

A new species of the genus *Trogoderma* Dejean, 1821 from China (Coleoptera: Dermestidae: Megatomini)

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Abstract. *Trogoderma gigantea* sp. nov. is described and compared to the other Chinese species of the genus. It is characterized by its entirely black elytra, shape of the antenna, male genitalia, female genitalia and larvae. A key to *Trogoderma* species found in China is provided.

INTRODUCTION

The genus *Trogoderma* Dejean, 1821 contains approximately 150 known species worldwide (Háva 2003, 2015, Herrmann & Háva 2010), 13 of which are known from the China. Of these, two were previously recorded from the Yunnan province of China (Chao 1966, Liu 1986, Zhang 1999, 2008). In the present paper we describe a new species and provide a key to all the species known from China.

MATERIAL AND METHODS

The following measurements were used (Herrmann & Háva 2010):

EL (elytra length) - linear distance from shoulder to apex of elytron

EW (elytra width) - maximum linear width of elytron

PL (pronotum length) - maximum length of pronotum measured from anterior margin to posterior margin

PW (pronotum width) - maximum linear width of pronotum

TL (total length) - linear distance from anterior margin of pronotum to apex of elytra

Photographs were captured by using Nikon E800 and Nikon SMZ1500 microscopes.

Deposition of type material:

JHAC Jiří Háva, Private Entomological Laboratory & Collection, Únětice u Prahy, Prague-West, Czech Republic;

SFUC Department of Insects, Southwest Forestry University, Kunming, China.

DESCRIPTION

Trogoderma gigantea sp. nov.

(Figs. 1-19)

Type material. Holotype (♂), allotype (♀): Kunming, Yunnan province, June 2014, in the seed of *Calotropis gigantea*., collected by Xiong, (SFUC). Paratypes (10 ♂♂, 6 ♀♀): the same data as holotype, (SFUC, JHAC).

Description. Male. Measurements (in mm): TL 2.6-3.5, PL 0.6-0.8, PW 1.4-1.7, EL 2.1-2.8, EW 1.4-1.9.

Body small, oval (Fig. 1), head and pronotum black, shiny, with sparse white setae on pronotum; elytra black with brown maculae; antennae brown; legs colour changing from dark femora to brown tarsus.

Head coarsely pitted, sparsely covered with long, erect, light brown setae; pits partially indistinct and somewhat blurred. Palpi light brown. Eye large. One ocellus present on frons. Antenna light brown, with golden-brown pubescence, 11 segments, slightly darkened towards tip, not forming distinct club; terminal segment large and cone shape, dark brown (Fig. 3). Pronotum shiny, sparsely and coarsely pitted, covered sparsely with sub-erect, long and light-brown setae; density of pits and pubescence increases towards lateral margins; lateral margin of pronotum smooth, toothless. Scutellum triangular, without pubescence and distinct pits.

Elytron shiny black (Figs. 1, 2) with three white transverse lines in a wave shape, and with white maculation at the end of the outer margin of the elytron, no longitudinal line connects the transverse lines. The black areas of elytron densely covered by backward-directed, dark brown setae, occasionally spattered with white and golden-brown setae. The white areas of elytron covered densely by backwardly pointing, white setae, spattered with golden-brown setae. First transverse line widest near the base of the elytra, forming incomplete basal loop in the middle of the line. On the legs, the colour changing from black to brown, from femur to brown digitus, covered with recumbent, light brown setae. Abdominal sternites black, ventrites covered by fine, coarsely pitted, sparsely covered with recumbent golden brown setae (Fig. 5).

