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Two new genera of Enopliinae, *Skelleyus* and *Divulgoatus*
(Coleoptera: Cleridae)

Weston Opitz

Division of Plant Industry/Entomology,
Florida Department of Agriculture and Consumer Services,
1911 SW 34th Street, Gainesville, Florida 32608-7100

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Two new genera of Enopliinae, *Skelleyus* and *Divulgoatus* (Coleoptera: Cleridae)

Weston Opitz

Division of Plant Industry/Entomology,
Florida Department of Agriculture and Consumer Services,
1911 SW 34th Street, Gainesville, Florida 32608-7100
Weston.Opitz@fdacs.gov

Abstract. Two **new genera**, *Skelleyus* Opitz and *Divulgoatus* Opitz (Coleoptera: Cleridae: Enopliinae), show unusual antennal development. Funicular antennomeres become shorter as they approach an extensive capitulum. This study involves three taxa, *Skelleyus leavengoodi* Opitz, **new species**, *Divulgoatus kelleri* Opitz, **new species**, and *Divulgoatus discrepans* (Gorham).

Key words. Taxonomy, new species, key to species.

ZooBank registration. urn:lsid:zoobank.org:pub:E059A916-DDE2-4193-A090-8CDD46EDC859

Introduction

The two new genera of Cleridae presented in this work show a most unusual antennal development. The greatly extended antennal capitulum is not found in any other member of the Enopliinae. The complete illustrations of the antennae are depicted in the species descriptions.

Materials and Methods

This study involves the morphology of 11 adult specimens. Males of each species were dissected to investigate the aedeagal structure, and, to a lesser extent, to determine species assignment. Although morphological criteria are used to determine specific level discontinuities, I adhere to the biological species concepts as discussed by Standfuss (1896), Dobzhansky (1937), and Mayr (1963). Morphological divergence is a useful criterion with which to hypothesize reproductive isolation. In this study, consideration for species status involves body form, color of the pubescence on the pronotal and elytral discs, shape of the antennal capitulum, and differences in the aedeagus.

Methods involving dissections, measurements, and morphological terminology follow those described in Opitz (2010: 35). Brown (1956) was used to coin scientific names for new species. Abbreviations used in this treatise are defined as follows: EW/FW = eye width / frons width; PW/PL = pronotal width / pronotal length; EL/EW = elytral length along epipleural margin / greatest width across elytral disc. All measurements were made at 500 X. Line drawings were made with an M5 Wild stereoscopic microscope with camera lucida attachment (Leica, Wetzlar, Germany). Habitus photographs were taken with a Leica Z 16 APO microscope equipped with JVC KY-F75U-CCD camera and controlled by Syncroscopy Auto Montage software (Cambridge, United Kingdom). I used codens as noted in Arnett et al. (1993) to indicate repositories of specimens, with some modifications to accommodate private collections.

FSCA Florida State Collection of Arthropods, Division of Plant Industry/Entomology, Doyle Connor Building, 1911 SW 34th Street, Florida Department of Agriculture, Gainesville, Florida 32608-7100, United States of America.

NHML Natural History Museum, London, Department of Entomology, SW 5BD, London, United Kingdom.

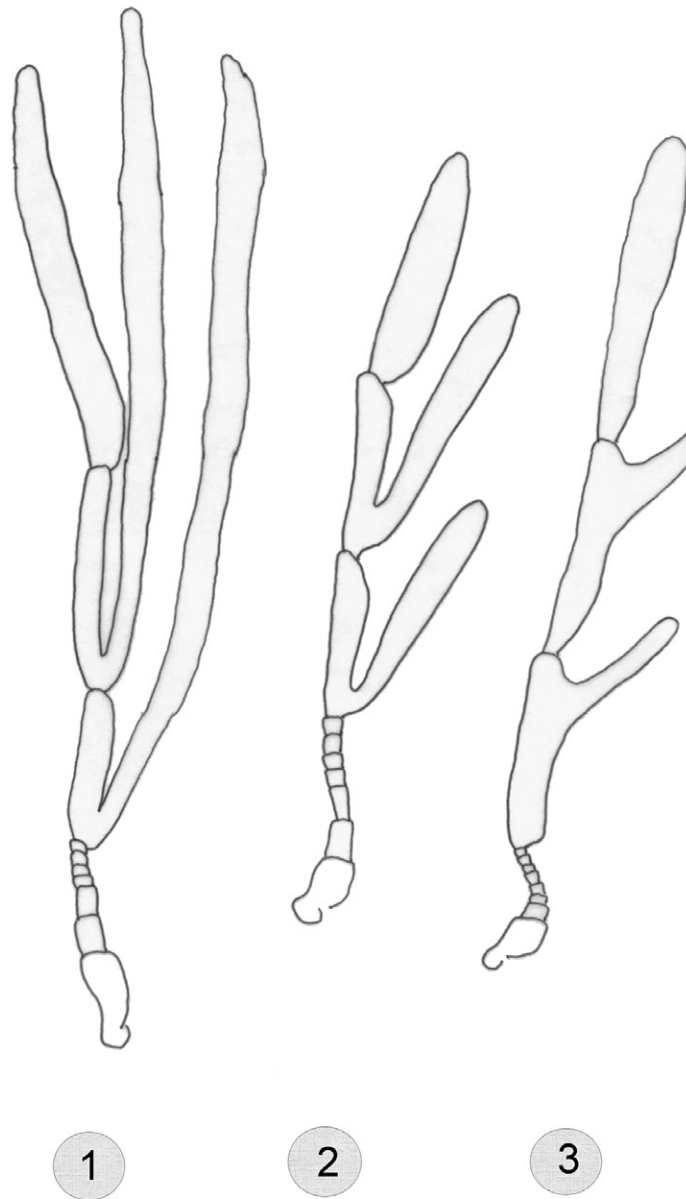
USNM United States Department of Agriculture, Systematic Entomology Laboratory, c/o National Museum of Natural History MRC 168, Washington, D.C. 20560-0165, United States of America.

Results

Key to the adults of *Divulgoatus* Opitz and *Skelleyus* Opitz

Skelleyus and *Divulgoatus* are most similar to the genera *Teneropsis* Chapin and *Enoplium* Latreille, in which the antennal capitulum is not extended.

1. Ninth and tenth capitular antennomere with short-distal branch (China); antenna with 11 antennomeres (Fig. 3) ***Skelleyus leavengoodi* Opitz, new species**
- Capitular antennomere lacks short-distal branch; antenna with 10 antennomeres **2**
- 2(1). Male capitulum extremely extended, collateral branch three times longer than antennomere 9 (Brunei, India, Myanmar) (Fig. 1) ***Divulgoatus discrepans* (Gorham)**
- Male capitulum not extremely extended, collateral branch twice times longer than antennomere 9 (Philippines) (Fig. 2) ***Divulgoatus kelleri*, Opitz, new species**



Figures 1–3. Antennae. 1) *Divulgoatus discrepans*. 2) *D. kelleri*. 3) *Skelleyus leavengoodi*.

