



Taxonomic notes on the *Lycocerus purpurascens* species-group (Coleoptera: Cantharidae), with descriptions of two new species from China

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Abstract

The *Lycocerus purpurascens* species-group is redefined. *Lycocerus purpurascens* (Wittmer, 1978) is redescribed in detail. Another four species are assigned to this species-group, including *L. safraneki* (Švihla, 2004), *L. benesi* (Švihla, 2004), *L. nigromaculatus* **sp. nov.** (Sichuan, Chongqing, Hubei, Shaanxi) and *L. medogensis* **sp. nov.** (Xizang). These species are illustrated with habitus, aedeagus, as well as abdominal sternite VIII and internal reproductive organs of female. An identification key and a distribution map of the species-group are provided.

Key words: soldier beetles, *Lycocerus*, new species, taxonomy, East Asia

Introduction

Lycocerus Gorham, 1889 comprises over 300 species distributed in the Oriental and Eastern Palearctic Regions (Delkeskamp 1977; Kazantsev & Brancucci 2007). To facilitate species recognition and systematic classification within this speciose genus, Okushima (2005) has introduced the concept of species-group for its subdivision, which has been widely followed in subsequent works. To date, 17 species-groups have been proposed (Okushima 2005; Okushima & Brancucci 2008; Yang *et al.* 2014; Hsiao & Okushima 2016; Okushima & Hsiao 2017; Xi *et al.* 2021, 2022; Wang *et al.* 2022, 2023a, b). Among these, the *Lycocerus purpurascens* species-group was originally established by Okushima (2005), which at that time included only a single species at that moment. Its systematic status within the genus *Lycocerus* remains uncertain, as indicated in the phylogenetic study conducted by Hsiao (2021). This uncertainty highlights the need for additional species to be examined in order to clarify this issue.

During our recent study on the Chinese fauna, we found more species attributed to the *L. purpurascens* species-group, including two previously named species and two undescribed ones. Given that the characteristics of female reproductive systems are crucial for diagnosing species-groups, it is necessary to provide such information due to its absence in the original definition (Okushima 2005). This study aims to advance the taxonomic understanding of the *L. purpurascens* species-group and furnish references for the classification and phylogeny of *Lycocerus* in future research.

Material and methods

The studied material is preserved in the following collections:

IZCAS—Institute of Zoology, Chinese Academy of Sciences, Beijing, China;

MHBU—Museum of Hebei University, Baoding, China;
NHMB—Naturhistorisches Museum Basel, Switzerland;
NMPC—National Museum, Praha, Czech Republic.

Morphological terminology used in this study mainly follows that of Okushima (2005). The genitalia of both sexes and the abdominal sternites VIII of females were dissected and cleared in 10% NaOH solution. Subsequently, male genitalia were soaked in a warm 30% NaOH solution for an appropriate duration (generally between 5 to 15 minutes, depending on their condition and size). Following this, the male genitalia were cleaned, and female genitalia were dyed with haematoxylin. Habitus photos were captured using a Leica M205A stereomicroscope, with multiple layers stacked utilizing Combine ZM (Helicon Focus 5.3). Line drawings were produced with a camera lucida attached to a Nikon SMZ1500 stereo-microscope and subsequently edited in CorelDRAW 12 and Adobe Photoshop CS3.10.0.1. The body length was measured from the anterior margin of the clypeus to the elytral apex, while the body width was assessed across the humeral part of the elytra.

Complete label data were listed for type specimens of the previously known species, using square brackets “[]” for our remarks and comments, [p] indicating that the following data are printed and [h] that they are handwritten. Quotation marks were used to separate data from different labels and a backslash “/” to separate data from different lines of the same label. For the additional specimens, quotation marks were used if their original labels are written in English. All the labels written in Chinese were transliterated into English.

The distribution map is produced by ArcGIS 10.6 (Esri, Redlands, California, USA) and processed in the Adobe Photoshop CS5.

Taxonomy

Lycocerus purpurascens species-group

Updated diagnosis. Body small sized (5.0–8.0 mm). Body yellow, head, pronotum and scutellum yellowish orange, pronotum sometimes with a pair of small black spots, elytra blue or green, with strong metallic luster. Antennae filiform, lacking smooth longitudinal grooves on middle antennomeres in both sexes. Pronotum subquadrate, sometimes slightly widened posteriorly. Elytra subparallel-sided, without distinct longitudinal ribs on disc. Each outer claw of pro- and mesothoracic legs bearing a digitiform tooth at base in both sexes; all other claws simple (Figs 1, 5). Female reproductive system with spermathecal duct short; diverticulum thin and long; spermatheca composed of two long spiral tubes; accessory gland slightly expanded apically, at least twice shorter than spermathecal ducts (Fig. 3).

Distribution. China, Bhutan (Fig. 7).

Lycocerus purpurascens (Wittmer, 1978)

(Figs 1A, B, 2A–C, 3A, 4A)

Athemus (Andrathemus) purpurascens Wittmer, 1978: 155, fig. 5; 1995: 222, fig. 177.

Lycocerus purpurascens: Okushima 2005: 141, fig. 37.

Lycocerus purpureus Kazantsev 2007: 54 [replacement name for *Athemus (Andrathemus) purpurascens* Wittmer, 1978, nec *Cantharis purpurascens* Pic, 1911, synonymized with *Lycocerus rubripennis* (Hope, 1831)]; 2007: 253; Yang *et al.* 2014: 456, fig. 105. Synonymized by Löbl & Smetana 2008: 25.

Type material examined. **Holotype** ♂ (NHMB), [p] “Nat.-Hist. Museum / Basel – Bhutan / Expedition 1972”, [p] “Dechhi Paka 3300m / 19–20.5”, [p] “HOLOTYPUS”, [h] “*Athemus* Subg. *Andrathemus* / *purpurascens* / Wittm. / det. W. Wittmer”.

Additional material examined. 1 ♂, 1 ♀ (IZCAS), China: Xizang: Nyingchi City, 3050 m, 7.viii.1983, leg. Y.-H. Han.

Redescription. Body length: 7.0–8.0 mm (both sexes); width: 1.2–1.6 mm (both sexes).

Male (Fig. 1A). Body yellow, slightly darkened at maxillary and labial palpi, antennae, and tarsi, elytra metallic blue or green. Body surface densely covered with short pale-yellow pubescence.

