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Two new *Trichotaenia* species from Zambia

(Coleoptera: Cicindelidae)

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Abstract

Two new species of the paucispecific African genus *Trichotaenia* (*T. mufumbweana* sp. n. and *T. mwini-lungae* sp. n.) are described from north-western Zambia. An up-to-date key is provided to the species of this genus, which is remarkable because of the distinct elytral pattern, different from species to species, formed by a marked pubescence of the dorsal side instead of elytral spots and markings.

Introduction

The paucispecific African genera *Trichotaenia*, *Trichodela* and *Epitrichodes* (all created by RIVALIER 1957) are remarkable because they include a few species which share the rare character of having a marked ornamental pubescence on the surface of elytra, pronotum and head. In some species the labrum too is more or less covered with small setae. Such a pubescence forms a distinct elytral pattern, different from species to species, which helps to distinguish them (HORN 1938). However, old specimens may have their body pubescence more or less partially rubbed off, what consequently makes sometimes their proper identification more difficult or doubtful (especially in *Trichodela*).

While *Epitrichodes* appears to be a monospecific genus with *E. villosus* (PUTZEYS, 1880) as the only species, the genus *Trichodela* proved to include not only *T. nubifera* (W. HORN, 1915) (= *Cicindela flavipes* PUTZEYS, 1880) but also six additional poorly distinct species (HORN 1905; CASSOLA 1995 & 2005; MORAVEC 1999; WERNER 2003b; WERNER & SCHÜLE 2006). The genus *Trichotaenia* was reviewed by the first author several years ago (CASSOLA 1983). One further species (*T. mireki* WERNER, 2003) was described more recently (WERNER 2003a) and the genus is presently known to include nine poorly collected species. In addition to the remarkable elytral pubescence, the species are characterized, unlike *E. villosus*, by the enlarged penultimate segment of the labial palpi and the foliated antennomeres 5-10. The genus as a whole is distributed in central-southern African countries only (especially Zambia and Katanga in Democratic Republic of Congo, but also Angola, Zimbabwe, Tanzania, Botswana, Namibia and possibly the South African Republic) (CASSOLA 1983; WIESNER 1992; WERNER 2000).

Although Charly WERNER sadly and suddenly died on 12 May 2007 (CASSOLA 2007, SCHÜLE 2008), the authors had previously agreed to write this paper as a joint paper together. Fabio CASSOLA and Peter SCHÜLE consequently feel to be their duty to co-author Charly WERNER this way, also because the studied material was collected by him during some of his many trips to Africa. He visited Zambia several times and collected both two new *Trichotaenia* species, which are described below. A few further specimens brought back by other collectors were also seen. While the holotypes were deposited in the Zoologische Staatssammlung München (Zoological State Collection Munich; ZSM), the other specimens are presently in Vladimir TICHY's (Trebon, Czech Republic; VTC) or in authors' collections (FCC, KWC, PSC).

Trichotaenia mufumbweana sp. n.

(Fig. 1 a-d)

Holotype, ♂, from ZAMBIA, North-western province: near Mufumbwe, 21.XI.2003, K. Werner & Smrz leg. Two paratypes, ♀♀, from a nearby locality: 50 km W Mufumbwe (SW Solwezi), 4.XII.2004, Snizek & Tichy leg. Seven more paratypes (6 ♂♂ 1 ♀) also from another locality in the vicinity: Mufumbwe, 24-30.I.2005, B. & P. Malec leg. Holotype deposited in the ZSM, two paratypes (♀♀) in VTC, the other paratypes in authors' collections (1 ♀ KWC, 4 ♂♂ 1 ♀ PSC, 1 ♂ 1 ♀ FCC).

