

<https://helda.helsinki.fi>

A revision of the genus *Gastraulacus* Guérin-M+eneville, 1843
(Coleoptera, Eucnemidae: Eucnemini)

Muona, Jyrki

2021-12-14

Muona, J 2021, ' A revision of the genus *Gastraulacus* Guérin-M+eneville, 1843
(Coleoptera, Eucnemidae: Eucnemini) ', *Entomologische Blätter für Biologie und Systematik
der Käfer.*, vol. 117 .

<http://hdl.handle.net/10138/343298>

Downloaded from Helda, University of Helsinki institutional repository.

This is an electronic reprint of the original article.

This reprint may differ from the original in pagination and typographic detail.

Please cite the original version.

A revision of the genus *Gastraulacus* Guérin-Méneville, 1843 (Coleoptera, Eucnemidae: Eucnemini)

JYRKI MUONA

Abstract

The phylogeny of the genus *Gastraulacus* Guérin-Méneville, 1843 is discussed. It is split in two genera, both of them supported by evolutionary novelties, synapomorphies. Five new taxa are described: *Pseudotemmillus* new genus, type species *Pseudotemmillus giuglarisi* n.sp. (French Guiana), *Gastraulacus brasiliensis* n.sp. (Brazil), *Gastraulacus moragai* n. sp. (Costa Rica) and *Gastraulacus doyeri* n. sp. (Costa Rica). *Gastraulacus nevermanni* Barber, 1925 is transferred to *Pseudotemmillus* new genus and three previously described species are redefined: *Gastraulacus atratus* Guérin-Méneville, 1843, *Gastraulacus bisulcatus* (Latreille, 1834), and *Gastraulacus cavifons* Barber, 1925. A key for identification of these taxa is given.

Introduction

Phylogenies of beetle families based on analytical methods are not common. One of the clades for which such a hypothesis exists is the false click-beetles (Eucnemidae), divided in eight subfamilies and thirty-three tribes with some 200 genera (Muona 1993). Only a handful of eucnemid genera have been revised on global scale since Bonvouloir's pioneering study (1871, 1872a, 1872b, 1875): *Achaica* Muona, *Agastocerus* Bonvouloir, *Galbimorpha* Fleutiaux, *Galbites* Fleutiaux (Muona, 1991a); *Anelastes* Kirby (Muona, 2000 and Kovalev, 2019); *Coomanius* Fleutiaux (Otto, 2021); *Eucnemis* Ahrens (Muona, 2019); *Euryostus* Fleutiaux (Muona, 2020); *Euryphlegon* Otto (2017); *Phlegon* Laporte (Otto, 2017) and *Temnus* Fleutiaux (Muona & Malinen, 2020). The present work is an addition to this series.

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 (exchange grant in 1981), The British Council (exchange grant in 1988) and the Academy of Finland.

Collection acronyms

- AMNH. American Museum of Natural History, New York
- BMNH. The Natural History Museum, London INBIO.
- INPA. Instituto Nacional de Pesquisas da Amazônia, Brazil
- FSCA. Florida State Collection of Arthropoda
- INBIO. Panama project, J. Schmidl
- IRSNB. Royal Belgian Institute of Natural Sciences, Brussels
- JMC. Jyrki Muona collection, presently in MZH, Helsinki.
- MNHN. Muséum National d'Histoire Naturelle, Paris
- NHMH. Naturhistorisches Museum, Wien FSCA. Florida State Collection of Arthropoda
- MZH. Finnish museum of natural history, Helsinki, Finland
- TAMU. Texas A&M university insect collection
- UCD. R.M.Bohart Museum, University of California, Davis
- USNM. United States National Museum, Washington D.C., USA
- ZSM: Zoologische Staatssammlung München

Introduction

Barber (1925), in his study of *Gastraulacus*, listed three formerly described species: *G. bisulcatus* (Latreille), *G. atratus* Guérin-Méneville and *G. cavifrons* Horn. He added as new *G. nevermanni* Barber, a species with strikingly different dorsal sculpture from that of the others. In the substantially larger material at my disposal, I was able to confirm the presence of four additional species. Three of them were related to the type species of *Gastraulacus*, *G. bisulcatus*, one was similar to *G. nevermanni*.

The differences between these two species groups were considerable and it was necessary to assess their generic status. Both groups clearly belonged to tribe Eucnemini, having well-developed hypomeral excretory pits (fig. 1). Within this tribe they were unique in having powerfully developed tibiotarsal grooves on meso-metathorax (fig. 1) and sharply defined tarsal grooves on visible abdominal ventrites 1-4 (fig. 1).

The monophyly of the genus *Gastraulacus sensu* Barber, 1925

The differences between the two species groups included in *Gastraulacus* were significant. In order to increase clarity, they are referred to as group G (= species belonging to same group with *G. bisulcatus*) and group P (= species similar to *G. nevermanni*) in the following discussion of the characters.

(1) The frons in group G is deeply grooved above the lateral extensions of frons over the antennal insertion points (fig. 21-24), in group P no such structures exist (fig. 36-37).

(2) The antennae in group G are of “*Eucnemis*-type” (Muona, 1993, fig. 76), flagellomeres are flattened, becoming flatter, shorter and wider towards apex (fig. 2), in group P flagellomeres 1-8 are about identical, wider than long (fig. 3).

(3) The surfaces of species belonging to group G are moderately to very shiny, punctation being either sparse or partly rugose, best described as normal (fig. 17-20), in group P dorsal surfaces are dull, partly very densely punctate or rugose, on elytra forming large granules (fig. 38-39), punctures being sharply defined and usually filled with organic debris.

(4) The median sclerite of aedeagus is large, plate-shaped in group G (fig. 15-16, 28-32), deeply divided in two lobes in group P (fig. 46-49).

(5) The apical lateral lobes are much shorter than the median sclerite and simple in group G (fig. 15-16, 28-32), about as long as the median sclerite with two separate apices in group P (fig. 48-49).

(6) The base of the supporting part of male sternite IX is deeply grooved, bifid in group G (fig. 4-5), deeply bisinuate, with three apices in group P (fig. 6). With six obvious differences it might seem clear that we are dealing with two genera. When observing dif-

ferences between species groups, even today genera are described without considering the phylogenetic meaning of the differences. Such an approach is not an evolutionary one. It aims to group species on the basis of similarity, rather than trying to understand their evolutionary history. The key question is the identity of the sister-groups, i.e. searching for synapomorphies supporting the putative clades. Fortunately, in this case a phylogenetic hypothesis is available to help in assessing observed differences in an evolutionary context (Muona, 1991a; Muona, 1993; Lawrence et al., 2007; Muona & Malinen, 2020; Muona & Teräväinen, 2020).

(1) The state in group G is unique among Eucnemidae and clearly a synapomorphy, the state in group P is present in all outgroups and thus a plesiomorphy.

(2) The state in group G is found in all other Eucnemini, most Mesogenini and many Galbitini, but not present in any other Eucnemidae. It is optimized as a synapomorphy for the three tribes and thus a plesiomorphy for group G. The state found in group P is similar to that found in the Galbitini genus *Temnillus* Bonvouloir, but quite different in details - distribution of sensory elements on flagellomeres - and clearly a synapomorphy for group P.

(3) The granulose surface structure in group P is unique in Eucnemidae and a synapomorphy, the state seen in group G is widespread in outgroups and a plesiomorphy.

(4) The state found in group G is the one found in the sister group of Eucnemini, Mesogenini, as well as in Galbitini and most Eucnemini, but not known outside these tribes. It is a plesiomorphy, whereas the state in group P is either a synapomorphy or an indication of a problem in the present classification, suggesting relationship with Galbitini.

