A revision of the genus Temnillus Bonvouloir, 1871 (Coleoptera, Eucnemidae, Mesogenini)

Muona, Jyrki

2021-12-14

Muona , J 2021 , ' A revision of the genus Temnillus Bonvouloir, 1871 (Coleoptera, Eucnemidae, Mesogenini) ' , Entomologische Blätter für Biologie und Systematik der Käfer. , vol. 117 , pp. 79-89 .

http://hdl.handle.net/10138/343297

Entomologische Blätter und Coleoptera

Ent. Bl. Col. (2021) 117: 001 - 020 ISSN 0013-8835

A revision of the genus *Temnillus* Bonvouloir (Coleoptera, Eucnemidae, Mesogenini)

Jyrki Muona

Abstract

The genus *Temnillus* Bonvouloir is revised. Three new species are described: *T. isthmi* n.sp. (Costa Rica), *T. giuglarisi* n.sp. (French Guiana) and *T. skelleyi* n.sp. (Peru).

A lectotype is designated for *Gastraulacus leprieuri* Guérin-Méneville, 1843, type locality Cayenne, French Guiana.

Three previously described species, *T. aspericollis* Fisher (Trinidad), *T. leprieuri* (Guérin-Méneville) (Cayenne) and *T. mexicanus* Barber (Mexico) are illustrated and their diagnostic features pointed out. The systematic position of the genus *Temnillus* is discussed and a key is provided for the identification of the species.

Zusammenfassung

Key words

Introduction

Most eucnemid genera have not been revised on global scale since Bonvouloir's pioneering studies (1871, 1872a, 1872b, 1875). Many new genera and hundreds of new species have been described after that revision and identification of new material has become challenging. The present paper is an installment in a series of generic revisions and reviews intended to clarify these problems.

Collection acronyms

ALCA Andreas Link collection, Ansfelden, Austria

FSCA, Florida State Collection of Arthropoda

IRSNB. Royal Belgian Institute of Natural Sciences, Brussels

JMC. JMuona collection, presently in MZH, Helsinki.

MNHN. Muséum National d'Histoire Naturelle, Paris.

MZH. Finnish museum of natural history, Helsinki, Finland

UCD. R.M.Bohart museum of entomology, University of California, Davis

USNM. United States National Museum, Washington D.C., USA

Temnillus Bonvouloir, 1871

Bonvouloir, 1871: 115.

Type-species: *Gastraulacus leprieuri* Guérin-Méneville, by monotypy (Bonvouloir, 1871: 116, plate 5, fig. 5; Muona, 1987).

General remarks and diagnosis

Muona & Malinen (2020) discussed the tribal relationships within the subfamily Eucneminae. The redefined tribe Mesogenini was characterized by the pileated spermatheca (Muona 1993, figs. 215, 217, 218) and its sister-group, the Eucnemini, by the excretory organs on hypomera (Muona 1993, fig. 17; Muona, 2019). These two tribes shared a synapomorphic structure of the male genitalia. The apical parts of lateral lobes and the median sclerite of median lobe formed a functional unit with movable lateral lobes (Muona 1993, figs. 164, 168). All these parts were fused in their sister-group, the tribe Galbitini. Galbitini was characterized by the fusion of the apical parts of the lateral lobes and the remaining basal ring and the separation of the median sclerite and the lateral lobes (Muona 1991a, figs. 10-12).

Within the tribe Galbitini species belonging to two genera, the American *Temnus* Fleutiaux and the Asian *Temnillus* Bonouloir, are characterized by (1) deep metasternal and abdominal tarsal grooves (fig. 15, 26)

and (2) eyes being horizontally divided by a canthus, a narrow lateral extensions of the frons (fig. 12, 14). Two further synapomorphies shared by the two taxa are (3) the reduction of the basal piece of the aedeagus and (4) the complete fusion of all parts of the lateral lobes (fig. 18-23; see also Muona, 1993, fig. 165-167). The sister-group of the *Temnus*-*Temnillus* clade is the genus *Submesogenus* Fleutiaux, characterized by a transparent, plate-like median lobe and fused parts of lateral lobes still showing the suture indicating the furrow between the basal and lateral parts of the modified lateral lobes.

Temnillus species have only partly divided eyes (fig. 12), in species belonging to *Temnus* the division is deeper (Muona & Malinen, 2016, fig. 25). The body form differs as well, *Temnus* species being slender and evenly narrowing caudad, *Temnillus* species cylindrical.

Temnillus species are dark brown to blackish medium-sized beetles. All species appear to be entirely glabrous, although minuscule setae can be found, especially ventrally. Punctation is dense to very dense, partly rugose.

Antennae are short, extending to hind corners of pronotum. Scape is large, pedicel and flagellomeres 1-8 are small, similar to each other, 9th is asymmetrical (fig. 7-9). Flagellomeres are peculiar, rectangular in cross section with long sides having a round spot formed by densely set sensory elements mediobasally (fig. 8, best seen on apical segments).