Diagnosis. A flightless *Trichotaenia* species, bronze-black coloured with some slight reddish reflections on head and pronotum. Clypeus mostly glabrous, reddish bronze with some green reflections. Labrum large, rounded and 5-toothed in front, glabrous with just four marginal sensorial setae, piceous-black in most specimens, triangularly blackened with wide testaceous lateral margins in one female paratype. A stripe of dense white recumbent pubescence on genae, continuing behind on the ventral half of proepisterna up to the lateral sides of first two abdominal sternites, where it is much narrower. Sternum and abdominal sternites otherwise glabrous. Antennae barely attaining the half of the elytral length in male, shorter in female; antennomeres 1-4 dark metallic black with bluish or violaceous reflections, antennomeres 5-10 strongly foliated. Elytral pubescence leaving the shoulders and the discal part almost glabrous, covering the lateral sides and the apex, and emitting two short spurs on disc (a smaller one above the apex and a larger one above the middle).

Description.

Head bronze-black with slightly reddish reflections, covered with short white recumbent pubescence on vertex, the protruding frons and eyes; two white setae near both eyes at fixed loci. Clypeus glabrous, reddish bronze with some green reflections. Labrum large, rounded, five-toothed in front, glabrous with four sensorial setae near the anterior edge, piceous-black coloured in most specimens (both males and females, but triangularly blackened with wide testaceous lateral margins in one female). A stripe of dense white recumbent pubescence on genae. Antennae nearly reaching the half of the elytral length in male, shorter in female; antennomeres 5-10 strongly foliated. Mandibles piceous black, shortly testaceous on basal outside margins. Maxillary and labial palpi testaceous, with the last joints piceous black with metallic reflections.

Thorax: pronotum slightly longer than wide, subparallel-sided, bronze-black with sometimes slight cupric reflections, covered with white recumbent pubescence (especially at sides but also on disc). Dorsal half of proepisterna glabrous, ventral half densely covered with a stripe of white recumbent pubescence which continues that of genae and extends to the ventral half of mesepisterna and on metepisterna.

Elytra oval-shaped, shoulders effaced (a flightless species, with the elytra apparently soldered to each other); dull, dark to black, the elytral pubescence leaving the shoulders and most of the disc almost glabrous, covering the lateral sides and the apex, and also emitting two short spurs on disc (a smaller one above the apex, leaving a narrow naked areole between it and the apical part, a larger one, somewhat squared, above the middle). Sutural tooth acutely protruding in male, less pronounced in female.

Ventral surface pitchy black, sides of 1st and 2nd abdominal sternites narrowly pubescent, continuing the white pubescent stripes which start on genae and extend on the ventral half of pro- and mesoepisterna on on metepisterna. Trochanters pitchy black with some reddish rufous portions, legs metallic black with a few rows of spiniform setae on femora and tibiae.

♂ aedeagus relatively small, arched, tapering, with a straight, simple apex.

Length: 10-12 mm (without labrum).

Etymology. This new *Trichotaenia* species is so named from its type locality (Mufumbwe), where only it is presently known from in so far.

Remarks. The glabrous labrum is a character which *T. mufumbweana* shares with several other *Trichotaenia* species [*T. tereticollis* (BOHEMAN, 1860), *T. allardi* CASSOLA, 1983, *T. africana* CASSOLA, 1983, *T. mireki* WERNER, 2003 and the species described herein], and which immediately helps to distinguish them from five other species [*T. suturata* (W. HORN, 1915) (= *suturalis* PUTZEYS, 1880), *T. pseudosuturalis* (W. HORN, 1914), *T. pseudotereticollis* (W. HORN, 1929), *T. duplosetosa* (W. HORN, 1929), *T. rivalieri* (BASILEWSKY, 1958)] which, in contrast, exhibit a more or less setose labrum. *T. mufumbweana* has an elytral pattern which somewhat recalls that of *T. tereticollis*, however it is easily distinguished from the latter species because of the effaced oval-shaped shoulders which demonstrate that it is, unlike *T. tereticollis*, a wingless species instead. Moreover, the anterior inner spur of *T. tereticollis* is placed around or just behind the elytral middle, while in *T. mufumbweana* it is definitely above the middle.

Trichotaenia mwinilungae sp. n.