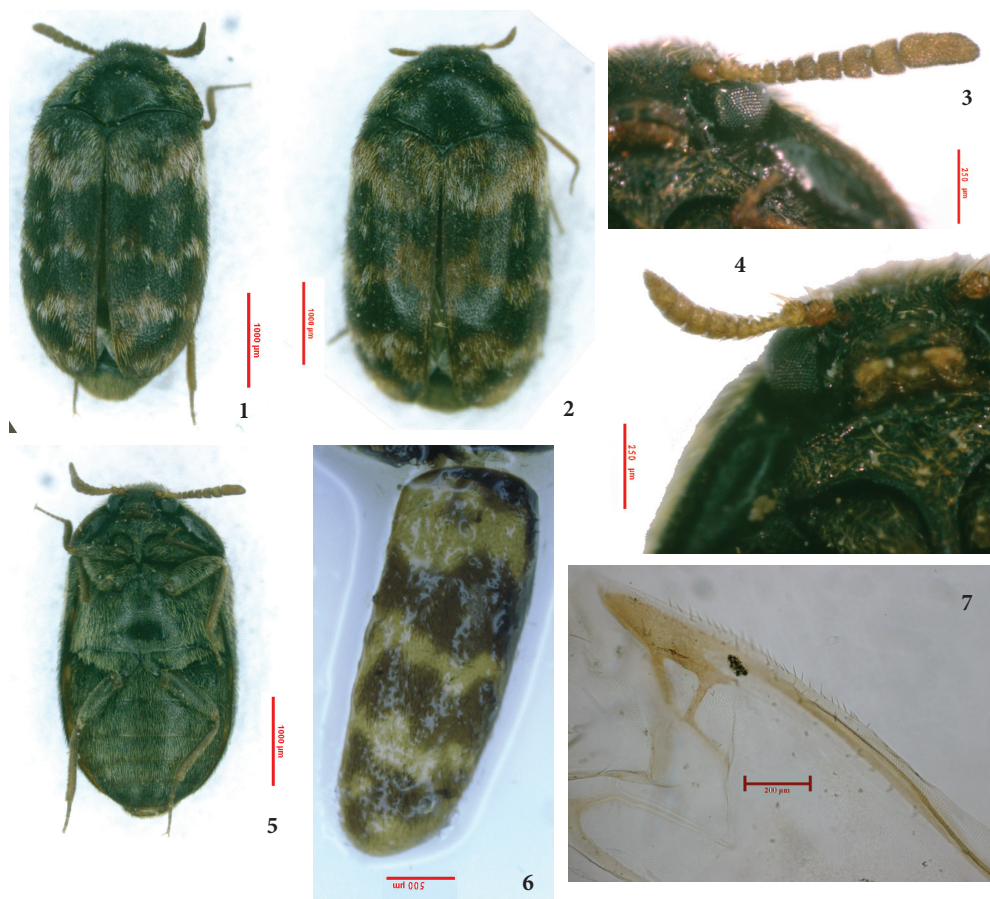
Male genitalia as in Figs. 8, 10.

Female. Measurements (in mm): TL 2.3-3.2, PL 0.6-0.76, PW 1.1-1.4, EL 1.8-2.6, EW 1.2-1.8 (Fig. 2).

Antenna was shorter than male, club 4-5-segmented, which forms a distinction between male and female specimens (Fig. 4).

Other external morphological characters as in male above. Female genitalia as in Figs. 9, 11.

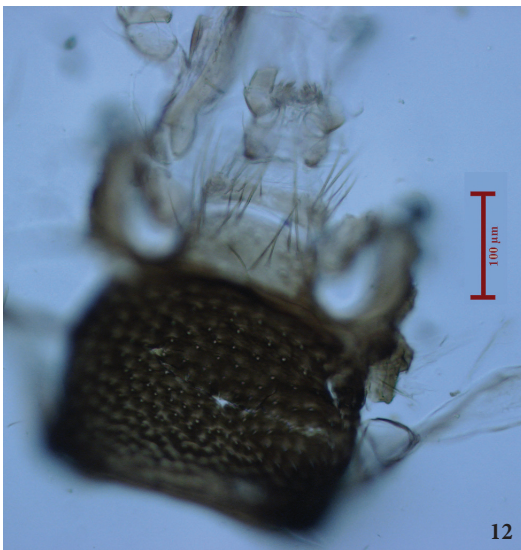
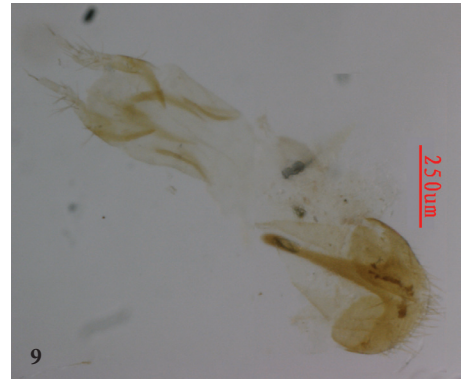
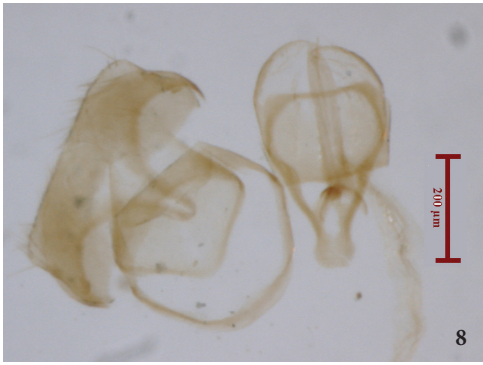
Description of larva. Dorsal surface uniformly creamy white to light brownish yellow or rarely brown (Fig. 13). Different lengths of nudisetae, spicisetae and hastisetae covering the body. In ventral view, the body is covered with soft spicisetae which are uniform in size. In dorsal view, there are long spicisetae covering the body laterally; short spicisetae and hastisetae erect and sparsely covering ossification zone of notum, the hastisetae becoming



