

A new species of *Brahmina* Blanchard (Coleoptera: Scarabaeidae: Melolonthinae) from northeastern China

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Abstract: *Brahmina* Blanchard, 1851 is a minor genus in the Melolonthinae and is comprised of 76 species assigned into three subgenera. Here a new species of *Brahmina* (*Brahmina*) is described as new to science from Liaoning: *Brahmina haitangensis* sp. nov. Sexual dimorphism is discovered in *Brahmina* for the first time: clypeal notch absent in male but present in female; male antennal club longer than the total length of the third to the seventh antennomeres, while the female antennal club shorter than those antennomeres; both metaspurs slender in male, but the lateral metaspur expanded in female.

Key words: cockchafer; sexual dimorphism; taxonomy; Liaoning

中国东北地区婆媳金龟属一新种（鞘翅目：金龟科：鳃金龟亚科）

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摘要：婆媳金龟属是鳃金龟亚科 1 个较小的属，全世界已知 76 种，分为 3 亚属。本文描述了采自辽宁的婆媳金龟亚属 1 新种，海棠婆媳金龟 *Brahmina haitangensis* sp. nov.。报道了海棠婆媳金龟的性二型现象：雌虫唇基末端轻微凹陷，雄虫上唇无凹陷；雄虫触角鳃片部大于触角第 3–7 节之和，雌虫触角鳃片部短于该长度；雄虫后足胫节距均细长，雌虫后足胫节外侧距膨大。

关键词：鳃金龟；性二型；分类；辽宁

Introduction

The cockchafer genus *Brahmina* Blanchard, 1851 belongs to Rhizotrogini of Melolonthinae, and is mainly distributed in the Palearctic and Oriental realm (Medvedev 1951). *Brahmina* is a minor genus comprising 76 species, 15 of which were discovered in Northeast Asia (Löbl & Smetana 2006). Adults of *Brahmina* are reported to consume plant leaves (Chandel *et al.* 1995; Pathania & Chandel 2016), while their larvae usually consume plant roots or tubers (Gupta & Gavkare 2014; Jia *et al.* 2020).

Brahmina were further subdivided into three subgenera, *Anoxiella* Reitter, 1902, *Brahminella* Medvedev, 1951, and *Brahmina* Blanchard, 1851, composed of two, three, and

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71 species, respectively. *Brahmina* (*Anoxiella*) are peculiar for their each elytra furnished with prominent longitudinal ridges. *Brahmina* (*Brahminella*) are remarkable for the metafemur completely punctured and covered with straight setae (Medvedev 1951). With respect to *Brahmina* (*Brahmina*), however, the species delimitation and character descriptions are far more ambiguous, even lacking a photograph in previous descriptions.

In this study, a new species of *Brahmina* (*Brahmina*) was discovered and is described from Liaoning, northeastern China. Detailed morphological characters, key to the sympatric species, and sexual dimorphism of this species are provided.

Material and methods

Live adults were collected at Haitang Mountain (N41°53'8", E121°46'47"), Fuxin City, Liaoning Province of northeast China in early August of 2021 and 2023. Type specimens are preserved at the Entomological Museum of Shenyang Agricultural University (SYAU). The genitalia were dissected and observed under a Leica EZ4HD Stereoscopic Zoom microscope. Male genitalia were macerated in cold 5% KOH solution for 30 min and then rinsed with distilled water. Photographs of adult specimens were taken with an Olympus OM-D E-M5 II digital camera (Olympus, Tokyo, Japan). The micrographs of anatomical details were taken using a Nikon SMZ 25 Stereoscopic Zoom microscope (Nikon, Tokyo, Japan). All figures were adjusted and assembled with Adobe Photoshop 2020.

The following abbreviations are applied in the figure notes: C — cardo; DR — dorsal ridge; En — endophallus; Ga — galea; IL — incisor lobe; L — lacinia; LC — lateral corner; M — membrane; MC — mesal corner; ML — molar lobe; MP — maxillary palpi; N — notch; P — protuberance; Pb — phallobase; Pm — parameres; Pt — prostheca; R — ridge; S — stipe; VB — ventral branches; LS — lower spur.