(Fig. 2 a-c)

Holotype, ♂, and one paratype, ♂, from Zambia, North-western province: 30 km E Mwinilunga, 22–24. XI.2005, K. Werner leg.. Three additional paratypes (♂♂) from another locality in the vicinity: 50 km E Mwinilunga, 12. XI.2003, K. Werner & Smrz leg.. Holotype deposited in the ZSM, 2 ♂♂ in KWC, 1 ♂ in FCC, 1 ♂ in PSC. ♀ unknown.

Diagnosis. A wingless *Trichotaenia* species, dark bronze coloured with slight cupreous reflections on head, pronotum and elytra, especially beneath the white recumbent pubescence. Clypeus glabrous, dark bronze with cupreous or bluish reflections especially on the lateral sides. Labrum large, glabrous, 5-toothed in front, with just four submarginal sensorial setae; testaceous, more or less blackened on the basal third to half, the black colouration more or less extending triangularly on disc. A stripe of dense white recumbent pubescence on genae, continuing on the ventral half of proepisterna up to the whole of metepisterna. Sternum and abdominal sternites glabrous. Antennae approximately attaining the elytral middle, expectedly shorter in female; segments 1–4 dark metallic with violaceous reflections, antennomeres 5–10 enlarged and depressed but not foliated. Elytral pubescence leaving three naked areoles in between, one below the scutellum some distance from the suture, the second one in the middle, centered by a small tuft of closely appressed setae which are more apparent than the other hairs, the third smaller one below it and before the apical area. Female unknown.

Description. Head dark bronze with cupreous reflections. Frons, vertex and declivities of eyes evenly covered with white recumbent pubescence; two longer white setae near both eyes at fixed loci. Interocular depression strong, vertex almost flat in between. Clypeus glabrous, dark bronze with cupric or bluish reflections especially on the lateral sides. Labrum also glabrous, large, 5-toothed in front, glabrous, with just four submarginal sensorial setae; testaceous, more or less blackened on the basal third to half, the black colouration more or less extending triangularly on disc. A stripe of dense white recumbent pubescence on genae. Antennae approximately attaining the elytral middle, expectedly shorter in females; antennomeres 1–4 dark metallic with violaceous reflections, antennomeres 5–10 more or less depressed and foliated. Mandibles piceous black, shortly testaceous along the basal outside margins. Maxillary and labial palpi testaceous, with the last joints piceous black with metallic reflections.

Thorax: pronotum subsquare, about as long as wide, slightly raised in the middle; bronze-black with cupreous reflections, sparsely but evenly covered with short white to yellowish pubescence, recumbent on the lateral sides and on front and hind lobes, but more or less erect in the middle. Dorsal half of proepisterna glabrous and polished, the ventral half densely covered with a stripe of white recumbent pubescence which continues that of genae and extends up to metepisterna.

Elytra: dull bronze-black with cupreous reflections along the suture and on the lateral sides beneath the white recumbent pubescence. This is especially dense laterally and apically but occurs along the suture as well, leaving three almost glabrous areoles in between (the one below the scutellum at some distance from the suture, the second one in the middle, centered by a small tuft of white closely appressed hairs which are more apparent than the others, the third smaller one below it and before the apical area). Shoulders short, rounded, almost effaced; hind wings reduced to a very small non-functional stump. Sutural spine small but briefly and acutely protruding.

Ventral surface with cupreous reflections on sternal pieces, abdominal sternites metallic bluish-black, glabrous. Trochanters pitchy black, legs metallic dark with cupreous reflection on the front part of femora, tarsi with green to blue reflections. A few rows of spiniform setae especially on tibiae.

♂ aedeagus relatively small, tapered, arched, with a straight, simple apex.

♀ unknown.

Length: 9–10 mm (without labrum).

Etymology. This new *Trichotaenia* species is so named from its type locality (Mwinilunga), which so far is the single recorded locality.

Remarks. The elytral pubescence of *T. mwinilungae* somewhat recalls that of *T. pseudotereticollis*, which, however, is a slightly larger species and has pubescent clypeus and labrum, much more strongly foliated antennomeres 5–11, reddish elytra, and a distinctly longer, more parallel-sided pronotum with the pubescence arranged in two longitudinal stripes on both sides of the glabrous middle. Moreover, it has normally-shaped shoulders with functional hind wings below.