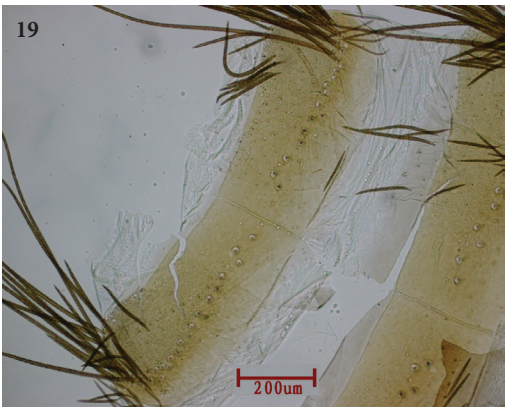
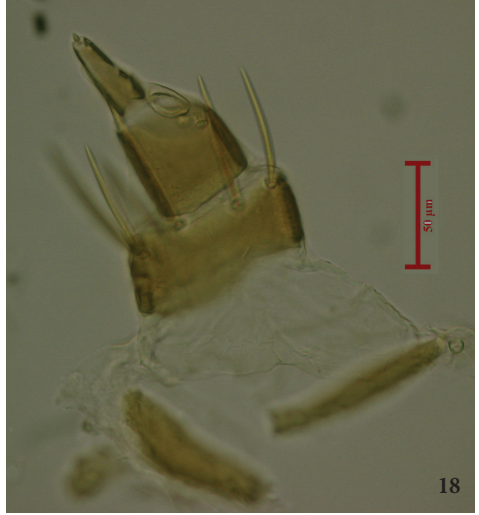
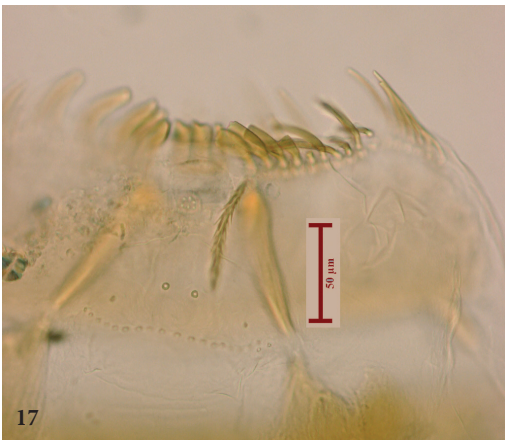
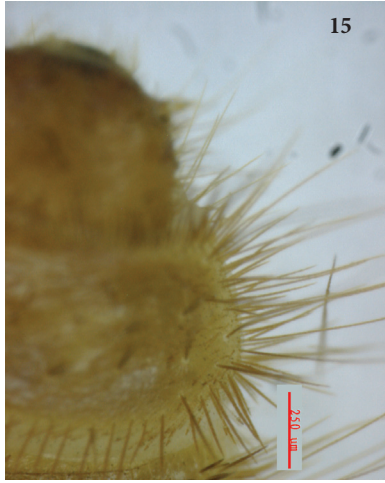
Figs. 1-7. *Trogoderma gigantea* sp. nov.: 1- male, dorsal view; 2- female, dorsal view; 3- antenna of male; 4- antenna of female; 5- male, ventral view; 6- male elytra from a strong solution of KOH; 7- morphology of hind wing.

gradually more numerous and longer from the head to the body end, thus the sixth to eighth abdominal tergite covered with long, thickly dotted hastisetae (Figs. 14, 15, 16). Antecostal suture exist in eighth abdominal tergum . Coxae without dark pigmentation.

