



First record of the genus *Myrmedonota* Cameron (Coleoptera, Staphylinidae) from North America, with descriptions of two new species

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Abstract

The lomechusine genus *Myrmedonota* Cameron is recorded from North America for the first time. *Myrmedonota* is diagnosed, and two new species, *M. aidani* Maruyama & Klimaszewski, **sp. nov.**, and *M. lewisi* Maruyama & Klimaszewski, **sp. nov.**, are described and illustrated. Bionomical information is provided for both new species.

Key words: Aleocharinae, Lomechusini, *Myrmedonota*, Nearctic, myrmecophily

Introduction

The genus *Myrmedonota* Cameron, 1920 (tribe Lomechusini Fleming, subtribe Myrmedoniina Thomson) is represented by 11 species from Malaysia, Singapore, Indonesia and Papua-New Guinea. According to the original description of the type species of *Myrmedonota*, *M. cingulata* Cameron, 1920, the type series were collected with small ants, so it is presumed to be a myrmecophile. Though bionomics of most other species are unknown, one species is also reported as a myrmecophile associated with *Papyrius nitidus* (Mayr, 1862) (Hymenoptera, Formicidae, Dolichoderinae) (Kistner 2003), and another species is known as a termitophile associated with *Schedorhinotermes* sp. (Isoptera, Rhinotermitidae) (Bourguignon & Roisin 2006).

The original diagnosis of *Myrmedonota* was not well defined (Cameron 1920), and the description is not useful for discriminating it from the other lomechusine genera. Probably, the affiliations of most species have been based on the similarities of their facies to the type species and the small body size in comparison to the other lomechusine members. Bourguignon and Roisin (2006) mentioned some diagnostic features of the genus, but they are rather general features that are shared by other lomechusine genera, e.g., *Myrmoecia* Mulsant & Rey, 1873, *Pella* Stephens, 1835, and *Zyras* Stephens, 1835 (s. lat.).

Recently, we found two undescribed species of the Lomechusini in the United States. After close examination of the specimens and comparison with the type species, they are found to be members of the genus *Myrmedonota*. In this paper, we redefine the genus based on the type species and new material from North America, present external and internal illustrations of diagnostic structures for the first time, describe the new species and provide the bionomical information.

Material and methods

Technical procedures and terminology adopted here follow Maruyama (2006). The following abbreviations are used for measurements in the descriptions:

AL	antennal length
BL	body length
EL	eye length
ELW	elytral width
FBL	forebody length
HTL	hind tibial length
HW	head width
PL	pronotal length
PW	pronotal width

The specimens are deposited in the following collections: the Insectarium René-Martineau, Canadian Forest Service (LFC), the Canadian National Collection of Insects, Arachnids, and Nematodes (CNC), the Field Museum of Natural History (FMNH), and the private collection of Munetoshi Maruyama (cMM).

Taxonomy

Genus *Myrmedonota* Cameron, 1920

See, Kistner (2003) for references, list of species, and key to species.
Type species: *Myrmedonota cingulata* Cameron, 1920, by monotypy.

Diagnosis. This genus is characterised and distinguished from the other lomechusine genera by a combination of the following character states: 1) body surface finely punctated; 2) head with occipital suture; 3) pronotum transverse, >1.5 wider than long; 4) setation on abdomen sparse to moderate; 5) cardo of maxilla covers bases of stipes and lacinia (Fig. 3); 6) lacinia extremely narrowed and parallel-sided (Fig. 3); 7) mentum almost as long as wide (Figs. 4, 13); 8) apodeme of labium with medial projection (Figs. 5, 14); 9) 1st segment of labial palpus longer than 2nd segment (Figs. 5, 14); 10) each lobe of ligula with 2 setulae (Figs. 5, 14).

Comments. *Myrmedonota* is placed in the subtribe Myrmedoniina of the tribe Lomechusini based on the combination of the following character states: elongated lacinia; mesoventral process shorter than metaventral process; tarsal formula 4, 5, 5; base of capsule of aedeagal median lobe partially covers the compressor plate.

This is the first record of *Myrmedonota* from North America. The diagnosis is based on an examination of the type species *M. cingulata* Cameron, 1920 (2 ♂♂ and 2 ♀♀, **MALAYSIA:** Selangor, Ulu Gombak, 8–15 VI 2005, coll. M. Maruyama, by flight interception traps); the present new species, and the original descriptions of *M. papyriomyrmecis* Kistner, 2003 and *M. termitophila* Bourguignon & Roisin, 2006.

