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A revision of the genus *Microlia* Casey, 1910 (Coleoptera: Staphylinidae: Aleocharinae: Hoplandriini)

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Abstract

Microlia Casey, 1910 is transferred from the tribe Athetini Casey, 1910 to the tribe Hoplandriini Casey, 1910. The genus *Nosora* Casey, 1911 is placed in synonymy with *Microlia* Casey, 1910. Three new species of *Microlia* are described (*M. tetramera* Gusarov, **sp. nov.** and *M. pentamera* Gusarov, **sp. nov.** from Costa Rica, and *M. panamensis* Gusarov, **sp. nov.** from Panama). Three species are redescribed (*M. silacea* (Erichson, 1839) known from Virginia and North Carolina, *M. azteca* (Casey, 1911) known from Mexico, and *M. meticola* (Casey, 1911) known from Arizona and Texas). A key for identification of species of *Microlia* is provided. *Homalota silacea* Erichson, 1839, *Nozora azteca* Casey, 1911 and *N. meticola* Casey, 1911 are transferred to *Microlia*. *Dolosota* (*Microlia*) *pernix* Casey, 1910 is placed in synonymy with *Microlia silacea* (Erichson, 1839).

Key words: Coleoptera, Staphylinidae, Aleocharinae, Hoplandriini, *Microlia*, *Nosora*, taxonomy, new species, synonymy, Nearctic, Neotropical, identification key.

Introduction

Casey (1910) described *Microlia* as a subgenus of the genus *Dolosota* Casey, 1910 in the subtribe Athetina Casey, 1910 and included in it two species: *D.*(*M.*) *pernix* Casey, 1910 (the type species) and *D.*(*M.*) *petulans* Casey, 1910. While revising the types of all aleocharine species described by Casey from North America I discovered that the types of *D. pernix* are very similar to the two species described by Casey in the genus *Nosora* Casey, 1911 (currently placed in the tribe Hoplandriini Casey, 1910 (Fenyes 1920; Hanley 2001)).

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In this paper I place *Nosora* in synonymy with *Microlia*, describe three new species of *Microlia* and provide a key for identification of species of *Microlia.* I follow the terminology accepted in taxonomy of Aleocharinae (Sawada 1970, 1972; Newton *et al.* 2000). The spermathecal gland is shown on the drawings solely to illustrate the gland position in relation to other parts of spermatheca. Phylogenetic relations of *Microlia* (=*Nosora*) to other genera of Hoplandriini are discussed by Hanley (2001, in press, a, b) and are not addressed in this paper.

Depositories

CNC – Canadian National Collection, Ottawa (Dr. A.Smetana, Mr. A.Davies).
KSEM – Snow Entomological Collection, University of Kansas (Dr. J.S.Ashe).
NMNH – National Museum of Natural History, Washington, DC (Dr. T.L.Erwin).
MNHUB – Museum für Naturkunde der Humboldt-Universität, Berlin (Dr. M.Uhlig).

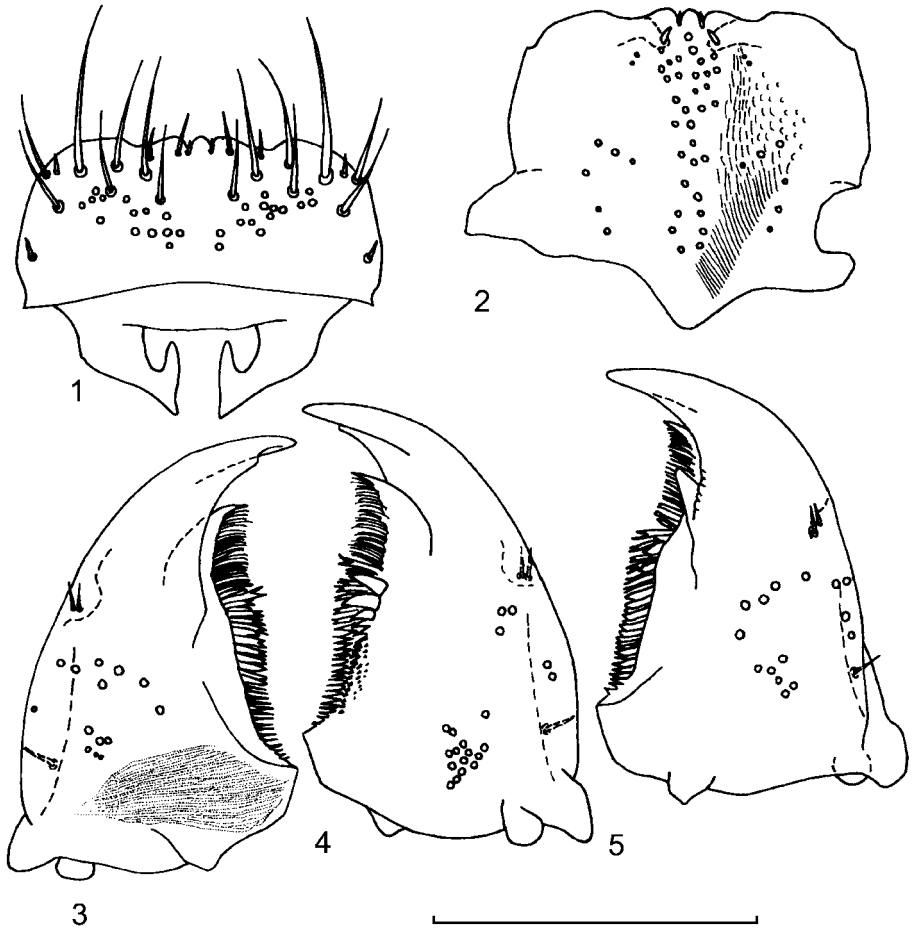
Microlia Casey, 1910 (Figs. 1-80)

Dolosota (*Microlia* Casey, 1910): 144 (subtribe Athetina Casey, 1910).
Nosora Casey, 1911: 145 (tribe Myrmedoniini Thomson, 1867), **syn. nov.**
Nosora: Leng, 1920: 122 (as valid genus; tribe Myrmedoniini).
Pancota (*Microlia*): Leng, 1920: 122 (as valid subgenus; tribe Myrmedoniini).
Atheta (*Microlia*): Fenyes, 1920: 202 (as a synonym of *Atheta* (*Pancota*)).
Nosora: Fenyes, 1920: 308 (as valid genus; tribe Hoplandriini Casey, 1910).
Atheta (*Microlia*): Bernhauer & Scheerpeltz, 1926: 660 (as a synonym of *Atheta* (*Pancota*)).
Nosora: Bernhauer & Scheerpeltz, 1926: 717 (as valid genus; subtribe Hoplandriina).
Nosora: Leng & Mutchler, 1927: 23 (as valid genus).
Nosora: Blackwelder, 1952: 262 (as valid genus).
Ischnopoda (*Microlia*): Blackwelder, 1952: 202, 246, 288 (as a synonym of *Ischnopoda* (*Pancota*)).
Atheta (*Microlia*): Moore & Legner, 1975: 351 (as a synonym of *Atheta* (*Pancota*)).
Nosora: Moore & Legner, 1975: 456 (as valid genus).
Acrotona (*Microlia*): Seevers, 1978: 100 (as valid subgenus; tribe Athetini).
Nosora: Seevers, 1978: 142 (as valid genus; tribe Hoplandriini).
Nosora: Ashe in Newton *et al.*, 2000: 360 (as valid genus; tribe Hoplandriini).
Acrotona (*Microlia*): Ashe in Newton *et al.*, 2000: 368 (as valid subgenus; tribe Athetini).
Nosora: Hanley, 2001: 221 (as valid genus; tribe Hoplandriini).

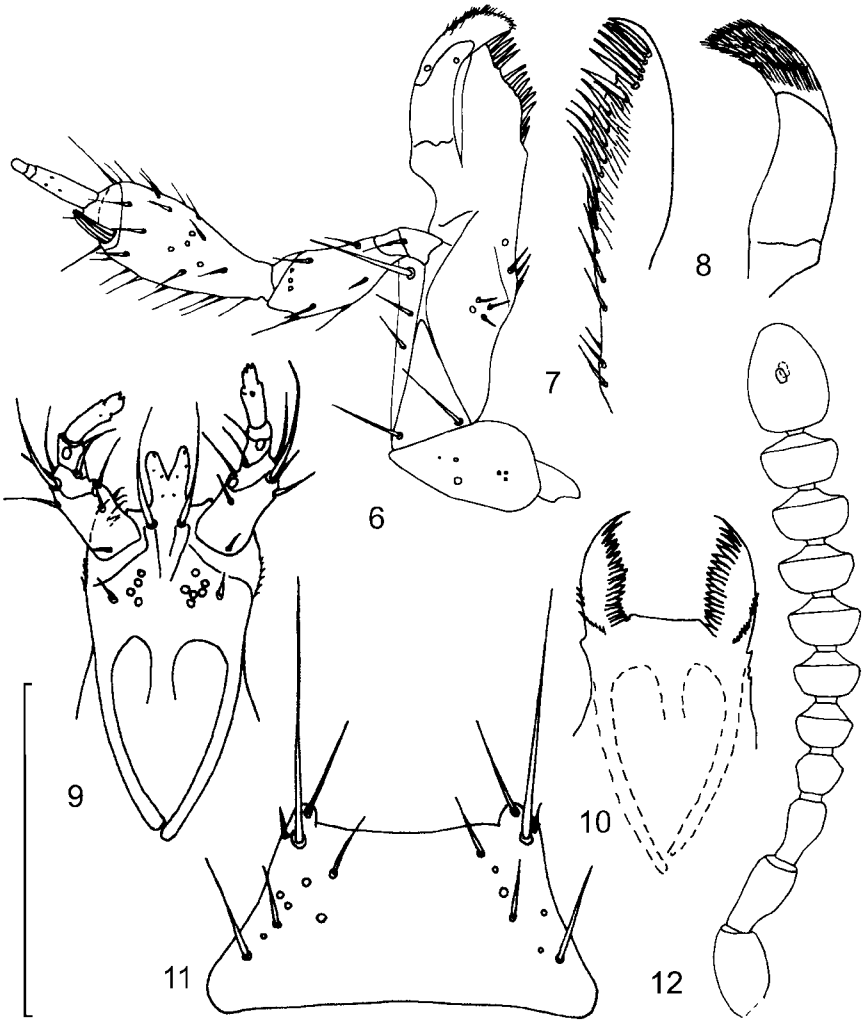
Diagnosis. *Microlia* can be distinguished from other aleocharine genera by the combination of the following characters: body broadest at elytra; antennal articles 5-10 strongly transverse (Figs. 12, 30, 48); labial and maxillary palpi with pseudosegment (Figs. 6, 9);

