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Four new species of *Agraphydrus* Régimbart (Coleoptera: Hydrophilidae), with additional faunistic records for China

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Abstract

Four new species of *Agraphydrus* Régimbart are described from China: *Agraphydrus danxiaensis* **sp. nov.** from Guangdong, *A. mutatus* **sp. nov.** from Jiangxi, and *A. xieweicaii* **sp. nov.** and *A. zhangyouxiangi* **sp. nov.** from Hunan. Three species are recorded for the first time from China: *A. biprojectus* Minoshima, Komarek & Ôhara, 2015, *A. nepalensis* Komarek, 2018, and *A. nemorosus* Komarek, 2019. Additional faunistic data are provided for the following Chinese species: *A. anhuianus* (Hebauer, 2000), *A. audax* Komarek & Hebauer, 2018, *A. calvus* Komarek & Hebauer, 2018, *A. cantonensis* Komarek & Hebauer, 2018, *A. chinensis* Komarek & Hebauer, 2018, *A. confusus* Komarek & Hebauer, 2018, *A. contractus* Komarek & Hebauer, 2018, *A. fasciatus* Komarek & Hebauer, 2018, *A. fikaceki* Komarek & Hebauer, 2018, *A. globipenis* Komarek & Hebauer, 2018, *A. gracilipalpis* Komarek & Hebauer, 2018, *A. igneus* Komarek & Hebauer, 2018, *A. robustus* Komarek & Hebauer, 2018, *A. umbrosus* Komarek & Hebauer, 2018, *A. variabilis* Komarek & Hebauer, 2018, and *A. yunnanensis* Komarek & Hebauer, 2018. A new colouration form of *A. yunnanensis* is described. An updated list of *Agraphydrus* species occurring in China is provided.

Key words: *Agraphydrus*, Acidocerinae, Hydrophilidae, fauna, new species, Oriental region, China.

Introduction

Agraphydrus Régimbart, 1903, one of largest genera in Hydrophilidae, has been seriously ignored until the last ten years. Up to 2013, only 20 species had been described (Short & Fikáček 2011). Since 2015, a total of 183 new species have been described worldwide (Minoshima *et al.* 2015, 2016; Komarek 2018, 2019, 2020; Komarek & Freitag 2020; Komarek & Hebauer 2018; Yang & Jia 2021; Girón & Short 2021). Of all known species, 163 species occur in the Oriental Region (Hansen 1999; Girón & Short 2021; Yang & Jia 2021), 31 species in the Afrotropical Region (Komarek 2020; Girón & Short 2021), 18 species occur in the Palearctic Region (Hansen 1999; Komarek 2020; Przewoźny 2022, Girón & Short 2021) and five species in Australia (Komarek 2019, Girón & Short 2021). So far, no species has been recorded from the Nearctic or Neotropical regions.

Horelophopsis Hansen, the sole genus of subfamily Horelophopsinae Hansen, was combined with Acidocerinae based on comprehensive analyses of DNA sequence data from the mitochondrial genes *COI*, *COII* and *16S* and the nuclear genes *18S*, *28S* and *arginine kinase* (Short & Fikáček 2013). *Horelophopsis* Hansen was further synonymized by Short *et al.* (2021) with *Agraphydrus* based on comprehensive analyses of DNA sequence data from the nuclear genes 18S, 28S, H3, CAD and the mitochondrial gene COI (Short *et al.* 2021). The results of Short *et al.* (2021) show that although the morphological variation is rather broad and includes a variety of forms, *Agraphydrus* is monophyletic.

Material and methods

For this study, we have examined more than 2000 specimens of Chinese *Agraphydrus*. Aedeagi of the holotypes of four new species were dissected. After 8–10 hours in 10% KOH at room temperature, dissected genitalia were

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transferred to a drop of distilled water, remaining membranes were removed under a compound microscope, and the cleaned genitalia were subsequently mounted in a drop of glycerine on a piece of transparent plastic attached below the respective specimen after they had been photographed. Habitus photographs were taken using a Nikon DS-Ri2 mounted on a Nikon SMZ25; layers were captured and aligned in the NIS-Elements software. Photographs of genitalia were taken using a Zeiss AxioCam HRc mounted on a Zeiss AX10 microscope with the Axio Vision SE64 software. These images were then aligned in Helicon focus (v7.0.2). SEM photographs were taken with a Phenom Prox scanning electronic microscope. All images were digitally enhanced using Adobe Photoshop CC 2019.

Morphological terminology used in the description mainly follows Hansen (1991) and Komarek and Hebauer (2018).

All examined specimens of this paper are deposited in Collection of Sun Yat-sen University, Guangzhou, China (SYSU).

Taxonomy

***Agraphydrus danxiaensis* sp. nov.**
Chinese common name: 丹霞阿牙甲
(Figs 1A, B, 3A, 4A–H)

Type locality. China, Guangdong Province, Shaoguan Prefecture, Danxia Mountain.

Type material. HOLOTYPE: CHINA: male (SYSU); Guangdong Province, Shaoguan Prefecture, Danxia Mountain (广东韶关丹霞山), 2010.V.27, Fenglong Jia leg. **PARATYPES: CHINA:** 13 exs., same data as holotype.

Diagnosis. This species is distinguished from other species of *Agraphydrus* by the following combination of characters: head black, with reddish-brown preocular patches; clypeus distinctly microreticulate at the lateral and anterior margins; apical maxillary palpomere without apical infuscation, about 1.5× as long as penultimate; antennae with nine antennomeres; elytra with four rows of systematic punctures; metafemora pubescent in basal 3/4; aedeagus with wide median lobe, abruptly narrowed in the middle, the widest part equal to the widest part of parameres, ventral plate wide, deeply split into two lobes, parameres wide at the base, apical 1/3 strongly narrowed, ca. 1/2 x as wide as of the base.

Description. Form and colour (Fig. 1A, B)**.** Total length: 2.1–2.3mm, evenly broadly oval, moderately convex dorsally, elytral width: 1.0–1.2mm, elytra parallel-sided at the basal half; maxillary palpomeres uniformly yellow brown; labrum, clypeus and frons black, with reddish-brown preocular patches; pronotum yellowish brown, with 4 small black spots arranged in a square, and between these with a large dark brown median spot; elytral with the same colour as pronotal median spot; ventral side dark brown; epipleura and legs yellow brown.

Head. Labrum with microsculpture (Fig. 4A); clypeus with evenly excised anterior margin, distinctly microreticulate at lateral and anterior margins (Fig. 4A), ground punctures fine, interspace ca. 1-2× as wide as a puncture; systematic punctures distinct; antennae with nine antennomeres (Fig. 4C); eyes moderately small, not protruding; maxillary palpomeres slender, slightly shorter than the maximum width of clypeus, as long as pronotum in midline, palpomere 4 slightly asymmetrical, about 1.5× as long as palpomere 3 (Fig. 4B); mentum with a few coarse punctures and microsculpture laterally (Fig. 4D).

Thorax. Pronotal ground punctures similar to those on head, systematic punctures distinct; Elytral ground punctures as those on head and pronotum; systematic punctures somewhat indistinct, arranged into 4 rows, mesal row not reaching anterior margin; mesoventrite flat anteriorly, gradually raised posteriad medially to from a hump with a weak ridge laterally, followed the hump with a weak longitudinal carina.

Legs. Pubescence present on proximal 2/3 of profemora (Fig. 4F), on proximal 3/4 of meso- and metafemora (Fig. 4G–H); hairline oblique on pro- and mesofemora, slightly curve on metafemora.

Abdomen. Ventrite 5 emarginate apically (Fig. 4E).

Aedeagus (Fig.3A). Length: 0.40 mm. Phallobase stout, slightly shorter than the parameres, with distinct manubrium apically; parameres with short basal protrusion, widest at the base, with flatted apex, inner margin straight at basal two-thirds, apical one third strongly narrowed, and rounded protruding inward apically, outer margin straight, distinctly narrowed outwards subapically; median lobe widest near base, abruptly strongly narrowed at apical third, apical portion ca. 2/3× as wide as the widest part, apex truncate; ventral plate wide, about as wide as the

widest of median lobe, deeply split into two lobes apically; corona moderately larger, located at middle position of median lobe; basal apophyses long, reaching to more than half of phallobase.

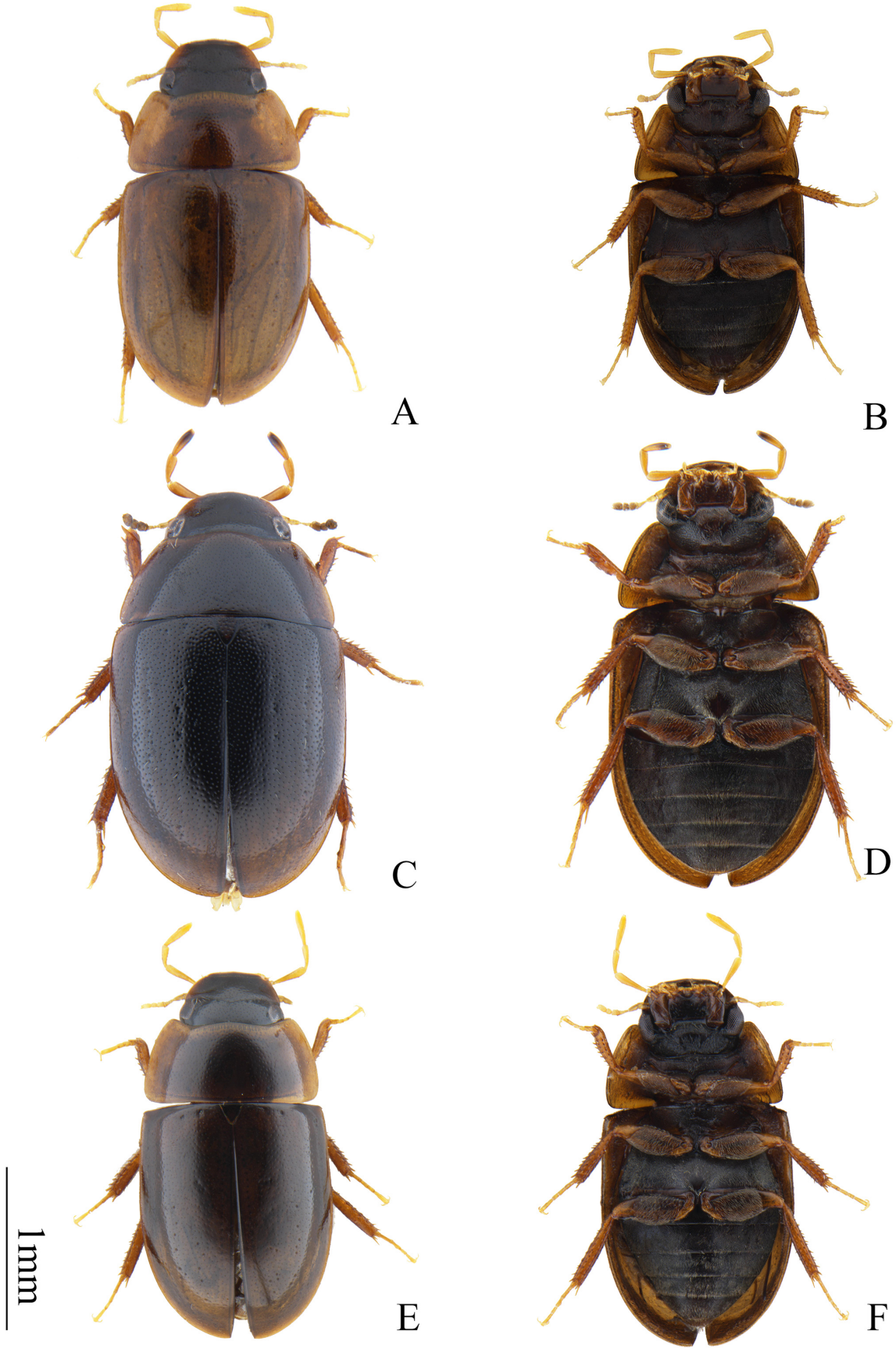

FIGURE 1. Habitus of *Agraphydrus* spp. **A, B.** *A. danxiaensis* **sp. nov. C, D.** *A. mutatus* **sp. nov. E, F.** *A. xieweicaii* **sp. nov.**

Etymology. This species is named after Danxiashan, the type locality.

