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Taxonomic notes on Chinese Lamiini (Coleoptera: Cerambycidae: Lamiinae)

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Abstract

Paragniopsis ochraceomaculata Breuning, 1965 and *Paragniopsis* Breuning, 1965 are confirmed to be junior synonyms of *Agnioides striatopunctatus* Breuning, 1956 and *Agnioides* Breuning, 1956 respectively after comparison of types; *Monochamus fruhstorferi* Breuning, 1964 is a new junior synonym of *Annamanum lunulatum* (Pic, 1934). *Paranamera ankangensis* Chiang, 1981 and *Mimonemophas multimaculatus* Xie & Wang, 2015 are transferred to the genus *Anoplophora* Hope, and the former is newly recorded from Hunan Province.

Key words: Lamiini, new synonym, new combination, China, Vietnam, Laos, India

Introduction

While working on the Cerambycidae fauna of the Qinling Mts. of Shaanxi Province, China, the first author discovered that the species of *Paranamera ankangensis* Chiang, 1981 looked very much like a member of the genus *Anoplophora*. She visited NWAFU to examine the types and discussed the issue with the second author who revised the genus *Anoplophora* (Lingafelter & Hoebeke, 2002). Based on further museum work, including examination of specimens of the genus *Paranomera* by the first author, we resolve additional systematic issues and present our conclusions on new taxonomic decisions, justifications, and synonymies below.

Materials

Types and other material studied are deposited in the following institutions:

BPBM	Bernice Pauahi Bishop Museum, Honolulu, Hawaii USA
CBWX	Collection of Wen-Xuan Bi, Shanghai, China
DJHC	Collection of Daniel J. Heffern, Houston, Texas, USA
IRSNB	Institut royal des Sciences naturelles de Belgique, Brussels, Belgium
IZAS	Institute of Zoology, Chinese Academy of Sciences, Beijing, China
NWAFU	Northwest A&F (Agriculture and Forestry) University, Yangling, Shaanxi, China
MHNL	Muséum d'Histoire Naturelle, Lyon, France = CCEC: Musée des Confluences, Lyon, France
MNHN	Muséum national d'Histoire naturelle, Paris, France
NMNH	National Museum of Natural History (Smithsonian Institution), Washington, District of Columbia, USA
SWU	Collection of Insects, Southwest University, Chongqing (ex South-west Agricultural University), Chongqing, China
YU	Yangtze University (Hubei Agricultural College), Jingzhou, Hubei, China

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Other acronyms used in this work:
TD: Type depository
TL: Type locality

Results

genus *Agnioides* Breuning, 1956

Agnioides Breuning, 1956: 671. Type species: *Agnioides striatopunctatus* Breuning, 1956, by original designation.
Paragniopsis Breuning, 1965: 59. Type species: *Paragniopsis ochraceomaculata* Breuning, 1965, by original designation. Synonymized by Roguet, 2017: 104.
Paragniopsis: Rondon & Breuning, 1970: 445.
Agnioides: Löbl & Smetana, 2010: 276.

Distribution. China, Laos, India.

Remarks. The genus *Agnioides* Breuning, 1956 contains only one species which was described from a male specimen from India, while the genus *Paragniopsis* Breuning, 1965 contains a unique species which was described from a female specimen from Laos. After the comparison of the two holotypes and other specimens from China, we agree with Roguet (2017) that *Paragniopsis ochraceomaculata* Breuning, 1965 is a junior synonym of *Agnioides striatopunctatus* Breuning, 1956 and the genus *Paragniopsis* is a junior synonym of *Agnioides*.

Agnioides striatopunctatus Breuning, 1956

Agnioides striatopunctatus Breuning, 1956: 671, fig. 3. TL: India, West-Bengal (Darjeeling District) [British Bootang]. TD: MHNL.
Paragniopsis ochraceomaculata Breuning, 1965: 59, fig. page 59. TL: Laos, Phou Khao Khoay. TD: BPBM. Synonymized by Roguet, 2017: 104.
Agnioides striatopunctatus: Pu, 1991: 250; Löbl & Smetana, 2010: 276.
Paragniopsis ochraceomaculata: Rondon & Breuning, 1970: 445.

Distribution. China: Yunnan; Laos, India.