apical half of ligula divided into two lobes (Figs. 9); pronotum with microsetae directed posteriorly along the midline of the disc (Type V, Benick & Lohse 1974) (Fig. 13); pronotal macrosetae short; pronotal hypomera invisible in lateral view; medial microseta of mesotibia inconspicuous, shorter than tibial width; tarsal formula 4-4-5 or 4-5-5; metatarsal segment 1 not longer than segment 2; one empodial setae; posterior margin of male abdominal sternum 8 extended posteriorly as large triangular lobe (Figs. 21, 34, 62); median lobe of aedeagus with long and narrow apical process (Figs. 26-29, 68-72); parameres with two long and two short macrosetae (Figs. 31, 44); spermatheca forming two to many coils (Figs. 32-33, 47) or numerous irregular loops (Figs. 42-43).

Description. Length 1.8-2.3 mm. Body from brownish yellow to brown with darker apex of antennae and abdominal segments 4-6, in some species with darker elytra or head; elytra much broader than pronotum and abdomen.



FIGURES 1-5. Mouthparts of *Microlia meticola* (Casey) (Arizona). 1 – labrum; 2 – epipharynx; 3 – left mandible, dorsal view; 4 – left mandible, ventral view; 5 – right mandible, dorsal view. Scale bar 0.1 mm.



FIGURES 6-12. Mouthparts and antenna of *Microlia meticola* (Casey) (Arizona). 6 – right maxilla, ventral view; 7 – right lacinia, dorsal view; 8 – right galea, dorsal view; 9 – prementum; 10 – hypopharynx; 11 – mentum; 12 – right antenna. Scale bar 0.14 mm (6), 0.1 mm (7-11), 0.28 mm (12).

Head transverse; eyes large, 2-3 times as long as temples; infraorbital carina complete. Antennal article 2 longer than article 3, 4 subquadrate or transverse, 5-10 transverse or strongly transverse (ratio 2.0-2.4), apical article with two coeloconic sensilla (Figs. 12, 30, 48). Labrum (Fig. 1) transverse, anterior margin with four shallow emarginations. Adoral surface of labrum (epipharynx) without transverse row of pores (Fig. 2). Mandibles (Figs. 3-5) broad, right mandible with a small medial tooth; dorsal molar area with velvety patch consisting of tiny denticles (visible at x400; Fig. 3). Maxilla (Figs. 6-8) with galea extending beyond apex of lacinia; apical lobe of galea covered with numerous fine and short setae; apical half of lacinia with row of closely spaced spines, middle portion produced

medially and covered with numerous setae. Maxillary palpus with four segments and pseudosegment (Fig. 6). Labium as in Figs. 9-11; labial palpi with three segments and pseudosegment (Fig. 9); apical half of ligula divided into two lobes; medial area of prementum without pores or pseudopores, lateral areas with 4-6 pores and single spinose pore. Hypopharyngeal lobes as in Fig. 10. Mentum (Fig. 11) with protruding anterior angles, straight anterior margin, medial area without pores.

Pronotum (Fig. 13) strongly transverse, broadest near middle, sides broadly rounded; anterior margin straight, posterior margin convex; surface covered with microsetae directed posteriorly in midline, laterally and obliquely posteriorly in lateral areas (Type V, Benick & Lohse 1974)**;** macrosetae short; hypomera invisible in lateral view. Meso - metasternum as in Fig. 14, mesosternal process long and wide, extended about 1/2 length of mesocoxal cavities, metasternal process almost non-existent, anterior margin of metasternum only slightly convex medially; mesosternum and mesosternal process not carinate medially; relative lengths of mesosternal process: isthmus: metasternal process in ratio of about 11:10:2; mesocoxal cavities margined posteriorly; mesocoxae contiguous. Medial microseta of mesotibia inconspicuous, shorter than tibial width. Tarsal segmentation 4-5-5 or 4-4-5 (Figs. 15-20); metatarsal segment 1 not longer than segment 2. One short empodial seta. Wings fully developed. Posterior margin of elytra slightly concave near postero-lateral angle.

Abdominal terga 3-5 with moderately transverse basal impressions. Tergum 7 1.4-1.6 times longer than tergum 6. Puncturation on terga 6-7 not significantly sparser than on terga 3-5. Tergum 7 with wide white palisade fringe.

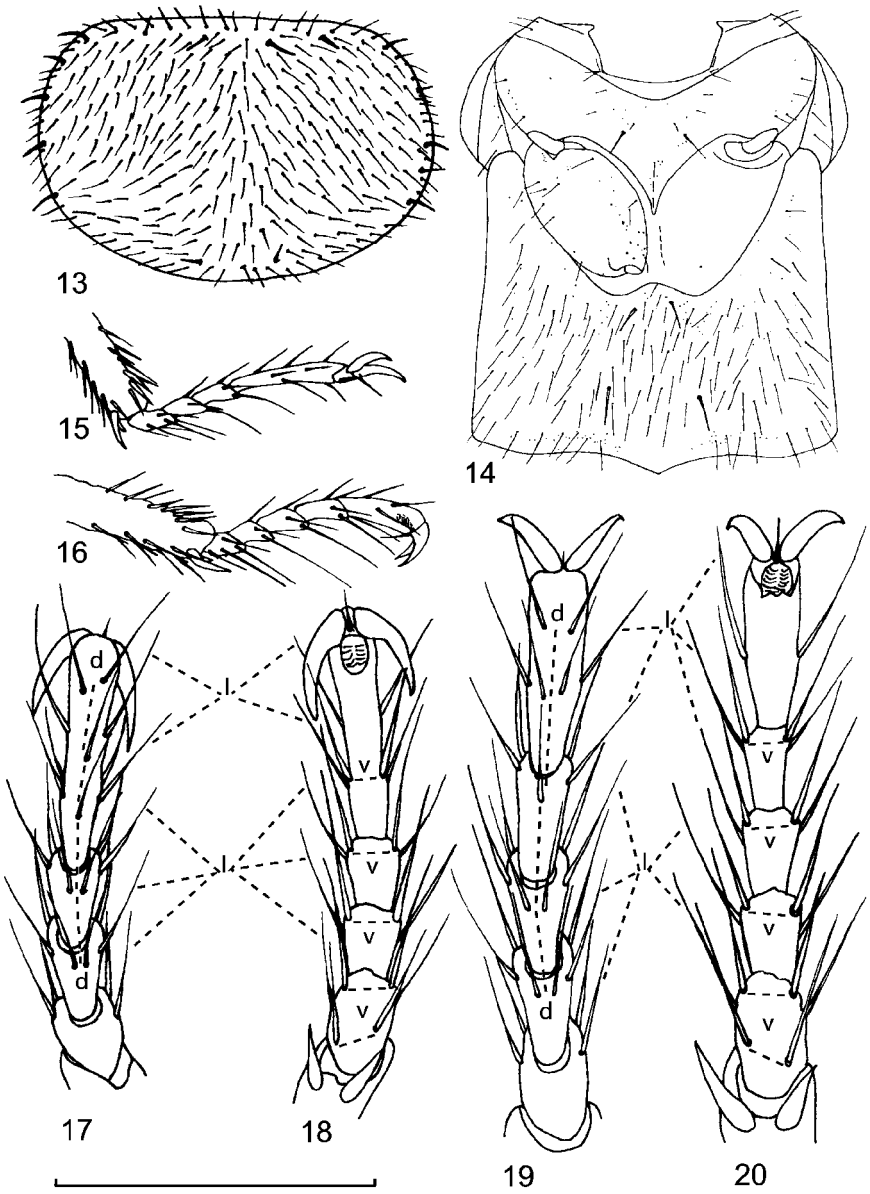
Male secondary characters include some of the following: lateral triangular lobes or medial knob at posterior margin of tergum 3, longitudinal tubercles on terga 7 and 8, crenulation of posterior margin of tergum 8. Posterior margin of male abdominal sternum 8 extended posteriorly as pointed triangular lobe (Figs. 21, 34, 62). Median lobe of aedeagus with long and narrow apical process (Figs. 26-29, 68-72). Parameres with two long and two short macrosetae (Figs. 31, 44). Copulatory piece of internal sac with long apical process (Fig. 57). Spermatheca forming two to many coils (Figs. 32-33, 47) or numerous irregular loops (Figs. 42-43).

Type species. *Dolosota pernix* Casey, 1910, by original designation.

Synonyms. *Nosora azteca* Casey, 1911, the type species of the genus *Nosora* by original designation is similar to *M. pernix* in all characters listed in the Diagnosis. Therefore *Nosora* is placed in synynymy with *Microlia*.

Discussion. My examination of the lectotype of *Microlia meticola* (Casey, 1911) (original combination: *Nosora meticola*) revealed that in this species the tarsal formula is 4-4-5 (Fig. 15). Examination of additional material demonstrated that in *M. meticola* both sexes have this tarsal formula and there is no intraspecific variation in this character (in total more than 80 specimens were examined). Up to now this fact has been overlooked (despite the type of *N. meticola* carrying a small label “4-4-5”, apparently by Casey), and

all authors who wrote about the group believed the formula was 4-5-5. One of the new species of *Microlia* described below (*M. tetramera*) also has mesotarsus with four articles (Figs. 17-18).