The structure of the scape deserves some attention. As pointed out earlier (Muona, 1991a; Otto, 2017) some eucnemids have a strong tooth on ventral apex of the scape. This structure may well be connected with the subapical attachment of the pedicel. One possible function is that of a supporting role for the small pedicel carrying the heavy flagellum. Such a mechanism may well be needed in Eucnemidae, as the antennae can only move backwards in relation to the scape because of the scape-pedicel attachment system. Pedicel being narrow basally, it requires support against overextension. The scape-tooth is present and prominent in all *Temnillus* (e.g. fig. 8). The tight fit of the antenna in the antennal groove in *T. aspericollis* Fisher and *T. mexicanus* Barber provide a possible function for this structure. When the antenna is at rest, the apex of scape is so positioned that the tooth is placed at the junction of the corner of the frontoclypeal margin and the corresponding tip of the prosternum (fig. 14). There is a small gap where the tooth fits when the head and prothorax are drawn together as tight as they go. As long as the beetle keeps the head tightly drawn in, the tooth helps to secure the powerful scape in its locked position preventing attempts to force the antenna out. Thus the tooth contributes to the compactness of the body and protects the antenna.

Temnillus prosternum is wide and short, front margin being either gently curved or bisinuate, prosternal process is wide, short, apically blunt, notosternal sutures are open, about straight and short, much shorter than the length of the lateral antennal grooves. Antennal grooves are deep, without punctures and basally closed. Meso- and metathorax have strong, smooth grooves for reception of mesolegs, both the tibial and tarsal sections of this groove being sharply defined with a ridge. Metacoxal plates are triangular, widest closer to midline than side, metafemora and –tibae are flattened, without vestiture or spine-combs, metatarsomere one is longer than tarsomeres 2-5 combined, all tarsomeres are simple, tubular, claws are long and slender (fig. 16). Abdominal tarsal grooves are sharply defined, deep, smooth, covering visible ventrites 2-4 (fig. 15, 26).

Both sexes are known of three species. *Temnillus giuglarisi* n.sp. males are smaller than females, but otherwise similar to them. This probably holds for the closely related *T. leprieuri* (Guérin-Menéville) and *T. skelleyi* n.sp. as well. *Temnillus aspericollis* Fisher male has hairy excretory pits on visible ventrites 2-4 (fig. 15, 25). The similar *T. mexicanus* Barber probably shares this feature, although it was not recorded from the male the specimen studied in 1980s (see Muona, 1993, fig. 165).

Male genitalia are highly characteristic due to fusion of lateral lobes, free median lobe and reduced basal piece (see Muona, 1993, fig. 165-167). In Eucnemidae, the tube transporting sperm, *ductus ejaculatoris,* ends in a lancet-shaped sclerotization, which should not be confused with the median lobe (fig. 24). Male sternite IX has separate basal struts delicately connected to the rest of the sclerite (fig. 17). Female internal genitalia are of the same type as in the genus *Temnus* Fleutiaux, spermatheca is globular with lateral knob and elongated spermathecal gland (Muona, 1993, fig. 216).

Temnus species are known from Chiapas in Mexico to Trinidad & Tobago and French Guiana on the Atlantic coast as well as Iquitos in Peru, western Amazonia. According to Chassain & Tourolt (2011) one species is "fairly common" in French Guiana, but generally specimens are rare in collections and nothing is known of their biology. Only fourteen specimens belonging to six species were available for the present study.

The width ("W") was measured always at the widest point and the length along body midline, in case of elytra, omitting scutellum. Instead of eleven antennomeres, the terms scape, pedicel and flagellomere are used. Flagellomeres are referred to with the letter "f" and the number from 1 to 9.

Temnillus leprieuri (Guérin-Méneville)

Gastraulacus leprieuri Guérin-Méneville, 1843: 189
Figures 1, 19, 22.

Type material

Lectotype designated here, a male labelled: Cayenne/ Collection de Bonvouloir/ Gastraulacus leprieuri Guérin-Méneville 1843, LECTOTYPE/J.Muona des. 2021/ (Bonvouloir collection, MNHN).

This specimen is pinned with an old pin with blunt,

cut-off end. I have attached this pin to a micro vial plastic stopper, which in turn is attached to a standard insect pin. Male genitalia are mounted in Euparal on a cellulose acetate card and attached to the same pin.

According to Horn & Kähle (1935), the Eucnemidae from the dispersed Guérin-Méneville collection went to IRSNB, Brussels. The type material could not be located there, but the Bonvouloir collection in Paris had a male labelled "Cayenne". This specimen is regarded as a syntype and is designated here as the lectotype. It agrees well with Bonvouloir's description as well as his illustration (1871: 116; plate 5, figure 5).

Distribution

French Guiana, Cayenne.
Material seen: Holotype.