Description of *Divulgoatus* Opitz, new genus

Type species. *Pelonium discrepans* Gorham 1892: 745. By present designation.

Diagnosis. In both species of this genus the male capitulum is extremely extended. Moreover, the 8th and 9th capitular antennomeres are highly lobate in male specimens.

Description. *Size:* Length 6.0–10.0 mm; width 1.5–2.5 mm. *Form:* Oblong rectangular, body not deep, about 7.5 times longer than broad. *Vestiture:* Dorsum profusely vested with very short pubescence; antennal funicle highly setose; elytra abundantly vested with minute setae, all setae emerge from minute punctures. *Head:* Cranium quadrate, frons narrow; gula (Fig. 7) narrowed then widened, gula with two well-developed setose gular processes; labrum (Fig. 6) very shallow, broadly incised distally; mandible (Fig. 8) body stout, anterior dens blunt, medial and posterior dens well developed, penicillus well developed; maxilla laterolacinia present, terminal palpomere subsecuriform; labium narrowed, ligula deeply incised, ligular lobes not narrowed, terminal palpomere subsecuriform; eyes, ommatidia large, ocular notch deep; antenna (Fig. 4, 5) comprised of 10 antennomeres, 8th and 9th with collateral lobes, antennomere very 10 long. *Thorax:* Pronotum (Fig. 12) slightly transverse, dorsolateral carina complete, disc convex and finely punctate, side margins convex; prointercoxal process (Fig. 13) trigonal; pronotal projections short, acuminate, not approximating prointercoxal process; elytron (Fig. 11) profusely sculptured with small densely scattered setiferous punctations, asetiferous punctations obscure, somewhat cribrate, epipleural fold not abruptly narrowed at elytral middle, slightly deflexed and narrowly extended to elytral apex, elytral anterior margin not carinate; metathoracic wing, wedge open; metendosternite (Fig. 13) with furcal lamina, furcal anterior plate small, subrectangulate; legs, profemora not swollen, tibial (Fig. 10) spur formula 0-2-2, tarsal sole formula 2-2-2, unguis (Fig. 9) without basal denticle. *Abdomen:* Aedeagus shorter than length of abdomen, distal region of phallobase not bilobed, tegmen reduced ventrally, submembranous, phallobasic struts not confluent with phallobasic apodeme, phallobasic rod present; phallus acuminate distally, phallic plates very narrow.

Distribution. The distribution of this genus extends from India to Myanmar and the Philippines.

Etymology. *Divulgoatus* is a Latin name with a meaning of “spread”. The gender is masculine.

Descriptions of *Divulgoatus* species

Divulgoatus discrepans (Gorham, 1892)

Figures 1, 14, 17, 20, 22, 24

Type material. Lectotype: ♂. Type locality: Myanmar, Carin Hills (Chebà), 900–1100. (NHML). **Paralectotype.** One specimen. Myanmar, Carin Hills (Chebà), 900–1100 (NHML).

Diagnosis. The antenna of this species shows highly expended capitular antennomeres (Fig. 1).

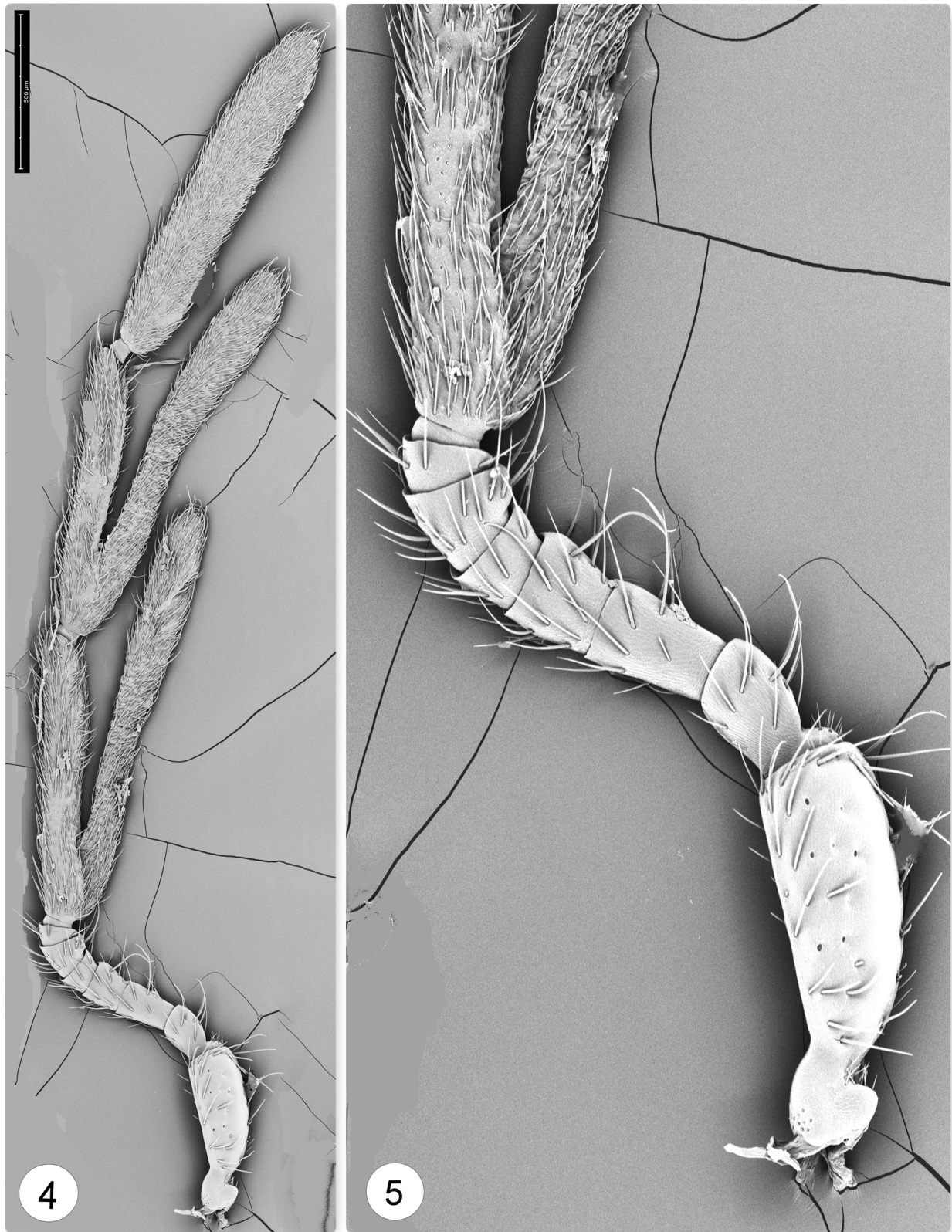
Redescription. *Size:* Length 8.0 mm; width 1.5 mm. *Habitus* Fig. 14. *Color.* Cranium, antenna, and pronotum brown-yellow, elytra mostly brown; middle of elytron and epipleural margin yellow. *Head.* Eye much broader than frons, eyes nearly contiguous (EW/FW 45/5), ommatidia large; capitular antennomeres 8 and 9 lobate. *Thorax.* Pronotum sparsely punctate; slightly oblong (PW/ PL 100/90); elytra slightly cribrate (EL/EW 320/70). *Abdomen.* Aedeagus as in Fig. 17.

