



## New species and additional faunistic record of *Taiwanocantharis* Wittmer, 1984 from China (Coleoptera: Cantharidae)

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### Abstract

*Taiwanocantharis shergaoensis* (Wittmer, 1989) is recorded from China for the first time and redescribed herein. A new species of *Taiwanocantharis* is described from Xizang under the name of *T. marginalis* **sp. nov.** Both species are illustrated with habitus of both sexes, aedeagus, as well as female abdominal sternite VIII and reproductive systems.

**Key words:** soldier beetles, alpha taxonomy, new species, new faunistic record, China

### Introduction

The genus *Taiwanocantharis* Wittmer, 1984 was redefined by Švihla (2011) and is particularly characterized by its metallic green or blue elytra, which makes its separation from *Cantharis* L., 1758. To date, this genus comprises a total of 18 species (Švihla 2011; Yang, Y. & Yang, X 2014), with 14 of these species being distributed in China. These species are mostly described by Wittmer (1989, 1997a, b), Švihla (2005, 2011), and Yang, Y. & Yang, X (2014).

In our recent study, *T. shergaoensis* (Wittmer, 1989), originally located in N. India (Assam), was found from China (Xizang) for the first time. Meanwhile, an unknown species was discovered and described herein. Additionally, the characteristics of female reproductive system are incorporated in the species description for the first time. This study aims to advance the taxonomic understanding of *Taiwanocantharis* and provides essential reference data for future phylogenetic analyses for this genus and related genera.

### Material and Methods

The studied specimens are deposited 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, Basel, Switzerland.

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 taken using a Canon EOS

80D digital camera, while images of the genitalia were captured via a Leica M205A stereomicroscope. All images underwent post-processing with Helicon Focus 7 and edited in the Adobe Photoshop CS5. 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. The terminology of this study follows Yang, Y. & Yang, X (2014).

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.

## Taxonomy

**Class Insecta Linnaeus, 1758**

**Order Coleoptera Linnaeus, 1758**

**Family Cantharidae Imhoff, 1856 (1815)**

**Subfamily Cantharinae Imhoff, 1856 (1815)**

**Tribe Cantharini Imhoff, 1856 (1815)**

**Genus *Taiwanocantharis* Wittmer, 1984**

*Cantharis (Taiwanocantharis)* Wittmer, 1984: 147. Type species: *Cantharis (Taiwanocantharis) tripunctata* Wittmer, 1984.  
*Taiwanocantharis* Wittmer: Švihla 2011: 4.

**Distribution.** China; N. India; Nepal; N. Myanmar; N. Thailand; N. Laos; N. Vietnam.

***Taiwanocantharis shergaoensis* (Wittmer, 1989)**

(Figs 1A, B, 2A–C, 3A, C)

*Cantharis shergaoensis* Wittmer, 1989: 209, figs 2, 6.  
*Taiwanocantharis shergaoensis*: Švihla 2011: 5.

**Type material examined.** Holotype ♂ (NHMB), labeled [h] “Assam Kameng / Shergaon 5.5.61”, [h] “6100-6600’ / F. Schmid”, [h] “878”, [h] “Cantharis / shergaoensis / Wittm. / det. W. Wittmer”, [p] “HOLOTYPUS”, [p] “Naturhistorisches / Museum Basel / Coll. W. Wittmer”, [p] “CANTHARIDAE / CANTH00003532”.

**Additional material examined.** CHINA, Xizang: 1 ♂ (IZCAS), Mêdog, Baibung Township, Gêling Vill., 15.VI.2021, H. Liu & M. Qin leg; 3 ♀♀ (IZCAS), Mêdog County, 12.VI.2021, Y.-C. Zhao & Z.-M. Ma leg; 1 ♀ (IZCAS), Nyingchi City, Mainling County, 29.VI. 2021(N1), H.-B. Liang & Y. Xu leg; 6 ♂♂, 1 ♀ (MHB), “Xizang, Mêdog County, 12.VII.2018, Peng. Chen & Shen leg.”; 2 ♀♀ (MHB), “Xizang, Nyingchi City, Pailong Town, 16.VII.2019, Z.-W. Yin leg.”.

