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● Description of *Aposthonia limushana* sp. nov. (Embioptera: Oligotomidae) from Hainan Province, China

Zhi-Teng CHEN^{1*} & Bo-Tao YAN²

¹School of Grain Science and Technology, Jiangsu University of Science and Technology, Zhenjiang 212004, Jiangsu Province, China;

<https://orcid.org/0000-0002-6331-8978>; 741208116@qq.com

²Institute of Tropical Agriculture and Forestry, Hainan University, Haikou 570228, Hainan Province, China;

<https://orcid.org/0009-0000-7795-445X>; 1478462770@qq.com

*Corresponding author

Abstract: *Aposthonia limushana* sp. nov. is described and illustrated based on male morphological characters from Hainan Province, China. This species is distinguished by a unique configuration of male terminalia, including an unmodified apically pointed left hemitergal process (10LP) and a finger-shaped right hemitergal process (10RP) with a rounded outer margin and truncate inner margin at its apex. This discovery elevates the number of documented *Aposthonia* species in China to three. A key to adult males of Chinese *Aposthonia* species is provided.

Keywords: Biodiversity, Hainan Island, new species, taxonomy, webspinner

● 中国海南省黎母山裸尾丝蚁（纺足目：等尾丝蚁科）一新种记述

陈志腾^{1*} & 晏博韬²

¹粮食学院，江苏科技大学，镇江 212004，江苏省，中国

²热带农林学院，海南大学，海口 570228，海南省，中国

*通讯作者

摘要：本文记述产自中国海南省的足丝蚁一新种——黎母山裸尾丝蚁 *Aposthonia limushana* sp. nov.。该物种雄性腹部末端具有独特构造，包括一未修饰、顶端尖锐的左半背板突起（10LP）和一指状的右半背板突起（10RP），其顶端外缘为圆形，内缘为截形。此新种的发现使中国已知的裸尾丝蚁属物种增至三种。本文提供了中国裸尾丝蚁属雄性成虫的鉴定检索表。

关键词：生物多样性，海南岛，新物种，分类学，足丝蚁

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● Introduction

The genus *Aposthonia* Krauss, 1911 (Embioptera: Oligotomidae) comprises 26 species distributed across the Oriental and Australian regions (Poolprasert *et al.* 2011a; Chen 2022). Taxonomic revisions of this genus have been comprehensively reviewed by Poolprasert *et al.* (2011a). Prior to this study, only two species were recorded from China: *Aposthonia borneensis* (Hagen, 1885) documented in Guangdong, Hainan, and Hong Kong (Ross 1978; Lu 1987, 1990), and *Aposthonia guizhouensis* Chen, 2022 from Guizhou Province (Chen 2022). Notably, a putative *Aposthonia* species reported from Hainan by Lu (1990) was later reclassified under *Eosembia* Ross, 2007 (Poolprasert *et al.* 2011b). Molecular studies by Chen *et al.* (2017) elucidated the mitochondrial genome of *A. borneensis*, while Ross (2007) hypothesized that numerous undescribed *Aposthonia* species likely persist in understudied regions of southwestern China.

This study describes *Aposthonia limushana* **sp. nov.**, collected from Limushan, Hainan Province, representing the third *Aposthonia* species recorded in China. Diagnostic morphological traits of the male terminalia unequivocally differentiate it from congeners. A key to Chinese *Aposthonia* males is included to facilitate future identifications.

● Material and methods

The holotype male was manually collected from a pine forest in Limushan, Hainan Province (coordinates: 19.175546°N, 109.799089°E) on 3 November 2023 and preserved in 75% ethanol. Morphological examinations were conducted using a SDPTOP SZM45 stereomicroscope. High-resolution images were captured with a Canon EOS 5DSR camera fitted with a Canon MP-E 65 mm 5X macro lens, post-processed in Adobe Photoshop (Beta). The holotype is deposited in the Insect Collection of Jiangsu University of Science and Technology (ICJUST), Jiangsu Province, China. Morphological terminology follows Ross (1948, 2007). Abbreviations: **MA** (anterior medial vein); **10L/R** (left/right hemitergite of abdominal segment 10); **10LP/RP** (left/right hemitergal process); **EP** (epiproct); **H** (hypandrium); **HP** (hypandrial process); **LPPT** (left paraproct); **LCB** (left cercus-basipodite); **LC1/2** (first/second segment of left cercus); **RC1/2** (first/second segment of right cercus).