Diagnosis

Study of the aedeagus may be required for certain identification as only the lectotype is known. Closely related with *T. giuglarisi* n.sp., but differs in many features: tips of bifid median lobe are slenderer and smaller, fused lateral lobes are narrowly separated and evenly curved before the sharp tips and the basal piece is longer (fig. 19, 22). The form of pronotum differs as well, sides being fairly evenly rounded craniad, being nearly parallel on basal half in *T. giuglarisi*. In body form *T. leprieuri* is more similar to *T. skelleyi* n.sp., but differs from that species in having denser and less orderly dorsal punctation, wider pronotum and different male genitalia.

Description

Length 6.3 mm. Black, shiny, antennae and legs dark reddish brown.

Head very densely punctate, partly rugose, punctures variable in size, mostly large, face widely depressed between antennal sockets and in between eyes but not on occiput. Antennae stout, pedicel and f1-8 strongly transverse, f8 about twice as wide as long, f9 asymmetrical, but even the shorter side longer than f8. Frontoclypeus with slight indication of a median tooth.

Pronotum 1.4 times wider than long, widest at hind corners, fairly evenly converging craniad, with a long, narrow median line, very densely punctate, punctures separate on basal disk but becoming rugose from there on, intervals shiny (fig. 1). Lower flanks of pronotum narrowly depressed along the edge from hind corner to front edge (as in fig. 12).

Scutellum about as long as wide, punctate, hind corners widely rounded.

Elytra parallel-sided for 2/3 of length, 1.65 times as long as wide, evenly rounded apically, moderately densely punctate, densest on basal region, striae 1, 2, 8, and 9 apically deeply excavated, on disk striae 1-4 partly poorly expressed, interstices convex on sides, flat on disk (fig. 1).

Ventrum shiny, prosternum strongly and densely punctate, hypomera with larger and less densely set punctures. Prosternal peg wide, short, blunt, punctate. Metasternum with sparser punctation, punctures smaller and largely absent on midline. Metacoxal plates and abdominal ventrites densely punctate, punctures fairly small, fifth visible ventrite slightly keeled along midline, rugose along edges. Tarsal grooves on metasternum covering the sclerite completely, gently curved mediad and then laterad towards end of sclerite.

Aedeagus very similar to that of *T. giuglarisi*, but differs in the form of the apices of the lateral lobes and the median lobe as well as the length of the basal piece and the width of the ventral opening between the fused lateral lobes (fig. 19, 22).

Temnillus giuglarisi n.sp.

Temnillus leprieuri auct. nec Guérin-Méneville, 1843 (Chassain & Touroult, 2011)
Figures 3, 7, 11, 18, 21, 26.

Type material

Holotype male on card, abdomen on separate card, labelled: French Guiana Matiti, 30 km NWW Cayenne, 5º3' N 52º 36' W 04-2014, Jean-Louis Giuglaris leg., HOLOTYPE, Temnillus giuglarisi n.sp., J. Muona design., 2021/(JMC). Aedeagus mounted in Euparal on a transparent cellulose acetate card, which is attached to the same pin with the holotype.

Paratypes

Four specimens with same data as holotype except for date, one male 06-2014, two females 04-2014 and one female 11-2014. (JMC, ZMH).

Additional material

Chassain & Touroult (2011) illustrated a specimen of this species as *T. leprieuri* from French Guiana.

Distribution

French Guiana, Matiti, Chassain & Touroult (2011) give Matiti, Saül and Reserve de Nouragues.

Derivation of name

Named after the collector, J. L. Giuglaris.
Material seen: Two males, three females.

Diagnosis

Study of the aedeagus may be required for certain identification. Closely related with *T. leprieuri*, but differs in many features: tips of bifid median lobe are plumper and larger, fused lateral lobes are more widely separated, sinuate, not evenly curved before the wider, rounded tips and the basal piece is shorter (fig. 18, 21). The form of pronotum differs as well, sides being nearly parallel on basal half, not fairly evenly rounded craniad as in *T. leprieuri*. In body form *T. leprieuri* is similar to *T. skelleyi* rather than *T. guiglarisi* (fig. 1-3).

Description

Length 6.2-7.5 mm. Black, shiny, antennae and legs dark reddish brown.

Head very densely, but not rugosely punctate, punctures variable in size, mostly large, narrowly depressed between antennal sockets and widely, shallowly and separately in curved fashion on frons. Antennae stout, pedicel and f1-8 strongly transverse, f8 about twice as wide as long, f9 asymmetrical, the shorter side shorter than f8 (fig. 7). Frontoclypeus with well-developed median tooth (fig. 26).

Pronotum 1.4 times wider than long, widest at hind corners, conspicuously parallel-sided well over its half-length, the abruptly, concavely narrowing, with short basal groove continuing as narrow glabrous line further craniad, very densely punctate, punctures separate on basal disk but rugose in front and partly on sides, intervals shiny (fig. 3). Lower flanks of pronotum narrowly depressed along the edges from hind corners towards front, but obliterated by the swollen pronotal sides after the mid-line (fig. 11). These swollen flanks are the reason why pronotum appears to have long parallel sides in dorsal view.

