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**First description of the female of *Lamiogethes hastipenis* Liu et al., 2020 (Coleoptera: Nitidulidae, Meligethinae)**Meike LIU<sup>1,\*</sup>, Xinyue WANG<sup>1</sup>, Simone SABATELLI<sup>2</sup>, Paolo AUDISIO<sup>2</sup><sup>1</sup> College of Agriculture, Yangtze University, Jingzhou, Hubei, 434025, China – liumk2009@126.com; 491390130@qq.com;

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**Abstract**

In this study, the female of *Lamiogethes hastipenis* Liu, Yang, Huang, Cline, Sabatelli & Audisio, 2020, is reported for the first time, based on recently collected specimens from its type locality in Shennongjia National Forest Park, Hubei Province, China. Dorsal and ventral pictures of both male and female, along with pictures of their genitalia, are provided. The larval hostplant of *L. hastipenis* (almost certainly in the family Lamiaceae) still results unknown.

**Key words:** pollen beetles, ovipositor, Lamiaceae, China, Shennongjia National Forest Park.**Introduction**

The genus *Lamiogethes* (Coleoptera: Nitidulidae: Meligethinae) was established by Audisio and Cline (Audisio et al. 2009). Approximately 125 species are currently known in this genus, which are divided into more than ten species groups, mainly distributed in the Palearctic, Afro-tropical, and Madagascan Regions, and in the Indian sub-continent (Audisio 2012; Lasoń & Ghahari 2013; Audisio et al. 2014a; Chen et al. 2015; Liu et al. 2017, 2020). In China, there are about 50 species in this genus (Audisio et al. 2005, 2009; Chen et al. 2015; Liu et al. 2017, 2020, and unpublished data). The larvae of most species in this genus are associated with the flowers of plants of the Lamiaceae family, although members of a peculiar species-group (thus far known from SW China, Indian subcontinent, and Socotra Island) have demonstrated to be associated with flowers of the unrelated Euphorbiaceae (Audisio 2012). Recently, some female specimens of *Lamiogethes hastipenis* Liu, Yang, Huang, Cline, Sabatelli & Audisio, 2020 (described from the Shennongjia Nature Reserve, Hubei Province, China, and thus far known only based on two males), were collected for the first time in the type locality of this species. These new materials therefore allowed the description of its unknown female and of its ovipositor.

**Materials and methods**

We performed dissection and characterization studies under Olympus SZ61 stereomicroscope. Color images were captured using a Leica DFC450 digital colour microscope camera mounted on a Leica microscope M205A. Images were later processed in package *LAS* (ver. 4.3, see <https://www.leica-microsystems.com>) and Photoshop CS 2019 software.

Acronyms employed in morphological measurements: refer to Fig. 3 and Table 1 in Audisio et al. (2014b).

The acronyms for museum institutions are as follows:

**CAR-MZUR:** P. Audisio's collection, currently housed in the Zoological Museum, Sapienza Rome University, Rome, Italy

**NWAFU:** Entomological Museum of the Northwest A&F University, Yangling, China

**YZU:** Yangtze University, Jingzhou, Hubei, China

**Results and Taxonomy**

*Lamiogethes hastipenis* Liu, Yang, Huang, Cline, Sabatelli & Audisio, 2020

*Lamiogethes hastipenis* Liu, Yang, Huang, Cline, Sabatelli & Audisio, 2020: 63–76.