**Redescription.** Body length 13.5–15.0 mm (both sexes), width 2.0–2.4 mm (both sexes).

Male (Fig. 1A). Body dark brown, head black, mandibles brown. Antennomeres I, II brownish yellow ventrally. Pronotum light yellow, with two pairs of small black markings along lateral margins, and a large black marking in center of disc, behind which with four small black markings conjoint with the large one. Elytra blue or green, with strongly metallic luster. Body densely covered with light yellow recumbent pubescence, of which feebly sparser on head.

Head rounded, densely punctate on surface; eyes slightly protruding, head width across eyes distinctly narrower than pronotum; antennae filiform, extending to the middle of elytra when inclined; antennomeres II shortest, about half length of I, III third longer than II, V longest, XI feebly longer than X, IV–XI each with a narrow, smooth longitudinal to oval groove nearly in middle of outer margin.

Pronotum 1.4 times wider than long, anterior margin feebly arcuate, lateral margins rounded, posterior margin nearly straight; anterior angles widely rounded, posterior angles obtusely angled, disc distinctly convex on postero-

lateral parts, surface lustrous, slightly largely and sparsely punctate. Elytra nearly parallel-sided, 2.9 times longer than humeral width, 4.5 times longer than pronotum, surface coarsely punctate. Each outer tarsal claw with a triangular appendicle at base, while inner claws simple.

**Aedeagus** (Fig. 2A–C): ventral process of each paramere slender and sinuate, distinctly thinned at apical third part in ventral view (Fig. 2B); conjoint dorsal plate of parameres shorter than ventral process, nearly parallel-sided, widely and roundly protuberant in middle of apical margin (Fig. 2A), bisinuate at outer margins, with latero-apical angles acute (Fig. 2C); the emargination between conjoint dorsal plate and ventral process wide and distinctly shallower than length of ventral process (Fig. 2C); laterophyse extruding over conjoint dorsal plate, stout and distinctly widened at apical part, truncate in ventral view (Fig. 2B), which slightly hooked and bent dorsally (Fig. 2A).

**Female** (Fig. 1B). Similar to male, but body larger, eyes less protruding, antennae shorter, extending to third length of elytra when inclined, middle antennomeres lacking grooves. Abdominal sternite VIII (Fig. 3A) largely and rectangularly emarginated in middle of posterior margin, with a small triangular emargination at bottom, behind which present with a pair of membranous rhombic lobes, nearly rectangular at latero-apical angles. Internal organ of reproductive system (Fig. 3C): diverticulum long, thin, and spiral tube-shaped, progressively thinned apically; spermathecal duct moderately long and slightly thicker than diverticulum; spermatheca thin and spiral tube-shaped, feebly longer than diverticulum; accessory gland evenly thin and feebly shorter than spermatheca.

**Distribution.** China (new faunistic record from Xizang), N. India (Assam).

***Taiwanocantharis marginalis* Y. Yang, Hua & Liu, sp. nov.**

(Figs 1C, D, 2D–F, 3B, D)

**Type material. HOLOTYPE: CHINA:** ♂ (IZCAS), Xizang, Zayü, Shang Zayü, N [night collecting], 5.VI.2021, H. Liu & Y.C. Zhao leg. **PARATYPES: CHINA, Xizang:** 1 ♂ (IZCAS), Zayü, Shang Zayü, N [night collecting], 5.VI.2021, H. Liu & Y.-C. Zhao leg.; 1 ♂ (IZCAS), Zayü, Xia Zayü, N [night collecting], 6.VI.2021, Y.-C. Zhao leg.; 1 ♀ (MHB), Zayü, Shang Zayü, 5.VI.2021, A.-M. Shi leg.

**Diagnosis.** This species is similar to *T. malaisei* (Wittmer, 1989) (located in N.E. Myanmar) in the general shape of aedeagus, but can be easily distinguished from the latter by combination of the following characteristics: pronotum with only one large black marking in center of disc (Fig. 1C, D), while *T. malaisei* with additional four small black markings behind the large black marking in center of disc; aedeagus with laterophyse nearly even in width and rounded at apex in ventral view, which extruding over conjoint dorsal plate of parameres (Fig. 2E), ventral process distinctly thinned at apical part in ventral view (Fig. 2D), whereas in *T. malaisei*, laterophyse widened apically and slightly protruding latero-apically in ventral view, which not beyond conjoint dorsal plate of parameres (Wittmer 1989: fig. 5), ventral process feebly widened at apical part in ventral view (Wittmer 1989: fig. 5); abdominal sternite VIII of female with middle emargination feebly shallower than lateral ones (Fig. 3B), while distinctly shallower (Wittmer 1989: fig. 7) in *T. malaisei*.