Scutellum about as long as wide, punctate, hind corners widely rounded.

Elytra parallel-sided for 2/3 of length, 1.75 times longer than wide, evenly rounded caudad from there, more densely punctate than in *T. leprieuri*, densest on basal region, striae 1, 2, 7, 8 and 9 apically deeply excavated, on base and disk striae 1-4 partly poorly expressed, interstices convex on sides but less strongly than in *T. leprieuri*, flat on disk (fig. 3).

Ventrum shiny, prosternum strongly and densely punctate, hypomera with larger and less densely set punctures. Prosternal peg wide, short, blunt, punctate. Metasternum with sparser puntation, punctures smaller and largely absent on midline. Metacoxal plates and abdominal ventrites densly punctate, punctures fairly small, fifth visible ventrite slightly keeled along midline, rugose along edges. Tarsal grooves on metasternum covering the sclerite completely, gently curved mediad and then laterad towards end of sclerite (fig. 26).

Aedeagus very similar to that of *T. leprieuri*, but differs in the form of the apices of lateral lobes and the apices of the median lobe as well as the length of the basal piece and the width of the ventral opening between the fused lateral lobes (fig. 18, 21).

Temnillus skelleyi n. sp.

Figures 2, 12, 20.

Type material

Holotype male glued on card with abdomen separate, labelled:/Peru: Loreto; 80 km, NW Iquitos Explorama, Lodge 2.km up Rio, Yanamono from Amazonas, Riv.:25-28-VIII-1992, P. Skelley at day/

HOLOTYPE Temnillus skelleyi n.sp. J. Muona desig. 2021 male sign/ (FSCA). Aedeagus mounted in Euparal on a transparent cellulose acetate card and attached to the same pin with he holotype.

Distribution

Peru, Loreto, 80 km NW Iquitos.
Derivation of name.
Named after the collector, P. Skelley.
Material seen.
Holotype.

Diagnosis

Study of the aedeagus may be required for certain identification as only the lectotype is known. Aedeagus is quite different from that of *T. leprieuri* and *T. giuglarisi*. Median lobe has swollen apices and lateral lobes are plumper and with rounded apex, basal piece is short as in *T. giuglarisi* (fig. 20). The form of pronotum is similar to that of *T. leprieuri*, sides being fairly evenly rounded craniad but nearly parallel on basal half in *T. giuglarisi*. Of the three species, *T. skelleyi* has the strongest striae, stria two being clearly marked as a fine line through the elytra.

Description

Length 5.8 mm. Black, shiny, antennae and legs dark reddish brown.

Head very densely punctate, not rugose, punctures variable in size, mostly large, with round depression between antennal sockets and another one between eyes. Antennae stout, pedicel and f1-8 strongly transverse, f8 about twice as wide as long, f9 asymmetrical, but even the shorter side longer than f8. Frontoclypeus with slight indication of a median tooth.

Pronotum 1.4 times wider than long, widest at hind corners, fairly evenly converging craniad, seemingly more strongly than in *T. leprieuri*, with a wide basal depression, no real median groove, densely punctate, punctures separate, intervals shiny. Lower flanks of pronotum narrowly depressed along the edges from hind corners to front edge (fig. 12).

Scutellum about as long as wide, punctate, hind corners widely rounded.

Elytra parallel-sided for 2/3 of length, evenly rounded caudad from there, moderately densely punctate, punctures fine, densest on basal region, striae apically deeply excavated although all not reaching apex, all striae well expressed on disk, interstices convex on sides, flat on disk.

Ventrum shiny, prosternum strongly and densely punctate, hypomera with larger and less densely set punctures. Prosternal peg wide, short, blunt, punctate. Metasternum with sparser punctation, punctures smaller and largely absent on midline. Metacoxal plates and

abdominal ventrites densely punctate, punctures fairly small, fifth visible ventrite slightly keeled along midline, rugose along edges. Tarsal grooves on metasternum covering the sclerite completely, gently curved mediad and then about straight towards end of sclerite. Aedeagus characteristic in the form of the apices of lateral lobes and the apices of the median lobe, basal piece short as in *T. giuglarisi* (fig. 20).

Temnillus isthmi n.sp.

Figures 4, 8.

Type material

Holotype female pinned, labelled:/Cartago [hand-written with ink], Temnillus Leprieuri Guér. [hand-written with ink]/**HOLOTYPE** Temnillus isthmi n.sp. J. Muona desig. 2021 female symbol/ (JMC)
Paratype female pinned, labelled:/Costa Rica: Catie, 3 km SE Turrialba, 600 m. Cartago Prov., V-13/16-1985 J. Doyen leg/PARATYPE Temnillus isthmi n.sp. J. Muona desig. 2021 female symbol/ (UCD)

Distribution

Costa Rica.
Material seen.
Two females, holo- and paratype.
Derivation of name.
Occurs on the isthmus between the Atlantic and the Pacific, thus the genitive *isthmi*.