Distribution. Only known from type locality.

Remarks. This species shares the characters of clypeus with distinct microreticulation at lateral and anterior margins, maxillary palpomeres uniformly yellow, antennae with nine antennomeres, four rows of elytral systematic punctures and ventrite 5 with very distinct apical emargination with *A. conicus* Komarek & Hebauer, 2018, *A. contractus* Komarek & Hebauer, 2018, *A. forcipatus* Komarek & Hebauer, 2018, *A. globipenis* Komarek & Hebauer, 2018, *A. igneus* Komarek & Hebauer, 2018, *A. xieweicaii* **sp. nov.** and *A. pauculus* (Knisch, 1924). It can be easily distinguished from the species mentioned above by the form of aedeagus. Based on the form of aedeagus, the new species is close to *A. globipenis*. It can be distinguished from the latter by median lobe not abruptly strongly narrowed at apical third, parameres with apical one third strongly narrowed inward and rounded protruding inward apically (not narrowed inward at apical third, sharply protruding inward apically in *A. globipenis*), outer margin straight, distinctly narrowed outwards subapically (not narrowed outwards subapically in *A. globipenis*).

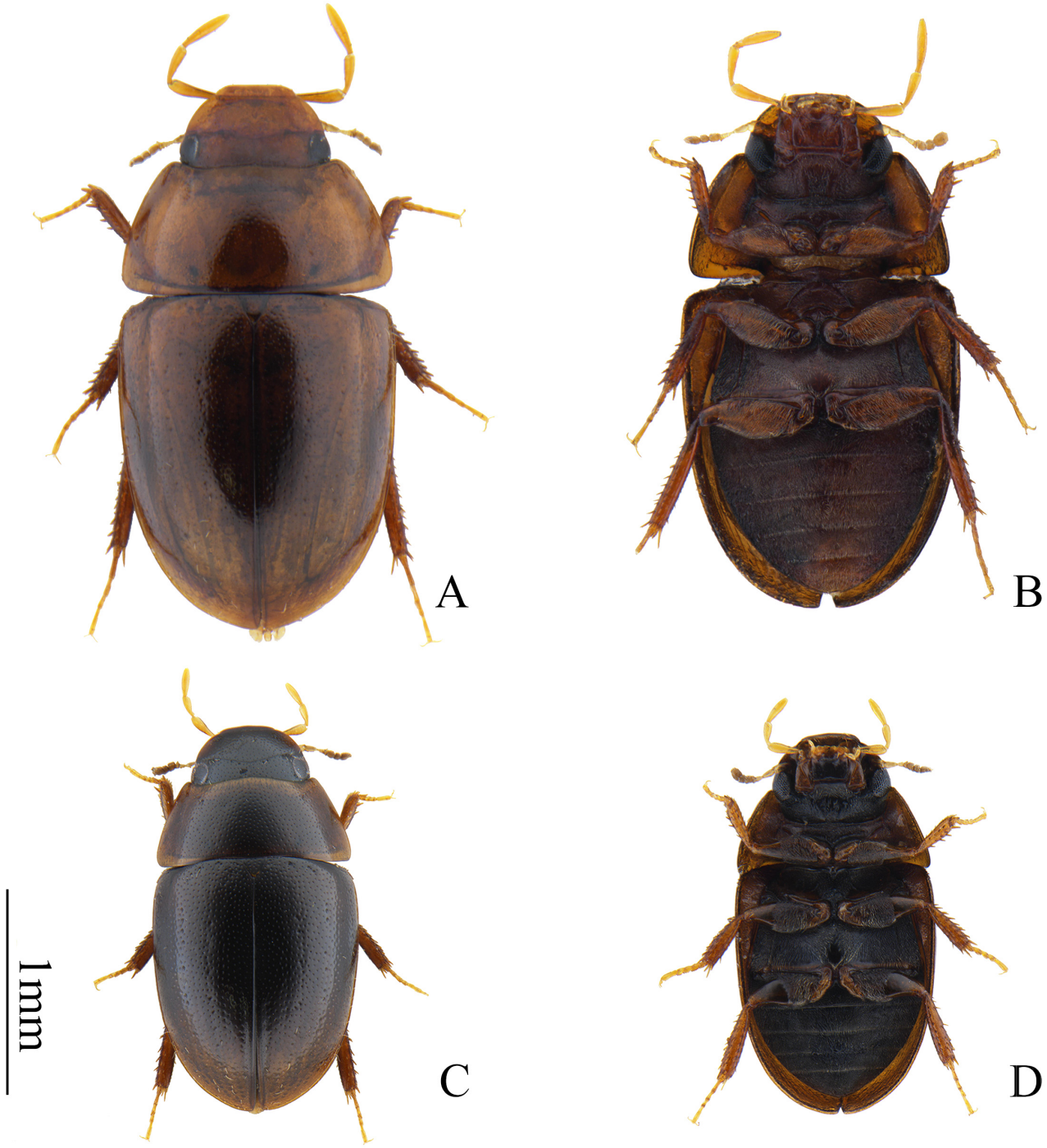

FIGURE 2. Habitus of *Agraphydrus* spp. **A, B.** *A. zhangyouxiangi* **sp. nov. C, D.** *A. yunnanensis* Komarek & Hebauer.

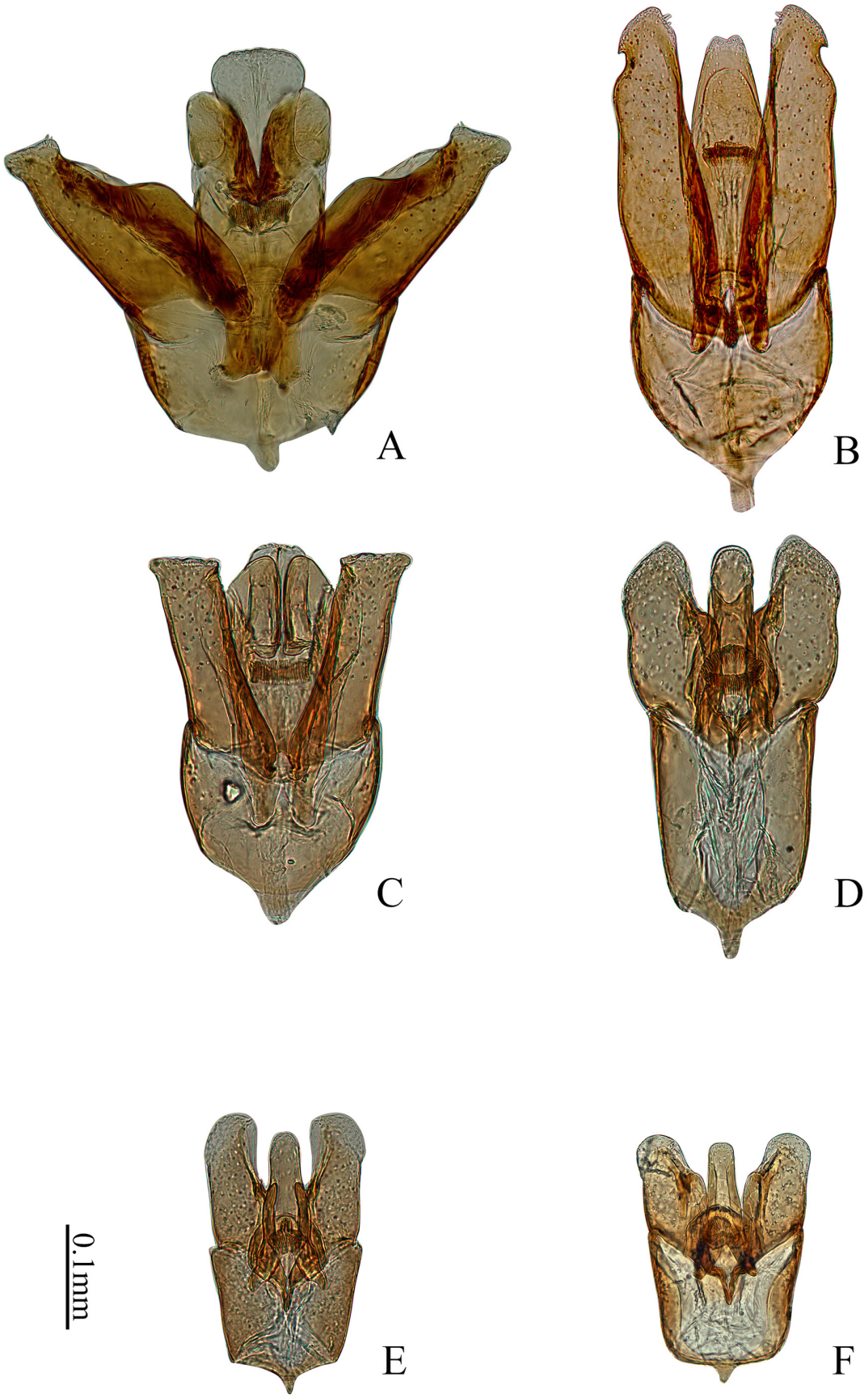

FIGURE 3. Aedeagus of *Agraphydrus* spp. **A.** *A. danxiaensis* **sp. nov. B.** *A. mutatus* **sp. nov. C.** *A. xieweicaii* **sp. nov. D.** *A. zhangyouxiangi* **sp. nov. E, F.** *A. yunnanensis* Komarek & Hebauer.