FIGURES 13-20. Details of *Microlia meticola* (Casey) (13-15, Arizona), *M. azteca* (Casey) (16, paralectotype), *M.* cf. *tetramera* Gusarov, **sp. nov.** (17-18, female from Costa Rica) and *M. silacea* (Erichson) (19-20, paralectotype of *Homalota silacea*). 13 – pronotum; 14 – mesometathorax, ventral view; 15-16 – right mesotarsus, posterior view; 17, 19 – right mesotarsus, dorsal view; 18, 20 – right mesotarsus, ventral view; d – dorsal setae of mesotarsus; v – ventral setae; l – lateral setae. Scale bar 0.4 mm (13-14), 0.28 mm (15-16), 0.1 mm (17-20).

Traditionally in the aleocharine taxonomy the tarsal formula was considered an important character, often stable at the level of tribe. However in a few groups the tarsal formula was found to vary within the genus (as in *Gyronycha* Casey, 1893 (Seevers 1978)). The genus *Microlia* is a new example of such intrageneric variation in tarsal formula.

To establish homologies of tarsal segments between the species with different tarsal formulas the setation was examined. In 4-5-5 species every segment of mesotarsus carries a pair of lateral setae (Figs. 19-20, l); on ventral side the first segment has two pairs of setae, second-fourth have one pair of ventral setae each, fifth has no ventral setae (Fig. 20, v); on dorsal side the first segment has no setae, second-fourth segments have one or two dorsal setae each, fifth has two pairs of dorsal setae (Figs. 19, d). Comparison between the 4-5-5 (Figs. 19-20) and 4-4-5 (Fig. 17-18) species shows that in the 4-4-5 species the last segment of mesotarsus has the setae found on both fourth and fifth segments of the 4-5-5 species: a pair of ventral setae (Fig. 18, v), 1+1+2 dorsal setae (Fig. 17, d) and two pairs of lateral setae (Figs. 17-18, l). Apparently the last segment of mesotarsus in the 4-4-5 species is homologous to the two last segments of mesotarsus in the 4-5-5 species.

The key for aleocharine genera by Ashe (Newton *et al*. 2000) does not allow to identify the species of *Microlia* (=*Nosora*) with tarsal formula 4-4-5. These species run to couplet 24 in Key E. To incorporate *Microlia* the key should be modified by inserting additional couplet as follows (p. 308 in Newton *et al*. 2000):

24(22) Maxillary (Fig. 155.22, arrow) and labial (Fig. 159.22) palpi with apical pseudosegment, appearing to have 5 and 4 palpomeres, respectively . . . . . *Microlia*.
– Maxillary and labial palpi without apical pseudosegments 24a
24a(24) Body distinctly … (from here follow the original key)

The 4-5-5 species of *Microlia* reach *Nosora* at couplet 3 in Key C by Ashe (Newton *et al*. 2000).

Two species were originally included in subgenus *Microlia* by Casey (1910). The second species, *Dolosota* (*M.*) *petulans* Casey, 1910 belongs to the genus *Acrotona* Thomson, 1859, tribe Athetini.

All species of *Microlia* mentioned in this paper are similar in external characters including proportions of antennal segments. The species represented in my material by many specimens show considerable variation in body coloration and sometimes in punctuation of pronotum. Some species are known from only few specimens which does not allow to assess variability of body coloration. Considering the observed intraspecific variation and the possibility that undescribed species of *Microlia* exist in Central America, it seems reasonable that a key to known species based on coloration of specimens will be of limited value. That is why the key below is based mostly on the characters of genitalia and secondary sexual characters even though some species are known by one sex only.

There can be little doubt that many undescribed species of *Microlia* exist in Central

and possibly South America. The high diversity of *Microlia* in Central America is illustrated by the fact that in a single locality in Costa Rica three species of *Microlia* were found (*M. pentamera* Gusarov, **sp. nov.**, *M. tetramera* Gusarov, **sp. nov.** and an additional species represented by females only; see Discussion after the description of *M. tetramera*).

Key for Identification of species of *Microlia*

1 Posterior margin of abdominal sternum 8 protruding as large pointed lobe (Figs. 21, 34, 62). Tergum 8 with tubercles and/or crenulate posterior margin (Figs. 22, 35, 50, 63). Males 2
– Posterior margin of abdominal sternum 8 convex, or slightly protruding as rounded or pointed short lobe (Figs 23, 36, 51). Tergum 8 without tubercles, posterior margin never crenulate (Fig. 24, 37). Females 5
2 Abdominal tergum 3 without modifications. Known from the United States 3
– Posterior margin of tergum 3 with medial knob or lateral triangular lobes. Known from Costa Rica 4
3 Apical process of median lobe in ventral view more narrow (Fig. 28-29). Mesotarsus with 5 segments. Known from Virginia and North Carolina... 1. *M. silacea* (Erichson)
– Apical process of median lobe in ventral view broader (Fig. 40-41). Mesotarsus with 4 segments. Known from Arizona and Texas . . . . . 2. *M. meticola* (Casey)
4 Abdominal tergum 3 with medial double knob in front of posterior margin, but without lateral triangular lobes (Fig. 61). Apical process of median lobe in lateral view straight (Figs. 53-54). Mesotarsus with 5 segments . . . . . 4. *M. pentamera* Gusarov, **sp. nov.**
– Tergum 3 with lateral angles extended posteriorly as sharp triangular lobes, but without medial knob (Fig. 76). Apical process of median lobe in lateral view bent like a hook (Figs. 68-69). Mesotarsus with 4 segments ....5. *M. tetramera* Gusarov, **sp. nov.**
5 Spermatheca forming two to many regular coils (Figs. 32, 47) 6
– Spermatheca with multiple irregular loops (Fig. 42-43) 10
6 Two spine-like female accessory sclerites present (Fig. 25). Spermatheca forming 2-3 coils (Figs. 32-33). Mesotarsus with 5 segments. Known from Virginia and North Carolina . . . . . 1. *M. silacea* (Erichson)
– No female accessory sclerites 7
7 Spermatheca forming multiple coils (Fig. 47). Body uniformly dark. Mesotarsus with 5 segments. Known from Mexico . . . . . 3. *M. azteca* (Casey)
– Spermatheca forming 2-5 coils. At least pronotum lighter than the rest of the body. Known from Costa Rica 8
8 Spermatheca with rounded capsule, thinner, forming 3-5 coils (Figs. 59-60, 74). Mesotarsus with 4 or 5 segments 9

– Spermatheca with pointed capsule, thicker, forming 2 coils (Fig. 73). Mesotarsus with 4 segments . . . . . 5. Possible females of *M. tetramera* Gusarov, **sp. nov.**, type A.

9 Mesotarsus with 5 segments. Spermatheca forming 3-4 coils (Figs. 59-60) . . . . . 4. *M. pentamera* Gusarov, **sp. nov.**

– Mesotarsus with 4 segments. Spermatheca forming 5 coils (Figs. 74) . . . . . 5. Possible females of *M. tetramera* Gusarov, **sp. nov.**, type B.

10 Loops of spermatheca numerous (Figs. 42-43). Mesotarsus with 4 segments. Known from Arizona and Texas . . . . . 2. *M. meticola* (Casey)

– Loops of spermatheca less numerous (Fig. 79). Mesotarsus with 5 segments. Known from Panama . . . . . 6. *M. panamensis* Gusarov, **sp. nov.**

1. *Microlia silacea* (Erichson, 1839) (Figs. 19-33)

Homalota silacea Erichson, 1839: 120.
Homalota silacea: Bland, 1865: 398.
Dolosota (*Microlia*) *pernix* Casey, 1910: 144.
Homalota silacea: Leng, 1920: 115.
Homalota pernix: Leng, 1920: 115 (as synonym of *H. silacea*).
Atheta silacea: Leng, 1920: 119.
Atheta (*Microdota*) *silacea*: Fenyes, 1920: 187.
Atheta (*Microdota*) *pernix*: Fenyes, 1920: 187 (as synonym of *A. silacea*).
Atheta (*Microdota*) *silacea*: Bernhauer & Scheerpeltz, 1926: 635.
Atheta (*Microdota*) *pernix*: Bernhauer & Scheerpeltz, 1926: 635 (as synonym of *A. silacea*).
Atheta (*Microdota*) *silacea*: Leng & Mutchler, 1927: 22.
Atheta (*Microdota*) *pernix*: Leng & Mutchler, 1927: 22 (as synonym of *A. silacea*).
Atheta (*Microdota*) *silacea*: Moore & Legner, 1975: 374.
Atheta (*Microdota*) *pernix*: Moore & Legner, 1975: 374 (as synonym of *A. silacea*).
Acrotona (*Microlia*) *silacea*: Seevers, 1978: 257.
Acrotona (*Microlia*) *pernix*: Seevers, 1978: 257 (as valid species).