● Taxonomy

Family Oligotomidae Enderlein, 1909

Genus *Aposthonia* Krauss, 1911

Aposthonia limushana **sp. nov.** 黎母山裸尾丝蚁

<https://zoobank.org/B3ACD571-7204-4BBD-9DDA-CC8A8978C9E6>

Figs. 1–5

Type material. Holotype: ♂ (ICJUST): **CHINA:** Hainan Province, Qiongzong Li and Miao Autonomous County, Limushan, Limu Temple scenic area, pine forest near entrance (Fig. 1), 19.175546°N, 109.799089°E, 3-XI-2023, Bo-Tao Yan.

Etymology. The specific epithet refers to the type locality, Limushan.

Description of holotype. *Size.* Body length (from anterior of maxillary palps to cercal apex) ca. 7.5 mm (Fig. 2).

Head. Head capsule pale brown, near 1.5 times longer than wide, with reticular pigmentation (Fig. 3A, B). Eyes large, sides behind eyes rounded, gradually converging posteriorly. Clypeus pale, near trapezoidal. Maxillary palpi brown, five-segmented; labial palpi brown and short, three-segmented. Submentum pale brown, subquadrate, anterior and posterior margins concave, lateral margins rounded. Antennae pale brown to brown, gradually darkened toward apical segments, at least 19-segmented.



FIGURE 1. *Aposthonia limushana* sp. nov., male holotype: **A** habitat forest in Limushan **B** stream (water source) near collecting site.