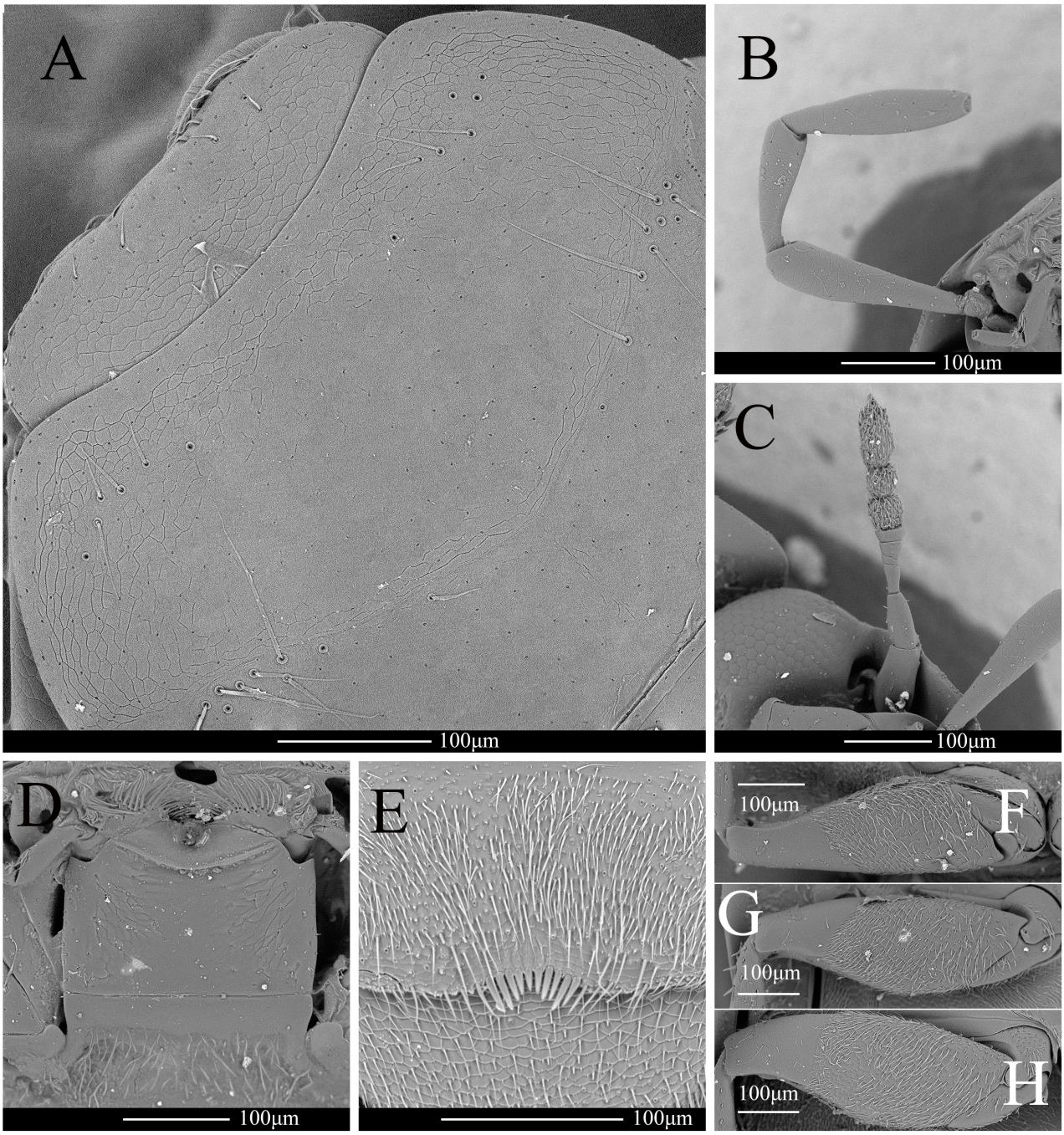

FIGURE 4. Morphology characters of *A. danxiaensis* **sp. nov. A.** Labrum and clypeus. **B.** Maxillary palpus. **C.** Antenna. **D.** Mentum. **E.** Posteromedial portion of ventrite 5. **F.** Profemur. **G.** Mesofemur. **H.** Metafemur.

***Agraphydrus mutatus* sp. nov.**
Chinese common name: 异阿牙甲
(Figs 1C, D, 3B, 5A–H)

Type locality. China, Jiangxi Province, Sanqingshan.

Type material. HOLOTYPE: CHINA: male; Jiangxi Province, Shangrao Prefecture, Sanqingshan, 2006. VIII.15, Fenglong Jia leg. **PARATYPES: CHINA:** 52 exs., same data as holotype.

Diagnosis. This species can be distinguished from other species of *Agraphydrus* by the following combination of characters: dorsum with coarse punctures; head black, with narrow rufous margin in front of eyes; clypeus

without microsculpture, except the lateral margins slightly microreticulate; apical maxillary palpomere slightly longer than penultimate, palpomere 4 with apical infuscation; antennae with nine antennomeres; elytra with four rows of systematic punctures; metafemora pubescent on proximal two-thirds; median lobe concave apically; ventrite 5 not emarginate apically; outer margin of parameres with sharp, hook-like subapical protrusion, slightly curved medially.

Description. Form and colour (Fig. 1C, D). Total length: 2.5–2.7mm, broadly oblong, moderately convex dorsally, elytral width: 1.3–1.4mm; maxillary palpomeres yellow brown, with palpomere 4 infuscated apically; head black-brown, with narrow rufous margin in front of eyes; pronotum black-brown with rufous lateral margins; elytra brown to dark brown, with light colour laterally and posteriorly; ventral surface dark brown; epipleura brown, legs brown to dark brown.

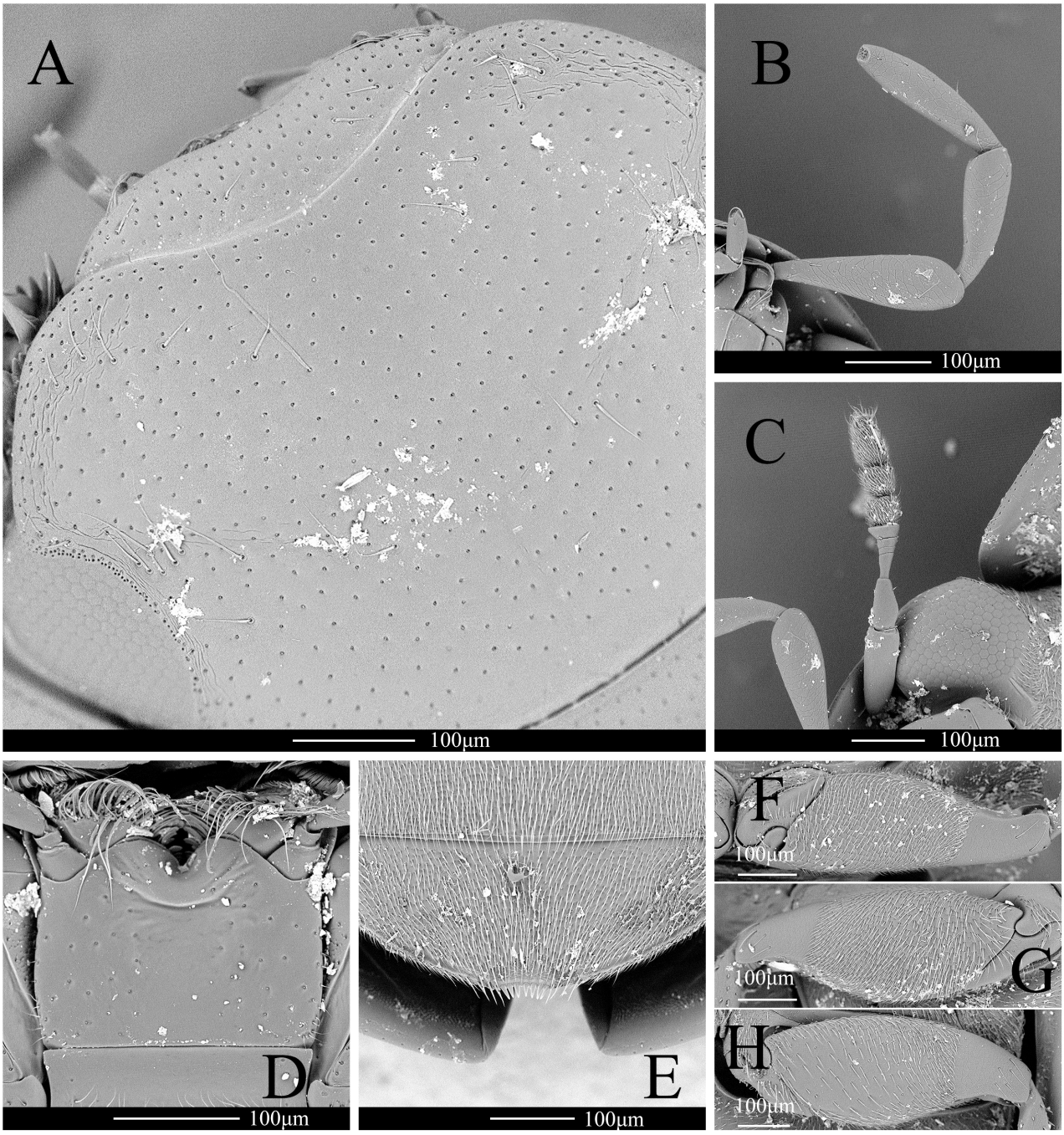

FIGURE 5. Morphology characters of *A. mutatus* **sp. nov. A.** Labrum and clypeus. **B.** Maxillary palpus. **C.** Antenna. **D.** Mentum. **E.** Posteromedial portion of ventrite 5. **F.** Profemur. **G.** Mesofemur. **H.** Metafemur.

Head. Labrum without microsculpture (Fig. 5A); clypeus with evenly excised anterior margin, without microsculpture except lateral margins very slightly microreticulate (Fig. 5A), ground punctures coarse and moderately dense, interspace about as wide as a puncture; systematic punctures distinct; antennae with nine antennomeres (Fig.5C); eyes of moderate size, not protruding; maxillary palpomeres slightly stout, as long as the maximum width of clypeus, about 1.1-1.2× as long as pronotum in midline, palpomere 4 slightly asymmetrical, slightly longer than palpomere 3 (Fig. 5B); mentum with some fine punctures laterally, without microsculpture (Fig. 5D), depressed anteromedially.

Thorax. Pronotal ground punctures as on head, systematic punctures distinct; Elytral ground punctures slightly coarser and denser than that on head and pronotum, systematic punctures distinct, arranged into 4 rows, row 3 not reaching anterior margin; mesoventrite with mesal bulge, ridged middle.