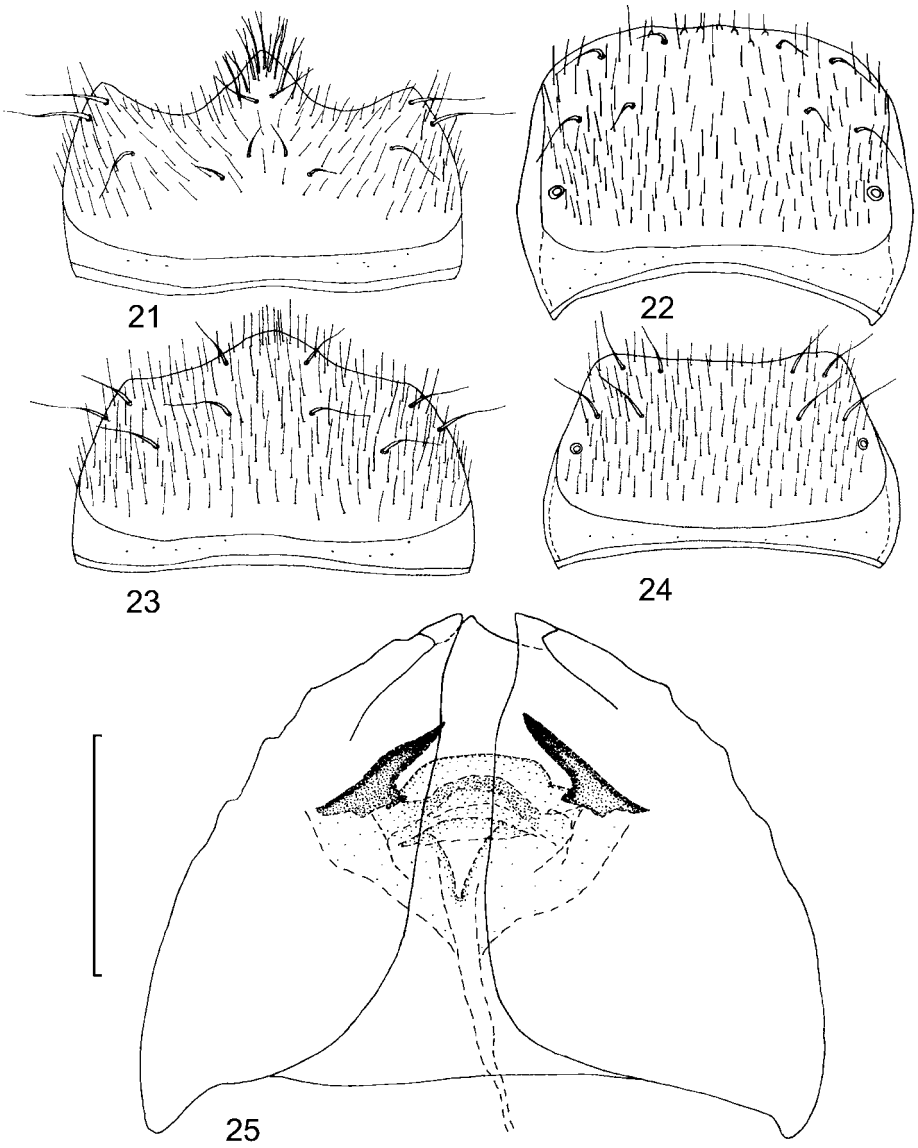
Type material. Lectotype of *H. silacea* (here designated): ♀, "5462", "*silacea* Er. Am. [Amerika] spt. [Septentrionale] Zimm. [Zimmermann]" (green label), "Type" (red label)", "Zool. Mus. Berlin" (MNHUB); paralectotypes: ♂ (with head and prothorax missing), "Americ. sept. Zimmerm. Nr. 5462" (green label), "*silacea* Er. Typ.", "Type" (red label), "Zool. Mus. Berlin"; 1 specimen (with the apex of abdomen missing), "Americ. sept. Zimmerm. Nr. 5462" (green label), "Type" (red label), "Zool. Mus. Berlin" (all in MNHUB). The purpose of the lectotype designation is to assure correct and consistent application of the name in the future.

Lectotype of *D. pernix* (here designated): ♀, "Va" (with a dot under "a") [Norfolk], "*Microlia pernix* Csy.", "Casey bequest 1925", "Type USNM 39192" (red label) (NMNH). The purpose of the lectotype designation is to assure correct and consistent application of the name in the future.

Additional material: UNITED STATES: North Carolina: ♂, 2♀♀, (Sherm.) without precise locality data (FMNH).

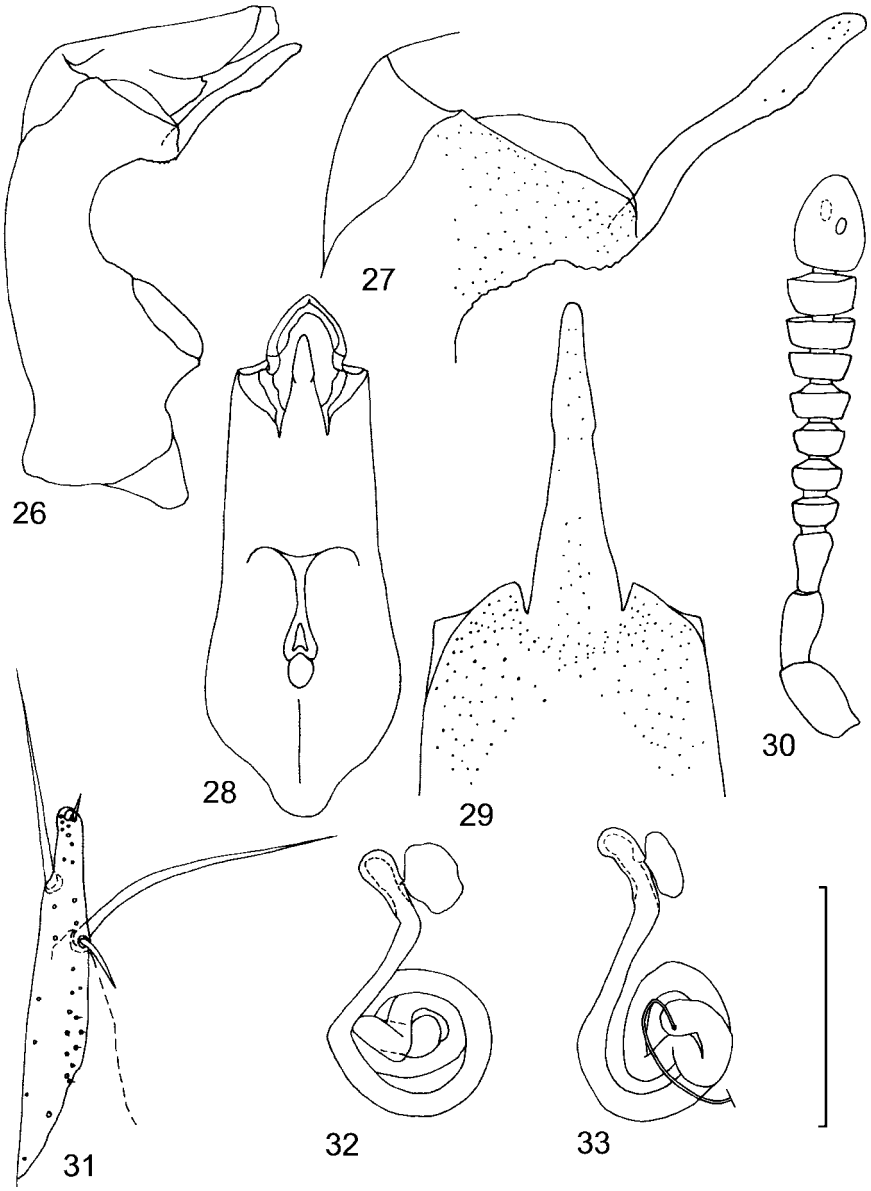
Diagnosis: *Microlia silacea* can be distinguished from other species of *Microlia* by the shape of the aedeagus, particularly the apical process of median lobe (Figs. 26-29), by having female accessory sclerites (Fig. 25) and spermatheca forming two-three coils (Fig. 32-33).

Description: Length 1.8-1.9 mm. Head, elytra and abdominal segments 3-4 yellowish brown, pronotum, legs, antennal articles 1-7 and mouthparts brownish yellow, abdominal segments 5-7 and antennal articles 8-11 brown.



FIGURES 21-25. Abdominal segment 8 and female accessory sclerites of *Microlia silacea* (Erichson) (21 – paralectotype of *Homalota silacea*; 22, 25 – North Carolina; 23-24 – lectotype of *Homalota silacea*). 21 – male sternum 8; 22 – male tergum 8; 23 – female sternum 8; 24 – female tergum 8; 25 – female accessory sclerites. Scale bar 0.25 mm (21-24), 0.1 mm (25).

Head surface glossy, on disk with weak isodiametric microsculpture, puncturation fine, distance between punctures ½-1 time their diameter. Eyes 2-2.5 times as long as temples.



FIGURES 26-33. Details of *Microlia silacea* (Erichson) (26-29, 31 – paralectotype of *Homalota silacea*; 30, 33 – North Carolina; 32 – lectotype of *Homalota silacea*). 26 – median lobe of aedeagus, lateral view; 27 – apex of median lobe of aedeagus, lateral view; 28 – median lobe of aedeagus, ventral view; 29 – apex of median lobe of aedeagus, ventral view; 30 – antenna; 31 – apical lobe of right paramere, internal view; 32-33 – spermatheca. Scale bar 0.2 mm (25, 27, 29, 31-33), 0.1 mm (26, 28, 30).

Pronotum strongly transverse, 1.3 times wider than head, width 0.43-0.46 mm, length 0.30-0.31mm, width to length ratio 1.5, surface glossy, with weak and poorly visible (at x70) transverse microsculpture; puncturation as on head or finer, distance between punctures 1-2 times their diameter. Elytra wider (0.56-0.59 mm) and longer (0. 41-0.43 mm, measured from humeral angle) than pronotum (pronotal length to elytral length ratio 0.71), 1.3 times wider than long, glossy, microsculpture and puncturation as on pronotum. Mesotarsus with 5 segments.

Abdominal terga glossy, with fine and poorly visible (at x70) microsculpture consisting of meshes, with fine puncturation, distance between punctures 1-3 times their diameter.

Male tergum 7 without tubercles; tergum 8 with several small tubercles in front of posterior margin (Fig. 22). Posterior margin of male sternum 8 with pointed triangular lobe; some apical microsetae bifurcate (Fig. 21). Aedeagus as in Figs. 26-29, 31. Apex of median lobe with narrow process (Fig. 29).

Female tergum 8 with slightly concave posterior margin (Fig. 24), sternum 8 with posterior margin forming obtuse lobe (Fig. 23). Females have two spine-like accessory sclerites (Fig. 25). Spermatheca forming two-three coils (Fig. 32-33).

Variability: In some specimens the basal abdominal segments are brown. Strength of pronotal puncturation is variable.

Synonyms. The types of *Dolosota pernix* and *Homalota silacea* are identical in external characters and genitalia. The synonymy established by Leng (1920) and Fenyes (1920) is confirmed.