Taxonomy

Brahmina haitangensis Zhang sp. nov.

Description. Holotype. Length 15.3 mm. Width 7.4 mm (Figs 1A–C). Paratypes. Lengths 14.5–15.9 mm. Width 7.1–8.4 mm (Figs 1D–F).

Head. Frons with a weak transverse ridge, disrupted in the middle (Fig. 3A). Clypeus with dense punctures and setae. Antenna 10-segmented; antennal club composed of 3 antennomeres.

Mouthparts. Labrum with an apical protuberance in the middle (Figs 2A, 2B). Mandible with a visible prostheca between incisor and molar region (Figs 2C–E). Labium with an apical notch in the middle. Labial palp 3-segmented (Fig. 2F). Maxilla with three teeth on galea; maxillary palp 4-segmented (Fig. 2G).

Thorax. Pronotum nearly trapezoidal, with prominent teeth on the arched lateral edge, and with numerous setae on dorsal surface (Fig. 3B). Pronotum dense microtrichia on anterior and posterior margin (Figs 3A, 3D). Scutellum nearly triangular, with numerous punctures (Fig. 3D). Thorax hirsute on ventral surface. Each elytron with five weak ridges and short setae (Figs 1A, 1D).

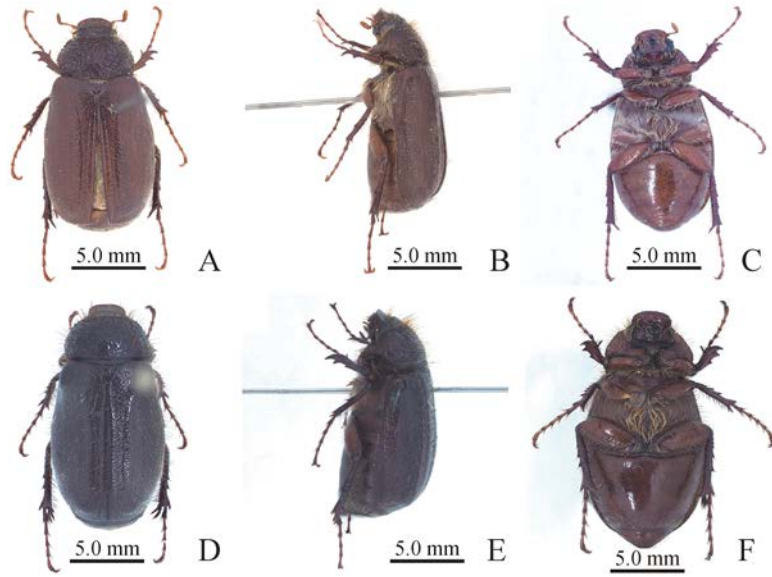


Figure 1. *Brahmina haitangensis* sp. nov., ♂ (A–C), ♀ (D–F). A, D. Dorsal views; B, E. Lateral views; C, F. Ventral views.