Distribution (Fig. 20, 22, 24). This species is known from Myanmar, India, and Brunei. India, Jawalagiri, North Salem, 5-IV-1930, F.R.I., Sandal, Insect Survey (NHML, 1). India, Ayur, North Salem, 15-IV-1931, F.R.I., Sandal, Insect Survey (NHML, 1). Brunei, Belait District, Labi, Bukit Teraja, 1983-39, 22-VIII-1979, Light trap 79 m above ground, S. L. Sutton (NHML, 1).

Divulgoatus kelleri Opitz, new species

Figures 2, 4–13, 15, 18, 23.

Type material. Holotype. ♂. Type locality: Mindanao, Province of Lanao del Norte, Momungan (Philippines) (USNM). **Paratypes.** 6 specimens. **Philippines.** BOETTCHER, North Mindanao, Province of Lanao del Norte,



Figures 4–5. Structures of *Divulgoatus kelleri* 4) Antenna 5) Funicular antenonnmeres.

Momungan, 28-II-1915 (FSCA, 2); 7-III-1915 (USNM, 1); 8-III-1915 (USNM, 1); 7-III-1915 (USNM, 1); no date available (USNM, 1).

Diagnosis. Except for the antennal construction, these beetles resemble superficially the specimen of *D. discrepans* (Gorham). In *D. kelleri* specimens the capitular antennomeres are considerably shorter (compare Fig. 1–2). Also, in *D. kelleri* specimens the elytra are predominately testaceous, which is not the case in most *D. discrepans* available beetles.

Description. *Size:* Length 8.0 mm; width 2.0 mm. *Habitus* 15. *Color.* Antennae mostly brown except last antennomer testaceous; cranium black; pronotum yellow; elytra flavotestaceous, except apex black, elytra vested with very fine setae; legs bicolorous; remainder of integument flavotestaceous. *Head.* Eye broader than width (EW/FW 30/25), ommatidia large; capitular antennomers 8 and 9 with long collateral branch. *Thorax.* Pronotum with minute punctures (PW/ PL 90/100); elytral punctures minute (EL/EW 370/100). *Abdomen.* Aedeagus as in Fig. 18.

Distribution. This species is known from the Philippines (Fig. 23).

Etymology. The trivial name, *kelleri*, is a patronymic that recognizes Oliver Keller for his departmental courtesies.

Description of *Skelleyus* Opitz, new genus

Type species. *Skelleyus leavengoodi* Opitz. By present designation.

Diagnosis. In this genus the ninth and tenth capitular antennomere have a short distal branch.

Description. *Size:* Length 6.0 mm; width 2.0 mm. *Form:* Oblong rectangular, body not deep, about 5.5 times longer than broad. *Vestiture:* Dorsum profusely vested with very short pubescence; antennal funicle highly setose; elytra abundantly vested with minute setae, all setae emerge from minute punctures. *Head:* Cranium quadrate, frons wide; gula wide; labrum very shallow, broadly incised distally; mandible body stout; maxilla, terminal palpomere subsecuriform; labium narrowed, ligula deeply incised, ligular lobes not narrowed, terminal palpomere subsecuriform; eyes, ommatidia large, ocular notch deep; antenna comprised of 11 antennomeres, 9th and 10th with collateral lobes, antennomere 11 very long (Fig. 3). *Thorax:* Pronotum slightly transverse, dorsolateral carina complete, disc convex and coarsely punctate, side margins convex; prointercoxal process trigonal; pronotal projections short, acuminate, not approximating prointercoxal process; elytral disc sculptured with rows punctations, asetiferous punctations obscure, elytra somewhat cribrate at apex; legs, profemora not swollen, tibial spur formula 0-2-2, tarsal sole formula 2-2-2, unguis without basal denticle. *Abdomen:* Aedeagus with uncus and phallus spinous; tegmen reduced ventrally, submembranous, phallobasic struts confluent with phallobasic apodeme, phallobasic rod present; phallus acuminate distally, phallic plates very narrow.

Distribution. Known from China (Fig. 21).

Etymology. *Skelleyus* is a patronymic dedicated to Paul E. Skelley. The gender is masculine.

