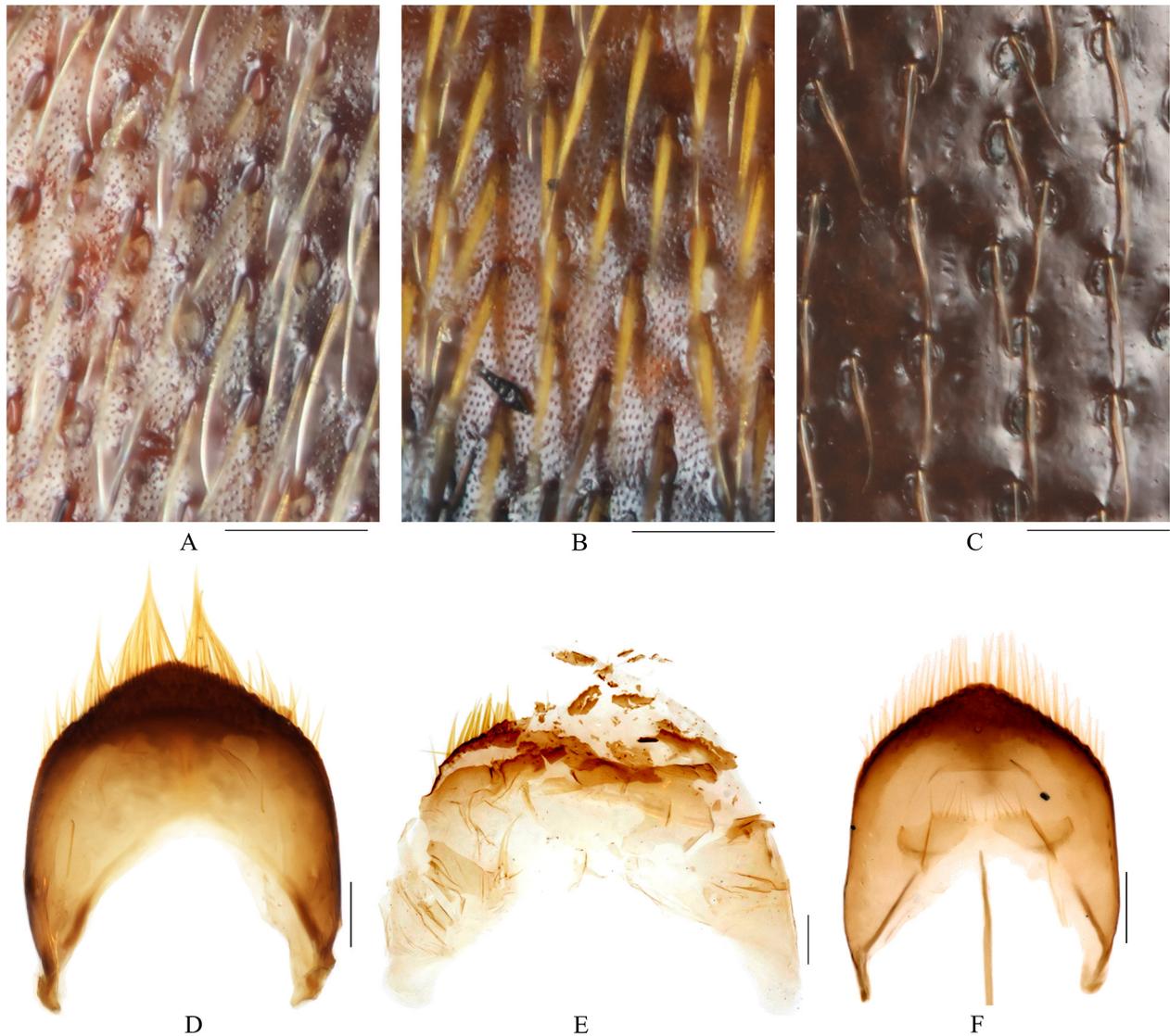


FIGURE 4. Anal sclerite, male eighth abdominal sternite and elytra punctures. **A.** (*A.*) *arciformis* Zhang & Huang, **sp. nov.** **A.** Elytra punctures; **D.** Anal sclerite. **A.** (*A.*) *montis* Zhang, Huang & Huang, **sp. nov.** **B.** Elytra punctures; **E.** Anal sclerite. **A.** (*A.*) *medogensis* Zhang & Huang, **sp. nov.** **C.** Elytra punctures. **F.** Anal sclerite and male eighth abdominal sternite. Scale bars: 0.1 mm in A–C; 0.2 mm in D–F.

Surface of head with sparse deep punctures, vertex with punctures of variable size, ranging from 0.7–1.5× diameter of eye-facets, separated by >0.5 diameters, interspaces smooth and shining. Pronotal surface with dense punctures, 1.6–2.0× diameter of eye-facets, separated by 0.4–1.3× diameter, interspaces smooth and shining. Elytral surface with dense punctures, 1.8–2.2× diameter of eye-facets, separated by 0.7–1.3× diameters, interspaces smooth and shining (Fig. 4C). Pygidium surface with fine punctures, 1.1–1.7× diameter of eye-facets; separated by 0.8–2.1× diameters, interspaces leathery. Mentum and submentum with shallowly impressed and sparse punctures, ca. 1.0× diameter of eye-facets, interspaces smooth. Prosternum with small punctures in middle and large punctures laterally. Meso- and metaventricle with dense punctures, 1.1–1.7× diameter of eye-facets, interspaces smooth and shining. Abdominal ventrites with dense punctures, similar to those of metaventricle.