Distribution: Known from Virginia and North Carolina (Fig. 80).

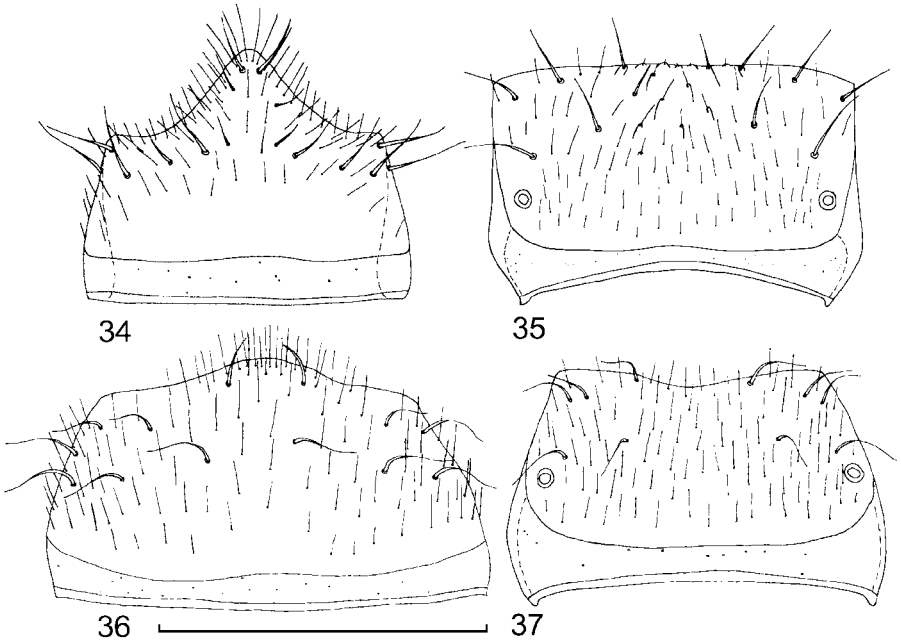
2. *Microlia meticola* (Casey, 1911) (Figs. 1-15, 34-44)

Nosora meticola Casey, 1911: 146.
Nosora meticola: Leng, 1920: 122.
Nosora meticola: Fenyes, 1920: 308.
Nosora meticola: Bernhauer & Scheerpeltz, 1926: 717.
Nosora meticola: Moore & Legner, 1975: 456.
Nosora meticola: Seevers, 1978: 143.

Type material. Lectotype: ♀, **UNITED STATES: Arizona:** Nogales (Wickham) (NMNH). This reference to the lectotype is not to be considered as lectotype designation. The lectotype will be designated by Hanley (in press, c).

Additional material: UNITED STATES: Arizona: Cochise Co.: 23 specimens, Portal, Soutwest Research Station, dead *Cucurbita* flowers (H. & A. Howden), 22.vi.1956; ♂, ditto but beating oak, 24.vi.1956; ♂, ditto but 28.vi.1956 (all in CNC); 67 specimens, Southwest Research Station, *Datura* flowers (M.Weiser), 29.vii.1993 (KSEM); **Texas:** ♂, 2 miles W of Fort Davis (H. & A. Howden), 14.vii.1956 (CNC).

Diagnosis: *Microlia meticola* can be distinguished from other species of *Microlia* by the shape of the aedeagus, particularly the apical process of median lobe (Figs. 38-41) and spermatheca with numerous irregular loops (Fig. 42-43).



FIGURES 34-37. Details of *Microlia meticola* (Casey) (Arizona). 34 – male sternum 8; 35 – male tergum 8; 36 – female sternum 8; 37 – female tergum 8. Scale bar 0.4 mm.

Description: Length 1.9-2.1 mm. Head from brownish yellow to brown; pronotum from brownish yellow to brown, with lighter borders; elytra from yellowish brown with lighter humeral angles to brown; abdominal segments 3-4 yellow to brown, segments 5-7 brown, segment 8 brownish yellow to brown; 4 or 5 basal antennal articles brownish yellow, 6 or 7 apical articles brown; legs and mouthparts yellow; in most specimens pronotum and abdominal segments 3-4 and 8 lighter than head, elytra and abdominal segments 5-7.

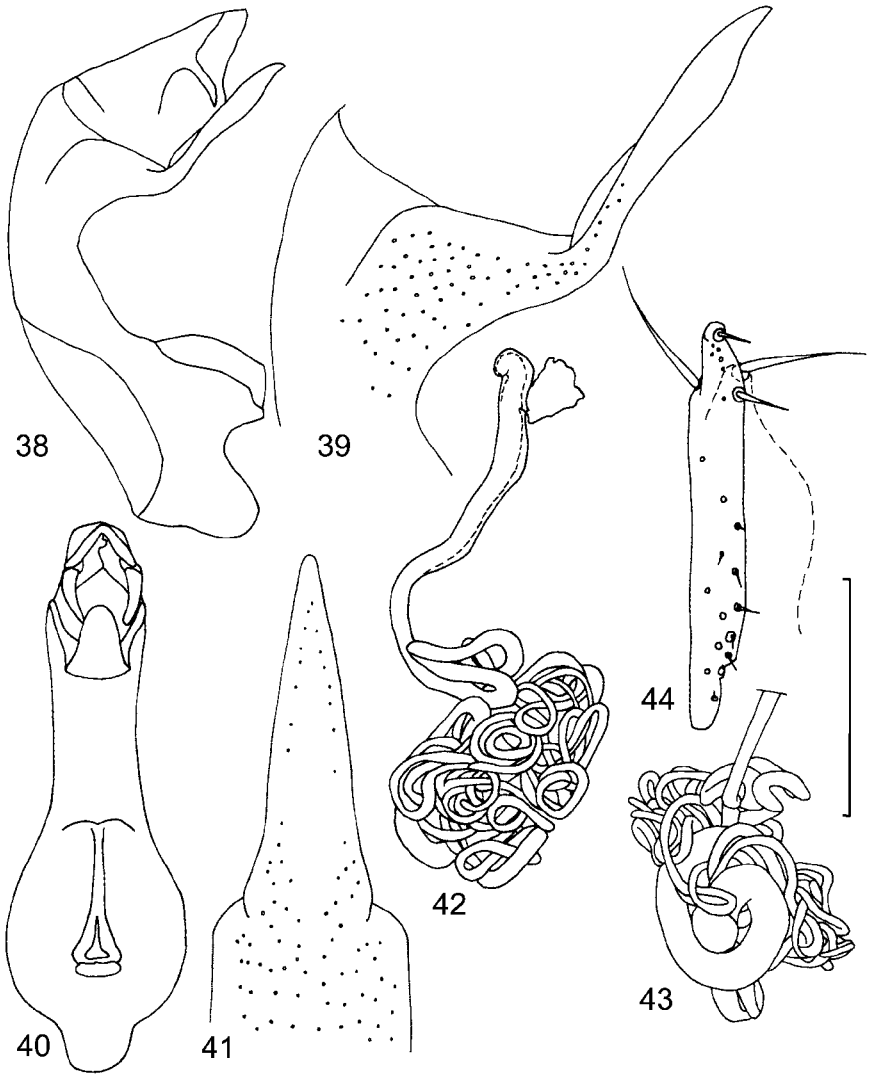
Head surface glossy, on disk with weak isodiametric microsculpture, puncturation fine, distance between punctures 1-2 times their diameter. Eyes 2.5-3.5 times longer than temples.

Pronotum strongly transverse, 1.3 times wider than head, width 0.44-0.56 mm, length 0.29-0.39 mm, width to length ratio 1.5, surface glossy, with weak and poorly visible (at x70) transverse microsculpture; puncturation as on head or stronger, distance between punctures 1-2 times their diameter. Elytra wider (0.51-0.66 mm) and longer (0.46-0.54 mm, measured from humeral angle) than pronotum (pronotal length to elytral length ratio 0.68), 1.2 times wider than long, surface glossy, with weak transverse microsculpture,

puncturation slightly asperate, distance between punctures 1-2 times their diameter. Mesotarsus with 4 segments.

Abdominal terga glossy, with fine and poorly visible (at x70) microsculpture consisting of meshes, with fine puncturation, distance between punctures 1-3 times their diameter.

Male tergum 7 in front of posterior margin and posterior half of male tergum 8 with numerous longitudinal tubercles, posterior margin of male tergum 8 straight (Fig. 35). Posterior margin of male sternum 8 with big triangular lobe (Fig. 34). Aedeagus as in Figs. 38-41, 44. Median lobe with long and narrow apical process (Figs. 41).



FIGURES 38-44. Details of *Microlia meticola* (Casey) (Arizona). 38 – median lobe of aedeagus, lateral view; 39 – apex of median lobe of aedeagus, lateral view; 40 – median lobe of aedeagus, ventral view; 41 – apex of median lobe of aedeagus, ventral view; 42-43 – spermatheca; 44 – apical lobe of right paramere, internal view. Scale bar 0.2 mm (38, 40, 42-43), 0.1 mm (39, 41, 44).

Female tergum 8 with concave posterior margin (Fig. 37), sternum 8 with convex posterior margin (Fig. 36). Spermatheca forming numerous irregular loops (Fig. 42-43). No female accessory sclerites.

Variability: Body coloration varies from yellowish brown (as in *M. silacea*) in light specimens to entirely brown in dark specimens. The strength of pronotal puncturation is variable.

Distribution: Known from Arizona and Texas (Fig. 80).

Natural History: Long series of *M. meticola* were collected in flowers of *Cucurbita* and *Datura*.

3. *Microlia azteca* (Casey, 1911) (Figs. 16, 45-48)

Nosora azteca Casey, 1911: 146.
Nosora azteca: Fenyes, 1920: 308.
Nosora azteca: Bernhauer & Scheerpeltz, 1926: 717.
Nosora azteca: Seevers, 1978: 143.

Type material. Lectotype and two paralectotypes: 3♀♀, **MEXICO:** Cuernavaca (Wickam) (NHNM). The fourth specimen labeled as paralectotype is missing from the pin. This reference to the lectotype is not to be considered as lectotype designation. The lectotype will be designated by Hanley (in press, c).