Diagnosis

Easily separated from *T. leprieuri, T. giuglarisi* and *T. skelleyi* by the strong, complete elytral striae and convex interstices. The reddish brown color, short basal median groove on wide pronotum and very dense and orderly pronotal punctation separate this species from *T. mexicanus* and *T. aspericollis*.

Description

Length 8.3-9.4 mm. Dark reddish brown, shiny, antennae and legs paler in color (fig. 4).

Head very evenly and very densely punctate, not rugose, with round depression starting from between antennal sockets and extending to mid-frons, depression divided by low median ridge. Frontoclypeus forms a transverse very densely and finely punctate swollen area below the depression. Antennae relatively stout, pedicel and f1-8 transverse, f8 about 1.6 times as wide as long, f9 asymmetrical (fig. 8). Frontoclypeus with slight indication of a median tooth.

Pronotum 1.5 times wider than long, widest at hind corners, fairly evenly converging craniad, with a medial basal smooth depression widening craniad, without median groove, very densely punctate, punctures largely separate separate, rugose on upper flanks, intervals shiny. Lower flanks of pronotum narrowly depressed along the edges from hind corners towards front edge, but interrupted there (as in fig. 12).
Scutellum longer than wide, glabrous, hind corners widely rounded.

Elytra parallel-sided for 2/3 of length, 1.8 times as long as wide, evenly rounded caudad from there, densely punctate and partly rugose basally, punctuation becoming finer towards apex, there fine and sparse, all striae well-developed overall, forming sharp lines. interstices convex, more so along sides. Stria 1 deep and punctate throughout, striae 1, 2 and 7 apically deep with large punctures.

Ventrum shiny, prosternum strongly and densely punctate, hypomera with larger, less densely set punctures and strong microsculpture. Prosternal peg wide, short, blunt, punctate. Metasternum with sparser punctation, punctures smaller caudad along midline. Metacoxal plates and abdominal ventrites densely punctate, punctures fairly small, fifth visible ventrite strongly keeled along midline, widely rugose along edges. Tarsal grooves on metasternum covering the sclerite completely, slightly bent caudad early on, otherwise straight.

Temnillus aspericollis Fisher

Temnillus aspericollis Fisher, 1945: 79-80.
Figures 6, 10, 14, 15, 16, 17, 23, 24, 25.

Type material.

Holotype, USNM, nr. 57163, Trinidad & Tobago, Trinidad, Arima, Verdant Vale region, not seen.

Distribution

Trinidad & Tobago, Trinidad.
Material seen.
One male from Trinidad & Tobago, Trinidad, Arima, West of Blanchisesse Rd., 10.68°N 61.29°W (JMC).

Diagnosis

Easily separated from other species by flat elytral interstices, distinctly punctate striae, sharply cut median pronotal groove, largely asperate, minute dorsal sculpture and dark brown color with dull sheen. Pronotum slenderer than that of *T. mexicanus*.

Description

Size 9.2-9.5 mm. Dark blackish brown, antennae and legs paler in color (fig. 6).

Head very evenly and very densely punctate, not rugose, with deep median depression between antennal sockets continuing as short glabrous area and ending as narrow groove to mid frons. Frons with strong, spade-shaped median depression, largely glabrous, dull, rest of

head slightly uneven. Frontoclypeus slightly bisinuate with small median tooth. Antennae slender, scape large, dorsally angled close to apex, very densely punctate, pedicel and f1-8 about as long as wide, f8 about 1.1 times as wide as long, f9 asymmetrical, elongated (fig. 10).

Pronotum 1.25 times wider than long, widest at hind corners, sides slightly bulging in the middle, evenly converging craniad from thereon, with deep medial basal smooth depression from base to last fourth of total pronotal length, but becoming shallow after mid-length (fig. 5). Pronotal punctuation complex, along midline fairly sparse and shallow basally and apically, in middle very dense, rugose, forming curved chains of joined punctures, on sides dese and partly rugose (fig. 5). Lower flanks of pronotum narrowly depressed along the edges from hind corners towards front edge, but interrupted there (as in fig. 12).

Scutellum longer than wide, sparsely punctate, hind corners widely rounded fig. 5).

Elytra parallel-sided for 3/4 of length, evenly rounded caudad from there, 1.9 times as long as wide, very densely punctate and mostly asperate basally, all striae well-developed and from basal third on, strongly and regularly punctate, interstices flat (fig. 5). Striae 1 and 9 apically deeper with larger punctures.

Ventrum shiny, prosternum strongly and densely punctate, hypomera with larger, less densely set punctures and strong microsculpture (fig. 14). Prosternal front margin strongly bisinuate, peg wide, short, blunt and punctate. Metasternum on sides with dense punctuation and large punctures, similar to that of abdominal ventrites, on a large triangular area from front to caudad margin less densely punctate with shallow punctures (fig. 14). Tarsal grooves on metasternum covering the sclerite completely, slightly bent caudad early on, otherwise straight. Metacoxal plates densely punctate (fig. 15). Abdominal ventrites 2-4 with small crested median openings showing group of stout hairs (fig. 15, 25). Fifth visible ventrite widely keeled along midline, rugose along edges.

