

Review of the genus *Trogoderma* from Madagascar (Coleoptera: Dermestidae: Megatominae)

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Trogoderma sambiranum sp. n., *T. taomasinum* sp. n. and *T. trifasciatum* sp. n. from Madagascar are described, illustrated and keyed. *Trogoderma madecassum* (Pic, 1924) comb. n. is newly combined from the genus *Orphinus*. *Trogoderma seminigrum* Pic, 1915, *T. impressiceps* (Pic, 1915) and *T. madecassum* (Pic, 1924) are firstly illustrated.

Key words: Taxonomy, new species, new combination, Coleoptera, Dermestidae, *Trogoderma*, Madagascar.

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INTRODUCTION

The genus *Trogoderma* Dejean, 1821 contains 135 known worldwide species (Háva 2003, 2009), seven species known from the Afrotropical region (Mroczkowski 1968, Háva 2003, Háva & Herrmann 2008), from Madagascar only three species described by Pic (1915, 1924) and one species recently described by Háva & Herrmann (2008) are known. During the determination of some materials from the following collections, I found three new species from Madagascar.

MATERIAL AND METHODS

The size of the beetles or of their body parts can be useful in species recognition and thus, the following measurements were made:
total length (TL) - linear distance from anterior margin of pronotum to apex of elytra.

pronotal length (PL) - maximum length measured from anterior margin to posterior margin.

pronotal width (PW) - maximum linear transverse distance.

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

Specimens of the presently described species are provided with a red, printed label with text as follows: „HOLOTYPE *name of taxon* sp. n. Jiří Háva det. 2009”. Separate labels are indicated by slashes (\). Remarks of the author are found in square brackets [].

Moreover, following abbreviations refer to the collections, in which the examined material is deposited:

IJEC Ivo JENIŠ private collection, Náklo, Czech Republic;

JHAC author's collection;

MNHN Muséum National d'Histoire Naturelle, Paris, France (A. TAGHAVIAN);
 MRAC Royal Museum for Central Africa, Tervuren, Belgie (M. DE MEYER);
 MZPW Muzeum i Institut Zoologii PAN, Warszawa, Poland (D. MIERZWA);
 ZMUB Museum für Naturkunde der Humboldt Universität, Berlin, Germany (M. UHLIG).

Scale line (without figures 1, 5, 9, 13, 16, 18) = 0.25 mm.

RESULTS

Subfamily Megatominae
 Tribe Megatomini
 Genus *Trogoderma* Dejean, 1821

Trogoderma seminigrum Pic, 1915 (Figs. 1-4)

Trogoderma seminigrum Pic, 1915: 5.

Material examined: „Madagascar, [Taomasinum distr.], Maroantsetra, [49°44'E 15°26'S], 1962, J. Vadon lgt.“, 2 females, J. Háva det., (1 JHAC, 1 MRAC); „NE Madagascar, Fizono, ix.1959, J. Vadon lgt.“, 1 male, J. Háva det., (JHAC); „Hist.-Coll. (Coleoptera) Nr. 9231, *Trogoderma* spec., Madagascar Goudot“ [blue printed label], 4 spec., J. Háva det. (3 ZMUB, 1 JHAC); „Madagascar, Toliara env. [43°39'E 23°20'S], 23-27.11.1996, J. Stolarczyk lgt., 1 female; J. Háva det., (JHAC); „Madagascar, Ambodivangy, vii.1945,“ \ „*Trogoderma seminigrum* M. Mroczkowski det.“, 2 spec., J. Háva revid., (MZPW).

Remarks: There are not illustrations in the original description. The habitus, antennae and male genitalia are illustrated here for the first time.

Trogoderma impressiceps (Pic, 1915) (Figs. 5-8)

Phradonoma impressiceps Pic, 1915: 6.

Trogoderma impressiceps: Háva, 2003: 135 (new combination).

Material examined: „Madagascar, Antseranana distr., Sambiranum riv., Marovato vill. [48°55'E 12°40'S], 5-12.12.2001, J. Horák lgt.“, 1 male, J. Háva det., (JHAC); „Madagascar, [Toliara distr.], Tanandava [43°40'E 22°56'S] (lumiére), 1963-1964, G. Schmitz [lgt.]“, 2 females, J. Háva det., (1 MRAC, 1 JHAC); „Madagascar, Toliara distr., Ranohira (Isalo) [45°24'E 22°33'S], 8-11.2.1995, Ivo Jeniš lgt.“, 2 females, J. Háva det., (IJEC).

Remarks: There are not illustrations in the original description. The habitus, antennae and male genitalia are illustrated here for the first time.