Description of *Skelleyus* species

Skelleyus leavengoodi Opitz, new species

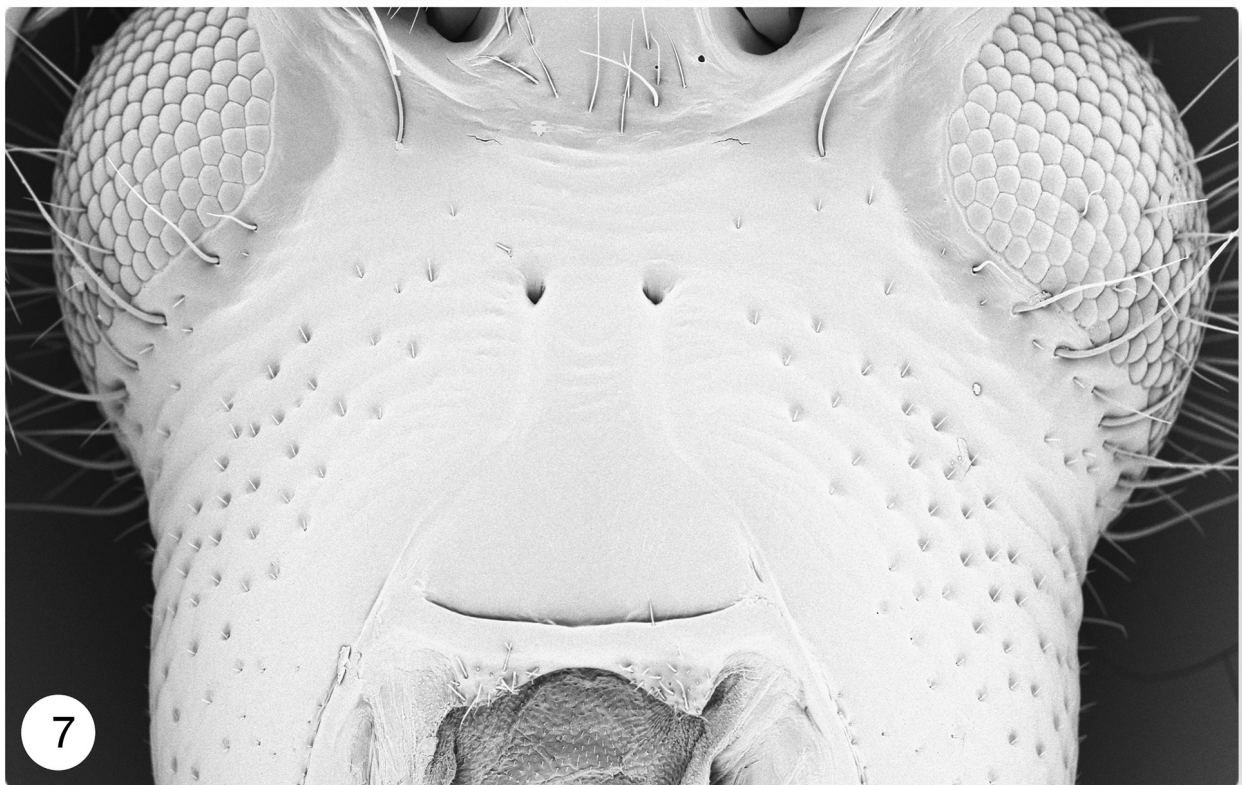
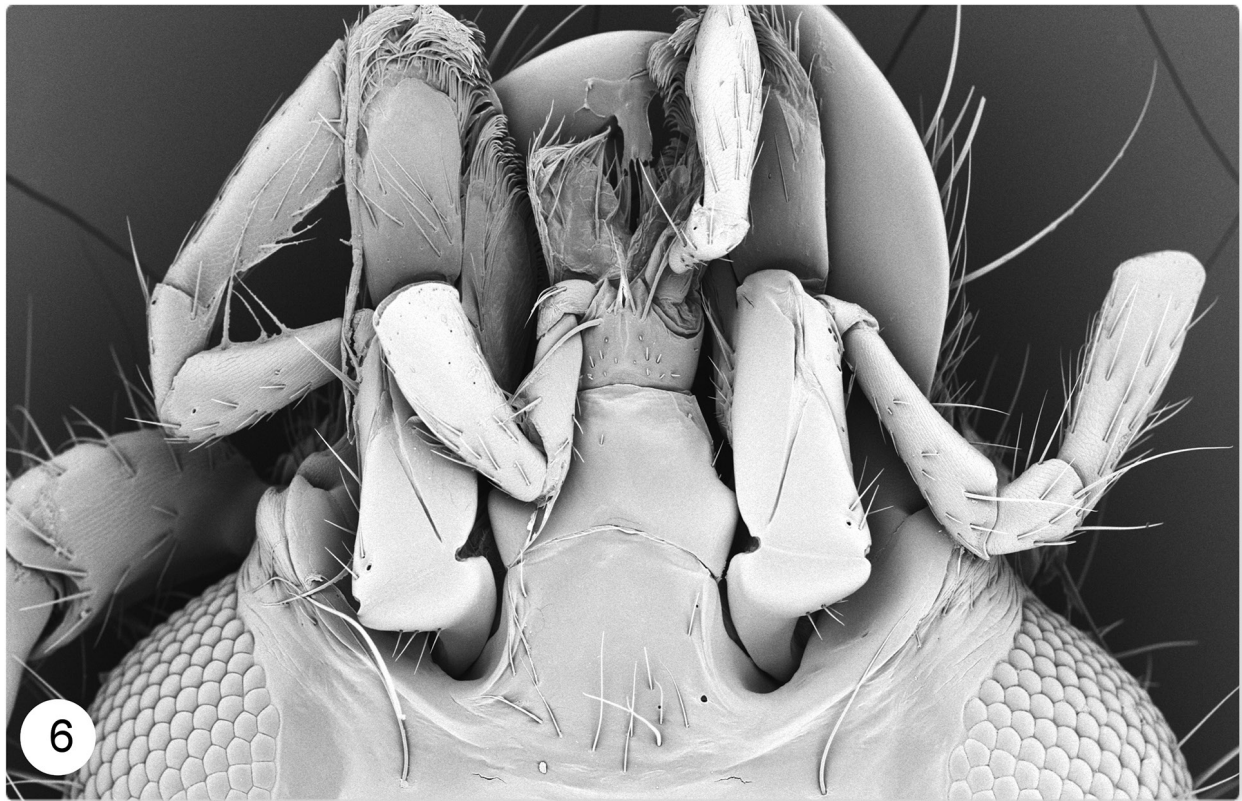
Figures 3, 16, 19, 21

Type material. Holotype. ♂. Type locality: China, Fujian Province, Foochow, M. S. Yang (USNM).

Diagnosis. In this species the antennal collateral branches are distal to the terminal antennomere (Fig. 3).

Description. *Size:* Length 6.0 mm; width 2.0 mm. *Habitus* 16. *Color.* Antennae black; epicranium mostly black, frons testaceous; pronotum testaceous, except pronotal arch and pronotal collar infuscated; elytra mostly black, with faint fascia, elytra vested with very fine setae; legs bicolorous; remainder of integument brown. *Head.* Eye width same as frons width (EW/FW 25/25), ommatidia large; capitular antennomers 9 and 10 with long collateral branch, collateral branches proximal. *Thorax.* Pronotum coarsely punctate at sides (PW/ PL 90/100); elytral disc sculptured with rows of punctations, elytra somewhat cribrate at apex (EL/EW 260/60). *Abdomen.* Aedeagus as in Fig. 19.

Distribution. This species is known from China (Fig. 21).



Figures 6–7. Structures of *Divulgoatus kelleri* 6) Mouthparts 7) Gula.

Etymology. The trivial name, *leavengoodi*, is a patronymic that recognizes John M. Leavengood for his manuscript review courtesies.