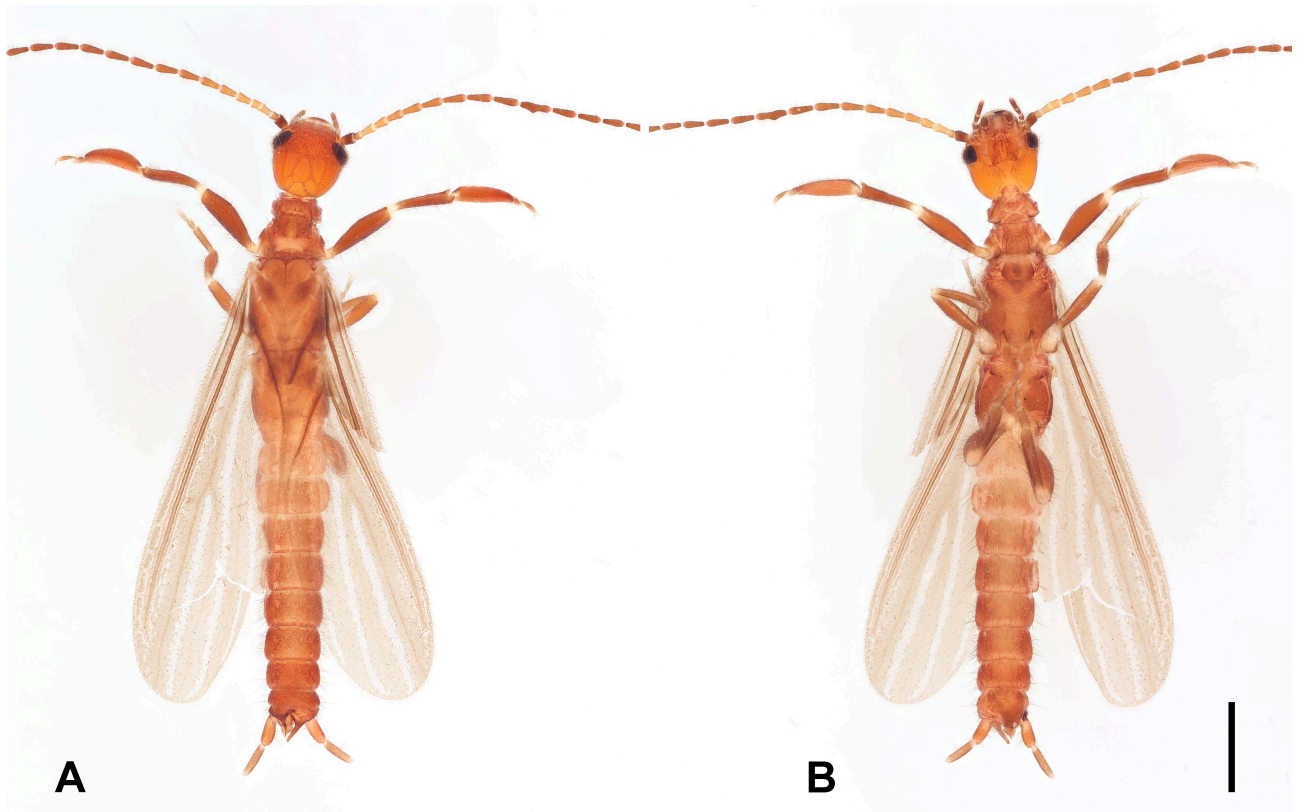


FIGURE 2. *Aposthonia limushana* sp. nov., male holotype: **A** habitus, dorsal view **B** habitus, ventral view. Scale bar = 1 mm.

Thorax. Prothorax brown, near trapezoidal, much shorter and narrower than head, with subequal length and width, surface with deep transverse and longitudinal grooves. Meso- and metathorax generally brown, width subequal to head. Wings pale brown (Fig. 2), with longitudinal pale stripes; MA unforked. Legs brown, articulations pale; hind basitarsus with single ventral papilla (Fig. 3C).

Abdomen. Abdomen brown, terminalia darker (Fig. 2). Hemitergites 10L and 10R subequal in size (Fig. 4). 10LP slender, hook-shaped, slightly curved outward, gradually tapered to pointed apex. 10RP longer and near 1.5 times wider than 10LP, thickness mostly uniform; apex subtriangular in dorsal view, outer margin rounded, inner margin truncate. EP weakly sclerotized, longitudinal, slender, near four times longer than wide, lateral margins slightly concave. H broad (Fig. 5), posterior margin truncate; right posterolateral margin deeply concave, left margin rounded. HP subtriangular, angles obtuse. LPPT small, sclerotized, hook-shaped in ventral view, gradually reduced in width toward apex; in dorsal view, LPPT reduced to thin, obliquely oriented sclerite with outwardly curved apex. LCB darkly sclerotized, subquadrate, fused to cercal base, with obtuse corners. LC1 medially dilated, without lobes; RC1 near cylindrical, mostly uniform in width.

Diagnosis. *Aposthonia limushana* sp. nov. is assigned to Oligotomidae based on the unforked MA, asymmetrical male terminalia, broad tergite 10 connection between hemitergites, and unfused LC2/LC1 (Ross 2007; Miller *et al.* 2012). Generic placement is confirmed by the single hind basitarsal papilla and absence of projected LCB (Ross 2007; Poolprasert *et al.* 2011a). The species is unambiguously distinguished from congeners by the combination of an apically unmodified 10LP and a finger-shaped 10RP whose apex has rounded outer margin and truncate inner margin (Ross 1978; Poolprasert *et al.* 2011a; Chen 2022). This discovery presents the third species of *Aposthonia* known from China and underscores the unexplored diversity of *Aposthonia* in tropical and subtropical regions of China.

