



## Revision of the subgenus *Orientostichus* Sciaky & Allegro in Southeast China, with descriptions of seven new species of the *Pterostichus prattii* Bates species group (Coleoptera: Carabidae: Pterostichini)

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### Abstract

The subgenus *Orientostichus* Sciaky & Allegro, 2013 from Southeast China is reviewed. A total of eleven species were recognized from this area, all belonging to the *Pterostichus prattii* Bates, 1890 species group. They are mainly differentiated by the characters of pronotum basal foveae, elytral microsculpture, male sexual modification on sternite VII, and endophallus of male genitalia. Seven new species are described: *Pterostichus* (*Orientostichus*) *sinuosus* sp. nov. (type locality: Guangfuding, Guangxi), *P. (O.) shan* sp. nov. (Nanling, Guangdong), *P. (O.) luoxiaoensis* sp. nov. (Qiyunshan, Hunan), *P. (O.) separatus* sp. nov. (Tianmu Mt., Zhejiang), *P. (O.) skanda* sp. nov. (Tianmu Mt., Zhejiang), *P. (O.) fujianensis* sp. nov. (Luoboding, Fujian), *P. (O.) deliquus* sp. nov. (Ziyundong mt., Fujian). *P. (O.) matalini* Fedorenko, 2023 is newly recorded from China (Jian'ou, Fujian).

**Key words:** Southeast China, *Pterostichus*, new species, taxonomy, secondary sex character

### Introduction

The subgenus *Orientostichus* Sciaky & Allegro, 2013 contains a number of large-sized *Pterostichus* Bonelli, 1810 species that are commonly seen not only in the evergreen broadleaf forest in eastern China but also in the cloud forest in the high mountains of western China. A total of 25 species have been described within this subgenus (Sciaky & Allegro 2013; Fedorenko 2023; Yin *et al.* 2023), being distributed in South China and Southeast Asia. These species can be roughly classified into four species groups: the *P. pulcher* Sciaky & Allegro, 2013 group, the *P. curtatus* Fairmaire, 1886 group, the *P. lesticoides* (Straneo, 1939) group, and the *P. prattii* Bates, 1890 group (Yin *et al.* 2023; Fedorenko 2023). The first two groups are only known from the high mountains of southwestern China, while the remaining two are mainly distributed in moderate elevations and are characteristic for the subtropical and warm temperate areas of Southeast Asia. The species of the *P. pulcher* group and the *P. lesticoides* group have been relatively well studied (Yin *et al.* 2023; Fedorenko 2023), while there is still a large number of new species awaiting to be described in the remaining two groups.

The initial intention of the current work was to describe three new species within this subgenus from the Nanling Area. However, when studying these species, it was uncovered that the specimens previously determined as *P. prattii* actually belong to several distinct species, and as a result, more new species were discovered from Zhejiang and Fujian provinces. Hence, we define Southeast China as the scope of the present research. The concept of Southeast China in this paper approximately encompasses the region south of the Yangtze River and east of the line from Jinfo Mountain to Leigong Mountain to the Beibu Gulf (Fig. 1B). This region includes the following provinces: Zhejiang, the southern part of Anhui, Taiwan, Fujian, Jiangxi, Guangdong, Hunan, the southern part of Chongqing, the eastern part of Guizhou, and the eastern part of Guangxi.

Based on the specimens we examined from diverse collections, detailed morphological studies were conducted, with special focus on the characters of the male sexual modification on sternite VII and the endophallus of male

genitalia. A total of eleven species were recognized in Southeast China, all belonging to the *P. prattii* species group, among which seven are new to science: three from the middle section of Nanling Area and the remaining four from Zhejiang and Fujian. All these new species were discovered at relatively high altitudes (> 1000 m), while the widely distributed species *P. prattii* and the very rare species *P. matalini* Fedorenko are typically found at lower elevations. Future investigations are expected to discover more new species at high altitudes in this region, especially in the eastern part of Guizhou and the southern part of Jiangxi.

In the present paper, all the eleven species known from the Southeast China belonging to the *Pterostichus* (*Orientostichus*) *prattii* species group are revised. For all of the taxa treated here, identification keys, examined materials, ample descriptions, illustrations, and distribution maps are provided, particularly with the addition of male sternite VII and endophallus characters.

## Material and methods

The present study is mainly based on the examination of specimens from Southeast China. Most of specimens examined, including types of new species, are deposited in the collections of the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (**IZAS**). Other collections with materials examined in the present study were indicated by the following abbreviations:

**CBFU** Collection of Forestry Entomology Laboratory, Beijing Forestry University, Beijing, China.

**CCCC** Collection of Chang-chin Chen, Tianjin, China.

**CHYL** Collection of Hao-yuan Li and Yihang Li, Beijing, China.

**CJHC** Collection of Jia-heng Chen, Beijing, China.

**HBUM** Hebei University Museum, Baoding, China

**MNHN** Muséum National d'Histoire Naturelle, Paris, France.

**NMPC** Národní Muzeum Přírodovědecké Muzeum, Prague, Czech Republic.

The terminology of the male genitalia, female genitalia, methods of dissection techniques, endophallus everting procedures, and photography follow our previous studies (Yin *et al.* 2023; Chen *et al.* 2024). Terminology of microsculpture mainly follows Shi and Liang (2015).

Measurements and the abbreviations are as follows: body length (**BL**) was measured from the apical margin of the labrum to the elytral sutural apex; body width (**BW**) was measured along the greatest width of closed elytra; the width of head (**HW**) was measured along the greatest transverse distance of head including eyes; pronotum width (**PW**) was measured along its greatest width; pronotum length (**PL**) was measured along its median line; basal width of pronotum (**PBW**) was measured from two posterior angles; apical width (**PAW**) was measured from two anterior angles; elytra length (**EL**) was measured along the suture from the base of the scutellum to the elytral apex.

Other abbreviations used in the descriptions are as follows: antennomere 3 (**A3**); male sexual modification on sternite VII (**msc**); the basal portion of median lobe of aedeagus (**bp**); the apical portion of median lobe of aedeagus (**ap**); ventral basal lobe of endophallus (**vb**); preapical setose region of endophallus (**psr**); basal sclerotized piece of endophallus (**bsp**); the first projection on right branch of *bsp* (**p1**), the second projection on right branch of *bsp* (**p2**), the third projection on right branch of *bsp* (**p3**).

Additional newly introduced morphological terms on the basal foveae area of pronotum, male sexual modification on sternite VII, male genitalia and endophallus are detailed explained in the section of “Morphological characters of the *P. prattii* species group from Southeast China” below.

## Taxonomy

### Subgenus *Orientostichus* Sciaky & Allegro, 2013

*Orientostichus* Sciaky & Allegro, 2013: 113; Fedorenko 2018: 111; Fedorenko 2023: 155; Yin *et al.* 2023: 163.

**Type species:** *Pterostichus prattii* Bates, 1890.

Species of the subgenus *Orientostichus* are well-defined by the robust body, continuous umbilicate pore series on the elytral interval 9, and the longitudinally twisted apical lamella of male genitalia. The morphological characters

of this subgenus have been adequately described by previous authors (Sciaky & Allegro 2013; Fedorenko 2023; Yin *et al.* 2023), and there is no necessity to redescribe it here.

Prior to the present work, a total of 25 species have been described within this subgenus (Sciaky & Allegro 2013; Fedorenko 2023; Yin *et al.* 2023), which are distributed in South China (approximately south of 35° latitude, east of 98° longitude), Vietnam, Thailand, and Myanmar. Within this subgenus, three species groups were clearly defined: the *P. pulcher* group, the *P. prattii* group, and the *P. lesticoides* group (Yin *et al.* 2023; Fedorenko 2023). A fourth species group, the *P. curtatus* group, although not formally proposed, was mentioned by Yin *et al.* (2023: 165) to comprise *P. curtatus*, *P. perlutus* and several undescribed relatives from the mountains of southwest China with regular elytral intervals, absence of parascutellar pore, one to two or none discal setigerous pores on interval 3, and endophallus usually without coarse setae. In the present work, we only focus on the species of this subgenus from Southeast China, and all these eleven species in this area belong to the *P. prattii* species group.

The *P. prattii* group and *P. lesticoides* group were recognized for the species of Indochina and were differentiated from each other by the characters presented in the key by Fedorenko (2023: 161). Nevertheless, based on our study of the species from Southeast China, it is discovered that only the following differences can constantly distinguish the representatives of the *P. lesticoides* group from those of the *P. prattii* group: pronotal lateral bead more distinctly flat and dilated in basal half; pronotum wide at base, rounded on sides; basal foveae without basal sulcus and basal bead; endophallus without coarsely setose band on left-apical surface.

## Checklist for species and species groups of subgenus *Orientostichus*

### *Pterostichus pulcher* species group

<i>P. condylus</i> Yin, Zhu & Shi, 2023	Sichuan (Mianning, Xide)
<i>P. jialini</i> Yin, Zhu & Shi, 2023	Sichuan (Huidong: Jiamashi)
<i>P. leo</i> Yin, Zhu & Shi, 2023	Sichuan (Jinyang: Shizishan)
<i>P. liyuani</i> Yin, Zhu & Shi, 2023	Sichuan (Puge, Zhaojue)
<i>P. orbicollis</i> Yin, Zhu & Shi, 2023	Sichuan (Huili: Longzhoushan)
<i>P. pemphis</i> Yin, Zhu & Shi, 2023	Sichuan (Puge, Zhaojue, Butuo)
<i>P. pulcher</i> Sciaky & Allegro, 2013	Sichuan (Meigu, Ebian)

### *Pterostichus lesticoides* species group

<i>P. laevistriatus</i> Fedorenko, 2023	Vietnam: Cao Bang
<i>P. lesticoides</i> (Straneo, 1939)	Vietnam: Sa Pa
<i>P. pseudolesticoides</i> Fedorenko, 2023	Vietnam: Lao Cai
<i>P. tamdaoensis</i> Fedorenko, 2023	Vietnam: Tam Dao

### *Pterostichus curtatus* species group

<i>P. curtatus</i> Fairmaire, 1886	Yunnan
<i>P. perlutus</i> Jedlička, 1938	Sichuan (Jiulong)

### *Pterostichus prattii* species group

<i>P. luoxiaoensis</i> <b>sp. nov.</b>	Hunan (Yanling, Guidong)
<i>P. davidi</i> (Tschitscherine, 1897)	Yunnan
<i>P. deceptrix</i> (Tschitscherine, 1898)	Sichuan (Jiuzhaigou)
<i>P. deliquus</i> <b>sp. nov.</b>	Fujian (Yong'an: Ziyundong Mt.)
<i>P. distinctissimus</i> Jedlička, 1940	Taiwan
<i>P. ferreroi</i> Straneo, 1989	Thailand: Chiangmai
<i>P. fujianensis</i> <b>sp. nov.</b>	Fujian (Sanming, Yong'an, Longyan)
<i>P. gallopavo</i> Sciaky & Wrase, 1997	Shaanxi (Huashan)

<i>P. machulkai</i> Jedlička, 1931	Chongqing (Jinfoshan)
<i>P. makarovi</i> Fedorenko, 2023	Vietnam: Cao Bang
<i>P. matalini</i> Fedorenko, 2023	Vietnam: Lao Cai; China: Fujian (Jian'ou)
<i>P. prattii</i> Bates, 1890	Widely distributed in South China: Zhejiang, Fujian, Guangdong, Anhui, Hubei, Jiangxi, Hunan, Guangxi, Guizhou, Sichuan, Chongqing
<i>P. semirugosus</i> (Andrewes, 1947)	Myanmar: Kambaiti
<i>P. separatus</i> <b>sp. nov.</b>	Zhejiang, Anhui, Fujian
<i>P. shan</i> <b>sp. nov.</b>	Guangdong (Ruyuan: Nanling)
<i>P. simillimus</i> Fairmaire, 1886	Yunnan
<i>P. sinuosus</i> <b>sp. nov.</b>	Guangxi (Guangfuding), Hunan (Yangming Mt.)
<i>P. skanda</i> <b>sp. nov.</b>	Zhejiang (Tianmu Mt.)
<i>P. tachongi</i> Jedlička, 1936	“Gansu: Tachong, Nganshan”, no modern record

### Key to species groups of the subgenus *Orientostichus*

- 1 Elytral intervals 3 and 5 each with three or more deeply foveate discal pores, interrupting intervals and forming catenulate sculpturing . . . . . ***P. pulcher* species group**
- Elytral interval 3 with zero to two small setigerous pores, interval 5 without setigerous pore, all intervals regular . . . . . **2**
- 2 Pronotal lateral bead thick anteriorly, distinctly flat and dilated in posterior half. . . . . ***P. lesticoides* species group**
- Pronotal lateral bead fine, not or barely wider in posterior half than in anterior half . . . . . **3**
- 3 Elytra always without parascutellar pore; endophallus usually without setose area, rarely with a small setose area on left surface; ventral basal lobe of endophallus usually indistinguishable, rarely large but obscure; gonocoxite 2 with one or two ensiform setae on inner margin . . . . . ***P. curtatus* species group**
- Elytra usually with parascutellar pore (some individuals of *P. distinctissimus* without parascutellar pore); endophallus with coarsely setose bands on left-apical surface; ventral basal lobe of endophallus strongly prominent, globular or nearly so; gonocoxite 2 without ensiform seta (Fig. 10E) . . . . . ***P. prattii* species group**

### *Pterostichus* (*Orientostichus*) *prattii* species group

The concept of this species group is in correspondence with that defined by Fedorenko (2023), yet distinct from the “*prattii*-group” referred to the early authors (Jedlička 1962; Sciaky & Wrase 1997). The species of this species group can generally be differentiated from other members of this subgenus by: i) elytral parascutellar pore usually presenting; ii) interval 3 with 1-2 small setigerous pores or without such pores; iii) elytral intervals more or less transversely wrinkled or rugose near the apex; iv) pronotal lateral bead not or barely widened in the basal half; v) endophallus of the male genitalia with a basal sclerotized piece that is uninterrupted and branched, with a coarsely setose band on the left-apical surface, with ventral basal lobe strongly prominent, globular or nearly so (Fig. 8); vi) gonocoxite 2 of ovipositor short and wide, without ensiform setae.

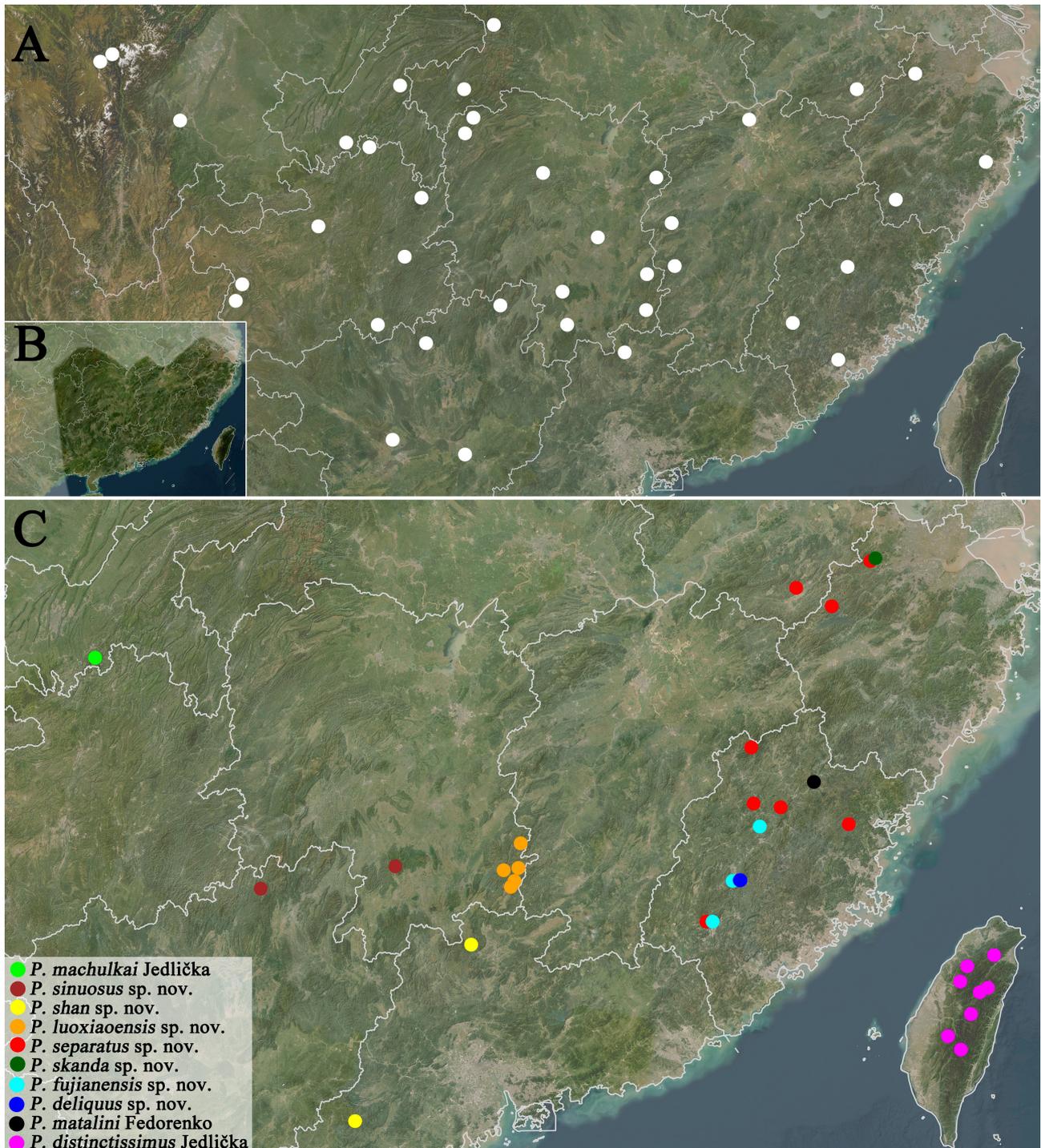
The different species within the *P. prattii* species group are highly similar to one another in both external appearances and the aspect of male genitalia (Fig. 7). The main characters for distinguishing species are the modified sternite VII in males and the structure of the endophallus (mainly for the basal sclerotized piece). The following external characters have taxonomy value when identifying species within this species group: body length; elytral microsculpture of male and female; number of accessory setae on antennomere 3; the structure of the pronotal base, including the basal foveae, lateral margins, and posterior angles; the range of the transversal wrinkles on the elytral intervals; the punctures on metepisternum; shape of shallow carina on the elytra reflexed lateral margin. Sometimes, it can be extremely difficult to identify females. In such circumstances, it is better to compare them with the males collected together.

**Habitat.** In Southeast China, species of the *P. prattii* species group usually live in bamboo forests, broad-leaved forests or shrublands (Fig. 2). Most of the specimens were collected using pitfall traps, but for the largest species, *P. prattii*, they can sometimes be encountered along the roadside near villages.

#### **Morphological characters of the *P. prattii* species group from Southeast China.**

Body large and robust, containing the largest among Chinese *Pterostichus*, BL ranging 17.0–32.0 mm, BW 6.2–11.5 mm. Dorsal surface and appendages entirely black, without metallic luster; mouthparts and tarsomeres somewhat reddish brown. Elytral microsculpture always distinct in males, usually forming isodiametric (such as *P. separatus*

**sp. nov.**, with length of each mesh subequal to width, Fig. 3F), transversal meshes (such as *P. fujianensis* **sp. nov.**, with each mesh 1.5–2.5 times wider than long, Fig. 3G), or very strongly transversal meshes (in *P. machulkai*, with each mesh more than 4 times wider than long, Fig. 3H), but consisting of dense transversal lines only in *P. matalini* (Fig. 3I). In females, elytral microsculpture granular (consisting of very strong isodiametric microsculpture with embossed meshes) and distinctly different from males (such as *P. skanda* **sp. nov.** and *P. fujianensis* **sp. nov.**, Fig. 3A, B); normally isodiametric, usually similar to males (such as *P. separatus* **sp. nov.**, Fig. 3D), but different from the males in *P. machulkai*; or consisting of very transversal superficial meshes only in *P. matalini*. Microsculpture on head and pronotum similar among different species, stronger and isodiametric on head; shallower and transversal in most regions of pronotum, gradually turning to isodiametric meshes on the basal-median area of pronotum.



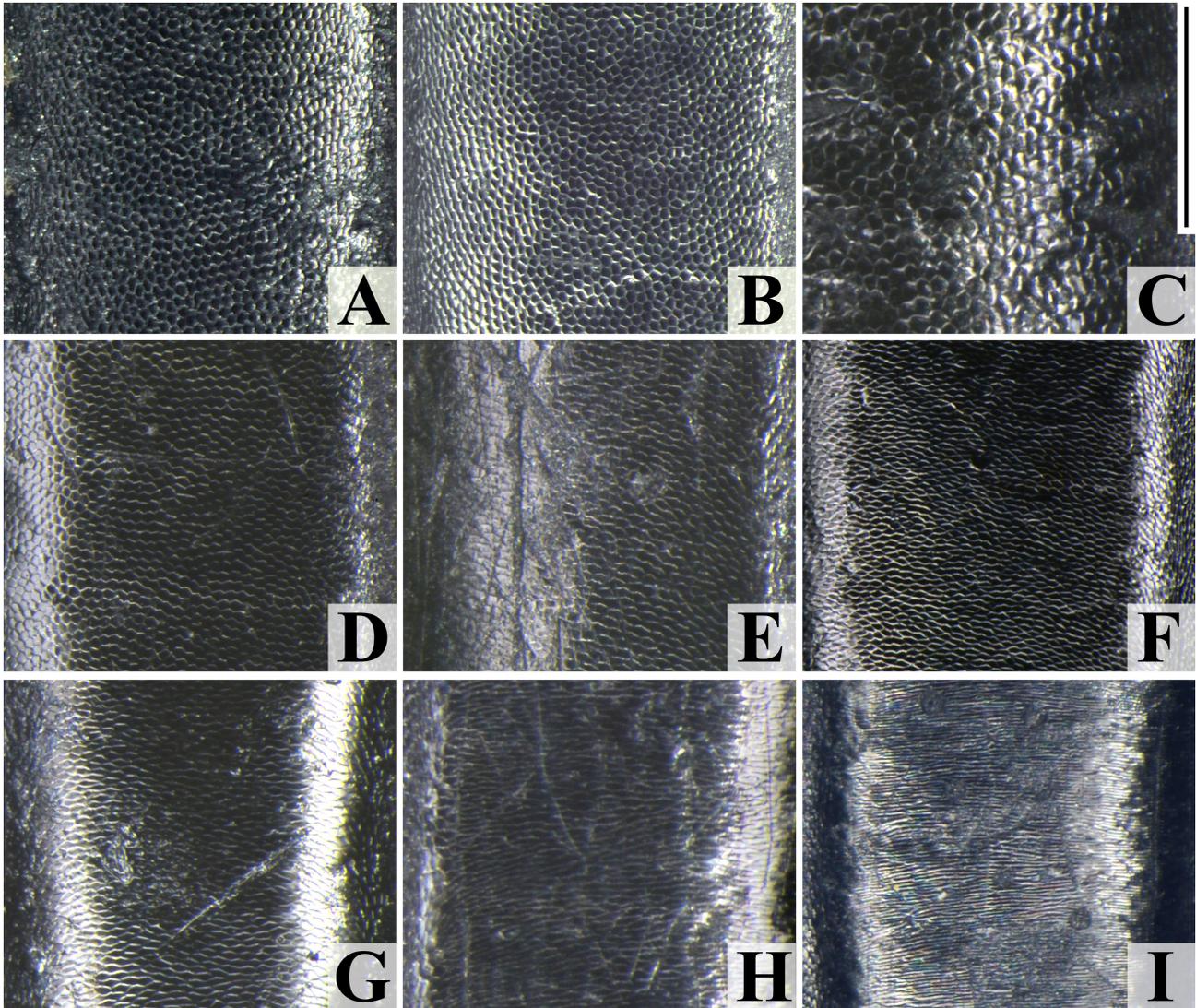
**FIGURE 1.** Confirmed distributions of *Pterostichus* (*Orientostichus*) spp. in South China: **A.** Distribution of *P. prattii* Bates. **B.** Highlighted region showing the concept of Southeast China in the present research. **C.** Distributions of remaining ten species in the present research region.