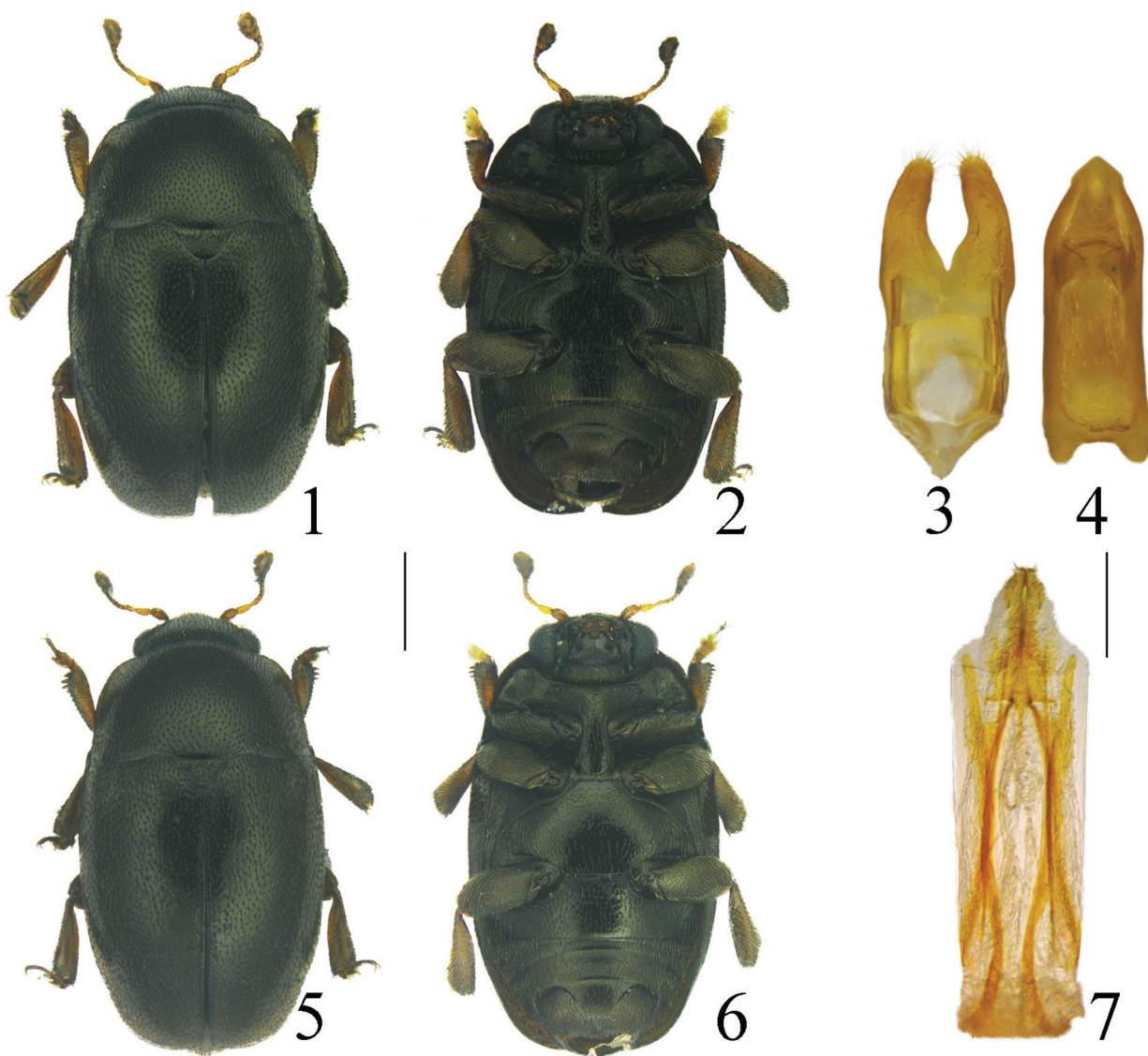
## Description

**Male.** The male specimens collected in this study are fully consistent with the holotype in color and overall body morphology (Figs 1–2); the male genitalia are defined by an elongate tegmen with subparallel lateral margins in their posterior half and a deep medial incision (Fig. 3); the median lobe of the aedeagus exhibits a characteristic pre-distal enlargement, terminating in a sword-tip-shaped apical structure (Fig. 4), typical of all species of the complex including *Lamiogethes ancestor* (Kirejtshuk, 1980) and allied taxa (Liu et al. 2020).