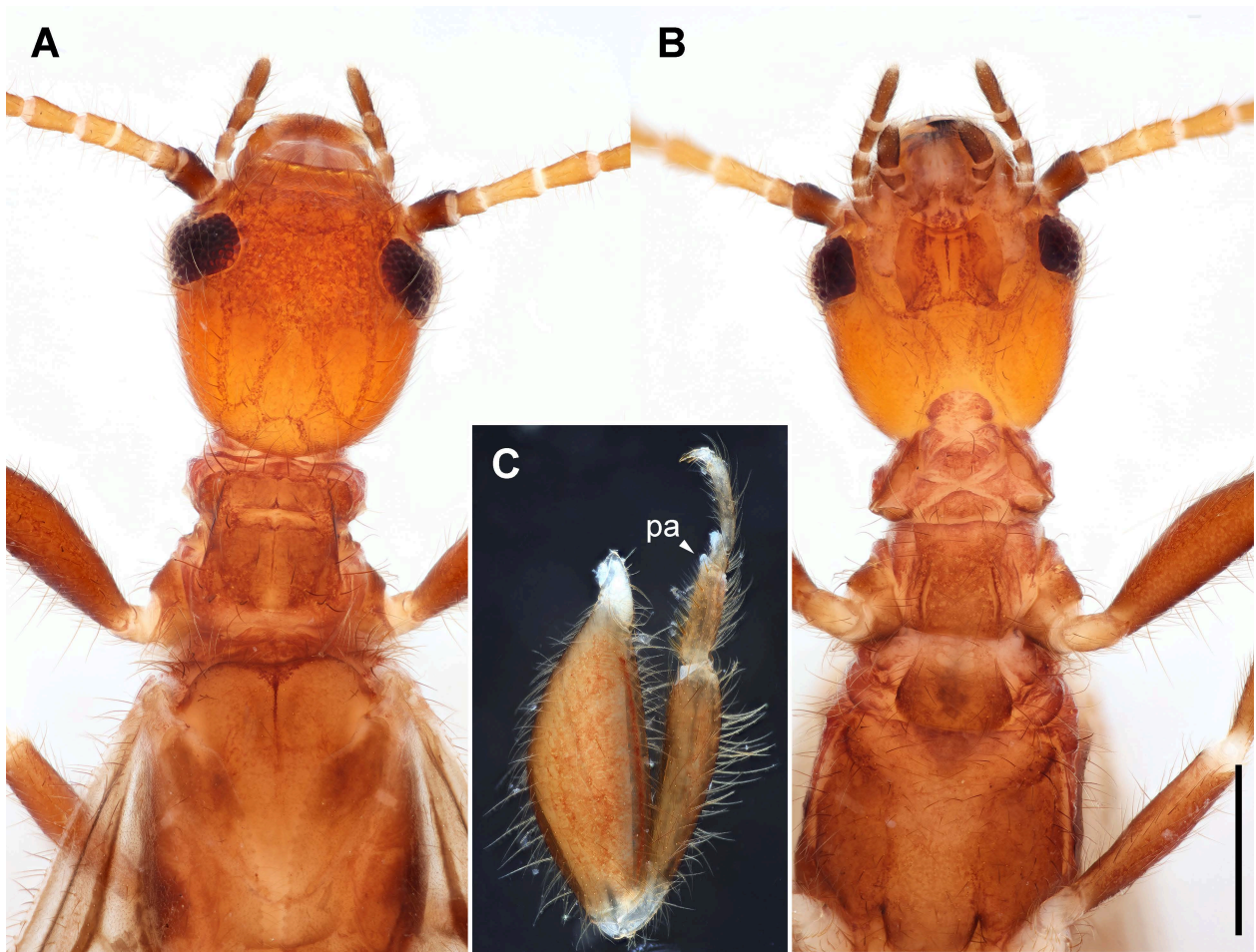


FIGURE 3. *Aposthonia limushana* **sp. nov.**, male holotype: **A** head and thorax, dorsal view **B** head and thorax, ventral view **C** right hind leg, dorsal view. Scale bar = 0.5 mm. **pa** (papilla).

Key to adult males of *Aposthonia* species from China

- 1 10RP apex with distinct outer hook.....*A. borneensis*
- 10RP apex lacking outer hook.....**2**
- 2 10 LP apex with outer hook.....*A. guizhouensis*
- 10 LP apex unmodified, lacking outer hook.....*A. limushana* **sp. nov.**

