Elytra, *Tokyo*, New Series, **9** (2): 297–303
December 25, 2019

A New Species of the Termitophilous Genus *Trichopsenius* Horn, 1877 (Coleoptera, Staphylinidae, Aleocharinae) from Morocco

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Abstract *Trichopsenius moroccanus* sp. nov. is described from northern Morocco as the first African species of the genus. This species is very similar to *T. ibericus* Kistner et Assing, 1995 described from Spain but is distinguished from it by the shapes of abdominal segment IX, aedeagus, and spermatheca. Pictures of habitus, diagnostic characters and habitat of the new species are provided.
Key words: *Reticulitermes*, Rhinotermitidae, rove beetle, termitophily, Trichopseniini.

Introduction

The genus *Trichopsenius* Horn, 1877 belongs to the termitophilous tribe Trichopseniini LeConte et Horn, 1883 (Coleoptera: Staphylinidae: Aleocharinae). The genus is composed of eleven species that are distributed in North America (five species) (LeConte, 1863; Seevers, 1941, 1945, 1957; Pasteels & Kistner, 1971), Spain (one species) (Kistner & Assing, 1995), and Japan (five species) (Naomi & Terayama, 1986, 1996). The intercontinental distributional pattern, especially in the North Template Zone, of the *Trichopsenius* species is unique among termitophilous taxa in Aleocharinae. All the known *Trichopsenius* species are obligate termitophiles and associated with *Reticulitermes* termites (Blattodea: Rhinotermitidae). Immature stages are known only for two American species, *T. depressus* (LeConte, 1863) and *T. frosti* Seevers, 1945 (Howard & Kistner, 1978; Kistner & Howard, 1980).

The purpose of this study is to describe a new species of *Trichopsenius* based on adult morphology. This is the first record of *Trichopsenius* from Africa. This is also the first record of an obligate termitophilous rove beetle in Morocco.

Material and Methods

Specimens examined in this study were provided by Peter Koniar, Martin Švarc and Peter Hlaváč of Czech Republic. To make permanent mounts, specimens were immersed in KOH for a night at room temperature and subsequently washed with distilled water. The specimens were then dehydrated by ethanol and embedded in Euparal on glass slide. Dissections were made in Euparal.

Line pictures of diagnostic characters were drawn based on the dissected specimens using a Nikon Eclipse Ci-L biological microscope equipped with a Y-IDT Drawing Tube. In the line pictures, right halves of pronotum, ventrites, and abdominal segments were drawn without setae (Figs. 3, 5 & 7–12). Habitus pictures were photographed using a Canon 70D camera equipped with an MP-E65 high-magnification lens and an EX-24 twin flash. The images were stacked by the auto-montage software Combine ZM.

Results

Trichopsenius moroccanus sp. nov.

(Figs. 1–22)

Type series. Holotype: ♂, "MOROCCO 23.IV.2010 / RIF MTS. (CHEFCHAOUÈN) / DRAA-EL-ASEF ENV. (698 m) / N35°05,893' W05°20,098' / Peter Koniar & Martin Švarc leg.". Paratypes: 7 ♂♂, 7 ♀♀, same data as holotype (1 ♂, abdominal segments dissected off, 1 ♀, completely dissected); 2 ♂♂, 1 ♀, same data as holotype except for N35°05,909' W05°20,100' (696 m); 1 ♂, 1 ♀, same data as holotype except for N35°06,059' W05°20,349' (731 m); 1 ♂, 1 ♀, same data as holotype except for N35°05,295' W05°25,352' (659 m); 1 ♂, 2 ♀♀, "MOROCCO: Ar Rif / road Chefchaouen - Ksal el / Kebr, 2236 ft / N35°05,303' W05°25,317' / P. Hlaváč leg., 3-7.VI.2007" (1 ♂, 1 ♀, completely dissected).