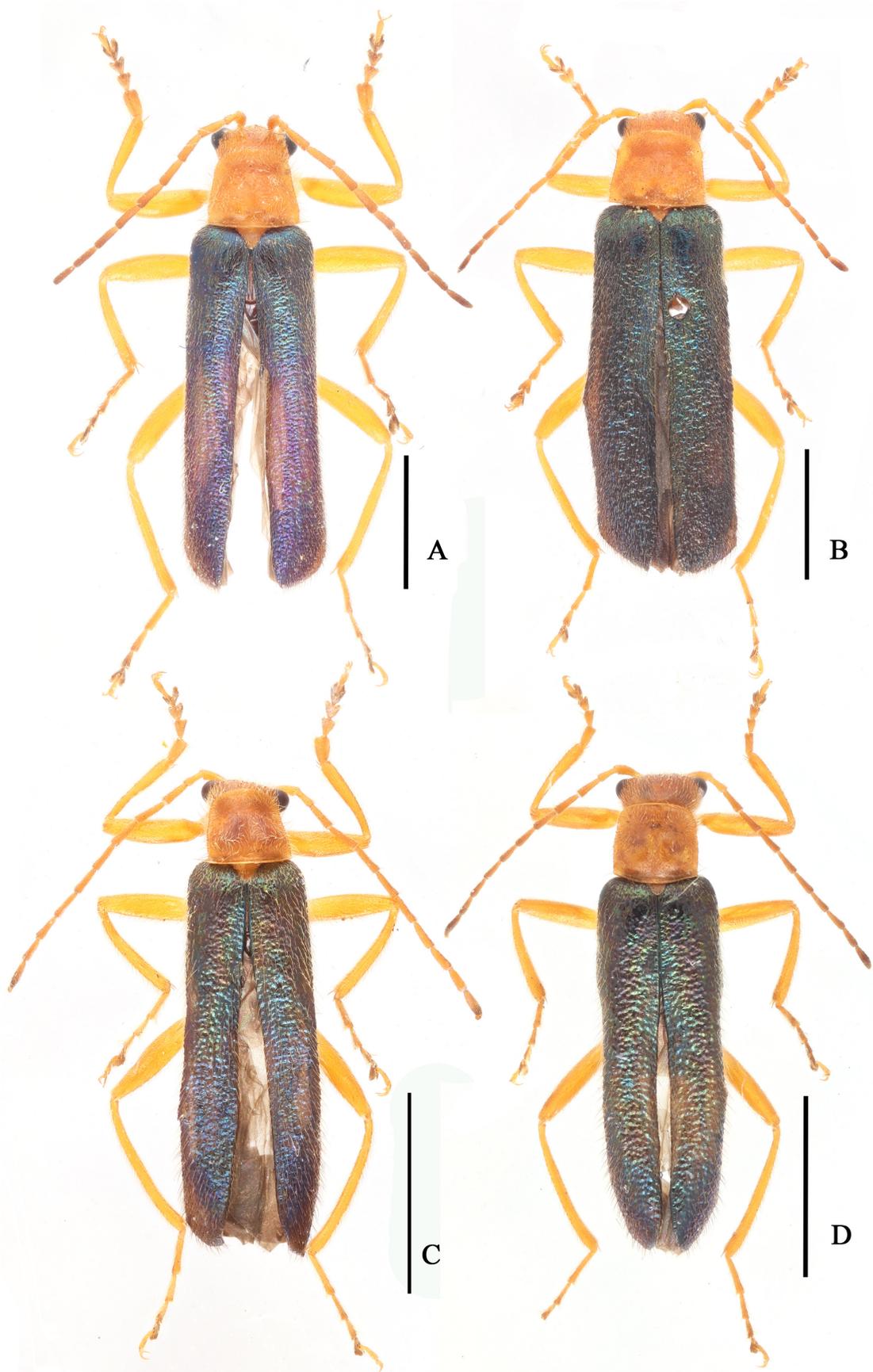


FIGURE 1. Habitus, dorsal view (A, C. male; B, D. female). A, B. *Lycoerus purpurascens* (Wittmer, 1978). C, D. *L. safraneki* (Švihla, 2004). Scale bars: 2.0 mm.

Head feebly narrowed behind eyes, surface densely and finely punctate; eyes moderately protruding; head width across eyes feebly wider than anterior margin of pronotum; antennae reaching approximately apical third of elytral length when inclined, antennomeres II shortest, 2.2 times as long as wide, III–IX slightly widened apically, V longest, X–XI nearly parallel-sided, subequal in length, XI acute at apices.

Pronotum nearly trapezoidal, anterior margin feebly arcuate, lateral margins slightly diverging posteriorly, posterior margin nearly straight, anterior angles rounded, posterior angles right-angled, disc convex on posterolateral parts, surface finely and feebly sparsely punctate than that on head. Elytra 4.3 times as long as humeral width and 6.0 times as long as pronotum, 1.4 times as wide as posterior margin of pronotum.

Aedeagus (Fig. 2A–C): ventral process of each paramere slender, even in width along whole length, feebly bent inwards and approaching each other in ventral view (Fig. 2A), slightly bent ventrally in lateral view (Fig. 2C); dorsal plate of each paramere nearly as long as ventral process (Fig. 2A, C), with inner margins distinctly sinuate and extending basally over apical margins of basal pieces, outer margins converging apically, narrowly rounded at apex in dorsal view (Fig. 2B), slightly truncated at apex in lateral view (Fig. 2C); the emargination between ventral process and dorsal plate narrowly rounded at bottom (Fig. 2C); laterophyse progressively narrowed apically in lateral view (Fig. 2C).

Female (Fig. 1B). Similar to the male, but body larger; eyes less protruding; antennae shorter, extending posteriorly to approximately half elytral length when inclined. Abdominal sternite VIII (Fig. 3A): shallowly and triangularly emarginated in middle and on both sides of posterior margin, with the middle emargination nearly as deep as lateral ones, the portions between middle and lateral emarginations widely rounded at apices. Internal organ of reproductive system (Fig. 4A): spermatheca I distinctly shorter than II; diverticulum nearly as long as II; accessory gland opening near bases of both spermathecae.

Distribution. China (Xizang), Bhutan.

Remarks. This specific name has been replaced by *Lycocerus purpureus* established by Kazantsev (2007), due to its preoccupation by *Cantharis purpurascens* Pic, 1911, which was regarded as a junior synonym of *Lycocerus rubripennis* (Hope, 1831) (Kazantsev 1999). However, the species referred as *Cantharis purpurascens* Pic, 1911, which was purportedly described by Pic, does not exist. It is actually a misidentification of the species *Cantharis purpreopubens* Pic, 1911, thereby resulting in an erroneous homonym treatment by Kazantsev (2007). This error was subsequently corrected by Löbl & Smetana (2008), but was overlooked in later studies by Yang *et al.* (2014) and Hsiao (2021). Therefore, it is necessary to clarify this nomenclatural change herein.