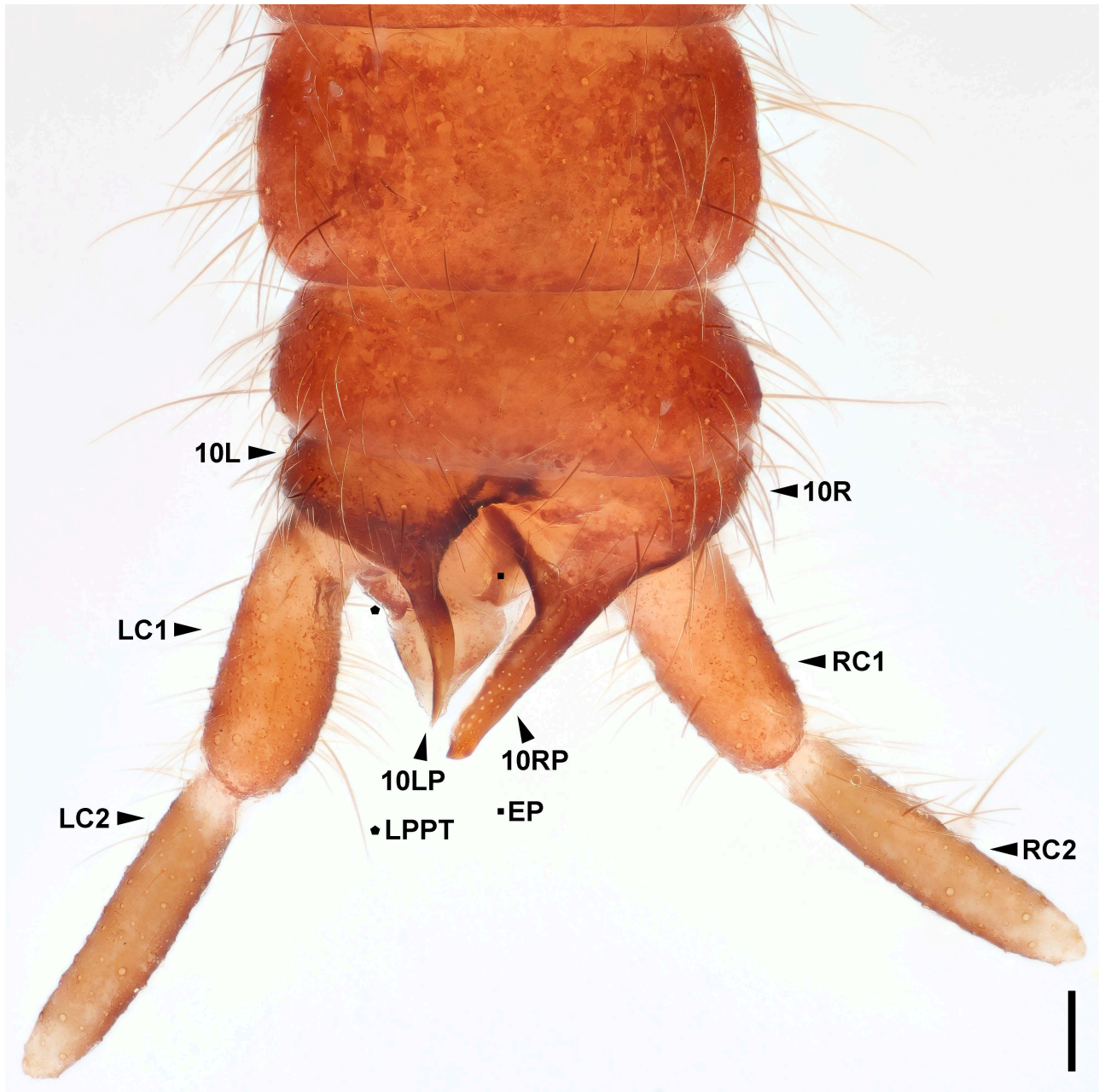


FIGURE 4. *Aposthonia limushana* sp. nov., male holotype: terminalia, dorsal view. Scale bar = 0.1 mm. **10L/R** (left/right hemitergite of abdominal segment 10) **10LP/RP** (left/right hemitergal process) **EP** (epiproct) **LPPT** (left paraprot) **LC1/2** (first/second segment of left cercus) **RC1/2** (first/second segment of right cercus).