(5) As character 4, plesiomorphy in group G, undecided in group P.

(6) As character 4, plesiomorphy in group G and probably undecided in group P.

On the basis of these features it is concluded that character (1) is a synapomorphy supporting the monophyly of group G and characters (2) and (3) are synapomorphies supporting the monophyly of group P. Characters (4), (5) and (6) may be synapomorphies of group P but they may also indicate that the position of group P is ambiguous and it is more closely related to Galbitini than Eucnemini. However, many other characters used in the earlier analysis (Muona, 1993) would contradict this latter solution, e.g. the presence of hypomeral pits and complete ventral grooves on abdomen as well as the shape of the spermatheca.

The conclusion was that both groups were clades and deserved generic status on evolutionary grounds. Group P is here formally described as a new genus.

Species belonging to these two genera are widely distributed in Central and South America from Mexi-

co to Brazil, Peru, Trinidad and Tobago and French Guiana. In addition to some 50 specimens seen, an attempt was made to evaluate digitized information available over the internet. The main source for such information (GBIF) was consulted and the identifications of the records listed there was assessed.

The width of the pronotum was measured at the widest point, usually at the caudal tips of the hind angles. The greatest length of the pronotum was measured from the midline. The greatest length of the elytra was measured from the caudal tip of scutellum to the tip of the elytra, i.e., omitting scutellum. Instead of eleven antennomeres, the terms scape, pedicel and nine flagellomeres are used. Flagellomeres are referred to with the letter “f” and the number from 1 to 9.

***Gastraulacus* Guérin-Ménéville, 1843**

Gastraulacus Guérin-Ménéville, 1843: 188
Bonvouloir, 1871: 115.

Type-species: *Galba bisulcatus* Latreille, by original designation (Guérin-Ménéville, 1843: 188; 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). 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).

Within the tribe Eucnemini, *Gastraulacus* is characterized by the deep, well defined metasternal and abdominal tarsal grooves (fig. 1, 25-27). In this respect, as well as in general appearance, it resembles the American Galbitini genus *Temnillus* Bonvouloir, 1871 (Muona, 2021). *Gastraulacus* is easy to separate from *Temnillus* with the help of the simple eyes lacking dividing canthus and the prominent hypomeral sensory pits.

Gastraulacus species are dark brown to black in color, antennae and legs being lighter. Dorsal surfaces appear hairless. Punctuation is prominent, on head and pronotum moderate, mostly not rugose, on elytra often sparser apically. Head is deflexed between antennal sockets forming a ventrally facing frontoclypeal region and a frontal “face”, with huge pits above antennal insertion points, usually with a median impression from below the antennal sockets across the frontoclypeal area (fig. 7-8, 21-24). Antennae are slightly longer than pronotum, conspicuously loosely organized for a eucnemid (fig. 2). Prosternum is wide and fairly short,

hypomeral excretory pits are prominent (fig. 1, 11-12), lateral antennal grooves are deep, forming deep pocket at closed basal end (fig. 1, 50). Grooves for reception of mesolegs are sharply defined, smooth; abdominal tarsal grooves are deep and sharply defined on ventrites 1-4, extending to last visible ventrite as smooth areas (fig. 1, 13-14). All legs are relatively short, humeri and tibiae are flattened, tibiae are sparsely and minutely punctate, without spine-combs, with sharp lateral angle, meso- and metatarsi are longer than tibiae, protarsi being slightly shorter. First metatarsomere is long, longer than tarsomeres 2-5 combined, 2-4 short (fig. 1, 50), on meso- and prolegs first tarsomere is proportionately shorter. Antennal grooves as well as grooves for reception of legs provide an exact fit for extremities and when these are drawn in, the beetle resembles a large, bulky seed.

Aedeagus is of derived type shared by many Mesogenini, Eucnemini and Galbitini genera (fig. 15-16, 28-32; Muona, 1991a: fig. 10-12; Muona, 1993: fig. 124, 163, 168; Muona, 2019; 2020), with large median plate, complex, divided fused lateral lobes and tubular basal piece. The female reproductive tract has a simple undivided bursa and a small, simple spermatheca with prominent apical opening (Muona 1993: fig. 219-223).

There appears to be a fair amount of variation in the proportions of antennal parts as well as sexual dimorphism in their shape. The shape of the pedicel is unusual as the basal half is only half as thick as the first flagellomere and when the antennae are at rest, completely hidden under the scape (fig. 12, 40, 41, 52). This must be the reason for Barber’s cryptic observation that the third joint (= first flagellomere) is twice as long as the second (= pedicel) in *G. atratus* (1925: 63). In all species studied they were about as long when both could be seen properly.

The shape of the hypomeral pits is a promising characters for Eucnemini taxonomy. Published results on *Eucnemis* (Muona, 2019) and ongoing unpublished work with *Idiotarsus* Bonvouloir suggest this character varies within species and a substantial material is needed to assess this variation. This was not available here, but some suggestions are presented.

The biology of the species is poorly known, but it appears clear that they develop in wood infested with bracket fungi.

***Gastraulacus cavifrons* Horn, 1890**

Gastraulacus cavifrons Horn, 1890: 215.

Gastraulacus cavifrons Horn, 1890 (Chassain & Touroult, 2011).

Figures 7, 9, 11, 14, 15, 50

Type material

Holotype from Nicaragua, Chontales (BMNH), seen. Other material.

French Guiana: Matiti, 1 male (JMC), Belizon, 3 females (JMC), Res. Nat. Trinite, 1 female (JMC). Chassain & Touroult (2011) illustrate a specimen from French Guiana.

Diagnosis.

Because of the large vase-shaped impression on head and caudad strongly converging metasternal tarsal grooves this species can be confused only with *G. brasiliensis*. *G. cavifrons* can be separated from *G. brasiliensis* by wider pronotum (fig. 9), stronger elytral striae (fig. 9) and form of the aedeagus (fig. 15). Often frontal punctation is sparser as well (fig. 7).

Description.

Size: male 10.5 mm (1), females 12.4-15.0 (5). Body form slender, 2.9 times as long as at widest point, dorsum blackish brown, moderately shiny (fig. 9). Head very densely punctate around frontal impression, increasingly less so towards sides, frontal impression variably punctate, often nearly glabrous, frontal pits with curved lateral margins, frontoclypeus with deep triangular impression just above the apex, above it with strong, rounded pit which becomes gradually larger and forms a huge vase-shaped impression on frons (fig. 7). Pronotum with nearly parallel sides for basal 2/3, from there on abruptly converging, with basally strong and deep, on disk wide an shallow median groove, with rounded impressions on both sides of base, very densely punctate, rugose, surface appearing uneven (fig. 9). Scutellum wide, rounded, sparsely punctate, elytra with sharp striae, these well-developed even apically, interstices with dense, transversely rugose punctation, punctures small, interstices convex, 3rd and 5th higher than others (fig. 9). Prosternum moderately densely, evenly punctate, hypomera nearly glabrous, pits with few inconspicuous hairs on lateral surfaces, median edge strongly projecting (fig. 11). Metasternum densely punctate, punctures small, in caudal half with sparser punctation, in middle with sharp, shiny groove, area between tibiotarsal grooves and metanepisternum densely punctate with small punctures (fig. 11). Deep tibiotarsal grooves strongly converging caudad, with dull shine due to microscopic sculpture (fig. 50). Metacoxal plates fairly stout, densely punctate with small punctures (fig. 50). Abdominal ventrites with large densely set punctures between tarsal grooves, more sparsely punctate on lateral sides except for extreme edges, ventrite 5 with sharply defined, punctate small extensions to tarsal grooves. Apex of abdomen slenderer than in *G. brasiliensis* (fig. 14).