**Female.** Size: body length 2.19 mm, width (maximum elytral width) 1.23 mm.

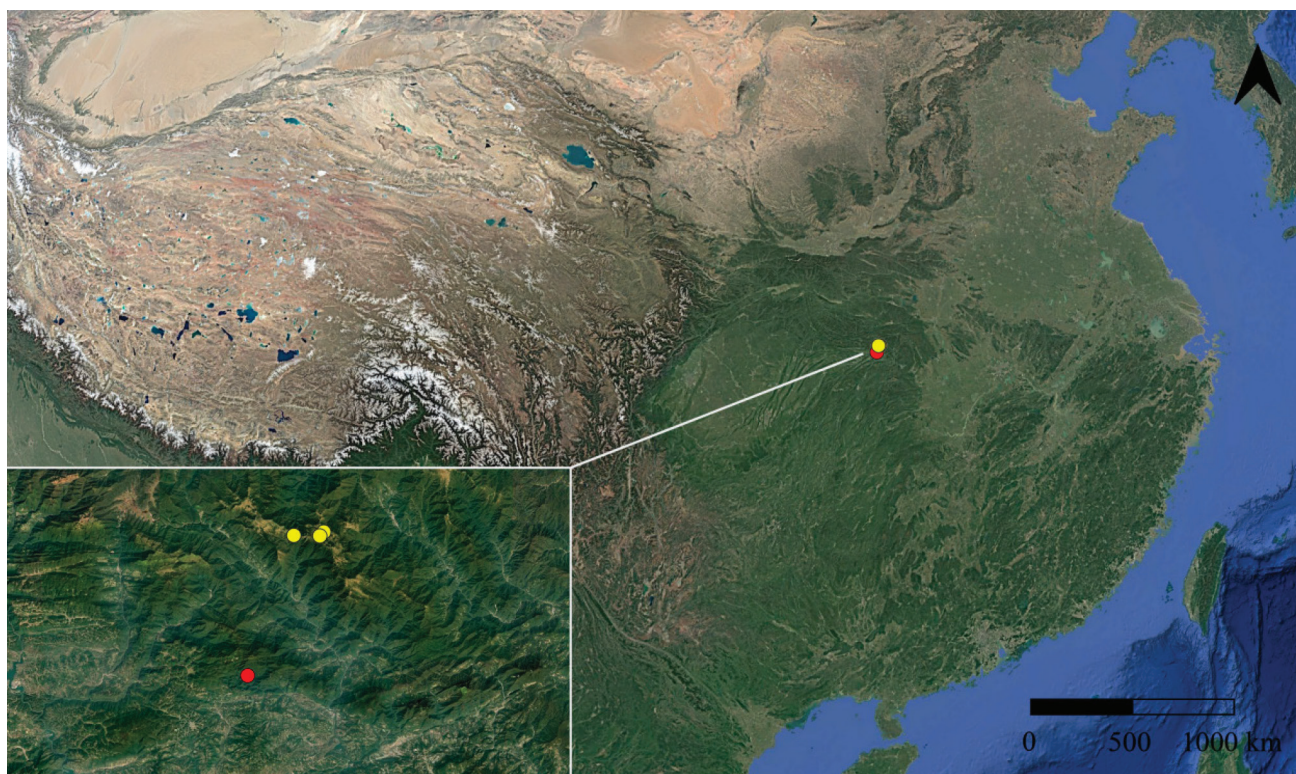
**Body color and pubescence.** Dorsal and ventral (Figs 5–6) surfaces of the body entirely black, with shiny tegument. Antennae pale brown to dark brown, with the first antennomere dark brown, second and third antennomeres pale brown. Legs brownish black. Pubescence golden, short, fine, uniformly developed, not covering the tegument. The length of each seta ca. 0.46× that of the second antennomere.

**Dorsal habitus.** Clypeus with truncate anterior margin. Dorsal punctures on pronotum rather fine and deep, each about 1.2–1.6 diameters apart; space between punctures smooth and shiny. Dorsal punctures on elytra slightly larger, about 1.2–1.7 diameters apart; space between punctures smooth and shining, with no traces of transverse strigosity (Fig. 5). Ratio LPR1/LELY = 0.44; ratio WPR1/LPR1 =



**Figs 1–7** – *Lamiogethes hastipenis* Liu, Yang, Huang, Cline, Sabatelli & Audisio, 2020. 1, Habitus of the male, dorsal view; 2, Habitus of the male, ventral view; 3, Tegmen; 4, Median lobe of the aedeagus; 5, Habitus of the female, dorsal view; 6, Habitus of the female, ventral view; 7, Ovipositor. Scale bars: 0.5 mm (Figs 1–2, 5–6); 0.2 mm (Figs 3–4, 7).





**Fig. 8** – Distribution map of *Lamiogethes hastipenis* (The red dot represents the data from Liu et al. 2020; the yellow dots represent the recently collected records, all of them being from the Shennongjia, Hubei, China).