Holotype (1 ♂) and a part of paratypes (2 ♂♂, 3 ♀♀; 1 ♂, 1 ♀, partly or completely dissected) are deposited at the National Museum of Prague, Czech Republic. The rest of paratypes are deposited in the Peter KONIAR collection, Prague, Czech Republic (3 ♂♂, 2 ♀♀), Martin ŠVARC collection, Liberec, Czech Republic (2 ♂♂, 2 ♀♀), and Kyushu University Museum (5 ♂♂, 5 ♀♀; 1 ♂, 1 ♀, completely dissected).

Diagnosis. This species is very similar to *T. ibericus* KISTNER et ASSING, 1995 but is distinguished from it by the longer and slenderer lateral lobes of the male abdominal segment IX (Fig. 11), the longer apical lobe of the aedeagal median lobe (Fig. 15), the thicker apical lobe of paramere (Figs. 16–17), and the spermatheca which is thicker and with the circular basal part (Fig. 18). This species is also distinguishable from the other *Trichopsenius* species by a combination of the following characters: pronotum with anterior margin straight (not emarginate at middle) (Fig. 3); elytra as long as wide (Fig. 4); hind tibia with a row of four to five long yellow setae along lateral margin (Fig. 6); female tergite VIII with posterior margin arcuate (not notched at middle) (Fig. 8).

Description. Body (Figs. 1 & 19–20) glossy, orange brown, elytra and lateral lobe of tergite IX slightly darker, antennae and legs paler, average length 2.14 mm (1.89–2.46 mm, n = 6).

Head approximately 1.7 times as wide as long, widest behind eyes, with a pair of long setae between eyes, a pair of long setae present at middle of anterior margin. Antenna (Fig. 2) with eleven segments; segments III–XI with six long setae apically; segments V–X densely covered with pubescences around apical margins; segments III–X successively widening and shortening distally; segment I larger and wider than other segments; segment II slightly longer than segment III; segment III narrower than other segments, 1.4 times as long as wide; segment IV subparallel sided, 1.6 times as long as wide; segment V slightly longer than wide; segment VI subquadrate; segments VII–X wider than long; segment XI with apex moderately pointed, 1.4 times as long as wide.

Pronotum (Fig. 3) approximately 1.5 times as wide as long, widest around posterolateral corners, as wide as two elytra combined (Fig. 1); anterior margin almost straight, subtransparent, with two pairs of setae, two pairs of long setae present subapically; lateral margins rounded, with two pairs of long setae; two pairs of long setae present at posterolateral corners; posterior margin subtransparent laterally, with three pairs of long setae; disc with six pairs of long setae; average length 0.48 mm (0.44–0.51 mm, n = 8), average width 0.70 mm (0.67–0.71 mm, n = 8). Elytron (Fig. 4) as long as wide, with lateral margin slightly rounded, ten to twelve long setae present laterally; posterior margin subtransparent; disc with three longitudinal rows of three to four long setae; average length 0.42 mm (0.38–0.44 mm, n = 8), average width 0.41 mm (0.38–0.44 mm, n = 8). Meso- and metaventrites (Fig.