Legs. femora pubescent on basal two-thirds; hairline straight on femora (Fig. 5F–H).

Abdomen. Ventrite 5 slightly truncate apically, very slightly emarginate (Fig. 5E).

Aedeagus (Fig. 3B). Length: 0.48–0.50mm. Phallobase as long as wide, ca. 2/3× as long as parameres, with distinct manubrium apically; outer margin of parameres slightly but clearly curved medially, apex slanted outwards, with sharp, hook-like subapical protrusion, with distinct subapical gap, inner margin straight, basal protrusion short; median lobe slightly shorter than parameres, apex sightly narrowed apicad; corona located in middle position of median lobe; basal apophyses reaching to 1/3 of phallobase.

Etymology. This species is named after "mutatus", meaning "changed", meaning the male external genitalia of this species are similar to those of *A. anhuianus*.

Remarks. This species shares the characters of clypeus without microsculpture, maxillary palpomere 4 with apical infuscation, antennae with nine antennomeres and elytra with four rows of systematic punctures with *A. confusus* Komarek & Hebauer, 2018, *A. coomani* (Orchymont, 1927), *A. robustus* Komarek & Hebauer, 2018, *A. comes* Komarek & Hebauer, 2018 and *A. jilanzhui* Komarek & Hebauer, 2018; it differs from the above species by the body being thicker and larger, body length is ≥2.5mm (the above species: except for some *A. jilanzhui* >2.5mm), Darker dorsally, pronotum and elytra dark brown, outer margin of parameres with cuspidal, hook-like subapical protrusion and distinct subapical gap (the above species: in addition to the fact that the aedeagus of *A. robustus* also has these two characteristics and the apex of parameres of aedeagus of *A. jilanzhui* also has the outwards protrusion outwards, but no gaps) and corona located in middle position of median lobe. The aedeagus is very similar to *A. anhuianus*, but the new species differs from the latter by the anterior margin of clypeus without small median notch, palpomere 4 of maxillary palpomeres infuscate apically, dorsal punctures are much deeper and clearer; inner margin of parameres straight subapically (more or less curved subapically in *A. anhuianus*); outer margin of parameres under the gap broadly dilated outwards (narrowed dilated outwards in *A. anhuianus*, see Komarek & Hebauer 2018, p.88: fig. 217).

***Agraphydrus xieweicaii* sp. nov.**
Chinese common name: **谢氏阿牙甲**
(Figs 1E, F, 3C, 6A–H)

Type locality. China, Hunan Province, Gaowangjie Nature Reserve.

Type material. HOLOTYPE: CHINA: male; Hunan Province, Xiangxi Prefecture, Gaowangjie Nature Reserve (湖南省湘西州高望界自然保护区), 876m a.s.l., 28°39.72'N, 100°5.48'E, 2017.VI. 21, Fenglong Jia leg. **PARATYPES: CHINA:** 2 exs., same data as holotype; 1 exs., Hunan Province, Gaowangjie National Nature Reserve, 694m a.s.l., 28°39.936' N, 100°5.245' E, 2017.VI. 20, Fenglong Jia leg; 1 exs., Hunan Province, Gaowangjie National Nature Reserve, 1053m a.s.l., 28°39.898' N, 100°3.575' E, 2017.VI. 21, Fenglong Jia leg.

Diagnosis. This species can be distinguished from other species of *Agraphydrus* by the following combination of characters: head black, without preocular patches; labrum microreticulate, clypeus distinctly microreticulate at lateral and anterior margins; apical maxillary palpomere slightly longer than penultimate, palpomere 4 without apical infuscation; antennae with nine antennomeres; elytra with four rows of systematic punctures; metafemora pubescent at basal 3/4; phallobase nearly globular, median lobe wider than parameres, corona larger, located at middle position of median lobe, parameres parallel, apex with protrusion outwards.

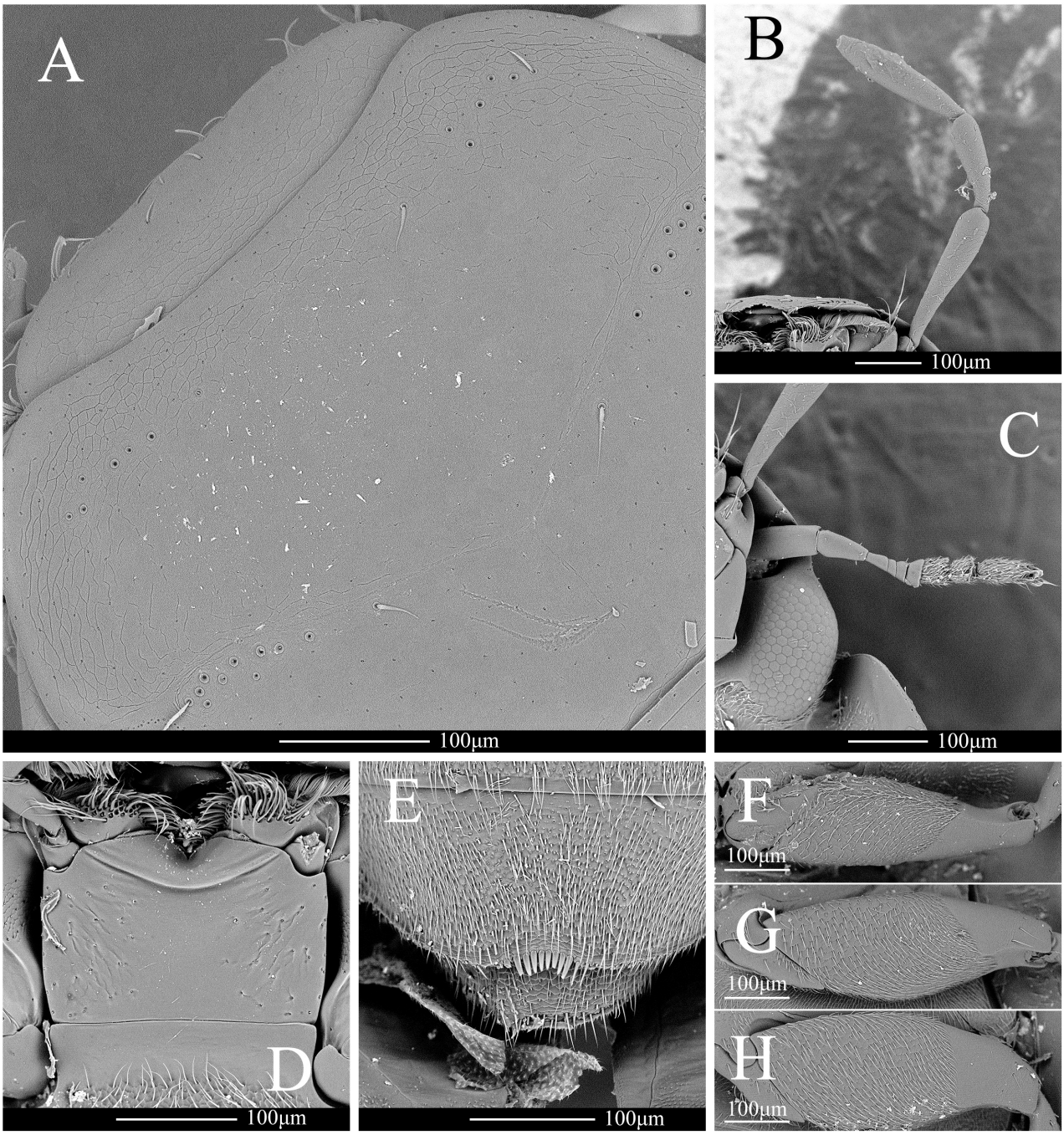

FIGURE 6. Morphology characters of *A. xieweicaii* **sp. nov. A.** Labrum and clypeus. **B.** Maxillary palpus. **C.** Antenna. **D.** Mentum. **E.** Posteromedial portion of ventrite 5. **F.** Profemur. **G.** Mesofemur. **H.** Metafemur.

Description. Form and colour (Fig. 1E, F)**.** Total length: 2.2–2.3mm, oblong, moderately convex dorsally; elytral width: 1.1–1.2mm; maxillary palpomeres uniform yellow brown; labrum, clypeus and frons black-brown, clypeus without preocular patches; pronotum brown to dark brown with lighter colour of margins; elytra darker than pronotum, lateral margins and apex yellow-brown, sometimes with scattered yellow-brown spots apically; ventral surface dark brown; epipleura and legs rufus, basal part of femora darker than other parts of legs.

Head. Labrum with microsculpture (Fig. 6A); clypeus with evenly excised anterior margin, distinctly microreticulate at lateral and anterior margins (Fig. 6A), ground punctures fine and moderately sparse, interspace ca. 1.2–2.5× as wide as a puncture; systematic punctures distinct; antennae with nine antennomeres (Fig. 6C); eyes small, not protruding; maxillary palpomeres slender, about as long as the maximum width of clypeus, ca. 1.0–1.1×

as long as pronotum in midline, palpomere 4 slightly asymmetrical, ca.1.5× as long as penultimate (Fig. 6B); mentum with some coarse punctures and microsculpture laterally (Fig. 6D).

Thorax. Pronotal ground punctures as those on head, systematic punctures distinct; elytral ground punctures as those on head and pronotum; systematic punctures distinct, arranged into 4 rows, row 1–3 with strongly reduced number of punctures, row 3 not reaching anterior margin; mesoventrite flat on anterior part, gradually elevated to form a hump with weak ridge laterally, following the hump with a weak longitudinal carina.

Legs. Profemora pubescent on proximal 2/3 (Fig. 6F); meso- and metafemora pubescent on proximal 3/4 (Fig. 6G–H), hairline oblique on pro- and mesofemora, slightly curve on metafemora.

Abdomen. Ventrite 5 emarginate apically (Fig. 6E).

Aedeagus (Fig. 3C). Length: 0.35–0.36mm. Phallobase nearly globular, about as long as the parameres, as long as wide, with distinct manubrium apically; parameres widest at the base, with flatted apex, outer margin straight, the apex of outer margin protruding outwards, inner margin slightly curve subbasally, apical half straight, basal protrusion extending into about 1/3 of phallobase; median lobe widest at the base, slightly narrowed in the middle position, with flatted apex, slightly longer than parameres, ventral plate deeply bilobed, widest portion ca. 2× as wide as apex of median lobe; corona big, located in middle position of median lobe; basal apophyses reaching to 1/2 of phallobase.

Etymology. This species is named after Mr. Weicai Xie, the curator of Biological Museum of Sun Yat-sen University, who has contributed to the Biological Museum of Sun Yat-sen University over twenty years.