**FIGURE 2.** Habitus photographs of *Pterostichus* (*Orientostichus*) spp. from Southeast China. **A.** Living habitus of *Pterostichus prattii* Bates in Yanling, Hunan (provided by Yuzhou Huang). **B.** Environment of the collecting site of *P. prattii* Bates in Yanling, Hunan (provided by Yuzhou Huang). **C.** Environment photo of the collecting site of *P. separatus* **sp. nov.** in Tianmu Mt., Zhejiang.

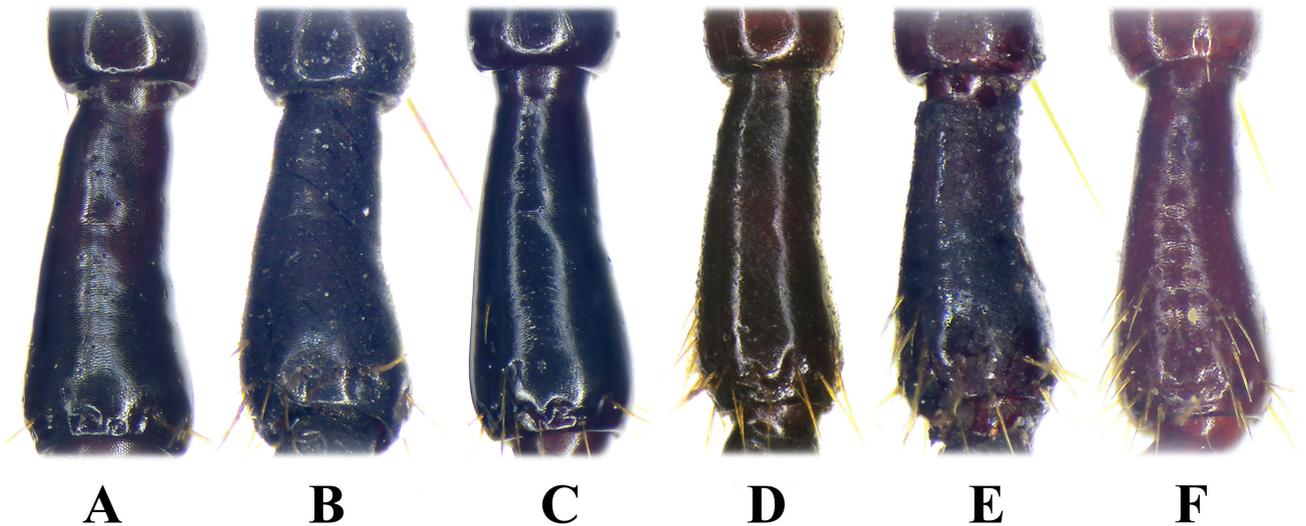
Head medium-sized, slightly thickened; vertex nearly impunctate; eyes large and hemispherical; two supraorbital setae present; frontal grooves deep, reaching mid-point of eyes; tempora short, slightly convex behind eyes. Antennae exceeding basal border of pronotum and reaching to about basal sixth of elytra; scape shorter than

combined length of following two segments. Antennomere 3 (*A3*) with or without accessory setae besides seven to eight primary setae forming apical ring (Fig. 4); if present, these accessory setae usually abundant (more than ten), occupying at least basal third of inner margin of *A3*, and only slightly shorter than the primary ones (in four species, such as in *P. skanda* **sp. nov.** Fig. 4F); but in *P. prattii* (Fig. 4C), usually only the inner-apical angle of *A3* with very few accessory setae much shorter than primary ones; and in *P. sinuosus* **sp. nov.**, very few (less than five) or no accessory setae present on *A3*. Mandibles elongate and thickened, apex curved; terminal labial and maxillary palpomere subtriangular, a little more broadly expanded in males; submentum with one seta on each side.

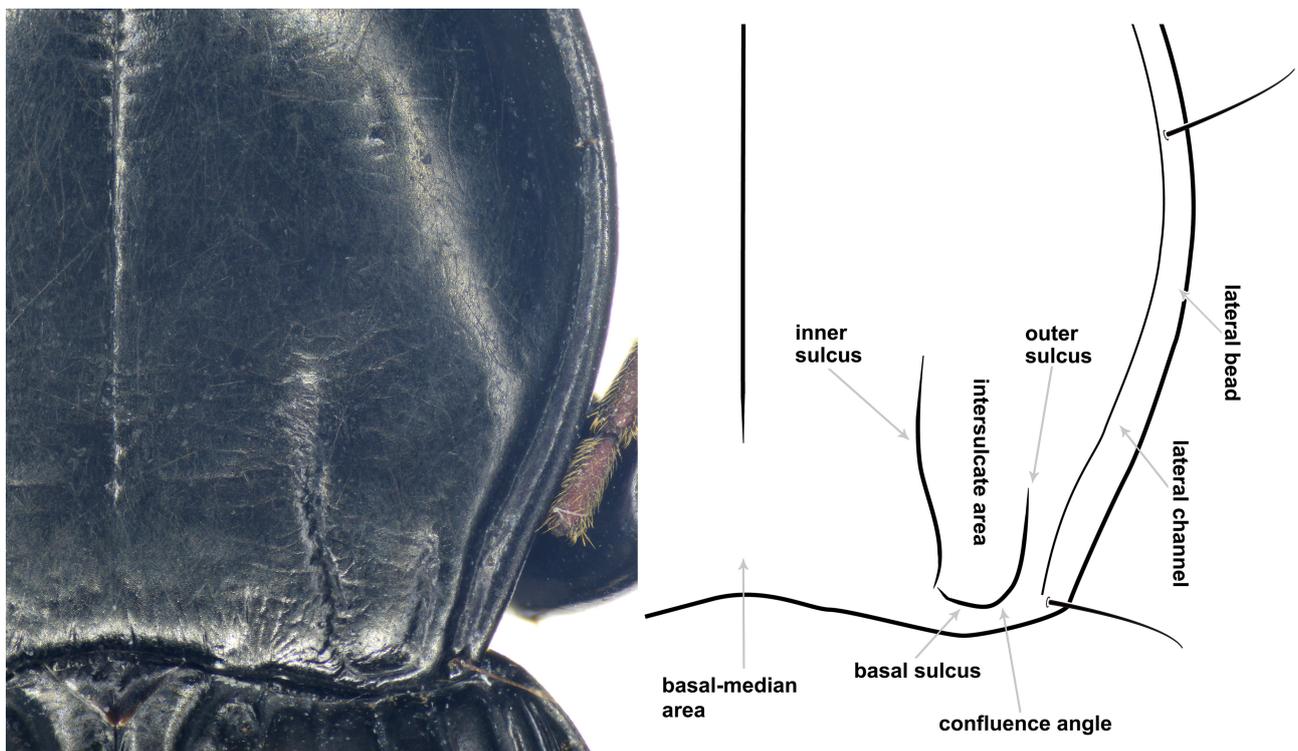


**FIGURE 3.** Elytral microsculpture of *Pterostichus* (*Orientostichus*) spp. from Southeast China. **A.** Granular, female of *P. fujianensis* **sp. nov.** from Luoboding, Fujian. **B.** Granular, female of *P. skanda* **sp. nov.** from Tianmu Mt., Zhejiang. **C.** Granular–isodiametric, male of *P. distinctissimus* Jedlička from Hsinchu, Taiwan. **D.** Isodiametric, female of *P. separatus* **sp. nov.** from Wuyishan, Fujian. **E.** Slightly transversal (mesh l/w about 1.5), holotype of *P. deliquus* **sp. nov.**, male. **F.** Slightly transversal (mesh l/w about 1.5), male of *P. separatus* **sp. nov.** from Tianmu Mt., Zhejiang. **G.** Transversal (mesh l/w about 2), male of *P. fujianensis* **sp. nov.** from Luoboding, Fujian. **H.** Strongly transversal (mesh l/w more than 4), male of *P. machulkai* Jedlička from Jinfoshan, Chongqing. **I.** Liner, male of *P. matalini* Fedorenko from Nanping, Fujian. Scale bars: 2 mm

Pronotum subquadrate or subcordate, widest a little before middle; both sides evenly arched, with one mid-lateral seta, usually straight or hardly sinuate before posterior angles, but distinctly sinuate in *P. sinuosus* **sp. nov.**; anterior margin often slightly narrower than posterior margin, only in *P. machulkai* and *P. luoxiaoensis* **sp. nov.** anterior margin distinct wider than posterior margin; posterior margin nearly straight, usually slightly emarginate in middle. Anterior angles slightly protruded with blunt apex; posterior angles obtuse-rounded without denticles,



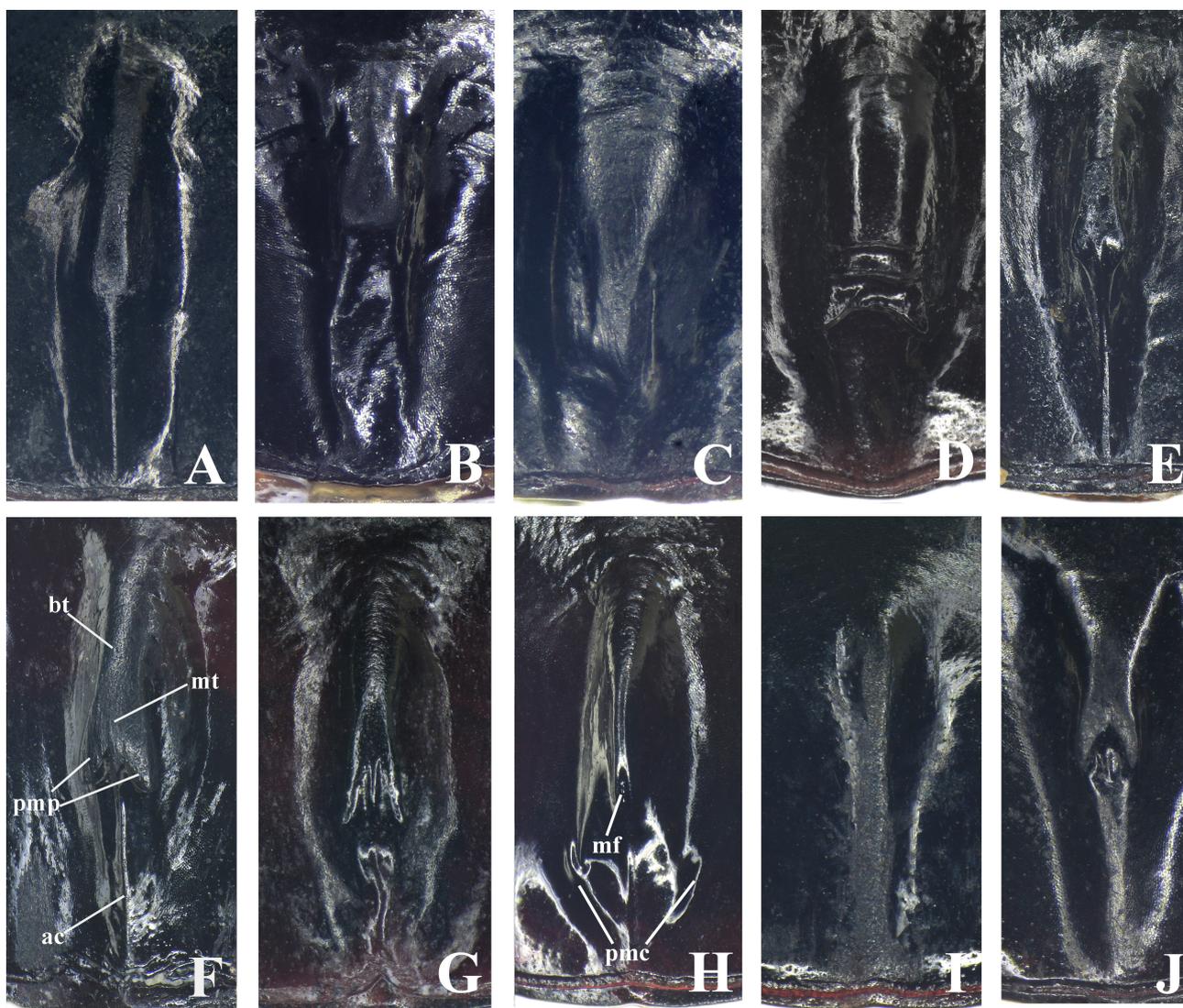
**FIGURE 4.** Antennomere 3 of *Pterostichus* (*Orientostichus*) spp. from Southeast China. **A.** *Pterostichus sinuosus* **sp. nov.**, holotype. **B.** *P. sinuosus* **sp. nov.**, female paratype from Yanling, Hunan. **C.** *P. prattii* Bates, male from Guidong, Hunan. **D.** *P. separatus* **sp. nov.**, male from Longyan, Fujian. **E.** *P. distinctissimus* Jedlička, male from Hsinchu, Taiwan. **F.** *P. skanda* **sp. nov.**, holotype.



**FIGURE 5.** Pronotum base and basal fovea of *Pterostichus prattii* Bates, a male from Nanling, Guangdong (left—photograph; right—schematic drawing with used terms).

apex usually obscure but distinct in *P. matalini* and *P. deliquus* **sp. nov.**; median line deeply incised, disc usually with faint transversal wrinkles aside it; basal-median area often with fine longitudinal wrinkles along posterior margin. Basal foveae comprised of two sulci each side, usually clearly defined. In order to facilitate the descriptions of basal fovea, the following morphological terms were introduced (Fig. 5): the **inner sulcus** about a third length of pronotum, usually sinuate toward lateral sides in the middle, extended to pronotal base, reaching basal sulcus or ended before it (but usually with a very fine connection line between them); the **outer sulcus** usually slightly

shallower than inner sulcus, about half length of inner sulcus; the outer sulcus extended inwardly and bent forming a short **basal sulcus**, it usually finer and shallower than outer sulcus; the **confluence angle** referring to the included angle between outer and basal sulci, usually clearly rectangular or circular filleted; the well-defined basal sulcus forming **basal bead** between it and pronotal basal margin; the **outer eminentia** referring to the area between outer sulcus and lateral channel, usually present as a short ridge; the **intersulcate area** referring to the protuberant area between inner and outer sulci, usually with fine wrinkles and almost impunctate, but distinctly punctate in *P. skanda* **sp. nov.**; lateral channel narrow, usually entire and reaching pronotal posterior seta, but interrupted before posterior seta in *P. machulkai*.

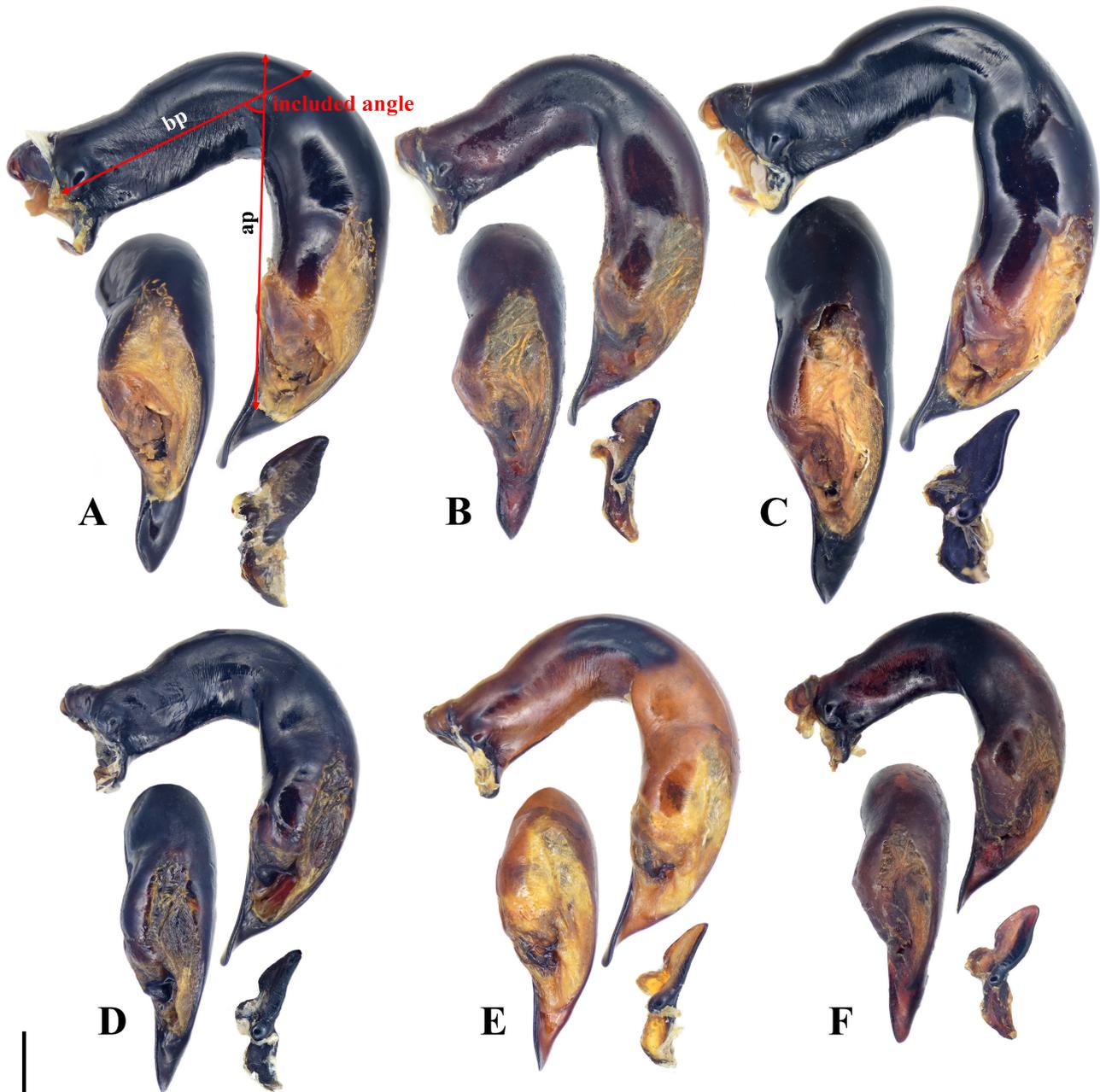


**FIGURE 6.** Male sexual modification on sternite VII of *Pterostichus* (*Orientostichus*) spp. from Southeast China. **A.** *Pterostichus prattii* Bates, Nanling, Guangdong. **B.** *P. machulkai* Jedlička, Jinfoshan, Chongqing. **C.** *P. sinuosus* **sp. nov.**, holotype. **D.** *P. shan* **sp. nov.**, paratype from Yunkai Mt., Xinyi. **E.** *P. luoxiaoensis* **sp. nov.**, paratype from Lingfeng Mt., Yanling. **F.** *P. separatus* **sp. nov.**, paratype from Wuyi Mt. **G.** *P. skanda* **sp. nov.**, holotype. **H.** *P. fujianensis* **sp. nov.**, paratype from Meihuashan, Longyan. **I.** *P. matalini* Fedorenko, Jian'ou, Fujian. **J.** *P. distinctissimus* Jedlička, Hsinchu, Taiwan. Abbreviations: *bt* basal tubercle, *mt* median table, *ac* apical carina, *pmp* paramedian projections, *mf* median fovea, *pmc* paramedian carinas.

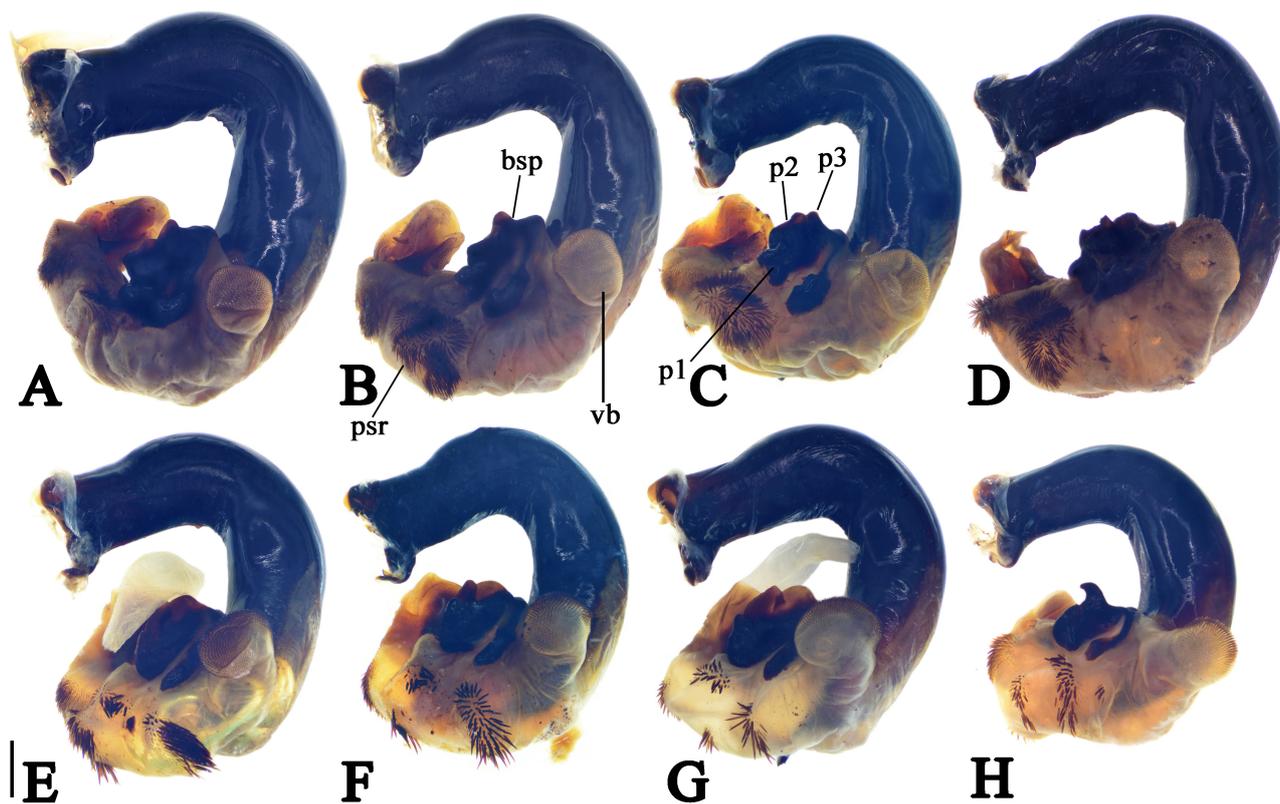
Elytra oblong, width a little greater than half of length, lateral sides subparallel, slightly widened behind middle. Humerus widely rounded, slightly wider than pronotum base, without humeral tooth. Parascutellar stria joined to stria 1, angular base of stria 1 very short or absent; parascutellar pore usually present, absent only in some individuals of *P. distinctissimus*. Striae deeply incised, smooth without punctures; inner intervals usually flat, outer intervals strongly convex. Interval 3 usually with one setigerous pore behind middle, but without pore in all specimens of *P. machulkai* and some individuals of *P. distinctissimus*, very rarely with two pores in a few individuals of *P. prattii*

and *P. fujianensis* **sp. nov.**; if present, this pore usually adjoining to stria 2, but clearly distant from stria 2 in *P. distinctissimus*; intervals 5 and 7 without discal setigerous pores; in most species, intervals more or less transversely wrinkled near apex, wrinkled area at most occupying elytral apical third; but in *P. distinctissimus*, intervals strongly rugose behind middle, wrinkled area extended to near elytral base. Umbilicate pore series on interval 9 continuous in middle, composed of 26–34 pores; the first primary umbilicate pore very large and laterally placed, usually with two small pores before it, but in most individuals of *P. separatus* **sp. nov.** from Zhejiang, with three small pores before the first primary pore; the terminal primary umbilicate pore very large, placed before level of epipleuron apical plica, with one to four small pores behind it; interval 7 with two pores before apex. Reflexed lateral margins of elytra usually smooth, while in *P. fujianensis* **sp. nov.**, with a fine obscure carina in apical half.

