

# Taxonomy of *Thermonotus* Gahan (Coleoptera: Cerambycidae: Lamiinae)

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**Abstract:** *Thermonotus nigripes* Gahan is recorded from Yunnan, China for the first time. Photographs of habitus, hind wing and genitalia of male, a catalogue and a key to the species of the genus are presented.

**Key words:** Chrysomeloidea; Monochamini ; taxonomy; key; catalogue

齿胸天牛属分类研究（鞘翅目：天牛科：沟胫天牛亚科）

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**摘要：**简述了齿胸天牛属 *Thermonotus* Gahan, 1888 的研究概况，提供了世界齿胸天牛属种名录及分种检索表。记述了中国 1 新纪录种：齿胸天牛 *Thermonotus nigripes* Gahan，补充描述了该种的形态特征，首次描述了后翅和雄性外生殖器特征。

**关键词：**叶甲总科；墨天牛族；分类；检索表；名录

## Introduction

The genus *Thermonotus* Gahan, belonging to the tribe Monochamini, subfamily Lamiinae, includes 9 species (Tavakilian & Chevillotte 2016), distributed mainly in Indonesia, Malaysia, Vietnam, Myanmar from Southeast Asia. Gahan (1888) first published *Thermonotus* as a new genus of Lamiinae with description of *T. nigripes*. Pic (1923) established *Gibbanamera* with description of *G. rubra*. Breuning (1944) revised *Gibbanamera* as a synonym of *Thermonotus*. The genus *Thermonotus* can be distinguished by the following characters: frons not trapezoidal or trapezoidal slightly; the scape long and slender; prosternal intercoxal process lower than fore coxae, rarely as high as fore coxae, but in this case, front edge extended and extended laterally over fore coxae; the mesosternal intercoxal process tuberculate more or less developed and truncated anterior; the mesotibiae without groove; sterna without erected hairs.

There has been one species recorded in China (Löbl & Sama 2010) before the present study, *T. ruber* distributed in Yunnan Province (Breuning 1944; Pu 1980; Huang 1987; Hua 2002; Li 2009; Löbl & Sama 2010). *T. nigripes* Gahan is recorded from Yunnan Province, China for the first time.

## Material and methods

The specimens examined are deposited in the following collections:

SWU—Insect Collection of Southwest University, Chongqing, China.

SYSU—Sun Yat-sen University, Guangzhou, China.

All images were captured using Canon 7D Camera with Helicon Intelligent Software For Photographers and edited with Adobe Photoshop CS5. Terminology follows Ślipiński and Escalona (2013).

## Taxonomy

### *Thermonotus* Gahan, 1888

*Thermonotus* Gahan, 1888: 399. Type species: *Thermonotus nigripes* Gahan, 1888, by monotypy.

*Gibbanamera* Pic, 1923:19. Type species: *Gibbanamera rubra* Pic, 1923, by monotypy. Synonymized by Breuning, 1944: 327.

Description. Body oval to elongated. The antennae rather slender, as long as body in females, 1/4 longer than body in males; the basal segments with scattered fringes beneath; the scape long and slender, with a closed cicatrix; 3rd segment distinctly longer than 4th; antennal tubercles raised and close adjacent. Eyes finely faceted, lower eye lobes small. The pronotum transverse, with two transverse grooves anterior and posterior respectively, in the middle of the lateral edge with a large and broad conical spine and slightly curved at the tip; the disc with blunt bumps; the prosternal intercoxal process as high as the fore coxae, greatly enlarged at anterior edge and extended laterally over fore coxae, very high at sides, truncated at front edge. The elytra elongate and convex, broadly rounded at apex. The mesosternal intercoxal process formed a smooth plate, broadly rounded and truncated vertically at front edge. Metasternum normally long. Legs not long, but very robust, clavate; mesotibiae without groove; the tarsi divaricated (Breuning 1944).