Diagnosis: *Microlia azteca* can be distinguished from other species of *Microlia* by larger body, spermatheca forming multiple coils (but not irregular loops) (Fig. 47), mesotarsus with 5 segments and uniformly brown coloration.

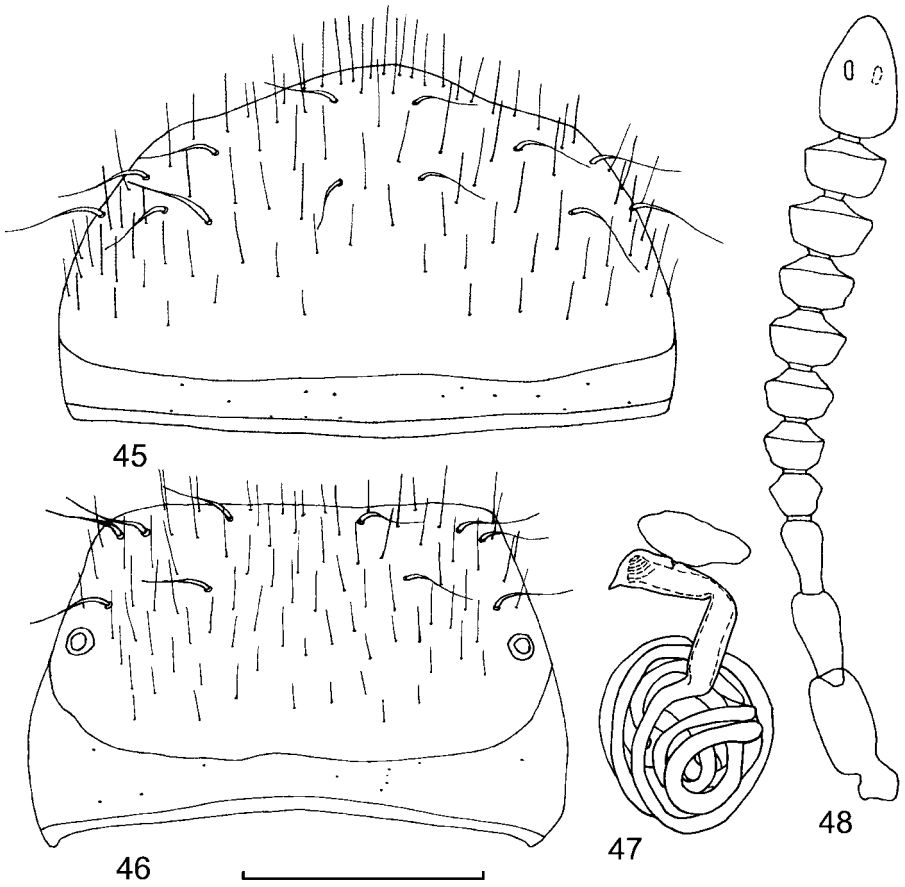
Description: Length 2.3 mm. Body uniformly brown, legs, antennal articles 1-4 and mouthparts yellow.

Head surface glossy, on disk with weak isodiametric microsculpture, puncturation strong, distance between punctures equal to their diameter. Eyes 2.2 times longer than temples.

Pronotum strongly transverse, 1.3 times wider than head, width 0.50-0.51 mm, length 0.34-0.36 mm, width to length ratio 1.5, surface glossy, with weak transverse microsculpture; puncturation as on head. Elytra wider (0.60-0.61 mm) and longer (0.51-0.56 mm, measured from humeral angle) than pronotum (pronotal length to elytral length ratio 0.65), 1.1 times wider than long, surface glossy, with weak transverse microsculpture, puncturation finer than on pronotum, slightly asperate, distance between punctures 1-2 times their diameter. Mesotarsus with 5 segments.

Abdominal terga glossy, with fine microsculpture consisting of transverse (terga 3-6) or isodiametric (tergum 7) meshes, with fine puncturation, distance between punctures 2-3 times their diameter.

Puncturation of female tergum 7 strongly asperate; tergum 8 with straight posterior margin (Fig. 46), sternum 8 with convex posterior margin (Fig. 45). Spermatheca forming numerous coils, but not irregular loops (Fig. 47).



FIGURES 45-48. Details of *Microlia azteca* (Casey) (paralectotype). 45 – female sternum 8; 46 – female tergum 8; 47 – spermatheca; 48 – right antenna. Scale bar 0.2 mm.

Variation: The coloration of the three known specimens of *M. azteca* is identical and resembles that of darker specimens of *M. meticola*. However one cannot rule out a chance that specimens with lighter coloration might occur in *M. azteca* as in the other species where longer series had been examined.

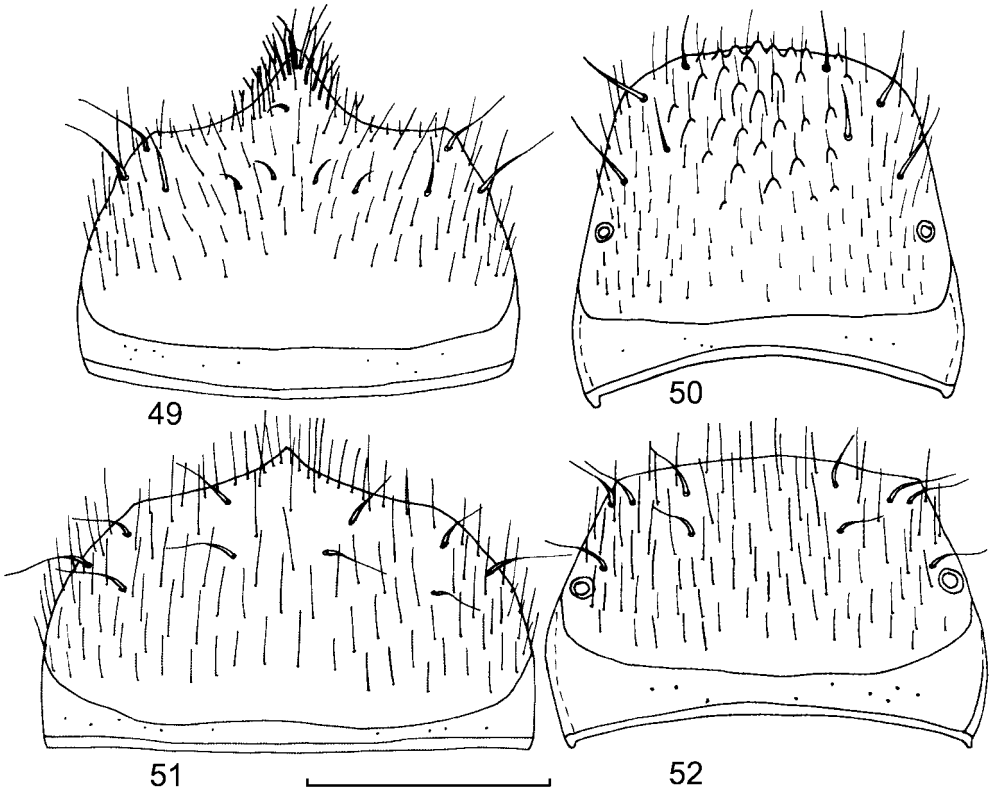
Distribution: Known from a single locality in Mexico (Fig. 80).

4. *Microlia pentamera* Gusarov, sp. nov. (Figs. 49-61)

Type material. Holotype: ♂, **COSTA RICA:** San Jose, Zurquí de Moravia, 1600m, malaise (P. Hanson), v.1994 (KSEM). Paratypes: 2♀♀, as the holotype; 2♀♀, ditto but vi.1993; ♀, ditto but ix-x.1993 (KSEM).

Diagnosis: *Microlia pentamera* can be distinguished from other species of *Microlia*

by the shape of the aedeagus (Fig. 53-56), particularly the apical process of median lobe (Figs. 54, 56), double knob at posterior margin of the male tergum 3 (Fig. 61) and spermatheca forming 3-4 coils (Fig. 59-60).



FIGURES 49-52. Details of *Microlia pentamera* Gusarov, **sp. nov.** (49-50 – holotype; 51-52 – paratype). 49 – male sternum 8; 50 – male tergum 8; 51 – female sternum 8; 52 – female tergum 8. Scale bar 0.2 mm.

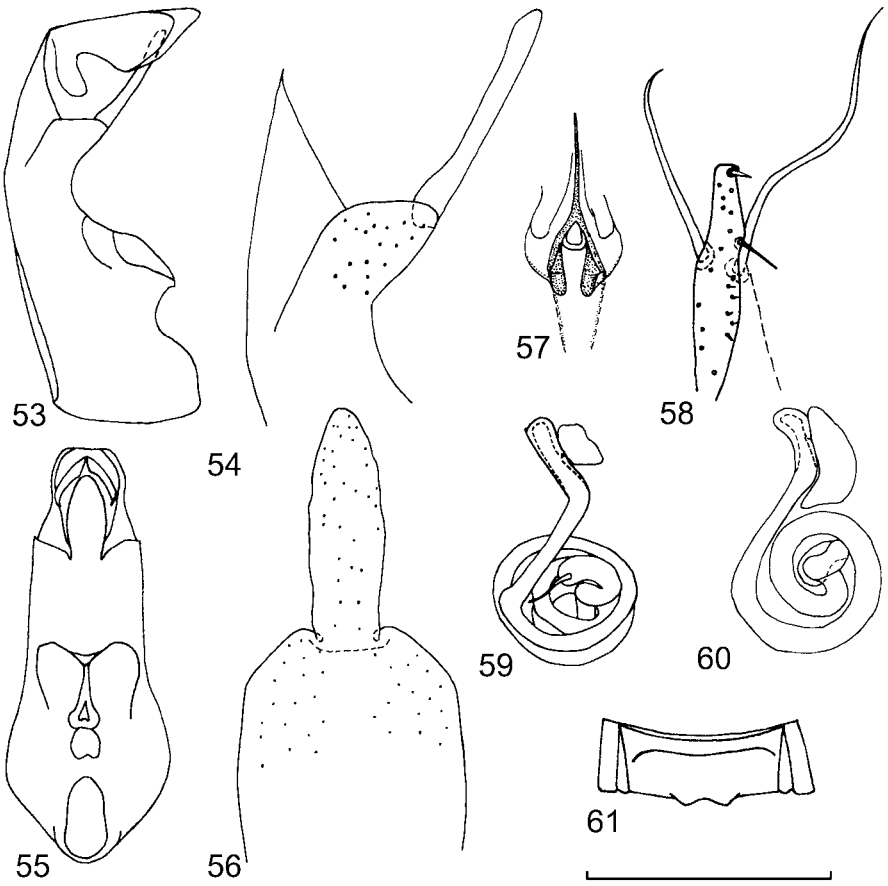
Description: Length 1.8 mm. Head from brownish yellow to brown; pronotum from brownish yellow to light brown; elytra brown; abdominal segment 3 or segments 3-4 yellow, segments 4-7 or 5-7 yellowish brown to dark brown; legs, mouthparts and five basal antennal segments yellow, six apical segments brown.