Mesofemora with two long setae on posterior ventral margin, with three to five spiniform setae on apical half of anterior ventral margin, arranged in two or three groups; metacoxae with two setae; metatrochanters without seta; metatarsomeres 1–3 with outer-lateral ridge; fifth tarsomere setose ventrally.



**FIGURE 7.** Male genitalia of *Pterostichus* (*Orientostichus*) spp., median lobe of aedeagus and right paramere. **A.** *Pterostichus prattii* Bates, Lishui, Zhejiang. **B.** *P. prattii* Bates, Emeishan, Sichuan. **C.** *P. prattii* Bates, Nanling, Guangdong. **D.** *P. separatus* **sp. nov.**, Wuyishan, Fujian, paratype. **E.** *P. separatus* **sp. nov.**, Gaoping Village, Fujian, paratype. **F.** *P. fujianensis* **sp. nov.**, Ziyundong Mountain, Fujian, paratype. Abbreviations: *ap* the axis of apical portion, *bp* the axis of basal portion. Scale bar: 1 mm.

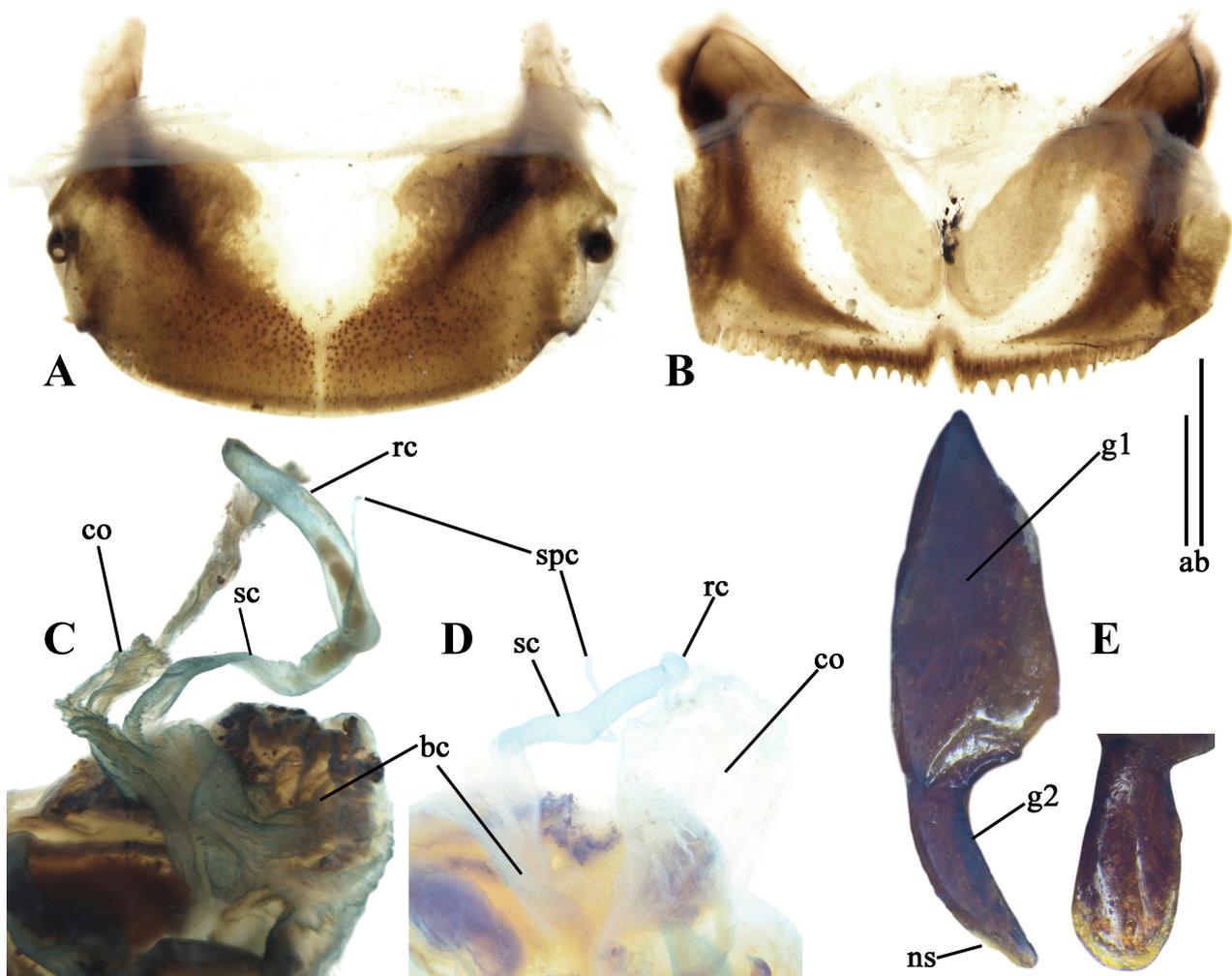


**FIGURE 8.** Endophallus of *Pterostichus* (*Orientostichus*) spp., left lateral view. **A.** *Pterostichus prattii* Bates, Lishui, Zhejiang. **B.** *P. prattii* Bates, Xifeng, Guizhou. **C.** *P. prattii* Bates, Emeishan, Sichuan. **D.** *P. prattii* Bates, Leigongshan, Guizhou. **E.** *P. separatus* **sp. nov.**, Meihuashan, Fujian, paratype. **F.** *P. separatus* **sp. nov.**, Wuyishan, Fujian, paratype. **G.** *P. separatus* **sp. nov.**, Xuefengshan, Fujian, paratype. **H.** *P. fujianensis* **sp. nov.**, Meihuashan, Fujian, paratype. Abbreviations: *psr* preapical setose region, *vb* ventral basal lobe, *bsp* basal sclerotized piece, *p1* the first projection on right branch of *bsp*, *p2* the second projection on right branch of *bsp*, *p3* the third projection on right branch of *bsp*. Scale bar: 1 mm.

Metepisternum short, length subequal to or slightly shorter than basal width, usually distinctly punctate, sometimes punctures very sparse and locally restricted. Sternite VII with one seta on each side in males, two in females. Male sternite VII with well-defined sexual character (*msc*) forming a distinct tubercle or ridge except for *P. deliquus* **sp. nov.** (Fig. 6). The basic form of *msc* present as a longitudinal ridge with dilated and flattened median part, fine apical extension, and a pair of asymmetric paramedian projections (such as *P. separatus*, Fig. 6F). All the other types of *msc* can be regarded as modifications from this basic form. In order to facilitate the descriptions of male sternal sex character, the following morphological terms were introduced (Fig. 6): the **basal tubercle** (*bt*) referring to the wide and gently sloping region on the base of the ridge, if the basal tubercle well developed, *msc* more like a tubercle such as in *P. shan* **sp. nov.** (Fig. 6D); the **median table** (*mt*) referring to the dilated and flattened surface on the middle of the ridge, sometimes the median table rudimental, *msc* more like a tubercle or a simple ridge, such as in *P. matalini* (Fig. 6I); the **apical carina** (*ac*) referring to the fine carinate extension between median table and sternite apex; a pair of asymmetric **paramedian projections** (*pmp*) often present, connected to the apex of median table, the right projection usually slightly longer and more inclined outward than the left projection as in *P. separatus* **sp. nov.** and *P. skanda* **sp. nov.** (Fig. 6F, G), sometimes the paramedian projections conjoint to apex, forming a large **median fovea** (*mf*), as in *P. distinctissimus* (Fig. 6J); a pair of shallow **paramedian carinas** (*pmc*) sometimes present aside the apical carina, the left paramedian carina always longer than the right one, as in *P. fujianensis* **sp. nov.** and *P. machulkai* (Fig. 6B, 6H).

Median lobe of aedeagus stout, strongly curved near basal third; the basal and apical portions referring to the median lobe shaft before and after the curve respectively; the length of basal portion (*bp*) measured along the central axis of basal portion, from basal orifice to the dorsal margin of aedeagus; the length of apical portion (*ap*) measured from the apical margin of apical orifice, across the maximum bending point on ventral margin, to the dorsal margin

of aedeagus (Fig. 7A), this line was also regarded as the axis of apical portion. The included angle between axes of *bp* and *ap* normally from 65° to 75°, but up to 85° in *P. matalini*; the ratio *bp/ap* between 0.57–0.82. Ventral margin of median lobe evenly curved all through its length (as in *P. matalini*, Fig. 19B), faintly tuberculate on basal portion (as in *P. luoxiaoensis* **sp. nov.**, Fig. 14B), or grooved on the maximum bending point and more or less tuberculate on apical portion (as in *P. separatus* **sp. nov.** Fig. 15B). Apical lamella long and twisted longitudinally, length about 2.5 times as basal width, apex narrowly rounded. Right paramere relatively short and stout, apex widely rounded or rounded-triangular, right margin straight or gently sinuate at apical fourth, left margin well curved before the articulation.



**FIGURE 9.** Female genitalia of *Pterostichus* (*Orientostichus*) spp. **A–C** *P. prattii* Bates, Nanling, Guangdong. **A.** Tergite VIII. **B.** Sternite VIII. **C.** Internal reproductive tracts. **D.** Internal reproductive tracts of *P. luoxiaoensis* **sp. nov.**, Guidong, Hunan, paratype. **E.** Ventral and inner lateral views of ovipositor, *P. fujianensis* **sp. nov.** in Luoboding, Fujian, paratype. Abbreviations: *g1* gonocoxite 1, *g2* gonocoxite 2, *ns* nematiform setae, *bc* bursa copulatrix, *co* common oviduct, *sc* seminal canal, *rc* receptaculum, *spc* spermathecal canal. Scale bars: **a** = 1 mm (A, B, C, D), **b** = 0.5 mm (E).

Endophallus strongly directed ventrally, gonopore opened to ventral-basal direction of aedeagus, with three sclerotized pieces on ventral surface: two preapical sclerotized pieces very close to gonopore, small and slightly hooked, always covered by base of gonopore lobe. The very large and prominent basal sclerotized piece (*bsp*) close to margin of apical orifice, U-shaped, deeply grooved to apical direction, divided *bsp* into two branches: the left branch slenderer, usually with simple and less sclerotized apex, but strongly thickened forming one or three large projections in three species (*P. prattii*, *P. sinuosus* **sp. nov.** and *P. luoxiaoensis* **sp. nov.**); the right branch much thicker and wider, apex strongly swollen usually comprised of two or three large accessory sclerotized projections; the first projection (*p1*) close to gonopore, usually large, somewhat auriform, and very strongly sclerotized, but reduced to a small tubercle in *P. machulkai* and *P. deliquus* **sp. nov.**; the second projection (*p2*) often slightly larger

than *p1*, partly covered by *p1*, and with scaled surface; the third projection (*p3*) sometimes absent (in *P. machulkai*, *P. matalini*, *P. sinuosus* **sp. nov.** and *P. deliquus* **sp. nov.**), if present, *p3* always smaller than *p2*, partly or almost entirely covered by *p2*, also with fine scales. Left-apical surface of endophallus always with preapical setose region (*psr*), usually present as one to three coarsely setose bands; the ventral basal lobe (*vb*) always large and strongly prominent, globular or nearly so, with heavy scales on its apex (Fig. 8).

Female genitalia: Sternite VIII apex serrate (Fig. 9B; Fedorenko 2023: Figs 53, 55, 57). Gonocoxite 2 of ovipositor ovate, almost identical across in species: shortly falciform in ventral view, length three times as basal width; without ensiform setae on outer or inner margin; apex rounded in lateral view, with one nematiform seta in a sensory pit (Fig. 9E). Spermatheca short in comparison to other subgenera of *Pterostichus*, with seminal canal and receptaculum hardly differentiated; receptaculum straight and slightly dilated, surface smooth; seminal canal a little slenderer than receptaculum, two to three times longer than receptaculum; spermathecal canal inserted on base of receptaculum (Fig. 9C, D).

### Key to species of subgenus *Oriostichus* in southeast China

- 1 *A3* with accessory setae in addition to the apical ring (Fig. 4B–F); pronotum lateral margins at most very faintly sinuate before posterior margin . . . . . 2
- *A3* without accessory setae except apical ring (Fig. 4A); or with very few (less than five, Fig. 4B, C) accessory setae, but in this case (*P. sinuosus*), pronotum lateral margins distinctly sinuate before posterior margin (Fig. 12H). . . . . 6
- 2 Elytral intervals coarsely rugose on posterior half, transversal wrinkles reaching anterior half of elytra (Fig. 20A); Taiwan . . . . . 11. *P. distinctissimus* Jedlička
- Elytral intervals with fine transversal wrinkles restricted on posterior third; China mainland . . . . . 3
- 3 Elytral third interval without dorsal pore (Fig. 11A); males with transversal microsculpture on elytra (Fig. 3H); pronotum lateral channel ended before post-lateral seta (Fig. 11H); metepisternum at most sporadically punctate; *msc* tuberculate (Figs 6B, 11I, J); Chongqing (Jinshshan) . . . . . 2. *P. machulkai* Jedlička
- Elytral third interval with one dorsal pore behind middle, occasionally with two pores; males with isodiametric microsculpture on elytra (Fig. 3F); pronotum lateral channel reaching post-lateral seta; metepisternum densely and coarsely punctate; *msc* ridged, dilated and flattened on the middle of ridge (Fig. 6A, F, G) . . . . . 4
- 4 Very large species, BL usually 26.0–32.0 mm, rarely comprise individuals small as to 24 mm; *A3* with very few (usually less than five) short accessory setae, much shorter than the primary ones (Fig. 4C); pronotal basal fovea with inner sulcus sinuate or angulate near middle (Figs 5, 10H); umbilical series on interval 9 usually with only one (rarely two) small pore behind the terminal primary pore; *msc* without paramedian projections (Fig. 6A); widely distributed species . . . . . 1. *P. prattii* Bates (part)
- Smaller species, BL 18.0–22.0 mm; *A3* with numerous (usually more than ten) longer accessory setae, slightly shorter than the primary ones (Fig. 4D, F); pronotal basal fovea with inner sulcus gradually curved or inclined near middle; umbilical series on interval 9 with two to four small pores behind the terminal primary pore; *msc* with well-defined paramedian projections (Fig. 6F, G); Zhejiang, Anhui, Fujian . . . . . 5
- 5 Smaller species, BL 18.0–19.5 mm; pronotal basal fovea distinctly punctate (Fig. 16H); elytra with granular microsculpture in females (Fig. 3B), isodiametric in males; elytra with very faint transversal wrinkles near apex; *msc* with paramedian projections slightly longer than median table (Fig. 6G); Zhejiang (Tianmu Mt.). . . . . 7. *P. skanda* **sp. nov.**
- Larger species, BL 20.5–22.0 mm; pronotal basal fovea impunctate or with few punctures near anterior end of outer sulcus (Fig. 15H); elytra with similar isodiametric microsculpture in both sexes (Fig. 3D, F); elytra with distinctly transversal wrinkles at least occupying apical sixth; *msc* with paramedian projections much shorter than median table (Fig. 6F); Zhejiang, Fujian, Anhui . . . . . 6. *P. separatus* **sp. nov.**
- 6 Females with isodiametric microsculpture on elytra, similar to males; *msc* ridged, dilated and flattened on the middle of ridge, forming a well-defined median table region (Fig. 6A, E) . . . . . 7
- Females with granular or transversal microsculpture on elytra, different from males; *msc* tuberculate (Fig. 6C, D), without modification (Fig. 18I, J), or simply ridged without a well-defined median table region (Fig. 6H, I) . . . . . 8
- 7 Larger species, BL 24.0–32.0 mm; pronotum slightly constricted to base, posterior margin slightly wider than anterior margin (PAW/PBW = 0.87–0.91); *msc* with apical carina not extended into median table (Fig. 6A); widely distributed species . . . . . 1. *P. prattii* Bates (part)
- Smaller species, BL 19.0–20.5 mm; pronotum strongly constricted to base, posterior margin distinctly narrower than anterior margin (PAW/PBW = 1.12–1.14); *msc* with apical carina extended into median table (Fig. 6E); Hunan (Guidong, Yanling). . . . . 5. *P. luoxiaoensis* **sp. nov.**
- 8 Elytra with linear microsculpture in males (Fig. 3I); with very transversal superficial microsculpture in females; Fujian (Jian'ou), N. Vietnam . . . . . 10. *P. matalini* Fedorenko
- Elytra with isodiametric or transversal microsculpture in males (Fig. 3F, G); with granular microsculpture in females (Fig. 3A) (females of *P. deliquus* unknown) . . . . . 9
- 9 Pronotum subcordate, lateral margin strongly sinuate before posterior angles (Fig. 12H); metepisternum densely and coarsely punctate; Guangxi (Lingui), Hunan (Yongzhou) . . . . . 3. *P. sinuosus* **sp. nov.**
- Pronotum nearly circular, lateral margin not sinuate before posterior angles; metepisternum with sparser and finer punctures, area near the outer-posterior angle usually impunctate . . . . . 10

- 10 Elytral microsculpture nearly isodiametric in males, length of each mesh similar to its width; *msc* tuberculate, surface of the tubercle with three (occasionally four) transverse sharp carinas (Fig. 6D); Guangdong. . . . . 4. *P. shan* sp. nov.
- Elytral microsculpture slightly transversal in males, length of each mesh at least 1.5 times as width (Fig. 3F, G); *msc* ridged or absent; Fujian. . . . . 11
- 11 Larger species, BL 23.5 mm; pronotum posterior angles with sharp apex (Fig. 18H); elytra reflexed lateral margin without carina; *msc* absent (Fig. 18I, J). . . . . 9. *P. deliquus* sp. nov.
- Smaller species, BL 18.0–20.5 mm; pronotum posterior angles with obtuse-rounded apex (Fig. 17H); elytra reflexed lateral margin usually with a flattened and smooth carina in apical third; *msc* ridged (Fig. 7H). . . . . 8. *P. fujianensis* sp. nov.

## Species description

### 1. *Pterostichus (Orientostichus) prattii* Bates, 1890

Chinese common name: 硕通缘步甲

(Figs 1A, 2A–B, 4C, 5, 6A, 7A–C, 8A–D, 9A–C, 10)

Bates 1890: 212. (Original: *Pterostichus*; type in MNHN; type locality: Wa-Shan); Tschitschérine 1897: 71; Tschitschérine 1898: 173; Jedlička 1938: 5; Jedlička 1962: 295; Sciaky & Wrase 1997: 1106; Sciaky & Allegro 2013: Bousquet 2017: 748; 113; Fedorenko 2023: 155; Yin *et al.* 2023: 163.

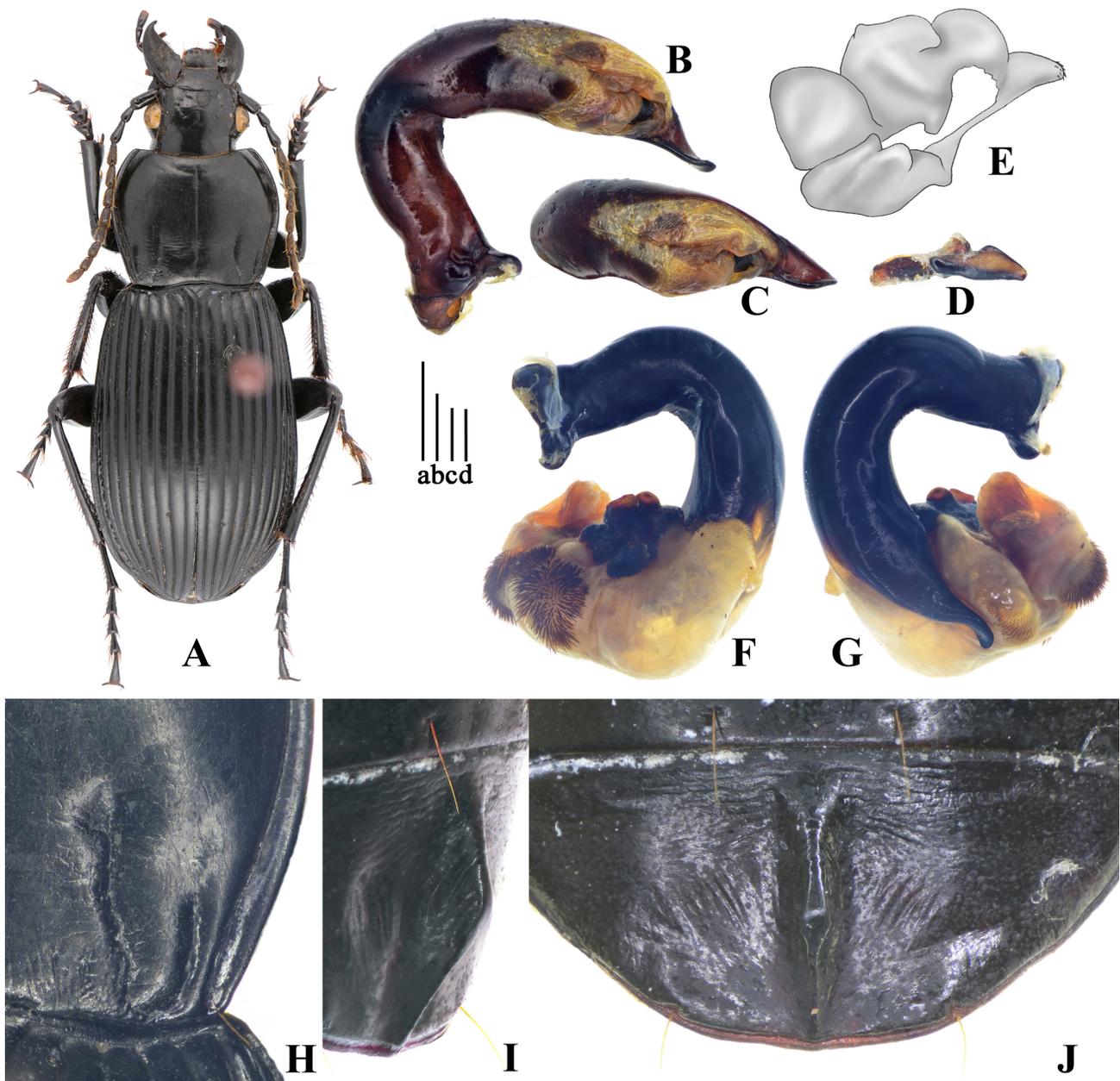
**Material examined. LECTOTYPE: CHINA:** male, designated by Sciaky & Allegro 2013 (MNHN), “Wa-Shan 6000ft., A.E. Pratt coll, June 1889”, “*Pterostichus prattii* Bates”, “Ex. Musaeo, H.W. Bates, 1892”, “Lectotypus *Pterostichus pratti* Bates Des. Sciaky 95” [red label, by handwriting]. **PARALECTOTYPES: CHINA:** 1 male (MNHN), “Chia-Ting-Fu, 1000 ft., A.E. Pratt coll., July 1889”, “Ex. Musaeo H.W. Bates 1892”, “Syntype” [red label]; 1 male and 2 females (MNHN), “Wa-Shan, 6000ft., A.E. Pratt coll, June 1889”, “Ex. Musaeo, H.W. Bates, 1892”, “Syntype” [red label]; 1 female (MNHN), “Wa-Shan, 6000ft., A.E. Pratt coll, June 1889”, “*Pterostichus prattii* Bates”, “Museum Paris, Coll. R. Oberthur, 1952”, “Syntype” [red label]; 1 male and 1 female (MNHN), “Wa-Shan, 6000ft., A.E. Pratt coll, June 1889”, “Museum Paris, Coll. R. Oberthur, 1952”, “Syntype” [red label]. **Non-type materials: Sichuan:** 1 male (IZAS), “Sichuan province, Wolong town, Wulidun, 2180m, artificial larch forest, 2004.V.23-26, pitfall trap, Yu Xiaodong leg., RGI2-1”, “*Pterostichus prattii*, Bates, 1890, compared with type, Shi, H.L., 2011” [by handwriting]; 1 male (IZAS), “Sichuan, Wolong, Gengda, 1515m, derelict land, pitfall trap, 2004.VII.5-8, Xiaodong Yu”; 2 females (IZAS), “Sichuan, Wolong, Gengda, 1845m, artificial larch forest, pitfall trap, 2004.VII.5-8, Xiaodong Yu”; 4 males and 6 females (IZAS), “Sichuan, Lushan, Shuangshi twon, B03, 1165m, mixed broadleaf-conifer forest, pitfall trap, 2001.VI.29-VIII.5, Xiaodong Yu & Hongzhang Zhou”; 5 males and 4 females (IZAS), “China, Sichuan, Tianquan, Lianglu, 1400m, 2011.VIII.12, Huang Hao leg.”; 1 male (IZAS), “Sichuan, Baoxing, Fengtongzhai, B12, 1795m, mixed broad-leaved forest, pitfall trap, 2001.VI.30-VII.3, Xiaodong Yu & Hongzhang Zhou”; 1 male (IZAS), “CHINA, Sichuan, Baoxing, Fengtongzhai, 1580m, 2003.VIII.15, Changqing Xu, Coll.”; 2 females (CBFU), “Sichuan, Baoxing”; 1 male (IZAS), “CHINA, Sichuan, prov., Kangding, Lhakang 30.20N, 101.30E, 2004.VII.17, Liu Dajun”; 1 male (IZAS), “Sichuan, Emeishan, 1955.VI.12, Huang K.R. & Jin G.T.”; 1 male (CBFU), “Sichuan, Emeishan, Leidongping, 2023.VIII.1, 2484.9m”, “29.534658N, 103.334011E, Xiao F.”; **Hubei:** 1 female (IZAS), “China, Hubei, Xuan’en, Changtanhe County, Houhe Village, night trap, N30.033006, E109.724061”, “1210m, 2017.V.7-9, Liu Y.Z. & Hao K. leg., Institute of Zoology, CAS”; 1 female (CBFU), “Hubei, Shennongjia, Guanmenshan, N31.4362, E110.3824, pitfall trap, 1361m, 2022.VII.29, Shi H.L. & Yang G.Y.”; 1 female (IZAS), “Hubei, Wufeng, Houhe, Pitfall trap, 900-1000m, 2013.VIII.4, Hao Huang leg.”; **Jiangxi:** 4 males and 13 females (IZAS), “CHINA, Jiangxi prov. Lushan, Lianhuatai, Youdian hotel, trap 29.54217N/ 115.93415E, 895m, 2006.6.27, Liu Y., Liang H.B., Teiji Sota collectors”; 1 male and 2 females (IZAS), “CHINA, Jiangxi prov., Anfu, Wugongshan. Forest station. Pitfall trap 27.44591N, 114.18827, 1220m, 2006.6.29 Liu Y., Liang H.B., Teiji Sota collectors”; 2 males (IZAS), “CHINA, Jiangxi prov., Jingganshan, Dajing Forest station, pitfall trap 26.50028N, 114.08262E, 1140m, 2006.7.1 Liu Y., Liang H.B., Teiji Sota collectors”; 3 males and 3 females (IZAS), “Jiangxi, Jiujiang City, Lushan Mt., 2006.VI.28, Liang H.B., Liu Y. and Sota”; 1 male (IZAS), “China, Jiangxi Lushan 2007.VIII.8 Junsheng Cui”; 1 female (IZAS), “Jiangxi, Lushan Mt., 1978.III”; 2 females (IZAS), “10.8.35 O.PIEL. coll. Ku-ling Guling, Musee Heude”; 1 male and 2 females (CBFU), “Lushan, Guling Town, 2020.VIII, Liu Y.Z. pitfall trap”; **Chongqing:** 1 female (IZAS), “CHINA, Chongqing, Nanchuan, Jinfo Mt. N. slope 1713m, 2012.VIII.20 N29.04043 E107.18410”, “pitfall trap broadleaf forest, SHI Hongliang, HUANG