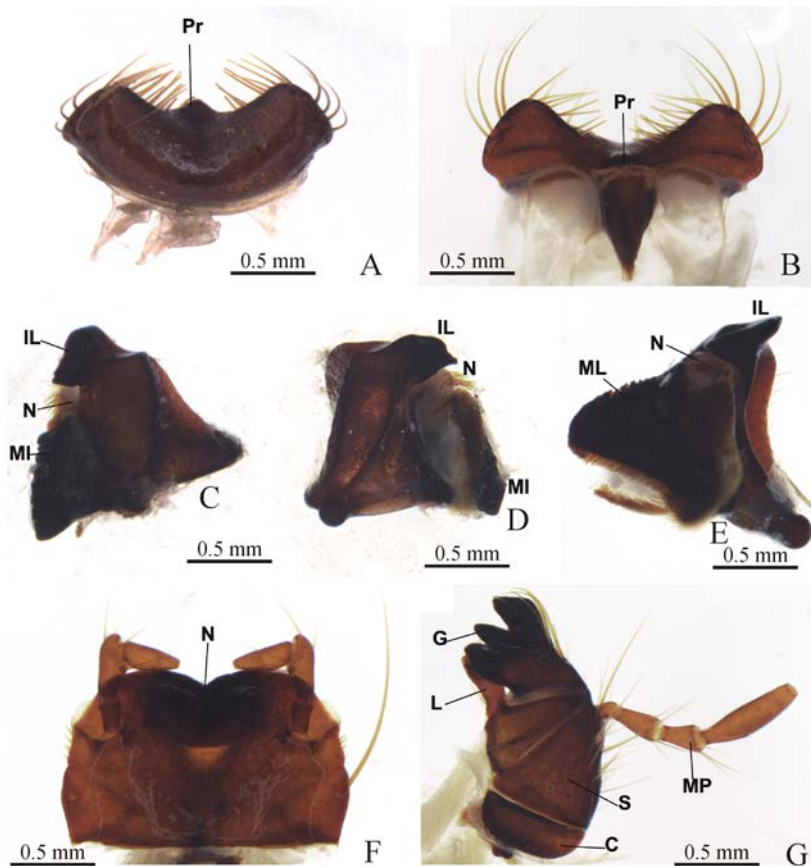


Figure 2. Mouthparts of *Brahmina haitangensis* sp. nov. A. Labrum; B. Epipharynx; C–E. Right mandible, ventral (C), dorsal (D) and lateral (E) views; F. Labium, ventral view; G. Left maxilla, ventral view.

Leg. Tarsus slightly longer than tibia on thoracic legs. Protibia with three teeth; distal tooth enlarged (Fig. 3E). Tarsus bifurcated, with the distal tooth slender and longer (Fig. 3C). Mesotibia with seven teeth on lateral surface, nine teeth on dorsal surface (Fig. 3F). Metatibia with seven teeth laterally and eight teeth dorsally (Fig. 3G). Metafemur with a row of setae on ventral surface (Fig. 3H).

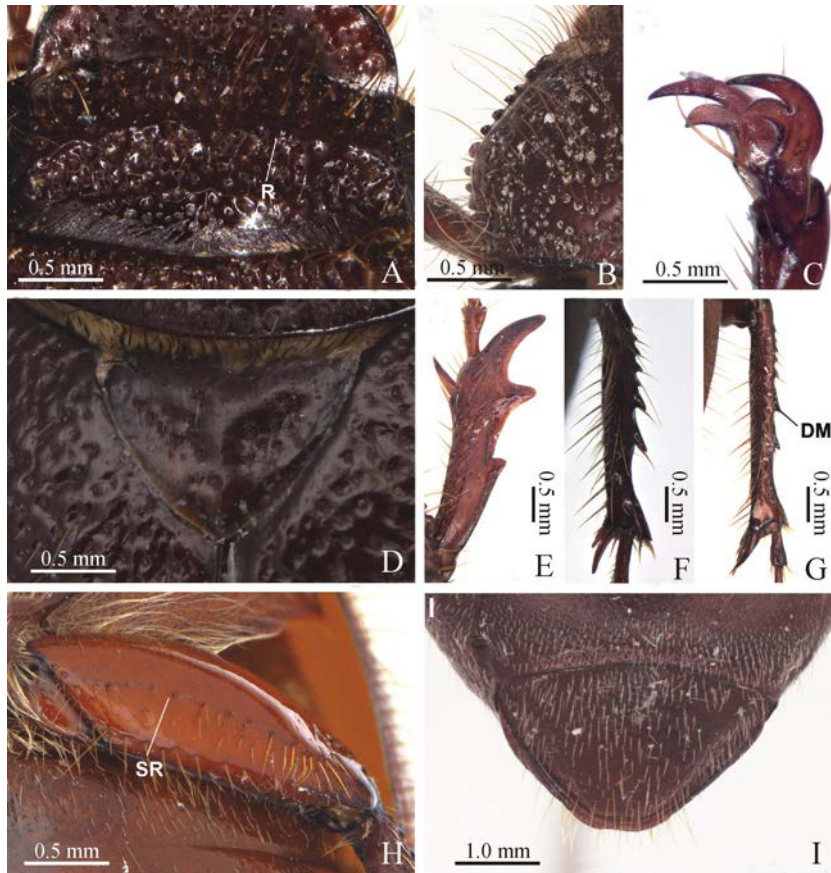


Figure 3. Thorax, thoracic legs, and pygidium of *Brahmina Haitangensis* **sp. nov.** A. Frons; B. Left part of pronotum; C. Claws of proleg; D. Scutellum; E. Right protibia, dorsal view; F. Right mesotibia, dorsal view; G. Right metatibia, dorsal view; H. Left metafemur, ventral view, arrow shows setal row; I. Pygidium.

