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Two new species of the genus *Zaitzevia* Champion (Coleoptera: Elmidae) from Guangdong Province, China

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Abstract

Two new species of *Zaitzevia* Champion, 1923, *Zaitzevia acuta* **sp. nov.** and *Zaitzevia nanlingensis* **sp. nov.** are described from Guangdong Province, China and photographs of habitus and male aedeagus are provided. This genus is recorded from Guangdong Province for the first time.

Key words: riffle beetles, new species, Guangdong, China

Introduction

The genus *Zaitzevia* Champion, 1923 (Coleoptera: Elmidae) is represented by 27 valid species from Asia and America, and 14 species have been described from China (Jäch *et al.* 2016; Jiang & Wang 2020, 2021; Bian & Zhang 2022; Iwata *et al*. 2022; Jiang & Chen 2023; Peng *et al.* 2024).

The Chinese species are listed as the following:

1. *Zaitzevia babai* Nomura, 1963 (Taiwan)
2. *Zaitzevia chenzhitengi* Jiang & Wang, 2020 (Sichuan, Shaanxi, Yunnan)
3. *Zaitzevia fengtongzhaiensis* Jiang & Chen, 2023 (Sichuan)
4. *Zaitzevia formosana* Nomura, 1963 (Taiwan)
5. *Zaitzevia gaoligongensis* Bian & Zhang, 2022 (Yunnan)
6. *Zaitzevia muchenae* Bian & Zhang, 2022 (Yunnan)
7. *Zaitzevia parallela* Nomura, 1963 (Taiwan)
8. *Zaitzevia triangularis* Peng, Bian & Wang, 2024 (Shanxi)
9. *Zaitzevia reniformis* Bian & Zhang, 2022 (Yunnan)
10. *Zaitzevia sichuanensis* Jiang & Chen, 2023 (Sichuan)
11. *Zaitzevia tangliangi* Jiang & Wang, 2021 (Hubei)
12. *Zaitzevia tsushimana* Nomura, 1963 (Jilin; Japan; Korea; Russia)
13. *Zaitzevia xiongzichuni* Jiang & Wang, 2020 (Yunnan)
14. *Zaitzevia yingzuijieensis* Jiang & Chen, 2023 (Hunan)

In this paper, *Zaitzevia* is recorded from Guangdong Province for the first time, and another two new species are described.

Material and methods

Specimens were examined with a Leica M205c stereomicroscope and an Olympus BX51 compound microscope. Male genitalia were placed in concentrated lactic acid in a cavity slide for several hours before they were examined.

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Habitus and genitalia photographs were made with Keyence VHX-2000 Super Resolution Digital Microscope System. The first strial interval refers to the sutural interval. Label data are cited verbatim, with separate lines on the same label indicated by a slash "/"; different labels are separated by a vertical line "|". Abbreviations used in the text: BL—body length = PL+EL, EW—maximum width of elytra, BW—maximum width of body (=EW), PL—pronotal length, PW—maximum width of pronotum, EL—elytral length. The type specimens of the new species are deposited in the Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang, China (IAECAS).

Taxonomy

***Zaitzevia acuta* sp. nov.**
Chinese common name: 尖茎寥溪泥甲
(Figs 1A, B, 2A–C; 4A–C)

Type material. HOLOTYPE: CHINA: male: "CHINA: Guangdong, Maoming / Xinyi, Qianpai Town / 111°14′29″E 22°16′22″N / 994 m 2017.11.19 / Peng & Sun" (IAECAS). **PARATYPES: CHINA:** 1 male, 1 female, the same data as holotype (IAECAS).