Acknowledgments

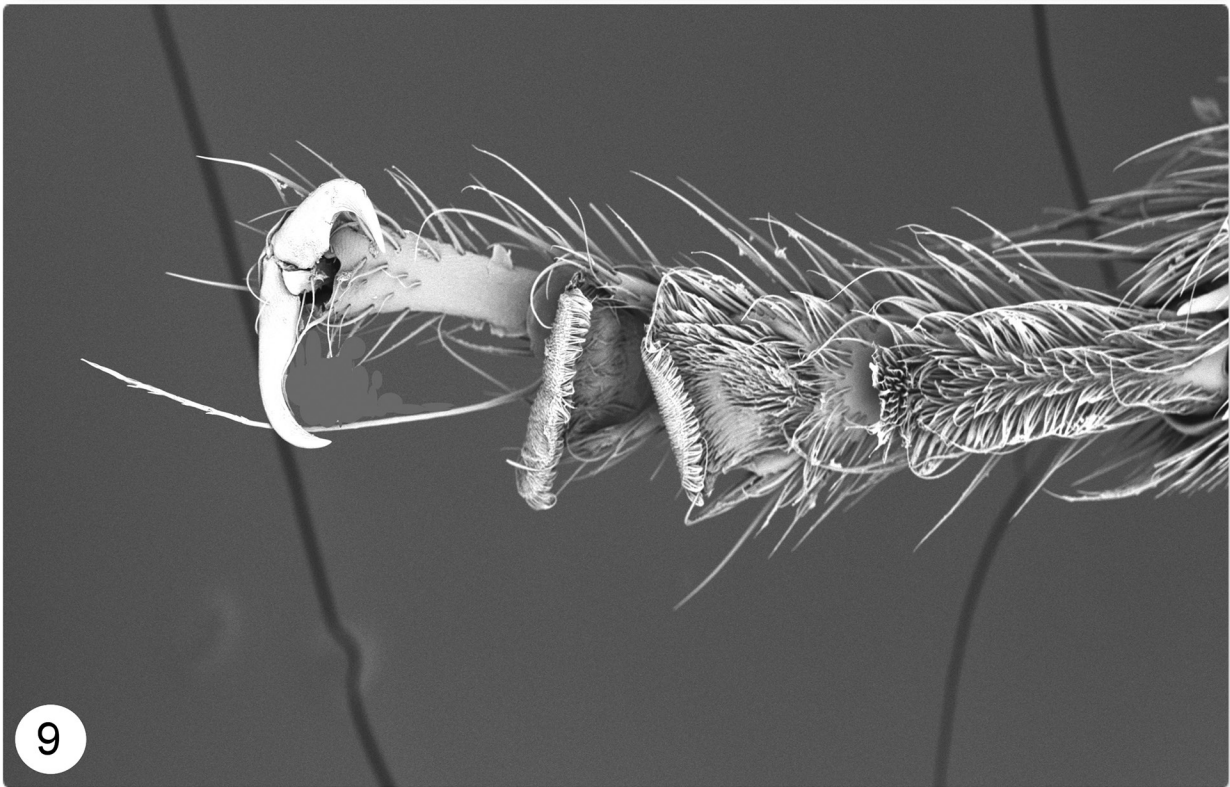
I thank the curators of the institutions listed in the “Repositories of specimens” section: Paul E. Skelley (Paul.Skelley@fdacs.gov), Maxwell V. L. Barclay (m.barclay@nhm.ac.uk), and Floyd Shockley (ShockleyF@si.edu), for entrusting me with specimens in their charge. The thorough reviews of Sam Bolton and Kyle Schnepf are much appreciated. My wife Galena provided much support in the preparation of the distributional maps and the Montage and Leica images, and Jonathan S. Bremer prepared SEM images. My thanks to Paul E. Skelley for numerous departmental courtesies, and to the Florida Department of Agriculture, DPI, for institutional affiliation and support.