Head surface glossy, on disk with weak isodiametric microsculpture, puncturation strong, distance between punctures ½-1 times their diameter. Eyes 2-2.5 times longer than temples.

Pronotum strongly transverse, 1.4 times wider than head, width 0.43-0.50 mm, length 0.29-0.33mm, width to length ratio 1.5, surface glossy, with weak microsculpture; puncturation as on head, distance between punctures ½-1 times their diameter. Elytra wider (0.54-0.59 mm) and longer (0.43-0.47 mm, measured from humeral angle) than pronotum

(pronotal length to elytral length ratio 0.66), 1.2 times wider than long, surface glossy, with weak and poorly visible (at x70) microsculpture, puncturation as on pronotum, distance between punctures ½-1 times their diameter. Mesotarsus with 5 segments.

Abdominal terga glossy, with fine and poorly visible (at x70) microsculpture consisting of transverse meshes, with fine puncturation, distance between punctures 1-3 times their diameter.



FIGURES 53-61. Details of *Microlia pentamera* Gusarov, **sp. nov.** (53-58, 61 – holotype; 59-60 – paratypes). 53 – median lobe of aedeagus, lateral view; 54 – apex of median lobe of aedeagus, lateral view; 55 – median lobe of aedeagus, ventral view; 56 – apex of median lobe of aedeagus, ventral view; 57 – copulatory piece of internal sac; 58 – apical lobe of right paramere, internal view; 59-60 – spermatheca; 61 – abdominal segment 3, dorsal view. Scale bar 0.2 mm (53, 55, 59-60), 0.1 mm (54, 56-58), 0.55 mm (61).

Posterior margin of male tergum 3 raised as double knob (Fig. 61). Male terga 7 and 8 with multiple longitudinal tubercles in posterior half. Posterior margin of male tergum 8 crenulate medially (Fig. 50). Posterior margin of male sternum 8 with big triangular lobe;

some apical microsetae bifurcate (Fig. 49). Aedeagus as in Figs. 53-58. Apical process of median lobe in lateral view straight (Figs. 53-54).

Female tergum 8 with straight posterior margin (Fig. 52). Posterior margin of female sternum 8 extended as short pointed lobe (Fig. 51). Spermatheca with rounded capsule and forming three-four coils (Fig. 59-60). No female accessory sclerites.

Distribution: Known from a single locality in Costa Rica (Fig. 80).

Natural History: *Microlia pentamera* was collected with malaise trap.

5. *Microlia tetramera* Gusarov, sp. nov. (Figs. 17-18, 62-76)

Type material. Holotype: ♂, **COSTA RICA:** San Jose, Zurquí de Moravia, 1600m, malaise (P. Hanson), iii.1994 (KSEM).

Additional material: COSTA RICA: possible females of *M. tetramera*, type A: 3♀♀, same data as the holotype but vi-vii.1994; ♀, ditto but vi.1993 (KSEM); possible females of *M. tetramera*, type B: 2♀♀, as the holotype but ix-x.1993 (KSEM).

Diagnosis (based on the male holotype only): *Microlia tetramera* can be distinguished from other species of *Microlia* by having mesotarsus with 4 segments, the lateral angles of male tergum 3 extended posteriorly as pointed triangular lobes (Fig. 76), by the shape of the aedeagus (Figs. 68-72), particularly the hook-like apical process of median lobe (Figs. 68-69).

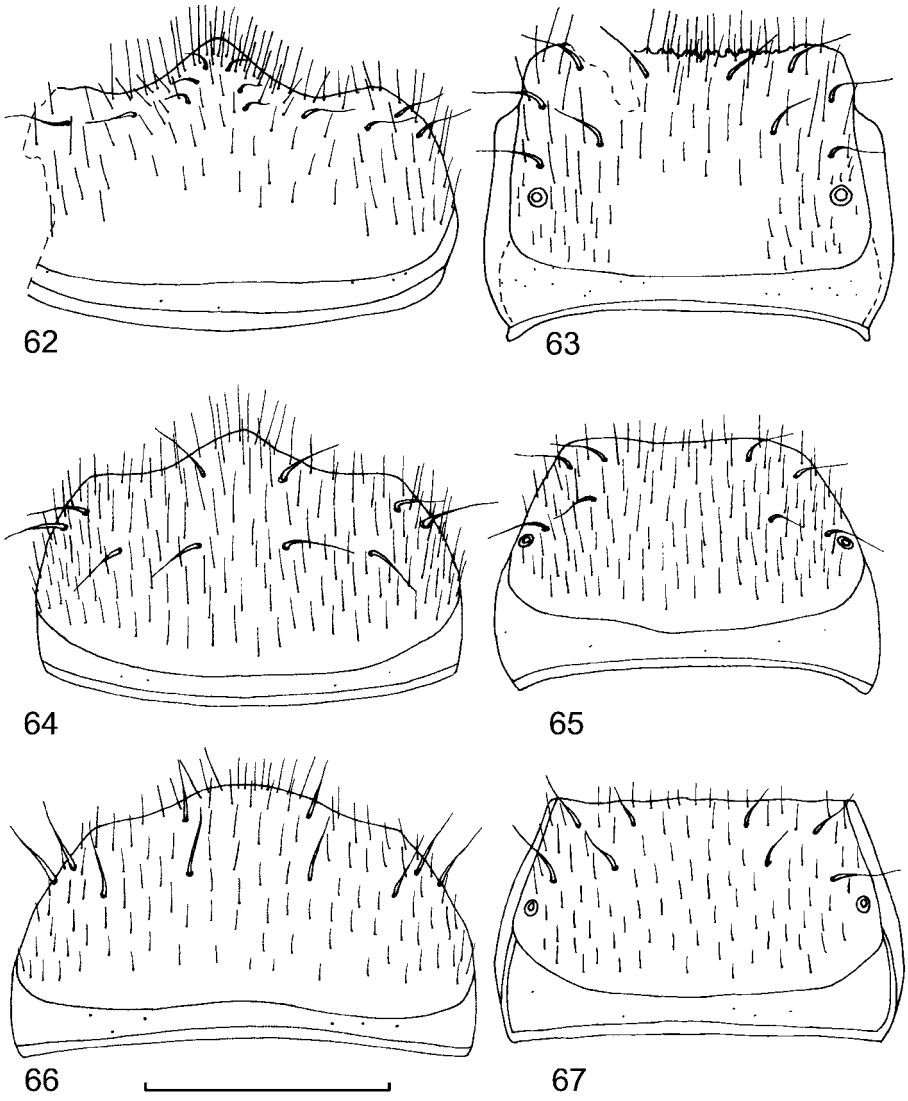
Description (based on the male holotype only): Length 1.8 mm. Head, pronotum and abdominal tergum 3 brownish yellow; elytra brown, with lighter humeral angles; abdominal segments 4-7 dark brown; legs, mouthparts and seven basal antennal segments yellow; four apical antennal segments brown.

Head surface mat, on disk with strong isodiametric microsculpture, puncturation fine, distance between punctures equal to their diameter. Eyes 2.8 times longer than temples.

Pronotum strongly transverse, 1.4 times wider than head, width 0.50 mm, length 0.30 mm, width to length ratio 1.7; surface mat, with strong isodiametric microsculpture; puncturation as on head. Elytra wider (0.60 mm) and longer (0.47 mm, measured from humeral angle) than pronotum (pronotal length to elytral length ratio 0.64), 1.3 times wider than long, surface glossy, with weak transverse microsculpture, puncturation stronger than on pronotum and slightly asperate, distance between punctures equal to their diameter. Mesotarsus with 4 segments.

Abdominal terga glossy, without visible (at x70) microsculpture, with fine puncturation, distance between punctures 2-3 times their diameter.

Lateral angles of male tergum 3 extended posteriorly as pointed triangular lobes (Fig. 76). Male tergum 7 without tubercles. Posterior margin of male tergum 8 crenulate (Fig. 63). Posterior margin of male sternum 8 with broad triangular lobe (Fig. 62). Aedeagus as in Figs. 68-72. Apical process of median lobe in lateral view bent like hook (Figs. 68-69).



