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SYNONYMY OF *MALADERA RUBIDA* (MOSER, 1915) COMB. N. (COLEOPTERA, SCARABAEIDAE, SERICINI), WITH COMMENTS ON ITS DISTRIBUTION

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ABSTRACT

During a revision of type material of Afrotropical and Asian Sericini, the following new synonymy was established: *Maladera rubida* (Moser, 1915), **comb. n.** (= *Autoserica errata* Moser, 1916, **syn. n.**), *Maladera laminifera* (Moser, 1916), **comb. n.** and *Maladera fuscescens* (Moser, 1917), **comb. n.** Lectotypes for *Autoserica rubida* Moser, 1915 and *Autoserica errata* Moser, 1916 are designated. Based on the examination of a large amount of material from Indochina and from the type locality of *Autoserica errata* Moser (Dar-es-Salaam), it was concluded that the species was an element of East African savannah, rather than being Indochinese.

INTRODUCTION

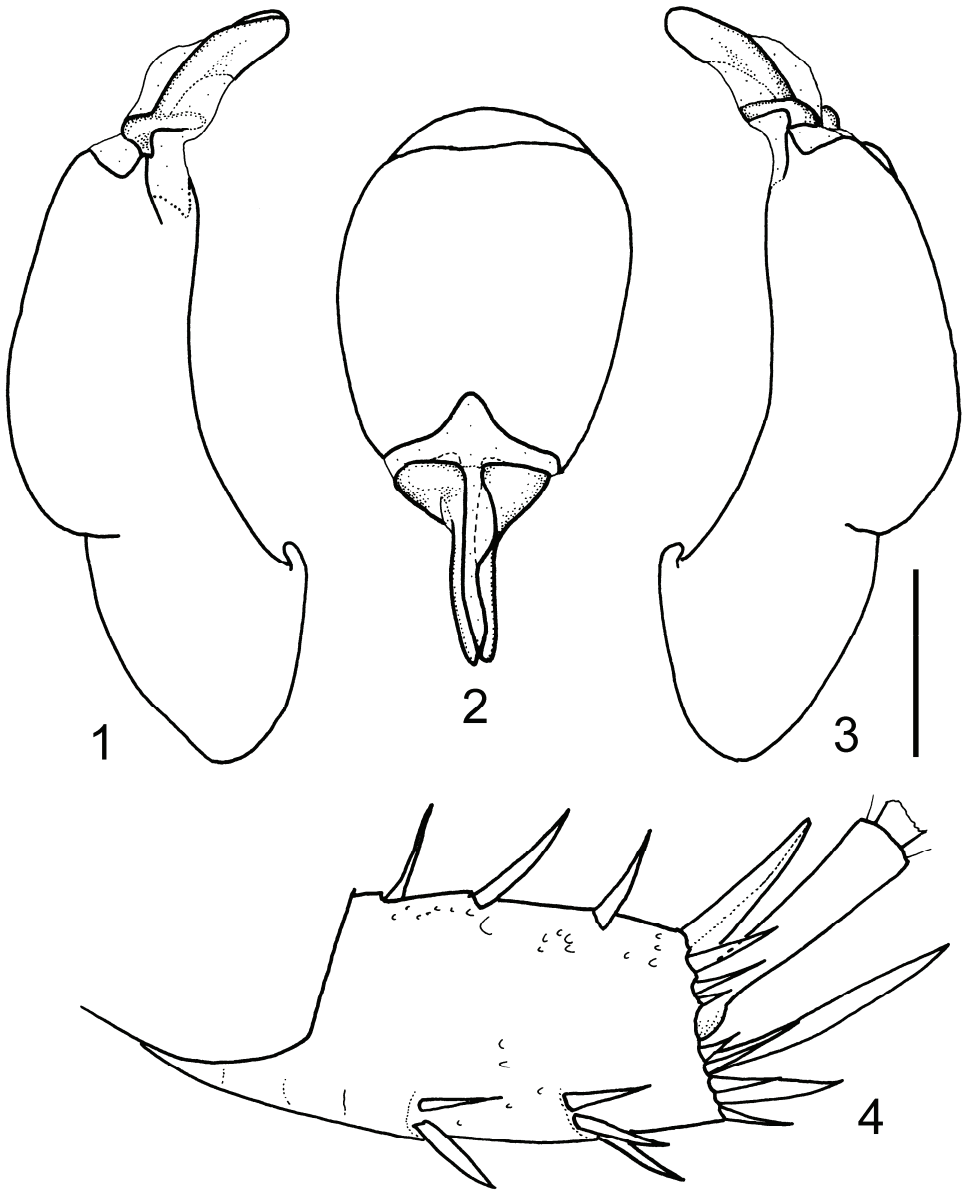
The genus *Maladera* Mulsant and Rey, 1871, is widely distributed in Palearctic, Oriental and Afrotropical regions. With more than 500 described species it is one of the largest genera of Sericini. During revisionary work on the Oriental and eastern Palearctic Sericini, almost all available type material of species described from mainland Asia was examined by the author. In addition, approximately ten thousand non-identified specimens, mainly from Indochina, the Himalayas and the Indian subcontinent, were obtained from several institutional and private collections, and studied. For a number of described species, only type material was available for study due to the rareness of the species or to other factors. In the unusual case of *Autoserica rubida* Moser, 1915, described from "Pegu India" [Pegu is located today in Myanmar (Burma)], no specimens, other than the four syntypes, were found among the Asian material examined. During a preliminary study of the Afrotropical species of *Autoserica* Brenske, 1897, however, it became apparent that *Autoserica errata* Moser, 1916, described from Tanzania, was synonymous with *A. rubida*.