Key to the genus *Trichotaenia*

1. Labrum glabrous 2
- Labrum setose 7
2. Ventral side pubescence reduced to genae and proepisterna *T. allardi* CASSOLA, 1983
- Ventral side pubescence more extended 3
3. Ventral side pubescence covering most episterna but not the sides of the first abdominal sternites
- *T. mwinilungae* **sp. n.**
- Ventral side pubescence extended to the sides of the first abdominal sternites 4
4. Elytral pubescence covering the apex, the scutellar area, a transversal band in the middle and a very narrow marginal band; body shape dromicoid *T. africana* CASSOLA, 1983
- Elytral pubescence covering a broad marginal band with two oblique extensions or spurs on disc (one around the middle, one before the apical area) and the apical area 5
5. Shoulders squared *T. tereticollis* (BOHEMAN, 1860)
- Shoulders effaced 6
6. Humera almost completely covered by the pubescence of marginal band *T. mireki* WERNER, 2003
- Marginal band of elytra shorter, a broad subhumeral area without dense pubescence
- *T. mufumbweana* **sp. n.**
7. Remnants of pigmented spots under the elytral pubescence *T. duplosetosa* (W. HORN, 1929)
- No remnants of pigmented spots on elytra 8
8. Pronotum short, wider than long, cordiform, pubescent on sides only; elytral transversal band in front of middle *T. pseudosuturalis* (W. HORN, 1914)
- Pronotum with two pubescent stripes on sides of disc; lateral sides and middle glabrous 9
9. Elytral pubescence forming a dense sutural band *T. suturata* (W. HORN, 1915)
- Elytral pubescence not forming a dense sutural band 10
10. Elytral pubescence with a small tuft of hairs around the middle
- *T. pseudotereticollis* W. HORN, 1929
- Elytral pubescence with a transversal band around the middle *T. rivalieri* BASILEWSKY, 1958

Conclusions

Together with the two new species described above, the remarkable African tiger beetle genus *Trichotaenia* appears so far to include eleven species at least, six of which [*T. tereticollis* (BOHEMAN, 1860), *T. allardi* (CASSOLA, 1983), *T. africana* (CASSOLA, 1983), *T. mireki* (WERNER, 2003), *T. mufumbweana* **sp. n.** and *T. mwinilungae* **sp. n.**] have a glabrous labrum, while five [*T. suturata* (W. HORN, 1915), *T. pseudosuturalis* (W. HORN, 1914), *T. pseudotereticollis* (W. HORN, 1929), *T. duplosetosa* (W. HORN, 1929), *T. rivalieri* (BASILEWSKY, 1958)] have a more or less setose labrum. Thus two species groups are easily distinguishable. Judging from the shape of the elytra and shoulders, six species (*T. tereticollis*, *T. suturata*, *T. duplosetosa*, *T. pseudotereticollis*, *T. rivalieri* and *T. allardi*) apparently have functional hind wings, while the other *Trichotaenia* species obviously have oval-