Lycocerus safraneki (Švihla, 2004)

(Figs 1C, D, 2D–F, 3B, 4B)

Athemus (*Andrathemus*) *safraneki* Švihla, 2004: 187, figs 106–108.

Lycocerus safraneki: Kazantsev & Brancucci 2007: 253.

Type material examined. **Holotype** ♂ (NMPC), [p] “China: E Tibet, Bomi env. / 29 52N 95 45E, ca.3000 m / 9.-10. 7. 1997 mixed forest / M. Trýzna & Šafránek lgt.”, [p] “HOLOTYPUS / *Athemus* / (*Andrathemus*) / *safraneki* sp. n. / V. Švihla det. 2003”.

Additional material examined. 1 ♂, 3 ♀♀ (MHBV), China: Xizang: Doshong La (Pass), 3300–4200 m, 8. viii. 2003, leg. H.-J. Xue & X.-P. Wang; 2 ♀♀ (IZCAS), Bayi, Town, Kadinggou, 3036 m, 18. viii. 2006, leg. Z.-S. Song; 1 ♂ (IZCAS), Nyingchi City, 3050m, 6. viii. 1983, leg. Y.-H. Han; 1 ♀ (IZCAS), Pai Town, Mainling (Milin) Co., 3000 m, 20. vii. 1983, leg. Y.-H. Han.

Redescription. Body length: 4.9–6.0 mm (both sexes); width: 0.9–1.2 mm (both sexes).

Male (Fig. 1C). Body yellow, slightly darkened at maxillary and labial palpi, antennae, and tarsi, elytra metallic green. Body surface densely covered with short pale-yellow pubescence.

Head feebly narrowed behind eyes, surface densely and finely punctate; eyes moderately protruding; head width across eyes feebly wider than anterior margin of pronotum; antennae reaching approximately apical third of elytral length when inclined, antennomeres II shortest, 2.5 times as long as wide, III–X slightly widened apically, VI longest, XI nearly parallel-sided, XI acute at apices.

Pronotum subquadrate, anterior margin feebly arcuate, lateral margins subparallel, posterior margin nearly straight, anterior angles rounded, posterior angles right-angled, disc convex on posterolateral parts, surface finely

and feebly sparsely punctate than that on head. Elytra 4.1 times as long as humeral width and 5.0 times as long as pronotum, 1.2 times as wide as posterior margin of the pronotum.

Aedeagus (Fig. 2D–F): ventral process of each paramere slender, even in width along whole length, nearly parallel to each other, feebly bent inwards near apices in ventral view (Fig. 2D), slightly expanded at apex in lateral view (Fig. 2F); dorsal plate of each paramere slightly longer than ventral process (Fig. 2D, F), with inner margins diverging apically and not reaching apical margins of basal pieces, outer margins feebly sinuate, subrounded at apices in dorsal view (Fig. 2E), acute at apex in lateral view (Fig. 2F); the emargination between ventral process and dorsal plate rectangular at bottom (Fig. 2F); laterophyse abruptly narrowed apically in lateral view (Fig. 2F).

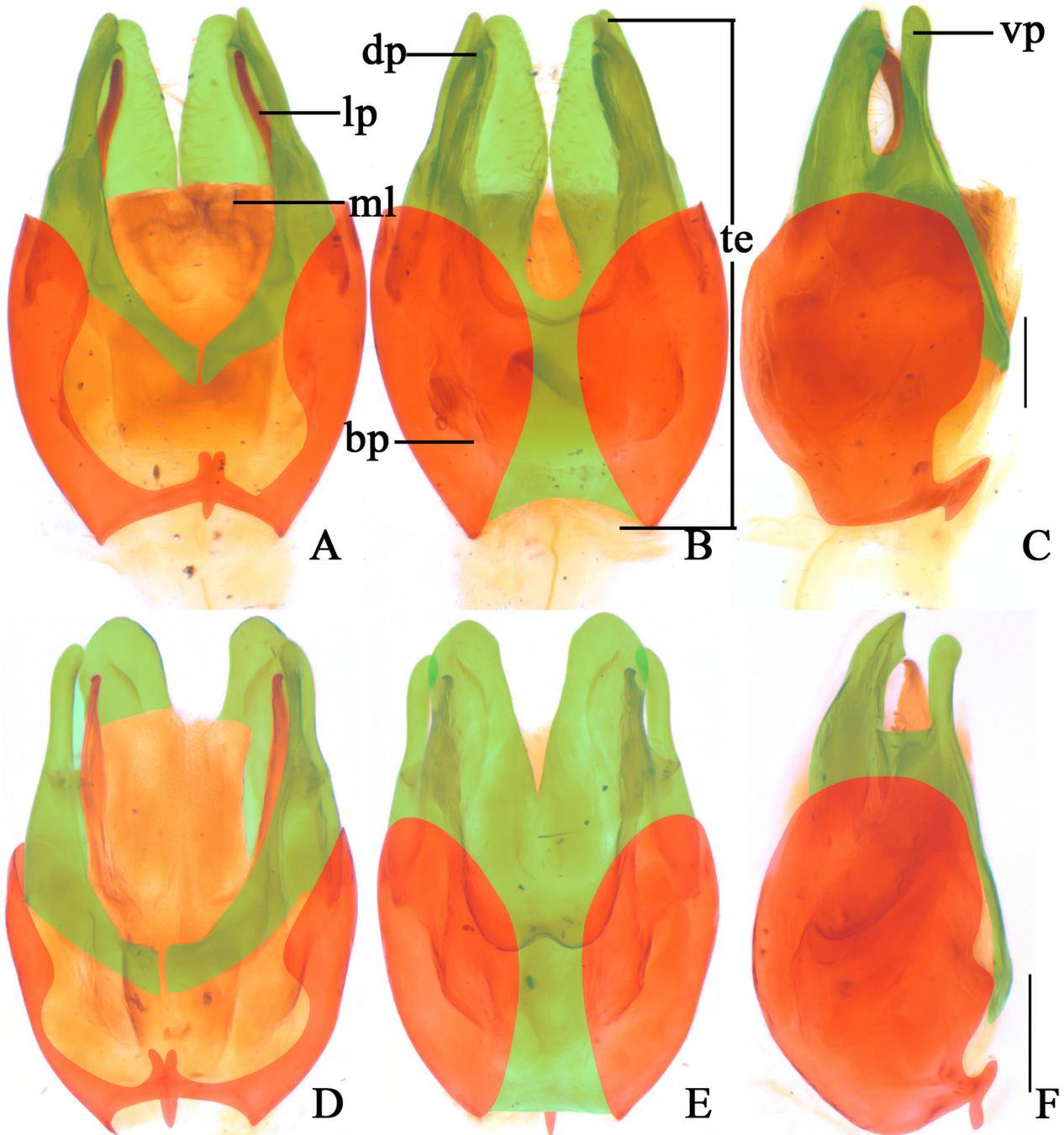


FIGURE 2. Aedeagus (A, D. ventral view; B, E. dorsal view; C, F. lateral view). A–C. *Lycocerus purpurascens* (Wittmer, 1978). D–F. *L. safraneki* (Švihla, 2004). Abbreviations: bp—basal piece, dp—dorsal plate of each paramere, lp—laterophyse, ml—median lobe, te—tegmen, vp—ventral process of each paramere. Scale bars: 0.5 mm.