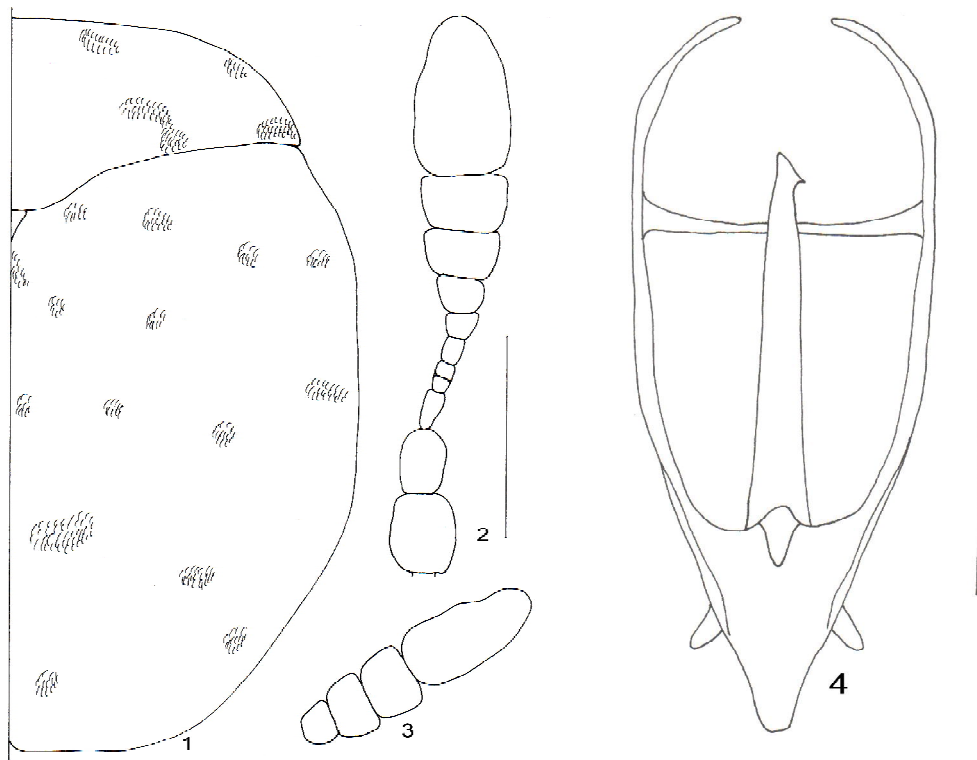
Trogoderma madecassum (Pic, 1924) comb. n. (Figs. 9-12)

Orphinus madecassus Pic, 1924: 3.

Type material. Holotype: *Orphinus madecassus* (male): „Tananarive [handwritten, label]“, (MNHN).

Material examined: Madagascar, Taomasinum distr., 1.5 km ESE of Amboditafonana, 48°44'E 17°27'S, 26-27.i.2001, O. Hovorka lgt., 2 males, 2 females, (JHAC); „Hist.-Coll. (Coleoptera) Nr. 9232, *Trogoderma* spec., Madagascar Goudot“ [blue printed label], 2 spec., (ZMUB); „Madagascar, Tamatave prov., Moramanga env. [48°13'E 18°56'S], 21-24.12.1996, I. Jeniš lgt.“, (2 IJEC, 1 JHAC); „Madagascar, Tamatave distr., Andasibe, 17-30.12.2001, J. Horák lgt.“, 17 spec., (JHAC).

Remarks: According to Pic's type material and study of recently collected material this species belong to the genus *Trogoderma*. There are not illustrations in the original description. The habitus, antennae and male genitalia are illustrated here for the first time.



Figs. 1 - 4. *Trogoderma seminigrum* Pic, 1915: 1: form of body dorsal aspect; 2: antenna of male; 3: antennal club of female; 4: male genitalia;

***Trogoderma trifasciatum* sp. n.**
(Figs. 13-15)

Type material. Holotype (male): „Madagascar, Isola Sainte Marie [Nosy Boraha I.] [49°50'E 17°05'S], foresta Kalalao, 3.x.1989“ [without collector]. Holotype deposited in (JHAC).