Middle setae series of epipharyngeal margin consisting of two broad inner setae and two narrow outer setae about half as wide as inner setae, but outer setae were longer than inner setae; inner setae often with 'V'- or 'W'- shaped longitudinal grooves (Fig. 19). Six papillae in distal sensory cup of epipharynx (Fig. 17). Antenna as illustrated, generally consisting of three segments, but seemingly having a fourth or merely a large papilla (Fig. 18). Second segment is longest, and the basal segment is subequal in length to the third segment. There are setae inserted around the circumference of basal segments except on the outside of the antenna; single seta commonly present on second segment of mature individuals; one short spiciseta frequently present on basal segment of mature individuals; on most nudisetae, the length of basal segment is longer than that of second segment.



Figs. 8-13. *Trogoderma gigantea* sp. nov.: 8- male genitalia (with abdominal segment 9 and tergum of segment 10); 9- female genitalia; 10- male genitalia; 11- serrated sclerites from the bursa copulatrix of female genitalia; 12- mentum from male; 13- larva, dorsal view.



Figs. 14-20. *Trogoderma gigantea* sp. nov.: 14- larval tergum of segments 6-8 cover with spicisetae; 15- larval pronotum, with spicisetae and hastisetae; 16- hastisetae; 17- six distal papillae; 18- larval antenna; 19- middle setal series of epipharyngeal margin.

The larvae of *T. gigantea* sp. nov. are very similar to those of *T. granarium* Everst, 1898, *T. teukton* Beal, 1956 and *T. variabile* Ballion, 1878 but they can be distinguished by the setae of the basal antennal segments (Fig. 18), the antecostal suture on the eighth abdominal tergum (Fig. 20), characters on the epipharynx (Fig. 17) and the hastisetae (Fig. 16) distinction the others (Beal 2005, Liu 1986, ISPM 27: Annex 3, 2012).

Differential diagnosis. The new species differs from the other known Chinese species of *Trogoderma* in the entire elytra, and from all other known *Trogoderma* species in the shape of the antenna (Figs. 3-4), male genitalia (Figs. 8, 10), female genitalia (Figs. 9, 11) and other characters (Figs. 6, 7, 12).

Etymology. The species is named after the generic name of its recorded host, *gigantea*.

KEY TO CHINA SPECIES OF *TROGODERMA*

1. Antenna with 9, 10, or 11 segments. Male segments and club of 3-5, female 3-4 in number. *T. granarium* Everts, 1898
- Antenna with 11 segments. Male segments and club of 5-7 or less obvious, female 4-5 in number 2
2. Elytra black. Maculae on elytra not light-coloured, but only formed by light-brown setae 3
- Elytra brown or black. Integument with light-colored bands present on elytron, and with white or brown pale setae. 4
3. Antenna and legs dark black, male segments and club of 5-7 in number, female bursa copulatrix sclerite bow-shaped *T. glabrum* (Herbst, 1783)
- Antenna and legs dun, male segments and club of 5 in number, female bursa copulatrix sclerite straight *T. longisetosum* Chao et Lee, 1966
4. Lines clearly present either connecting submedian band with loop or subbasal band with submedian band *T. yunnaeensis* Zhang et Liu, 1986, *T. versicolor* (Creutzer, 1799), *T. inclusum* LeConte, 1854, *T. koenigi* Pic, 1954
- No longitudinal lines present in elytral integument 5
5. Male tenth abdominal tergite posterior margin nearly straight, the tergite forms a rectangle 6
- Male tenth abdominal tergite posterior edge with strong hump, the tergite triangular 7
6. Each side of male tenth abdominal tergite posterior edge covered by one bundle of long setae, female bursa copulatrix sclerite nearly rectangular *T. teukton* Beal, 1956
- Each side of male tenth abdominal tergite end with no bundles of long setae, female bursa copulatrix sclerite slightly curved *T. variabile* Ballion, 1878
7. Pronotum black, with light brown maculae. Abdomen brown. The distal portion of antennal club short *T. varium* (Matsumura et Yokoyama, 1928)
- Pronotum black. No light-colored maculae on pronotum, only light-brown setae present. The distal segment of antennal club long *T. gigantea* sp. nov.

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