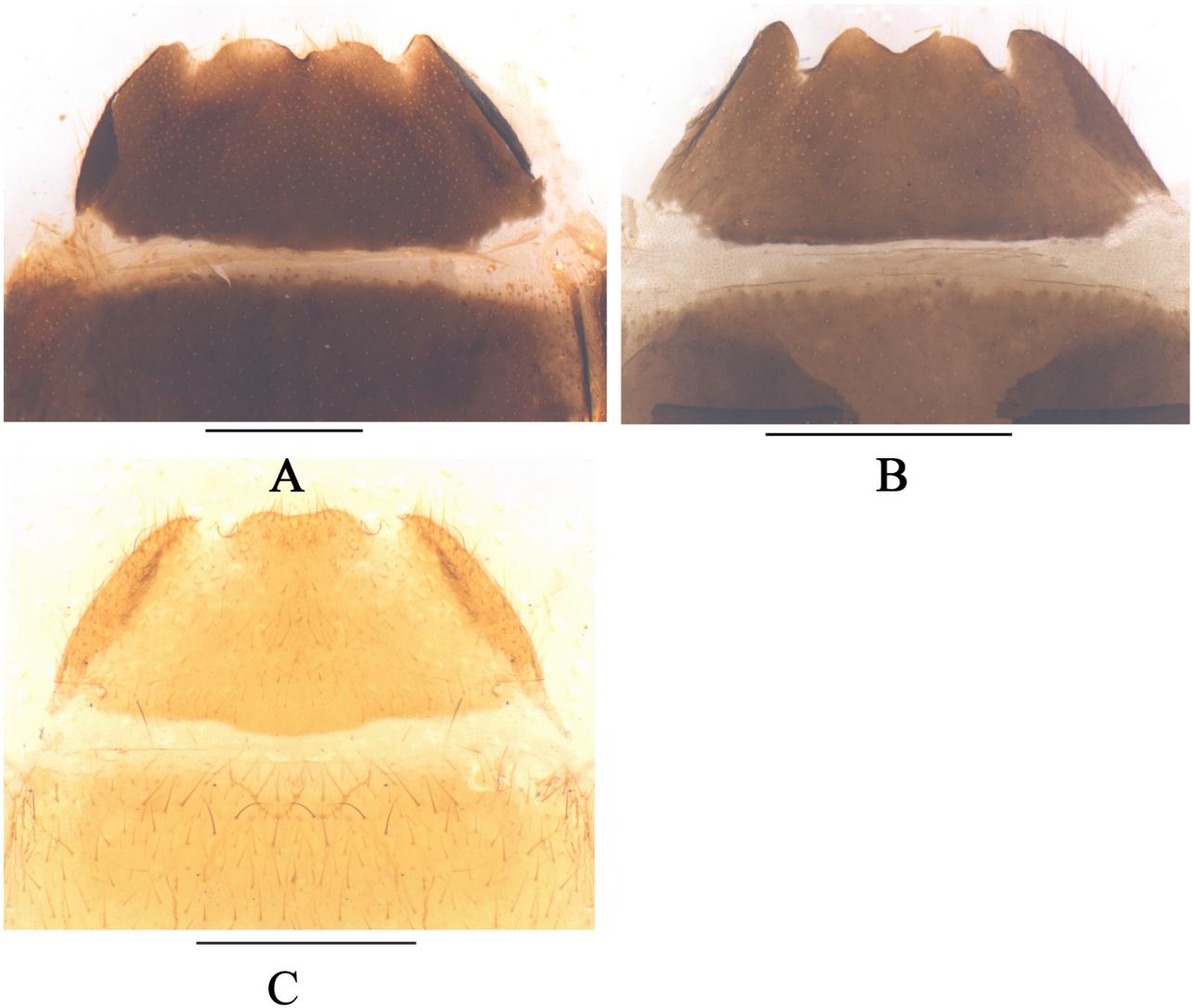


FIGURE 3. Abdominal sternite VIII of female, ventral view. **A.** *Lycocerus purpurascens* (Wittmer, 1978). **B.** *L. safranki* (Švihla, 2004). **C.** *L. nigromaculatus* **sp. nov.** Scale bars: 0.5 mm.

Female (Fig. 1D). Similar to the male, but body larger; eyes less protruding; antennae shorter, extending posteriorly to approximately basal fourth of elytral length when inclined. Abdominal sternite VIII (Fig. 3B): deeply and triangularly emarginated in middle and on both sides of posterior margin, with the middle emargination wider and shallower than lateral ones, the portions between middle and lateral emarginations narrowly rounded at apices. Internal organ of reproductive system (Fig. 4B): spermatheca I distinctly longer than II; diverticulum nearly as long as I; accessory gland opening at base of spermatheca II.

Distribution. China (Xizang).

***Lycocerus nigromaculatus* Y. Yang, X. Yang & Liu, sp. nov.**

(Figs 5A, B, 6A–C, 3C, 4C)

Type material. HOLOTYPE: CHINA: ♂ (MHBUS), China, Sichuan, Songpan, Shuanghe Vill., 03. viii. 2024, leg. P. Wang. **PARATYPES:** CHINA: 2 ♀♀ (MHBUS), Sichuan: Songpan, Fengping Vill., 26. vii. 2024, leg. C.-T. Wang; 1 ♀ (MHBUS), Songpan, Shuanghe Vill., Xigou, 23. vii. 2024, leg. C.-T. Wang; 1 ♀ (MHBUS), Songpan, Huanglong, Dawan Vill., 27. vii. 2024, leg. C.-T. Wang. Chongqing: 1 ♂, 3 ♀♀ (MHBUS), Yintiaoling, Hongqi, Maoxuanwo, 22. vii. 2024, leg. P. Jiang; 1 ♂ (MHBUS), Yintiaoling, Linkouzi, Guimenguan, 26. vii. 2024, leg. L.-

Y Wang. Hubei: 1 ♂, 1 ♀ (IZCAS), Xingshan, Longmenhe, 1400 m, 24. vii. 1993, leg. S.-M. Song; 1 ♀ (IZCAS), Xingshan, Longmenhe, 1400 m, 23. vii. 1993, leg. X.-K. Yang; 1 ♀ (IZCAS), Xingshan, Longmenhe, 1670 m, 24. vii. 1993, leg. S.-M. Song. Shaanxi: 1 ♂ (MHBUS), Ningshan, Huoditang, 1276 m, 33°25'08"N, 108°24'02"E, 14. viii. 2013, leg. X.-C. Zhu & Y. Tian.