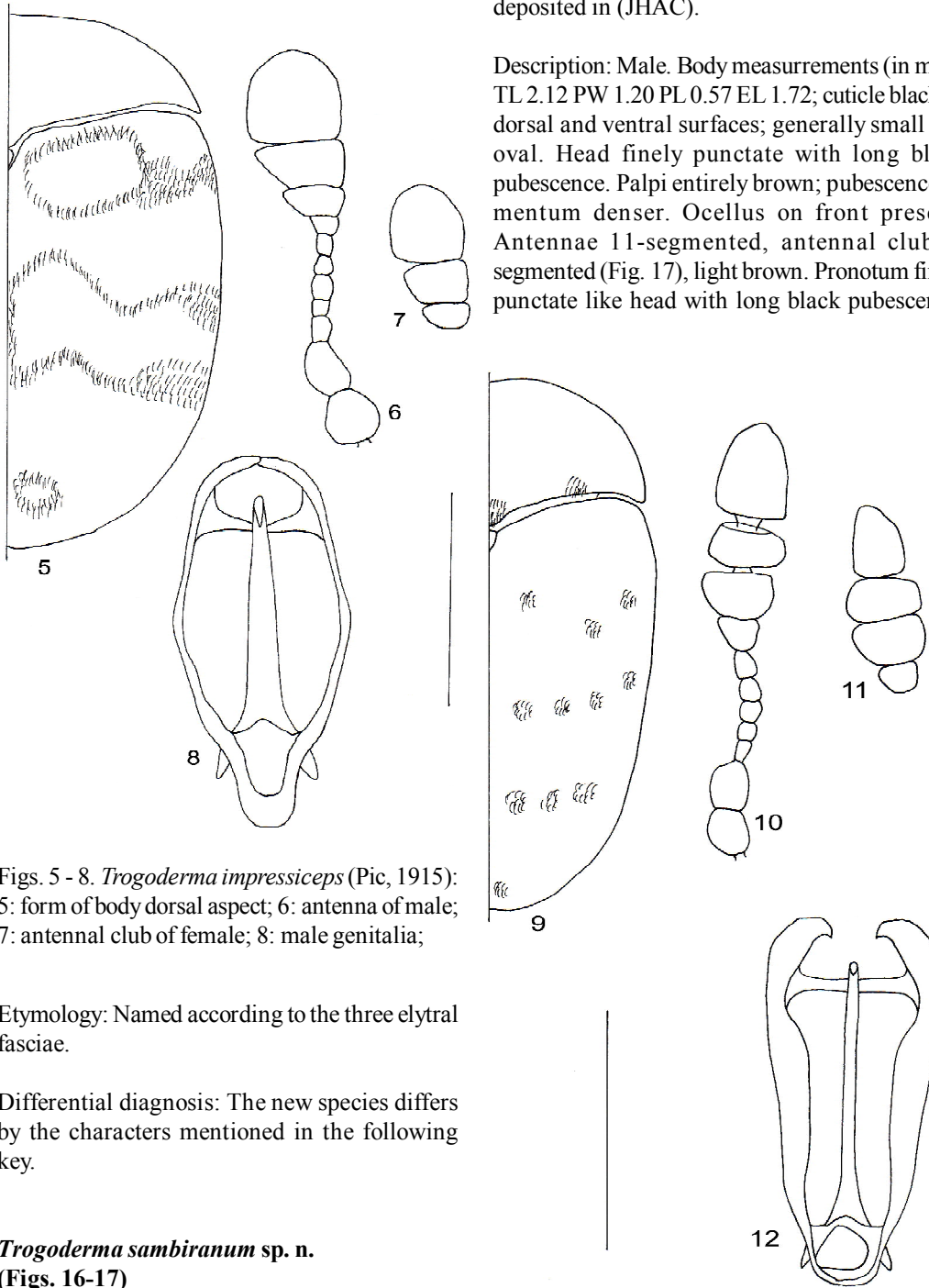
Description: Male. Body measurements (in mm): TL 2.22 PW 1.15 PL 0.52 EL 1.72; cuticle black-brown on dorsal and ventral surfaces; generally large and elongate. Head finely punctate with long yellow pubescence. Palpi entirely brown; pubescence on mentum denser. Ocellus on front present. Eyes large, with microsetae. Antennae 11-segmented, antennal club 7-segmented (Fig. 14), segments I-VI light brown, segments VII-XI

dark brown. Pronotum finely punctate like head with long yellow pubescence. Scutellum very small, triangular finely punctated as pronotum, without pubescence. Elytra finely punctate; cuticle black-brown with three orange-brown defined bands covered by long yellow pubescence; other parts with long brown pubescence (Fig. 13). Epipleuron entirely dark brown. Legs light brown with very short yellow pubescence; tibiae without thorns. Mesometasternum with short yellow pubescence. Abdominal sternites with long yellow pubescence. First visible abdominal sternite with distinct oblique discal striae. Male genitalia (Fig. 15).

Female: unknown.

[48°55' E 12°40'S], 5-12.12.2001". Holotype deposited in (JHAC).