Type specimens examined. Holotype of *Agnioides striatopunctatus* Breuning, 1956, male (Figs 1a–c), British Bootang, Maria Basti (MHNL= CCEC, examined through images). Holotype of *Paragniopsis ochraceomaculata* Breuning, 1965, female, Laos, region de Vientiane, Phou Khao Khoay, 1963.VIII, leg. J. A. Rondon (BPBM 8628, ex Collection J. A. Rondon, examined through images).

Other specimens examined. China: 1 male 1 female, Yunnan, Xishuangbanna, Damenglong, 1958.IV.24 (IZAS).

Remarks. The type locality of *Agnioides striatopunctatus* Breuning, 1956, British Bootang was often misrepresented as Bhutan (Pu, 1991). However, British Bootang is in fact located in West-Bengal, India (Lin, 2012), while Maria Basti is now Kalimpang environs. This species has not been recorded from Bhutan. The holotype of *Paragniopsis ochraceomaculata* Breuning, 1965, was misidentified as a male (Breuning, 1965). However, it is a female, which can be identified based on the shorter antennae with the sixth antennomere not extending to the elytral apex, while in males the sixth antennomere distinctly extends beyond the elytral apex. These two holotypes represent a male and female of the same species and therefore the synonym is confirmed.

Annamanum lunulatum (Pic, 1934)

(Figs 3–4)

Urecha lunulata Pic, 1934: 34. TL: Vietnam, Tonkin. TD: MNHN.
Annamanum lunulatum: Breuning, 1944: 402.
Monochamus fruhstorferi Breuning, 1964: 2. TL: Vietnam, Tonkin. TD: IRSNB. **Syn. nov.**
Uraecha longzhouensis Wang & Chiang, 2000: 46, figs 1–4. TL: China, Guangxi. TD: SWU. Synonymized by Lin & Ge, 2017: 893, figs. 10–12.

FIGURES 1–2. *Agnioides striatopunctatus* Breuning, 1956. 1. Holotype of *Agnioides striatopunctatus* Breuning, 1956 (photographed by Harold Labrique), male, from India. a. Dorsal view, b. Lateral view, c. Labels. 2. Holotype of *Paragniopsis ochraceomaculata* Breuning, 1965 (photographed by Nobuo Ohbayashi), female, from Laos. Scale 4 mm. 1c. Not to scale.

Distribution: China: Guangxi, Yunnan; Vietnam.

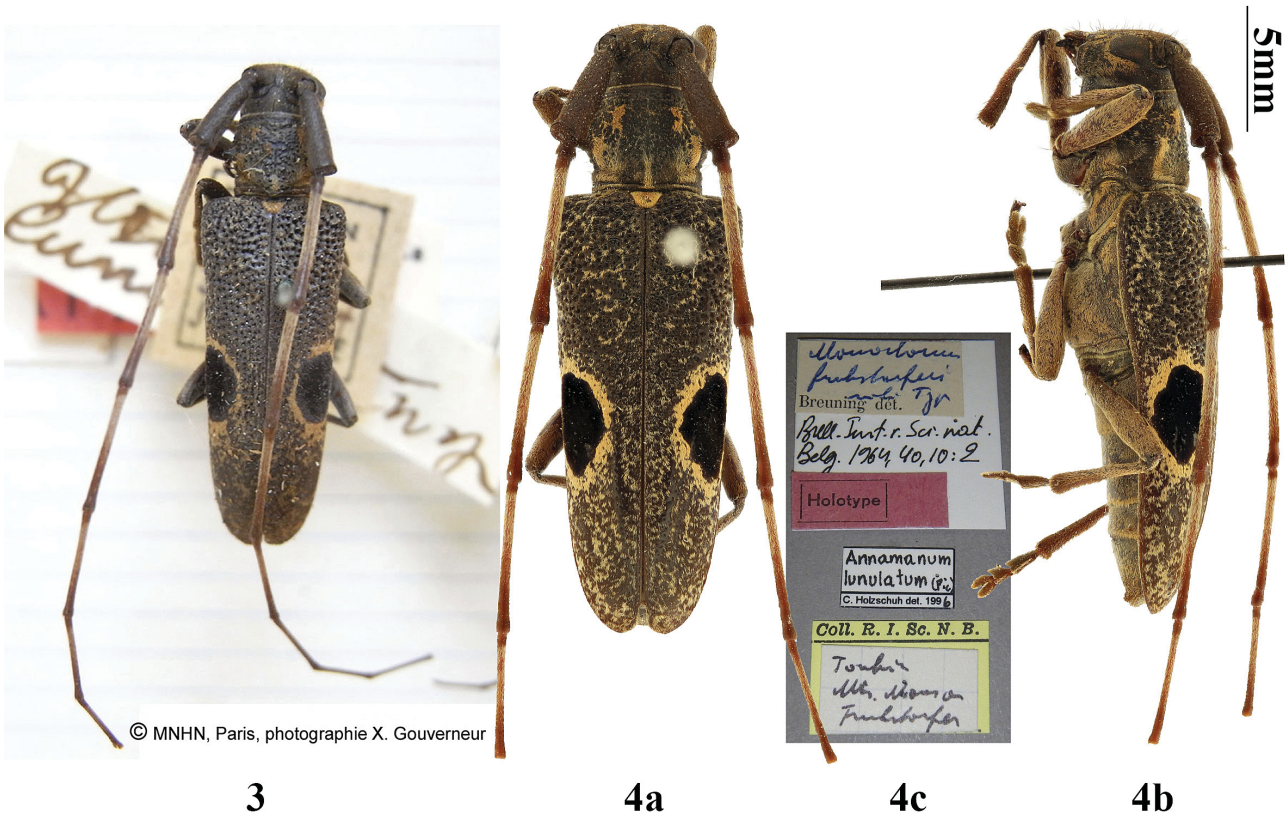
Type specimens examined. Holotype of *Urecha lunulata* Pic, 1934, female (Fig. 3), Vietnam, Tonkin, Chapa (MNHN, examined through images). Holotype of *Uraecha longzhouensis* Wang & Chiang, 2000, male, China, Guangxi (SWU, examined through images). Holotype of *Monochamus fruhstorferi* Breuning, 1964, female (Figs 4a–c, not male as reported in the original paper), Vietnam, Tonkin, Monts Mauson, leg. Hans Fruhstorfer (IRSNB, examined through images).