Aedeagus slender, similar to that of *G. brasiliensis* n.sp., but median plate with more rounded sides and less pronounced corners, basally united lateral lobes shorter and with shallower, rounded apical emargination (fig. 15). Ninth male sternite and eight male tergite similar to those of *G. brasiliensis* n.sp., eight tergite with complex apex (fig. 4)

Distribution

Nicaragua, French Guiana.

GBIF: Brazil (SiBBr), probably incorrect and refers to *G. brasiliensis*; French Guiana (“Le Monde des Insectes”), on the basis of the image appears to be correct; Nicaragua (MEL), not seen but regarded as correct; Panama (Schenkling, 1928: 10), quite likely, but unclear as no reference is given.

Gastraulacus brasiliensis n.sp.

Figures 4, 8, 10, 12, 13, 16.

Type material

Holotype male pinned, with aedeagus and genital sclerites in Euparal on cellulose acetate card, labelled “[Brasil: Rondonia, Porto Velho, 16-4-1979, J. Campbell]”, hand-written with ink (INPA).

Diagnosis

With strongly caudad converging metasternal grooves and large vase-shaped impression in head similar to *G. cavifrons*, but with clearly narrower pronotum and smoother elytra (fig. 10).

Description

Size: male 10.7 mm (1). Body form slender, 2.9 times as long as at widest point, dorsum blackish brown, moderately shiny (fig. 10). Head very densely punctate, punctures separate, mostly large, frontal impression very sparsely punctate, punctures shiny, frontal pits with long, slightly curved lateral margins, frontoclypeus with small, deep round pit between antennal sockets and above it with vase-shaped strong impression, this with deep sharp groove at base, and a widening shallower part on frons, resembling a huge exclamation mark (fig. 8). Pronotum with nearly parallel sides for basal half, from there on evenly rounded to front, basally with short median crest, midline with long narrow groove, mostly very densely punctate, rugose, upper flanks about in middle smoother (fig. 10). Scutellum wide, rounded, sparsely punctate, elytra with sharp striae basally, these becoming poorly defined towards apex, interstices with dense, transversely rugose punctation, punctures small, becoming close to indistinct towards apex, interstices convex, 3rd and 5th slightly higher than others (fig. 10). Prosternum densely, punctures large in middle, smaller towards sides and on prosternal peg, hypomera with large punctures on lateral margin, pits without hairs on lateral surfaces, median edge pointing inside (fig. 12). Metasternum moderately densely punctate, punctures small, area between tibiotarsal groove and metanepisternum densely punctate with small punctures. Deep tibiotarsal grooves strongly converging caudad

(as in fig 50), with dull shine due to microscopic sculpture. Metacoxal plates fairly stout, more parallel than in other species, densely punctate with small punctures. Abdominal ventrites similar to those of *G. cavifrons*, under coxal plates with denser vestiture. Apex of abdomen less sharply defined than in *G. brasiliensis* (fig. 13).

Aedeagus slender, similar to that of *G. cavifrons*, but median plate more rectangular and with sharper corners, basal united lateral lobes longer and with deeper, acute apical emargination (fig. 16). Ninth male sternite and eight male tergite similar to those of *G. cavifrons*, eight tergite with complex apex (fig. 4)

Distribution

Brazil.

Gastraulacus atratus Guérin-Ménéville, 1843

Gastraulacus atratus Guérin-Ménéville, 1843: 188.

Figures 2, 5, 18, 21, 31, 32, 35.

Type material

Two localities are listed in the original description, Mexico and Colombia. The Colombian syntype male was studied (IRSNB; see Horn & Kähle 1935 for information about Guérin-Ménéville's Eucnemidae types), the Mexican syntype should be in Chevrolat's collection (NHMW), but has not been located.

Diagnosis

Closely related with *G. bisulcatus*, *G. doyenii* and *G. moragai* with nearly parallel tarsal grooves on metasternum, but separated from all of them by stouter shape (fig. 18) and stronger, sharp striae (fig. 18). The inside margins of frontal pits are curved (fig. 21) and the flanks of metasternum are irregularly punctate (fig. 27) in contrast to those of *G. doyenii*. Pronotal midline is usually not punctate, in *G. bisulcatus* it is usually shallowly grooved, punctate. The median impression on head usually ends at antennal insertion level (fig. 21), in *G. moragai* it is usually stronger and reaches higher on frons.

Description

Size: males 7.0-10.0 mm (4), females 9.2-11.1 mm (6). Body form stouter than in other species, 2.4-2.5 times as long as at widest point, dorsum black, shiny (fig. 18). Head moderately densely, evenly punctate, frontal pits with curved lateral margins, frontoclypeus with distinct median groove from deflexed lower part to around the upper edge of the frontal pits, fl about as long the often partly hidden pedicel (fig. 2). Pronotum with wide basal median impression, midline usually with glabrous median portion, punctation moderately dense, mostly only occasionally rugose on upper sides

of flanks in front (fig. 18). Scutellum wide, glabrous, eytra with well-marked striae, these well-developed even apically, interstices with strong punctation basally, equally dense, but weaker towards apex (fig. 18). Prosternum with confused punctation laterally, sparse punctation in middle, punctures variable in size. Hypomeral pits with strong hair fringe on lateral edges (as in fig. 51-54), appearing larger than in other species because lateral edges of pits are rounded (as in fig. 51, 53) and median edges lack lateral projections (as in fig. 12). Metathorax with huge punctures on sides, in middle nearly glabrous with very fine and sparse punctation, lateral region between deep tibiotarsal grooves and metanepisterna about parallel sided, narrowing caudad, irregularly punctate, with punctures of many sizes (fig. 27). Metacoxal plates fairly elongate, moderately densely punctate (fig. 27). Abdominal ventrites with large punctures, equally densely punctate, ventrite 5 with vaguely defined, strong glabrous caudad widening tarsal grooves.

Aedeagus with wide, plate-like median sclerite, this longer than wide to about as long as wide, widening towards apex, secondary lateral lobes long, curved basally towards inside and apically towards outside. Organ similar to that of *G. moragai*, but secondary lateral lobes more curved and whole organ wider (fig. 31-32). Ninth male sternite and eight male tergite similar to those of *G. bisulcatus*, but ninth sternite with slender basal hooks and more triangular in shape (fig. 35).

Distribution

Panama: Colon Province, Panama Province; Colombia; Mexico, other syntype, not seen, questionable.

Gastraulacus bisulcatus (Latreille, 1834)

Galba bisulcatus Latreille 1834: 132.

Gastraulacus bisulcatus (Latreille, 1834), Guérin-Ménéville, 1843: 188.

Gastraulacus bisulcatus (Latreille, 1834), Chassain & Touroult, 2011.

Figures 17, 22, 28, 29, 33, 51, 53.

Type material

Holotype should be in BMNH (Horn & Kähle, 1935, Latreille's later collection > Norris > London), but not found. The only widespread Brazilian species is accepted as being the taxon here described.

Other material.

Brazil: Sao Paulo, 1 male (JMC), Goias, Jatai, 1 male (JMC), Parana, 1 female (JMC), Parana, Rodaulia, 1 female (AMNH), Parana, Caviuha, 1 female (AMNH), "Brazil", 1 female (JMC); French Guiana, Matiti, 1 female (JMC); Peru, Satipo, Junin, 1 female (JMC). Chassain & Touroult, 2011 illustrate a specimen from French Guiana.