The special structures on ventrites are clearly male organs of the same type as those known to exist in many Dirhagini, e.g. *Arrhipis subacuta* Guérin-Méneville (Muona, 1991b). Their function is not known, but they are likely involved with attracting females, other males or both (see Serrano et al., 2019). They are not mentioned in connection with the original description and it is assumed here that this means that the holotype is a female.

Aedeagus (fig. 23) similar to that of *T. mexicanus* (Muona, 1993, fig. 165), but the apices of both lateral lobes and median lobe differ in shape and the basal piece is larger.

Temnillus mexicanus Barber

Temnillus mexicanus Barber, 1925: 64.
Figures 5, 10, 13.

Type material

Holotype from Mexico, Chiapas in USNM, nr. 27858, not seen.

Distribution

Mexico, Chiapas; Panama, Bayamo.
Material seen
One female labelled:/Panama Bayano, 24 km W. Ipiti [Ipeti?]/20, 23-IV-1993/J. E. Wappes leg/ (FSCA). One Mexican male specimen was studied in the 1980s and its genitalia illustrated (Muona, 1993, fig. 165, but the notes have been lost.

Diagnosis

Easily separated from all other species by strongly punctate deep elytral striae and convex interstices, sharply cut median pronotal groove, largely rugose dorsal sculpture and dark brown color with greyish shade.

Description

Size 11.2-11.5 mm. Dark blackish brown, antennae and legs paler in color (fig. 5).

Head evenly and very densely punctate, not rugose, with small, deep median depression between antennal sockets and a faint large depression on frons, frontoclypeal margin bisinuate with large median tooth (fig. 13). Antennae slender, scape large, dorsally angled close to apex, very densely punctate, ventrally with an exceptionally large apical tooth, pedicel and f1-8 about as long as wide, f8 about 1.3 times as wide as long, f9 asymmetrical, elongated (fig. 9).

Pronotum 1.3 times wider than long, widest at hind corners, sides bulging in the middle, evenly converging craniad from thereon, with deep, smooth, scar-like median basal groove from base to slightly over middle (fig. 5). Pronotal punctation very dense, punctures mostly separate, on higher side rugose (fig. 5). Lower flanks of pronotum narrowly depressed along the edges from hind corners towards front edge, but interrupted there (as in fig. 12).

Scutellum longer than wide, very densely punctate, sides converging caudad, hind corners widely rounded (fig. 5).

Elytra parallel-sided for 3/4 of length, evenly rounded caudad from there, 2.0 times as long as wide, very densely punctate and mostly rugose basally, all striae well-developed, strongly and regularly punctate, interstices noderately convex, more so along sides (fig. 5).

Striae 1 and 9 apically deeper with larger punctures.

Ventrum shiny, densely and strongly punctate, hypomera with less densely and more shallowly punctate, with stronger microsculpture. Prosternal front margin strongly bisinuate, peg wide, short, blunt and punctate, notosternal suture slightly curved. Metasternum evenly densely punctate. Tarsal grooves on metasternum covering the sclerite completely, slightly bent caudad early on, straight. Metacoxal plates very densely punctate, punctures smaller than on metasternum. Fifth visible abdominal ventrite strongly keeled along midline, rugose along edges.

Aedeagus illustrated earlier (Muona, 1993, fig. 165).

Key to species

1. Form shorter, ratio L/W less than 2.6 (fig. 1-3); antennae stouter, f8 1.6-2.0 times as wide as long (fig. 7); dorsum shiny, blackish.....2
-. Form slenderer, ratio L/W more than 2.6 (fig. 4-6); antennae slenderer, f8 less than 1.6 times as wide as long (fig. 8-9); dorsum dark reddish brown, shiny, or greyish, dull.....4

2. Pronotum with nearly parallel sides past basal half, abruptly converging after this (fig. 3), lower flanks with weak depression along edge interrupted in front (fig. 11); elytra with weak striae on disk, stria two on basal half hard to see; head with deep midline groove from between antennal sockets to mid-eye level, frons widely but shallowly depressed; French Guiana. Aedeagus as in fig. 19, 22..... .....*T. giuglarisi* n.sp.
-. Pronotum with sides converging from hind corners to front margin more evenly (fig. 1, 2); striae overall clearly defined, stria two delicate but complete, lower sides of pronotum with uninterrupted stronger depression along edge (fig. 12).....3

3. Dorsum with strong, moderately dense punctation; pronotal punctures separate, large; elytra with strong punctation on convex interstices between well-marked striae; Peru, western Amazonas. Aedeagus as in fig. 20.....*T. skelleyi* n.sp.
-. Dorsum with more confused punctation, pronotal punctures separate, dense on basal disk, largely rugose in front and on sides, elytral punctation less regular, interstices flatter, striae weaker; French Guiana. Aedeagus as in fig. 18, 21. ....*T. leprieuri* Guérin-Méneville