In North America, the members of this genus are similar to those of *Pella* in general appearance, but can be distinguished by the small body size (in *Pella*, >3.5 mm) and the mouthpart character states 5) to 10) in the above diagnosis as outlined in the modified key below. This genus is keyed out as *Pella* in the key of Klimaszewski *et al.* (2005, pp. 707–710). In Ashe's (2001, pp. 310–311) "Key to the Nearctic genera of Lomechusini", *Pella* and *Myrmedonota* are keyed out to *Zyras*.

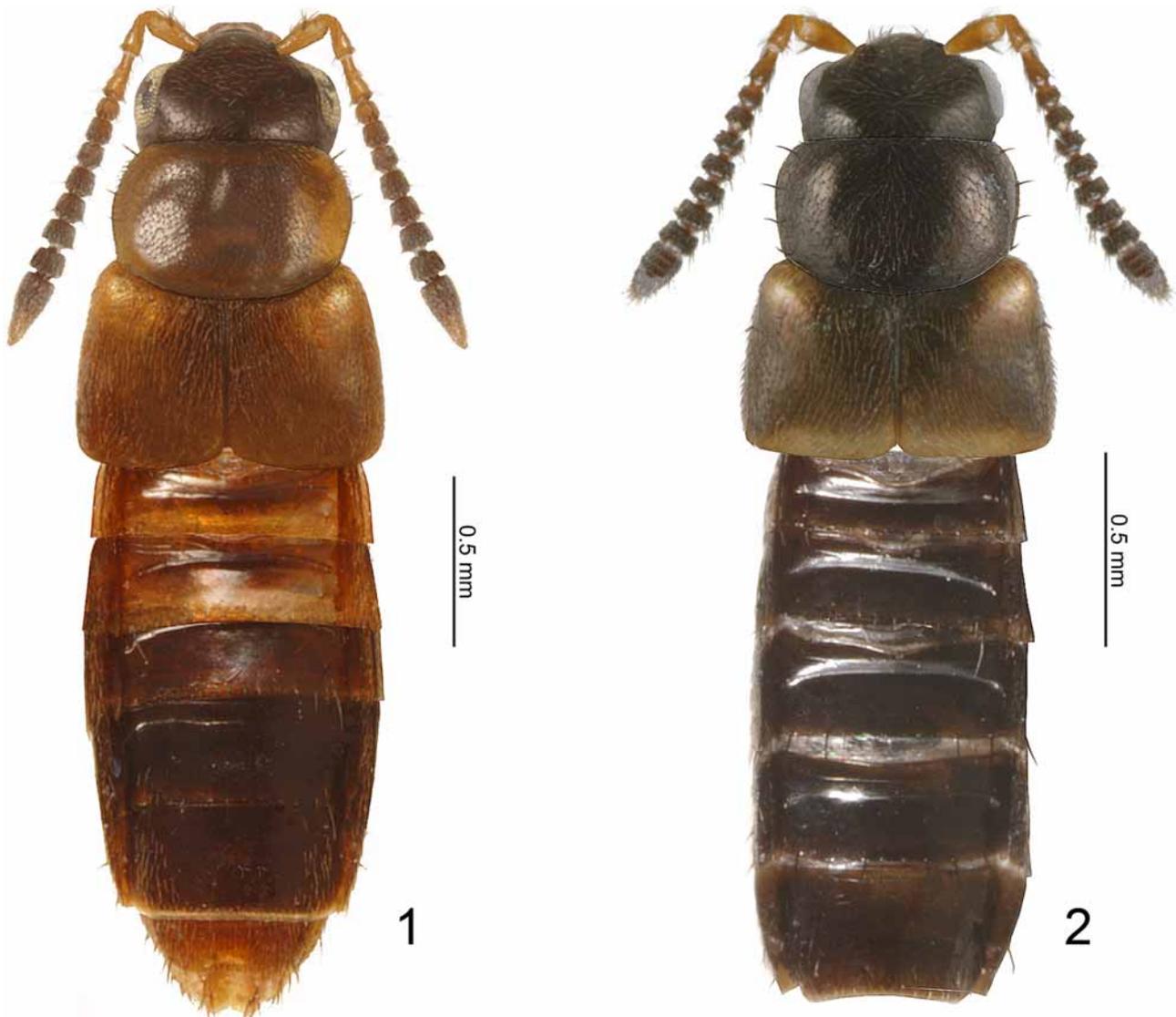
Myrmedonota aidani Maruyama & Klimaszewski, sp. nov.

Figs. 1, 3–12

Type series. Holotype, ♂, **UNITED STATES OF AMERICA: Ohio:** Summit County, Bath Nature Preserve [41.18°N, 81.65°W], 20 VI 2003–4 VII 2003, coll. L. B. Patrick (LFC). Paratypes: 5 ♂♂, 5 ♀♀, same data as holotype (LFC, FMNH); 5 ♂♂, 3 ♀♀, 2 sex?, same data but 30 VI 2005–14 VII 2005 (LFC, CNC, cMM); 3 ♂♂, 1 ♀, same data but 28 VII 2005–11 VIII 2005 (cMM).