Diagnosis

As *G. doyeri*, *G. moragai* and *G. atratus* with nearly parallel tarsal grooves on metasternum. Differs from *G. atratus* by slenderer body, grooved pronotal midline, stronger pronotal punctation and weaker elytral striae (fig. 17); from *G. doyeri* by weaker frontal groove and often more curved inside margins of frontal pits (fig. 22) and irregularly punctate flanks of metasternum (as in fig. 26-27); from *G. moragai* by grooved pronotal midline and stronger pronotal punctation (fig. 17) and weaker frontal groove (fig. 22).

Description

Size: males 9.5-10.5 mm (2), females 8.5-12.6 mm (8). Body slender, more than 2.7 times as long as at widest point, dorsum black, shiny (fig. 17). Head moderately densely, evenly punctate, frontal pits with curved lateral margins, frontoclypeus usually with vague median groove from deflexed lower part to around the middle level of the frontal pits, often with two small pits and non-punctate area above these, fl slightly longer than pedicel. Pronotum with weak basal median impression, midline punctate, with nearly complete narrow median groove, punctation moderately dense, largely transversely rugose, punctures separate on basal region and basal flanks (fig. 17). Scutellum rounded, glabrous, elytra with feeble striae at most, interstices with strong punctation basally, punctures here large, much sparser and smaller towards apex (fig. 17). Prosternum with dense punctation on sides, punctures becoming sparser and less densely set in middle, hypomerical pits with strong hair fringe on lateral edges, lateral edges rounded, not nearly straight (fig. 51, 52) as in *G. atratus* and *G. moragai* (fig. 52, 54). Metathorax with more evenly and densely set punctures than in *G. atratus*, lateral region between deep tibiotarsal grooves and metanepisterna narrowing caudad, irregularly punctate, with punctures of many sizes (fig. 27). Metacoxal plates proportionately longer than in *G. atratus*, with much denser punctation than in that species. Abdominal ventrites with large punctures, equally, densely punctate, ventrite 5 with vaguely defined, strong glabrous caudad widening tarsal grooves.

Aedeagus with wide, plate-like median sclerite, this wider than long, widest at base, secondary lateral lobes short, claw-shaped with small apical tooth (fig. 28-29). Ninth male sternite and eight male tergite similar to those of *G. atratus*, but ninth sternite with strong basal hooks and more pointedly rounded in shape.

Distribution

Brazil, French Guiana, Peru.
Colombia (Horn 1890: 215) incorrect, it refers to one syntype of *Gastraulacus atratus*; Mexico (Bonvou-

loir, 1871: 114), not seen, probably incorrect; Nicaragua (Horn, 1890: 215), not seen, probably incorrect. Chassain & Touroult (2011) report this species from Kaw, Matiti and Saül.

Gastraulacus doyeri n.sp.

Figures 1, 19, 24, 25

Type material

Holotype female pinned, labelled “[COSTA RICA: Catie, 3 km SE Turrialba, 600 m Cartago Prov. V-13/16 85 J. Doyen]” (UCD)

Paratypes Four pinned female specimens, labelled (1) “[Fila Matama 1680m, Limon Limon Prov. COSTA RICA April 1989, A. Chacon & G. Herrera 197000, 630500]” (INBIO); (2) “[Rio San Lorenzo 1050 m, Tierras Morenas Z. P., Tenorio, Prov. Guanacaste, COSTA RICA, C. Alvarado, Abr. 1991, L-N 287800 427600]” (JMC); (3) “[Est, Cacao 1000-1400m, Lado SO Vol. Cacao, N.P., Guan. Proc. Guanacaste, COSTA RICA, K. Taylor, 21 a 29 May 1992, L-N 323300 375700]” (INBIO); (4) “[COSTA RICA Prov. Guanacaste, Guanacaste NP. Vulcan Cacao| 10 51 29.5 E 85 27 50.9 W, 1024 m 25.-27.5.-2003, Leg. Cate, Barrios, Uhler]” (INBIO).

Diagnosis

Closely related to *G. bisulcatus*, *G. atratus* and *G. moragai*, but separated from all of them by the inside margin of frontal pits being often long, not curved (fig. 24) and the densely and orderly punctate flanks of metasternum (fig. 25), in form elongated as *G. bisulcatus* and *G. moragai*, not stout as *G. atratus* (fig. 19).

Description

Size: females 9.5-10.7 mm (5). Body slender, more than 2.7 times as long as at widest point, dorsum black, shiny (fig. 19). Head fairly sparsely, evenly punctate, frontal pits usually with straight, often long lateral margins, frontoclypeus usually with vague, wide median groove from deflexed lower part to past the level of the frontal pits, often with non-punctate area and/or median pit where the groove ends (fig. 24). Pronotum with strong basal median impression, midline punctate or with narrow short median line and faint groove, punctation moderately dense, quite fine, forming chains of united punctures starting from the fairly sparsely punctate median disk down towards flanks (fig. 19). Scutellum widely rounded, glabrous, elytra about without striae, interstices with sparse and weak punctation, basally along suture with larger, confused punctures, apically close to glabrous (fig. 19). Prosternum with quite dense, strong punctation, punctures only very lightly sparser in middle,

hypomeral pits with hair fringe on lateral edges, hairs fairly short, about as densely set as those of *G. bisulcatus* (fig. 51). Metathorax with large, moderately densely set punctures cranial half, especially on sides close to glabrous on caudad half, lateral region between deep tibiotarsal grooves and metanepisterna widening caudad, very densely and orderly punctate (fig. 25). Metacoxal plates similar to those of *G. bisulcatus* in shape and punctation (fig. 25). Abdominal ventrites with large punctures, equally and fairly densely, punctate, ventrite 5 with vaguely defined, strong glabrous caudad widening tarsal grooves.

Distribution

Brazil.

Gastraulacus moragai n.sp.

Figures 20, 23, 26, 30, 34, 52, 54.

Type material

Holotype male pinned, labelled “[COSTA RICA, F. Nevermann, 26-6-32|Hamburgerfarm, Revelation, Ebenene Limon| In trockenem Holz], aedeagus and genital plates mounted in Euparal on transparent cellulose acetate card (MNHN).

Paratypes Five pinned female specimens, labelled (1) “COSTA RICA. Prov. Alajuela, Upala,| Alba Helicomias Send Cunós. 700 m. 01|Jul. 2000 A. Lopez. Luz ambiente|acuática L-N. 422600 299100 #58586|Barcode on reverse label inb0003302823|” (INBIO), (2) Fca. Cafrosa, Est. Las|Mellizas P.N. Amistad,|1300m, Prov. Punta. COSTA|RICA. J. C. Saborio|Jun – Jul 1990|L-S-316100, 596100|Barcode on reverse label cri000673303|” (INBIO), (3) “[Est. Pitilla, 9 km S. Santa Cecilia, N.P.|Guanacaste, Prov. Guana, COSTA RICA.|700m Jun 1994, c. Moraga L N|330_200380200 #3002|” (JMC), (4) Est, Pitilla, 700 m. 9 km|Sta. Cecilia, P.N. Guana-|caste, Prov. Guana. COSTA|Rica C. Moraga Jul 1991 |L-N-33200,380200|Barcode on reverse label cri000506108|” (INBIO), (5) PANAMA: Veraguas Prov.|Alto del Piedra, W. of Sante|Fe, VII-24-1999, 900 m.|Coll. A. R. Gillogly|” (TAMU), “Peru Dep. Huanuco, Rio Llullapichis, E.B.Pamguana 235 m. alt., S 9 36 49 W74 56 7, leg F. Wachtel 22.9. – 10.10. 2017” (ZSM).