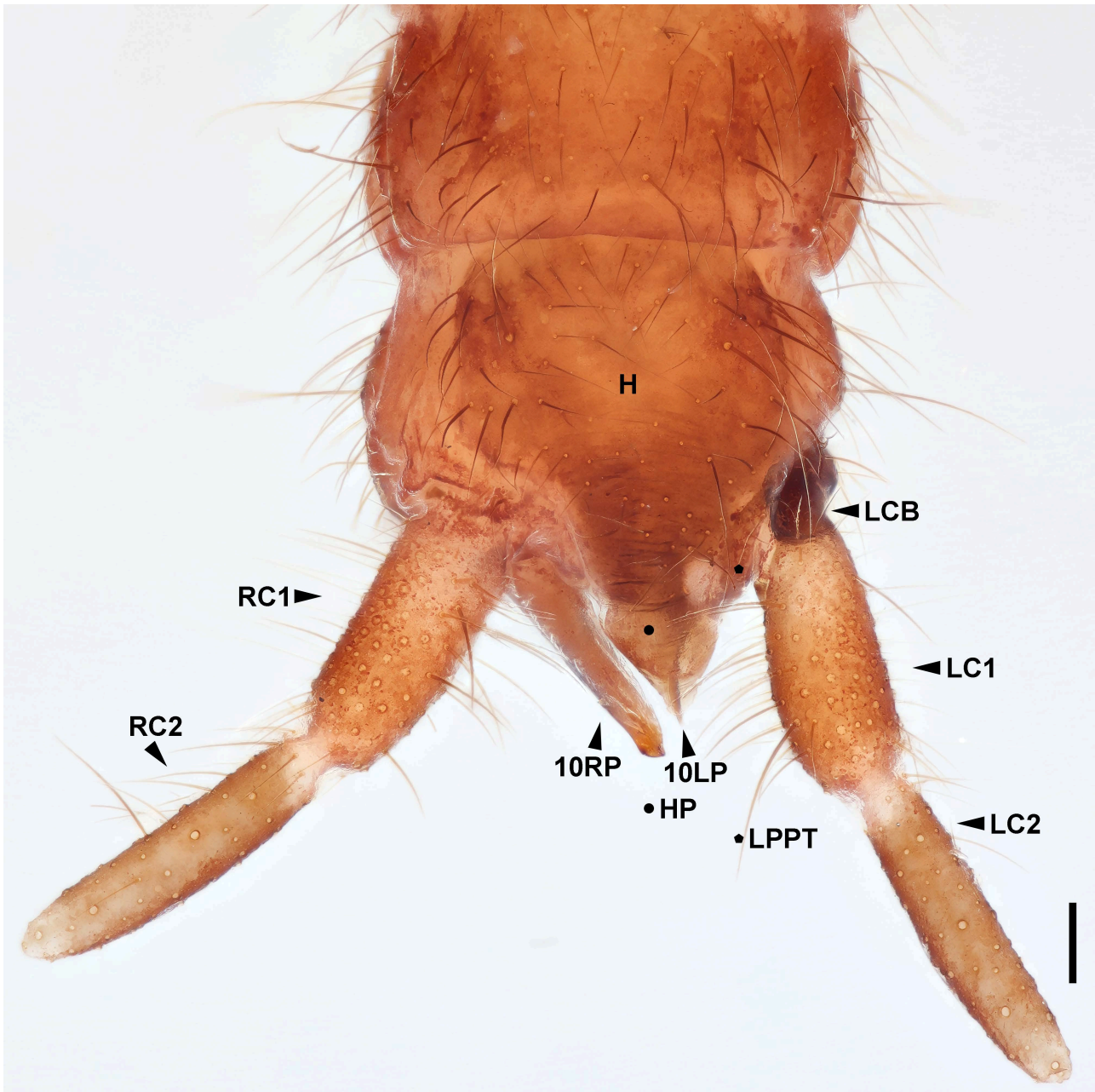


FIGURE 5. *Aposthonia limushana* sp. nov., male holotype: terminalia, ventral view. Scale bar = 0.1 mm. **10LP/RP** (left/right hemitergal process) **H** (hypandrium) **HP** (hypandrial process) **LPPT** (left paraproct) **LCB** (left cercus-basipodite) **LC1/2** (first/second segment of left cercus) **RC1/2** (first/second segment of right cercus).

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● Additional information

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