1.92; ratio WPR2/LPR1 = 1.83; ratio WPR2/WPR1 = 0.95; ratio LELY/WELY = 1.06; ratio WPR1/WPRA = 1.30; ratio WPR1/WELY = 0.89; ratio WPR2/WELY = 0.85.

**Ventral habitus.** Combined outer edges of antennal grooves almost straight, parallel-sided along most of length. Prosternal process nearly as wide as length of antennal club, punctation fine and sparse. The female metaventricle differs from the male metaventricle in having only an indistinct shallow impression. Last visible ventrite simple (Fig. 6), without tubercles or ridges.

**Appendages.** Antennae rather short (Fig. 6), ratio ANLE/HWEA = 0.71; ratio CLLE/W10J = 1.51; ratio L03J/W03J = 2.27; ratio L03J/L02J = 0.68; ratio L03J/L04J = 1.81. Protibiae with a group of 3–4 asymmetrical predistal teeth, the second and third distinctly pointed, and the other 1–2 only moderately pointed. Front tarsi rather widened, ratio WFTA/LFTA = 0.29; ratio LETI/WITI ≈ 2.67. Metatibiae simple, not arcuately curved nor sinuate along their inner side (Fig. 6), ratio LPTI/WPTI ≈ 3.28.

**Ovipositor.** Peculiarly elongated, gonostyloids' apices markedly rounded and non-bifurcated, styli small and hardly visible, placed at the apex (Fig. 7), ratio STLE/DSIA ≈ 0.87; ratio STLE/CGOW ≈ 0.04; ratio GONL/CGOW ≈ 1.82. Combined basal portions of gonocoxites transverse, linear-shaped, apices laterally directed and bluntly pointed (Fig. 7). Ratio OVPL/GONL ≈ 2.90; ratio OVPL/body length ≈ 0.40.

**Taxonomic remarks.** As reported in introduction, this species was originally described based on two male specimens only, collected from Shennongjia National Forest Park, Hubei Province, central China (Liu et al. 2020). Recent supplementary collections at the type locality have enabled us to compare a series of *Lamiogethes hastipenis* specimens of both sexes (Figs 1–7).

Liu et al. (2020) placed *Lamiogethes hastipenis* in the *L. difficilis* species group due to its external body shape and color, markedly recalling those of a rare European member of this group, *L. buyssoni* (C.Brisout de Barneville, 1882). In this study, it was found that the ovipositor of *L. hastipenis* exhibits a blunt apex vaguely similar (Fig. 7) to that of *L. difficilis* (Heer, 1841) (see Audisio 1993). This provides additional evidence for the placement of *L. hastipenis* within the *L. difficilis* species group.

## Examined materials

**China:** Hubei, Shennongjia National Forest Park, Shennong peak Scenic Area, sparsely forested and bushy area below the trail gate (31°16'12"N 110°10'12"E), 2500 m, 16.vi.2017, Audisio & Liu lgt, beating flowering bushes of *Rubus rosifolius* Sm. (Rosaceae), 2 ♂♂ (NWAUFU, CAR-MZUR). **China:** Hubei, Shennongjia, Muyu Town (31°26'54"N 110°14'19"E), 2722 m, 5.vi.2024, Xinyue Wang & Bowen Tian lgt, on flowering *Fragaria* sp.

(Rosaceae), 10 ♂♂, 3 ♀♀ (YZU); **China:** Hubei, Shennongjia, Shennong Valley (31°27'8"N 110°16'57"E), 2693 m, 6.vi.2022, Longyan Chen & QiuHong Li lgt, on flowering *Cardamine* sp. (Brassicaceae), 2 ♂♂, 2 ♀♀ (YZU).

**Distribution.** Central China, Hubei Province (Shennongjia; Liu et al. 2020; this study) (Fig. 8).

**Bionomical notes.** Adults of this species have been thus far collected only from flowers of *Rubus* (Rosaceae), *Fragaria* (Rosaceae), and *Cardamine* (Brassicaceae) (Liu et al. 2020; this study), which evidently all represent only occasional food plants. The larval host plant, almost certainly to be found among the Lamiaceae, therefore remains unknown for now. Further research is then needed to clarify the relationships between the larvae of *Lamiogethes hastipenis* and their actual host plants.

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