Head widest between eyes, ca. 1.5× wider than long. Clypeus moderately notched medially. Pronotum widest near base, ca. 1.9 wider than long, anterior margin with deep trapezoidal depression, posterior margin undulated, not elongated to cover the base of scutellum, lateral margins arcuate. Scutellum nearly semicircular, apex broadly rounded, length 0.6× width. Elytra nearly square, length 1.0× combined width, 2.2× longer than pronotum, anterior margin distinct, posterior margins widely rounded. Pygidium fully exposed with truncated apex. Antennal grooves

deep and long, posterior margins slightly convergent. Mentum nearly quadrangular. Prosternum without distinct medial carina, prosternal process strongly expanded behind procoxae to prosternum posterior margin, and narrowing to apex. Mesoventrite slightly carinate. Metaventrite disc slightly depressed, axillary space small, 0.4× length of metanepisternum. Distance between metacoxae 2.8× width of distance between procoxae and 2.0× width of distance between mesocoxae. First abdominal ventrite longest, followed in length by hypopygium, and ventrites 2–4 gradually longer. Anal sclerite and eighth abdominal ventrite with long fimbriae apically (Fig. 4F).

Antennae slightly shorter than head width. Antennal scape slightly triangular, pedicel almost cylindrical, antennomere 3 distinctly shorter than 4–5 combined, antennomeres 4–5 equal in length, antennomeres 6–8 gradually thickened; antennomere 8 obviously cup-shaped; antennal club symmetrical, ca. 0.3× total length of antennal; terminal antennomere distinctly shorter than antennomeres 9–10 combined. Terminal maxillary palpomere elongate