Material studied for this revision is deposited in the collection of the author (CA) and in the Zoological Museum of the Humboldt University, Berlin (ZMHB).

TAXONOMIC TREATMENT

***Maladera rubida* (Moser, 1915), comb. n. (figures 1-4)**

Autoserica rubida Moser, 1915: 155.
Autoserica errata Moser, 1916: 141, **syn. n.**



Figures 1-4. Maladera rubida *(Moser) (Lectotype: "Pegu India"); 1,3. aedeagus, lateral view, 2. parameres, dorsal view, 4. metatibia, external face. Scale: 0,5 mm.*

Type material examined. Lectotype (*Autoserica rubida*, here designated): "Pegu India / *Autoserica rubida* Mos. Type" (ZMHB). Paralectotypes (*Autoserica rubida*, here

designated): "Pegu India / *Autoserica rubida* Mos. Type" (ZMHB), 2 "Pegu India / *rubida* Mos." (ZMHB). Lectotype (*Autoserica errata*, here designated): "D. Ost. Afrika Dar-es-Salaam Stgr. L / 234 Brsk. / Coll. Brenske / *Autoserica errata* Mos. Type" (ZMHB).
Additional material examined. 1 "D.O. Afrika Khutu Steppe K. Schwarze 1912" (ZMHB).

Redescription. Length: 7.5-7.9 mm, length of elytra: 5.5-6.1 mm, width: 4.8-5.0 mm. Body oval, reddish brown, antenna yellow, labroclypeus weakly shiny, remainder of dorsal surface dull, glabrous, except for a few small setae on the head and elytra.

Labroclypeus subtrapezoidal, distinctly wider than long, widest at base, straight and strongly convergent to broadly rounded anterior angles, lateral border and ocular canthus producing a very indistinct blunt angle, margins weakly reflexed, anteriorly very shallowly sinuate medially; surface flat, weakly shiny, very coarsely and densely punctate, distance between punctures less than their diameter, with a few short, erect setae behind anterior margin; frontoclypeal suture feebly impressed and weakly angled medially; smooth area in front of eye approximately three times as wide as long; ocular canthus short and broad, finely punctate, with a short single terminal hair. Frons with very fine, moderately dense punctures, glabrous except for a few setae beside eyes. Eyes moderately large, ratio of diameter / interocular width: 0.7. Antenna yellow, 10-segmented; club with three segments, in male as long as remaining segments together, in female distinctly shorter than remaining segments together. Mentum anteriorly elevated and flattened.