Description: Male. Body measurements (in mm): TL 2.12 PW 1.20 PL 0.57 EL 1.72; cuticle black on dorsal and ventral surfaces; generally small and oval. Head finely punctate with long black pubescence. Palpi entirely brown; pubescence on mentum denser. Ocellus on front present. Antennae 11-segmented, antennal club 4-segmented (Fig. 17), light brown. Pronotum finely punctate like head with long black pubescence;



Figs. 5 - 8. *Trogoderma impressiceps* (Pic, 1915): 5: form of body dorsal aspect; 6: antenna of male; 7: antennal club of female; 8: male genitalia;

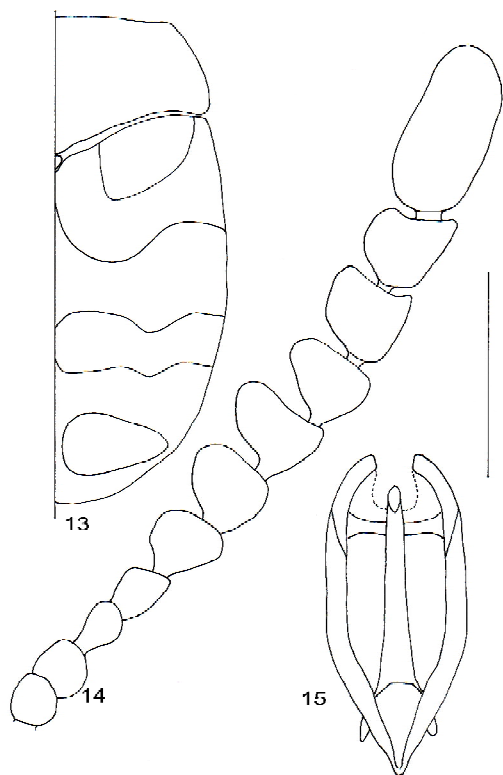
Etymology: Named according to the three elytral fasciae.

Differential diagnosis: The new species differs by the characters mentioned in the following key.

***Trogoderma sambiranum* sp. n.**
(Figs. 16-17)

Type material. Holotype (female): „Madagascar, Antseranana distr., Sambirana riv., Marovato vill.

Figs. 9 -12. *Trogoderma madecassum* (Pic, 1924): 9: form of body dorsal aspect; 10: antenna of male; 11: antennal club of female; 12: male genitalia;



Figs. 13 -15. *Trogoderma trifasciatum* sp. n. (holotype): 13: form of body dorsal aspect; 14: antenna of male; 15: male genitalia;

anterior angles not visible from above. Scutellum very small, triangular finely punctated as pronotum, without pubescence. Elytra coarsely punctate; cuticle black with one large orange spot on apex and one transverse fasciae from white pubescence on the middle (Fig. 16). Epipleuron entirely black. Legs brown with short yellow pubescence; tibiae without thornst. Mesometasternum with short white pubescence. Abdominal sternites with long white pubescence. First visible abdominal sternite with distinct oblique discal striae.

Male: unknown.

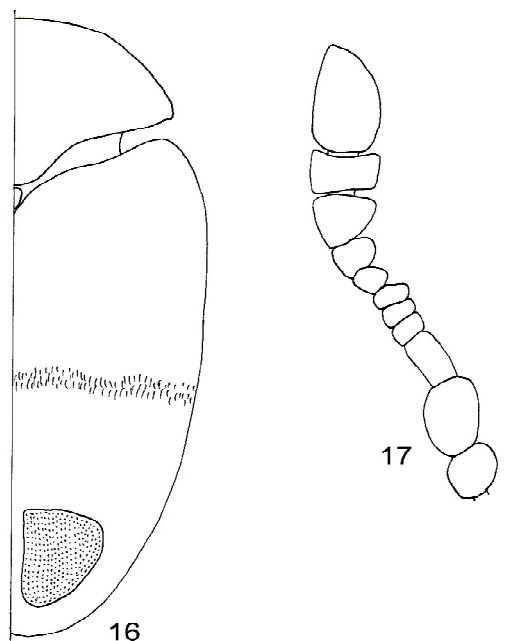
Etymology: Named according to the type locality (Sambirana river).

Differential diagnosis: The new species differs by the characters mentioned in the following key.