Diagnosis. This species is a small species, less than 2 mm. It is similar to *Zaitzevia aritai* Satô, 1963 and *Z. elongata* Nomura, 1962 in body size and habitus, but it can be distinguished from *Z. aritai* by body black, surface of elytra smooth and shiny, not shagreened, also by distal 1/3 of penis more sharpened; from *Z. elongata* by punctures on pronotum sparser, by median sulcus deeper, by surface of elytra smooth and shiny, not shagreened, by distal third of penis distinctly sharpened, not as *Z. elongata* distinctly sharpened in distal 1/4, and also by different shape of the endophallus. It can be distinguished from *Z. babai* Nomura, 1963 by median sulcus not reaching the base, and by its broader body than *Z. babai*; from *Z. nitida* Nomura, 1963 which with the similar body size by median sulcus not reaching the base, and by striae 2–4 lacking strial punctures in basal1/5; from *Z. parallela* Nomura, 1963 by median sulcus of pronotum shallow, not broadened medially, by 5th, 6th intervals not completely carinate, and by surface of prosternal process smooth and shiny, not rugosely punctate.

Body elongated obovate (Fig. 1A, B). BL 1.8 mm, BW 0.85 mm. Dorsal surface black and shining, femora and tibiae dark brown. Anterior margin of pronotum, antennae, tarsi and claws yellowish brown, ventral side black except distal three ventrites yellowish brown to brown.

Head mostly retracted into the pronotum. Labrum wider than long, anterior 2/3 of disc smooth and shiny, sparsely punctate and pubescent, basal 1/3 and lateral areas micro-reticulated, lateral margins with long setae which look like fringes. Clypeus smooth and shiny, sparsely pubescent. Clypeal suture straight, slightly impressed. The surface of frons as clypeus, but the areas inside of eyes densely pubescent, with a few granules.

PL 0.5 mm, PW 0.6 mm. Pronotum (Fig. 2A) broadest at basal2/5, slightly attenuated anteriorly and posteriorly. Anterior angles sharp and distinctly produced, posterior angles almost right-angled. Disc smooth and shiny, sparsely punctate. Median sulcus presents from basal 1/5 to 3/5. Lateral sulcus vestigial, slightly incurved at basal 2/5, then curved outwards to basal 7/10. Base with two to three granules in front of anterior angle of scutellum at each side.

EL 1.3 mm, EW 0.85 mm, broadest at middle, slightly attenuated anteriorly and distinctly attenuate posteriorly. Lateral margins denticulated. Disc smooth and shiny, strial punctures on the 1st striae middle-sized from basal 1/10 to basal half, distal half of strial punctures fine; strial punctures on the 2nd, 3rd, 4th striae absent in basal 1/5, middle-sized from basal 1/5 to 1/2, smaller and well separated in distal half. Intervals 1 and 3 with a longitudinal row of very fine punctures respectively. Carinae on intervals 5 developed extending from basal 1/10 to apex, and carinae on intervals 6 and 7 incomplete, only present at subbase and apical part. The areas near the apex with some big granules. Lateral tomentose band present from the 5th interval to lateral margin.

Prosternum (Fig. 2B) densely pubescent, prosternal process elongated, lateral sides paralleled, apex broadly rounded, lateral margin slightly rimmed, disc smooth and shiny in basal 2/3, almost without punctures, distal 1/3 distinctly impressed. Metaventrites (Fig. 2C) with disc broadly and slightly impressed, surface smooth and shiny, only with some small granules; median groove present from base to basal 4/5, lateral parts densely pubescent; each side with two rows of punctures, one is behind of mesocoxa, and the other one is in front of posterior margin.

Ventrites see Fig. 2C. Middle discs of ventrites 1–4 and basal 1/3 of ventrite 5 smooth and shiny, with a few small granules, lateral parts of ventrites 1–5 densely pubescent. Distal 2/3 of ventrite 5 densely pubescent and granulated. Apex of ventrite 5 emarginated.