Diagnosis

As *G. doyeri*, *G. bisulcatus* and *G. atratus* with nearly parallel tarsal grooves on metasternum. Differs from *G. atratus* by slenderer body and weaker striae (fig. 20); from *G. doyeri* by curved inside margins of frontal pits (fig. 23) and irregularly punctate flanks of metasternum (fig.20); from *G. bisulcatus* by stronger frontal groove, shorter impression on pronotal midline and weaker pronotal punctation (fig. 20).

Description

Size: male 7.2 mm (1), females 8.5-12.1 mm (6). Body slender, more than 2.75 times as long as at widest point, dorsum blackish brown to black, shiny (fig. 20). Head fairly sparsely, evenly punctate, punctures larger than those of *G. doyeri*, frontal pits with curved lateral margins, frontoclypeus with strong, wide median groove from deflexed lower part to upper frons, usually with non-punctate transverse impression at mid eye level, creating an image of inverted cross (fig. 23). Pronotum with strong mediobasal median impression, often with drop-shaped shallow basal glabrous pit, midline punctate with narrow short median groove, punctation dense, punctures larger and more densely set than in *G. doyeri*, forming chains of united punctures starting from densely punctate median disk down towards flanks (fig. 20). Scutellum widely rounded, glabrous, eytra faintly striate basally, interstices with sparse and weak punctation, basally along suture with larger punctures, apically close to glabrous (fig. 20). Prosternum with sparse, fine punctation, punctures large on sides, hypomeral pits with strong hair fringe on lateral edges, hairs as those of *G. bisulcatus*, but lateral edge nearly straight, not rounded (fig. 52, 54). Metathorax with large, fairly densely set punctures on cranial third, especially on sides, otherwise very sparsely and minutely punctate, lateral region between deep tibiotarsal grooves and metanepisterna blade-shaped, irregularly punctate, with punctures of many sizes (fig. 26). Metacoxal plates similar to those of *G. bisulcatus* in shape and punctation. Abdominal ventrites with large punctures, equally, fairly densely punctate, ventrite 5 with vaguely defined, strong glabrous caudad widening tarsal grooves.

Aedeagus with wide, plate-like median sclerite, this longer than wide, widening apically, secondary lateral lobes long, nearly straight, only moderately curved apically (fig. 30). Ninth male sternite similar to that of *G. atratus*, but eight tergite wide, short, apically scarcely pointed, rounded (fig. 34).

Distribution

Costa Rica, Panama, Peru.

Pseudotemnillus new genus

Type species: *Pseudotemnillus giuglarisi* n.sp., designated here.

Diagnosis

Within the tribe Eucnemini, *Pseudotemnillus* is characterized by deep, well defined metasternal and abdominal tarsal grooves (fig. 40-41, 44-45). In this respect, as well as in general appearance, it resembles both *Gastraulacus* and the American Galbitini genus *Temnillus*

Bonvouloir, 1871. *Pseudotemnullus* is easy to separate from *Temnullus* with the help of simple eyes without dividing canthus (fig. 36-37) and presence of prominent hypomerall sensory pits (fig. 42-43). From *Gastraulacus Pseudotemnullus* differs in having unmodified head without lateral frontal pits (fig. 36-37), compact short antennae (fig. 3) and very dense, rough surface sculpture (fig. 39) as well as divided median lobe and bifid apical lateral lobes of aedeagus (fig. 46-49).

Description

Pseudotemnullus species are greyish black in color, antennae and legs being lighter. Dorsal surfaces appear hairless, punctation is extraordinarily rough and dense, single punctures are mostly large, on elytra largely granulate (fig. 38-39). Head is deflexed between antennal sockets forming a ventrally facing lower frontoclypeal region and a frontal “face”, with a short median groove from between the antennal sockets (fig. 36-37). Antennae are shorter than pronotum, compact, pedicel is wider and longer than flagellomeres, fl-8 being of equal size and form (fig. 3). Prosternum is wide and fairly short, hypomerall excretory pits lack vestiture (fig. 42-43), lateral antennal grooves are deep, basally closed (fig. 40-41). Grooves for reception of meso- and metalegs are sharply defined, smooth; abdominal tarsal grooves are deep and well-defined on ventrites 1-4, slightly extending to ventrite 5 (fig. 44-45). Antennal grooves as well as the grooves for reception of legs provide an exact fit for the extremities and when these are drawn in, the beetle resembles a bulky seed with rough surfaces.

Aedeagus is of derived type shared by several Eucnemini and Galbitini genera (Muona, 1991, fig. 10-12; 106, 107; Muona, 1993, fig. 124, 164, 168), with deeply divided median plate, complex, divided fused lateral lobes with two apices and tubular basal piece (fig. 46-49).

Only one definite observation about the biology of the species is known. The type-series of *G. nevermanni* Barber was cut from pupal cells from a dead standing tree in Costa Rica (Barber, 1925).

The taxonomy of *Pseudotemnullus* species requires further work. Two males belonging to different species are known and their relationship to the six females studied remained an educated guess. Both known males are more compactly built than the females and there is strong reason to suspect this is a sexual character.

Pseudotemnullus giuglarisi n.sp.

Gastraulacus nevermanni auct., nec Barber, 1925, Chassain & Touroult, 2011.

Figures 36, 38, 39, 40, 42, 44, 46, 48.

Type material

Holotype female pinned, abdomen glued on separate

card, labelled “[French Guiana Belizon, +4.25 -52.65 2015-08, JL Guiglaris leg.]HOLOTYPE, *Pseudotemnullus giuglarisi* n.sp., J.Muona des. 2018]” (JMC)

Paratypes. Two females labelled “[French Guiana Belizon, +4.25 -52.65 2015-07/08 and 2015-10, JL Guiglaris leg.] PARATYPE, *Pseudotemnullus giuglarisi* n.sp., J.Muona des. 2018]” (JMC); one female labelled “[Acc. 24895, Kamakusa, Jan. 1923 Nr. Gui.] PARATYPE, *Pseudotemnullus giuglarisi* n.sp., J.Muona des. 2018]” (USNM). The material available included one male labelled “[Verdant Vale WI, Arima Trinidad, Apr 1918 R. Thaxter, *Gastraulacus tuberculatus* Schauf. [all labels hand-written in ink]” (USNM). The label is almost identical with that of the holotype of *Temnullus asperatus* Fisher, 1945 (Muona, 2021), a specimen that lacks the collector’s name. It appears clear that it too was collected by R. Thaxter. This specimen was pinned and lacked right elytron. It is now glued on card, abdomen placed separately behind it. Aedeagus and the apical tergites and sternites are mounted in Euparal on a cellulose acetate card.

Additional material

One female labelled “/PERU, Loreto Prov., 40 km NE Iquitos on, Amazon R., Explorama, Inn; 22-24-08-1992, Castner & Skelley, hand coll. at night/” (FSCA), one female labelled “[Para Brazil, Acc. no. 2966] July” (USNM).

Chassain & Touroult (2011) illustrate a female of this species as *G. nevermanni*.

Note.

The three French Guiana females are very similar to each other and the description is based on them. The Guiana specimen is likely to belong to the same taxon and it is included as a paratype. The Trinidad male specimen is described here as being the male of *P. giuglarisi*. This decision was based on the structure of the hypomera.

The very short metathorax of both male *Pseudotemnullus* spp seen is most likely a sexual character.