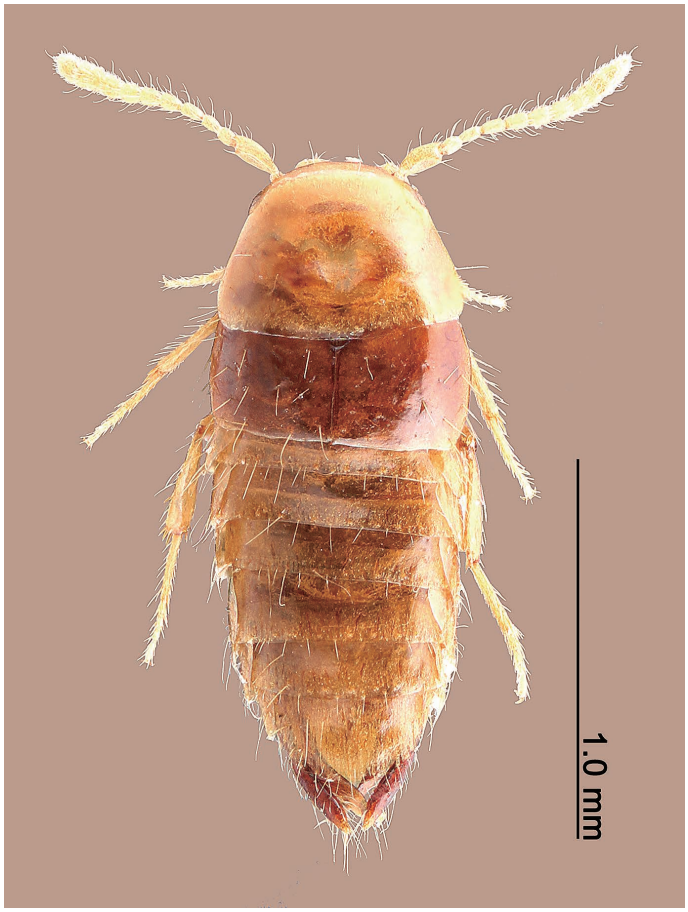
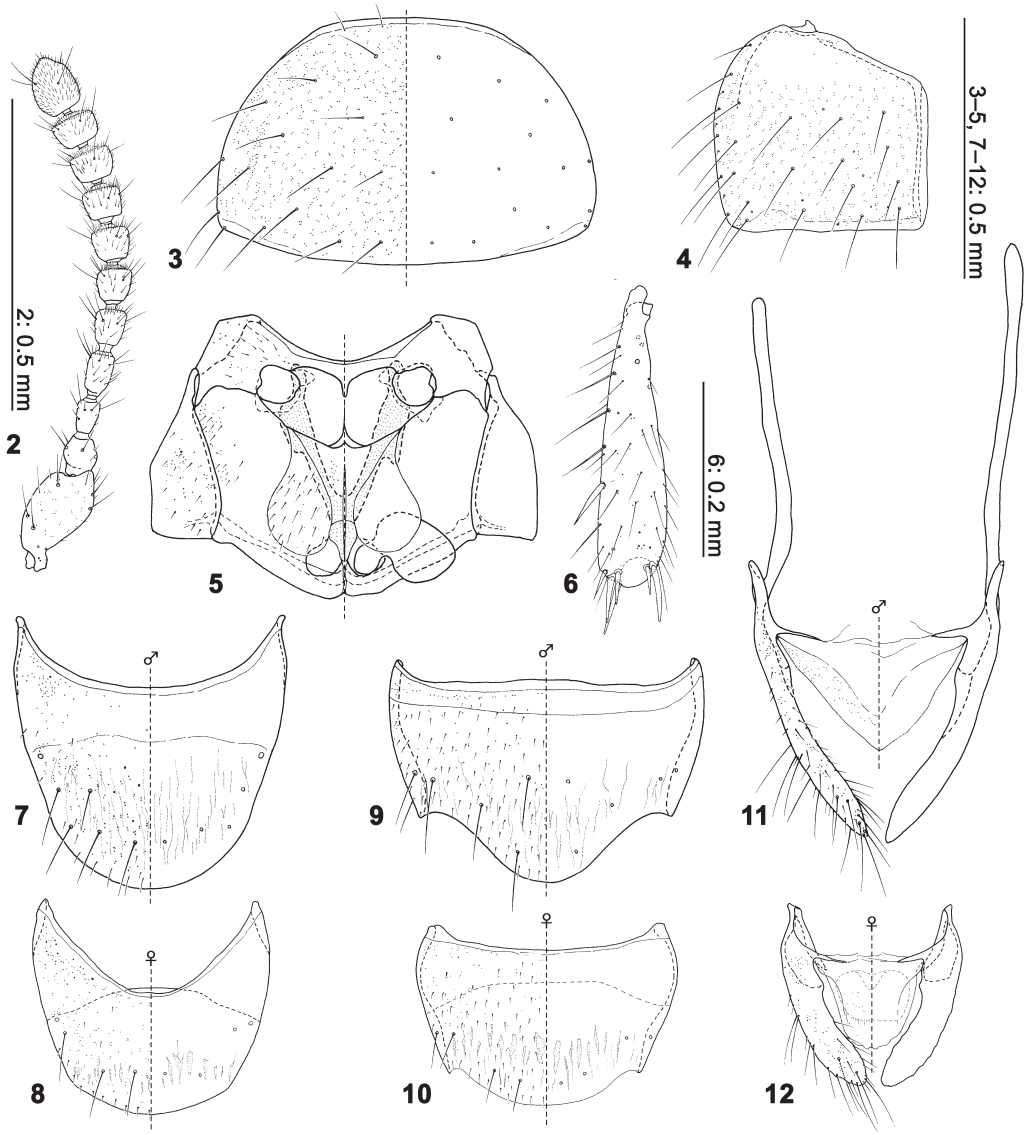