Description. Body length: 5.5–6.0 mm (5.8 mm in holotype); width: 1.2–1.6 mm (1.5 mm in holotype).

Male (Fig. 5A). Body yellow, slightly darkened at antennae, maxillary and labial palpi, as well as tarsi, meso- and metatibiae, pronotum with a pair of small rounded black spots on antero-lateral parts of disc, elytra metallic green. Body surface densely covered with short pale-yellow pubescence.

Head feebly narrowed behind eyes, surface densely and finely punctate; eyes strongly protruding; head width across eyes distinctly wider than anterior margin of pronotum; antennae reaching approximately apical third of elytral length when inclined, antennomeres II shortest, twice as long as wide, III–IX slightly widened apically, V longest, X–XI nearly parallel-sided, subequal in length, XI acute at apices.

Pronotum subquadrate, anterior margin feebly arcuate, lateral margins subparallel, posterior margin nearly straight, anterior angles rounded, posterior angles right-angled, disc convex on posterolateral parts, surface finely and feebly sparsely punctate than that on head. Elytra 4.3 times longer than humeral width and 5.0 times as long as pronotum, 1.3 times as wide as posterior margin of the pronotum.

Aedeagus (Fig. 6A–C): ventral process of each paramere slender, even in width along whole length, moderately bent to each other in ventral view (Fig. 6A), bent ventrally in lateral view (Fig. 6C); dorsal plate of each paramere slightly shorter than ventral process (Fig. 6A, C), with inner margins parallel to each at basal part and diverging apically at apical part and not reaching apical margins of basal pieces, outer margins slightly converging apically, subrounded at apices in dorsal view (Fig. 6B), truncate at apex in lateral view (Fig. 6C); the emargination between ventral process and dorsal plate widely rounded at bottom (Fig. 6C); laterophyse abruptly narrowed apically in lateral view (Fig. 6C).

Female (Fig. 5B). Similar to the male, but body larger; eyes less protruding; antennae shorter, extending posteriorly to approximately basal fourth of elytral length when inclined. Abdominal sternite VIII (Fig. 3C): shallowly and roundly emarginated in middle and on both sides of posterior margin, with the middle emargination slightly shallower than the lateral ones, the portions between middle and lateral emarginations widely rounded at apices. Internal organ of reproductive system (Fig. 4C): spermatheca I nearly as long as II; diverticulum slightly shorter than I or II; accessory gland opening at base of spermatheca II.

Etymology. The specific name is derived from the Latin *niger* (black) and *maculatus* (spotted), referring to the black spots on pronotal disc of this species.

Diagnosis. This new species is similar to *L. safraneki*, but can be readily distinguished by the following combination of characters: pronotum with a pair of small rounded black spots on antero-lateral parts of disc (Fig. 5A), while uniformly yellowish orange, without any black markings in *L. safraneki* (Fig. 1C); meso- and metatibiae darkened (Fig. 5A), while uniformly yellow in *L. safraneki* (Fig. 1C); eyes strongly protruding (Fig. 5A), while moderately protruding in *L. safraneki* (Fig. 1C); aedeagus with dorsal plate of each paramere slightly shorter than ventral process (Fig. 6A–C), while slightly longer in *L. safraneki* (Fig. 2D–F).

Distribution. China (Sichuan, Chongqing, Hubei, Shaanxi).

Lycocerus medogensis Y. Yang, Z. Yang & Liu, sp. nov.

(Figs 5C, 6D–F)

Type material. HOLOTYPE: CHINA: ♂ (MHBUS), “China, Xizang, Motuo County (Mêdog), near 80K, 29°41'09"N, 95°30'10"E, alt. 2330 m, mixed leaf litter, sifted, 09.VII.2018, Cheng, Peng & Shen leg.”.

Description. Body length: 7.0 mm (holotype); width: 1.4 mm (holotype).

Male (Fig. 5C). Body yellow, slightly darkened at tarsi, pronotum with a pair of small rounded black spots near middle of anterior margin, elytra metallic green. Body surface densely covered with short pale-yellow pubescence.

Head feebly narrowed behind eyes, surface densely and finely punctate; eyes moderately protruding; head width across eyes feebly wider than anterior margin of pronotum; antennae reaching approximately apical third of elytral length when inclined, antennomeres II shortest, 2.5 times as long as wide, III–IX slightly widened apically, V longest, X–XI nearly parallel-sided, subequal in length, XI acute at apices.