Other specimens examined. China: 1 male, Yunnan, Jinghong, Menghai county, Nabanhe Nature Reserve, Guomenshan, alt. 1114 m, 100.60610°E, 22.24644°N, 2009.V.26, leg. L.Z. Meng by Malaise trap (IZAS, IOZ(E)1858627).

Vietnam: 4 males 4 females, Vinh Phuc Prov., Tam Dao National Park, 965 m, 21°28.4'N, 105°38.8'E, Sante

Canopy Malaise Trap, 2011.VI.15–25, leg. Steven W. Lingafelter (NMNH); 2 females, Vinh Phuc Prov., Tam Dao National Park, 955 m, 21°28.408'N, 105°38.816'E, 2011.VI, leg. Long (NMNH); 1 male, Cao Bang Prov., Phja-Den environs, 948 m, 22°32.433'N, 105°52.012'E, Sante Canopy Malaise Trap, 2011.V.25–VI.5, leg. Steven W. Lingafelter (NMNH).

Remarks. The holotype of *Monochamus fruhstorferi* Breuning, 1964 was misidentified as a male (Breuning, 1964), but it is a female and it can be easily identified by the darker apices from antennomeres III to XI and the shape of ventrite V. It matches with the holotype female of *Urecha* (sic) *lunulata* Pic, 1934 very well and is herein synonymized, although it was identified as *Annamanum lunulatum* (Pic, 1934) by Carolus Holzschuh in 1996 (Fig. 4c). And the series of specimens collected from Vietnam confirmed that males of this species are identical to the holotype male of *Uraecha longzhouensis* Wang & Chiang, 2000 from Guangxi, China.



FIGURES 3–4. *Annamanum lunulatum* (Pic, 1934). 3. Holotype of *Urecha* (sic) *lunulata* Pic, 1934 (photographed by Xavier Gouverneur), female, from Vietnam, Tonkin, Chapa. 4. holotype of *Monochamus fruhstorferi* Breuning, 1964, female, from Vietnam, Tonkin, Mauson, photographed by Camille Locatelli. a. Dorsal view, b. Lateral view, c. Labels. 3 & 4c. Not to scale. 4a & 4b. Scale 5 mm.

Anoplophora ankangensis (Chiang, 1981) comb. nov.