Remarks. This species shares the characters of clypeus with distinct microreticulation at lateral and anterior margins, maxillary palpomeres uniform yellow, antennae with nine antennomeres, four rows of elytral systematic punctures and ventrite 5 with very distinct apical emargination with *A. danxiaensis* **sp. nov.**, *A. conicus*, *A. contractus*, *A. forcipatus*, *A. globipeni*, *A. igneus* Komarek & Hebauer, 2018 and *A. pauculus* (Knisch, 1924); it differs from *A. conicus* and *A. contractus* by elytra with parallel edges at basal half (the latter two with elytra distinctly attenuating posteriad); the aedeagus of the new species is nearly globular, which can be easily distinguished from other species of this genus except for *A. globipenis*; it differs from *A. globipenis* by parameres protruding outwards apically, not obviously protruding inwards apically (parameres of *A. globipenis* distinctly protruding inward apically, not protruding outwards apically), median lobe narrow, lobe of ventral plate strongly narrowed apicad; mentum with microsculpture (without microsculpture in *A. globipenis*).

***Agraphydrus zhangyouxiangi* sp. nov.**
Chinese common name: **张氏阿牙甲**
(Figs 2A, B, 3D, 7A–H)

Type locality. China, Hunan Province, Gaowangjie National Nature Reserve.

Type material. HOLOTYPE: CHINA: male; Hunan Province, Gaowangjie National Nature Reserve (湖南省湘西州高望界自然保护区), 876m a.s.l., 28°39.72'N, 100°5.48'E, 2017.VI. 21, Fenglong Jia leg. **PARATYPES: CHINA:** 4 exs., same data as holotype; 3 exs., Hunan Province, Gaowangjie National Nature Reserve, 694m a.s.l., 28°39.936' N, 100°5.245' E, 2017.VI. 20, Fenglong Jia leg; 1 exs., Hunan Province, Gaowangjie National Nature Reserve, 1053m a.s.l., 28°39.898' N, 100°3.575' E, 2017.VI.21, Fenglong Jia leg.

Diagnosis. This species is distinguished from other species of *Agraphydrus* by the following combination of characters: labrum, clypeus and frons rufous, without preocular patches; clypeus without microsculpture; apical maxillary palpomere without apical infuscation, ca. 1.5× as long as penultimate; antennae with nine antennomeres; elytra with four rows of systematic punctures; metafemora pubescent at basal 3/4; ventrite 5 truncate apically. aedeagus with phallobase ca. 1.2× as long as parameres, the median portion of parameres ca. 2× as wide as median portion of median lobe, corona in basal position of median lobe.

Description. Form and colour (Fig. 2A, B). Total length: 2.5–2.7mm, broadly oblong, moderately convex dorsally, elytral width: 1.3–1.4mm; maxillary palpomeres uniform yellow brown; labrum, clypeus and frons rufous, clypeus without preocular patches; pronotum yellowish brown, with 4 small black spots arranged in a square, and between these with a large rufous median spot; elytral rufous, same colour as head and median area of pronotum; ventral surface dark brown; legs rufous.

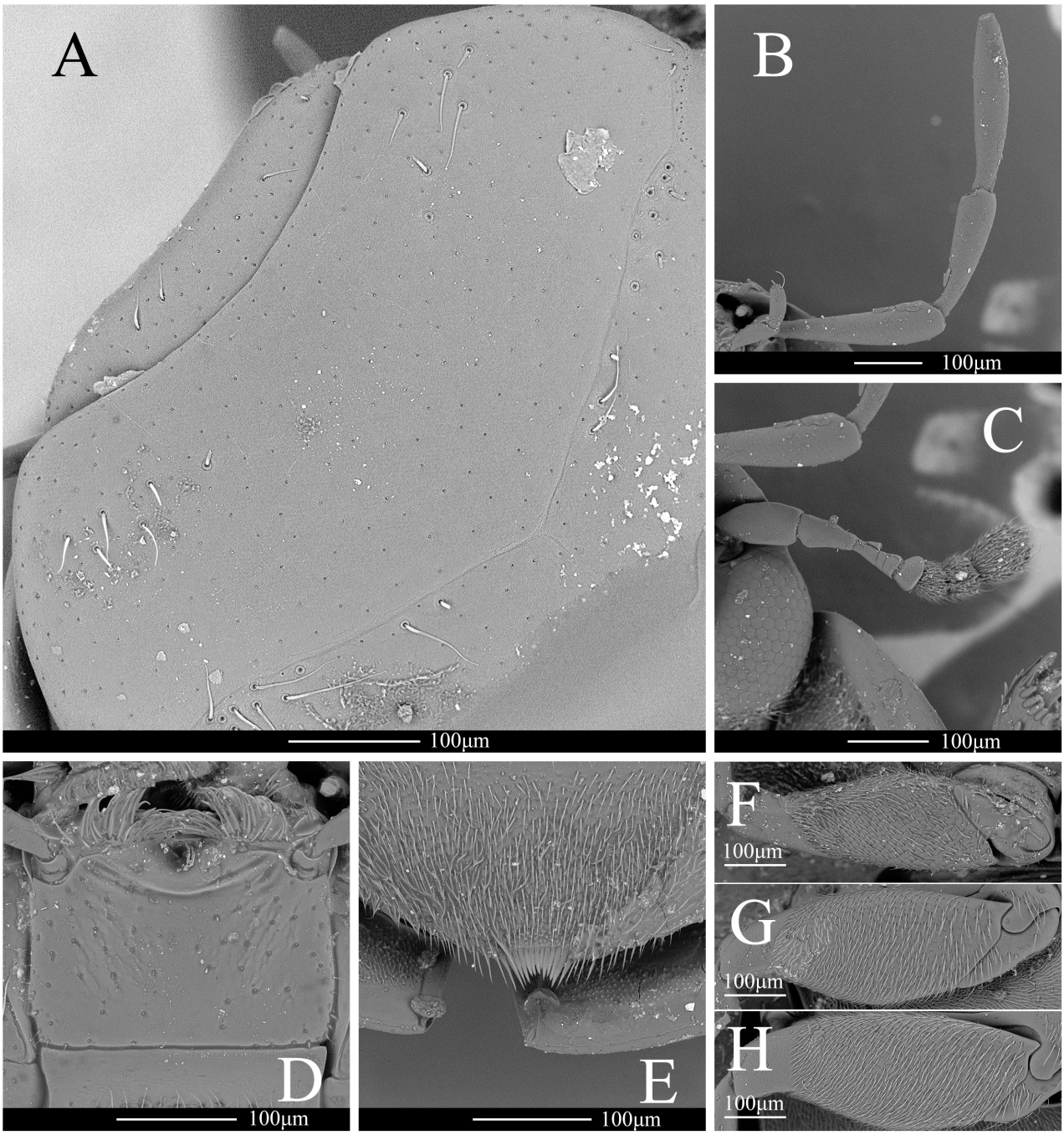

FIGURE 7. Morphology characters of *A. zhangyouxiangi* **sp. nov. A.** Labrum and clypeus. **B.** Maxillary palpus. **C.** Antenna. **D.** Mentum. **E.** Posteromedial portion of ventrite 5. **F.** Profemur. **G.** Mesofemur. **H.** Metafemur.

Head. Labrum without microsculpture (Fig. 7A); clypeus with evenly excised anterior margin, without microsculpture (Fig. 7A), ground punctures dense, interspace 1–2× as wide as a puncture; systematic punctures distinct; antennae with nine antennomeres (Fig. 7C); eyes moderately small, not protruding; maxillary palpomeres slender, slightly longer than the maximum width of clypeus, ca. 1.1× as long as pronotum in midline, palpomere 4 slightly asymmetrical, ca.1.5× as long as palpomere 3 (Fig. 7B); mentum depressed anteromedially, with some coarse punctures and microsculpture laterally (Fig. 7D).

Thorax. Pronotal ground punctures as those on head, systematic punctures distinct; elytral ground punctures as that on head and pronotum; systematic punctures distinct, arranged into 4 rows, mesal rows not reaching anterior margin; mesoventrite with distinct mesal bulge.

Legs. Pubescence present on proximal 3/4 of femora; hairline oblique on pro- and mesofemora, straight on metafemora (Fig. 7F–H).

Abdomen. Ventrite 5 truncate apically, without emargination (Fig. 7E).

Aedeagus (Fig. 3D). Length: 0.40–0.42mm. Phallobase long, ca. 1.2× as long as parameres, longer than wide, with distinct manubrium apically; parameres widest at the base, concave in the middle, apical 1/3 strongly narrowed apicad, abruptly strongly narrowed medially inwards, the median portion of parameres ca. 2× as wide as the median portion of median lobe, basal protrusion short; median lobe widest at the base, shorter than parameres, narrowed subbasally, lateral margin parallel; ventral plate slightly wider than median lobe, concave apically, ca. 2/3× as long as median lobe; corona moderately larger, located at basal position of median lobe; basal apophyses reaching to 1/5 of phallobase.

Etymology. This species is named after Mr. Zhang You-xiang, Jishou University, Hunan Province, China, in thanks for his help with the collecting in the Gaowangjie National Nature Reserve.

Distribution. Only known from type locality.

Remarks. This species shares the characters of clypeus without microsculpture, maxillary palpomeres uniform yellow, antennae with nine antennomeres, four rows of elytral systematic punctures, hairline straight on metafemora and ventrite 5 with very distinct apical emargination with *A. anhuianus* (Hebauer, 2000), *A. biprojectus* Minoshima, Komarek & Ôhara, 2015, *A. chinensis* Komarek & Hebauer, 2018, *A. masatakai* Minoshima, Komarek & Ôhara, 2015 and *A. uncinatus* Komarek & Hebauer, 2018; it differs from *A. anhuianus* and *A. masatakai* by clypeus without small median notch, mentum with shallow microsculpture laterally and parameres without subapical protrusion outwards; and from *A. biprojectus* by lighter colour, mentum with shallow microsculpture laterally, parameres without subapical protrusion outwards; it differs from *A. uncinatus* by smaller body, mentum with shallow microsculpture laterally, without subapical protrusion outwards. The aedeagus of new species is very similar to the aedeagus of *A. chinensis* and *A. fujianensis* Komarek & Hebauer, 2018, but the species differs from *A. fujianensis* by light colour, antennae with nine antennomeres, ventrite 5 not emarginate apically, phallobase ca. 1.2× as long as parameres, parameres not so strongly narrowed medially inwards; from *A. chinensis* by head and pronotum with light colour, ventrite 5 not emarginate apically, phallobase ca. 1.2× as long as parameres.

Species newly recorded for China

Agraphydrus biprojectus Minoshima, Komarek & Ôhara, 2015

Material examined. 7 exs., **YUNNAN**, Honghe, lvchun County, Sanmeng (云南省红河州绿春县三猛乡)**,** 1463.38m, 22°53'6.82"N, 102°19'24.53"E, 2021.V.1, Zhen-ming Yang, Zu-qi Mai, Zuo-yin Jiang & Baoping Huang leg.