### Key to *Thermonotus* Gahan

- |  |                                   |
|--|-----------------------------------|
| 1. Elytra black or blue.....           | 2                                 |
| - Elytra red, at least in parts.....   | 3                                 |
| 2. Elytra blue.....                    | <i>T. coeruleipennis</i> Ritsema  |
| - Elytra black.....                    | <i>T. nigripennis</i> Ritsema     |
| 3. Elytra without patches at apex..... | 4                                 |
| - Elytra with patches at apex.....     | 6                                 |
| 4. Antenna 1–4 palely testaceous.....  | <i>T. cylindricus</i> Aurivillius |
| - Antenna black.....                   | 5                                 |
| 5. Abdomen black.....                  | <i>T. nigriventris</i> Breuning   |
| - Abdomen yellow.....                  | 7                                 |
| 6. Femora red.....                     | <i>T. ruber</i> (Pic)             |
| - Femora black.....                    | <i>T. nigripes</i> Gahan          |
| 7. Elytra mental blue at apex.....     | <i>T. rufipes</i> Breuning        |
| - Elytra black at apex.....            | 8                                 |
| 8. Abdomen red.....                    | <i>T. apicalis</i> (Ritsema)      |
| - Abdomen black.....                   | <i>T. pasteuri</i> Ritsema        |

**1. *Thermonotus apicalis* (Ritsema, 1881)**

*Cereopsius apicalis* Ritsema, 1881: 5; Breuning, 1944: 328, fig. 219. TL: Indonesia (Java). TD: National Natural History Museum, Leiden.

*Thermonotus oberthüri* Ritsema, 1896: 206. TL: Indonesia (Sumatra, Benkoelen). TD: National Natural History Museum, Paris.

*Thermonotus apicalis*: Breuning, 1944: 328.

*Thermonotus apicalis oberthüri*: Breuning, 1949: 7.

Distribution. Indonesia (Sumatra, Java).

**2. *Thermonotus coeruleipennis* Aurivillius, 1911**

*Thermonotus coeruleipennis* Aurivillius, 1911: 199. TL: Malaysia (Borneo, Matang). TD: National Natural History Museum, Paris.

Distribution. Brunei; Malaysia (Borneo); Philippines (Palawan Island).

**3. *Thermonotus cylindricus* Aurivillius, 1911**

*Thermonotus cylindricus* Aurivillius, 1911: 200. TL: Malaysia (Borneo, Limbang). TD: Naturhistoriska Riksmuseet, Stockholm.

Distribution. Malaysia (Borneo: Limbang).

**4. *Thermonotus nigripennis* Ritsema, 1896**

*Thermonotus nigripennis* Ritsema, 1896: 205; Breuning, 1944: 328; Vives, 2005: 7. TL: Brunei (Borneo). TD: National Natural History Museum, Paris.

Distribution. Brunei; Malaysia (Borneo: Matang); Philippines (Palawan Island).

**5. *Thermonotus nigriventris* Breuning, 1959**

*Thermonotus nigriventris* Breuning, 1959: 171. TL: Burma (Papun). TD: Naturhistorisches Museum Basel.

Distribution. Burma (Papun).

**6. *Thermonotus pasteuri* Ritsema, 1890**

*Thermonotus pasteuri* Ritsema, 1890: 248; Ritsema, 1891: 238, Pl. 10, fig. 5; Breuning, 1944: 328, fig. 220. TL: Indonesia (Island of Nias, west of Sumatra). TD: National Natural History Museum, Leiden.

*Thermonotus pasteuri* m. *nigroapicalis* Breuning, 1944: 328, fig. 221 [unavailable name].

Distribution. Indonesia (Sumatra).

**7. *Thermonotus ruber* (Pic, 1923)**

*Gibbanamera rubra* Pic, 1923: 19. TL: Vietnam (Tonkin). TD: National Natural History Museum, Paris.

*Thermonotus ruber*: Breuning, 1944: 327; Pu, 1980: 73, fig. 30; Huang, 1987: 682; Hua, 2002: 235; Li, 2009: 106; Löbl & Sama, 2010: 287.