Xinlei, LIU Yizhou leg.”; 1 female (IZAS), “Chongqing, Nanchuan City, N slope of Jinfoshan, 2009.VI.7, Xiaodong Yang, B09y0648”; 4 males (CJHC), “Chongqing, Jinfoshan, North slope, 1500m, 2020.VII.21-25, Chen J.H., Li Z.C. & Wang C. leg.”; 1 female (CBFU), “Chongqing, Jinfoshan, 2010.VI.22”; 1 male and 1 female (CHYL), “Chongqing, Jinfoshan, Baiguolin, 2020.VI, 1500m, Li Y. leg.”; 1 female (IZAS), “CHINA, Chongqing, Jiangjin District, Mt. Simianshan, 1040m, Sep.5-7, 2008, Zhang W.W. leg.”; 1 male and 1 female (IZAS), “30-VII-2007, Chongqing, Shizhu, Dafengbao, 1700m, leg. by Zhang W.W.”; **Guizhou:** 1 female (IZAS), “Guizhou, Libo County, Maolan, Weng A., 2008.X.20, Zhang Q.F.”; 1 male (IZAS), “Guizhou, Fanjingshan, Huguosi, 2008.VII.19, Liu Y., pitfall trap”; 1 female (IZAS), “Guizhou, Fanjingshan, Huguosi, 2008.VII.19, Liu Y.”; 1 female (IZAS), “CHINA, Guizhou, Fanjing Shan 750m 2001.7.29, Liang H.B. leg.”; 1 female (IZAS), “CHINA Guizhou prov. Jiangkou county, Fanjingshan Mt. S. slope, 4500 steps (Huixiangping) to 5300 steps (ropeway tower); N27.90180 E108.70372-N27.90784 E108.70052”, “1778-1971m 2012.VIII.25 by pitfall trap, boradleaf forest; SHI Hongliang, HUANG Xinlei, LIU Yizhou leg.”; 1 female (IZAS), “Guizhou, Bajiaoshan, Shuidaotian, 2004-8-17, 632m, Haiying Ou & Guiqing Liu”; 4 females (IZAS), “Guizhou, Dashahe, 2004-8-25, 1374m, Haiying Ou & Guiqing Liu”; 1 male (IZAS), “Guizhou, Daozhen County, Dashahe, 1500m, 2004-V-22-27, Qirong Liao”; 2 males (IZAS), “Guizhou, Daozhen, Xiannvdong, 2004-V-25-27, Qiongzhang Song, 600-700m”; 2 females (IZAS), “Guizhou, Dagou Town, Qianfeng Village, 2004-8-22, 1325m, Haiying Ou & Guiqing Liu”; 2 males (CHYL), “Guizhou, Liupanshui, Shuicheng County, Longchang Township, 2021.VI, 1200m”; 1 male and 1 female (CHYL), “Guizhou, Liupanshui, Yiduo Forestry Park, 1700-1800m, 2022.V”; 5 males and 1 female (CJHC), “Guizhou, Qiandongnan, Leishan County, 2021.IX, 800m, Hong Ai leg.”; 1 male (CBFU), “Guizhou, Guiyang, Xifeng County, Xiwangshan, Fengchisi, 2022.VII.4, Jiang H.L. leg.”; **Guangxi:** 1 female (IZAS), “Guangxi, Miaoershan Mt.”, “1150m, 1985.VII.14, Shimei Song”; 1 female (IZAS), “Guangxi, Miaoershan, Tongmujiang, 800m”, “1985.VII.15, Subai Liao”; 1 female (IZAS), “Guangxi, Miaoershan, Jiuniuchang, 1150m”, “1985.VII.9, Subai Liao”; 1 male (IZAS), “CHINA, Guangxi prov., Xing’an distr. Shili Valley, 2007.07.13 Yang G.Y. leg. Cup trap”; 2 males and 1 female (CHYL), “Guangxi, Miaoershan Mt., 1500m, 2021.VII-VIII”; 1 male (IZAS), “CHINA, Guangxi, Xing’an County, Jinshi, Guiyan, 1229m, 2016.VII.08, Light Trap, Lu Y.Q.”; 1 male and 1 female (IZAS), 2014.V.20, Guangxi, Nanning, Wuming, Damingshan, Alt.1250m, Pitfall trap, Lu Y.Q.”; 1 male (CBFU), “Guangxi, Wuming, Damingshan, 2014”; 1 male (IZAS), “2014.VII.11, Guangxi, Hechi, Huanjiang County, Jiuwanshan, Alt. = 1180m, Lu Y.Q. leg.”; **Hunan:** 2 females (IZAS), “Hunan, Yongshun, Shanmuhe forestry centre, 600m, 1988.VIII.4, Shuyong Wang”; 1 male (IZAS), “Hunan, Sangzhi, Tianpingshan, 1650m, 1988.VIII.15, Xiaochun Zhang”; 1 male (IZAS), “Hengshan Hengyang City Hunan Prov. 8-VII-2005 Zhao & Li leg.”; 1 male (CHYL), “Hunan, Liuyang, Daweishan, 2021.VIII.3, Haoyi Liu leg.”; 1 female (IZAS), “CHINA, Hunan prov., Yanling, Taoyuandong Dayuan Nongchang N26.47268 E114.04166, 868m, 2008.7.7 day, Liang H.B. vegetation”; 1 male (IZAS), “China, Hunan, Yanling, Xiacun, Tianxin Village, hydropower station, N26.270709, E113.960435”, “1215m, 2017.VI.10-11, Liu Y.Z., Hao K. & Yu S.P. lgt., Institute of Zoology, CAS”; 1 male (CJHC), “CHINA: Hunan, Zhuzhou, Yanling County, Xiacun, Township, Huangmaolong, 1400m, 2023.VI.4, Yuzhou, Huang”; 2 females (IZAS), “Hunan, Guidong, Dongluo, Chishuixian, 1350-1450m, 2011.VII.1, Tian M.Y., Gao Q. & Sun F.F.”; 5 males and 2 females (CBFU), “Hunan, Yiyang, Anhua, Furonglinchang, N28.1609, E111.7949, 1399m, 2022.VII.29, Haohan Mao night trap”; 1 female (CJHC), “Hunan, Yongzhou, Shuangpai County, Yangmingshan mt., 2021.V.17, 1300-1500m, Jia Xinyang leg.” 1 male and 1 female (CJHC), “Hunan, Chenzhou, Guidong, Bamianshan, 2021.V.11-15, 1500m, Xinyang Jia leg.”; 1 male (CBFU), “China, Hunan, Ningyuan, Jiuyishan mt., Sanfenshi, N3, Pitfall trap, N25.247978, E112.0344”, “1373.95m, 2017. V.16-18, Liu Y.Z. & Yu S.P. leg., Institute of Zoology, CAS”; **Guangdong:** 3 males and 5 females (IZAS), “Guangdong, Nanling, Lei Gao, 2008”; **Fujian:** 1 female (CBFU), “Guiheshang Village Longyan City Fujian Prov. alt.1300m 23-V-2007 Huang & Xu leg.”; 1 female (IZAS), “Fujian, Longxishan, Xiwei”, “1990. IX.17, Chunmei Huang leg.”; 1 female (IZAS), “Fujian, Sanming, Luoboding, 1300-1500m, Xiuqiu Fan leg., 2017.VII.13”; 1 female (CHYL), “Fujian, Nanping, Shunchang County, Baoshan, 900m, 2019.VI”; **Zhejiang:** 1 male (CJHC), “Zhejiang, Lishui, Fengyangshan, 1400m, 2022.VI.29, Yifan Wang, leg.”; 1 female (IZAS), “China: Zhejiang Prov. Lin’an City, Mt. West Tianmushan, alt.1500m, 25-VII-2011 Li & Pan leg.”; 1 female (IZAS), “Longwangshan, Anji County Zhejiang Prov. alt. 950-1200m 24-IV-2006 Li Jin-Wen leg.”

**Diagnosis.** Very large species, normally larger than 25 mm; elytra with isodiametric microsculpture in both sexes; *msc* simply ridged, sharp and narrow, without paramedian projections (Figs 6A, 10I, J).

**Comparison.** Generally, this species can be distinguished from other species in Southeast China by its extremely large size. Only the largest individuals of three species (*P. separatus* sp. nov., *P. shan* sp. nov., *P. deliquus* sp. nov.)

may be of similar size to the smallest ones of *P. prattii*. In addition to the quite different characters on the male sternite VII, *P. prattii* can also be differentiated from these three species in the following aspects: compared with *P. separatus* **sp. nov.**, *P. prattii* has fewer and shorter accessory setae on *A3* (Fig. 4C); more distinctly sinuate inner sulcus on the pronotal basal foveae (Figs 5, 10H); and only one (rarely two) small pores behind the terminal primary pore of the umbilical series on interval 9 (with two to four small pores in *P. separatus* **sp. nov.**). Compared with *P. shan* **sp. nov.**, the females of *P. prattii* can be easily distinguished by their different elytral microsculpture. The males of these two species are extremely similar in external appearances, with the only differences on the sternite VII. Compared with *P. deliquus* **sp. nov.** (Fig. 18), *P. prattii* can be differentiated by the males with isodiametric microsculpture on elytra and the posterior angles of pronotum with an obscure apex (Figs 5, 10H).



**FIGURE 10.** *Pterostichus* (*Orientostichus*) *prattii* Bates. **A.** Habitus, a male from Lishui, Zhejiang. **B.** Left lateral view of median lobe of aedeagus, Wolong, Sichuan. **C.** Dorsal view of median lobe of aedeagus, Wolong, Sichuan. **D.** Right paramere, Wolong, Sichuan. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus, Yiyang, Hunan. **G.** Right lateral view of endophallus, Yiyang, Hunan. **H.** Pronotum basal fovea, a male from Wolong, Sichuan. **I.** Lateral view of male sternite VII, Wolong, Sichuan. **J.** Ventral view of male sternite VII, Wolong, Sichuan. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Description.** The largest *Pterostichus* species from China, BL = 24.0–32.0 mm, BW = 7.5–10.5 mm. Antennomere 3 with or without accessory setae; if present, accessory setae much shorter than primary ones, at most very few (less than 5) setae restricted near apex or on the inner-apical angle (Fig. 4C). Pronotum usually subquadrate, PW/PL = 1.27–1.32, PBW/PW = 0.78–0.83, widest near anterior two-fifth; anterior margin slightly narrower than posterior margin, PAW/PBW = 0.87–0.91; lateral margins evenly arched from anterior angle to posterior fourth, not sinuate before posterior angle; posterior angles obtuse, apex obscure, not dentate. Basal foveae usually impunctate, with transversal wrinkles aside inner sulcus; inner and outer sulci deep, with well-defined boundaries; outer sulcus straight and long, usually 0.5–0.6 times as long as inner sulcus, subparallel or slightly convergent to basal half of inner sulcus; basal sulcus well-defined, slightly shallower than outer sulcus, apex not exceeding inner sulcus; confluence angle nearly rectangular, sometimes slightly circular filleted; inner sulcus more or less sinuate near middle, shallower near base, reaching or almost reaching basal sulcus (Figs 5, 10H). Elytra oblong, BW/EL = 0.58–0.64; with distinctly isodiametric microsculpture in both sexes; parascutellar stria joined to stria 1, angular base of stria 1 very short or obsolete; parascutellar pore always present; interval 3 with one setigerous pore near apical third, adjacent to stria 2; intervals with shallow transversal wrinkles, usually occupying apical third or fourth of elytra; umbilicate series on interval 9 usually with one pore behind the terminal primary pore, sometimes with two. Metepisternum with fine punctures, relatively sparse to very dense. Male sternite VII with sharply ridged *msc*, slightly flattened and dilated at middle: basal tubercle narrow and not prominent, reaching sternite basal sixth; median table very narrow but well-defined; apical carina strongly ridged reaching sternite apex; paramedian projections and paramedian carinas absent (Figs 6A, 10I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth, *bp/ap* = 0.72–0.78; included angle between axes of *bp* and *ap* about 60°; apical lamella slightly twisted longitudinally, apex rounded; ventral margin not tuberculate on basal portion, slightly grooved on the curve, shallowly tuberculate near base of apical portion (Fig. 10B, C). Right paramere subtriangular, apex blunt and distinctly projected, right margin sinuate near apical fourth (Fig. 10D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, comprised of two setose bands, sometimes they nearly conjoint forming a large arcuate band (Fig. 10F, G); *bsp* U-shaped: left branch with thickened apex, composed of three conjoint projections; right branch in similar length as left branch, comprised of three large sclerotized projections; *p1* auriform, slightly smaller than *p2*; *p2* largest, with emarginate apex; apex of *p3* rounded (Fig. 10E).

**Distribution.** This species is widely distributed in South China, recorded from the following provinces: Zhejiang, Anhui, Fujian, Jiangxi, Guangdong, Guangxi, Hubei, Hunan, Guizhou, Sichuan, Chongqing. Records of this species from Henan and Shaanxi need further confirmation, but all similar specimens examined from Yunnan belong to other species. (Fig. 1A: White)

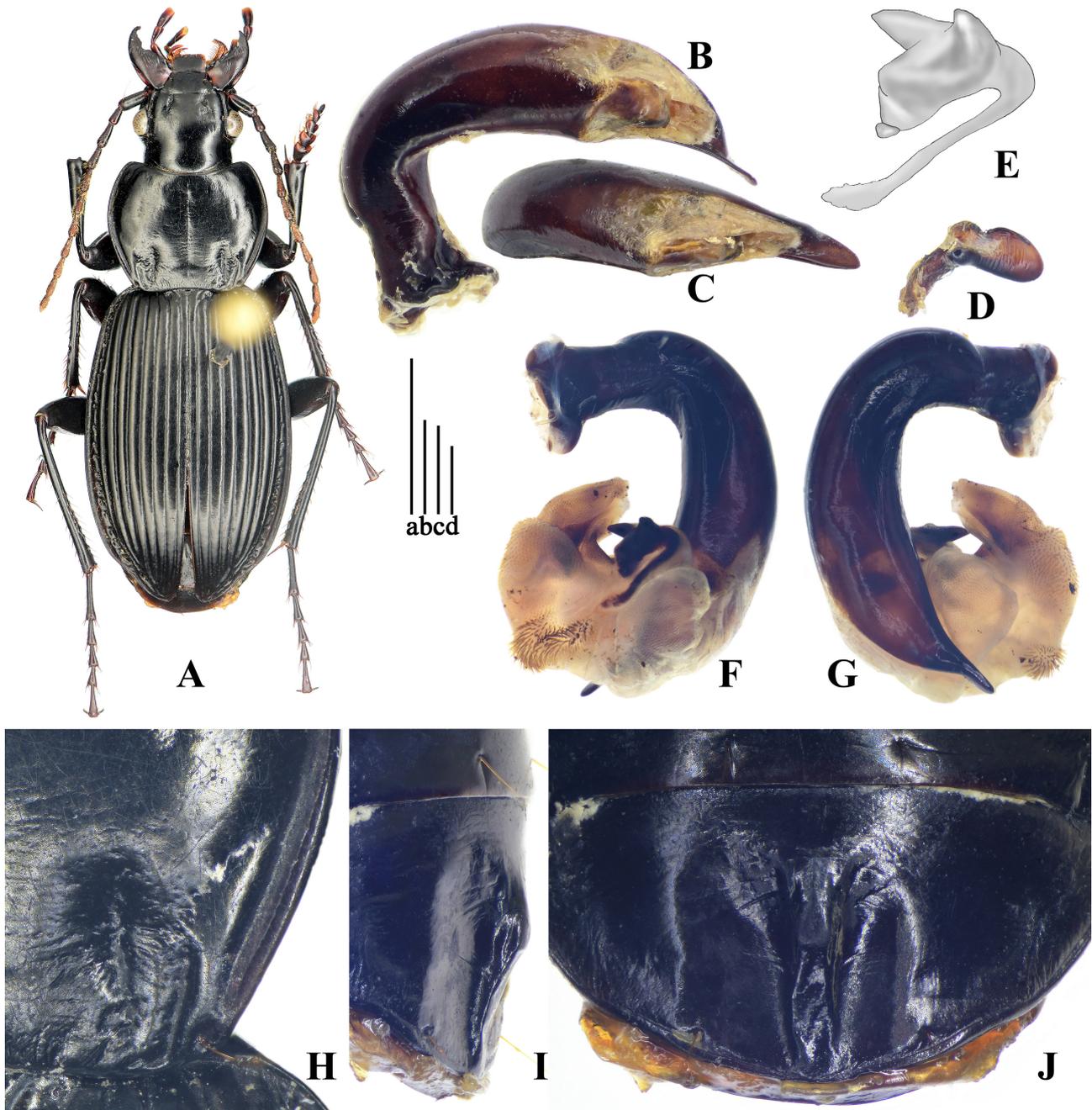
## 2. *Pterostichus (Orientostichus) machulkai* Jedlička, 1931

Chinese common name: 马氏通缘步甲  
(Figs 1C, 3H, 6B, 11)

Jedlička 1931: 136. (Original: *Pterostichus*; type in NMPC; type locality: Jinfoshan, Chongqing City); Jedlička 1938: 4; Jedlička 1962: 293; Sciaky & Allegro 2013: 114; Bousquet 2017: 747.

**Material examined. HOLOTYPE: CHINA:** female (NMPC), “Szechwan mer., Mts. Kinfushan, 2000m pr. Flum., Sung-kanho.”; “Type” [red label]; “Mus. Nat. Pragae, Inv. 24625” [orange label]; “machulkai, type, mihi, Det. Ing. Jedlička”. **Non-type materials** (a total of 1 male and 5 females): 1 male and 2 females (IZAS), “CHINA, Chongqing, Nanchuan, Jinfo Mt. N. slope, 1713m, 2012.VIII.20, N29.04043, E107.18410”, “pitfall trap, broadleaf forest, Shi Hongliang, Huang Xinlei & Liu Yizhou leg. IOZ, CAS”; 2 females (IZAS), “CHINA, Chongqing, Nanchuan, Jinfo Mt. north slope, way to the peak, 2046m, N29.03660, E107.18790”, “2012.VIII.19, pitfall trap, shrubs at cliff, Shi Hongliang, Huang Xinlei & Liu Yizhou leg. Institute of Zoology, CAS”; 1 female (MNHN), “Tatsienlu Szechuan, China, Em. Reitter”, “Machulkai, Jedl.” [by handwriting], “Muséum Paris, coll. Générale”, “compared with TYPE, Shi H.L., 2011”, [probably erroneous collecting data].

**Diagnosis.** *A3* with accessory setae; pronotum subcircular; elytra with strongly transversal microsculpture in males (Fig. 3H), with distinct isodiametric microsculpture in females; elytral interval 3 without setigerous pore; *msc* tuberculate, without paramedian projections nor apical carina (Figs 6B, 11I, J).



**FIGURE 11.** *Pterostichus (Orientostichus) machulkai* Jedlička, Jinfo Mt., Chongqing, male. **A.** Habitus. **B.** Left lateral view of median lobe of aedeagus. **C.** Dorsal view of median lobe of aedeagus. **D.** Right paramere. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus. **G.** Right lateral view of endophallus. **H.** Pronotum basal fovea. **I.** Lateral view of male sternite VII. **J.** Ventral view of male sternite VII. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Comparison.** This species can be easily differentiated from all other species in southeast China by the circular pronotum shape, and the absence of setigerous pore on elytral interval 3. Moreover, *P. machulkai* is also distinctive among these species for the pronotum lateral channel ended before post-lateral seta (Fig. 11H) and metepisternum nearly impunctate. The outline of pronotum in *P. machulkai* is most similar to that of *P. luoxiaoensis* **sp. nov.**, but it can be readily distinguished from the latter species by the presence of accessory setae on *A3* and the absence of setigerous pore on elytral interval 3. Some specimens of *P. distinctissimus* also have no setigerous pore on elytral interval 3, but the latter species is quite distinctive for the very rugose elytral intervals.