**Description.** Body length 11.5–12.6 mm (11.5 mm in holotype), width at humeri 2.9–3.2 mm (2.9 mm in holotype).

**Male** (Fig. 1C). Body brownish yellow, head black, antennae brown, antennomeres I, II yellowish orange ventrally, pronotum light yellow, with black lateral margins, as well as a large black marking in center of disc, elytra green, with strongly metallic luster, legs yellowish brown at coxae, trochanters and femora. Body densely covered with light yellow recumbent pubescence, of which feebly sparser on head.

Head rounded, surface densely punctate, eyes moderately protruding, head width across eyes distinctly narrower than pronotum, antennae filiform, extending to the middle of elytra, antennomeres II shortest and about half as long as I, III third longer than II, V longest, XI feebly longer than X, IV–XI each with a narrow, smooth longitudinal to oval groove near middle of outer margin, of which those on VI and VII being the longest.

Pronotum 1.3 times wider than long, anterior margin moderately arcuate, lateral margins rounded, posterior margin nearly straight, anterior angles widely rounded, posterior angles hardly protruding, disc distinctly convex on postero-lateral parts, surface finely punctate. Elytra nearly parallel-sided, approximately 3.2 times longer than humeral width, 4.7 times longer than pronotum, surface nearly lustrous at anterior third parts, coarsely punctate on the rest. Each outer tarsal claw with a rounded appendicle at base, while inner claws simple.