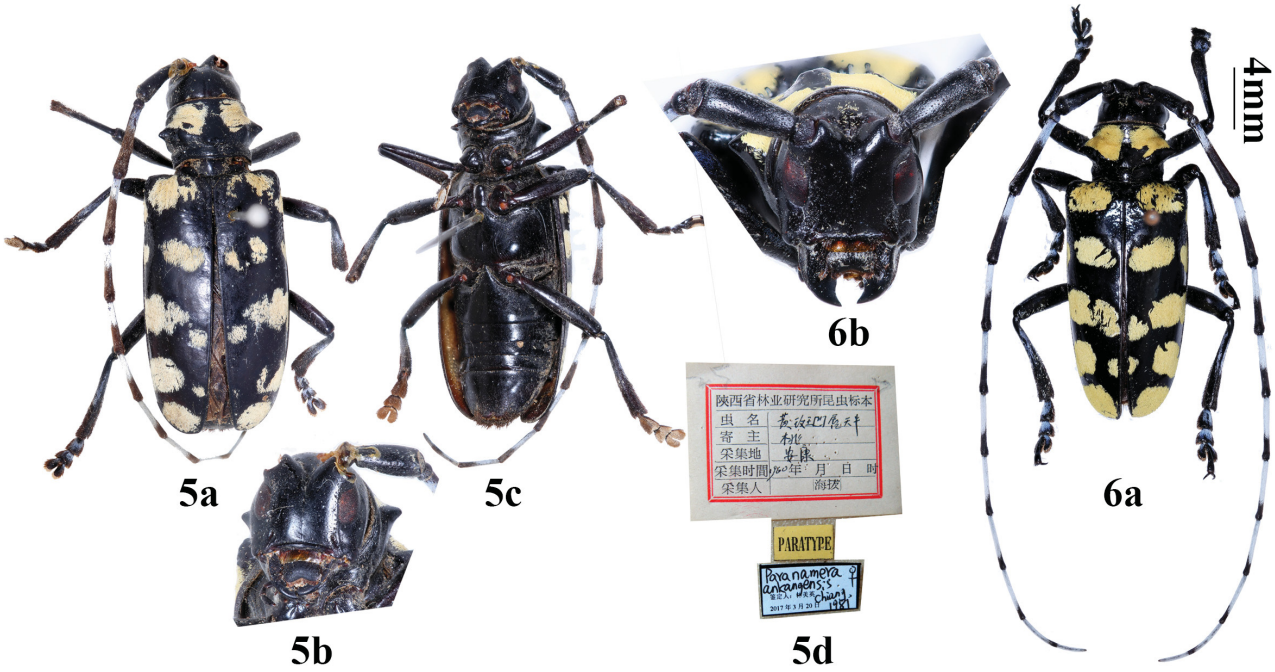
(Figs 5–9)

Paranamera ankangensis Chiang, 1981: 82, 84, pl. 1, fig. 10. TL: China, Shaanxi. TD: NWAFU.
Paranamera ankangensis: Chiang *et al.*, 1985: 134, pl. IX, fig. 152; Löbl & Smetana, 2010: 284; Lin, 2017: 338, pl. 29, fig. 8.

Diagnosis (Lin, 2017). This species is similar to *Anoplophora elegans* (Gahan, 1888) (Lingafelter & Hoebeke, 2002: 77, pl. 8, fig. a) but without annular pubescence at the apex of each antennomere. It is similar to *A. stanleyana* Hope, 1839 (Lingafelter & Hoebeke, 2002: 217, pl. 31, figs. d, e, f) and *A. birmanica* Hüdepohl, 1990 (Lingafelter & Hoebeke, 2002: 80, pl. 10, fig. a), but the yellowish pubescent markings on the pronotum terminate near the middle prothoracic lateral tubercles and lack such yellow pubescence at the basal half. Compared with *A. horsfieldii* (Hope, 1842) (Lingafelter & Hoebeke, 2002: 86, pl. 13, figs. a, b), the pronotal yellow pubescent

markings are larger and only at the apical half, and the yellow elytral pubescent markings have five transverse lines instead of four.

Specimens examined. China: 1 female, paratype, Shaanxi, Ankang, host: *Prunus persica* (Linnaeus) Batsch, 1960 (NWAFU, ex entomological collection of Shaanxi Forestrial Research Institute); 1 male, Shaanxi, Xunyang, 1981.VIII.27, leg. Fangfang She, Congde Lu (NWAFU, CO025460); 1 female, Shaanxi, Xunyang, 1981.VIII, leg. Congde Lu (NWAFU, CO027073); 1 female, Hunan, Hupingshan, Xiangbizigou, 2005.VII.20, leg. Zhao & Li (CBWX).