Agraphydrus nepalensis Komarek, 2018

Material examined. 2 males, 2 females, 28 spec., XIZANG, Rikaze, Dingjie County, Chentang, on wet rock with fine flowing water (西藏日喀则定结县陈塘镇流水岩壁表面), 2482 m, 27.8733N87.4117E, 2023.VII.10, Zu-qi Mai.

Agraphydrus nemorosus Komarek, 2019

Material examined. 11 exs., **GUANGXI**, in water of edge a river, Shiwandashan Forest Park (广西十万大山森林公园河边水中), 351m, 21.89352°N, 107.91312°E, 2011.VII.17, Ke-qing Song leg.

Additional faunistic data of Chinese *Agraphydrus*

***Agraphydrus anhuianus* (Hebauer, 2000)**

Material examined. 34exs., **HUBEI,** Dabieshan mountain, Qingtaiguan (湖北大别山脉青苔关), 31°12.2'N, 113°42.1'E, 2014.VI.1–4, Zhen-hua Liu leg.

Distribution. China (Anhui, ?Hong Kong, Hubei). **New for Hubei Province.**

Remarks. Minoshima, Komarek and Ôhara (2015) and Komarek and Hebauer (2018) reported this species from Thailand. This is a misidentification (Komarek 2019a). Based on Komark (2019a), this species only known from Anhui, China. The record of this species from Hong Kong by Przewoźny (2021) probably is *A. calvus* Komarek & Hebauer, 2018, a very close species to *A. anhuiensis* (Hebauer).

***Agraphydrus audax* Komarek & Hebauer, 2018**

Material examined. 19 exs., **GUANGXI**, Jiuwandashan, Yangmeiao (广西九万大山杨梅坳), 1183m, 25°11'42"N, 108°38'51"E, 2015.VII.20, Ren-chao Lin & Yu-dan Tang leg.; 9 exs., **YUNNAN**, Baoshan, Baihualing (云南保山市百花岭)**,** 25°10'N, 98°16'E, 2015.IV.18, Ren-chao Lin & Yu-dan Tang leg.

Distribution. Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan. **New for Guangxi and Yunnan Province**.

***Agraphydrus calvus* Komarek & Hebauer, 2018**

Material examined. GUANGXI: 100 exs., Jiuwandashan, Yangmeiao (广西九万大山杨梅坳), 1183m, 25°11'42"N, 108°38'51"E, 2015.VII.20, Ren-chao & Yu-dan Tang leg.; 28 exs., Guilin, Maoershan Mount, Lijiang Grant Canyon (广西省桂林兴安县猫儿山漓江大峡谷), 557.87m, 24°31'20″N, 114°25'23.5″E, 2020.IX.2, Zhen-ming Yang leg., 4 exs., Guilin prefecture, Longsheng County, Huaping Natural Reserve (广西桂林市龙胜县花坪自然保护区), 817.7m, 25.6239°N, 109.9196°E, 2020.VIII.22, Zhen-ming Yang leg. **HUNAN:** 52 exs.**,** Yanling County, Taoyuandong, shennong valley, on wet stone (湖南省炎陵县桃源洞神农谷潮湿岩壁), 2012.VII.1, Fenglong Jia leg.; 1 exs., Chengzhou, Mangshan, Chawang valley (湖南省郴州莽山茶王谷), 683m, 24°58'90″N, 112°53'54″E, 2020.VIII.25, Zhen-ming Yang leg.; 2 exs., Yongzhou, Dupangling, Yueyan Forest Farm (湖南省永州都庞岭月岩林场), 478m, 25°29'42″N, 111°35'22″E, 2020.VIII.30, Zhen-ming Yang leg.; 20 exs., Shaoyang prefecture, Chenbu Miao Autonomous County, Zijinshan, Shuangjiangkou (湖南省邵阳市城步苗族自治县金紫山双江口), 768.34m, 26°14'59″N, 110°28'49″E, 2020.IX.9, Zhen-ming Yang leg.; 1 exs., Shaoyang prefecture, Chenbu Miao Autonomous County, Zijinshan,Yaorenping public area (湖南省邵阳市城步县金紫山林场瑶人坪公区), 825.6m, 26.2524°N, 110.4976°E, 2020.VIII.25, Zhen-ming Yang; 5 exs., Shaoyang prefecture, Chenbu Miao Autonomous County, Nanshan Natural Reserve (湖南省邵阳市城步苗族自治县南山自然保护区), 810m, 26°15'3"N, 110°27'32", 2020.VIII.18, Zhen-ming Yang leg.

Distribution. Guangdong, Guangxi, Guizhou, Hong Kong, Hunan, Jiangxi. **New for Guangxi and Hunan.**

***Agraphydrus cantonensis* Komarek & Hebauer, 2018**

Material examined. 3 exs., **JIANGXI:** Jinggangshan, Jingzhushan (江西省井冈山荆竹山), 2011.IV.25, Fenglong Jia leg.

Distribution. Guangdong, Jiangxi. **New for Jiangxi Province**.

***Agraphydrus chinensis* Komarek & Hebauer, 2018**

Material examined. 40 exs., **GUANGDONG:** Danxiashan, on wet stones (广东省丹霞山石岩潮湿岩壁), 2011. VI.10, Fenglong Jia leg.

Distribution. Anhui, Fujian, Guangdong, Zhejiang. **New for Guangdong Province.**

Agraphydrus confusus Komarek & Hebauer, 2018

Material examined. ZHEJIANG: 5 exs., Qiandaohu lake natural Oxygen Bar (浙江千岛湖氧吧), ca. 29.60ºN, 119.14ºE, 2009.VIII.10–12, 贾凤龙采; 5 exs., Tianmushan mount (天目山), ca. 30.26ºN, 120.13ºE, 2009.VII.27. VIII.10, Fenglong Jia leg. **JIANGXI:** 4 exs., Jinggangshan, Xiangzhou (井冈山湘州), 349m, 26°36'20.26"N, 114°16'20.33"E, 2011.IV.26, Fenglong Jia leg.; 6 exs., Jinggangshan (井冈山), 2011.VII.2–4, Lijun Yang & Weicai Xie leg.; 19 exs., Shangrao, Sanqingshan (上饶三清山)**,** 2006.VIII.13**,** Fenglong Jia leg. **HUNAN:** 3 exs., Yanling County, Taoyuandong, Luoshuiyuan village (湖南炎陵县桃源洞落水源村), 2014.V.27, Ren-chao Lin & Wei-cai Xie leg.; **FUJIAN:** 1 exs., Wuyishan, Upper reaches of Da'anxi river (福建武夷山大安崇阳溪上游), 447.5m, 27°57'32"N, 117°51'58"E, 2010.VII.15, Fenglong Jia leg.; **GUANGDONG:** 39 exs., Shenzhen, Qiniangshan (广东深圳七娘山), 2010.VI.17, Fenglong Jia leg.; 39 exs., Shenzhen, Dapeng Peninsula, Yangmeikeng (广东省深圳大鹏半岛杨梅坑), 19m, 22°32′43″N, 114°33′37″E, 2019.VII.30, Zhuo-yin Jiang, Zhen-ming Yang, Xin-yuan Ji & Guang-yu Guo leg.; 49 exs., Nanling, Dadongshan (广东南岭大东山), 2009.VI.25–27, Fenglong Jia leg.; 1 exs., Gaoyao County, Yangmei Town (广东高明杨梅镇), 2006.IV.23–26, Fenglong Jia leg.; 20 exs., Fengkai County, Heishiding Natural Reserve (广东封开黑石顶), 2007.VII.20–22, Fenglong Jia; 1 exs., Zhuhai (珠海), 2007. II.24**,** Fenglong Jia leg.; 3 exs., Shaoguan Prefecture, Chebaling Natural Reserve (广东韶关车八岭自然保护区), 23°14'46"N, 113°33'56"E, 2017.V.28–29, Fenglong Jia, Shi-shuai Wang & Zu-long Liang leg.; 10 exs., Shaoguan Prefecture, Chebaling Nature Reserve (广东省韶关市车八岭自然保护区), 350m, 24°43'21"N, 114°15'24"E, 2020. VIII.21, Zhen-ming Yang; 2 exs., Zhuhai, the mount behind Sun Yat-sen University campus (广东珠海中山大学后山), 2011.VII.5–8, Fenglong Jia leg.; 2 exs., Zhuhai, Hengqin island (广东珠海横琴岛), 2006.VII.10, Fenglong Jia leg.; 28 exs., Shaoguan Prefecture, Nanling, Qingshuigu (广东韶关市南岭清水谷), 830m, 24°54'60″N, 114°2'10″E, 2020.VIII.2; **HAINAN:** 1 ex., Tongshi (海南岛通什), 1957, Cui-ying Li leg. **GUANGXI:** 122 exs., Shiwandashan Forest Park (广西省十万大山森林公园), at light, 267m, 2011.VII.9–20, Ke-qing Song; 2 exs., Shiwandashan Forest Park (广西十万大山森林公园), 2013.IV.8–12, Hai-dong Chen leg.; 4 exs., Shiwandashan, in edge of Nalin river (广西十万大山纳林河边缘), 316m**,** 2011.VII.10, Ke-qing Song leg.; **GUIZHOU:** 129 exs., Rongjiang County, Pingyang, Xiaodanjiang (贵州榕江县平阳乡小丹江), 2005.IV.16–19, Shuang Zhao leg.

Distribution. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hong Kong, Hunan, Jiangxi, Yunnan, Zhejiang; Laos, Vietnam. **New for Fujian, Guangdong, Guangxi, Hainan, Hunan, Jiangxi, Zhejiang Provinces.**

Agraphydrus contractus Komarek & Hebauer, 2018

Material examined. JIANGXI: Jinggangshan, Main peak (江西井冈山主峰), 2010.X.4, Fenglong Jia leg.; 2 exs., Jinggangshan, Xiangzhou (井冈山湘州), 349m, 26°36'20.26"N, 114°16'20.33"E, 2011.IV.26, Shuang Zhao leg.; 1 ex. Jinggangshan, Shuangxikou (江西省井冈山双溪口), 411m, 26°31.4'N, 114°11.3'E, 2010.X.3, Zhao Shuang leg.; **HUNAN:** 1 ex., Yanling County, Taoyuandong (湖南炎陵县桃源洞), 2014.V.21, Ren-chao Lin & Wei-cai Xie leg.; **GUANGDONG:** 4 exs., Nanling Mountains, Dadongshan (广东南岭大东山), 2009.VI.27, Fenglong Jia leg.; 1 ex., Fengkai County, Heishiding (广东省封开黑石顶), 2013.X.4–6, Fenglong Jia, Yue Jia, Bing-jie Chen, Ren-chao Lin & Wei-lin Xu leg.; 16 exs., Shaoguan Prefecture, Shixing County, Luoba Town, roadside near Chebaling (广东韶关市始兴县罗坝镇车八岭公路), 426m, 24°43'6″N, 114°15'18″E, 2020.VIII.19, Zhen-ming Yang leg.