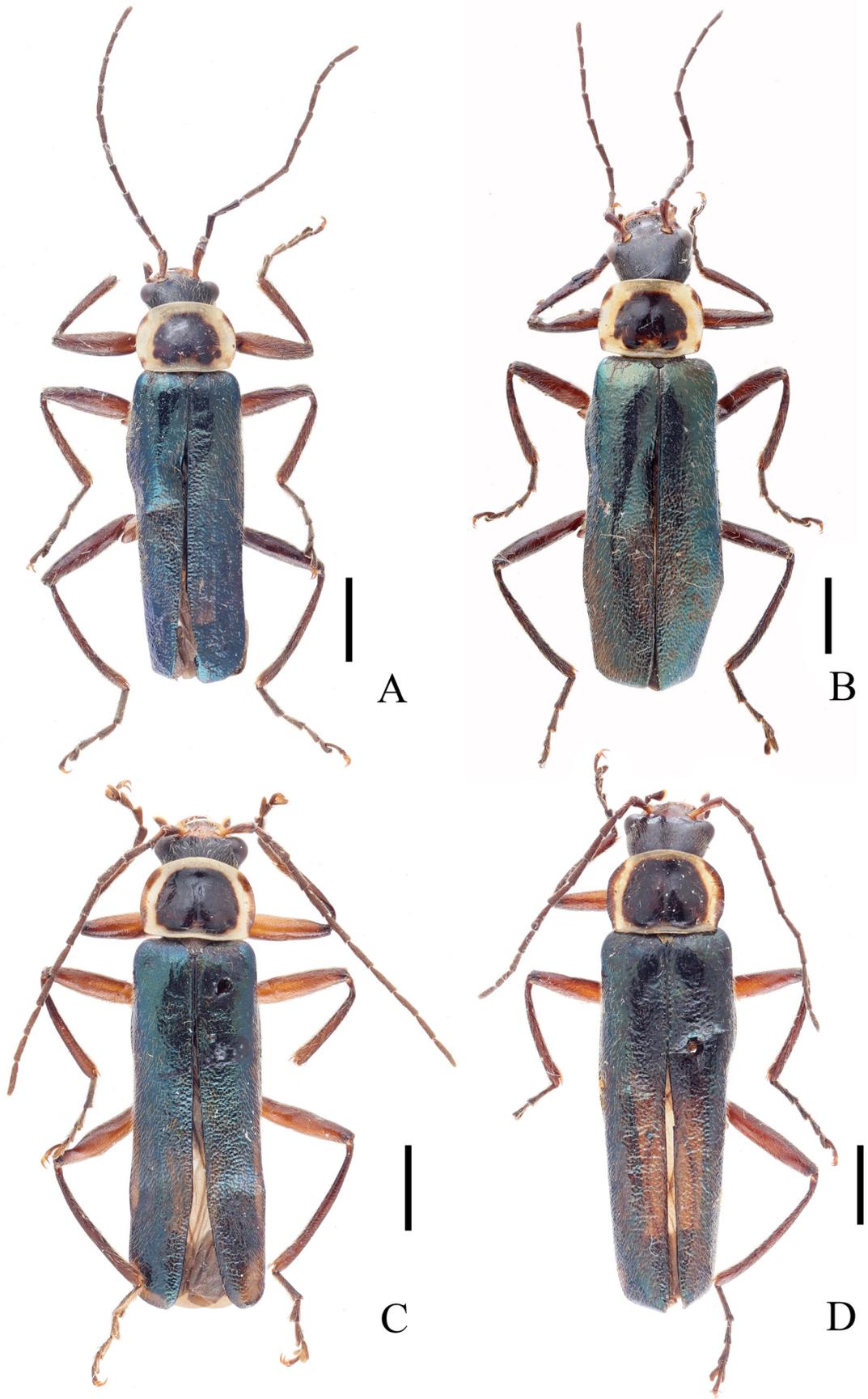
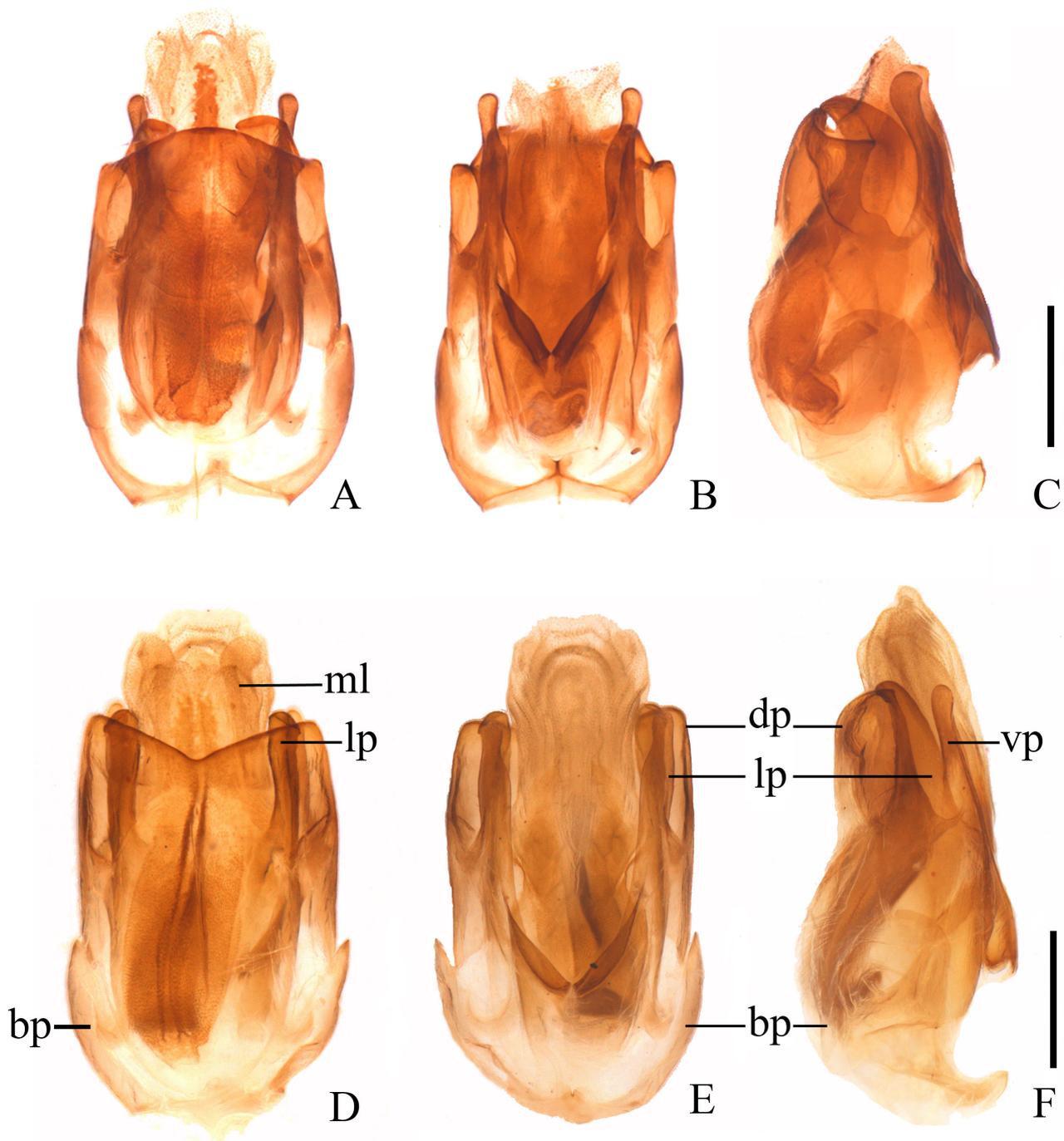