Pronotum moderately wide, widest at base, lateral margins straight, weakly narrowed to the middle, in anterior half weakly convex and convergent anteriorly, anterior angles strongly produced and sharp, anterior marginal line complete, margin weakly produced medially; surface densely and very finely punctate, without longer setae, with microscopic setae in the punctures only; anterior and lateral borders setose. Scutellum broad, triangular, with fine and very dense punctures, setae each bearing a single very minute seta.

Elytra oblong, widest at middle, striae indistinctly impressed, finely and densely punctate, intervals flat, with fine, moderately dense punctures, odd intervals with a few fine, adpressed, short, white setae, some punctures with microscopic setae; epipleural edge robust, ending at the weakly convex external apical angle of elytra, epipleura densely setose, apical border chitinous, with short microtrichomes.

Ventral surface dull, thorax and metacoxa with large and moderately dense punctures, sparsely setose, metacoxa glabrous except for numerous long setae laterally; each abdominal sternite, in addition to generally distributed fine and dense punctures, with a distinct transverse row of coarse punctures each bearing a short seta, some scattered punctures with microscopic setae, penultimate sternite apically with a shiny smooth chitinous border, which is one forth as long as sternite. Mesosternum between mesocoxae as wide as mesofemur. Ratio of length of metepisternum / metacoxa: 1 / 1.95. Pygidium moderately convex, very finely and moderately densely punctate, without smooth midline, punctures with microscopic setae and with a few long setae along apical margin.

Legs broad; femora with two longitudinal rows of setae, finely and moderately densely punctate; metafemur dull, anterior edge acute, lacking an adjacent serrated line, posterior ventral margin medially feebly concave, strongly widened in apical half and not serrate, dorsally completely serrated, glabrous. Metatibia broad and short, widest at middle, ratio width / length: 1 / 2.25, dorsally sharply edged, with two groups of spines, basal one at middle, apical one at three fourth of metatibial length, basally with three punctures with serrated margins, each bearing single spines; lateral face longitudinally convex, with moderately dense, fine punctures dorsally, glabrous; ventral edge with three strong spines

equidistant from each other, medial face not punctate, apex interiorly near tarsal articulation shallowly concave, nearly truncate. Tarsomeres not punctate dorsally, ventrally with sparse, short setae; metatarsal segments ventrally with a strongly serrated ridge, beside which is a strong longitudinal carina, first metatarsomere a little shorter than the two following segments combined and a little longer than the upper tibial spur. Protibia short, bidentate. All claws symmetrical, feebly curved and long, with normally developed basal tooth.

Aedeagus: figures 1 and 3.