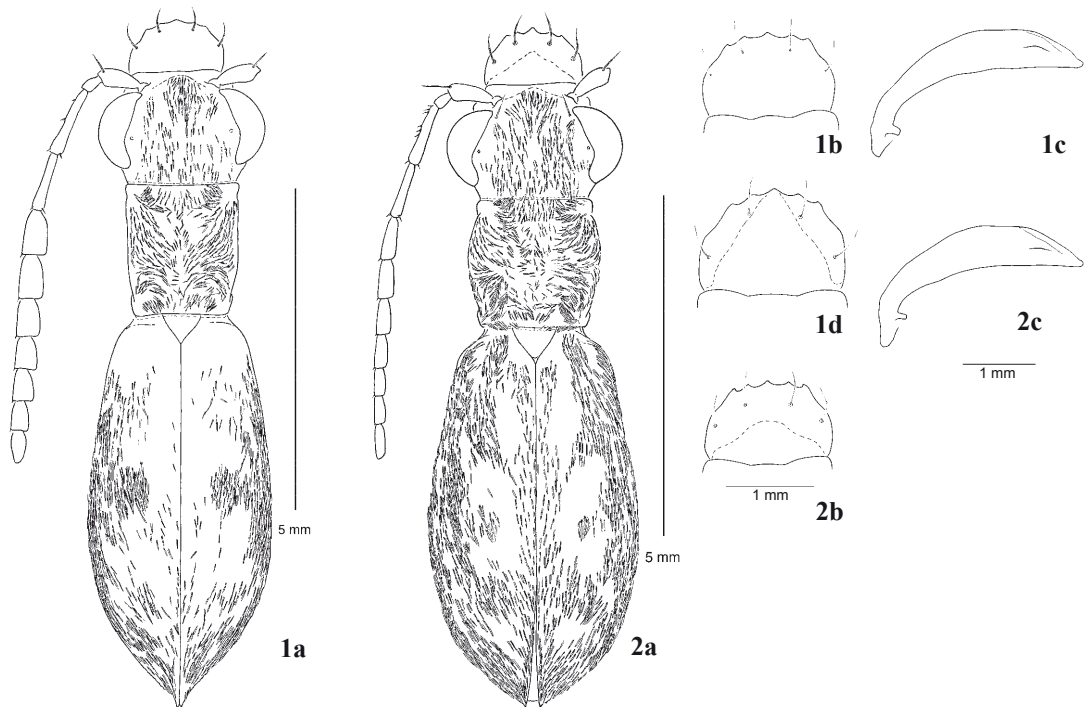


Fig. 1. *Trichotaenia mufumbweana* sp. n., male paratype: **a.** habitus, **b.** labrum, **c.** aedeagus; female paratype: **d.** labrum.
Fig. 2. *Trichotaenia mwinilungae* sp. n., male paratype: **a.** habitus, **b.** labrum, **c.** aedeagus.

shaped elytra with reduced to effaced shoulders, thus evidently being flightless (with the hind wings mostly being reduced to small non-functional stumps). In fact all *Trichotaenia* species, even if normally winged, never fly and prefer to rapidly run on the ground through the grasses in savannah habitats like the species of other African genera such as *Prothymidia* RIVALIER, 1963, *Bennigsenium* W. HORN, 1897 (CASSOLA & WERNER 2003) and *Dromica* DEJEAN, 1826 (CASSOLA 2002).

As it was stated above, this genus is remarkable because the involved species are characterized by a marked pubescence of their upside, as well as by a marked stripe of white recumbent hairs which runs from the genae to the ventral half of pronotum and episterna, and sometimes extends behind to metepisterna up to the sides of the first abdominal sternites. Moreover, all *Trichotaenia* species are apparently rare, as no less than four species (*T. pseudosuturalis*, *T. duplosetosa*, *T. allardi* and *T. africana*) are still known by their few type specimens only. All *Trichotaenia* species appear to have been rarely collected, to be poorly known and poorly represented in the entomological collections. The first author, in his 1983 paper (CASSOLA 1983), tentatively suggested that their rarity as well as their curious elytral pattern (constituted by the elytral pubescence instead of spots and markings) could be perhaps related to some unknown special habits, and concluded that further behavioural and ecological study should hopefully be accomplished. However, the only available information was given by WERNER (2003a), who caught many *T. mireki* specimens during daytime along the edges of a sandy path inside a Miombo forest habitat, in a locality where six more tiger beetle species were also found to be active syntopically.

Zusammenfassung

T. mufumbweana sp. n. und *T. mwinilungae* sp. n. aus Nordwest-Sambia werden beschrieben. Differentialmerkmale werden abgebildet. Für die wenigen Arten der Gattung *Trichotaenia* wird ein Bestimmungsschlüssel vorgelegt. Die Vertreter dieser Gattung zeichnen sich durch eine fleckige Flügeldeckenbehaarung aus, die jeweils zu einem artspezifischen Muster angeordnet ist.

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