**Specimens examined.** **China**, 1♂, Yunnan, Maguan, Nanlao, alt. 1000 m, 25-VI-1979, Guotai TAN leg., host plant. *Lindera communis* Hemsl; 1♀, Yunnan, Maguan, Xiaobazi, alt. 1250 m, 11-VII-1979, collector unknown (SWU); **Vietnam**, 1♂, Tonkin, Hoa Binh, A de cooman leg. (SYSU-Ce-003708); 1♀, Tonkin, Hoa Binh, A de cooman leg. (SYSU-Ce-003713).

Distribution. China (Yunnan); Vietnam (Tonkin: Hoa Binh).

**8. *Thermonotus rufipes* Breuning, 1958**

*Thermonotus rufipes* Breuning, 1958: 264. TL: Indonesia (Sumatra, Benkoelen). TD: National Natural

History Museum, Paris.

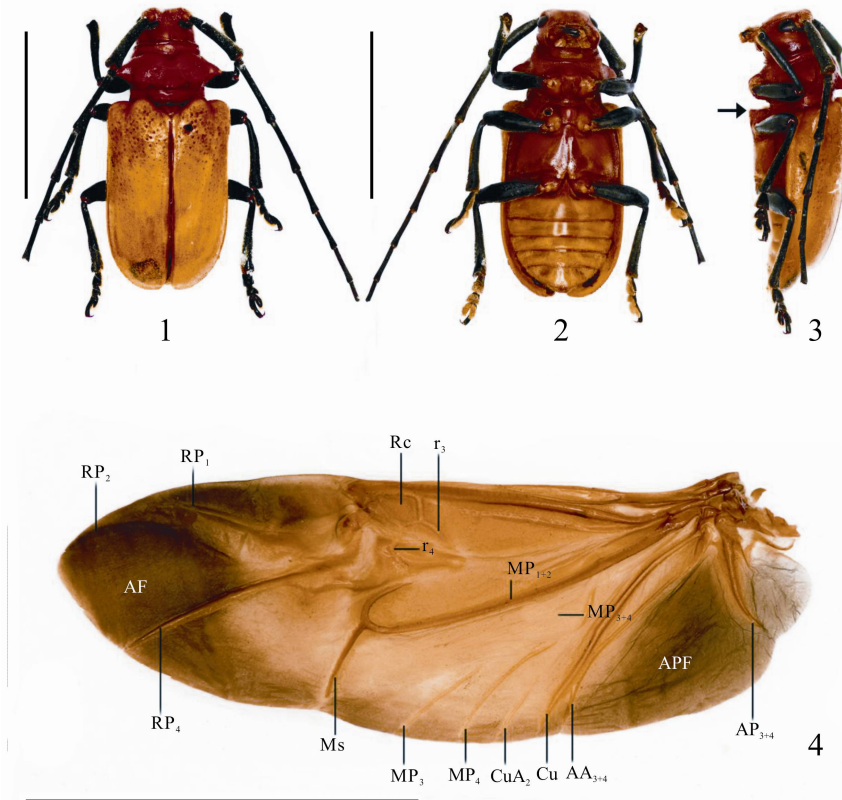
Distribution. Indonesia (Sumatra).

9. *Thermonotus nigripes* Gahan, 1888 (Figs. 1–3), new record to China

*Thermonotus nigripes* Gahan, 1888: 399; Breuning, 1944: 327; Rondon and Breuning, 1970: 447; Löbl and Sama, 2010: 287. TL: India. TD: unknown.

**Specimen examined.** China, 1♂, Yunnan, Cangyuan, VII-2007, Zhijin WANG leg. (SWU).

Distribution. China (Yunnan: Cangyuan); India (Sikkim: Darjeeling); Indonesia (Sunda Islands); Laos (Luang Prabang); Malaysia (Malacca: Penang).