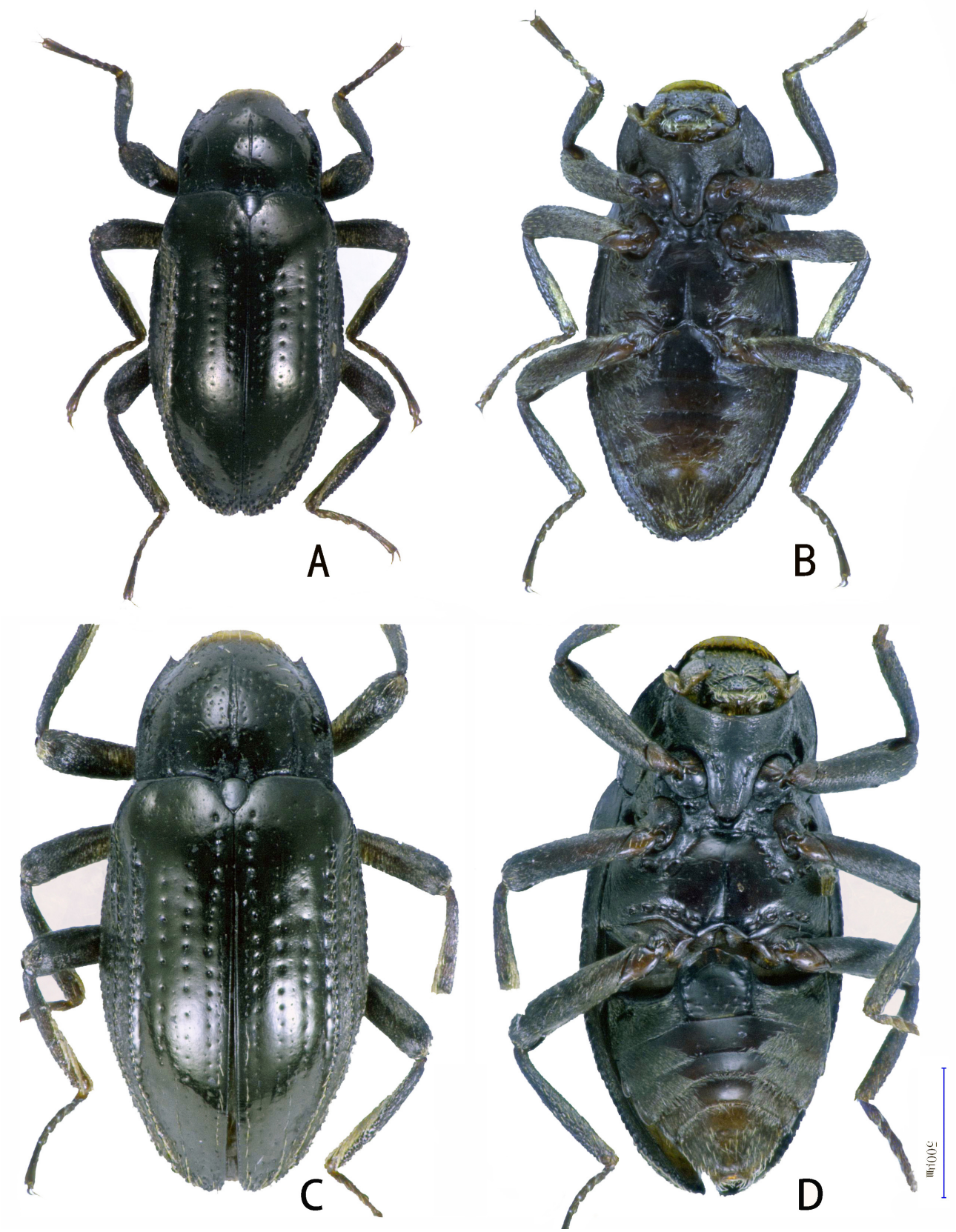

FIGURE 1. Habitus, holotype male. **A, B.** *Zaitzevia acuta* **sp. nov. C, D.** *Z. nanlingensis* **sp. nov. A, C.** dorsal view. **B, D.** ventral view. Scale bar: 0.5 mm.