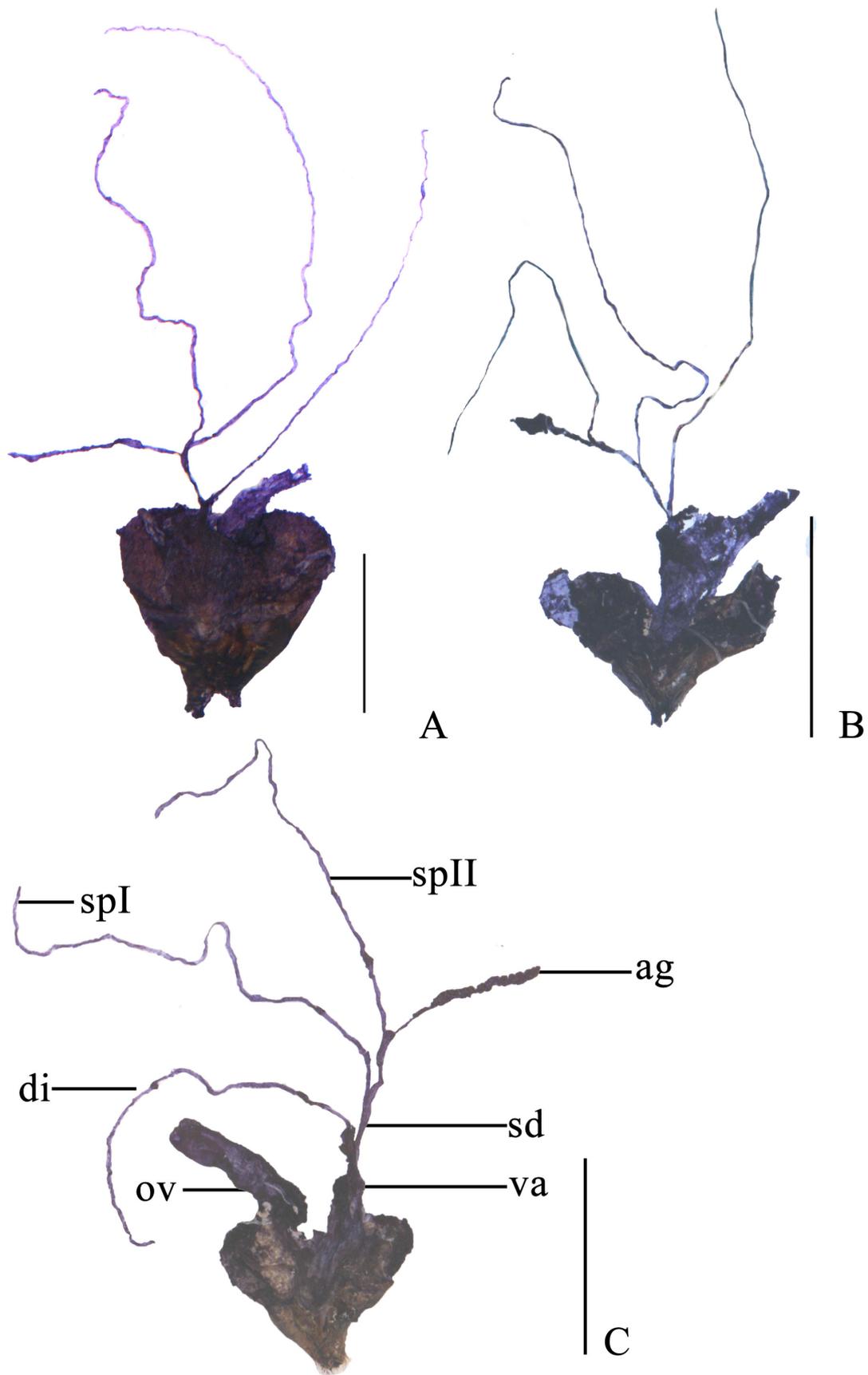


FIGURE 4. Internal organ of female reproductive system, lateral view. **A.** *Lycocerus purpurascens* (Wittmer, 1978). **B.** *L. safraneki* (Švihla, 2004). **C.** *L. nigromaculatus* **sp. nov.** Abbreviations: ag—accessory gland, di—diverticulum, sd—spermathecal duct, spI—spermatheca I, spII—spermatheca II, ov—median oviduct, va—vagina. Scale bars: 1.0 mm.

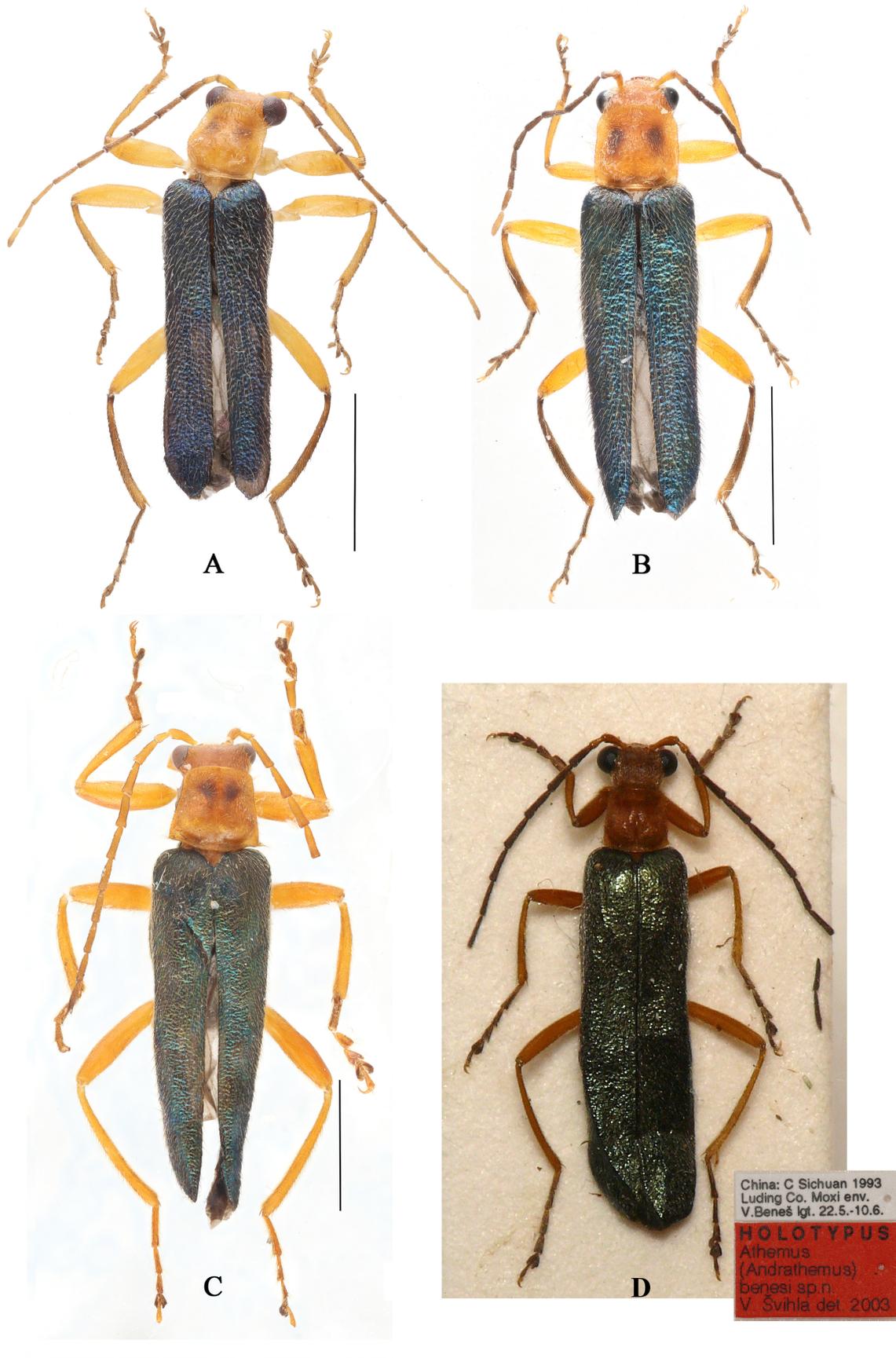


FIGURE 5. Habitus, dorsal view (A, C, D. male; B. female). **A, B.** *Lycocerus nigromaculatus* sp. nov. **C.** *L. medogensis* sp. nov. **D.** *L. benesi* (Švihla, 2004). Scale bars: 2.0 mm.