Distribution. Fujian, Guangdong, Hunan, Jiangxi. **New for Hunan, Jiangxi Provinces**.

Agraphydrus fasciatus Komarek & Hebauer, 2018

Material examined. GUANGXI: 1 ex., Shiwandashan Forest Park, in water of edge of river (广西省十万大山森林公园河流边水中), 351m, 21.89352°N, 107.91312°E, 2011.VII.17, Ke-qing Song leg.; 9 exs., Shiwandashan, edge of Nalin river (广西十万大山纳林河河边缘), 316m, 2011.VII.21, 宋克清采; 4 exs., Shiwandashan Forest Park, in water of Shitouhe river edge (广西十万大山森林公园石头河河水边), 2011.VII.12, Ke-qing Song leg.;

YUNNAN: 2 exs., Jingdong Town (云南省景东镇), 24°30'N, 100°56'E, 2015.IV.15, Ren-chao Lin & Yu-dan Tang leg.

Distribution. Guangdong, Guangxi, Hong Kong, Jiangxi, Yunnan. **New for Guangxi and Yunnan Provinces**.

Agraphydrus fikaceki Komarek & Hebauer, 2018

Material examined. GUANGDONG: 6 exs., Renhua County, Danxianshan, Jinshiyan, on wet rock (广东省仁化县丹霞山锦石山潮湿岩壁), 2011.VII.22, Fenglong Jia leg.; 5 exs.**,** Renhua County, Danxianshan, near Xianglonghu lake, on wet rock (广东省仁化县丹霞山翔龙湖潮湿岩壁), 2011.VII.22, Fenglong Jia leg.; 8 exs., Renhua County, Danxiashan (广东省仁化县丹霞山), 2012.IV.21, Fenglong Jia & Ke-qing Song leg.; 9 exs., Renhua County, Danxiashan, Yangyuanshi (仁化县丹霞山阳元石), 2012.IV.12, Fenglong Jia & Jun-lei Liao leg.; 13 exs.; Danxiashan, Zhaolaofeng (丹霞山长老峰)**,** 2011.VII.10, Fenglong Jia leg.; **JIANGXI:** 7 exs., Jinggangshan (井冈山), 2010.IX.19, Zhao Shuang leg.; 2 exs., Jinggangshan (井冈山), 2010.X.2, Yue Jia & Yu-ran Cao leg.

Distribution. Guangdong, Jiangxi. **New for Guangdong Province.**

Agraphydrus globipenis Komarek & Hebauer, 2018

Material examined. GUIZHOU: 13 exs., Lishan County, Fangxiang mount (贵州雷山县方翔山), 2005.IX.17–18, Zhao Shuang leg.

Distribution. Guangxi, Guizhou, Hunan. **New for Guizhou Province.**

Agraphydrus gracilipalpis Komarek & Hebauer, 2018

Material examined. JIANGXI: 21 exs., Ganzhou Prefecture, Jiulianshan, Xiagongtang (江西省赣州九连山虾公塘), 526m, 24°32'28″N, 114°27'32″E, 2020.VIII.18, Zhen-ming Yang leg.; **GUANGXI:** 9 exs.**,** Shiwandashan Forest Park, edge of river (广西十万大山森林公园河边), 2011.VII.10, Ke-qing Song leg.

Distribution. Fujian, Guangdong, Guangxi, Jiangxi. **New for Guangxi and Jiangxi Provinces.**

Agraphydrus igneus Komarek & Hebauer, 2018

Material examined. JIANGXI: 1 male, Jinggangshan, Main peak (江西省井冈山主峰), 608m, 26.52971°N, 114.15715°E, 2011.IV.17, Ke-qing Song leg.; **GUANGXI:** 24 exs.**,** Shiwandashan, edge of river (广西十万大山河流边), 351m, 21.89352°N, 107.91312°E, 2011.VII.10–17, Ke-qing Song leg.; **YUNNAN:** 1 male, Jingdong Town (云南省景东镇), 1395m, 24°30'N, 100°56'E, 2015.IV.15, Ren-chao Lin & Yu-dan Tang leg.

Distribution. Guangdong, Guangxi, Hong Kong, Jiangxi, Yunnan. **New for Guangxi, Jiangxi, Yunnan Provinces.**

Agraphydrus robustus Komarek & Hebauer, 2018

Material examined. GUANGXI: 13 exs., Shiwandashan (广西十万大山), 2013.IV.8–12, Hai-dong Chen leg.; 6 exs., Shiwandashan Forest Park, edge of Shitouhe (广西十万大山森林公园石头河河水边), 2011.VII.12, Ke-qing Song leg.

Distribution. Guangdong, Guangxi, Yunnan. **New for Guangxi Autonomous Region**.

Agraphydrus umbrosus Komarek & Hebauer, 2018

Material examined. JIANGXI: 1 male, Jinggangshan, Main peak (江西井冈山主峰), 26.52971°N, 114.15715°'E, 2011.IV.29, Ke-qing Song leg.; 32 exs., Ganzhou Prefecture, Jiulianshan, Xiagongtang (江西省赣州九连山虾公塘), 526m, 24°32'28″N, 114°27'32″E, 2020.VIII.18, Zhen-ming Yang leg.; **MACAU:** 8 exs.**,** Luhuan, Dieshitang (澳门路环叠石塘), 2014.III.27, Fenglong Jia leg.; **GUANGXI:** 10 exs., Shiwandashan Forest Park (广西十万大山森林公园), 247m, 2011.VII.20, Ke-qing Song leg.; 21 exs., Shiwandashan Forest Park, Shitouhe river (广西十万大山森林公园石头河), 2011.VII.12, Ke-qing Song leg.; 18 exs., Longsheng, Jiangdi countryside (广西龙胜江底乡), 2013.4.8–12, Hai-dong Chen leg.; 36 exs., Shiwandashan (广西十万大山), 2013.IV.8–12, Hai-dong Chen leg.

Distribution. Fujian, Guangdong, Guangxi, Macau, Jiangxi. **New for Guangxi, Macau, Jiangxi.**

Agraphydrus variabilis Komarek & Hebauer, 2018

Material examined. MACAU: 2 exs., Shipaiwan country park (澳门石排湾郊野公园), 2016.VI.17, Fenglong Jia leg.

Distribution. Fujian, Guangdong, Guizhou, Guangxi, Hong Kong, Hubei, Hunan, Jiangxi, Macau, Taiwan, Sichuan, Shaanxi, Shandong, Yunnan, Zhejiang. **New for Macau.**

Agraphydrus yunnanensis Komarek & Hebauer, 2018
(Figs 2C–D, 3E–F, 8A–H)

Material examined. Material examined. 20 exs. Yunnan Province, Honghe Prefecture, Lüchun County, Sanmeng town (云南省红河绿春县三猛乡)**,** in sands of edge of river, 1463.38m**,** 22°53'6.82"N, 102°19'24.53"E**,** 2021.V.1**,** Z.-M. Yang, Z.-Q. Mai, Z.-Y. Jiang & B.-P. Huang leg.; 16 exs., at same river and with same collectors, 1463.38m**,** 22°53'6.8"N**,** 102°19'24.5"E**,** 2021.V.1; 51 ex., Yunnan Province, Baoshan Prefecture, Longyang County, Baihualing, Zaotang river (云南省保山市隆阳县百花岭澡堂河)**,** 1495.19m**,** 25.3086°N**,** 98.7936°'E**,** 2021.V.11**,** Z.-M. Yang, Z.-Q. Mai, Z.-Y. Jiang & B.-P. Huang leg.; 39 exs., Yunnan Province, Baoshan Prefecture, Baihualing (云南省保山市百花岭), 25°10'N, 98°16'E, 2015.IV.18, R.-C. Lin & Y-D. Tang leg.

This species was described by Komarek and Hebauer (2018) based on types from Xishuangbanna, Yunnan as "Labrum, clypeus and frons black, clypeus with yellow preocular patches about as wide as eye; maxillary palpi unicolored yellow; pronotum and elytra yellow to light brown". Based on the specimens we examined, the coloration is seriously variable. A few individuals from each locality are in complete agreement with type described by Komarek and Hebauer (2018). However, most individuals have dark colour of pronotum and elytra, and elytra always darker than pronotum, a few individuals with labrum and clypeus lightly brown. The individuals with light coloured elytra usually have distinct preocular patches. Most individuals with dark colour of elytra usually have indistinct preocular patches or only with narrow brown margins before eyes. A few individuals completely are completely without preocular patches.

Discussion

Agraphydrus is a very interesting genus of scavenger beetles in geographical distribution. The lineage still has many undescribed species and the actual species richness is likely to continue to grow (Komarek 2019; Short *et al.* 2021). It has a much higher abundance of species in the Oriental Region than other Regions. There is no species occurring in Nearctic and Neotropical Regions. Of 18 species occurring in the Palearctic Region (Girón & Short 2021), *A. pauculus* and *A. pygmaeus* are known in Xizang (Tibet) and occur in the lower area south of the Himalayas which is actually a part of the Oriental Region. *A. anhuianus*, *A. variabilis*, *A. reticuliceps*, *A. coomani*, *A. conicus*, *A. chinensis*, *A. audax*, *A. arduus* largely occur in Oriental Region reaching to near the north of the Yangtze River; *A. stagnalis* occurs in India, Bhutan, Nepal and Pakistan. These species should originate from Oriental species spreading to south border of Palearctic Region.