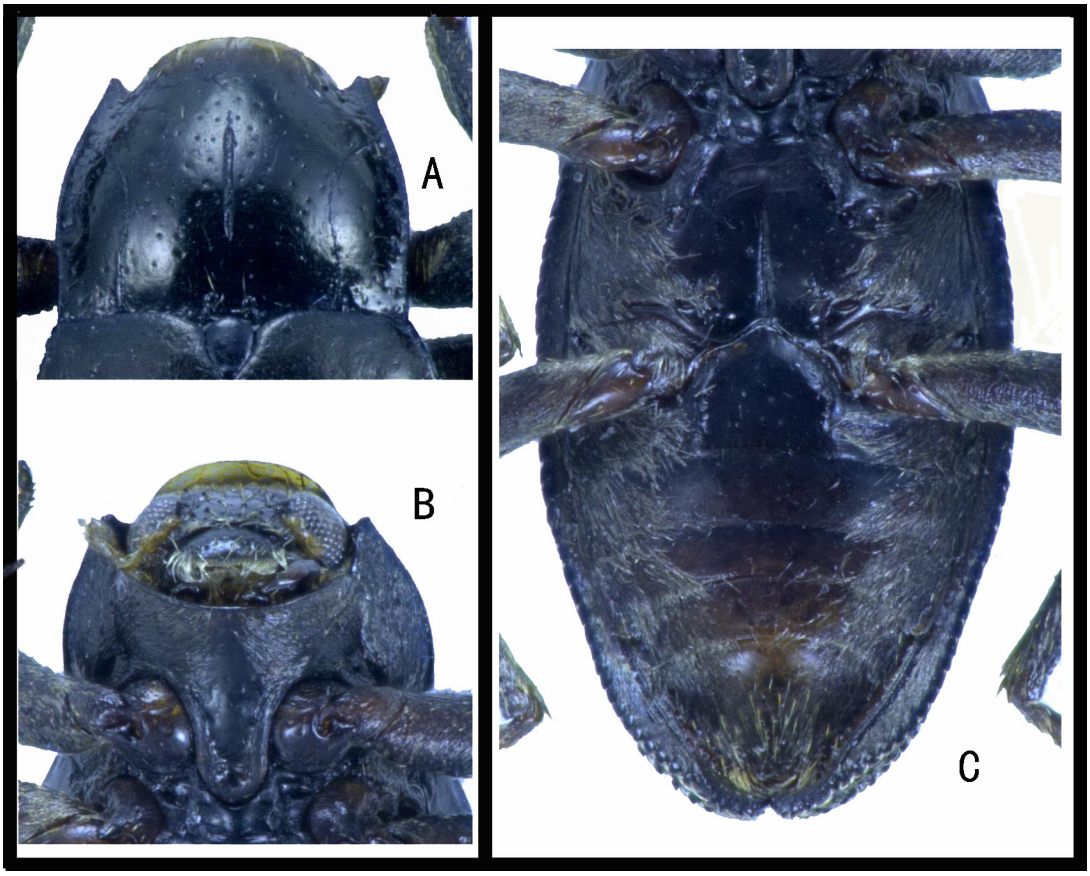

FIGURE 2. *Zaitzevia acuta* **sp. nov.**, holotype male. **A.** Pronotum. **B.** Prosternum. **C.** Metaventrite and ventrites.

Aedeagus (Fig. 4A–C): 0.7 mm long, elongated and slender. Penis about 2.3 times as long as phallobase, subparallel in basal 7/10, distinctly sharpened in distal 3/10, with a pair of small teeth sinuated at distal 1/6. Endophallus not developed (Fig. 4A–B). Parameres not developed and fused to penis, reaching basal 7/10 of penis.

Distribution. China: Guangdong.

Etymology. The epithet is derived from the Latin adjective "*acutus*" and refers to the cuspidal apex of penis.

***Zaitzevia nanlingensis* sp. nov.**

Chinese common name: 南岭寥溪泥甲

(Figs 1C, D, 3A–C, 4D–F)

Type materials. HOLOTYPE: CHINA: male: "CHINA: Guangdong, Shaoguan City / Ruyuan Nanling Nat. Res. / 113°1′3″E 24°55′41″N / 1001m, 2017.11.27 / Peng & Sun" (IAECAS). **PARATYPES: CHINA:** 2 females, the same data as holotype; 1 male: "China: Hunan, Yueyang / City, Pingjiang County | 600 m, 2003.03.21 / Leg. Wang (CWBS 503)" (IAECAS).