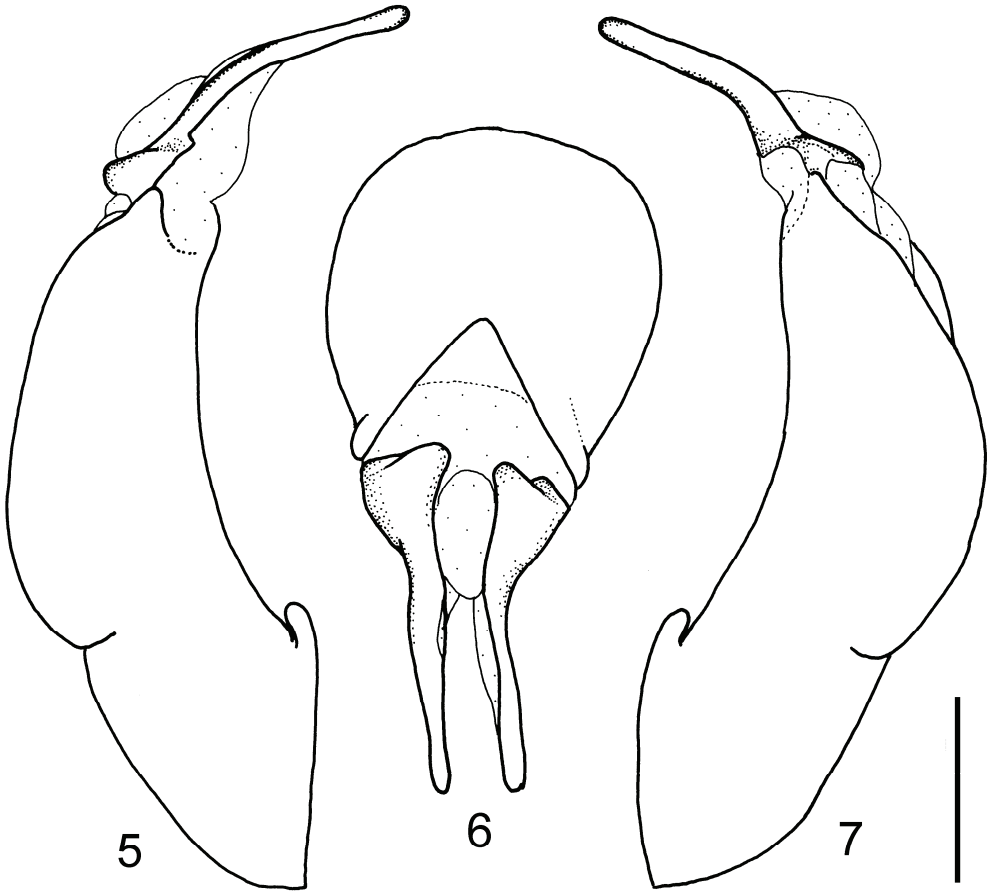
Remarks. Since the original descriptions of *Autoserica rubida* and *A. errata* gave no information about the number of specimens on which the descriptions were based, it is necessary to fix the taxonomic status of both taxa by designating lectotypes. The respective lectotypes selected here represent the only remaining syntypes of each taxon occurring in the Moser collection. The lectotypes of the two taxa are virtually identical in shape of parameres and in most external features, consequently I consider them to be synonymous.

Discussion. Although my conclusion is based on the examination of a rather small number of specimens, it seems quite probable, due to the extensive material examined from Indochina and adjacent regions, that *Maladera rubida* (Moser) is not an element of the Indochinese fauna, but rather of the East African savannah. Examination of additional material from East Africa in the future will surely give a more accurate idea of the distribution of this species. The primary support for this idea comes from the fact that two very closely related species, *Maladera laminifera* (Moser, 1916) comb. n. and *Maladera fuscescens* (Moser, 1917) comb. n., were described from Tanzania. Type material of both species was examined and collection data for this material is presented below. Although monophyly of *Maladera* remains to be tested by a sound phylogenetic analysis, the three species studied here very probably form a monophyletic group within *Maladera*. A significant apomorphy is the parameres being both symmetrical and slightly curved ventrally. Additionally, all three species are characterized by having relatively slender parameres; however this character state may not represent an apomorphy. The identity and status of *Autoserica* Brenske, 1897, was discussed following the examination of its type species [*A. piceorufa* Fairmaire (Arrow 1927)] (Ahrens, in press). I believe *Autoserica* must be regarded as a distinct genus that may be distinguished from *Maladera* by having an antennal club with four joints in both sexes. This is the underlying basis for the synonymy of *Autoserica* auctorum (nec Brenske, 1897) with *Maladera*. Defined in this way, *Autoserica* would contain almost no species formerly ascribed to it. This synonymy necessitates the following new combinations.

Maladera laminifera (Moser, 1916), comb. n. (figures 5-7)

Autoserica laminifera Moser, 1916: 150.