FIGURE 1. Habitus, dorsal view. A, B. *Taiwanocantharis shergaoensis* (Wittmer, 1989). C, D. *T. marginalis* sp. nov. A, C. Male. B, D. Female. Scale bars: 2.0 mm.



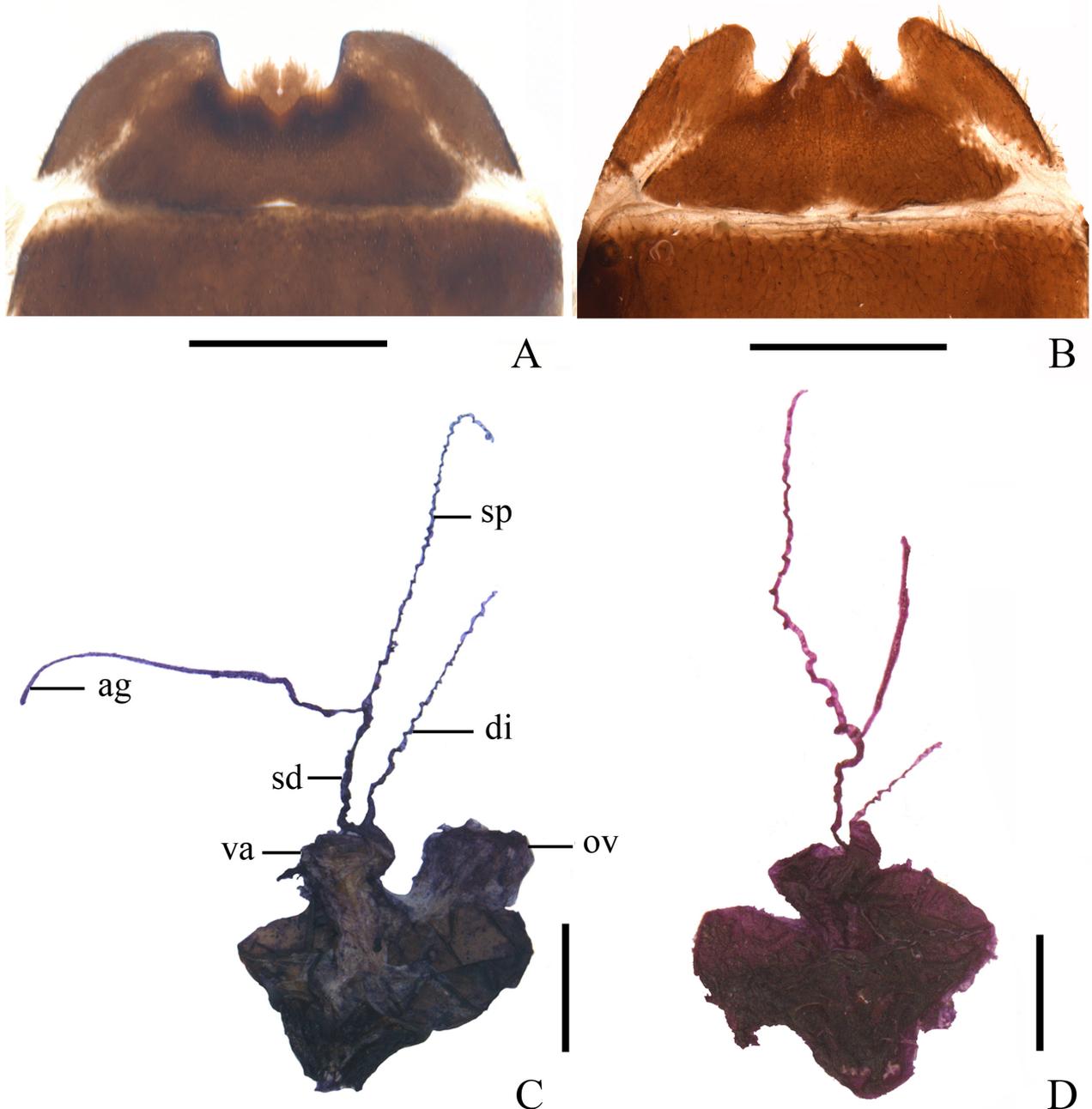
**FIGURE 2.** Aedeagus (A, D. Dorsal view. B, E. Ventral view. C, F. Lateral view). A–C. *Taiwanocantharis shergaoensis* (Wittmer, 1989). D–F. *T. marginalis* **sp. nov.** Abbreviations: bp—basal piece, dp—conjoint dorsal plate of parameres, lp—laterophyse, ml—median lobe, vp—ventral process of each paramere. Scale bars: 0.5 mm.