Diagnosis. This species is similar to *Zaitzevia awana* (Kôno, 1934), *Z. rivalis* Nomura, 1963, *Z. tsushimana* Nomura, 1963 in body size and habitus, but it can be distinguished from *Z. awana* by median sulcus not distinctly narrowed anteriorly and posteriorly, elytra smooth and shiny, not wrinkled, and apex of penis rounded, not distinctly sharpened as *Z. awana*; from *Z. rivalis* by median sulcus of pronotum extending from basal 1/10 to 4/5, not distinctly narrowed in anterior half, surface of elytra smooth and shiny, not shagreened, and also by distal third of penis distinctly narrowed, not as in *Z. rivalis* that distal 1/5 of penis distinctly narrowed; from *Z. tsushimana* by median sulcus not reaching the base, strial punctures absent in basal 1/5 on the 2nd, 3rd , 4th striae, while in *Z. tsushimana*, strial punctures on the 2rd, 3th , 4th striae clearly visible in basal 1/5, by different structure of the endophallus, and also by apex of penis rounded, not distinctly sharpened as in *Z. tsushimana*.

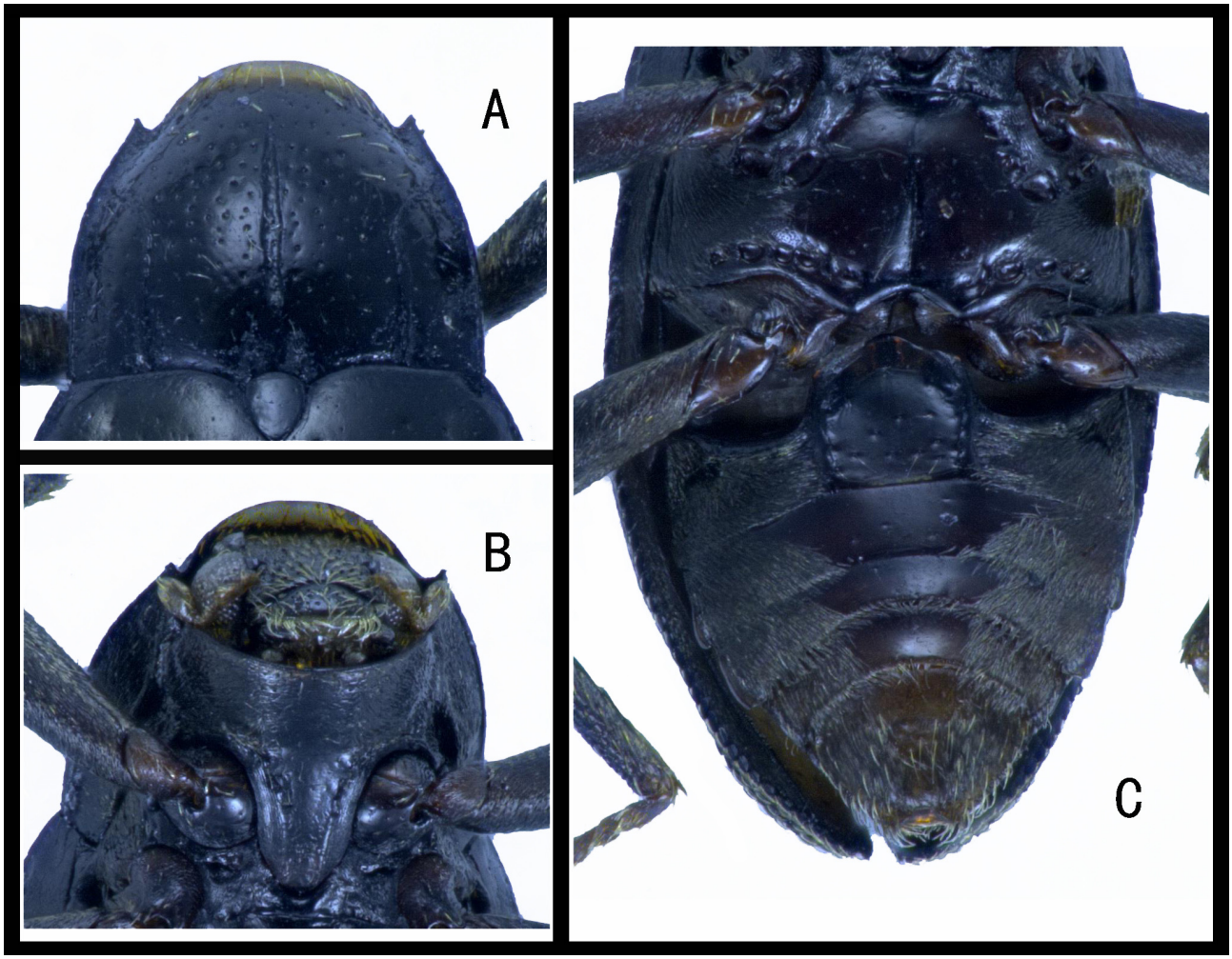

FIGURE 3. *Zaitzevia nanlingensis* **sp. nov.**, holotype male. **A.** Pronotum. **B.** Prosternum. **C.** Metaventrite and ventrites.

Description. BL 2.2 mm, BW 1.0 mm. Body elongated obovate (Fig. 1C, D). Dorsal surface black, except anterior margin of pronotum yellowish brown. Antennae, tarsi and claws yellowish brown. Legs brown except tarsi and claws. Ventral surface brown to dark brown.

Labrum micro-reticulated in basal 1/4, distal 3/4 smooth and shiny, sparsely punctate and pubescent. Anterior margin of labrum truncate, densely pubescent. Clypeus smooth and shiny, sparsely punctate and pubescent. Clypeal suture straight, slightly impressed. The areas inside of eyes densely punctate and pubescent.