Figures 1–4. *Thermonotus nigripes* Gahan, 1888. 1–3. Male habitus 1. Dorsal view; 2. Ventral view; 3. Lateral view; 4. Left hind wing (AF: Apical field; APF: Anal Posterior field; Rc: Radial cell; r3, r4: 3rd, 4th Radial cross-veins; RP: Radius Posterior; Ms: Medial spur; Mp: Medial Posterior; Cu: Cubital vein; CuA: Cubitus Anterior; AA: Anal Anterior; AP: Anal Posterior). Scale bars = 1 cm.

Male. (Figs. 1–3). Body length 16.5 mm, humeral width 7.2 mm. Body brick red, vertex and pronotum redder; apex of the mandibles, eyes, antennae (except for base of the scape), femora, tibiae and tarsi black; elytra and abdomen flavous; antennomeres 1–4 covered with long pale white pubescence beneath, 3rd and 4th antennae with a small white pubescence spot at base; scutellum closely covered with ochraceous pubescence; elytra covered with uneven ochraceous pubescence, elytra covered with extremely sparse black pubescence at apex.



Figures 5–13. *Thermonotus nigripes* Gahan, 1888, male genitalia. 5. Genitalia; 6–8. Tegmen; 9, 10. Parameres; 11–13. Penis. 5, 6, 12. Lateral view; 7, 9, 11. Ventral view; 8, 10, 13. Dorsal view. Scale bars = 1 mm.

Head almost smooth and impunctate. Front of the head with a narrow, mesial and raised line extending from the base of labrum up to the front margin of the prothorax; gena long; lower eye lobes small and shorter than gena; antennae distinctly longer than body. Pronotum transverse; lateral spines broad at base and almost regular cone, slightly curved backwards at apex; the disk raised between the lateral spines, the raised middle portion of the disk with a somewhat uneven surface and a median, posterior, feebly bifid process slightly punctured at each side. Scutellum almost regular triangular. Elytra almost parallel; the base of disk between the scutellum and the humerus projected forward to form a hump on each side of the scutellum; anterior half of the disk with sparse and irregular punctures and smaller towards apex; the humerus and apices of the disk rounded. Mesosternal intercoxal process tuberculate (Fig. 3). Ventral surface and legs impunctate.

Hind-wing. (Fig. 4) RA long, originating from the wing base, parallel with the anterior margin and forked into  $RA_{1+2}$  and  $RA_{3+4}$  at the terminal margin. These two forks meet again and Rc formed. Rc large.  $RP_1$ ,  $RP_2$  and  $RP_4$  present,  $RP_1$  and  $RP_4$  near wing margin,  $RP_2$  reach wing margin.  $r_3$  and  $r_4$  curved, prominent cross-vein braces. Ms is sclerotized, MP forks into  $MP_{1+2}$  and  $MP_{3+4}$ , but the fork obscured by a fold cutting across the base of  $MP_{3+4}$ .  $MP_{1+2}$

heavily sclerotized.  $MP_{3+4}$  forks into  $MP_3$  and  $MP_4$ .  $MP_3$ ,  $MP_4$ ,  $MP_{3+4}$  and  $CuA_2$  dissociated. The Anal vein forks into AA and AP at base.  $AA_{3+4}$  combined with Cu near posterior margin.  $AP_{3+4}$  reaches posterior margin.

Aedeagus. Tegmen (Figs. 5–10) curved, shorter than penis, parameres covered with setae apically, dorsal base with a dense setae, ventral apex with sparse setae; phallobase more than 2 times as long as parameres, abruptly expanded near middle and gradually constricted towards base. Penis (Figs. 11–13) curved and thick in profile; dorsal struts nearly 1/2 as long as penis; dorsal plate rounded apically; ventral plate longer than dorsal plate, bearing a small round projection.

**Specimen examined.** China, 1♂, Yunnan, Cangyuan, VII-2007, Zhijin WANG leg (SWU).

Distribution. China (Yunnan: Cangyuan); India (Sikkim Darjeeling: Singla); Indonesia (Sunda Islands); Laos (LuangPrabang); Malaysia (Peninsula of Malacca Penang).

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