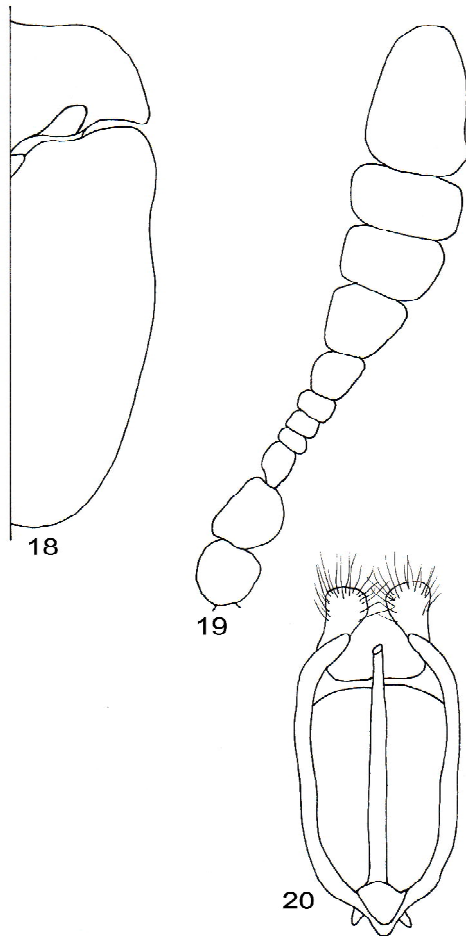
***Trogoderma taomasinum* sp. n.**
(Figs. 18-20)

Type material. Holotype (male): Madagascar, Taomasina distr., 1.5 km ESE of Amboditafonana, 48°44'E 17°27'S, 26-27.i.2001, P. Chvojka lgt. Holotype deposited in (JHAC).

Description: Male. Body measurements (in mm): TL 1.95 PW 1.10 PL 0.52 EL 1.55; cuticle unicolorously brown on dorsal surfaces, brown on ventral surfaces; generally small and oblong-elongate. Head finely punctate with long black pubescence. Palpi entirely brown; pubescence on mentum denser. Ocellus on front present. Antennae 11-segmented, antennal club 5-segmented (Fig. 19), dark brown. Pronotum finely punctate like head with long black pubescence;



Trogoderma sambiranum sp. n. (holotype): 16: form of body dorsal aspect (dotted area = red spot); 17: antenna of female;



Figs. 18 - 20. *Trogoderma taomasinum* sp. n. (holotype): 18: form of body dorsal aspect; 19: antenna of male; 20: male genitalia.

near scutellum with two large depressions. Scutellum very small, triangular finely punctated as pronotum, without pubescence. Elytra finely punctate; cuticle unicolorously brown without bands or spots, covered by long black pubescence (Fig. 18). Epipleuron entirely brown. Legs brown with short yellow pubescence; tibiae without thorns. Meso-metasternum with short yellowish pubescence. Abdominal sternites with short yellowish pubescence. First visible abdominal sternite with distinct oblique discal striae. Male genitalia (Fig. 20).

Female: unknown.

Etymology: Named according to the type locality (Taomasina district).

Differential diagnosis: The new species differs by the characters mentioned in the following key.

KEY OF KNOWN MADAGASCAN SPECIES

- 1(4) elytra bi- or three- colourous
- 2(3) form of body oval; antennal club consisting with 3-5 segments
 - elytra with one orange transverse fasciae and apical part covered by yellowish-white pubescence; antennal club consisting with 5 segments...*T. wolfgangi* Háva et Herrmann, 2008
 - elytra brown with orange-red fasciae covered by white pubescence; antennal club consisting with 3 segments; male genitalia (Fig. 8) *T. impressiceps* (Pic, 1915)
 - elytra black with one large orange spot on apex and one transverse fasciae of white pubescence on the middle; antennal club consisting with 4 segments.....*T. sambiranum* sp. n.
 - body very large TL 3.10-3.55 mm, elytra brown with more small spots covered by white pubescence; antennal club consisting with 4 segments; male genitalia (Fig. 4)
..... *T. seminigrum* Pic, 1915
 - body very small TL 1.77-2.27 mm; elytra black with small spots covered by white pubescence; antennal club consisting with 6 segments; male genitalia (Fig. 12)
..... *T. madecassum* (Pic, 1924) comb. n.
- 3(2) form of body elongated; antennal club consisting with 7 segments; each elytron with three orange-red fasciae covered by yellow pubescence *T. trifasciatum* sp. n.

4(1) elytra unicolorous, brown, covered by yellow pubescence; without fasciae or spots; antennal club consisting with 5 segments
..... *T. taomasinum* sp. n.

Remarks. According to the EPPO (2007) known from Madagascar as introduced synanthropic species *T. granarium* Everts, the species is not included in the presented key. The mentioned species visually similar to species belonged to the genus *Paratrogoderma* Scott, 1926, but the genus differs from the genus *Trogoderma* by the 10- segmented antennae (see Háva 2008).

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