FIGURES 5–6. *Anoplophora ankangensis* (Chiang, 1981) comb. nov. 5. Paratype of *Paranamera ankangensis* Chiang, 1981, female, from Shaanxi, Ankang. 6. Male, from Shaanxi, Xunyang. a. Dorsal view, b. head, frontal view, c. Ventral view, d. Labels. Scale 4 mm.

Distribution. China: Henan, Shaanxi, Hunan (new Province record).

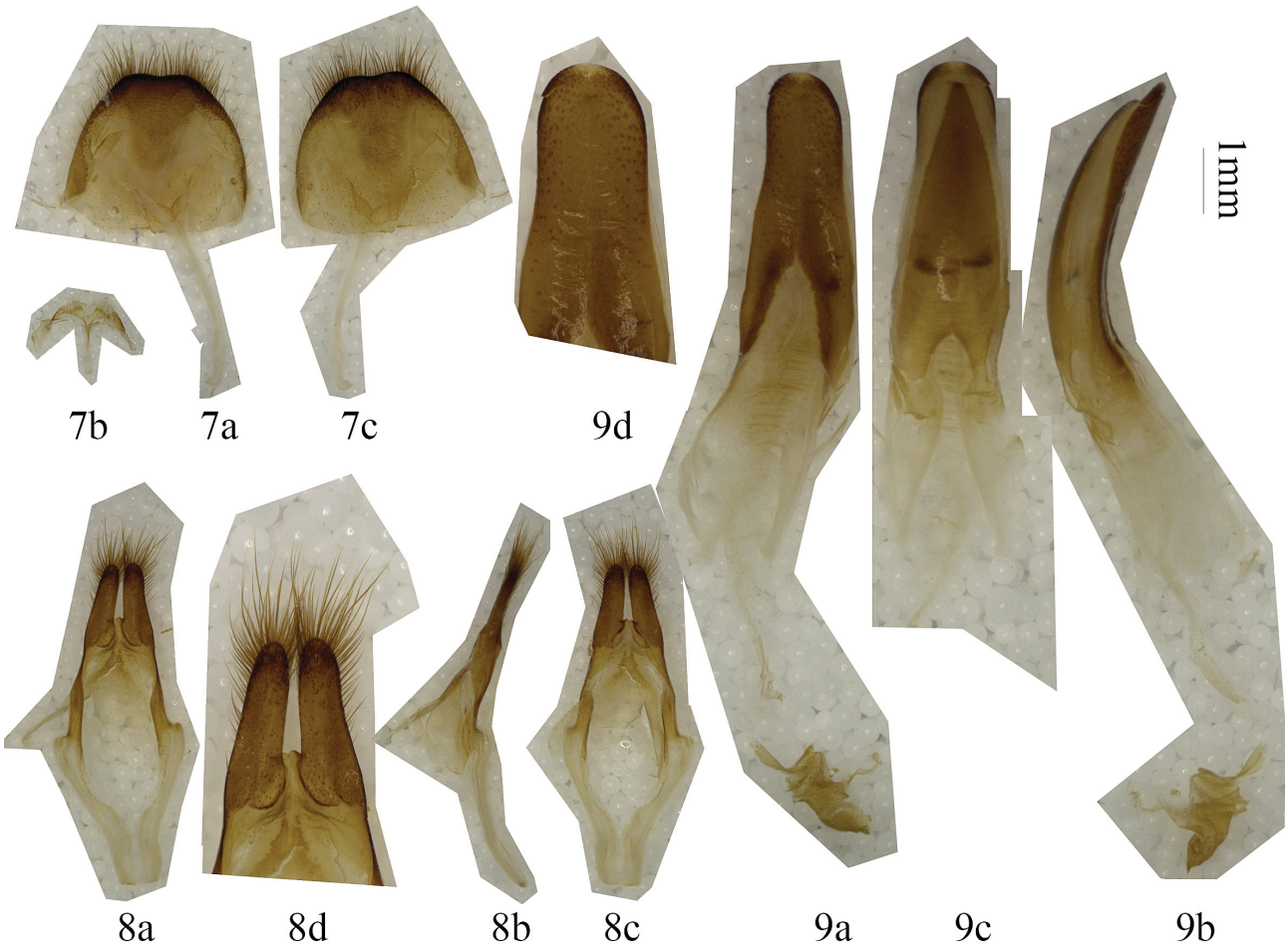
Host plants (Chiang, 1981; Tavakilian & Chevillotte, 2018**).** *Prunus persica* (Linnaeus) Batsch (Rosaceae).