Diagnosis

Because of the surface granules *P. giuglarisi* can be confused only with *P. nevermanni*, but that species has smaller hypomerall sensory pits (fig. 43).

Description

Size: male 9.2 mm (1), female 8.2-11.1 (7). Body slender, more than 2.75 times as long as at widest point, elytra about three times as long as pronotum (about 2.1 in male), dorsum dark greyish black, dull (fig. 38-39). Head flattened, extremely densely punctate, punctures large, pit-like, largely joined in chains, mostly filled with debris, lower frons with short median groove, widest at antennal socket height (fig. 36). Pronotum widest at hind angles, sides fairly evenly converging,

rounded, upper flanks with slight impressions laterally, midline with cut-like groove in front of scutellum, continuing further cranially, rather poorly defined, whole surface covered with extremely dense punctation, punctures pit-like, filled with debris (fig. 39). Scutellum widely rounded, punctate, elytra obscurely striate, interstices with irregular rows of granules, surface dullish (fig. 39). Prosternum with very dense punctation, punctures huge, hypomeral pits without hair fringe on lateral edges, pits large, on lateral sides about half the length of antennal groove, surfaces obscurely granulose, dull due to strong microreticulation (fig. 42). Metasternum elongate, about 1.7 times as long as prosternum (about 1.3 in male), densely punctate except for narrow smooth median line, punctures largest on sides, smallest at caudal margin, lateral region between deep tibiotarsal grooves and metanepisterna narrow, dull, without punctation (fig. 40). Metacoxal plates slender, strongly and very densely punctate (fig. 40). Abdominal ventrites with very dense punctation, ventrites 1-3 with sharply defined tarsal grooves, ventrite 4 with wider tarsal grooves with rounded sides and ventrite 5 with even wider, rounded tarsal grooves, all grooves smooth and shiny (fig. 44).

Aedeagus with deeply divided median sclerite with two blade-like parts, these appearing separate but joined basally, secondary lateral lobes long, with short ventral and long dorsal part, both hairy, rest of aedeagus tubular (fig. 46, 48). Organ similar to that of *P. nevermanni*, but median sclerite shorter and secondary lateral lobes with sharper, shorter and less densely hairy ventral parts.

Ninth male sternite quite different from those of *Gastraulacus* with deeply bisinuate base (fig. 6).

Distribution

Trinidad and Tobago, French Guiana, Guyana. The female specimens seen from Peru and Brazil are very similar to the ones from Guiana and appear to belong here as well, but they are not regarded as syntypes. Chassain & Touroult (2011) report this species as *Gastraulacus nevermanni* from many localities in French Guiana:

Pseudotemnillus nevermanni (Barber, 1925)

Gastraulacus nevermanni Barber, 1925:

Figures 37, 41, 43, 45, 47, 49.

Type material

Paratype male seen (USNM)

Diagnosis

The small hypomeral pits (fig. 43) separate this species from the similarly granulose *P. giuglarisi*.

Description

Size: male 10.0 mm (1). Body slender, more than 2.75 times as long as at widest point, elytra slightly more than twice as long as pronotum, dorsum dark greyish black, dull. Head flattened, very densely punctate, punctures larger than in *P. giuglarisi*, pit-like, mostly separate and filled with debris, lower frons with short median groove (fig. 37). Pronotum widest at hind angles, sides close to parallel, slightly bisinuate, converging in cranial third, disk with lateral round impressions, midline with nearly complete delicate sharp groove, whole surface covered with extremely dense punctation, punctures pit-like, filled with debris. Scutellum widely rounded, punctate, elytra obscurely striate, interstices with irregular rows of granules, surface dullish. Prosternum with very dense punctation, punctures large, hypomeral pits without hair fringe on lateral edges, pits small, on lateral sides about one fourth of the length of lateral antennal groove, surfaces obscurely granulose, dull due to strong microreticulation (fig. 41). Metasternum short, about 1.3 times as long as prosternum, fairly densely punctate except for very narrow smooth median line, punctures largest on sides, smallest at caudal margin and middle, less densely set than in *G. giuglarisi*, lateral region between deep tibiotarsal grooves and metanepisterna narrow, dull, without punctation (fig. 41). Metacoxal plates slender, strongly and very densely punctate (fig. 41). Abdominal ventrites with very dense punctation, ventrites 1-3 with sharply defined tarsal grooves, ventrite 4 with wider tarsal grooves with rounded sides and ventrite 5 with even wider, rounded tarsal grooves, all smooth and shiny (fig. 45).

Aedeagus with deeply divided median sclerite with two blade-like parts, these appearing separate but joined basally, secondary lateral lobes long, with short ventral and long dorsal part, both hairy, rest of aedeagus tubular (fig. 46, 48), similar to that of *P. giuglarisi*, but median sclerite longer and secondary lateral lobes with longer and more densely hairy ventral parts.

Ninth male sternite lost in the only dissected specimen seen.

Distribution

Costa Rica (type-locality). French Guiana (GBIF), not seen but treated as incorrect, referring to *G. giuglarisi*.

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, J. (ed.): Contribution à l'étude des Coléoptères de Guyane. Tome III.
- FISHER, W.S. 1945. New beetles of the family Eucnemidae from Central America and the West Indies. Proceedings 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, G.H. 1890. Insecta. Coleoptera. Throscidae and Eucnemidae. Biologia Central-America 3(1) 193-257.
- HORN, W. & Kahle, I. 1935-1937: Über entomologische Sammlungen, Entomologen und Entomologie (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.
- KOVALEV, A.V. 2019. A review of the genus *Anelastes* Kirby, 1819 (Coleoptera: Eucnemidae) of the Palearctic fauna. Zootaxa 4683 (1) 97-119.
- LATREILLE, M. 1834: Distribution methodique de la famille des Serricornés (ouvrage posthume). Annales de la Société Entomologique de France 3: 113-170. Lawrence et al., 2007.
- LAWRENCE, J.F.L., MUONA, J., TERÄVÄINEN, M., STÅHL, G. & VAHTERA, V. 2007. *Anischia*, *Perothops* and the phylogeny of Elateroidea (Coleoptera: Elateriformia). Insect Systematics and Evolution 38: 205-239.
- MUONA, J. 1987. The generic names of the beetle family Eucnemidae. Entomologica Scandinavica 18: 79-92
- MUONA, J. 1991a. A revision of the Indomalaysian 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. 2000. A revision of the Nearctic Eucnemidae. Acta Zoologica Fennica 212 1-106
- MUONA, J. 2019. A review of the genus *Eucnemis* Ahrens (Coleoptera, Eucnemidae). Entomologische Blätter und Coleoptera 115: 91-100.
- MUONA, J. 2020. A revision of the genus *Euryostus* Fleutiaux (Coleoptera, Eucnemidae, Mesogenini). Entomologische Blätter und Coleoptera 112: 21-27.
- MUONA, J. 2021. A revision of the genus *Temnillus* Bonvouloir (Coleoptera, Eucnemidae, Mesogenini). Entomologische Blätter und Coleoptera 113 (In press).
- MUONA, J. & MALINEN, P. 2020. A revision of the genus *Temnus* Bonvouloir (Coleoptera, Eucnemidae). Entomologische Blätter und Coleoptera 116: 11-20.
- MUONA, J. & TERÄVÄINEN, M. 2020. A re-evaluation of the Eucnemidae larval characters (Coleoptera). Papéis Avulsos De Zoologia 60 (special): e202060 (s.i.).28. <https://doi.org/10.11606/1807-0205/2020.60.special-issue.28>
- OTTO, R. 2017. A revision of Phlegoninae (Coleoptera: Eucnemidae), with descriptions of a new genus and four new species. Insecta Mundi 569: 1-27.
- OTTO, R. 2021. A new species of *Coomanius* Fleutiaux, 1924 (Coleoptera: Eucnemidae: Macraulacinae: Nematodini) from Southeast Asia. Insecta Mundi 877: 1-5.