**Description.** BL = 17.5–18.5 mm, BW = 6.5–6.8 mm. Antennomere 3 with numerous accessory setae, almost occupying the apical half of *A3*. Pronotum subcircular, PW/PL = 1.40–1.42, PBW/PW = 0.63–0.65, widest near anterior two-fifth; anterior margin wider than posterior margin, PAW/PBW = 1.07–1.09; lateral margins evenly arched from anterior angle to posterior angles, not sinuate before posterior angles; posterior angles obtuse-rounded, apex obscure, not dentate. Basal foveae distinctly punctate, punctures distributed along inner and outer sulci, and on intersulcate area; with transversal wrinkles aside inner sulcus; outer sulcus deep, with well-defined boundary, inner sulcus shallower, wider and with less distinct boundary; outer sulcus straight and long, about 0.6 times as long as inner sulcus, distinctly convergent to basal half of inner sulcus; basal sulcus very short and shallow, much shallower than outer sulcus, apex ended before level of inner sulcus; confluence angle nearly obtuse-angled; inner sulcus slightly sinuate near middle, vanished to base, not connect with basal sulcus; lateral channel interrupted before posterior seta (Fig. 11H). Elytra oblong, BW/EL = 0.63–0.65, with strongly transversal microsculpture in males (length of each mesh more than 4 times of width, Fig. 4H), with isodiametric microsculpture in females; parascutellar stria joined to stria 1, angular base of stria 1 obsolete; parascutellar pore present; interval 3 without setigerous pore; intervals with very shallow transversal wrinkles, only present very close to elytral apex; umbilicate series on interval 9 with one pore behind the terminal primary pore. Metepisternum almost impunctate, at most with sporadic fine punctures. Male sternite VII with tuberculate *msc*, bifurcate to apex: basal tubercle large, slightly constricted, reaching sternite basal sixth; median table small, hardly distinguished from basal tubercle, apex at about median point of sternite; paramedian projections and apical carina absent; a pair of asymmetric paramedian carinas nearly reaching apex of sternite, left carina longer and more curved than the right one (Figs 6B, 11I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal third, *bp/ap* = 0.58; included angle between axes of *bp* and *ap* about 75°; apical lamella slightly twisted longitudinally, apex rounded; ventral margin not tuberculate nor grooved, straight near base of apical portion (Fig. 11B, C). Right paramere very short, nearly ovate, apex well rounded, right margin straight at apical half, strongly curved near middle (Fig. 11D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, composed of one row of setae (Fig. 11F, G); *bsp* U-shaped: left branch slightly longer than right branch, apex not thickened; right branch comprised of two sclerotized projections; *p1* very small; *p2* very large, with two sharp cuneiform protuberances on dorsal surface; *p3* absent (Fig. 11E).

**Distribution.** This species is only known from the high altitude of Jinpo Mt., in Nanchuan District of Chongqing Municipality. (Fig. 1C: green)

### 3. *Pterostichus (Orientostichus) sinuosus* sp. nov.

Chinese common name: 曲缘通缘步甲

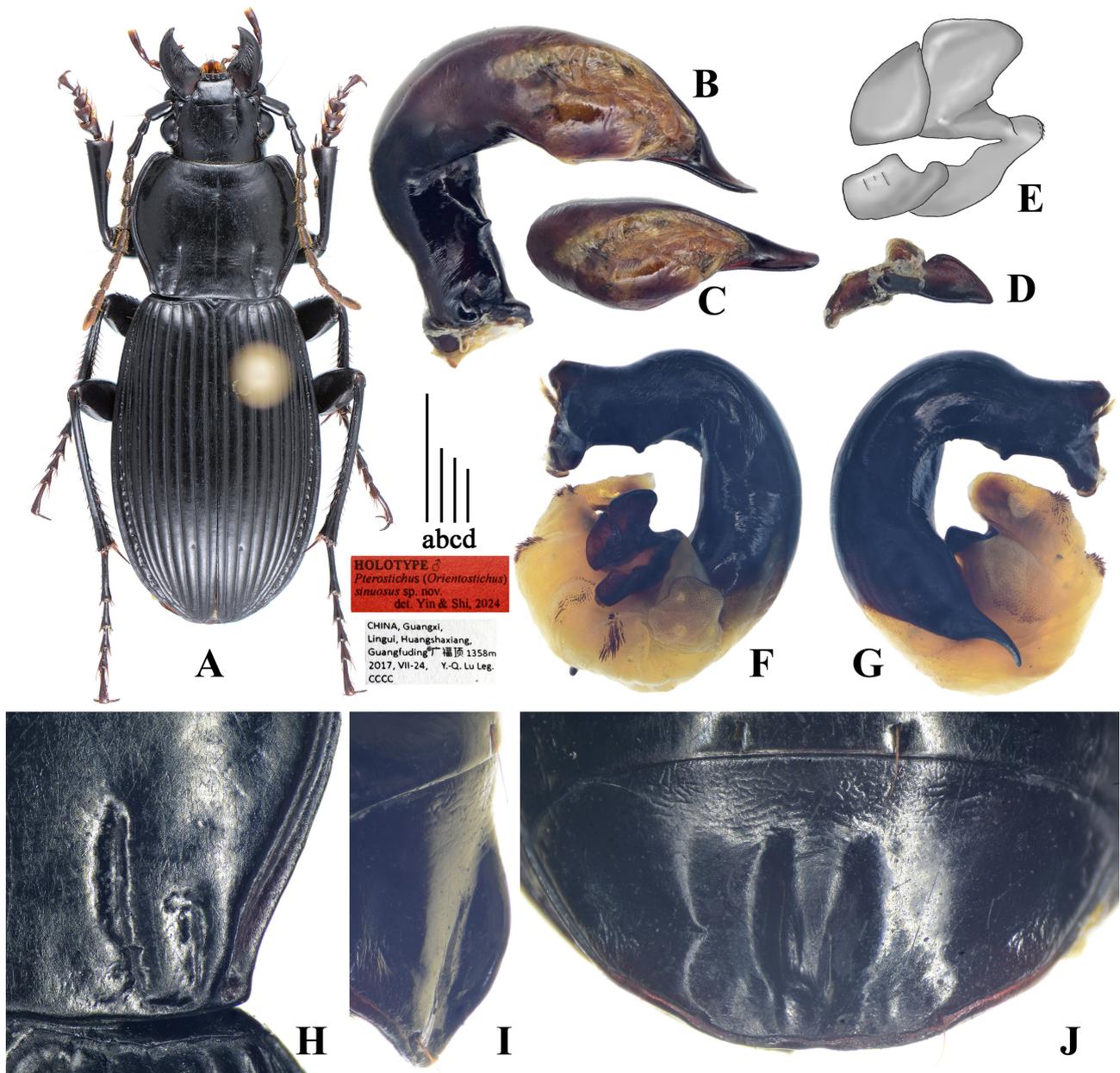
(Figs 1C, 4A, 4B, 6C, 12)

**Type locality.** China, Guangxi Province, Guilin City, Lingui District, Guangfuding. (N25.49°, E109.80°, alt. 1358m).

**Type material. HOLOTYPE: CHINA:** male (IZAS), “China, Guangxi, Lingui, Huangshaxiang, Guangfuding, 广福顶, 1358m, 2017.VII-24, Y.-Q. Lu leg., CCCC”, “HOLOTYPE ♂ *Pterostichus (Orientostichus) sinuosus* sp. nov. det. Yin & Shi, 2024” [red label]. **PARATYPE: CHINA:** 1 female (CJHC), “Hunan, Yongzhou, Shuangpai County, Yangmingshan Mt., 2021.V.17, 1300-1500m, Xinyang Jia leg.”.

**Diagnosis.** *A3* without or with very few accessory setae; elytra with isodiametric microsculpture in males, with granular microsculpture in females; pronotum lateral margin distinctly sinuate before posterior angles; *msc* tuberculate.

**Comparison.** The new species can be readily differentiated from all other species of the subgenus from southeast China by the pronotum lateral margins distinctly sinuate before posterior angles, whereas in all other known species pronotal lateral margins straight, hardly sinuate or slightly curved before posterior angles. This new species is most similar to *P. prattii* in several important aspects: *A3* without or with very few accessory setae (Fig. 4A, B); almost identical pronotum basal fovea (Fig. 12H) and similar male elytral microsculpture. In spite of the different pronotum shape, males of *P. sinuosus* sp. nov. can be distinguished from those of *P. prattii* by *msc* on sternite VII tuberculate, with shorter and less sharp apical carina; and females can be distinguished through the much stronger microsculpture on elytra.



**FIGURE 12.** *Pterostichus (Orientostichus) sinuosus* sp. nov., holotype. **A.** Habitus. **B.** Left lateral view of median lobe of aedeagus. **C.** Dorsal view of median lobe of aedeagus. **D.** Right paramere. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus. **G.** Right lateral view of endophallus. **H.** Pronotum basal fovea. **I.** Lateral view of male sternite VII. **J.** Ventral view of male sternite VII. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Description.** BL = 20.5–21.5 mm, BW = 7.5–8.0 mm. Antennomere 3 without accessory setae (in male holotype, Fig. 4A), or with very few (<5) short accessory setae restricted near the inner-apical angle (in female paratype, Fig. 4B). Pronotum subcordate, PW/PL = 1.30–1.32, PBW/PW = 0.75–0.76, widest near anterior two-fifth; anterior margin slightly narrower than posterior margin, PAW/PBW = 0.90–0.92; lateral margins evenly arched from anterior angles to posterior fourth, distinctly sinuate before posterior angles; posterior angles obtuse-angled, apex faintly projected, not dentate. Basal foveae impunctate, with transversal wrinkles aside inner sulcus; inner and outer sulci deep, with well-defined boundaries; outer sulcus straight and short, about half length as inner sulcus, subparallel to basal half of inner sulcus, shallower near base; basal sulcus well-defined, slightly shallower and finer than outer sulcus, apex slightly exceeding inner sulcus; confluence angle nearly rectangular; inner sulcus a little deeper than outer sulcus, slightly sinuate near middle, nearly reaching basal sulcus (Fig. 12H). Elytra oblong, BW/

EL = 0.62–0.63, with isodiametric microsculpture in males and granular microsculpture in females; parascutellar stria joined to stria 1, angular base of stria 1 very short or obsolete; parascutellar pore always present; interval 3 with one setigerous pore near apical third, adjacent to stria 2; intervals with shallow transversal wrinkles, usually occupying apical fifth of elytra; umbilicate series on interval 9 with one to three pores behind the terminal primary pore; elytra reflexed lateral margin smooth (in male holotype) or with a very short obscure carina near the terminal primary pore on interval 9 (in female paratype). Metepisternum with dense and coarse punctures. Male sternite VII with tuberculate *msc*, strongly flattened and dilated at meddle: basal tubercle large and prominent, reaching sternite basal sixth; median table oblong, well-defined, apex at about apical third of sternite; apical carina shallow but distinguishable, base dilated and fused to median table, nearly reaching sternite apex; paramedian projections and paramedian carinas absent (Fig. 12I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth,  $bp/ap = 0.78$ ; included angle between axes of *bp* and *ap* about  $70^\circ$ ; apical lamella slightly twisted longitudinally, apex rounded; ventral margin with a small but sharply projected tubercle on basal portion, slightly grooved on the curve, straight near base of apical portion (Fig. 12B, C). Right paramere subtriangular, apex blunt and distinctly projected, right margin slightly sinuate near apical fourth (Fig. 12D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, composed of three small setose bands, one near gonopore and the other two near *bsp* in left lateral view (Fig. 12F, G); *bsp* U-shaped: left branch with thickened apex, composed of two conjoint projections; right branch in similar length as left branch, comprised of two large sclerotized projections; *p1* auriform, smaller than *p2*; *p2* very large, with round and flabellate apex; *p3* absent (Fig. 12E).

**Distribution.** This very rare species is distributed at high altitude of Nanling Range; it is only known upon two specimens from two slightly distant localities: Guangfuding in Guilin, Guangxi Province and Yangming Mt. in Shuangpai, Hunan province. (Fig. 1C: maroon)

**Etymology.** The scientific name of the new species is derived from the Latin root “*sinuo-*” which means sinuate, referring to the distinctive sinuate pronotal lateral margins of the new species.

#### 4. *Pterostichus (Orientostichus) shan* sp. nov.

Chinese common name: 多通缘步甲

(Figs 1C, 6D, 13)

**Type locality.** China, Guangdong Province, Ruyuan Yao Autonomous County, Nanling natural reserves. (N24.93°, E113.01°, alt. 1092 m).

**Type material. HOLOTYPE: CHINA:** male (IZAS), “CHINA, Guangdong, Ruyuan, Nanling, Ruyang Station, N24.93420, E113.00951”, “1092m, 2008.VII.16, N., Zhu X.Y. pitfall trap, Institute of Zoology.”, “HOLOTYPE ♂ *Pterostichus (Orientostichus) shan* sp. nov. det. Yin & Shi, 2024” [red label]; **PARATYPES: CHINA:** (a total of 23 males and 26 females): 19 males and 23 females (IZAS), “Guangdong, Nanling, pitfall trap, Gao Lei leg., 2008”; 1 female (IZAS), “China, Guangdong, Ruyuan, Nanling, pitfall trap, N24.932039, E112.996099”, “1587m, 2017. VI.4-7, Liu Y.Z. & Yu S.P. lgt., Institute of Zoology, CAS.”; 4 males and 1 female (IZAS), “China, Guangdong, Xinyi, Yunkaishan, Datianding, N22.290107, E111.262121”, “1663 m, 2017.V.31-VI.1, N., Liu Y.Z. & Yu S.P. lgt., Institute of Zoology, CAS.”; 1 female (IZAS), “Nanling, pitfall trap, XII.2009, Gao Lei leg.”

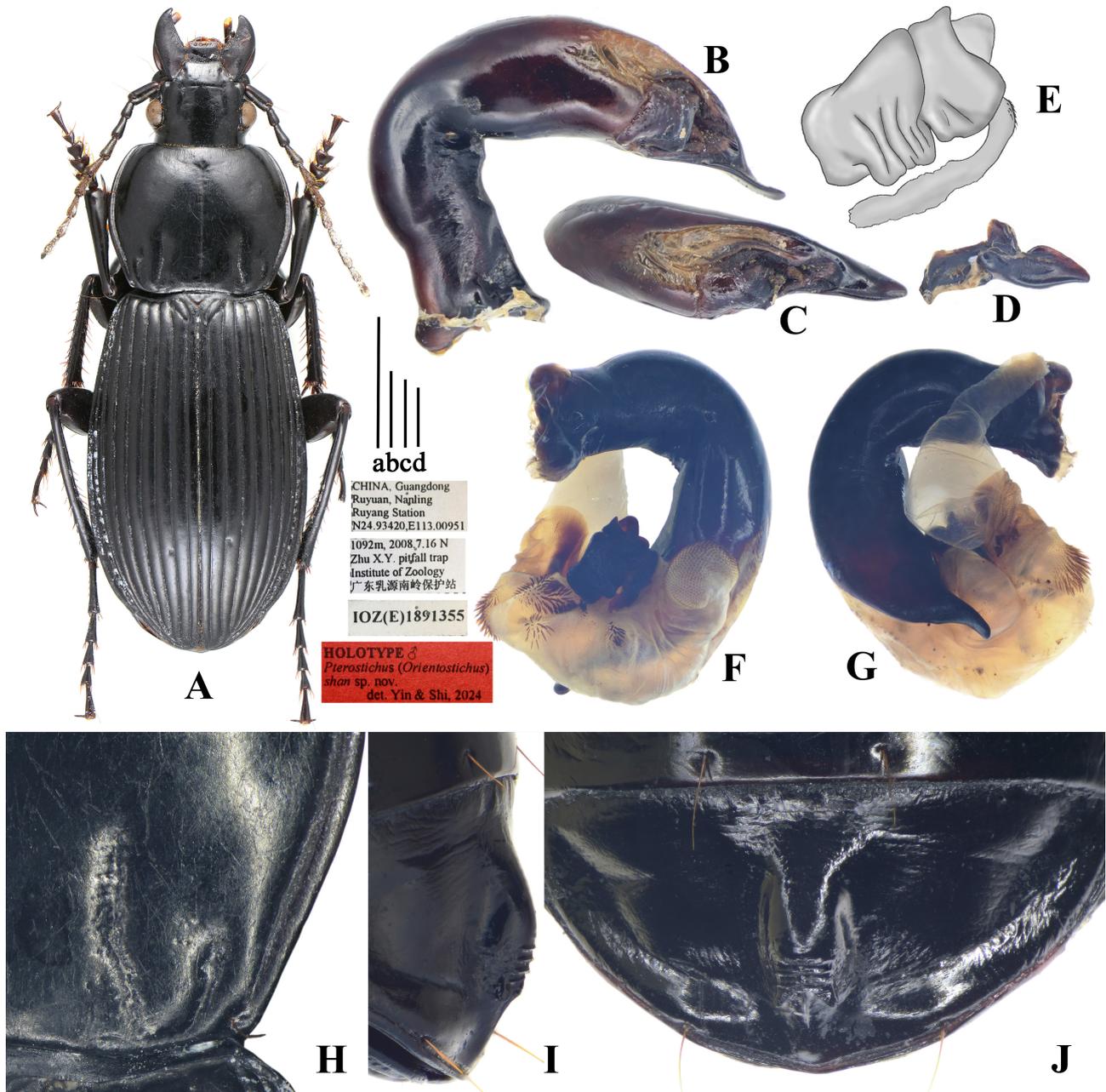
**Diagnosis.** *A3* without accessory setae; pronotum nearly circular; elytra with isodiametric or very weakly transversal microsculpture in males, granular in females; *msc* tuberculate, with three parallel transversal carinas (Figs 6D, 13I, J).

**Comparison.** The new species can be easily distinguished from all other species of the subgenus from southeast China by the distinctive male sternite VII characters. For the dorsal appearance, it can be recognized by the circular pronotum, *A3* without accessory setae and females with granular microsculpture on elytra.

In many aspects, the new species is most similar to the small individuals of *P. prattii*, and they are confirmed to be sympatric in Nanling Range. These two species can only be differentiated by: male sternite VII ridged in *P. prattii* (Fig. 6A), and tuberculate with transversal carinas in *P. shan* sp. nov. (Fig. 6D); and females of *P. shan* sp. nov. with granular microsculpture on elytra, while with isodiametric microsculpture in *P. prattii*.

The new species is also very similar to *P. fujianensis* sp. nov. and *P. deliquus* sp. nov. Despite the quite different characters on male sternite VII and different distribution range, the latter two species are also different from *P. shan*

**sp. nov.** by the more transversal microsculpture on elytra in males for *P. fujianensis* **sp. nov.** and *P. deliquus* **sp. nov.**, the pronotum posterior angle with sharper apex for *P. deliquus* **sp. nov.**, and the inner sulcus of pronotum basal foveae not bent near middle for *P. fujianensis* **sp. nov.**



**FIGURE 13.** *Pterostichus (Orientostichus) shan* **sp. nov.** **A.** Habitus, holotype. **B.** Left lateral view of median lobe of aedeagus, holotype. **C.** Dorsal view of median lobe of aedeagus, holotype. **D.** Right paramere, holotype. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus, Nanling, Guangdong, paratype. **G.** Right lateral view of endophallus, Nanling, Guangdong, paratype. **H.** Pronotum basal fovea, holotype. **I.** Lateral view of male sternite VII, holotype. **J.** Ventral view of male sternite VII, holotype. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Description.** BL = 20.5–23.5 mm, BW = 7.5–10.5 mm. Antennomere 3 without accessory setae. Pronotum nearly circular, PW/PL = 1.26–1.29, PBW/PW = 0.71–0.73, widest near middle; anterior margin slightly narrower than posterior margin, PAW/PBW = 0.87–0.91; lateral margins evenly arched from anterior angle to posterior angle, not sinuate before posterior angle; posterior angles obtuse, apex obscure, not dentate. Basal foveae usually impunctate, sometimes punctate aside inner sulcus; with transversal wrinkles aside inner sulcus; inner and outer sulci deep and narrow, inner sulcus somewhat wider than outer sulcus, with less distinct boundaries; outer sulcus straight

and short, usually 0.4–0.5 times as long as inner sulcus, subparallel to basal half of inner sulcus; basal sulcus well-defined, slightly shallower than outer sulcus, apex not exceeding inner sulcus; confluence angle nearly rectangular; inner sulcus usually distinctly bent forming an obtuse angle near middle, reaching or almost reaching basal sulcus; intersulcate area distinctly convex (Fig. 13H). Elytra oblong, BW/EL = 0.63–0.66, with isodiametric or weakly transversal microsculpture in males (length of each mesh at most 1.2 times as width), with granular microsculpture in females; parascutellar stria joined to stria 1, angular base of stria 1 very short or obsolete; parascutellar pore always present; interval 3 with one setigerous pore near apical third, adjacent to stria 2; intervals with shallow transversal wrinkles at most occupying apical sixth of elytra; umbilicate series on interval 9 with one or two pores behind the terminal primary pore. Metepisternum densely and finely punctate, punctures very sparse or almost absent near outer-posterior angle. Male sternite VII with tuberculate *msc*, strongly dilated in the middle: basal tubercle large and prominent, reaching sternite basal sixth; median table not well-distinguished from the basal tubercle, apex at about apical fourth of sternite, with three parallel transversal carinas on surface of median table, apical margin of median table forming the fourth transversal carina; paramedian projections short, triangular with sharp apex, slightly asymmetrical, left projection slightly shorter and narrower than the right one; apical carina short, shallowly carinate at basal half, gradually vanished and not reaching sternite apex; paramedian carinas absent (Figs 6D, 13I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth,  $bp/ap = 0.72–0.74$ ; included angle between axes of *bp* and *ap* about 65°; apical lamella slightly twisted longitudinally, apex rounded; ventral margin not tuberculate on basal portion, slightly grooved on the curve, shallowly swollen near base of apical portion (Fig. 13B, C). Right paramere subtriangular, apex blunt and strongly projected, right margin slightly sinuate near apical fourth (Fig. 13D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, comprised of three setose bands, sometimes conjoint forming a large arcuate band; *bsp* U-shaped: left branch with narrow apex, not thickened; right branch in similar length as left branch, comprised of three large sclerotized projections; *p1* largest, subquadrate, with transversal folds; *p2* smaller, with emarginate dorsal margin; *p3* smallest, with rounded apex (Fig. 13E).

**Distribution.** This new species seems locally abundant, but is known only from two distant localities of Nanling Range, in Ruyuan and Xinyi Counties in Guangdong Province. (Fig. 1C: yellow)

**Etymology.** The scientifically name of the new species derived from the Chinese character “shan” (山), which is in the shape of the three parallel carinas on the male sexual modification on sternite VII.

### 5. *Pterostichus (Orientostichus) luoxiaoensis* sp. nov.

Chinese common name: 罗霄通缘步甲

(Figs 1C, 6E, 9D, 14)

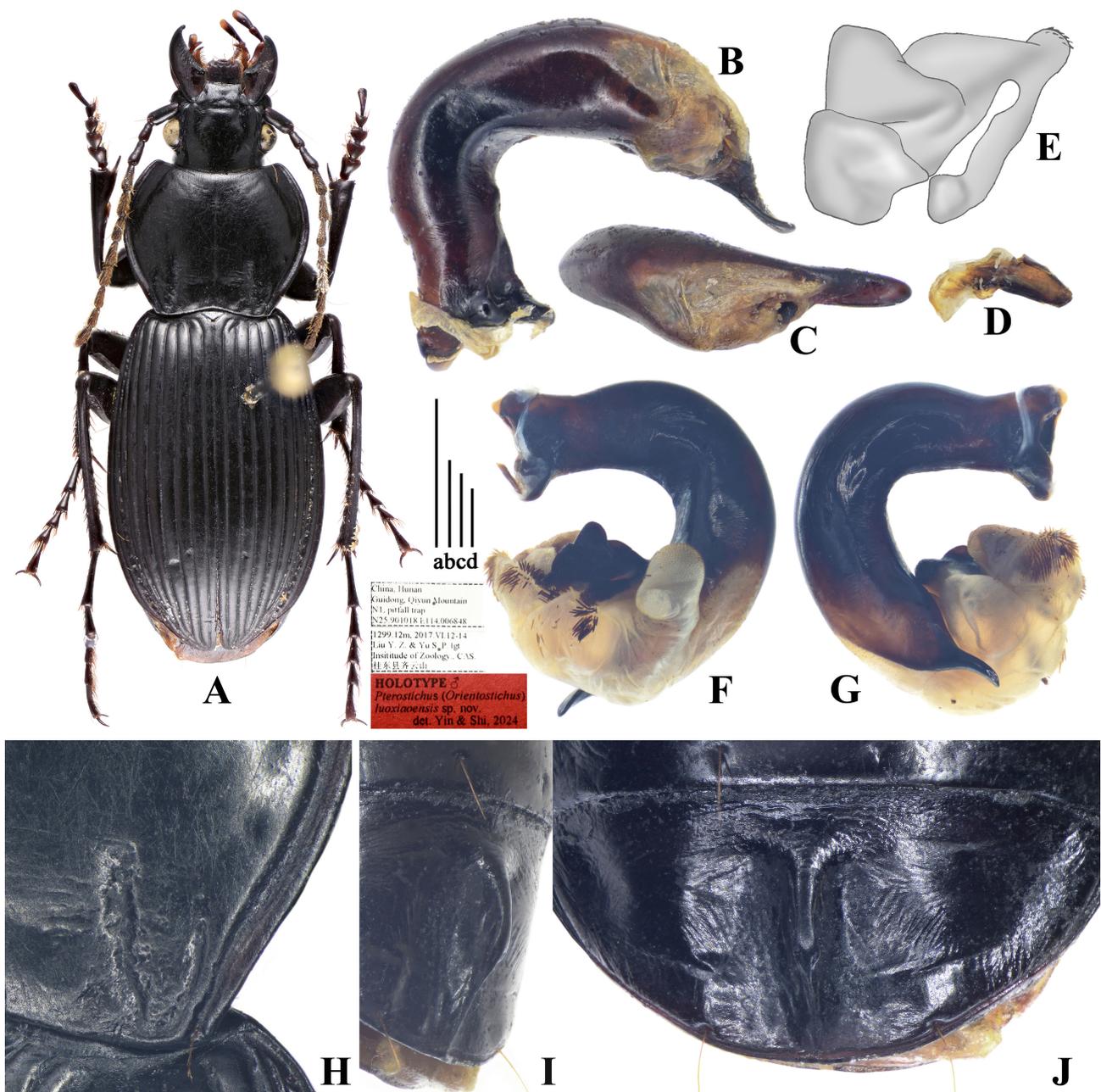
**Type locality.** China, Hunan Province, Guidong County, Qiyun Mt. (N25.90°, E114.01°, alt. 1299m).