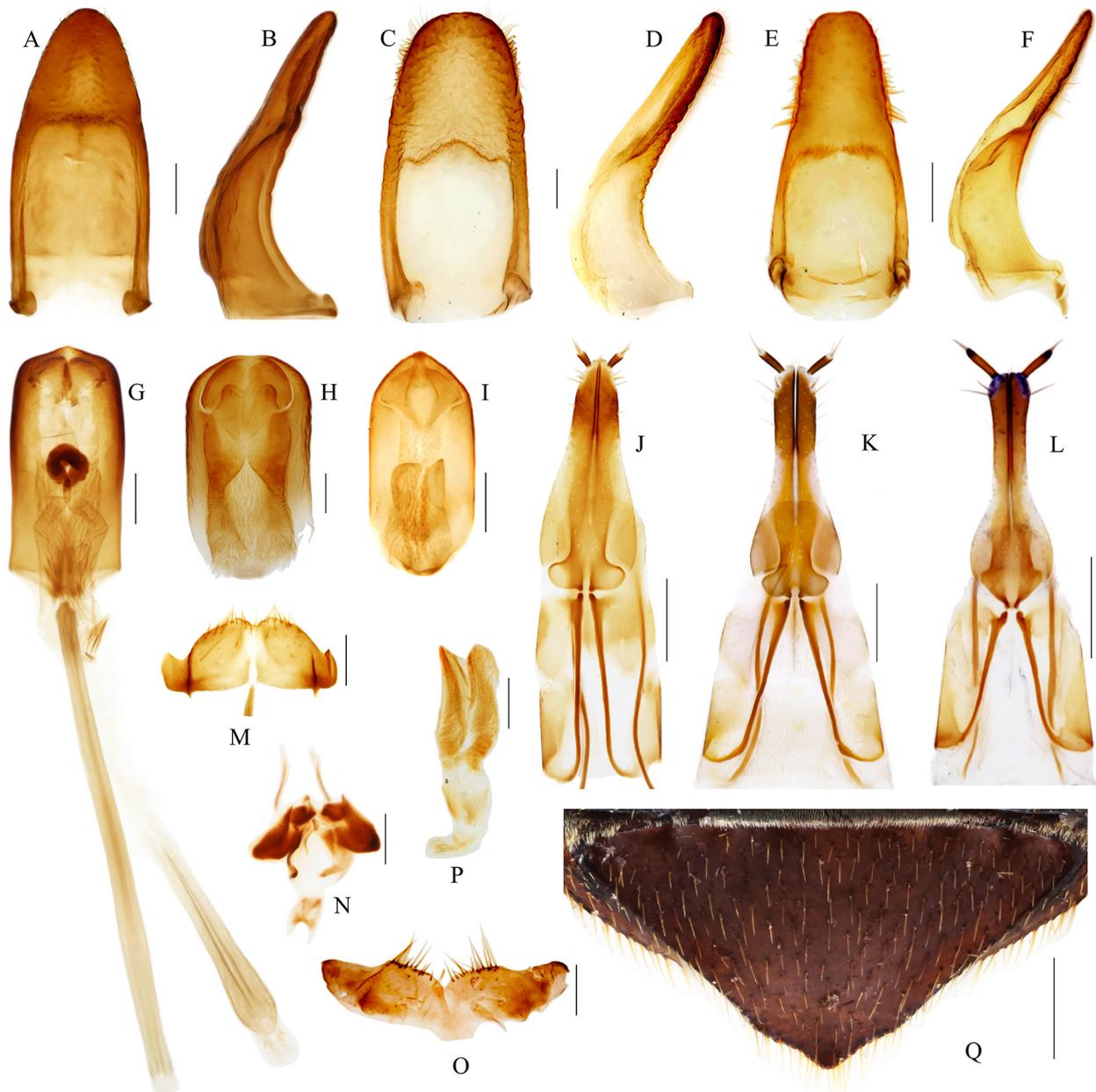


FIGURE 5. Genitalia and Pygidium. *A. (A.) arciformis* Zhang & Huang, **sp. nov.** **A, B.** Tegmen, ventral and lateral; **G.** Median lobe and internal sac sclerites of aedeagus; **J.** Ovipositor; **M.** Male eighth abdominal sternite. *A. (A.) montis* Zhang, Huang & Huang, **sp. nov.**: **C, D.** Tegmen, ventral and lateral; **H.** Median lobe; **K.** Ovipositor. **N.** Internal sac sclerites of aedeagus; **O.** Male eighth abdominal sternite. *A. (A.) medogensis* Zhang & Huang, **sp. nov.** **E, F.** Tegmen, ventral and lateral; **I.** Median lobe; **L.** Ovipositor; **P.** Internal sac sclerites of aedeagus; **Q.** Female pygidium. Scale bars: 0.1 mm in A–I, M–P; 0.2 mm in J–L, Q.

and subconical with truncate apically. Terminal labial palpomere elongate and subcylindrical with truncate apically. Protibia moderately arcuate, outer apical angle obtuse, meso- and metatibiae triangular, outer apical angle square. Tarsus dilated, claws simple.

Male genitalia moderately sclerotized. Tegmen 2.2× longer than wide, lateral margins converging apically, lateral fringe of setae visible from basal 3/5 to apex, truncated apex with shallow depression (Fig. 5E, F). Median lobe ca. 0.7× the length of tegmen, subparallel-sided and pointed apex, two kidney-shaped sclerite apically and two knife-shaped sclerite basally (Fig. 5I). Ejaculatory rods short, not fused to basal piece. Basal piece subrectangular and apically emarginate (Fig. 5P).

Female. Pygidium differing from that of male, sub-pentagonal with sharp apex (Fig. 5Q). Ovipositor moderately sclerotized. Paraprocts large. Gonocoxite slender, base gradually narrows and with moderately longer gonostylus apically (Fig. 5L).

Distribution. China (Xizang).

Etymology. The specific epithet is derived from its collecting location, Mêdog county, Xizang Autonomous Region.

Discussion

Since the revision of the subgenus *Aethina* by Kirejtshuk (1986), only 6 new species from Asia have been described primarily by Jelínek (1995) and Chen (2024). Previous taxonomic studies of this subgenus have focused largely on male genitalia, whereas the morphology of female genitalia has received comparatively little attention. Based on the examination of numerous specimens, we found that the female genitalia in this subgenus exhibit considerable interspecific variation. Notably, marked differences were observed among the three species (Fig. 5J, 5K, 5L) treated in this study, suggesting that female genital characters may provide additional taxonomically informative traits for species delimitation within the group.

Host associations remain poorly known for most species of this subgenus, with reliable host records available for only a few taxa. Among the three species examined here, host information is known for only one species, which may limit further investigations into their feeding habits. Such gaps in biological data are common in historical material, particularly when specimen labels lack detailed collection information or when specimens were collected long ago.

In addition, comparative examination of external morphology and genital structures suggests that *A. (A.) montis* Zhang, Huang & Huang, **sp. nov.**, *A. (A.) argus* Grouvelle, 1890 and *A. (A.) dundai* Jelínek, 1995 are closely related. Their relationships merit further investigation based on broader taxon sampling and additional morphological or molecular evidence.

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中国赤露尾甲属 *Aethina* 三新种 (鞘翅目: 露尾甲科: 露尾甲亚科)

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摘要: 描述并图示中国赤露尾甲属 *Aethina* 三新种, 即采自上海市, 隶属黄赤露尾甲种团的弧斑赤露尾甲 *Aethina* (*Aethina*) *arciformis* Zhang & Huang, **sp. nov.**、采自云南省福贡县, 隶属亮赤露尾甲种团的山纹赤露尾甲 *A.* (*A.*) *montis* Zhang, Huang & Huang, **sp. nov.**和采自西藏自治区墨脱县, 隶属长赤露尾甲种团的墨脱赤露尾甲 *A.* (*A.*) *medogensis* Zhang & Huang, **sp. nov.**。

关键词: 扁甲总科; 露尾甲科; 墨脱; 形态; 分类