Type material examined. Syntypes (*laminifera*): 1 “D-Ost-Afrika Iringa / *Autoserica laminifera* Type Mos.” (ZMHB), 2 “D-Ost-Afrika Iringa” (ZMHB).
Additional material examined. 3 ex. “Tanzania: 12.-17.xii.1996, Ruvuma, near Songea, Werner & Lizler leg.” (CA), 1 ex. “Tanzania: 2/3.XII.1994 Babati, 30 km to Dodoma, Werner leg.” (CA), 1 ex. “Tanzania: 10/16.XII.1999 near Mitundo, Dodoma prov., Werner & Lizler leg.” (CA).



Figures 5-7. Maladera laminifera *(Moser) (Tanzania: Ruvuma, near Songea); 5, 7. aedeagus, lateral view, 6. parameres, dorsal view. Scale: 0,5 mm.*

Redescription. Length: 9.2-11.1 mm, length of elytra: 6.1-7.0 mm, width: 4.9-6.1 mm. Body oval, dark brown, antenna yellow, labroclypeus somewhat shiny, remainder of dorsal surface dull, glabrous, except for a few small setae on the head and elytra.

Labroclypeus subtrapezoidal, distinctly wider than long, widest at base, straight and moderately convergent to weakly rounded anterior angles, lateral border and ocular canthus producing an indistinct blunt angle, margins weakly reflexed, anteriorly very shallowly sinuate medially; surface flat and weakly shiny, very coarsely and densely punctate, distance between punctures less than their diameter, with a few short, erect setae behind anterior margin; frontoclypeal suture feebly impressed and weakly angled medially; smooth area in front of eye approximately three times as wide as long; ocular canthus short and broad, finely punctate, with a short single terminal hair. Frons with very fine, moderately dense punctures, glabrous except a few setae beside eyes. Eyes small, ratio of diameter/interocular width: 0.48. Antenna yellow, 10-segmented; club with three segments, in male as long as

remaining segments together, in female distinctly shorter than remaining segments together. Mentum anteriorly elevated and flattened.

Pronotum moderately wide, widest at base, lateral margins in basal half almost straight and only weakly narrowed to the middle, in anterior half weakly convex and convergent anteriorly, anterior angles strongly produced and sharp, anterior margin with marginal line, margin weakly produced medially; surface densely and very finely punctate, with long, posteriorly curved setae laterally, additionally with microscopic setae in the punctures; anterior and lateral border setose. Scutellum broad, triangular, with fine and very dense punctures and with microscopic setae in the punctures.

Elytra oblong, widest at middle, striae indistinctly impressed, finely and densely punctate, intervals flat, with fine, moderately dense punctures, odd intervals with a few fine, adpressed, short, white setae, some punctures with very minute setae; epipleural edge robust, ending at the weakly convex external apical angle of elytra, epipleura densely setaceous, apical border chitinous, with short microtrichomes.

Ventral surface dull, thorax and metacoxa with large and moderately dense punctures, sparsely setose, metacoxa glabrous except for numerous long setae laterally; each abdominal sternite, in addition to generally distributed fine and dense punctures, with a distinct transverse row of coarse punctures each bearing a short seta, some scattered punctures with microscopic setae, penultimate sternite apically with a shiny smooth chitinous border, which is one forth as long as sternite. Mesosternum between mesocoxae as wide as mesofemur. Ratio of length of metepisternum / metacoxa: 1 / 1.85. Pygidium moderately convex, very finely and moderately densely punctate, without smooth midline, in punctures with microscopic setae and with a few long setae along apical margin.