**Type material. HOLOTYPE: CHINA:** male (IZAS), “China, Hunan, Guidong, Qiyun Mountain, N1. Pitfall trap, N25.901018 E114.006848”, “1299.12m, 2017.VI.12-14, Liu Y.Z. & Yu S.P. lgt., Institute of Zoology, CAS”, “HOLOTYPE ♂ *Pterostichus (Orientostichus) luoxiaoensis* sp. nov. det. Yin & Shi, 2024” [red label].

**PARATYPES: CHINA:** (a total of 5 males and 4 females): 1 male and 2 females (IZAS), “Hunan, Guidong, Bamianshan mt., 1999.IX.8, Li Shuyu leg.”; 1 male and 1 female (IZAS), “China, Hunan, Yanling, Ling Mountain, N6. pitfall trap, N26.310277 E114.01766”, “1700.35m, 2017.VI.10-11, Liu Y.Z., Hao K. & Yu S.P. lgt., Institute of Zoology, CAS”; 1 male and 1 female (IZAS), “China, Hunan, Guidong, Xinfang, Junzhu dam., N1. pitfall trap, N25.907644, E113.997708”, “1370.25m, 2017.VI.12-13, Liu Y. & Yu S.P. lgt., Institute of Zoology, CAS”; 1 male (CJHC), “CHINA: Hunan, Zhuzhou, Yanling County, Xiacun Township, Huangmaolong, 1400m, 2023.VI.4, Yuzhou Huang leg.”; 1 male (CHYL), “Hunan, Zhuzhou, Nanfengmian, 1800m+, 2024.VII.7, Ying-Bing Li leg.”

**Diagnosis.** *A3* without accessory setae; pronotum subcordate, anterior margin wider than posterior margin; elytra with isodiametric microsculpture similar in both sexes; *msc* ridged, apical carina extended into median table (Figs 6E, 14I, J).

**Comparison.** The new species can be differentiated from most other species of the subgenus from Southeast China by the pronotum strongly constricted to base, thus PAW/PBW more than 1.0. In this aspect, the new species is only similar to *P. machulkai* Jedlička. However *P. machulkai* can be easily distinguished from the new species by the absence of setigerous pore on elytral interval 3 and the presence of accessory setae on *A3*.



**FIGURE 14.** *Pterostichus (Orientostichus) luoxiaoensis* sp. nov. **A.** Habitus, holotype. **B.** Left lateral view of median lobe of aedeagus, holotype. **C.** Dorsal view of median lobe of aedeagus, holotype. **D.** Right paramere, holotype. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus, Yanling, Hunan, paratype. **G.** Right lateral view of endophallus, Yanling, Hunan, paratype. **H.** Pronotum basal fovea, holotype. **I.** Lateral view of male sternite VII, holotype. **J.** Ventral view of male sternite VII, holotype. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

In many morphological aspect, *P. luoxiaoensis* sp. nov. could be most closely related to *P. prattii*. These two species are sympatric and have very similar characters on male sternite VII; but in *P. luoxiaoensis* sp. nov., the apical carina extended basally into the median table, forming a pair of notches on the apex of median table (Fig. 14J), while in *P. prattii*, the apical carina not extended into the median table, without such notches (Fig. 10J). For the endophallus of male genitalia, these two species are also very similar, especially for the *bsp*; but in *P. luoxiaoensis* sp. nov., the apex of left branch of *bsp* is much narrower and less thickened than in *P. prattii*, while the right branch is almost identical in these two speciesl.

**Description.** BL = 19.2–20.5 mm, BW = 7.0–7.5 mm. Antennomere 3 without accessory setae. Pronotum subcordate, strongly constricted to base, PW/PL = 1.37–1.40, PBW/PW = 0.56–0.58, widest near anterior two-fifth; anterior margin wider than posterior margin, PAW/PBW = 1.12–1.14; lateral margins evenly arched from anterior angle to posterior fourth, not sinuate before posterior angle; posterior angles obtuse-angled, with narrowly rounded apex, not dentate. Basal foveae usually impunctate, sometimes with few punctures on intersulcate area, with transversal wrinkles aside inner sulcus; inner and outer sulci deep, with well-defined boundaries; outer sulcus straight and long, about 0.6–0.7 times as long as inner sulcus, distinctly convergent to basal half of inner sulcus; basal sulcus well-defined, deep as outer sulcus, apex not exceeding inner sulcus; confluence angle nearly rectangular, sometimes slightly circular filleted; inner sulcus evidently sinuate near middle, reaching basal sulcus (Fig. 14H). Elytra oblong, BW/EL = 0.63–0.65, with similar isodiametric microsculpture in both sexes; parascutellar stria joined to stria 1, angular base of stria 1 very short or obsolete; parascutellar pore always present; interval 3 with one setigerous pore near apical third, adjacent to stria 2; intervals with shallow transversal wrinkles, usually occupying apical fourth of elytra; umbilicate series on interval 9 with one or two pores behind the terminal primary pore. Metepisternum with dense and fine punctures. Male sternite VII with sharply ridged *msc*, slightly flattened and dilated at middle: basal tubercle narrow and not prominent, reaching sternite basal sixth; median table very narrow, slightly widened and flattened on the top; apical carina strongly ridged reaching sternite apex, extended basally into median table, forming a pair of notches on the apex of median table; paramedian projections and paramedian carinas absent (Figs 6E, 14I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth, *bp/ap* = 0.79–0.80; included angle between axes of *bp* and *ap* about 70°; apical lamella slightly twisted longitudinally, apex rounded; ventral margin shallowly tuberculate at middle on basal portion, not tuberculate near base of apical portion (Fig. 14B, C). Right paramere subtriangular, apex widely rounded, right margin straight (Fig. 14D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, comprised of two setose bands, sometimes they nearly conjoint forming a large arcuate band (Fig. 14F, G); *bsp* U-shaped: left branch narrow, with slightly thickened apex, as long as right branch; right branch comprised of three large sclerotized projections; *p1* auriform, smaller than *p2*; *p2* largest, with rounded apex and depressed at base; *p3* partly covered by *p2*, apex gently sloped (Fig. 14E).

**Distribution.** The new species is known from several localities in the southern section of Luoxiao Mountains, on the border of Hunan and Jiangxi provinces. All recorded localities are in Hunan Province, but it is also expected to be discovered in mountains on the side in Jiangxi Province. (Fig. 1C: orange)

**Etymology.** The scientific name of the new species is derived from the name of the area of its distribution, the Luoxiao Mountains.

## 6. *Pterostichus (Orientostichus) separatus* sp. nov.

Chinese common name: 离沟通缘步甲

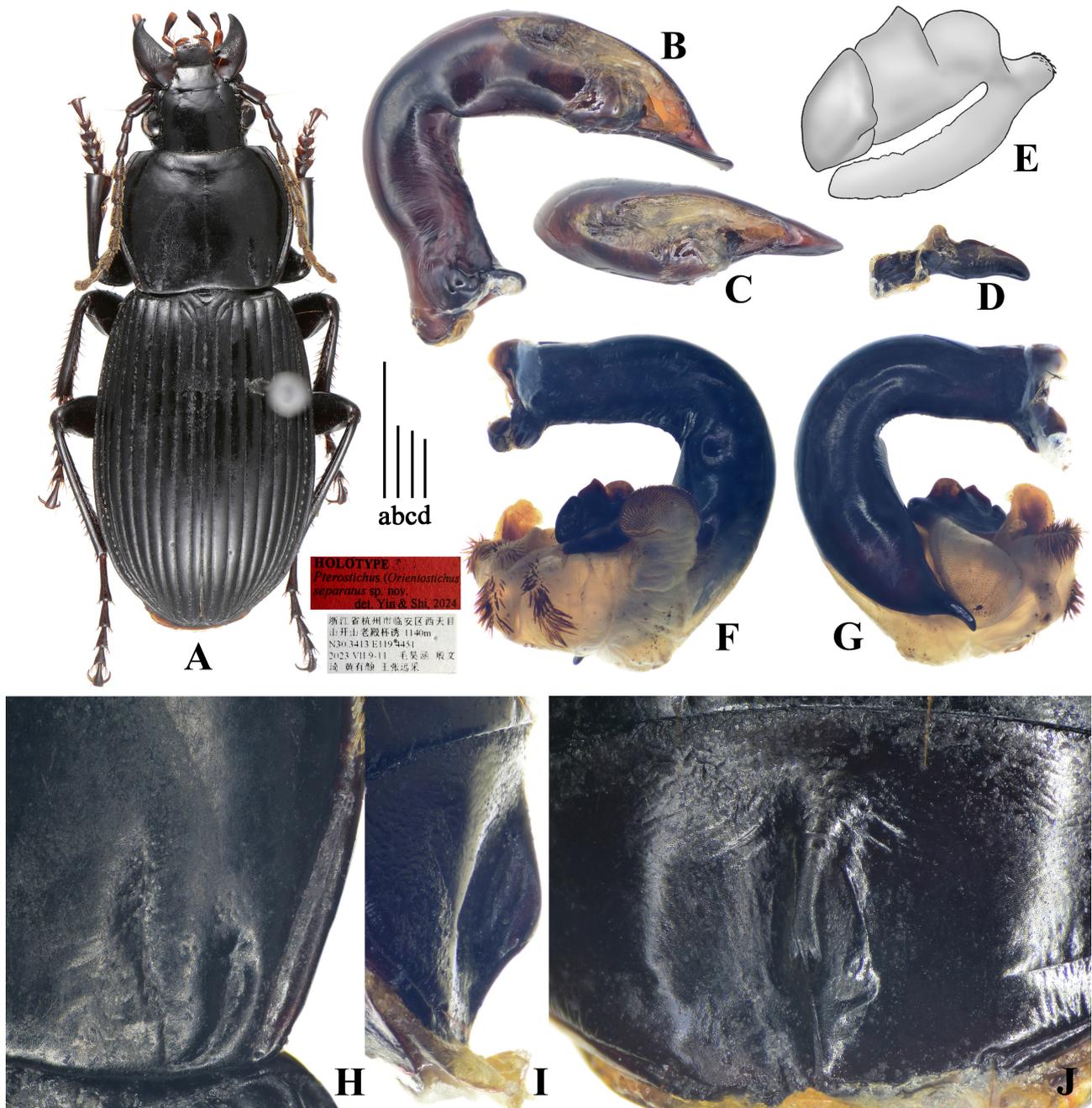
(Figs 1C, 2C, 3D, 3F, 4D, 4F, 7D, 7E, 8E, 8F, 8G, 15)

**Type locality.** China, Zhejiang Province, Hangzhou City, Lin'an District, Tianmu Mt. Mountain, Laodian. (N30.34°, E119.44°, alt. 1140m).

**Type material.** **HOLOTYPE:** CHINA: male (IZAS), “Zhejiang, Hangzhou, Lin'an, West Tianmushan mt., Kaishanlaodian, pitfall trap, 1140m, N30.3413, E119.4451, 2023.VIII.9-11, Haohan Mao, Wenqi Yin, Youyan Huang & Zhangyuan Wang leg.”; “HOLOTYPE ♂ *Pterostichus (Orientostichus) separatus* sp. nov. det. Yin & Shi, 2024” [red label]. **PARATYPES:** CHINA: (a total of 18 males and 24 females): **Zhejiang:** 3 male and 4 females (CBFU), the same data as holotype but labeled as paratype; 1 male and 4 females (IZAS), “2015.VII.28, West Tianmushan mt., Xianrending, Yong Wang, Pitfall trap”; 1 male (IZAS), “Zhejiang, Tianmushan mt., Longfengjian, 1998.VII.27, Huachao Xu, Light trap.”; 2 males and 3 females (CHYL), “Hangzhou City, West Tianmushan, 2023.VII-VIII, 400-1300m”; 2 males and 1 female (HBUM), “2014-VII-21-23, Zhejiang, Tianmushan, Xianrending, Caixia Fan & Di Li leg.”; “N30°20'58.98" E119°25'27.01" Alt. 1387-1506”; 4 females (CJHC), “Zhejiang, Thousand-island Lake, 2022.VII.16-18, 900m.”; 1 male (IZAS), “Zhejiang, West Tianmushan, 1988.III, Shen-hu Chen leg.”; 1 female (IZAS), “Zhejiang, West Tianmushan, 1500m, 2009.VII.2, Si-qin Ge, Institute of Zoology Academic Science.”; **Anhui:** 1 female (CBFU), “Anhui, Huangshan City, Tangkou Town, Fuxi Village, 571m, N30.0839, E118.1463, 2020.VI.30-VII.3, Hongliang Shi leg.”; **Fujian:** 1 male (CJHC), “China, Fujian, Guadun, 1200m, 2020.VIII, Yifan

Wang leg.”; 1 male (CJHC), “Fujian, Anping, Gaoping Village, 2020.VI.16, Linrui Yu leg.”; 3 males and 4 females (CBFU), “Fujian Province, Shaxian County, Xiamao, Town, Xuefengshan Mountain, 1100m, Xingqiu Fan leg., 2017.VII”; 1 male and 1 female (CHYL), “Fujian Province, Longyan City, Meihuashan Mt., 900m, 2019.VI”; 2 males and 1 female (CJHC), “Fuzhou, Minhou County, Luohantai, N26.4105, E119.0425, 1080m 2024.V.10, Han Gao leg. and coll.”.

**Diagnosis.** *A3* with accessory setae (Fig. 4D); pronotal basal foveae with the basal sulcus apex more or less exceeding base of inner sulcus, inner sulcus not connected with basal sulcus (Fig. 15H); elytra with isodiametric microsculpture (Fig. 3D) in both sexes, sometimes slightly transversal in males (Fig. 3F); *msc* with short paramedian projections, without paramedian carina (Figs 6F, 15I, J).



**FIGURE 15.** *Pterostichus (Orientostichus) separatus* sp. nov. **A.** Habitus, holotype. **B.** Left lateral view of median lobe of aedeagus, holotype. **C.** Dorsal view of median lobe of aedeagus, holotype. **D.** Right paramere, holotype. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus, Tianmu Mt., Zhejiang, paratype. **G.** Right lateral view of endophallus, Tianmu Mt., Zhejiang, paratype. **H.** Pronotum basal fovea, holotype. **I.** Lateral view of male sternite VII, holotype. **J.** Ventral view of male sternite VII, holotype. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Comparison.** The new species can be distinguished from most of the similar species of the subgenus by *A3* with numerous accessory setae. It is most similar to the smallest individuals of *P. prattii*, and also sympatric with the latter species. Despite their quite different characters on male sternite VII and male genitalia, these two species can be also distinguished by: (1) in *P. prattii*, *A3* without or with very few and short accessory setae, much shorter than the primary ones; while in *P. separatus* **sp. nov.**, these accessory setae more abundant and longer; (2) in the pronotum basal foveae of *P. prattii*, the apex of basal sulcus not exceeding inner sulcus, well connected to the base of inner sulcus, confluence angle usually well angulate; while in *P. separatus* **sp. nov.**, the apex of basal sulcus more or less exceeding inner sulcus, distinctly separated from the base of inner sulcus, confluence angle usually more rounded; (3) in *P. separatus* **sp. nov.**, the posterior angles of pronotum usually more rounded; (4) in *P. prattii*, umbilicate series on interval 9 usually with only one pore (occasionally two) behind the terminal primary pore; while in *P. separatus* **sp. nov.**, always with two or more pores behind the terminal primary pore.

In many morphological aspect, *P. separatus* **sp. nov.** could be most closely related to *P. skanda* **sp. nov.** Both species have similar setose *A3* and well-developed and trident *msc* on male sternite VII. The comparison of these two species is provided in the section under the latter new species.

**Description.** BL = 20.5–22.0 mm, BW = 7.5–8.0 mm. Antennomere 3 with numerous accessory setae, accessory setae nearly occupying apical third of inner margin of *A3*, only slightly shorter than primary ones (Fig. 4D). Pronotum usually subquadrate, PW/PL = 1.21–1.24, PBW/PW = 0.76–0.78, widest near anterior two-fifth; anterior margin slightly narrower than posterior margin, PAW/PBW = 0.88–0.92; lateral margins evenly arched from anterior angle to posterior fourth, not sinuate before posterior angle; posterior angles usually well rounded, apex obscure, not dentate. Basal foveae usually impunctate, with transversal wrinkles aside inner sulcus; inner and outer sulci deep, with well-defined boundaries; outer sulcus straight, usually 0.5–0.6 times as long as inner sulcus, slightly convergent to basal half of inner sulcus; basal sulcus well-defined, slightly shallower than outer sulcus, apex more or less exceeding inner sulcus; confluence angle rectangular or obtuse, always well circular filleted; inner sulcus more or less sinuate near middle, very shallow near base, well separated from basal sulcus or with a very fine and vague connecting line to basal sulcus (Fig. 15H). Elytra oblong, BW/EL = 0.60–0.64, with isodiametric microsculpture in both sexes (Fig. 4D), sometimes slightly transversal in males (length of each mesh about 1.5 times as width, Fig. 4F); parascutellar stria joined to stria 1, angular base of stria 1 usually very short, occasionally obsolete; parascutellar pore always present; interval 3 with one setigerous pore near apical third, adjacent to stria 2; intervals with shallow transversal wrinkles, usually occupying apical fourth or fifth of elytra; umbilicate series on interval 9 with two to four pores behind the terminal primary pore, with two or three pores before the basal primary pore. Metepisternum with dense punctures. Male sternite VII with ridged *msc*, slightly flattened and dilated at middle: basal tubercle narrow, not prominent, reaching sternite basal sixth; median table well-defined, distinctly dilated and flattened; apical carina strongly ridged, reaching sternite apex; paramedian projections short, triangular with sharp apex, slightly asymmetrical, left projection slightly shorter and wider than the right one; paramedian carina absent (Figs 6F, 15I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth,  $bp/ap = 0.72–0.76$ ; included angle between axes of *bp* and *ap* about  $65^\circ$ ; apical lamella slightly twisted longitudinally, apex rounded; ventral margin very faintly tuberculate on basal portion, slightly grooved on the curve, shallowly tuberculate near base of apical portion (Fig. 15B, C). Right paramere subtriangular, apex blunt and distinctly projected, right margin sinuate near apical fourth (Fig. 15D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, comprised of three setose bands, two of them near *bsp*, the rest one near gonopore (Fig. 15F, G); *bsp* U-shaped: left branch parallel to right branch, slightly thickened near apex; right branch almost as long as left branch, comprised of three large sclerotized projections; *p1* large and auriform; *p2* largest, with sharply angulate and laminar apex; *p3* slightly smaller than *p2*, semicircular (Fig. 15E).

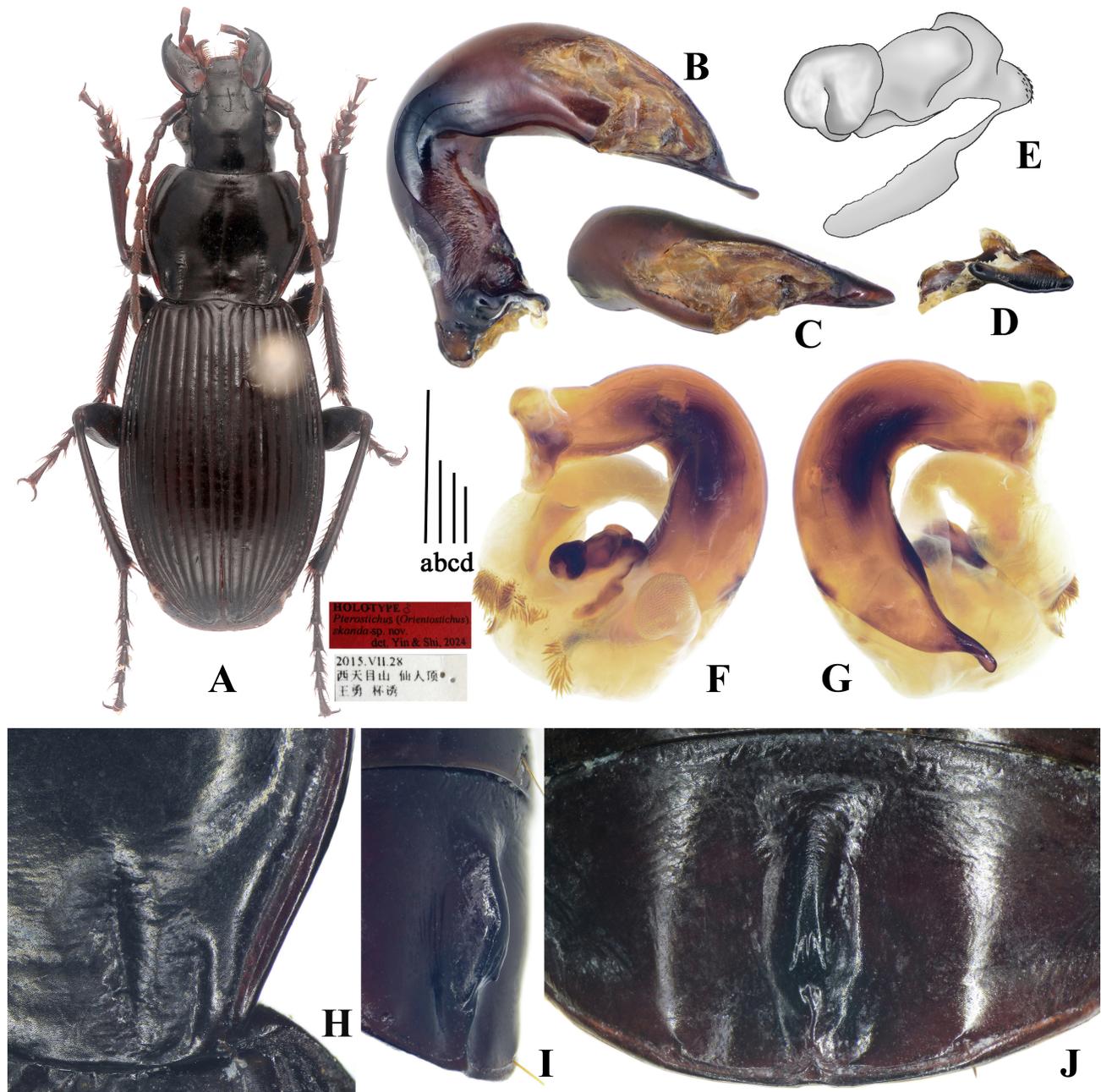
**Distribution.** This species has a relatively wide distribution range in Zhejiang, Fujian Provinces and south of Anhui Province (Fig. 1C: red).