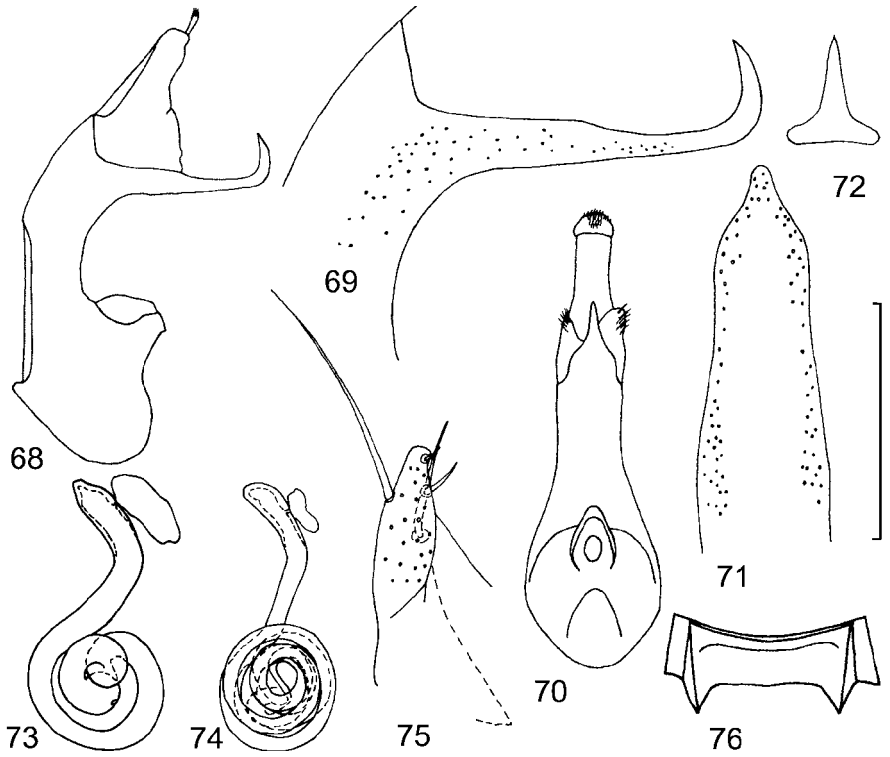
FIGURES 62-67. Details of *Microlia tetramera* Gusarov, **sp. nov.** (62-63 – holotype; 64-67 – possible female of *M. tetramera* from Costa Rica, 64-65 – type A, 66-67 – type B). 62 – male sternum 8; 63 – male tergum 8; 64, 66 – female sternum 8; 65, 67 – female tergum 8. Scale bar 0.2 mm.

Discussion: Two types of females, apparently representing different species, both with tarsal formula 4-4-5, have been collected at the type locality of *M. tetramera*. The females of the type A have thicker spermatheca with two coils and pointed capsule (Fig. 73) while in the type B females the spermatheca has about five coils and rounded capsule (Fig. 74). The male holotype of *M. tetramera* differs from both types of females in having darker coloration, stronger microsculpture of head and pronotum. It is impossible to reliably associate the male holotype with one of the two types of females without having additional material. An alternative hypothesis, that the type B females are conspecific with *M.*

pentamera (tarsal formula 4-5-5), seems implausible because no intraspecific variation of tarsal formula was observed in other species of *Microlia*.

Distribution: Known from a single locality in Costa Rica (Fig. 80).

Natural History: *Microlia tetramera* was collected with malaise trap.

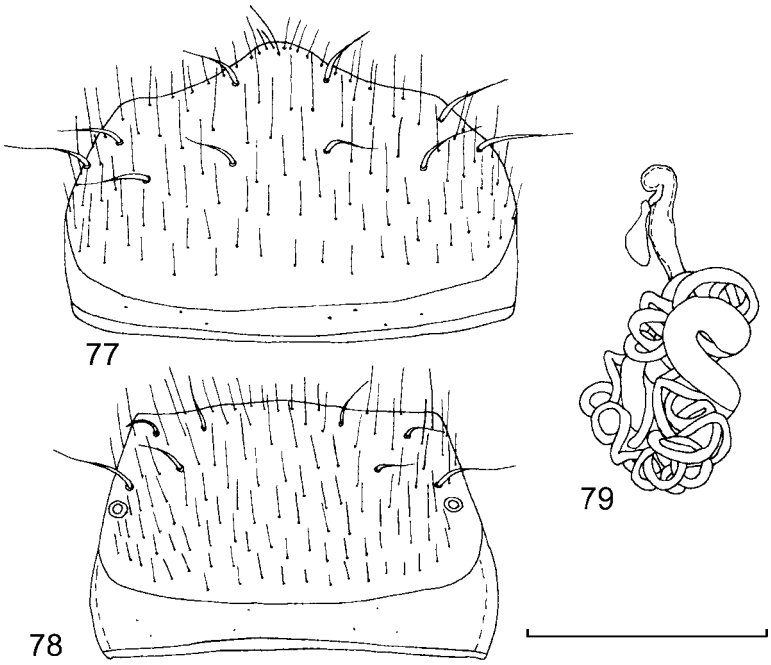


FIGURES 68-76. Details of *Microlia tetramera* Gusarov, **sp. nov.** (68-72, 75-76 – holotype; 73-74 – possible female of *M. tetramera* from Costa Rica). 68 – median lobe of aedeagus, lateral view; 69 – apex of median lobe of aedeagus, lateral view; 70 – median lobe of aedeagus, ventral view; 71 – apex of median lobe of aedeagus, ventral view; 72 – apex of median lobe of aedeagus, apical ventral view; 73-74 – spermatheca; 75 – apical lobe of right paramere, internal view; 76 – abdominal segment 3, dorsal view. Scale bar 0.2 mm (68, 70, 73-74), 0.1 mm (69, 71-72, 75), 0.55 mm (76).

6. *Microlia panamensis* Gusarov, sp. nov. (Figs. 77-79)

Type material. Holotype: **PANAMA:** Darién: ♀, Cana Biological Station, Serranía de Pirre, 1450m, 7º45’18”N 77º41’06”W, flight intercept trap (J.Ashe, R.Brooks), 7-9.vi.1996 (KSEM).

Diagnosis: *Microlia panamensis* can be distinguished from other species of *Microlia* by spermatheca with numerous irregular loops (Fig. 79), the absence of female accessory sclerites and by mesotarsus with 5 segments.



FIGURES 77-79. Details of *Microlia panamensis* Gusarov, **sp. nov.** (holotype). 77 – female sternum 8; 78 – female tergum 8; 79 – spermatheca. Scale bar 0.2 mm.

Description: Length 1.8 mm. Head, elytra and abdominal segments 3-4 yellowish brown, pronotum, legs, antennal articles 1-7 and mouthparts brownish yellow, abdominal segments 5-7 and antennal articles 8-11 brown.

Head surface glossy, on disk with weak isodiametric microsculpture, puncturation fine, distance between punctures ½-1 time their diameter. Eye twice as long as temples.

Pronotum strongly transverse, 1.3 times wider than head, width 0.43 mm, length 0.29 mm, width to length ratio 1.5, surface glossy, with weak and poorly visible (at x70) microsculpture; puncturation finer than on head, distance between punctures 1-2 times their diameter. Elytra wider (0.57 mm) and longer (0.47 mm, measured from humeral angle) than pronotum (pronotal length to elytral length ratio 0.61), 1.2 times wider than long, glossy, microsculpture and puncturation as on pronotum. Mesotarsus with 5 segments.

Abdominal terga glossy, with fine and poorly visible (at x70) microsculpture consisting of meshes, with fine puncturation, distance between punctures 1-3 times their diameter.

Female tergum 8 with straight posterior margin (Fig. 78), sternum 8 with posterior margin forming obtuse lobe (Fig. 77). Spermatheca forming multiple irregular loops (Fig. 79). No female accessory sclerites.

Distribution: Known from a single locality in Panama (Fig. 80).

Natural History: The only known specimen was collected with flight intercept trap.

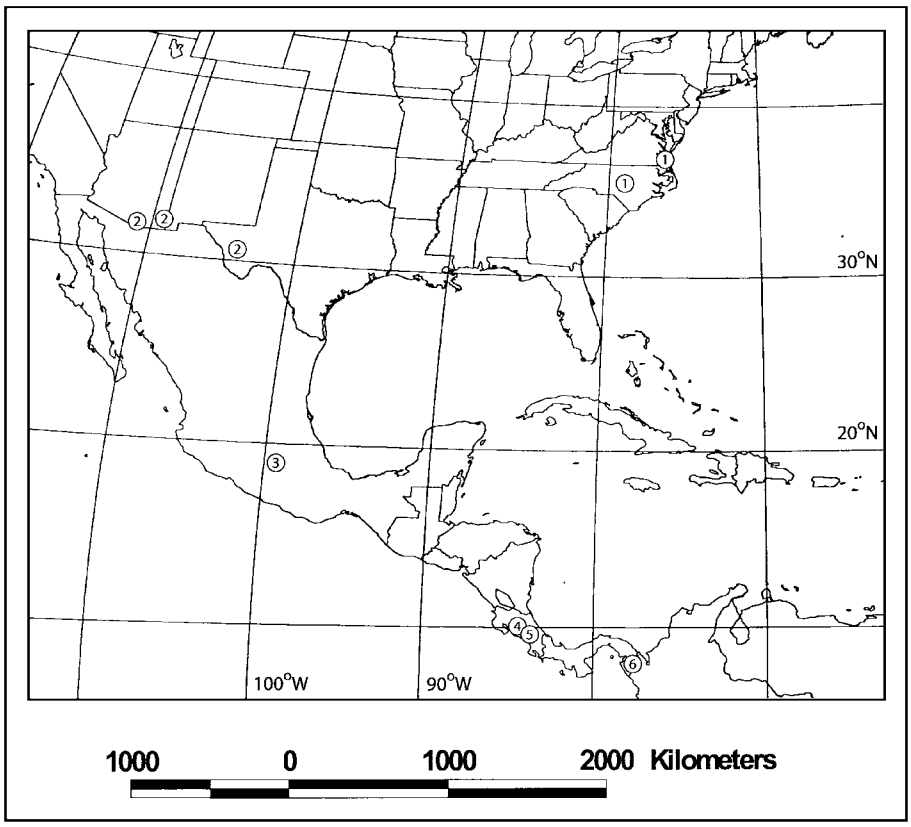


FIGURE 80. Geographical distribution of *Microlia* Casey. 1 – *M. silacea* (Erichson); 2 – *M. meticola* (Casey); 3 – *M. azteca* (Casey); 4 – *M. pentamera* Gusarov, **sp. nov.**; 5 – *M. tetramera* Gusarov, **sp. nov.**; 6 – *M. panamensis* Gusarov, **sp. nov.**

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