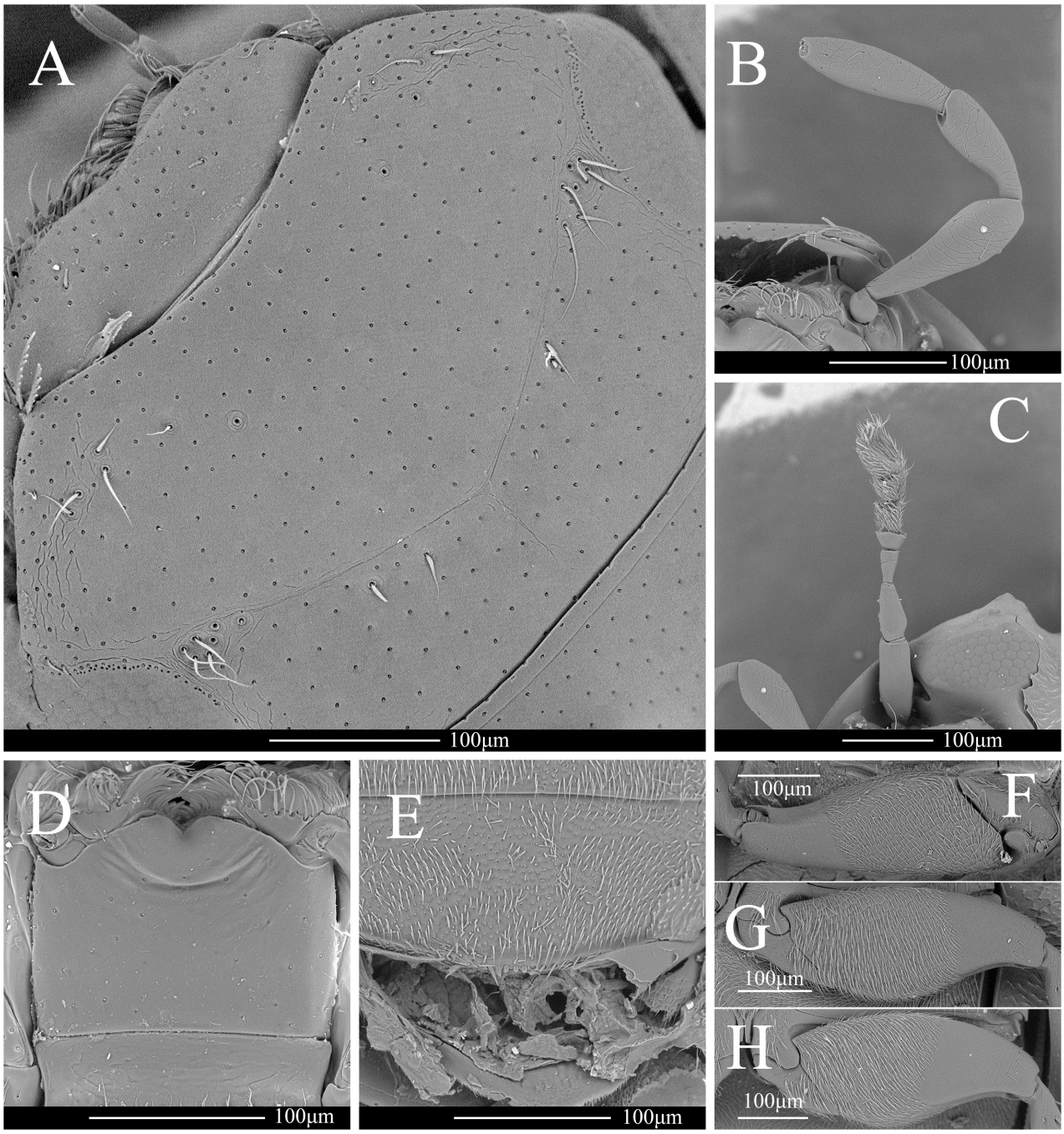

FIGURE 8. Morphology characters of *A. yunnanensis* Komarek & Hebauer. **A.** Labrum and clypeus. **B.** Maxillary palpus. **C.** Antenna. **D.** Mentum. **E.** Posteromedial portion of ventrite 5. **F.** Profemur. **G.** Mesofemur. **H.** Metafemur.

As to Japanese fauna, most entomologists regarded all of Japanese species as Palearctic. Actually, it is reasonable that Kyushu, Shikoku and adjacent islands, and Ryukyu islands are treated as a part of the Oriental Region (Jia & Tang 2018; Yang & Jia 2011). Based on this opinion, *A. luteilateralis* occurring in Japan (Okinawa Islands, Iriomote-jima Island and Ishigakijima Island), *A. ogatai* (Fukuoka) and *A. hanseni* (Ôura-gawa Kakou, Okinawa-jima, Ryukyus. Yoshitomi and Nakajima) should be Oriental species.

Only three species, *A. ishibarai* occurring in Japan (Honshu, Kyushu) and Korea, *A. narusei* occurring in Japan (Hokkaido, Honshu, Shikou, Kyushu and their adjacent islands, Oosumi Islands) and South Korea, *A. ogatai* occurring in Japan (Hokkaido, Honshu, Shikoku, Kyushu and their adjacent islands, Oosumi Islands), occur in both Palearctic and Oriental Regions. *A. jilanzhui* occurrs in the border of Palearctic and Oriental Regions (Gansu,

Hubei, Shaanxi, Sichuan of China) likely occurs to southern parts of China, but is unlikely to extend northwards based on our knowledge of *Agraphydrus*. Based on above knowledge, we only treated the four species occurring in Palearctic Region.

The colour of 4th maxillary palpomere is a nice characteristic for identification of species. Preocular patches are sometimes also used for distinguishing species. It is very interesting that preocular patches seem to be correlated with elytral colour in some species.

Updated list of Chinese *Agraphydrus*

A. activus Komarek & Hebauer, 2018	Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hong Kong, Hunan, Jiangxi, Macau
A. agilis Komarek & Hebauer, 2018	Guangxi, Yunnan
A. anhuianus (Hebauer, 2000)	Anhui, Hubei
A. arduus Komarek & Hebauer, 2018	Guangdong, Hubei, Yunnan
A. attenuatus (Hansen, 1999)	Yunnan
A. audax Komarek & Hebauer, 2018	Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan
A. biprojectus Minoshima, Komarek & Ôhara, 2015	Yunnan
A. calvus Komarek & Hebauer, 2018	Guangdong, Guangxi, Guizhou, Hong Kong, Hunan, Jiangxi
A. cantonensis Komarek & Hebauer, 2018	Guangdong, Jiangxi
A. chinensis Komarek & Hebauer, 2018	Anhui, Fujian, Guangdong, Zhejiang
A. comes Komarek & Hebauer, 2018	Hainan
A. confusus Komarek & Hebauer, 2018	Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hong Kong, Hunan, Jiangxi, Yunnan, Zhejiang
A. conicus Komarek & Hebauer, 2018	Anhui, Hunan, Jiangxi
A. connexus Komarek & Hebauer, 2018	Hainan
A. contractus Komarek & Hebauer, 2018	Fujian, Guangdong, Hunan, Jiangxi
A. coomani (Orchymont, 1927)	Fujian, Guangdong, Hainan, Taiwan
A. danxiaensis **sp. nov.**	Guangdong
A. dapengensis Yang & Jia, 2021	Guangdong
A. decipiens Minoshima, Komarek & Ôhara, 2015	Taiwan
A. fasciatus Komarek & Hebauer, 2018	Guangdong, Guangxi, Hong Kong, Jiangxi, Yunnan
A. fikaceki Komarek & Hebauer, 2018	Guangdong, Hong Kong, Jiangxi
A. forcipatus Komarek & Hebauer, 2018	Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Jiangxi, Zhejiang
A. fujianensis Komarek & Hebauer, 2018	Fujian
A. globipenis Komarek & Hebauer, 2018	Guangxi, Guizhou, Hunan
A. gracilipalpis Komarek & Hebauer, 2018	Fujian, Guangdong, Guangxi, Jiangxi
A. igneus Komarek & Hebauer, 2018	Guangdong, Hong Kong, Jiangxi, Yunnan
A. insidiator Minoshima, Komarek & Ôhara, 2015	Taiwan
A. jilanzhui Komarek & Hebauer, 2018	Gansu, Hubei, Shaanxi, Sichuan
A. komareki Yang & Jia, 2021	Guangdong
A. longipalpus (Jia, 1998)	Hainan
A. longipenis Komarek & Hebauer, 2018	Yunnan
A. masatakai Minoshima, Komarek & Ôhara, 2015	Guangdong, Hainan, Hong Kong, Yunnan
A. mutatus **sp. nov.**	Jiangxi
A. nepalensis Komarek, 2018	Xizang
A. niger Komarek & Hebauer, 2018	Fujian, Guangdong, Zhejiang
A. nemorosus Komarek, 2019	Guangxi
A. pauculus (Knisch, 1924)	Xizang

A. politus (Hansen, 1999)	Taiwan
A. pseudoniger Yang & Jia, 2021	Guangdong, Jiangxi
A. puzhelongi (Jia, 2010)	Guizhou, Jiangxi
A. pygmaeus (Knisch, 1924)	Xizang
A. reductus Komarek & Hebauer, 2018	Yunnan
A. reticuliceps Komarek & Hebauer, 2018	Guangxi, Guizhou, Hubei, Hunan
A. robustus Komarek & Hebauer, 2018	Guangdong, Guangxi, Yunnan
A. sabulosus Yang & Jia, 2021	Guangdong, Jiangxi
A. schoenmanni Komarek & Hebauer, 2018	Yunnan
A. setifer Komarek & Hebauer, 2018	Guangdong, Yunnan
A. splendens Komarek & Hebauer, 2018	Yunnan
A. umbrosus Komarek & Hebauer, 2018	Fujian, Guangdong, Guangxi, Jiangxi, Macau
A. uncinatus Komarek & Hebauer, 2018	Yunnan
A. variabilis Komarek & Hebauer, 2018	Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hong Kong, Hubei, Hunan, Jiangxi, Macau, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang
A. wangmiaoi Komarek & Hebauer, 2018	Hainan
A. xieweicaii **sp. nov.**	Hunan
A. yunnanensis Komarek & Hebauer, 2018	Yunnan
A. zhangyouxiangi **sp. nov.**	Hunan

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阿牙甲属*Agraphydrus*四新种及中国区系补遗（鞘翅目：牙甲科）

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摘要：描述中国阿牙甲属*Agraphydrus*四新种，即丹霞阿牙甲*Agraphydrus danxiaensis* **sp. nov.** (广东)、异阿牙甲*A. mutatus* **sp. nov.** (江西)、谢氏阿牙甲*A. xieweicaii* **sp. nov.**（湖南）和张氏阿牙甲*A. zhangyouxiangi* **sp. nov.** (湖南)。双突阿牙甲*A. biprojectus*、尼泊尔阿牙甲*A. nepalensis*和阴阿牙甲*A. nemorosus*为中国新记录。补充了以下中国种类的区系信息：安徽阿牙甲*A. anhuianus*、深谷阿牙甲*A. audax*、光足阿牙甲*A. calvus*、广东阿牙甲*A. cantonensis*、中国阿牙甲*A. chinensis*、孔夫子阿牙甲*A. confusus*、窄缩阿牙甲*A. contractus*、带阿牙甲*A. fasciatus*、费氏阿牙甲*A. fikaceki*、球阿牙甲*A. globipenis*、纤须阿牙甲*A. gracilipalpis*、焰色阿牙甲*A. igneus*、壮阿牙甲*A. robustus*、混阿牙甲*A. umbrosus*、变阿牙甲*A. variabilis*和云南阿牙甲*A. yunnanensis*。描述了云南阿牙甲一个新的色型。提供了中国阿牙甲属已知种名录。

关键词：阿牙甲属；须牙甲亚科；牙甲科；区系；新种；东洋区；中国