Remarks. The holotype is a female from Shaanxi, Ankang, collected in 1960.VII and was deposited in Northwestern Agriculture college (Chiang, 1981). It should be deposited in NWAFU, but the first author did not find the holotype in the main collection of NWAFU during her visit in 2017. It could be in another collection hosted by the Agriculture College (personal communication with Lin Lü, 2017.III.30). Fortunately she found the paratype female, which is also from Shaanxi, Ankang (reported in the Chinese description but missing in the English summary by Chiang, 1981), which indicated that the entomological collection of Shaanxi Forestry Research Institute is deposited in NWAFU.

Specimen of *Paranamera malaccensis* Breuning, 1935 examined. Malaysia: 1 male, Sabah, Crocker Range, vic. Trus Madi, 2000.III.18, leg. Local collector (DJHC). Our examination of the type species of *Paranamera* Breuning, 1935, *P. malaccensis* Breuning, 1935, shows that it lacks the common features present in *Anoplophora.* It lacks a posteromedial pronotal callus (present in most *Anoplophora* and *P. ankangensis* Chiang, 1981), it has narrow-based lateral pronotal tubercles that are elevated apically (broad-based lateral pronotal tubercles that are not or very weakly elevated apically are present in most *Anoplophora* species and *P. ankangensis*), the scape is cylindrical with a reduced cicatrix and as long as the third antennomere (the scape is enlarged apically with a pronounced cicatrix and distinctly shorter than the third antennomere in *Anoplophora* and *P. ankangensis*), the sutural elytral apex is sub-spiniform or acute (rounded apically in *Anoplophora* and *P. ankangensis*), and the body is nearly uniformly covered in pubescence (distinct glabrous regions are present in *Anoplophora* species and *P. ankangensis*). One additional feature, a strongly emarginate labrum that is present in species of *Paranamera* (and mentioned in the original description of the genus by Breuning (1935), was the basis for placing *P. ankangensis* in

that genus by Chiang (1981). In most *Anoplophora* the labrum is shallowly emarginate medially. However, this character is variable among and within species (Lingafelter & Hoebeke, 2002) and should not be used as a basis to exclude *P. ankangensis* from *Anoplophora*. Therefore, based on these features, *Paranamera ankangensis* Chiang, 1981 is transferred to *Anoplophora* as a new combination.

The genus *Paranamera* Breuning, 1935 now includes three species: *P. malaccensis* Breuning, 1935 (Malaysia, Malacca, Penang), *P. excisa* Breuning, 1942 (Indonesia, West Sumatra) and *P. oculata* Hüdepohl, 1994 (Myanmar, Tenasserim; Thailand, Pak, Chong). We consider that the species *P. oculata* Hüdepohl, 1994 may need to be transferred from this genus due to its different pronotum and elytral apices, however, we reserve that decision for future study.