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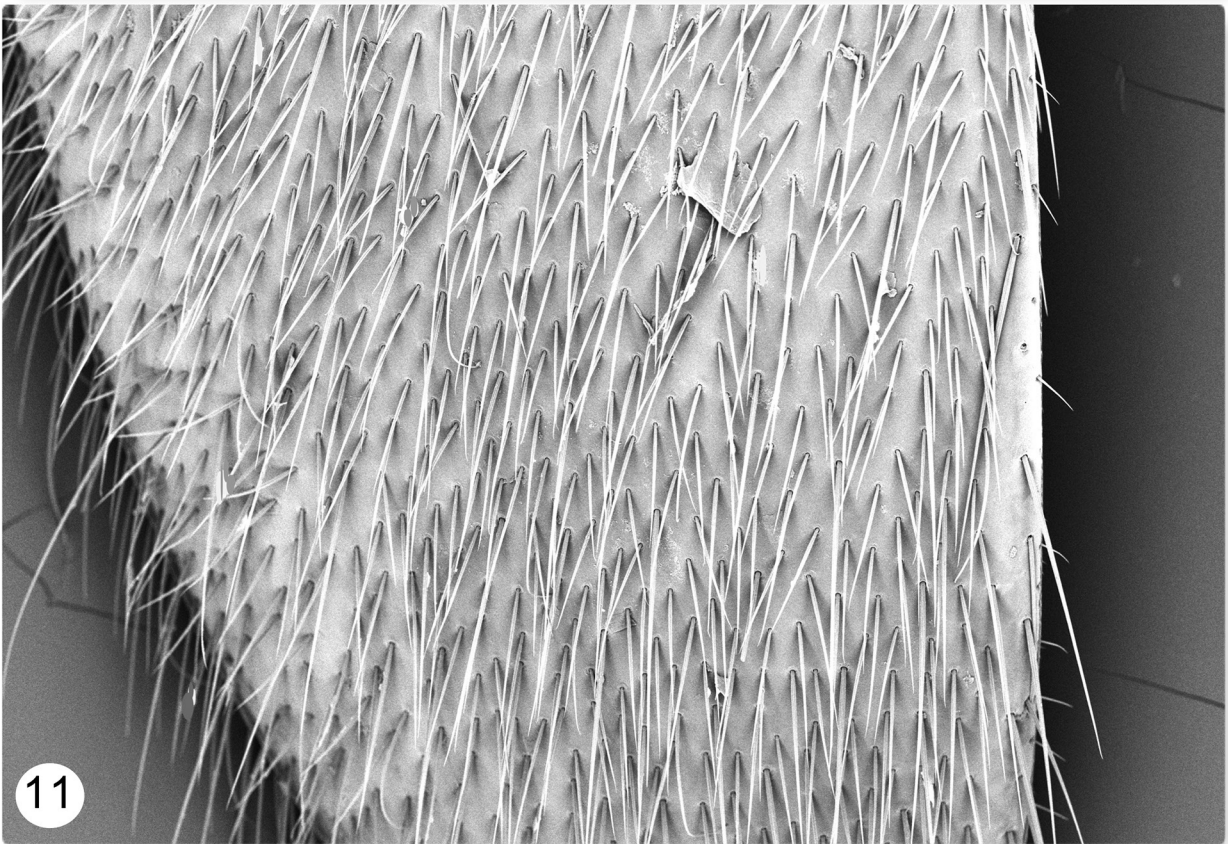
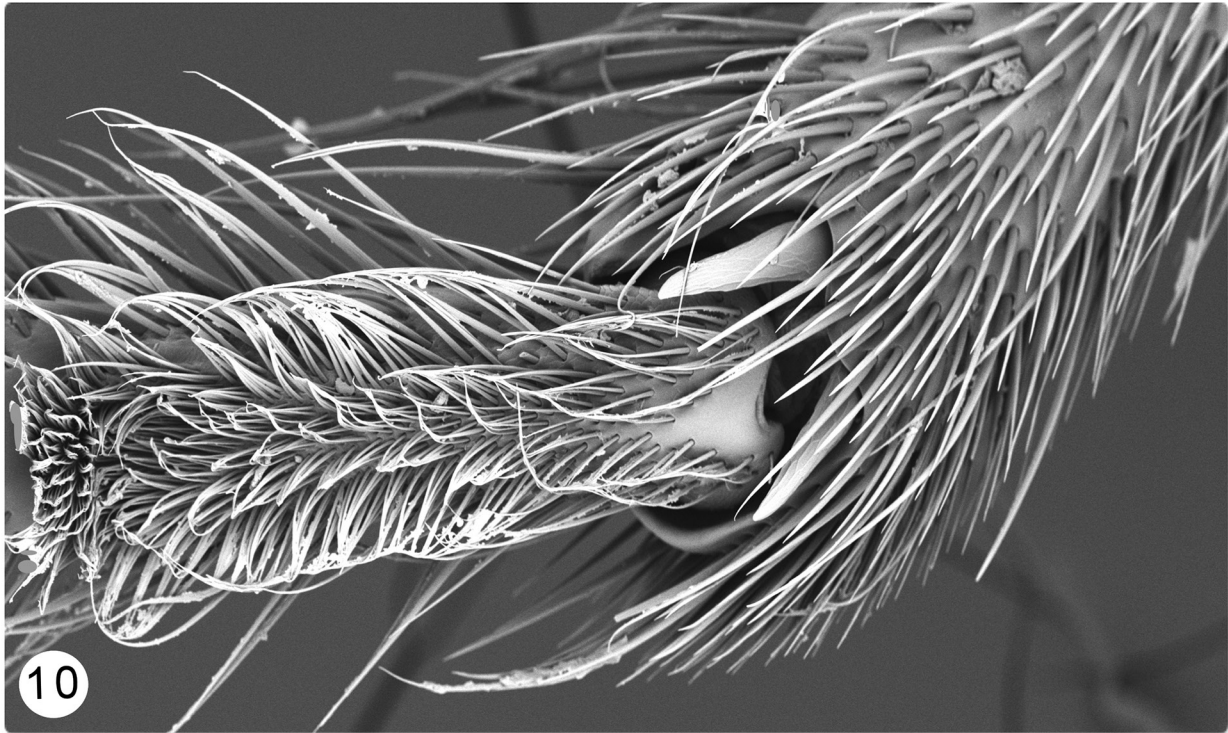
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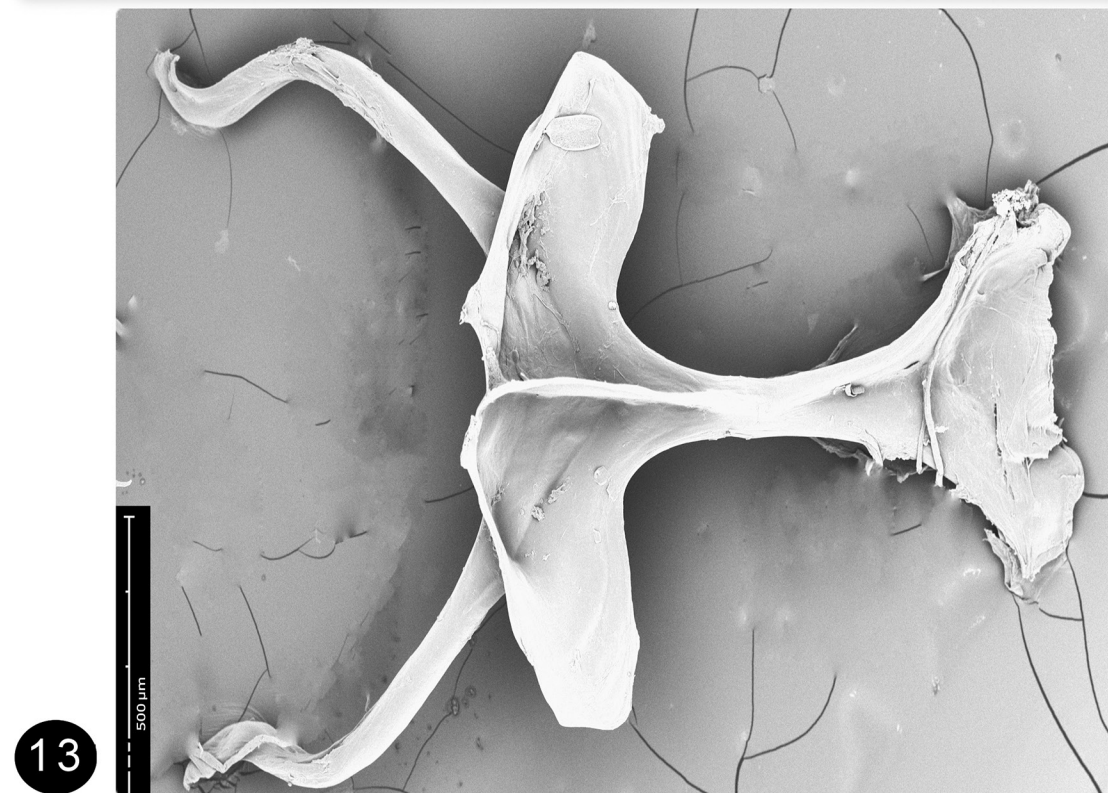