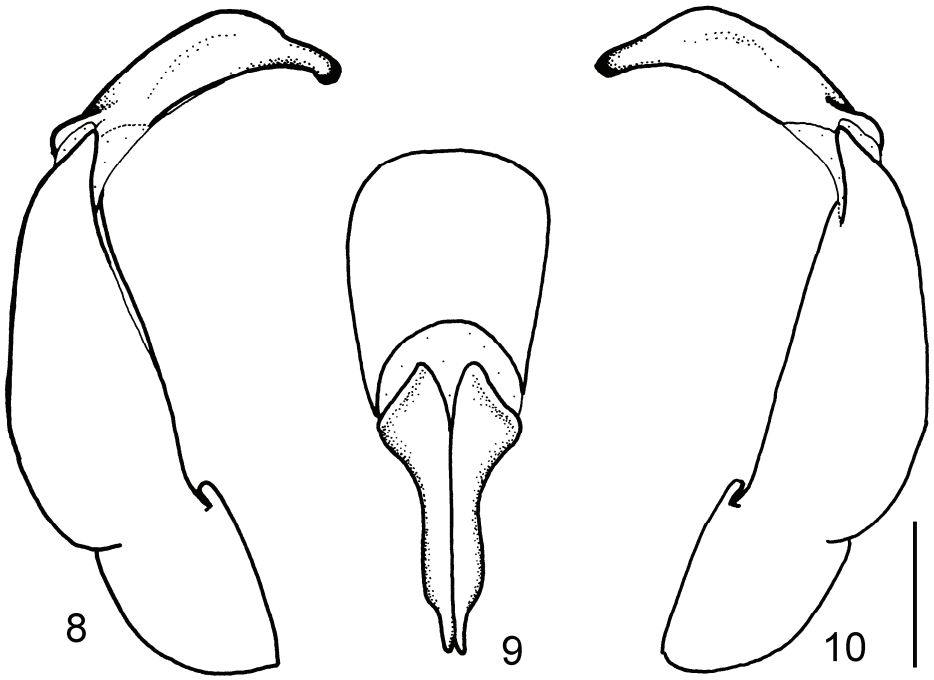
Legs broad; femora with two longitudinal rows of setae, finely and moderately densely punctate; metafemur dull, anterior edge acute, and without adjacent serrated line, ventral posterior margin straight, moderately widened in apical half and not serrate, dorsal margin completely serrated, glabrous, with a robust lamina in basal half. Metatibia broad and short, widest at middle, ratio width / length: 1 / 2.67, dorsally sharply edged, with two groups of spines, basal one at middle, apical one at three fourth of metatibial length, basally with three punctures with serrated margins, each bearing single spines; lateral face longitudinally convex, with moderately dense, fine punctures dorsally, glabrous; ventral edge with three strong spines equidistant from each other, medial face not punctate, apex interiorly near tarsal articulation shallowly concave, nearly truncate. Tarsomeres not punctate dorsally, ventrally with sparse, short setae; metatarsal segments ventrally with a strongly serrated ridge, beside which is a strong longitudinal carina, first metatarsomere a little shorter than the two following segments combined and a little longer than the upper tibial spur. Protibia short, bidentate. All claws symmetrical, feebly curved and long, with normally developed basal tooth.

Aedeagus: figures 5 and 7.

Remarks. *M. laminifera* differs from *M. rubida* and *M. fuscescens* by the weaker rounded anterior angles of labroclypeus and the shape of the metafemur, which possesses a robust lamina posteriorly in basal half in both sexes. Additionally, the species are easily distinguished by the shape of the parameres (compare figures. 1-3, 5-7, 8-10).

Maladera fuscescens (Moser, 1917), comb. n. (Figures 8-10)

Autoserica fuscescens Moser, 1917: 186.



Figures 8-10. Maladera fuscescens *(Moser) (Syntype: "Tanganika D.O.A."); 8, 10. aedeagus, lateral view, 9. parameres, dorsal view. Scale: 0,5 mm.*

Type material examined. Syntype (*fuscescens*): 1 "Tanganika D.O.A. / *Autoserica fuscescens* Type Mos." (ZMHB).
Additional material examined. 2 ex. "D-Ost Afrika Lindi '03" (ZMHB).

Redescription. Length: 8.2-8.9 mm, length of elytra: 6.3-7.3 mm, width: 5.1-5.9 mm. Body oval, dark brown, antenna yellow, labroclypeus somwhat shiny, remainder dorsal surface dull, glabrous, except for a few small setae on the head and elytra.