PL 0.6 mm, PW 0.75 mm. Pronotum (Fig. 3A) subparallel in basal 2/5, then slightly attenuated anteriorly. Anterior angles sharp and distinctly produced, posterior angles almost right-angled. Disc smooth and shiny, almost not pubescent. Median sulcus shallowly impressed, present from basal 1/10 to 4/5. Sublateral sulcus slightly incurved in basal 3/10, then distinctly curved outwards reaching basal 7/10 of lateral margin.

EL 1.6 mm, EW 1.0 mm. Elytra almost subparallel in basal 2/3, then distinctly attenuated in distal 1/3. Lateral margins denticulated. First strial punctures absent in basal 1/10, large punctures extending from basal 1/10 to 3/5, and small punctures in distal 2/5. The 2rd, 3th, 4th strial punctures absent or almost invisible in basal 1/5, large punctures from basal 1/5 to 1/2, smaller and well-separated in distal 1/2. Intervals 1 to 4 smooth and shiny, intervals 1, 3 with a longitudinal row of small setose punctures respectively. Carinae on intervals 5, 6 complete, and carinae on intervals 7 present from base to the declivity. Lateral tomentose band present from the 5th interval to lateral margin.

Prosternum (Fig. 3B) densely pubescent. Prosternal process gradually narrowed from base to apex, and the apex rounded; surface somewhat coarse, not pubescent; lateral margin distinctly rimmed. Disc of metaventrite (Fig. 3C) slightly convex, smooth and shining, with a few very fine punctures, not pubescent; lateral areas of metaventrite densely pubescent; each side with two rows of large punctures, one is behind of the mesocoxa, and the other one is in front of posterior margin.