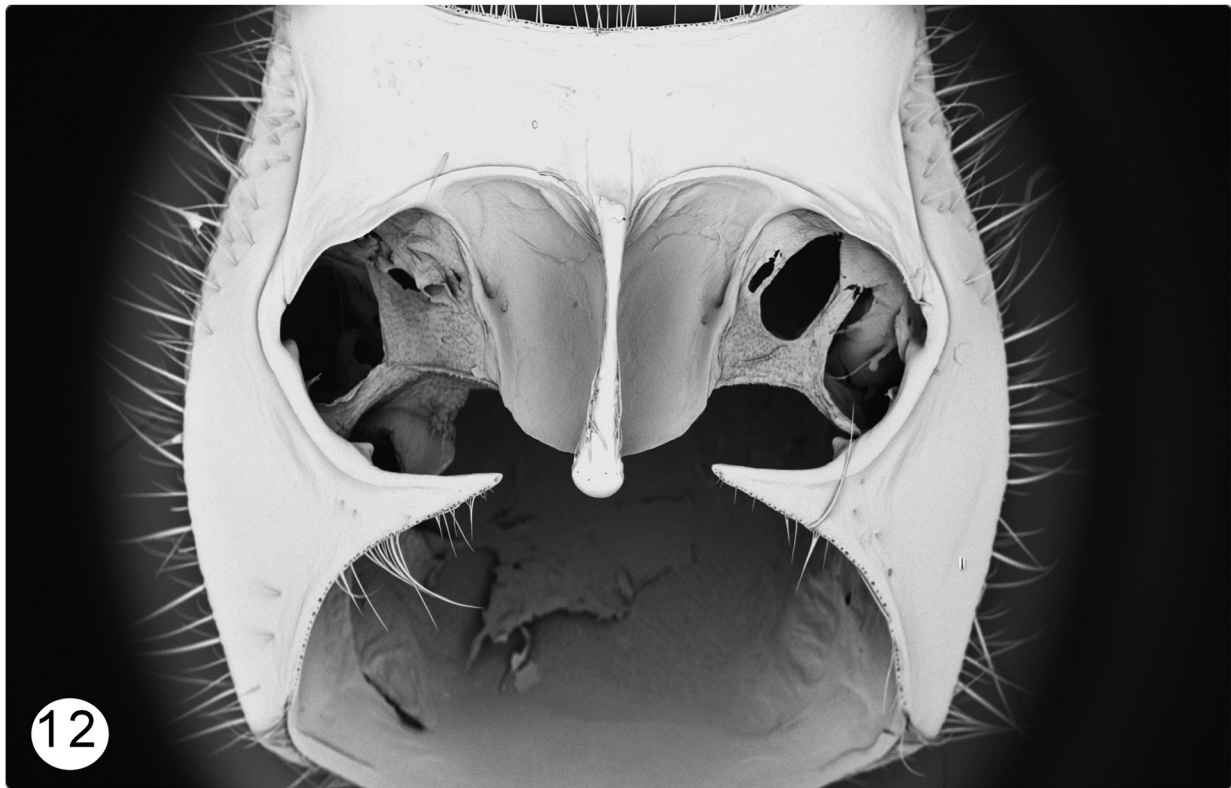
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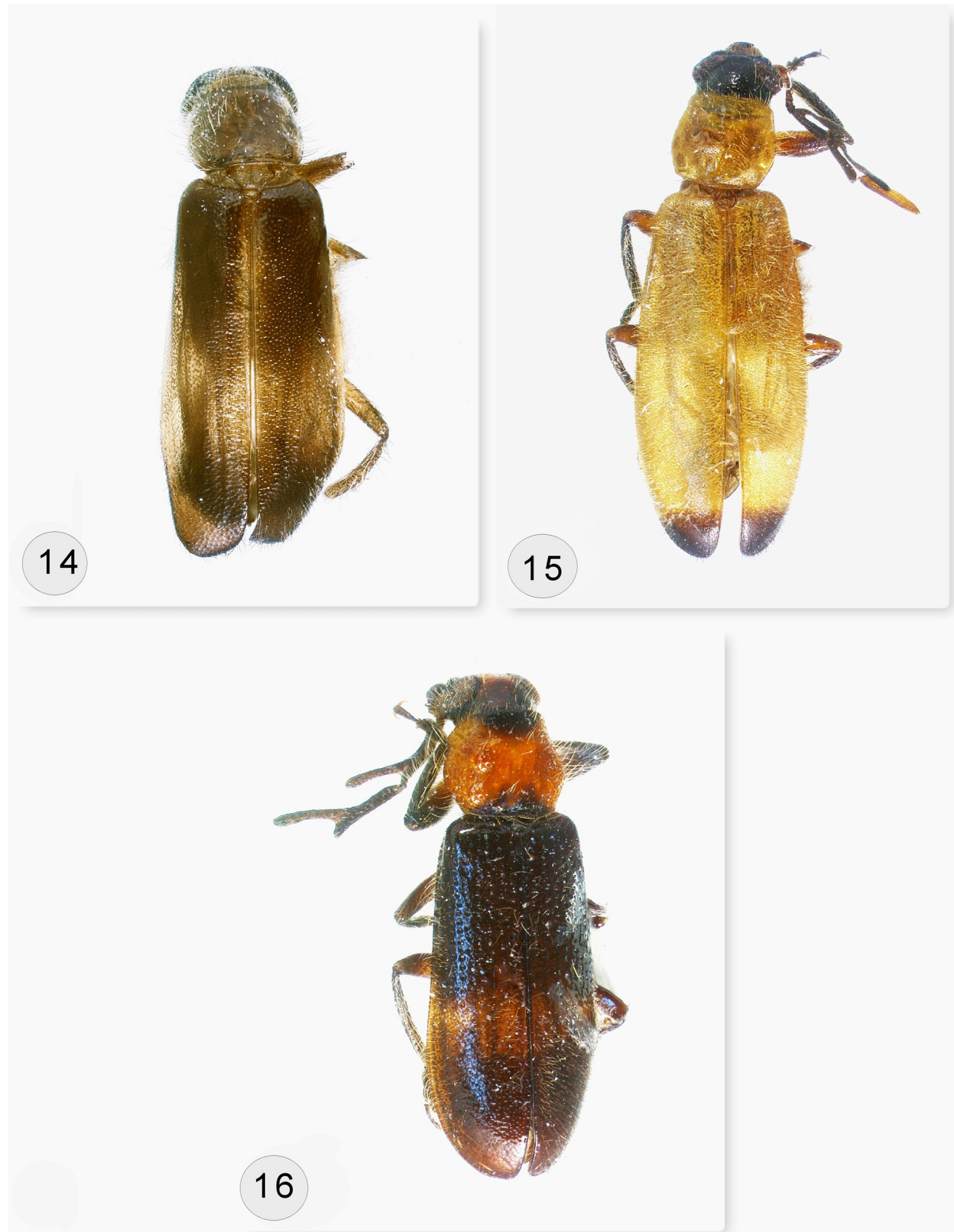
Figures 8–9. Structures of *Divulgoatus kelleri*. 8) Mandible. 9) Unguis.