Aedeagus (Fig. 2D–F): ventral process of each paramere slender and nearly straight, distinctly thinned at apical third part in ventral view (Fig. 2E); conjoint dorsal plate of parameres as long as ventral process, parallel-sided, largely and triangularly emarginated in middle of apical margin, with a pair of longitudinal ridges in middle of inner surface (Fig. 2D), nearly fluent in outer margins, with latero-apical angles nearly rectangular (Fig. 2F); the emargination between conjoint dorsal plate and ventral process narrow and as deep as length of ventral process (Fig. 2F); laterophyse extruding over conjoint dorsal plate, slender and even in width along whole length, rounded at apex in ventral view (Fig. 2E), which slightly hooked and bent dorsally (Fig. 2D).

Female (Fig. 1D). Similar to male, but body larger, eyes less protruding, antennae shorter, extending to third length of elytra when inclined, middle antennomeres lacking grooves, pronotum wider and 1.4 times wider than long, feebly convex on disc. Abdominal sternite VIII (Fig. 3B) deeply and roundly emarginated in middle and on both sides of posterior margin, with middle emargination feebly shallower than lateral ones, the portion between middle and lateral emarginations acute at apices, narrowly rounded at latero-apical angles. Internal organ of reproductive system (Fig. 3D): diverticulum moderately long, thin, and spiral tube-shaped, abruptly thinned apically; spermathecal duct moderately long and slightly thicker than diverticulum; spermatheca thin and spiral tube-shaped, distinctly longer than diverticulum; accessory gland evenly thin and distinctly shorter than spermatheca.

**Etymology.** This specific name is derived from the Latin *marginalis* (of edge), referring to its black lateral margins of pronotum.

**Distribution.** China (Xizang).



**FIGURE 3.** A, B. Abdominal sternite VIII of female, ventral view. C, D. Internal organ of female reproductive system, lateral view. A, C. *Taiwanocantharis shergaoensis* (Wittmer, 1989). B, D. *T. marginalis* sp. nov. Abbreviations: ag—accessory gland, di—diverticulum, sd—spermathecal duct, sp—spermatheca, ov—median oviduct, va—vagina. Scale bars: 1.0 mm.

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<https://doi.org/10.3897/zookeys.367.6641>

## 中国台花萤属 *Taiwanocantharis* 新种及新纪录种记述 (鞘翅目: 花萤科)

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**摘要:** 报道台花萤属 *Taiwanocantharis* 一中国新纪录种, 社寮台花萤 *T. shergaoensis*; 另描述西藏一新种, 即黑缘台花萤 *T. marginalis* sp. nov.。提供了二者整体图、雄性外生殖器和雌性第VIII节腹板特征图, 并首次报道该属雌内生殖系统特征。

**关键词:** 花萤科; 新种; 新纪录; 中国