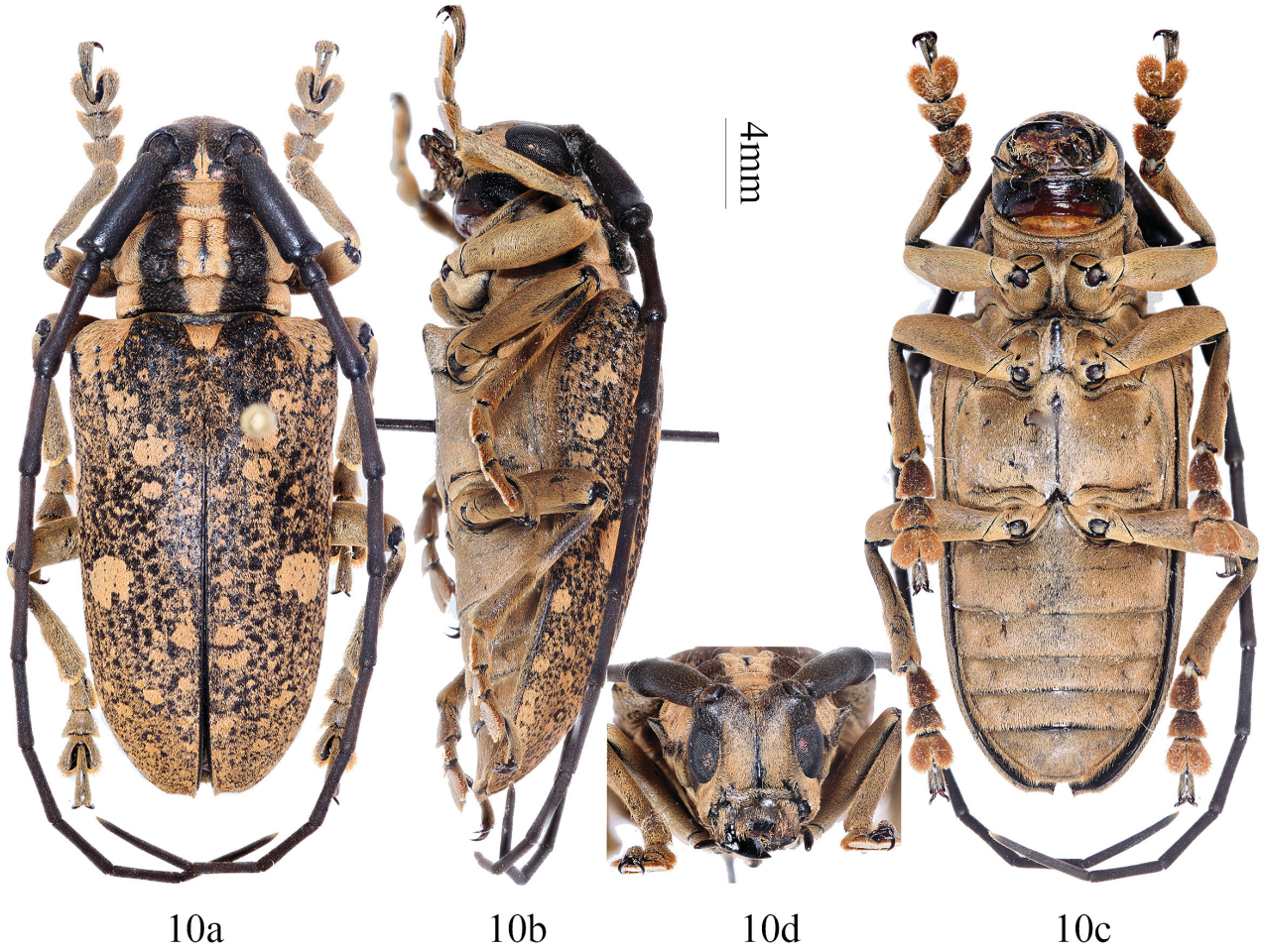
FIGURES 7–9. *Anoplophora ankangensis* (Chiang, 1981) comb. nov., male genitalia. 7. Tergite VIII and sternites VIII & IX. a. Ventral view, b. sternite VIII, c. Dorsal view. 8. Tegmen. 9. Median lobe with median struts, internal sac (partly broken and lost). a. Ventral view, b. Lateral view, c. Dorsal view, d. Ventral view and magnified. Scale 1 mm.

Anoplophora multimaculata (Xie & Wang, 2015) comb. nov.

Mimonemophas multimaculatus Xie & Wang, 2015 In: Xie *et al*., 2015: 599, figs. 5–6, 10–14. TL: China, Hubei. TD: YU.

Distribution. China: Hubei.

Remarks. *Mimonemophas multimaculatus* Xie & Wang is transferred to *Anoplophora* (new combination) since *Mimonemophas* was synonymized with *Anoplophora* by Bi & N. Ohbayashi (2015). The presence of dense bristle-like setae on the non-pubescent area of elytra in *Mimonemophas* is not a generic feature that distinguishes it from *Anoplophora* sensu Lingafelter & Hoebeke (2002) (Bi & N. Ohbayashi, 2015). The ending of the specific epithet should be "a" instead of "us" in the genus *Anoplophora*, because it is feminine in gender.



FIGURES 10. *Paranamera malaccensis* Breuning, 1935, male, from Malaysia, Sabah. a. Dorsal view, b. Lateral view, c. Ventral view, d. Head, frontal view. Scale 4 mm.

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