Fig. 1. Habitus of *Trichopsenius moroccanus* sp. nov.

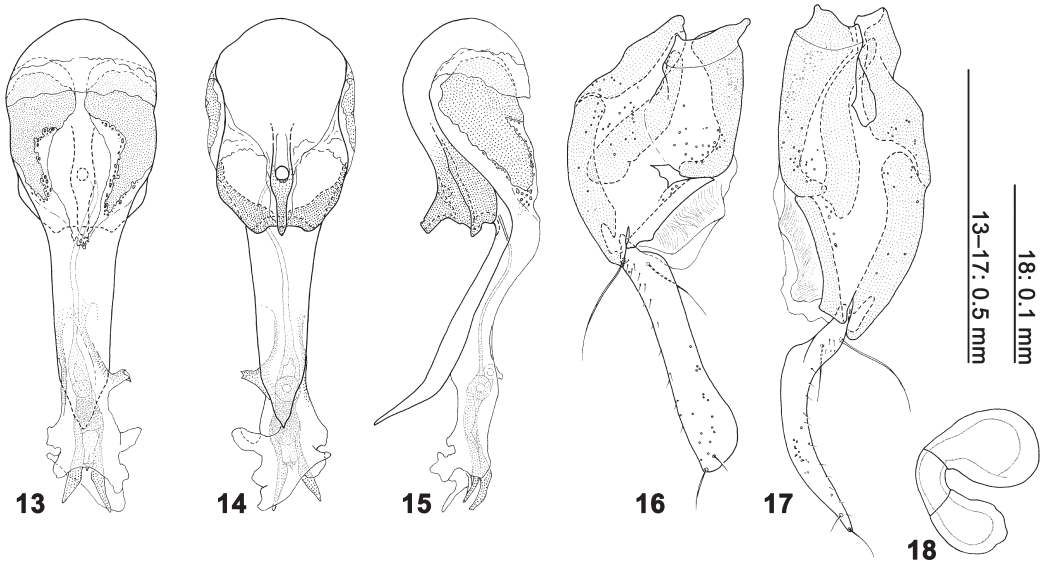
5) covered with several minute setae and pores laterally. Metaventrite approximately three times as long as mesoventrite; metaventral plate (Fig. 5) sparsely covered with minute setae and pores, capable of covering most part of hind trochanter (hind coxa fused with trochanter and embedded into a socket of metaventrite, which is a diagnostic feature of Trichopseniini). Legs sparsely covered with short setae. Tarsal formula = 5-5-5. Fore leg with tibia densely covered with relatively long setae on apical half of inner margin, with six to eight spurs at apex, two of them thick and long; relative length of tarsal segments I–V = 6 : 4 : 3 : 3 : 10. Mid leg with tibia covered with a row of eight long setae along outer margin, with five to seven spurs at apex, two of them thick and long; relative length of tarsal segments I–V = 22 : 6 : 5 : 4 : 11. Hind leg with tibia (Fig. 6) covered with a row of five to six long setae along outer margin, a spur present at apical third of outer margin, with five to six spurs at apex, two of them thick and long; relative length of tarsal segments I–V = 32 : 9 : 7 : 5 : 12.