SCHENKLING, S. 1928 Melasidae Coleopterorum Catalogus 11 (pars 96) 1-110

Key to species

1. Whole dorsal surface covered with densely set punctures (fig. 39), elytra with large granules.....2
- Dorsum shiny, moderately to densely punctate, at most only partly rugose (fig. 10, 20).....3
2. Hypomeral pits large (fig. 42). French Guiana, Trinidad, Guyana, Brazil.....
.....*Pseudotemmillus giuglarisi* n.sp.
- Hypomeral pits smaller (fig. 43). Costa Rica
.....*Pseudotemmillus nevermanni* (Barber, 1925)
3. Head with large vase-shaped median impression (fig.7-8), metasternal tibotarsal grooves strongly converging caudad (fig. 50), hypomeral pits with weak hair fringe (fig. 11-12)4
- Head with variable, less voluminous median impressions or grooves, (fig. 21-24), metasternal tarsal grooves directed about caudad (fig.25-27), hypomeral pits with strong hair fringe (fig.1)....5
4. Pronotum 1.4 times as wide as long, elytra with strong striae and mostly rugose interstices (fig. 9), Nicaragua, French Guiana.
.....*Gastraulacus cavifrons* Horn, 1890
- Pronotum 1.2 times as wide as long, elytra with caudad weakening striae, punctuation finer (fig. 10), Brazil.....*Gastraulacus brasiliensis* n.sp.
5. Frontoclypeal pits usually with long, parallel lateral edges, head with strong median groove, often with large median pit on frons (fig. 24), flanks of metasternum densely, regularly punctate (fig.25), Costa Rica.
.....*Gastraulacus doyenii* n.sp.
- Frontoclypeal pits with curved lateral edges, head with median groove, this usually weaker, with or without frontal median pits (fig. 21-23), metasternal flanks with less regular punctuation, partly, single punctures often elongated, obscure (fig. 26-27)6
6. Median plate of aedeagus wider than long, apical lateral lobes shorter (fig. 28-29), male tergite 8 apically pointed, medially strongly constricted with powerful hooks (fig.33); form slender, elytra faintly striate, disk of pronotum transversely rugose, with long median groove (fig. 17), head usually with median groove extending feebly to mid frons, often with pair of small pits (fig. 22), Brazil, ?French Guiana, ?Peru
.....*Gastraulacus bisulcatus* (Latreille, 1834)
- Median plate of aedeagus longer than wide, apical lateral lobes longer (fig. 30-32), male tergite ..8

more parallel-sided (fig. 34-35); disk of pronotum not rugose, Costa Rica, Panama, Colombia7

7. Male tergite 8 sharply pointed (fig. 35); body form especially short, wide, pronotum transversely impressed basally, with long smooth median line, elytral striae strong (fig. 18), head with shorter median groove (fig. 21), Panama, Colombia.....
.....*Gastraulacus atratus* Guérin-Méneville, 1843
- Male tergite 8 wide, feebly rounded apically (fig. 33); form slender (fig. 20), pronotum usually with droplet shaped basal impression, without long smooth median line (fig. 20), elytra with weak striae, head with longer median groove (fig. 23), Costa Rica, Panama, Peru
.....*Gastraulacus moragai* n.sp.

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](tel:0000-0003-2771-1171)

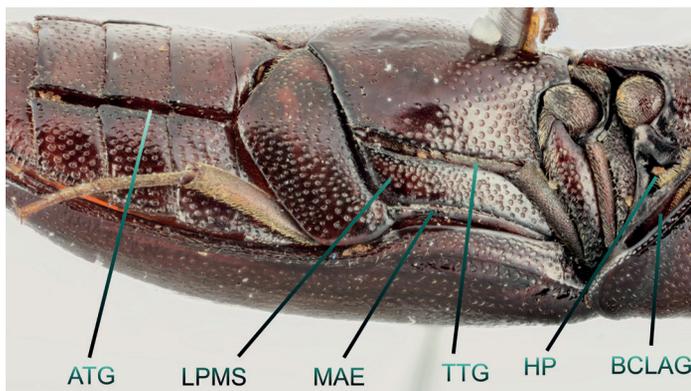


Figure 1. *Gastraulacus doyeni* n.sp., paratype, Limon Province, ventral characters. ATG = abdominal tarsal grooves; BCLAG = basally closed lateral antennal grooves; HP = hypomerical pits; LPMS = lateral part of metasternum; MAE = metanepisternum; TTG = tibio-tarsal groove on metasternum.



Figure 2-3. Antenna, left to right. (2) *Gastraulacus atratus* Guérin-Méneville, Panama, Colón Province; (3) *Pseudotemmillus giuglarisi* n.sp., paratype, Trinidad.



Figures 4-6. Ninth male abdominal tergite, from left to right. (4) *Gastraulacus brasiliensis* n.sp., holotype; (5) *Gastraulacus atratus* Guérin-Méneville, Panama, Colón province; (6) *Pseudotemmillus giuglarisi* n.sp., paratype, Trinidad.



Figure 7-8. *Gastrulacus* spp., facial view, from left to right. (7) *G. cavifrons* Barber, French Guiana; (8) *G. brasiliensis* n.sp., holotype, Brazil, Rondonia.



Figure 11-12, *Gastraulacus* spp., male prothorax, ventral view, from left to right. (11) *G. cavifrons* Barber, French Guiana, Matiti; (12) *G. brasiliensis* n.sp., holotype.



Figure 9-10, *Gastraulacus* spp., male, from left to right. (9) *G. cavifrons* Barber, French Guiana, Matiti; (10) *G. brasiliensis* n.sp., holotype.



Figure 13-14, *Gastraulacus* spp., male abdomen, from left to right. (13) *G. brasiliensis* n.sp., holotype; (14) *G. cavifrons* Barber, French Guiana, Matiti.

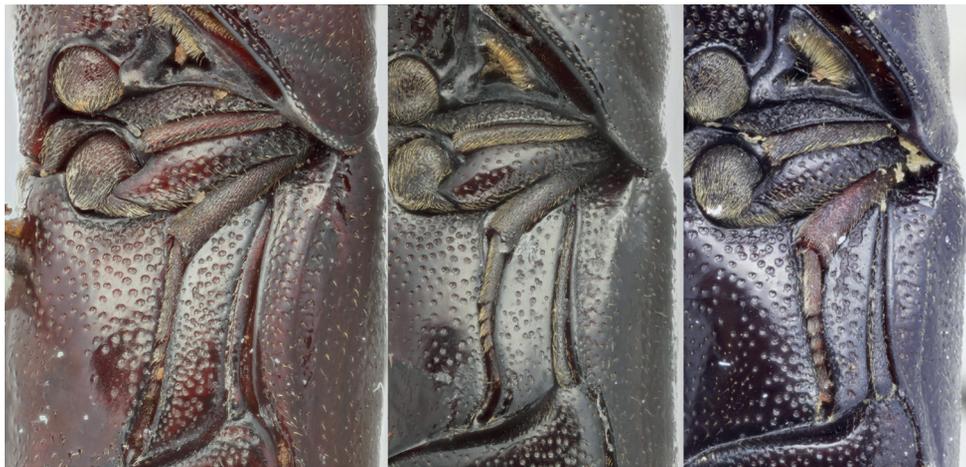
Figures 15-16, *Gastraulacus* spp., aedeagus, from upper to lower. (15) *G. cavifrons* Barber, French Guiana, Matiti; (16) *G. brasiliensis* n.sp., holotype.