4. Pronotum wider, ratio width/length 1.5, pronotum and elytral interstices very densely and orderly punctate, shiny (fig. 4); pronotum with short basal median groove (fig. 4); color reddish brown; Costa Rica.....*T. isthmi* n.sp.
-. Pronotum narrower, ratio width/length 1.2-1.3; dorsal surfaces entirely rugose or asperate, dull; pronotum with long median groove (fig. 5, 6); fronotclypeal margin bisinuate (fig. 14); color greyish dark brown.....5

5. Elytral interstices flat, striae narrow with tiny punctures (fig. 5); head with wide depression between antennal sockets (fig. 13); Mexico, Panama..... .....*T. mexicanus* Barber
- Elytral interstices convex, striae wider with larger punctures (fig. 6); head with deep median groove between antennal sockets and wide, triangular depression on frons (fig. 14); Trinidad & Tobago..... .....*T. aspericollis* Fisher

Acknowledgements

I am grateful to all the curators of the museums listed for providing a possibility to study the material. This study has been supported by the French and Finnish Ministries of Culture and Education, the British Council and the Academy of Finland.

References

Barber, H.S. 1925. Two new species of Central American Melasidae (Coleoptera). Proceedings of the Entomological Society of Washington 27(3): 62-64.

Bonvouloir, H.A. de 1871. Monographie de la Famille des Eucnémides, 1st part. Annales de la Société entomologique de France 40 Supplement, 1-288, pls. 1-21.

Bonvouloir, H.A. de 1872a. Monographie de la Famille des Eucnémides, 2nd part. Annales de la Société entomologique de France 40 Supplement, 289-416, pls. 22-28. [July 1972]

Bonvouloir, H.A. de 1872b. Monographie de la Famille des Eucnémides, 3rd part. Annales de la Société entomologique de France 40 Supplement, 417-560, pls. 29-36. [December 1972]

Bonvouloir, H.A. de 1875. Monographie de la Famille des Eucnémides, 4th part. Annales de la Société entomologique de France 40 Supplement, 561-907, pls. 37-42.

Chassain, J. & Tourolt, J. 2011. Les Eucnémides de Guyane (Coleoptera, Eucnemidae). Pp. 78-88. In: Tourolt,). (ed.): Contribution à l'étude des Coléoptères de Guyane. Tome III.

Fisher, W.S. 1945. New beetles of the family Eucnemididae from Central America and the West Indies. Pro-

ceedings of the United States National Museum 96 (3188): 79-93.

Guérin-Méneville, M.F.E. 1843. Revue critique de la tribu des Eucnémides. Annales Société entomologique France (2nd) I: 162-199, plates 5, 6.

Horn, W. & Kähle, I. 1935-1937: Über entomologische Sammlungen, Entomologen und Entomo -Museologie (Ein Beitrag zur Geschichte der Entomologie). Teil I-III. – Entomologische Beihefte aus Berlin-Dahlem, 2, 3, 4, Seiten: VI+1-160; 161-296; 297-536, Taf. I-XVI; XVII-XXVI; XXVII-XXXVIII.

Muona, J. 1987. The generic names of the beetle family Eucnemidae. Entomologica Scandinavica 18: 79-92

Muona, J. 1991a. A revision of the Indomalesian tribe Galbitini new tribe (Coleoptera, Eucnemidae). Entomologica scandinavica Supplement, 39, 1 - 67.

Muona, J., 1991b. The American species of the genus *Arrhipis* Bonvouloir (Coleoptera, Eucnemidae). Revista brasileira de Entomologia. 35 (1), 135-146.

Muona, J. 1993. Review of the phylogeny, classification and biology of the family Eucnemidae (Coleoptera). Entomologica scandinavica Supplement, 44, 1 - 133.

Muona, J. 2019. A review of the genus *Eucnemis* Ahrens (Coleoptera, Eucnemidae). Entomologische Blätter und Coleoptera 115: 91-100.

Muona, J. & Malinen, P. 2020. A revision of the genus *Temnus* Bonvouloir (Coleoptera, Eucnemidae). Entomologische Blätter und Coleoptera 116: 11-20.

Otto, R. 2017. A revision of Phlegoninae (Coleoptera: Eucnemidae), with descriptions of a new genus and four new species. Insecta Mundi 569: 1-27.

Serrano, J.M., McElfresh, J.S. Yunfan Zou, Y & Millar, J.G. 2019. Identification of Aggregation-Sex Pheromone Components for a Living Fossil, the False Click Beetle, Palaeoxenus dohrni Horn (Coleoptera: Eucnemidae). Journal of chemical ecology. https://doi.org/10.1007/s10886-019-01068-2

JYRKI MUONA
Finnish Museum of Natural History
P.O.Box 17
FIN-00014 University of Helsinki
Corresponding author: jyrki.muona@helsinki.fi
0000-0003-2771-1171

Figure 1-3. *Temnillus* spp. male, from left to right. (1) *T. leplieuri* (Guérin-Menéville), lectotype; (2) *T. skelleyi* n.sp., holotype; (3) *T. giuglarisi* n.sp., paratype.