**Etymology.** The scientific name of new species is derived from the Latin root “*separat-*”, meaning separated, referring to the pronotum basal foveae of the new species with the inner sulcus and basal sulcus are always well separated from each other.

7. *Pterostichus (Orientostichus) skanda* sp. nov.

Chinese common name: 韦陀通缘步甲

(Figs 1C, 3B, 4F, 6G, 16)



**FIGURE 16.** *Pterostichus (Orientostichus) skanda* sp. nov. **A.** Habitus, holotype. **B.** Left lateral view of median lobe of aedeagus, holotype. **C.** Dorsal view of median lobe of aedeagus, holotype. **D.** Right paramere, holotype. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus, Tianmu Mt., Zhejiang, paratype. **G.** Right lateral view of endophallus, Tianmu Mt., Zhejiang, paratype. **H.** Pronotum basal fovea, holotype. **I.** Lateral view of male sternite VII, holotype. **J.** Ventral view of male sternite VII, holotype. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Type locality.** China, Zhejiang Province, Hangzhou City, Lin'an District, Tianmu Mt., Xianrending. (N30.35°, E119.43°, alt. 1500m).

**Type material.** **HOLOTYPE:** CHINA: male (IZAS), "2015.VII.28, West Tianmushan mt., Xianrending, Yong Wang, Pitfall trap", "HOLOTYPE ♂ *Pterostichus (Orientostichus) skanda* sp. nov. det. Yin & Shi, 2024" [red label]. **PARATYPES:** CHINA: (a total of 3 males and 5 females): 2 males and 5 females (IZAS), the same data as holotype but labeled as paratype; 1 male (IZAS), "Zhejiang, West Tianmushan, 2007.VIII, Hao Huang leg."

**Diagnosis.** *A3* with accessory setae (Fig. 4F); basal foveae distinctly punctate, inner sulcus connected to basal sulcus (Fig. 16H); elytra with isodiametric microsculpture in males, with granular microsculpture in females (Fig. 3B); *msc* trident, with very long paramedian projections. (Figs 6G, 16I, J)

**Comparison.** The new species can be distinguished from most of the similar species of the subgenus by *A3* with numerous accessory setae. In many morphological aspect, this new species could be most closely related to *P. separatus* **sp. nov.** Both species have similar setose *A3* and trident *msc* on male sternite VII. These two new species are sympatric in high altitude of Tianmu Mt., but can be distinguished in the following aspects: (1) *P. skanda* **sp. nov.** is slightly smaller than *P. separatus* **sp. nov.**: 18.0–19.5 mm vs 20.5–22.0 mm. (2) The female elytral microsculpture are different: granular and different from males in *P. skanda* **sp. nov.** (Fig. 3B), while isodiametric and similar to males in *P. separatus* **sp. nov.** (Fig. 3D). (3) Pronotum posterior angles are usually more distinct in *P. skanda* **sp. nov.** (4) Pronotum basal foveal area is distinctly punctate in *P. skanda* **sp. nov.**, but almost impunctate in *P. separatus* **sp. nov.** (5) The inner sulcus of pronotum basal fovea is somewhat more distinctly connected to the end of basal sulcus in *P. skanda* **sp. nov.** (6) Elytral apex has less and finer transversal wrinkles in *P. skanda* **sp. nov.** (7) for specimens from Zhejiang, *P. separatus* **sp. nov.** always has three small pores before the basal primary pore in umbilicate series of interval 9, but has only two small pores in *P. skanda* **sp. nov.** (8) The *msc* on male sternite VII are distinctly trident in *P. skanda* **sp. nov.**, with very long and slender paramedian projections, slightly longer than median table region (Fig. 16J); while in *P. separatus* **sp. nov.** the paramedian projections are distinctly shorter than median table region (Fig. 15J). (9) For the male genitalia, the median lobe is slightly thicker with longer basal portion in *P. skanda* **sp. nov.** than in *P. separatus* **sp. nov.**, thus the ratio  $bp/ap = 0.79–0.81$  in *P. skanda* **sp. nov.**,  $bp/ap = 0.72–0.76$  in *P. separatus* **sp. nov.** (10) For the endophallus, the right and left branches of *bsp* are distinctly divergent in *P. skanda* **sp. nov.**, but well parallel in *P. separatus* **sp. nov.**

**Description.** BL = 18.0–19.5 mm, BW = 6.2–6.5 mm. Antennomere 3 with numerous accessory setae, accessory setae nearly occupying apical third of inner margin of *A3*, only slightly shorter than primary ones (Fig. 4F). Pronotum usually subquadrate, PW/PL = 1.30–1.32, PBW/PW = 0.71–0.73, widest near anterior two-fifth; anterior margin slightly narrower than posterior margin, PAW/PBW = 0.96–0.98; lateral margins evenly arched from anterior angle to posterior fourth, not sinuate before posterior angle; posterior angles slightly obtuse-angled, apex faintly pointed, not dentate. Basal foveae distinctly punctate, fine punctures along inner side of outer and inner sulci; with transversal wrinkles aside inner sulcus, usually without longitudinal wrinkles on basal-median area; inner and outer sulci deep, slightly wider with less well-defined boundaries than other species; outer sulcus straight and long, usually 0.5–0.6 times as long as inner sulcus, subparallel to basal half of inner sulcus; basal sulcus well-defined, much shallower and narrower than outer sulcus, apex not exceeding inner sulcus; confluence angle nearly rectangular; inner sulcus more or less sinuate near middle, shallower and dilated near base, usually connected to basal sulcus (Fig. 16H). Elytra oblong, BW/EL = 0.63–0.66, with isodiametric microsculpture in males, with granular microsculpture in females (Fig. 3B); parascutellar stria joined to stria 1, angular base of stria 1 obsolete; parascutellar pore always present; interval 3 with one setigerous pore near apical third, adjacent to stria 2; intervals with very few shallow transversal wrinkles, only present near extreme apex of elytra; umbilicate series on interval 9 with two or three pores behind the terminal primary pore. Metepisternum with dense punctures. Male sternite VII with sharply ridged *msc*, slightly flattened and dilated at middle, apex trident: basal tubercle narrow, not prominent, reaching sternite basal sixth; median table narrow and flattened, apex at about apical two-fifth of sternite; apical carina strongly ridged, reaching sternite apex, somewhat sinuate before apex; paramedian projections slender and long, slightly longer than median table, about one fourth length of apical carina, slightly asymmetrical, left projection a little longer and more outwardly projected than the right one; paramedian carina absent (Figs 6G, 16I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth,  $bp/ap = 0.79–0.81$ ; included angle between axes of *bp* and *ap* about 65°; apical lamella slightly twisted longitudinally, apex rounded; ventral margin faintly tuberculate on basal portion, slightly grooved on the curve, shallowly tuberculate near base of apical portion (Fig. 16B, C). Right paramere subtriangular, apex blunt and projected, right margin thickened, sinuate near apical fourth (Fig. 16D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, comprised of two setose bands near apex of *bsp*, without band near gonopore (Fig. 16F, G); *bsp* U-shaped: left branch slightly widened on apex, not thickened, distinctly divergent to the right branch; right branch in similar length as left branch, comprised of three large sclerotized projections subequal in size; *p1* auriform; *p2* and *p3* both with rounded apex, base of *p3* covered by *p2* (Fig. 16E).

**Distribution.** This species is only known from the peak (Xianrending) of Tianmu mountain, in Lin'an, Zhejiang province of China. (Fig. 1C: dark green)

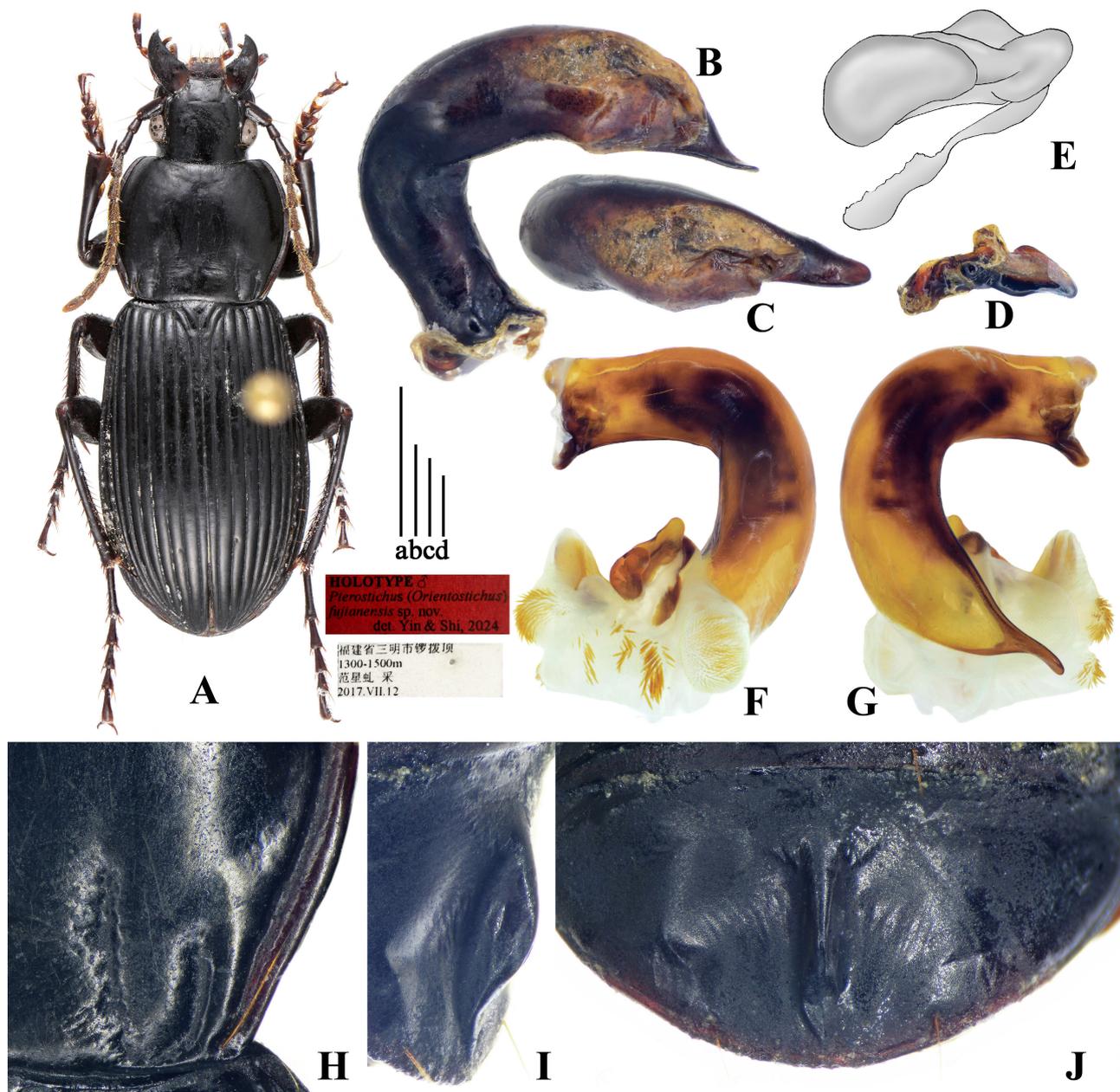
**Etymology.** The new species, only known from Tianmu Mountain, is named for Skanda Bodhisattva (韦陀菩萨). Tianmu Mountain, one of the Buddhist Mountains in China, is famous as the ashram of Skanda Bodhisattva.

### 8. *Pterostichus (Orientostichus) fujianensis* sp. nov.

Chinese common name: 福建通缘步甲

(Figs 1C, 3A, 3G, 6H, 7F, 8H, 9E, 17)

*Pterostichus (Orientostichus) prattii*: Yin *et al.*, 2023: 177, Fig. 29 (misidentification).



**FIGURE 17.** *Pterostichus (Orientostichus) fujianensis* sp. nov. **A.** Habitus, holotype. **B.** Left lateral view of median lobe of aedeagus, holotype. **C.** Dorsal view of median lobe of aedeagus, holotype. **D.** Right paramere, holotype. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus, Luoboding, Fujian, paratype. **G.** Right lateral view of endophallus, Luoboding, Fujian, paratype. **H.** Pronotum basal fovea, holotype. **I.** Lateral view of male sternite VII, holotype. **J.** Ventral view of male sternite VII, holotype. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Type locality.** China, Fujian Province, Sanming City, Luoboding. (N26.25°, E117.74°, alt. 1300–1500m).

**Type material. HOLOTYPE: CHINA:** male (IZAS), “China, Fujian, Sanming city, Luoboding, 1300–1500m, Xingqiu Fan leg., 2017.VI.24”, “HOLOTYPE ♂ *Pterostichus (Orientostichus) fujianensis* sp. nov. det. Yin & Shi, 2024” [red label]. **PARATYPES: CHINA:** (a total of 21 males and 30 females): 16 males and 23 females (IZAS, CBFU, CJHC), the same data as holotype but labeled as paratype; 4 males and 4 females (IZAS): “CHINA, Fujian, Longyan, Meihuashan mt., Guiheshang Village, N25.34121, E116.85670”, “1070m, 2007.V.22–VII.10, Huang Hao leg., Institute of Zoology”; 1 male and 3 females (IZAS, CBFU), “China, Fujian, 22.VI-13.VII, Ziyundong mt., NW slope, 25.46N, 117.20E, 900-1100m, Jaroslav Turna leg., 2007”..

**Diagnosis.** *A3* without accessory setae; elytra with transversal microsculpture in males (Fig. 3G), with granular microsculpture in females (Fig. 3A); elytra reflexed lateral margin with a flattened smooth carina in apical third; *msc* ridged, with median fovea on center of median table (Figs 6H, 17I, J).

**Comparison.** The new species can be distinguished from all other similar species by the elytra with transversal microsculpture (length of each mesh about 2.0 times as width, Fig. 3G) in males, and elytra reflexed lateral margin with a flattened smooth carina in apical third. It is sympatric and might be confused with *P. prattii* and *P. separatus* sp. nov., but can be easily distinguished from these two species by different elytral microsculpture both for males and females. Sometimes, the male elytral microsculpture of *P. separatus* sp. nov. might be a little similar to that in *P. fujianensis* sp. nov. But these two species are different in the presence of accessory setae on *A3* and characters on male sternite VII. *P. fujianensis* sp. nov. also might be confused with *P. deliquus* sp. nov., but the latter species is quite different in the shape of pronotum posterior angles (Fig. 17H) and male sternite VII without modification (Fig. 18I, J).

**Description.** BL = 18.0–20.5 mm, BW = 6.7–7.5 mm. Antennomere 3 without accessory setae. Pronotum subquadrate or nearly circular, PW/PL = 1.26–1.30, PBW/PW = 0.85–0.88, widest near anterior two-fifth; anterior margin slightly narrower than posterior margin, PAW/PBW = 0.87–0.91; lateral margins evenly arched from anterior angle to posterior fourth, not sinuate before posterior angle; posterior angles obtusely rounded, apex obscure, not dentate. Basal foveae usually impunctate, sometimes with few punctures along inner side of inner sulcus and near anterior end of outer sulcus; with dense transversal wrinkles aside inner sulcus; inner and outer sulci deep, with well-defined boundaries; outer sulcus straight and long, usually 0.6–0.7 times as long as inner sulcus, subparallel to basal half of inner sulcus; basal sulcus well-defined, slightly shallower than outer sulcus, apex not exceeding inner sulcus; confluence angle nearly rectangular or obtuse-angled, usually distinctly circular filleted; inner sulcus slightly oblique laterally behind middle, shallower near base, reaching or almost reaching basal sulcus (Fig. 17H). Elytra oblong, BW/EL = 0.60–0.62, with transversal microsculpture in males (length of each mesh about 2.0 times as width, Fig. 3G), with granular microsculpture in females (Fig. 3A); parascutellar stria joined to stria 1, angular base of stria 1 very short or obsolete; parascutellar pore always present; interval 3 with one setigerous pore near apical third, adjacent to stria 2; intervals without or with very shallow transversal wrinkles, only present near extreme apex of elytra; umbilicate series on interval 9 with only one pore behind the terminal primary pore; elytra reflexed lateral margin usually with a flattened and smooth carina in apical third. Metepisternum with sparse and coarse punctures close to the inner-anterior angle, outer-posterior region nearly impunctate. Male sternite VII with ridged *msc*, hardly flattened and dilated at middle: basal tubercle narrow and not prominent, reaching sternite basal sixth; median table very narrow, indistinguishable from basal tubercle, with an elongate median fovea on center, apex of median table at about apical third of sternite; paramedian projections absent; apical carina present but very faint, not reaching sternite apex; paramedian carinas stronger than apical carina, asymmetrical, left carina longer and less curved than the right one (Figs 6H, 17I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth, *bp/ap* = 0.78–0.81; included angle between axes of *bp* and *ap* about 70°; apical lamella slightly twisted longitudinally, apex rounded; ventral margin not tuberculate on basal portion, slightly grooved on the curve, slightly swollen near base of apical portion (Fig. 17B, C). Right paramere subtriangular, apex blunt and distinctly projected, right margin sinuate near apical fourth (Fig. 17D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, comprised of four setose bands, one near gonopore, the other three parallel (Fig. 17F, G); *bsp* U-shaped: left branch with slightly thickened apex, divergent to right branch; right branch in similar length as left branch, comprised of three large sclerotized projections; *p1* auriform and transverse, slightly smaller than *p2*; *p2* largest, always elongate and strongly projected towards base of aedeagus, apex usually broadly rounded, but sharply hooked in one specimen from Meihuashan (Fig. 8H); *p3* small, partly covered with *p2*, with rounded apex (Fig. 17E).

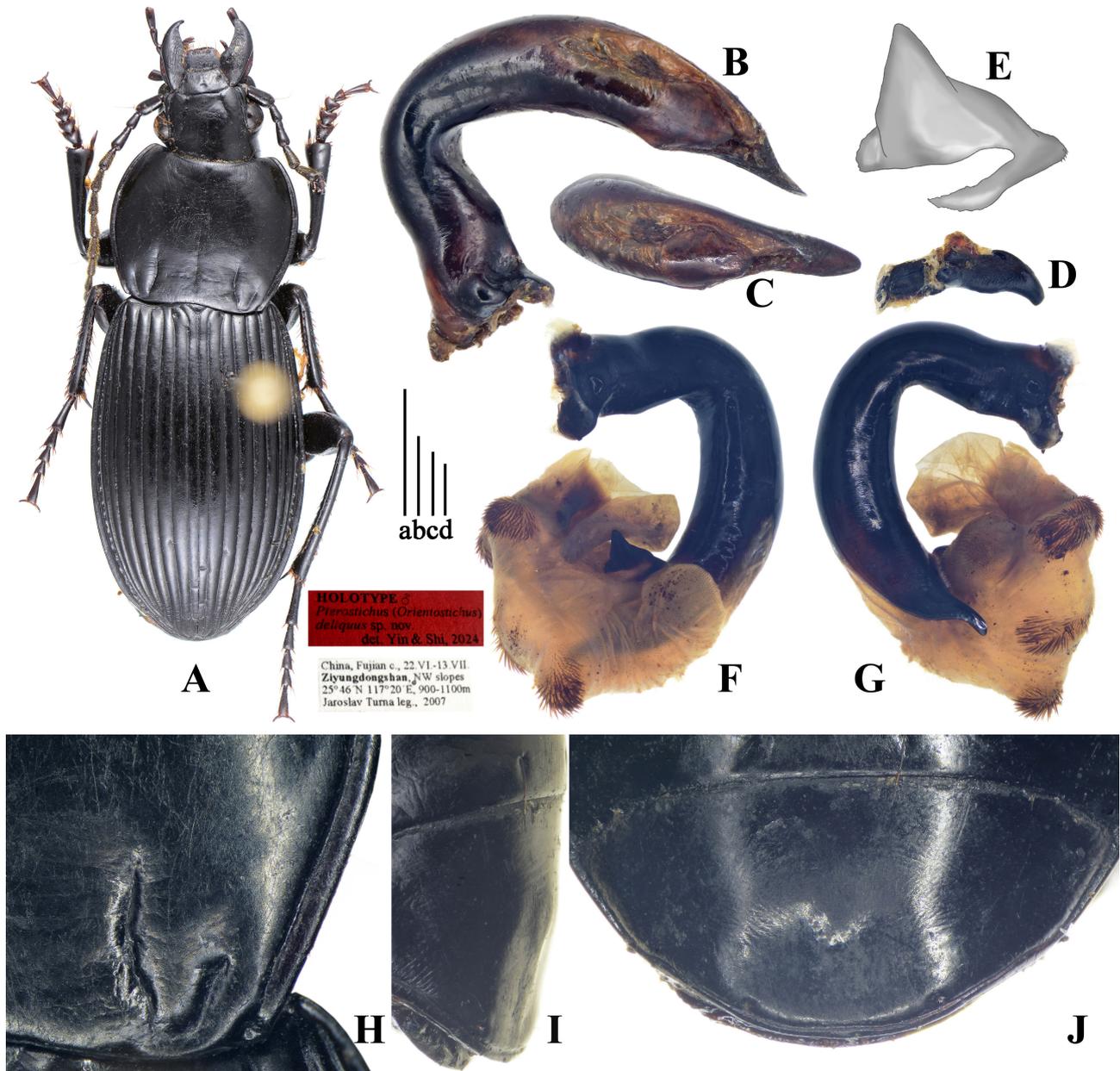
**Distribution.** This new species is known from three localities in southwest region of Fujian Province: Sanming, Yong'an, Longyan (Fig. 1C: cyan).

**Etymology.** The scientific name of new species refers to that it is only distributed in Fujian province.

**9. *Pterostichus (Orientostichus) deliquus* sp. nov.**

Chinese common name: 乌有通缘步甲

(Figs 1C, 3H, 18)



**FIGURE 18.** *Pterostichus (Orientostichus) deliquus* sp. nov., holotype. **A.** Habitus. **B.** Left lateral view of median lobe of aedeagus. **C.** Dorsal view of median lobe of aedeagus. **D.** Right paramere. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus. **G.** Right lateral view of endophallus. **H.** Pronotum basal fovea. **I.** Lateral view of male sternite VII. **J.** Ventral view of male sternite VII. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Type locality.** China, Fujian Province, Yong'an City, Ziyundong Mountain. (N25.77°, E117.33°, alt. 900–1100m).

**Type material. HOLOTYPE: CHINA:** male (IZAS), “China, Fujian, 22.VI-13.VII, Ziyundongshan, NW slopes 25°46'N 117°20'E, 900-1100m, Jaroslav Turna leg., 2007”, “HOLOTYPE ♂ *Pterostichus (Orientostichus) deliquus* sp. nov. det. Yin & Shi, 2024” [red label].

**Diagnosis.** *A3* without accessory setae; pronotum very large in comparison to elytra, posterior angles sharply obtuse-angled, posterior margin declined near posterior angles; elytra with slightly transversal microsculpture (mesh length/width about 1.5) on elytra; male sternite VII without distinct sexual character (Fig. 18I, J).

**Comparison.** The new species is distinctive among all species of the subgenus from southeastern China for its special pronotum shape and male sternite VII. *P. prattii* and *P. fujianensis* **sp. nov.** are sympatric with and might be confused with the new species. but these two species can be easily distinguished by the different elytral microsculpture, pronotum shape and male sternite VII.