Pronotum nearly trapezoidal, anterior margin feebly arcuate, lateral margins slightly diverging posteriorly, posterior margin nearly straight, anterior angles rounded, posterior angles right-angled, disc convex on posterolateral parts, surface finely and feebly sparsely punctate than that on head. Elytra 4.2 times as long as humeral width and 4.5 times as long as pronotum, 1.2 times as wide as posterior margin of the pronotum.

Aedeagus (Fig. 6D–F): ventral process of each paramere slender, slightly expanded apically and nearly parallel to each other in ventral view (Fig. 6D), slightly widened apically and feebly bent ventrally in lateral view (Fig. 6F); dorsal plate of each paramere slightly longer than ventral process (Fig. 6D, F), with inner margins diverging apically and just reaching apical margins of basal pieces, outer margins slightly sinuate, widely rounded at apices in dorsal view (Fig. 6E), acute at apex in lateral view (Fig. 6F); the emargination between ventral process and dorsal plate narrowly rectangular at bottom (Fig. 6F); laterophyse progressively narrowed apically in lateral view (Fig. 6F).

Female. Unknown.

Etymology. The specific name is derived from its type locality, Mêdog, Xizang, China.

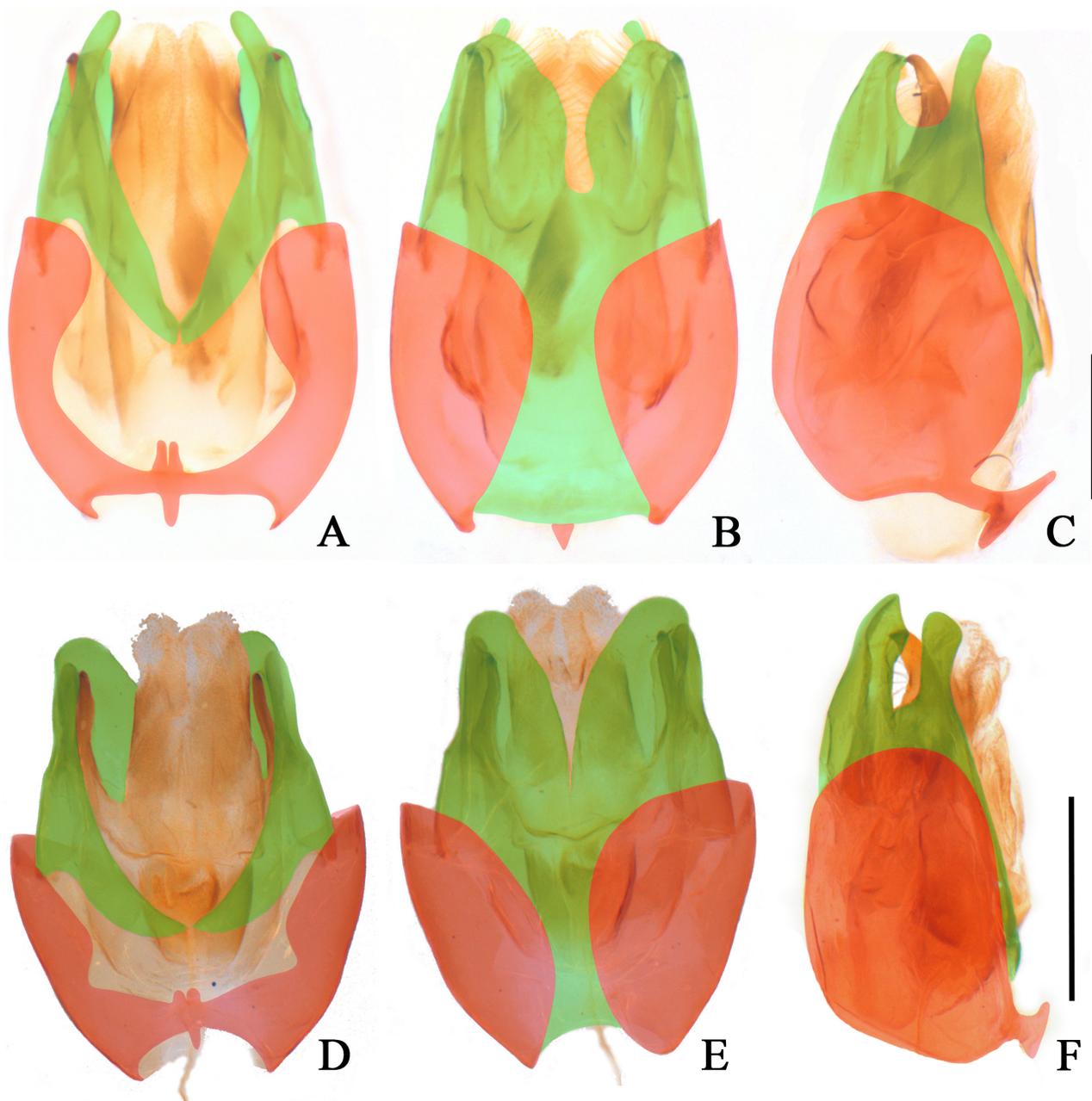


FIGURE 6. Aedeagus (A, D, ventral view; B, E, dorsal view; C, F, lateral view). A–C. *Lycocerus nigromaculatus* sp. nov. D–F. *L. medogensis* sp. nov. Scale bars: 0.5 mm.

Diagnosis. This new species is similar to *L. nigromaculatus* **sp. nov.** in possessing a pair of black spots on pronotum, but can be readily distinguished by the following combination of characters: eyes moderately protruding (Fig. 5C), while strongly protruding in *L. nigromaculatus* **sp. nov.** (Fig. 5A); pronotum trapezoidal, with lateral margins slightly diverging posteriorly (Fig. 5C), whereas that of *L. nigromaculatus* **sp. nov.** subquadrate with nearly parallel lateral margins (Fig. 5A); the black spots on pronotum located near middle of anterior margin, while on antero-lateral parts in *L. nigromaculatus* **sp. nov.**; all tibiae yellow (Fig. 5C), while meso- and metatibiae darkened in *L. nigromaculatus* **sp. nov.** (Fig. 5A); aedeagus with dorsal plate of each paramere slightly longer than the ventral process, which nearly parallel to each other in ventral view (Fig. 6D) and slightly widened apically in lateral view (Fig. 6F), while dorsal plate of each paramere shorter than the ventral process, which moderately bent to each other in ventral view (Fig. 6A) and even in width in lateral view (Fig. 6C) in *L. nigromaculatus* **sp. nov.**

Distribution. China (Xizang).

Lycocerus benesi (Švihla, 2004)

(Fig. 5D)

Athemus (*Andrathemus*) *benesi* Švihla, 2004: 186, figs 103–105.