Abdomen. Sternites with short setae on the anterior four abdominal segments, and with comparatively longer setae on fifth and sixth segments. Pygidium exposed and terminally rounded, with numerous setae and punctures.

Male genitalia. Phallobase equal in length with parameres; with a sulcus medially on dorsal surface. Parameres apically expanded, with a pair of hook-shaped ventral branches, and a pair of rudimentary dorsal branches. Each ventral branch with an acute lateral corner and an acute mesal corner (Fig. 4).

Sexual dimorphism. Clypeal notch absent in male (Fig. 5A), present in female (Fig. 5B). The male antennal club is longer than the total length of the third to the seventh antennomeres (Fig. 5C), while the female antennal club is shorter than those antennomeres

(Fig. 5D). Both metaspurs slender and acute in male (Fig. 5E), while the lateral metaspur expanded in female (Fig. 5F).

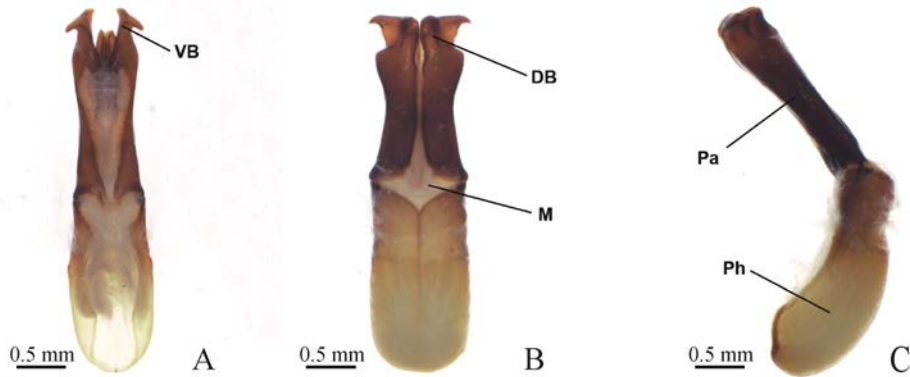


Figure 4. Male genitalia of *Brahmima haitangensis* sp. nov. A. Ventral view; B. Dorsal view; C. Lateral view.