**Description.** BL = 23.5 mm, BW = 8.5 mm. Antennomere 3 without accessory setae. Pronotum nearly circular, relatively large in comparison to elytra; PW/PL = 1.31, PBW/PW = 0.74, widest near anterior two-fifth; anterior margin slightly narrower than posterior margin, PAW/PBW = 0.83; lateral margins evenly arched from anterior angle to posterior angle, not sinuate before posterior angle; posterior angles obtuse angled, apex very sharply pointed, not dentate; posterior margin emarginate at middle, distinctly declined near posterior angles. Basal foveae impunctate, with few transversal wrinkles aside inner sulcus; inner and outer sulci deep, with well-defined boundaries; outer sulcus straight, about 0.5 times as long as inner sulcus, distinctly convergent to basal half of inner sulcus; basal sulcus well-defined, slightly shallower than outer sulcus, apex nearly reaching inner sulcus; confluence angle nearly rectangular, slightly circular filleted; inner sulcus distinct curved near middle, basal half strongly oblique laterally, shallower near base, slightly separated from basal sulcus (Fig. 18H). Elytra oblong, BW/EL = 0.61, with slightly transversal microsculpture in males (mesh length/width about 1.5, females unknown, Fig. 3H); parascutellar stria joined to stria 1, angular base of stria 1 obsolete; parascutellar pore present; interval 3 with one setigerous pore near apical third, adjacent to stria 2; intervals with distinct transversal wrinkles, occupying about apical fifth of elytra; umbilicate series on interval 9 with three pores behind the terminal primary pore. Metepisternum evenly covered with fine punctures. Male sternite VII without distinct *msc*, only very faintly raised on center (Fig. 18I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth, *bp/ap* = 0.67; included angle between axes of *bp* and *ap* about 60°; apical lamella slightly twisted longitudinally, apex rounded; ventral margin faintly tuberculate on basal portion, not grooved on the curve, not tuberculate on base of apical portion (Fig. 18B, C). Right paramere subtriangular, thickened near apex, apex blunt and projected, right margin sinuate near apical fourth (Fig. 18D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, comprised of three setose bands, one near gonopore, the other two on dorsal surface of endophallus (Fig. 18F, G); *bsp* U-shaped: left branch narrow and short, almost parallel to right branch; right branch longer than left branch, comprised of three large sclerotized projections; *p1* very small, divided by a shallow groove from *p2* at apex of right branch; *p2* largest, with sharp subulate apex, projected toward gonopore lobe; *p3* very flat, indistinguishable (Fig. 18E).

**Distribution.** The unique male holotype was collected in Ziyundong mountain, in Yong'an City of Fujian province (Fig. 1C: blue).

**Etymology.** The scientific name of the new species derived from the Latin root “*deliqu-*” which means lacking, referring to this species is unique in the *Pterostichus prattii* group for having no sexual modification on the male sternite VII.

## 10. *Pterostichus (Orientostichus) matalini* Fedorenko, 2023 New record from China

Chinese common name: 玛塔林通缘步甲

(Figs 3I, 6I, 19)

Fedorenko 2023: 161. (Original: *Pterostichus*; type in Zoological Museum of the Moscow State University, Russia; type locality: Vietnam: Lao Cai province).

**Material examined.** 1 male (CJHC), “Fujian, Nanping, Dongfeng Town, 200m, 2020 III-V, Han Gao leg.”.

**Diagnosis.** *A3* without accessory setae; elytra with linear microsculpture in males (Fig. 3I); with very transverse superficial microsculpture in females (Fedorenko 2023); male sternite VII with simply ridged *msc*, without paramedian projections nor carinas.

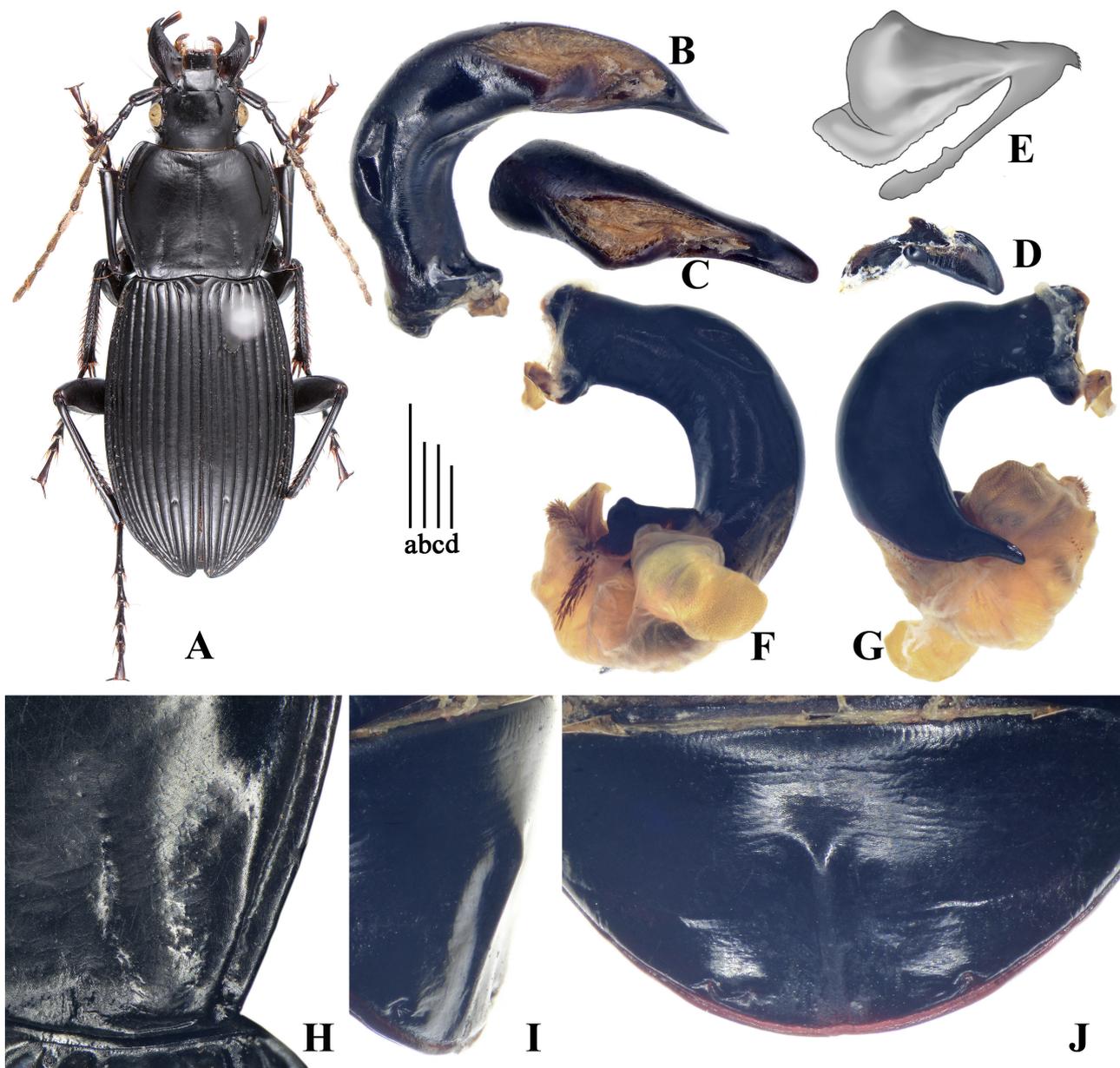


FIGURE 19. *Pterostichus (Orientostichus) matalini* Fedorenko, Nanping, Fujian, male. **A.** Habitus. **B.** Left lateral view of median lobe of aedeagus. **C.** Dorsal view of median lobe of aedeagus. **D.** Right paramere. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus. **G.** Right lateral view of endophallus. **H.** Pronotum basal fovea. **I.** Lateral view of male sternite VII. **J.** Ventral view of male sternite VII. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Comparison.** This species is unique in the *Pterostichus prattii* species group for its elytral microsculpture both in males and females. In the aspect of microsculpture, there is no similar species. In Fujian Province, this species should be sympatric with *P. prattii*, and is similar in the general appearance to the latter species. These two species can be readily distinguished by the different elytral microsculpture and male sternite VII.

**Description.** BL = 21.0 mm, BW = 7.3 mm. Antennomere 3 without accessory setae. Pronotum subquadrate, PW/PL = 1.39, PBW/PW = 0.72, widest near anterior two-fifth; anterior margin slightly narrower than posterior margin, PAW/PBW = 0.90; lateral margins evenly arched from anterior angle to posterior fourth, not sinuate before posterior angle; posterior angles obtuse, apex somewhat distinct, not dentate. Basal foveae impunctate, with very few transversal wrinkles aside inner sulcus; inner and outer sulci very shallow, with obscure boundaries; outer sulcus straight, about 0.5 times as long as inner sulcus, subparallel with inner sulcus, gradually vanished to base; basal sulcus well-defined, much deeper than outer sulcus, not connected to inner nor outer sulcus; confluence angle

nearly rectangular; inner sulcus nearly straight, gradually vanished towards base (Fig. 19H). Elytra oblong, BW/EL = 0.64, with strong liner microsculpture in males (Fig. 3I); parascutellar stria joined to stria 1, angular base of stria 1 short; parascutellar pore present; interval 3 with one setigerous pore near apical third, adjacent to stria 2; intervals with shallow transversal wrinkles, occupying apical fifth of elytra; umbilicate series on interval 9 with one or two pores behind the terminal primary pore; elytra reflexed lateral margin with very faint interrupted carina at apical half. Metepisternum only with a few sparse punctures near anterior margin. Male sternite VII with simply ridged *msc*, slightly dilated at base, extended from basal two-fifth to near apex of sternite: basal tubercle fused with apical carina, slightly ridged nearly reaching sternite apex, without median table, paramedian projections or paramedian carinas (Fig. 6I, 19I, 19J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth, *bp/ap* = 0.68; included angle between axes of *bp* and *ap* about 85°; apical lamella slightly twisted longitudinally, apex rounded; ventral margin not tuberculate on basal portion, base of apical portion straight without tubercle (Fig. 19B, C). Right paramere distinctly thickened, subtriangular, apex blunt, distinctly projected, right margin straight (Fig. 19D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, comprised of two setose bands, one near gonopore and the other one near apex of *bsp* (Fig. 19F, G); *bsp* U-shaped: left branch straight and slender, parallel with right branch; right branch in similar length as left branch, comprised of two large sclerotized projections; *p1* auriform, much smaller than *p2*; *p2* very large, with emarginate apex, gently sloped to base; *p3* absent (Fig. 19E).

**Remarks.** Compared to the type specimens collected from North Vietnam (Fedorenko 2023: 156, Figs 2–3), the specimen from Fujian is quite different in the pronotum shape: pronotum less constricted towards base, basal fovea almost impunctate, inner and outer sulci much shallower. Despite the above differences, the specimen from Fujian is exactly in accordance with *P. matalini* in many important aspects, including the elytral microsculpture, the character on male sternite VII (Fig. 19I; Fedorenko 2023: 159, Fig. 15), the shape of male aedeagus, right paramere, and the endophallus especially for *bsp* (Fig. 19F; Fedorenko 2023: 164, Fig. 42). Thus, it is evident that the unique male specimen from Fujian is identical to *P. matalini* Fedorenko, 2023, although this locality is very far from the type locality in Lao Cai of North Vietnam. All the morphological features provided above are based on the specimen from Fujian only.

**Distribution.** In China, this species is only known upon the single male collected from Dongfeng Town in Jian'ou City of Fujian Province, China (Fig. 1C: black). The altitude of the collecting locality is quite low (200m). Thus, it is inferred that this is a relatively widely distributed species in low elevation of Fujian province, but very rare. Out of China, this species was recorded from the Hoang Lien Son Mt. Ridge in Lao Cai province of Vietnam.

## 11. *Pterostichus (Orientostichus) distinctissimus* Jedlička, 1940

Chinese common name: 台湾通缘步甲

(Figs 1C, 3C, 4E, 6J, 20)

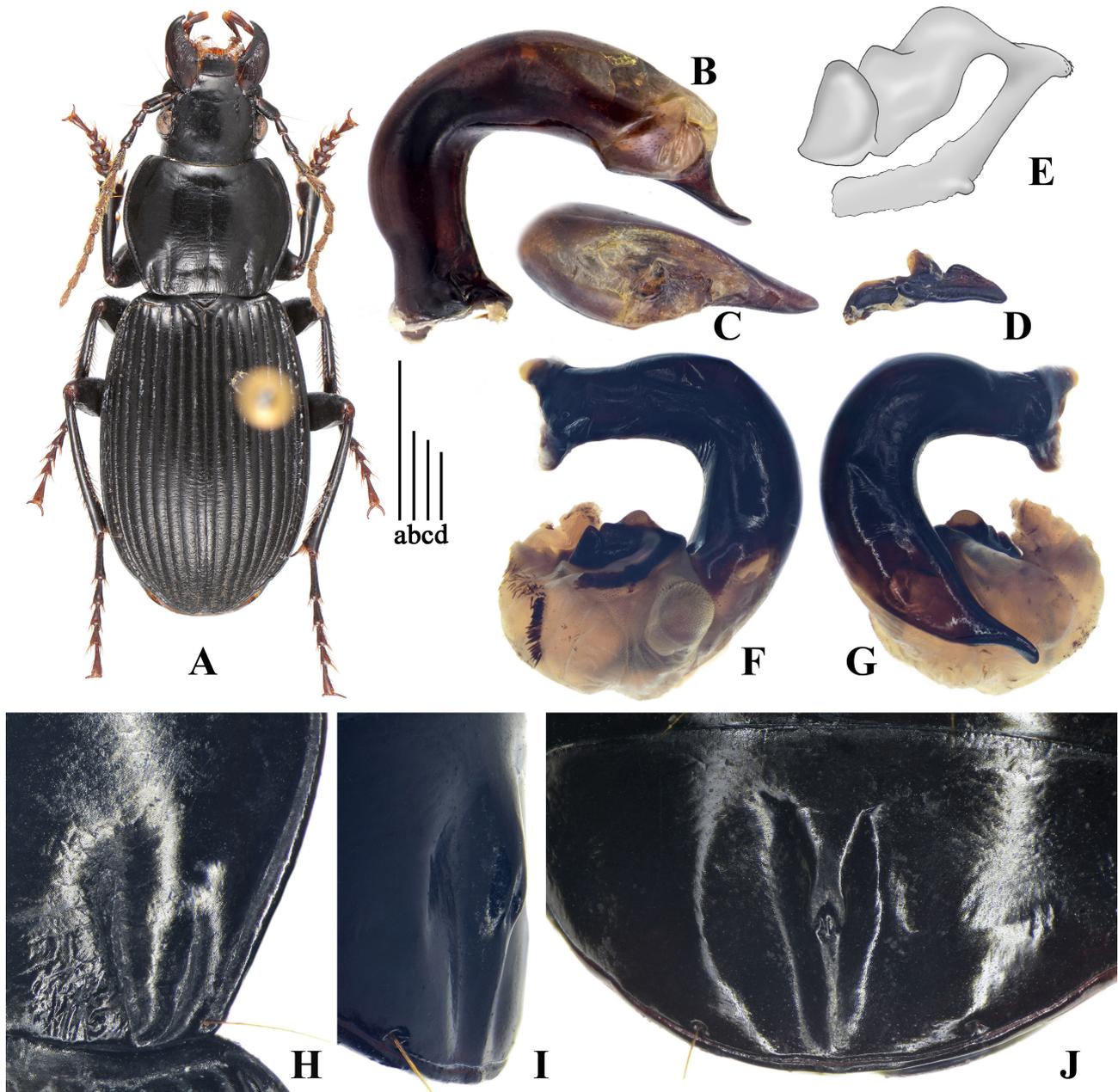
Jedlička 1940: 13. (Original: *Pterostichus*; type in NMPC; type locality: Formosa: Arisan); Jedlička 1962: 292; Sciaky & Allegro 2013: 114; Bousquet 2017: 747; Fedorenko 2023: 161.

**Material examined. HOLOTYPE: CHINA:** male (NMPC), “Formosa, Arisan, 1918, X.2-23, J. Sonan, M. Yoshino”, TYPUS” [red label], “Mus. Nat. Pragae, Inv. 26017”; *Pterostichus distinctissimus* sp. n., DET. ING. Jedlička” [by handwriting]. **Non-type materials** (a total of 16 males and 14 females): 1 male (CCCC), “Taiwan, Taichung county, Chuyunshan forest-road, 1950m, 1995.IX.18”; 2 males (CCCC), “Taiwan, Taichung county, Anmashan mt., Changchin Chen leg., 1600m, 1994.V.18”; 2 males (CCCC), “Taiwan, Taichung county, Anmashan mt., 6k, Yinchih Lin leg., 1996.IX.4”; 1 female (CCCC), “Taiwan, Taichung county, Hoping, Anmashan forest-road, 1996.IX.12”; 1 female (CCCC), “Taiwan, Taichung county, Anmashan mt., Changchin Chen leg., 1950m, 1994. IX.28”; 1 male (CCCC), “Taiwan, Hsinchu county, Wufong, Talu forest-road, 1990.VI.5”; 5 males and 3 females (CCCC), “Taiwan, Hsinchu, Wufeng, Talu forest-road, 23.5K, 1800m, pitfall trap, 2014.VIII.18, Dr. Shuping Wu leg.”; 1 female (CCCC), “Taiwan, Miaoli county, Taian, Kuanwu, 2200m, pitfall trap, 2014.VIII.21, conifers forest, Dr. Shuping Wu leg.”; 1 female (CCCC), “Taiwan, Hualien, Dayuling to Bilyu, C.J.C. leg., pitfall trap, 2006.X.10-11”; 1 female (CCCC), “Taiwan, Hualien, Chungheng Rd, Bilyu, C.J.C leg., pitfall trap, 2006.X.23”; 2 males and 2 females (CCCC), “Taiwan, Chungheng Rd, Hohuan mt., Hsiaofengkou to Kuanyuan, pitfall trap, 2006.X.23”; 1 male (CCCC), “Taiwan, Nantou county, Chushan, Shanlinhsi, 1994.IX.9, Wen-I Chou leg.”; 2 females (CCCC),

“Taiwan, Kaohsiung county, Hsinanshan, 2300m, Chen Changchin, 1996.VIII.30”; 1 female (CCCC): “Taiwan, Peichatienshan, Tungyenshan, 1996.VI.20”; 1 male (CCCC), “Taiwan, Sungkang, Nanshanhsi, Chinchí Lo leg., 1995.VII.14”; 1 male (CCCC), “Taiwan, Yushan, Sichi forest-road, 1997.IV.8”; 1 female (CCCC), “2006.VII.21, Taroko nat. park, Guanyun Villa”.

**Diagnosis.** *A3* with accessory setae; elytra with granular-isodiametric microsculpture in males, with granular microsculpture in females; elytral intervals coarsely rugose on posterior half, transversal wrinkles reaching anterior half of elytra; male sternite VII with tuberculate *msc*, with distinct median fovea on median table.

**Comparison.** This is the only *Pterostichus* species recorded from Taiwan province. Compared with other *Orientostichus* species from Southeast China, *P. distinctissimus* Jedlička can be easily distinguished by the very coarsely rugose elytra. The rugose elytra of this species are most similar to *P. semirugosus* (Andrewes) distributed in North Myanmar, but the latter species has no accessory setae on *A3*.



**FIGURE 20.** *Pterostichus (Orientostichus) distinctissimus* Jedlička, Hsinchu, Taiwan, male. **A.** Habitus. **B.** Left lateral view of median lobe of aedeagus. **C.** Dorsal view of median lobe of aedeagus. **D.** Right paramere. **E.** *bsp* of endophallus. **F.** Left lateral view of endophallus. **G.** Right lateral view of endophallus. **H.** Pronotum basal fovea. **I.** Lateral view of male sternite VII. **J.** Ventral view of male sternite VII. Scale bars: **a** = 5 mm (A), **b** = 1 mm (B, C, D), **c** = 1 mm (F, G), **d** = 0.5 mm (H, I, J).

**Description.** BL = 17.6–18.0 mm, BW = 6.3–6.8 mm. Antennomere 3 with accessory setae, accessory setae nearly occupying entire apical third of *A*3, only slightly shorter than primary ones (Fig. 4E). Pronotum nearly circular, PW/PL = 1.32–1.34, PBW/PW = 0.72–0.74, widest near anterior two-fifth; anterior margin slightly narrower than posterior margin, PAW/PBW = 0.93–0.95; lateral margins evenly arched from anterior angle to posterior fourth, not sinuate before posterior angles; posterior angles rounded obtuse, apex obscure, not dentate. Basal foveae impunctate, with few transversal wrinkles aside inner sulcus; inner and outer sulci deep and narrow, with well-defined boundaries; outer sulcus straight, usually 0.5–0.6 times as long as inner sulcus, distinctly convergent to basal half of inner sulcus; basal sulcus well-defined, slightly shallower than outer sulcus, apex not exceeding inner sulcus; confluence angle nearly rectangular, slightly circular filleted; inner sulcus slightly sinuate near middle, shallower near base, reaching or almost reaching basal sulcus (Fig. 20H). Elytra oblong, BW/EL = 0.63–0.66, with granular-isodiametric microsculpture in males (stronger than typical isodiametric microsculpture, but shallower than granular microsculpture in females Fig. 3C), with typical granular microsculpture in females; parascutellar stria joined to stria 1, angular base of stria 1 very short or obsolete; parascutellar pore present or absent; interval 3 usually with one small setigerous pore near apical third, usually distant from stria 2, occasionally without the pore; intervals with sculptural transversal lines, very strong forming rugose surface on apical third of elytra, gradually finer to elytral base, turned to fine transversal wrinkles on basal third of elytra; umbilicate series on interval 9 usually with two pores behind the terminal primary pore, occasionally with three pores. Metepisternum with sparse punctures restricted on anterior half. Male sternite VII with tuberculate *msc*, slightly dilated at middle: basal tubercle narrow and not prominent, reaching sternite basal sixth; median table very narrow and indistinguishable, apex at apical two-fifth of sternite, with a large ovate median fovea on top; apical carina strongly ridged reaching sternite apex; paramedian carinas absent (Figs 6J, 20I, J). Male genitalia: median lobe of aedeagus stout, strongly curved near basal two-fifth, *bp/ap* = 0.65–0.68; included angle between axes of *bp* and *ap* about 65°; apical lamella slightly twisted longitudinally, apex rounded; ventral margin not tuberculate on basal portion, without tubercle near base of apical portion (Fig. 20B, C). Right paramere subtriangular, apex blunt and distinctly projected, right margin slightly sinuate near apical fourth (Fig. 20D). Endophallus straightly directed ventrally, gonopore opened to ventral-basal direction of aedeagus; *vb* large, globular, strongly prominent to left lateral side of endophallus; *psr* distinct, comprised of two setose bands, they nearly conjoint near apex of *bsp* (Fig. 20F, G); *bsp* U-shaped: left branch long and narrow, parallel to right branch; right branch in similar length as left branch, comprised of three large sclerotized projections, about in similar size; *p1* auriform, slightly smaller than *p2*; *p2* with gently prominence apex; *p3* partly covered by *p2*, apex wide and rounded (Fig. 20E).

**Distribution.** This species is known from several localities at high altitude (1800–2500 m) of the Central Range in Taiwan province, China. (Fig. 1C: magenta)

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# 中国东南地区硕通缘步甲亚属*Orientostichus*中硕通缘步甲*Pterostichus prattii*种团修订并记七新种（鞘翅目：步甲科：通缘步甲族：通缘步甲属）

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**摘要:** 修订中国东南地区硕通缘步甲亚属*Pterostichus* (*Orientostichus*)物种, 共记述11种, 均属于硕通缘步甲*P. prattii*种团。不同物种主要依据前胸背板基凹区特征、两性鞘翅微纹、雄性第七腹板第二性征以及阳茎内囊等特征进行区分。描述七个新种, 即曲缘通缘步甲*P. sinuosus* **sp. nov.** (广西临桂广福顶)、彡通缘步甲*P. shan* **sp. nov.** (广东乳源南岭保护区)、罗霄通缘步甲*P. luoxiaoensis* **sp. nov.** (湖南炎陵齐云山)、离沟通缘步甲*P. separatus* **sp. nov.** (浙江临安天目山)、韦陀通缘步甲*P. skanda* **sp. nov.** (浙江临安天目山)、福建通缘步甲*P. fujianensis* **sp. nov.** (福建三明锣钹顶) 和乌有通缘步甲*P. deliquus* **sp. nov.** (福建永安紫云洞山); 记录一中国新纪录种, 即玛塔林通缘步甲*P. matalini* (福建建瓯东峰镇)。

**关键词:** 中国东南地区; 通缘步甲属; 新种; 分类学; 第二性征