Lycocerus benesi: Kazantsev & Brancucci 2007: 249.

Type material examined (Fig. 5D). Holotype ♂ (NMPC), [p] “China: C Sichuan 1993 / Luding Co. Moxi env. / V. Beneš lgt. 22.5.-10.6.”, [p] “HOLOTYPUS / *Athemus* / (*Andrathemus*) / *benesi* sp. n.”.

Distribution. China (Sichuan).

Discussion

In the original diagnosis (Okushima, 2005), the *L. purpurascens* species-group was characterized by features related to body form and coloration, as well as the distinctive digitiform tooth at the base of each outer claw on the pro- and mesothoracic legs. This study illustrates its female reproductive system. At least three members, including *L. purpurascens*, *L. safraneki* and *L. nigromaculatus* **sp. nov.**, exhibit consistent characteristics regarding the number of spermatheca, shapes and relative length of spermatheca, diverticulum and accessory gland. This finding provides additional evidence supporting the validity of this species-group, which will be beneficial for future research on the classification and phylogeny of the genus *Lycocerus*.

Furthermore, another four species have been incorporated into the *L. purpurascens* species-group, including two new species. This result reveals a broader distribution pattern for this group (Fig. 7), spanning from the Himalayan area (Bhutan and Xizang, China) to central China (Sichuan, Chongqing, Hubei and Shaanxi). It suggests that more species may be discovered in southwestern China in the future, as these regions haven been identified as centers of *Lycocerus* species richness based on the biodiversity analysis conducted by Liu *et al.* (2022).

Moreover, the species within the *L. purpurascens* species-group can be distinguished from one another based on the specific characteristics such as details of body coloration, shapes of pronotum, and aedeagus, as well as abdominal sternite VIII and reproductive systems of female. These differences are summarized in the following key to facilitate the species identification.

Key to the species of the *Lycocerus purpurascens* species-group

1. Pronotum with a pair of small black markings on both sides of disc (Fig. 5) 2
- Pronotum uniformly orange, without any black markings (Fig. 1) 3
2. Pronotum nearly trapezoidal, with lateral margins slightly diverging posteriorly (Fig. 5C); aedeagus with dorsal plate of each paramere slightly longer than the ventral process (Fig. 6D, F) *L. medogensis* **sp. nov.**
- Pronotum subquadrate, nearly parallel-sided (Fig. 5A); aedeagus with dorsal plate of each paramere distinctly shorter than ventral process (Fig. 6A, C) *L. nigromaculatus* **sp. nov.**
3. Pronotum subquadrate, nearly parallel-sided (Fig. 1C); aedeagus with the emargination between ventral process and dorsal plate rectangular at bottom (Fig. 2F) *L. safraneki* (Švihla, 2004)

- Pronotum nearly trapezoidal, with lateral margins slightly diverging posteriorly (Figs 1A, 5D); aedeagus with the emargination between ventral process and dorsal plate narrowly rounded at bottom (e.g., Fig. 2C) 4
- 4. Eyes moderately protruding in male (Fig. 1C); aedeagus with dorsal plate of each paramere nearly as long as ventral process (Fig 2A, C) *L. purpurascens* (Wittmer, 1978)
- Eyes strongly protruding in male (Fig. 5D); aedeagus with dorsal plate of each paramere slightly longer than ventral process (Švihla 2004: figs 103–105) *L. benesi* (Švihla, 2004)

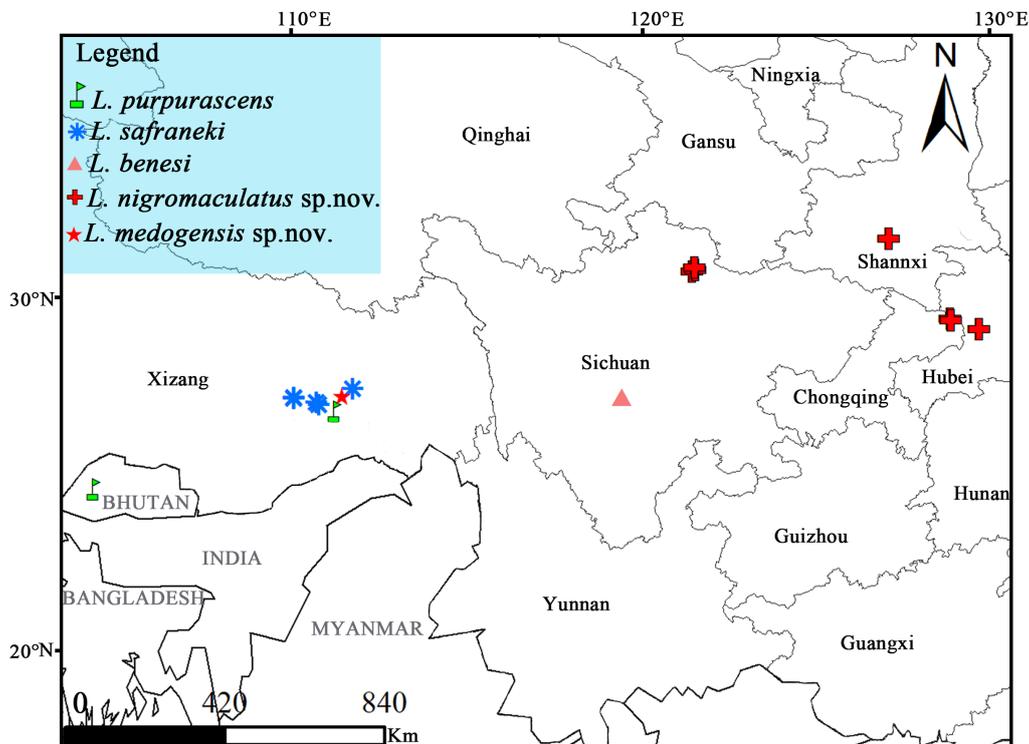


FIGURE 7. Distribution map of *Lycocerus purpurascens* species-group.

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紫翅异花萤 *Lycocerus purpurascens* 种团分类学记述及中国二新种 (鞘翅目: 花萤科)

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摘要: 对紫翅异花萤 *Lycocerus purpurascens* 种团进行重新界定, 包括紫翅异花萤 *L. purpurascens*、沙氏异花萤 *L. safraneki*、贝氏异花萤 *L. benesi* 以及两新种, 分别命名为墨脱异花萤 *L. medogensis* **sp. nov.** 和黑斑异花萤 *L. nigromaculatus* **sp. nov.**; 附有整体图、雄性外生殖器、雌性第VIII节腹板及内生生殖系统特征图; 还提供了该种团种检索表和分布图。

关键词: 花萤科; 异花萤属; 新种; 分类学; 东亚