Labroclypeus subtrapezoidal, distinctly wider than long, widest at base, straight and strongly convergent to broadly rounded anterior angles, lateral border and ocular canthus producing an indistinct blunt angle, margins weakly reflexed, anteriorly very shallowly sinuate medially; surface flat and weakly shiny, very coarsely and densely punctate, distance between punctures less than their diameter, with a few short, erect setae behind anterior margin; frontoclypeal suture feebly impressed and weakly angled medially; smooth area in front of eye approximately three times as wide as long; ocular canthus moderately long and very broad, densely punctate, with a short single terminal hair. Frons with very fine, moderately dense punctures, glabrous except for a few setae beside eyes. Eyes moderately large, ratio of diameter / interocular width: 0.68. Antenna yellow, 10-segmented; club with three segments, in male distinctly longer than the remaining segments together, in female distinctly shorter than remaining segments together. Mentum anteriorly elevated and flattened.

Pronotum moderately wide, widest at base, lateral margins in basal half subparallel, strongly convex in anterior half and convergent anteriorly, anterior angles strongly produced and sharp, anterior marginal line complete, margin weakly produced medially; surface densely and very finely punctate, without longer setae, with microscopic setae in the punctures only; anterior and lateral border setaceous. Scutellum broad, triangular, with fine and very dense punctures, each bearing microscopic setae.

Elytra oblong, widest at middle, striae indistinctly impressed, finely and densely punctate, intervals flat, with fine, moderately dense punctures, odd intervals with a few fine, adpressed, short, white setae, some punctures with microscopic setae; epipleural edge robust, ending at the weakly convex external apical angle of elytra, epipleura densely setose, apical border chitinous, with short microtrichomes.

Ventral surface dull, thorax and metacoxa with large and moderately dense punctures, sparsely setose, metacoxa glabrous except for numerous long setae laterally; each abdominal sternite, in addition to generally distributed coarse and dense punctures, with a distinct transverse row of coarse punctures each bearing a short seta, some scattered punctures with microscopic setae, penultimate sternite apically with a shiny smooth chitinous border, which is one fourth as long as sternite. Mesosternum between mesocoxae as wide as mesofemur. Ratio of length of metepisternum / metacoxa: 1 / 1.57. Pygidium strongly convex, very finely and moderately densely punctate, without smooth midline, punctures with microscopic setae and with a few long setae along apical margin.

Legs broad; femora with two longitudinal rows of setae, finely and moderately densely punctate; metafemur dull, anterior edge acute, lacking an adjacent serrated line, posterior ventral margin feebly concave medially, in apical half moderately widened and not serrated, strongly convex at apex, dorsal margin completely serrated, glabrous. Metatibia broad and short, widest at middle, ratio width / length: 1 / 2.45, dorsally sharply edged, with two groups of spines, basal one at middle, apical one at three fourth of metatibial length, basally with three punctures with serrated margins, each puncture bearing a single spine; lateral face longitudinally convex, with moderately dense, fine punctures dorsally, glabrous; ventral edge with three strong spines equidistant from each other, medial face not punctate, apex interiorly near tarsal articulation shallowly concave, nearly truncate. Tarsomeres not punctate dorsally, ventrally with sparse, short setae; metatarsal segments ventrally with a strongly serrated ridge, beside which is a strong longitudinal carina, first metatarsomere a little shorter than the two following segments combined and a little longer than the upper tibial spur. Protibia short, bidentate. All claws symmetrical, feebly curved and long, with normally developed basal tooth.

Aedeagus: figures 8 and 10.

Remarks. The species may be distinguished easily from *M. rubida* by the longer antennal club in male and by the posteriorly strongly convex apex of metafemur. Additionally, the species are easily distinguished by shape of the parameres (see figures. 5-7, 8-10). It is not known to me whether additional syntypes exist.

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