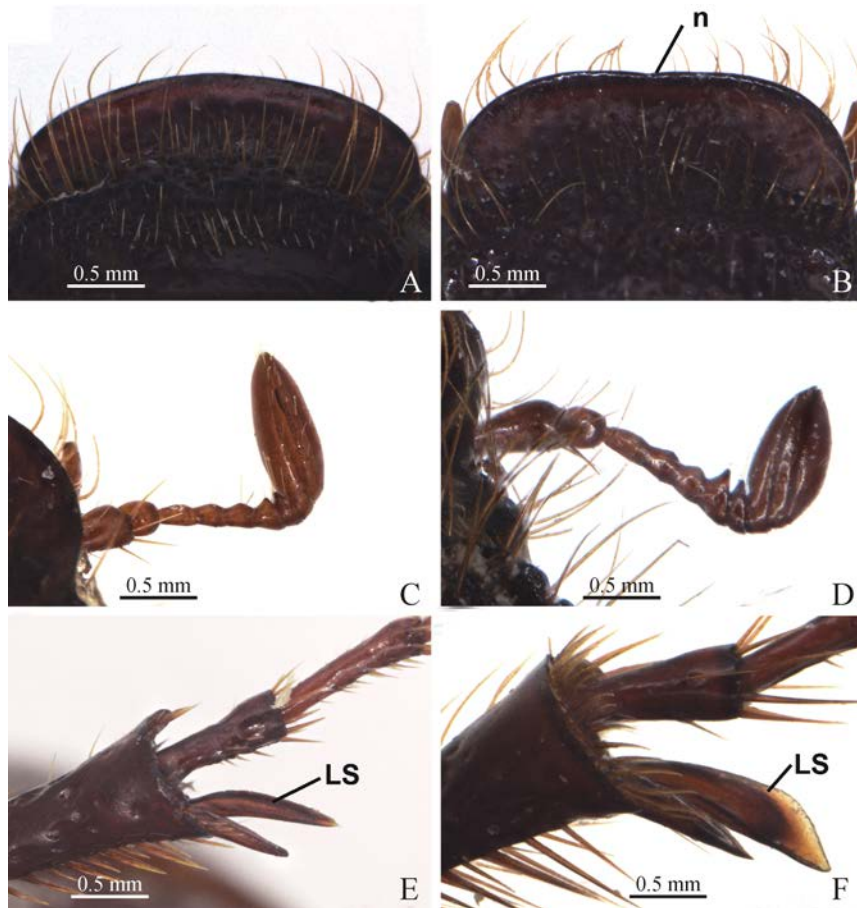


Figure 5. Sexual dimorphism of *Brahmima haitangensis* sp. nov. A, C, E. Male; B, D, F. Female. A, B. Clypeus; C, D. Right antenna; E, F. Spurs of metatibia.

Holotype. ♂, **China**, Liaoning, Fuxin City, Mt. Haitang, 121°46'47" E, 41°53'8"N, 04-VIII-2021, coll. Lu JIANG. **Paratypes.** 2♀, **China**, Liaoning, Fuxin City, Mt. Haitang, 04-VIII-2021, coll. Lu JIANG. 2♂2♀, **China**, Liaoning, Fuxin City, 02–03-VIII-2023, coll. Ruiyu ZHANG.

Etymology. The specific epithet “haitangensis” refers to the locality of the holotype.

Remarks. This new species is similar to *B. crenicollis* (Motschulsky, 1854) but differs from the latter by the following characters: frontal ridge is mesally disrupted; ventral branch of paramere with an acute mesal corner and an acute lateral corner.

Key to species of *Brahmina* from northeastern Asia

1. Elytra with prominent ridges 2
- Elytra without prominent ridges 3
2. Lateral teeth on pronotum similar in shape *B. senscens* (Fivaldszky)
- Lateral teeth on pronotum different in shape *B. potanini* (Semenov)
3. Setae on metatibia arranged in a line 4
- Setae on metatibia randomly arranged 7
4. Distal tooth of protibial shorter than the basal tarsomere 6
- Distal tooth of protibial longer than the basal tarsomere *B. agnella* (Faldermann)
5. Pronotum widest at the middle *B. faldermanni* Kraatz
- Pronotum widest at the posterior half *B. rubetra* (Faldermann)
6. Distal branch shorter than basal branch on claw *B. sakishimana* Nomura
- Distal branch longer than basal branch on claw 7
7. Frons with a pair of protuberances 8
- Frons without a pair of protuberances 10
8. Lateral teeth on pronotum similar in shape 9
- Lateral teeth on pronotum different in shape *B. sedakovi* (Mannerheim)
9. Basal branch of claw truncated distally *B. amurensis* Brenske
- Basal branch of claw curved distally *B. serricollis* (Motschulsky)
10. Horizontal ridge on frons complete *B. darcisi* Reitter
- Horizontal ridge on frons interrupted mesally 11
11. Scutellum with longitudinal ridge *B. ruida* Zhang & Wang
- Scutellum without longitudinal ridge 12
12. Posterior corner of pronotum nearly a right angle *B. wutaiensis* Zhang & Wang
- Posterior corner of pronotum nearly an obtuse angle 13
13. Protibial with a row of setae on dorsal surface 14
- Protibial without linearly-arranged setae on dorsal surface *B. mandarina* Reitter
14. Protibial spur opposite to the distal notch of tibia *B. crenicollis* (Motschulsky)
- Protibial spur opposite to the mesal tooth of tibia *B. haitangensis* **sp. nov.**

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