Figures 17-20, *Gastraulacus* spp., from left to right. (17) *G. bisulcatus* (Latreille); (18) *G. atratus* Guérin-Méneville; (19) *G. doyeni* n.sp., holotype; (20) *G. moragai* n.sp., paratype.



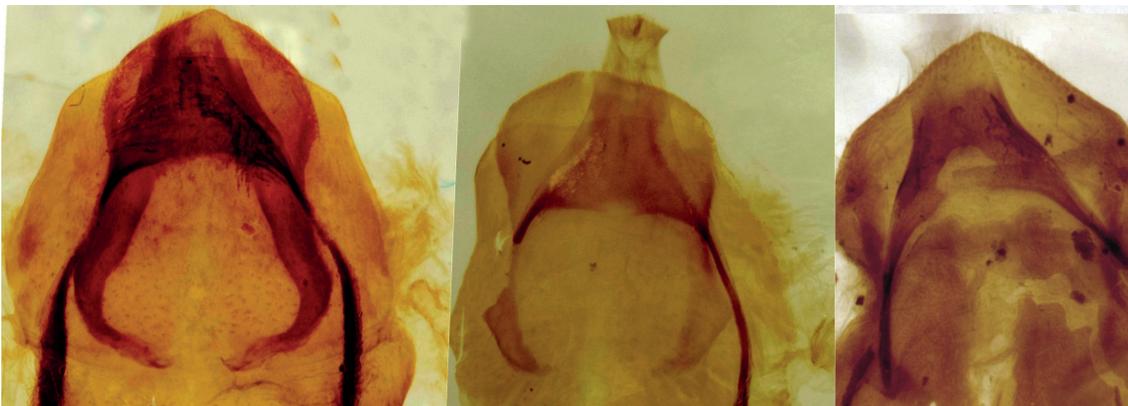
Figures 21-24, *Gastraulacus* spp., faces upper row from left to right (21) *G. atratus* Guérin-Méneville; (22) *G. bisulcatus* (Latreille); lower row from left to right (23) *G. moragai* n.sp.; (24) *G. doyeni* n.sp.



Figures 25-27, *Gastraulacus* spp., metasternum between metanepisternum and tibiotarsal groove, from left to right. (25) *G. doyeri* n.sp.; (26) *G. moragai* n.sp.; (27) *G. atratus* Guérin-Ménéville.



Figures 28-32, *Gastraulacus* spp., aedeagus, from left to right. (28) *G. bisulcatus* (Latreille), Brazil, Jatái; (29) ditto, Brazil, São Paulo; (30) *G. moragai* n.sp., holotype; (31) *G. atratus* Guérin-Ménéville. "Mexico"; (32) ditto, Panama, Colón Province.



Figures 33-35, *Gastraulacus* spp., male tergite 8, from left to right. (33) *G. bisulcatus* (Latreille), Brazil, Jatái; (34) *G. moragai* n.sp., holotype; (35) *G. atratus* Guérin-Ménéville. "Mexico"



Figures 36-37, *Pseudotemmillus* spp., facial view. (36) *P. giuglarisi* n.sp., paratype; (37) *P. nevermanni* (Barber), paratype.



Figures 38-39. *Pseudotemmillus giuglarisi* n.sp., paratype. (38) male; (39) female.



Figure 40-41, *Pseudotemmillus* spp., front half, from left to right, (40) *P. giuglarisi* n.sp., paratype female; (41) *P. nevermanni* (Barber), paratype male.



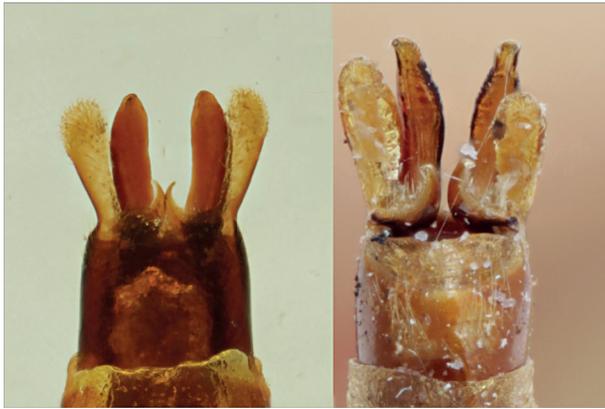
Fig.42-43, *Pseudotemmillus* spp., hypomeral pit, from left to right, (42) *P. giuglarisi* n.sp., paratype female; (43) *P. nevermanni* (Barber), paratype male.



Figures 44-45, *Pseudotemmillus* spp., male abdomen, from left to right. (44) *P. giuglarisi* n.sp.; (45) *P. nevermanni* (Barber), paratype.



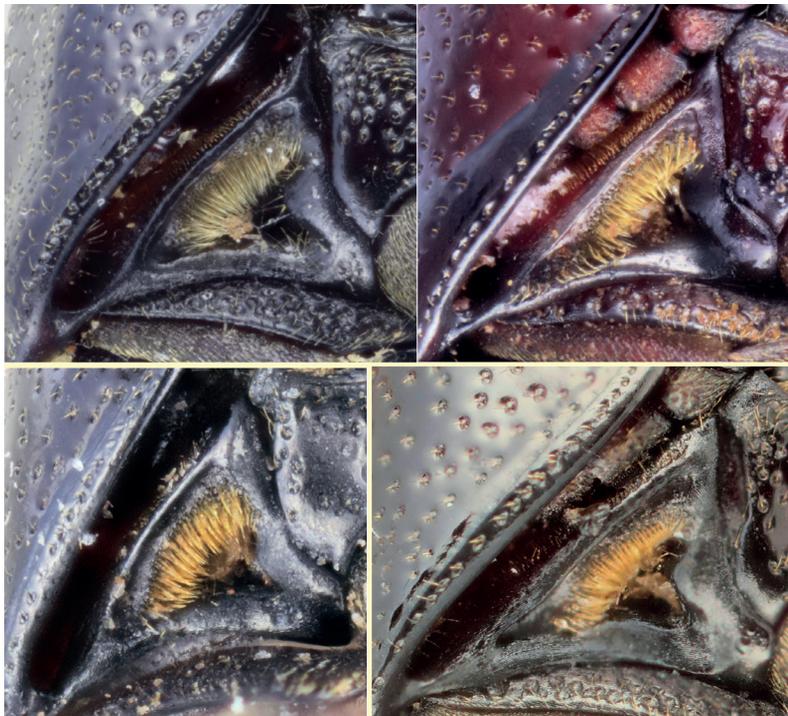
Figures 46-47, *Pseudotemmillus* spp., aedeagus, upper (46) *P. giuglarisi* n.sp.; lower (47) *P. nevermanni* (Barber), paratype.



Figures 48-49, *Pseudotemmillus* spp., aedeagus. from left to right. (44) *P. giuglarisi* n.sp.; (49) *P. nevermanni* (Barber), paratype.



Figure 50. *Gastraulacus cavifrons* Barber, pro-, meso- and metathorax, ventral view.



Figures 51-54. *Gastraulacus* spp, hypomeral pits. (51) *G. bisulcatus* (Latreille), male, Brazil, Jatai; (52) *G. moragai* n.sp., male, Costa Rica ; (53) *G. bisulcatus* (Latreille), female, Peru, Satipo Province; (54) *G. moragai* n.sp., female, Costa Rica.