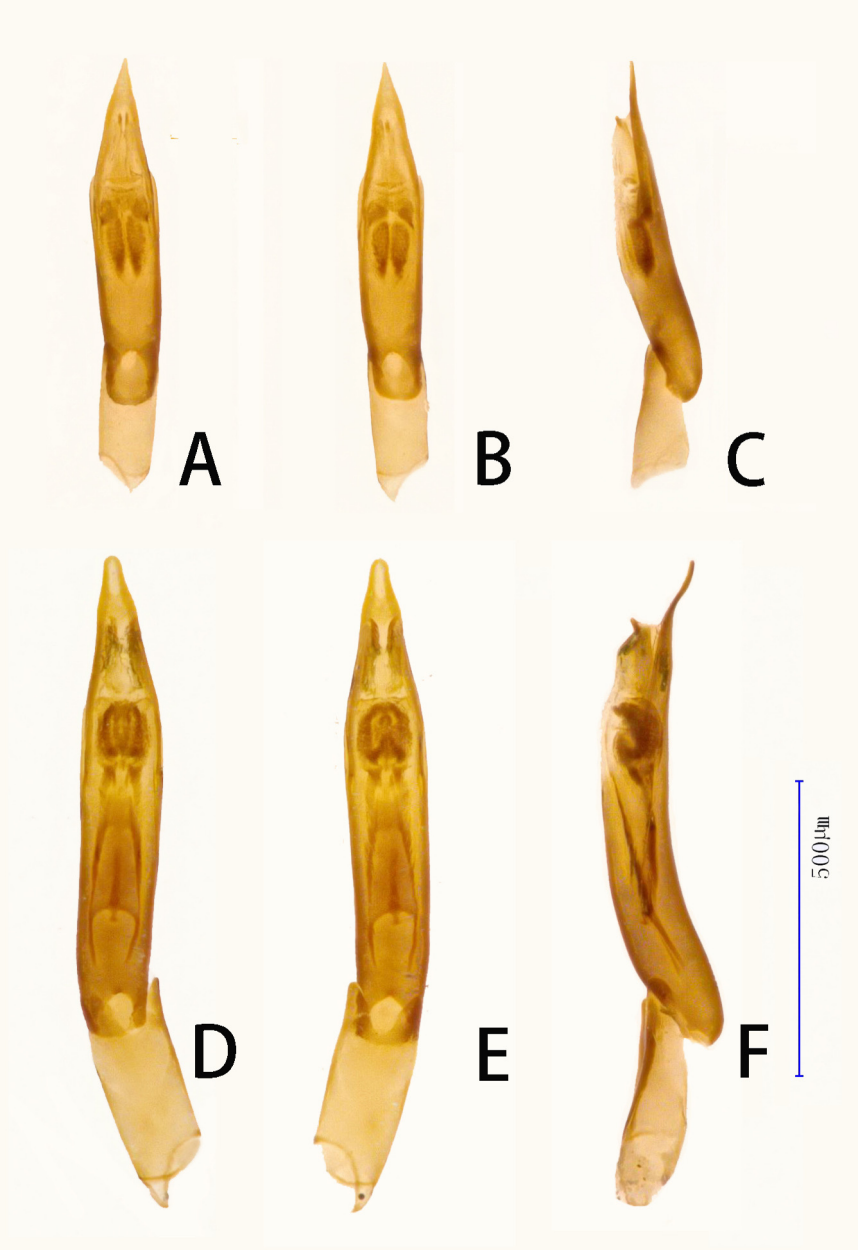

FIGURE 4. Aedeagus. **A**–**C** *Zaitzevia acuta* **sp. nov.**, holotype male. **D**–**F.** *Z. nanlingensis* **sp. nov.**, holotype male. **A, D.** ventral view. **B, E,** dorsal view. **C, F** lateral view. Scale bar: 0.5 mm.

Ventrites see Fig. 3C. Disc of ventrites 1–4 smooth and shiny, only with some small setose punctures. Lateral areas of ventrites 1–4 densely pubescent. Ventrite 5 with basal half of the disc smooth and shiny, not densely pubescent, and the other areas densely pubescent. Apical margin of ventrite 5 emarginate.

Aedeagus (Fig. 4D–F): 1.1 mm long, slender and elongated. Penis about 2.1 times as long as phallobase. Penis subparallel in basal 7/10, distinctly narrowed in distal 3/10, apex narrowly rounded; a pair of developed teeth sinuated at distal 1/6. Endophallus developed (Fig. 4D–E). Parameres fused to penis, indistinct, apices of parameres reaching basal 7/10 of penis.

Distribution. China: Guangdong, Hunan.

Etymology. This species is named after Nanling Nature Reserve.

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中国广东寥溪泥甲属*Zaitzevia*二新种（鞘翅目：溪泥甲科）

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摘要：报告了一个广东省新记录属——寥溪泥甲属*Zaitzevia*并描述两个新种，即尖茎寥溪泥甲*Z. acuta* **sp. nov.**和南岭寥溪泥甲*Z. nanlingensis* **sp. nov.**；展示了新种的外形特征和生殖器特征图。

关键词：溪泥甲科；新种；广东；中国