Abdomen (Fig. 1) gradually narrowed posteriorly, not physogastric but intersegmental membrane weakly developed (the membrane area is invisible in dried specimen). Tergites and sternites III–VII with a row of twelve long setae along posterior margins. Sternites III–VIII sparsely covered with minute setae. Tergites VII–VIII and sternites III–VIII (Figs. 7–10) with longitudinal striae on posterior half or posterior one third. Tergite VII with anterior margin broadly rounded.

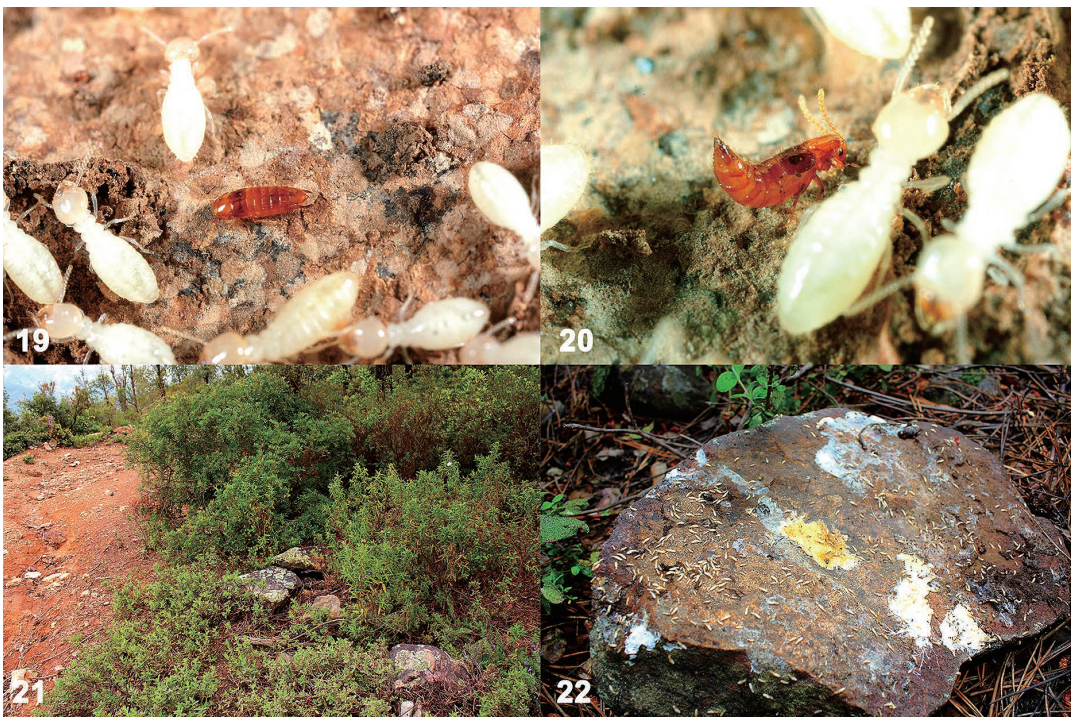


Figs. 2–12. *Trichopsenius moroccanus* sp. nov. —— 2, Antenna; 3, pronotum; 4, left elytra; 5, meso- and metaventrites with a hind trochanter; 6, left hind tibia, ventral view; 7, male tergite VIII; 8, female tergite VIII; 9, male sternite VIII; 10, female sternite VIII; 11, male tergites IX–X; 12, female tergites IX–X.

M a l e. Tergite VIII (Fig. 7) as long as wide, with posterior margin rounded, one or two pairs of long setae present at middle, with three pairs of long setae on posterior half. Sternite VIII (Fig. 9) approximately 1.4 times as wide as long, with posterior margin arcuate and more emarginate laterally than in female, two pairs of long setae present around posterolateral corners, three pairs of long setae present hexagonally at middle on posterior half. Tergite IX (Fig. 11) cylindrical, lobes long and slender, sparsely covered with long setae on posterior half, with apex pointed. Tergite X highly membranous, inverted triangular, slightly stained in V-shape. Median lobe of aedeagus (Figs. 13–15) with bas-



Figs. 13–18. *Trichopsenius moroccanus* sp. nov. —— 13, Median lobe of aedeagus, ventral view; 14, ditto, dorsal view; 15, ditto, lateral view; 16, left paramere; 17, right paramere; 18, spermatheca.