Figures 10–11. Structures of *Divulgoatus kelleri*. 10) Tarsal spur. 11) Elytron.



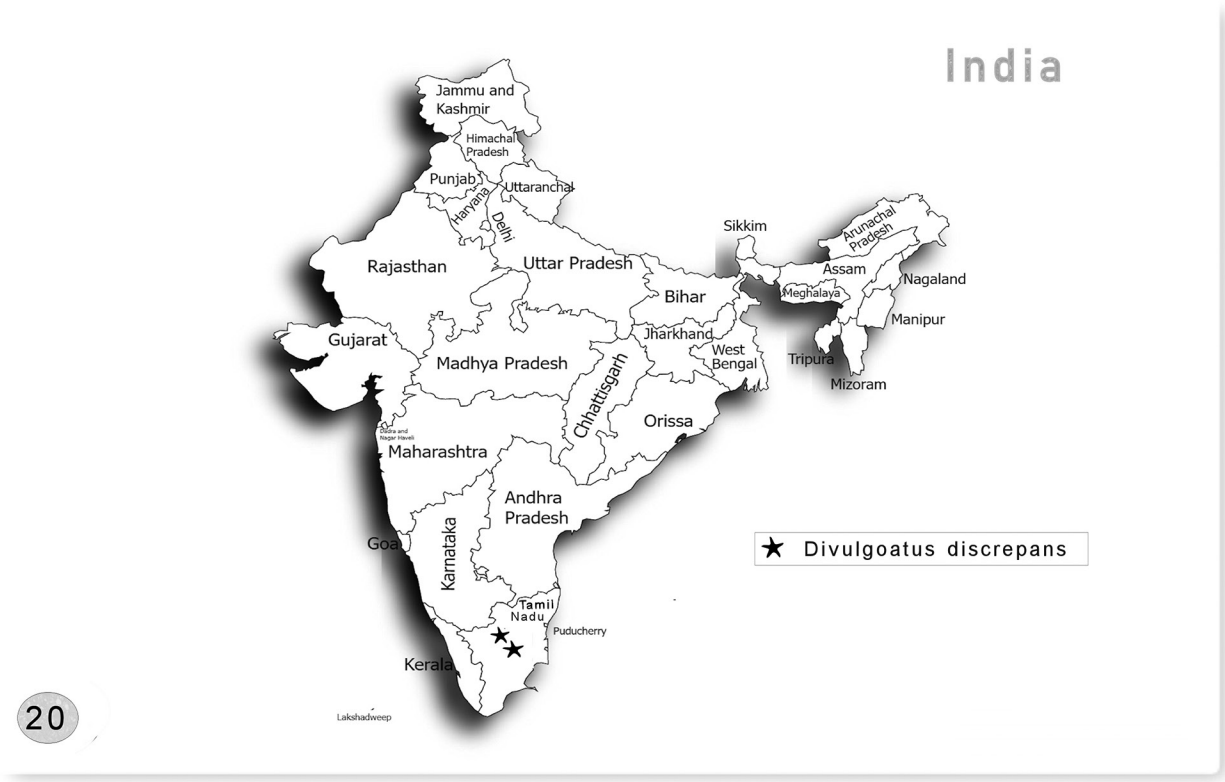
Figures 12–13. Structures of *Divulgoatus kelleri*. 12) Pronotum. 13) Metendosternite.



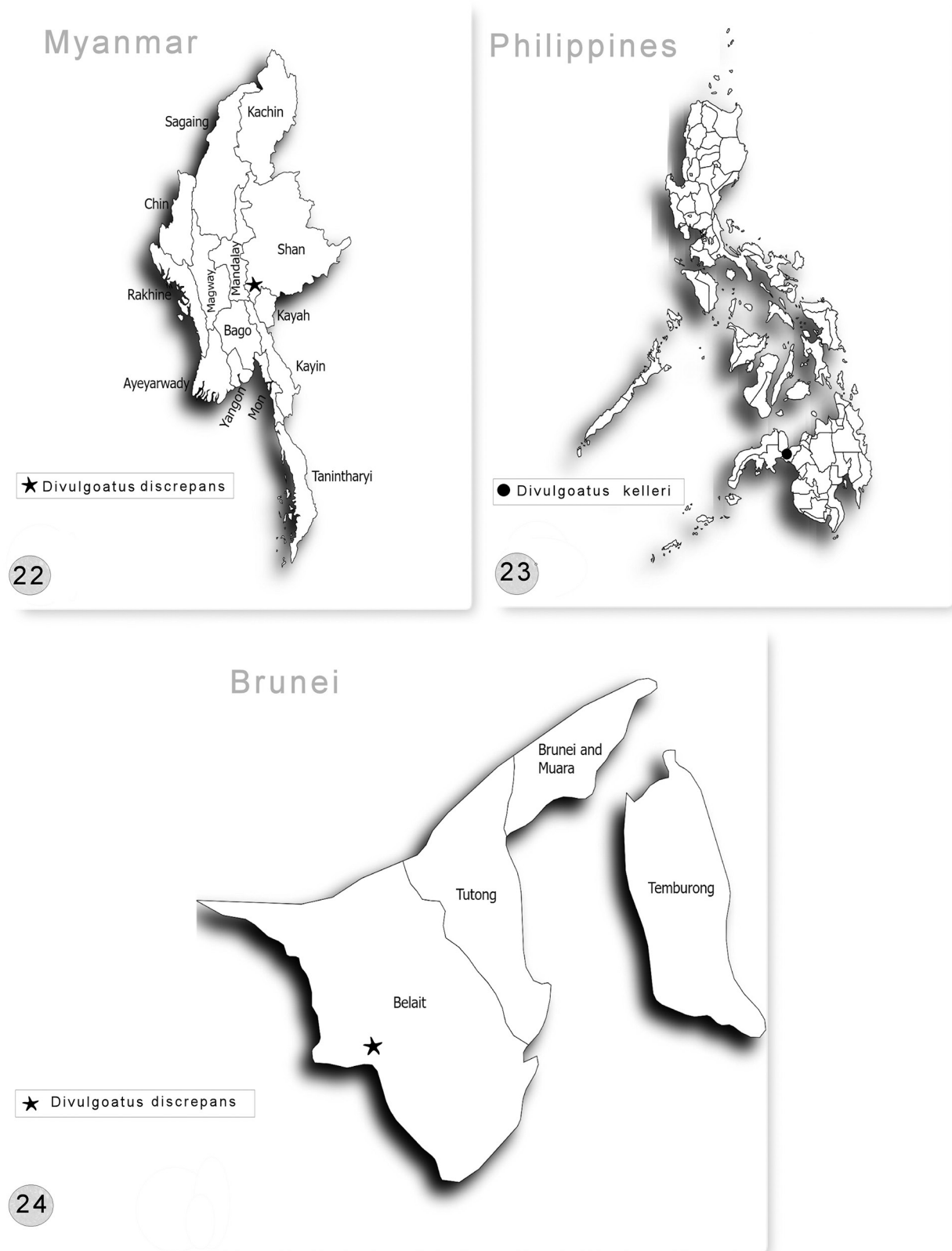
Figures 14–16. Habitus. 14) *Divulgoatus discrepans*. 15) *D. kelleri*. 16) *Skelleyus leavengoodi*.



Figures 17–19. Aedeagi. 17) *Divulgoatus discrepans*. 18) *D. kelleri*. 19) *Skelleyus leavengoodi*.



Figures 20–21. Geographical distributions of *Divulgoatus* and *Skelleyus* species. 20) India. 21) China.



Figures 22–24. Geographical distributions of *Divulgoatus* species. 22) Myanmar. 23) The Philippines. 24) Brunei.