Figure 4-6. *Temnillus* spp., from left to right. (4) *T. isthmi* n.sp., paratype female, Costa Rica: Catie; (5) *T. mexicanus* Barber, female, Panama; (6) *T. aspericollis* Fisher, male, Trinidad.

Figure 7-10. *Temnillus* spp, antenna, from left to right. (7) *T. giuglarisi* n.sp., paratype female, French Guiana: Matiti; (8) *T. isthmi* n.sp., paratype female, Costa Rica: Catie; (9) *T. mexicanus* Barber, female, Panama; (10) *T. aspericollis* Fisher, male, Trinidad.

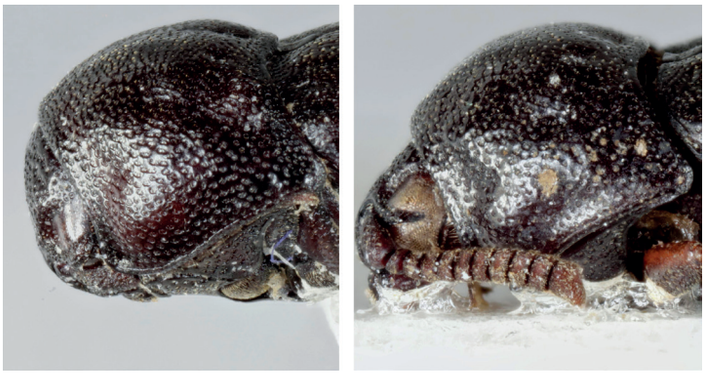

Figure 11-12. *Temnillus* spp., holotype, head and prothorax, from left to right. (11) *T. giuglarisi* n.sp.; (12) *T. skelleyi* n.sp.

Figure 13. *Temnillus mexicanus* Barber, female, facial view.

Figure 14. *Temnillus aspericollis* Fisher, male, ventral view of pro- and mesothorax.

Figure 15. *Temnillus aspericollis* Fisher, male, abdomen. Left metaleg removed, excretory organs on visible ventrites 2-4.

Figure 16 *Temnillus aspericollis* Fisher, male. Metaleg with part of the broken metanepisternum attached to coxa.

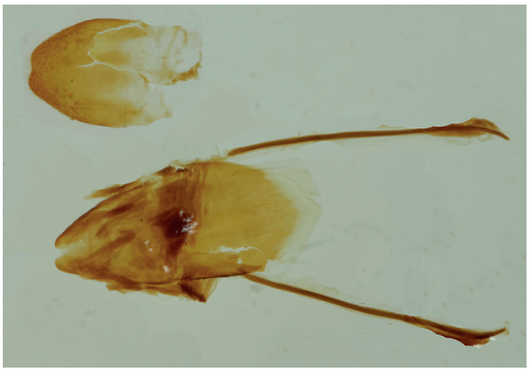

Figure 17. *Temnillus aspericollis* Fisher, male. Sternite IX with loosely connected basal struts and tergite IX.

Figure 18-22. *Temnillus*, aedeagus, from left to right, upper row 18-20, lower row 21-22. (18) *T. giuglarisi* n.sp., holotype; (19) *T. leprieuri (*Guérin-Menéville), lectotype; (20) *T. skelleyi* n. sp., holotype; (21) *T. giuglarisi* n.sp., holotype, enlargement; (22) *T. leplieuri (*Guérin-Menéville), lectotype, enlargement.

Figure 23-24. *Temnillus aspericollis* Fisher, male. (23) Aedeagus; (24) Apical part of *ductus ejaculatoris* with sclerotisized lancet-shaped tip.

Figure 25. *Temnillus aspericollis* Fisher, male. Excretory organs on ventrites 2-4.

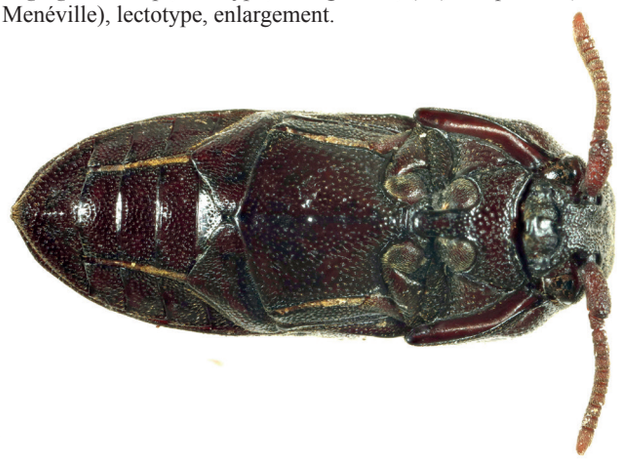

Figure 26. *Temnillus giuglarisi* n.sp., paratype female, ventral view, Costa Rica, Matiti.