Figs. 19–22. Habitat of *Trichopsenius moroccanus* sp. nov. —— 19, *T. moroccanus* in corridor of host termites; 20, ditto; 21, environment where *T. moroccanus* was found; 22, underside surface of a stone where *T. moroccanus* and host termites were found. Photographs taken by Peter Koniar and Martin Švarc.

al capsule as long as apical lobe; compressor plate downside in abdomen in dorsal view, highly membranous, split medially (Fig. 13), stained laterally (Figs. 13 & 15); distal crest upside in abdomen in dorsal view, produced apically, with apex truncate in lateral view (Fig. 15); apical lobe narrowed apicad in dorsal view (Fig. 14), very thin in lateral view (Fig. 13), with apex pointed, curved on apical one fourth (Fig. 15). Parameres (Figs. 16–17) asymmetric, longer than median lobe; apical lobe covered with minute setae along outer margin, with a pair of relatively long setae at base, a pair of short setae present at apex. Left paramere (Fig. 16) with apical lobe straight, thicker than in right paramere, slightly dilated around apex, with apex blunt. Right paramere (Fig. 17) with apical lobe with an obtuse corner around basal one fourth of inner margin, curved outward and narrowed apicad from apical one third, with apex pointed.

F e m a l e. Abdominal segments VIII–IX smaller than in male. Tergite VIII (Fig. 8) slightly wider than long, posterior margin rounded, without a raised platform, with a pair of long setae at middle of lateral margins, two pairs of long setae present in a row on posterior half. Sternite VIII (Fig. 10) approximately 1.5 times as wide as long, with posterior margin arcuate, two pairs of long setae present around middle of lateral margins, with two pairs of long setae medially on posterior margin. Tergite IX (Fig. 12) cylindrical, shorter and thicker than in male, sparsely covered with long setae on posterior half, with apex moderately pointed. Tergite X highly membranous, without stained area. Spermatheca (Fig. 18) with apical and basal part bulbous, apical part wider than basal part.

Host termite. *Reticulitermes* sp. (Rhinotermitidae).

Distribution. Only known from northern Morocco.

Etymology. The species epithet is derived from Morocco where this species is found.

Biological notes. The beetles collected in both of June 2007 and April 2010 were found under stones where host termites constructed corridors (Figs. 19–22), but the climate condition was quite different between April and June in Morocco. There was no rain for a long time at the time of collection in June 2007. On the other hand, the beetles were collected after two or three days of heavy rain in April 2010. Under the very wet condition, more termites and beetles were actively moving in corridors than in June 2007.

Comments. Based on the distribution and the limited morphological information of the *Reticulitermes* species (CLÉMENT *et al*., 2001; LEFEBVRE *et al*., 2016), it is possible that the host termite of *T. moroccanus* is *R. grassei* CLÉMENT, 1977.

Acknowledgements

We thank Mr. Peter KONIAR, Martin ŠVARC and Peter HLAVÁČ for providing the opportunity to examine the specimens of the new species. Peter KONIAR and Martin ŠVARC allowed us to use great photographs of the living specimens. This study was partly supported by a Grant-in-Aid for JSPS Fellows (No. 15J00725) for TK.

要　　約

金尾太輔・丸山宗利：モロッコより好白蟻性 *Trichopsenius* 属（鞘翅目ハネカクシ科ヒゲブトハネカクシ亜科）の 1 新種記載．———— Trichopseniini 族 *Trichopsenius* 属の 1 新種をモロッコより記載した．本新種は，本属において初めてのアフリカ産種であり，ヤマトシロアリ属（蜚蠊目ミゾガシラシロアリ科）の一種 *Reticulitermes* sp. を寄主とする好白蟻性種である．本新種の形態はスペインに分布する *T. ibericus* KISTNER et ASSING, 1995 に似るが，腹部第 9 節や交尾器の形状で区別される．

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Manuscript received 31 August 2019;
revised and accepted 17 November 2019.