Etymology. Dedicated to Aidan C. Patrick, son of the collector of the original series, L. Brian Patrick.

Diagnosis. This species is closely similar to *M. lewisi* in facies and body size but may be easily distinguished by the mostly reddish-brown body color, the morphology of the genital organs, especially the wider dorsal bridge of the median lobe of aedeagus and the S-shaped spermatheca. This species can easily be separated from the other known species of *Myrmedonota* by having 5 macrosetae along the lateral margin of the pronotum.



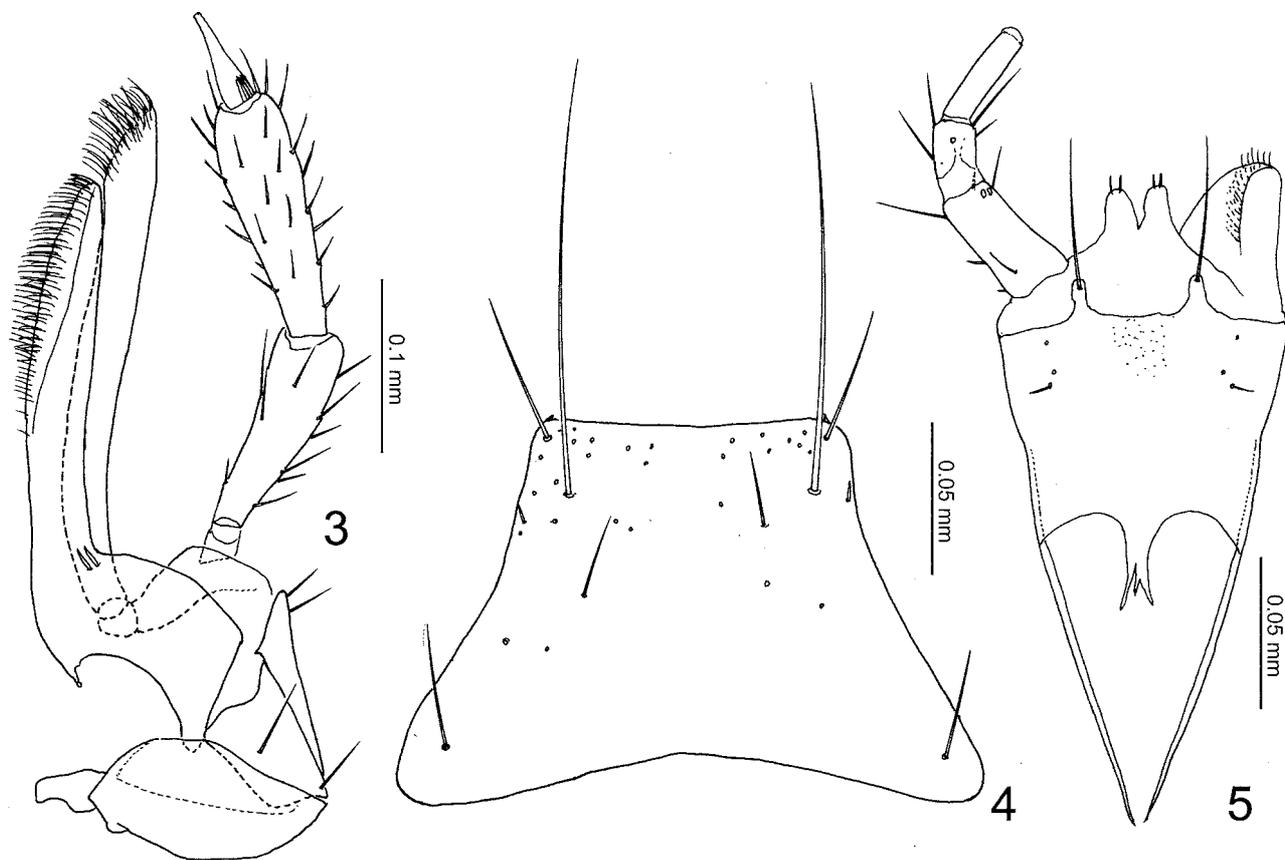
FIGURES 1, 2. Habitus of *Myrmedonota* spp. 1: *M. aidani*; 2: *M. lewisi*, terminal segments 9–10 removed and not shown.

Description. Body slender and subparallel (Fig. 1). Reddish-brown in ground color; head, 5th to 11th segments of antennae, 5th to 8th segments (sometimes also median areas of 4th and 5th segments) of abdomen black-

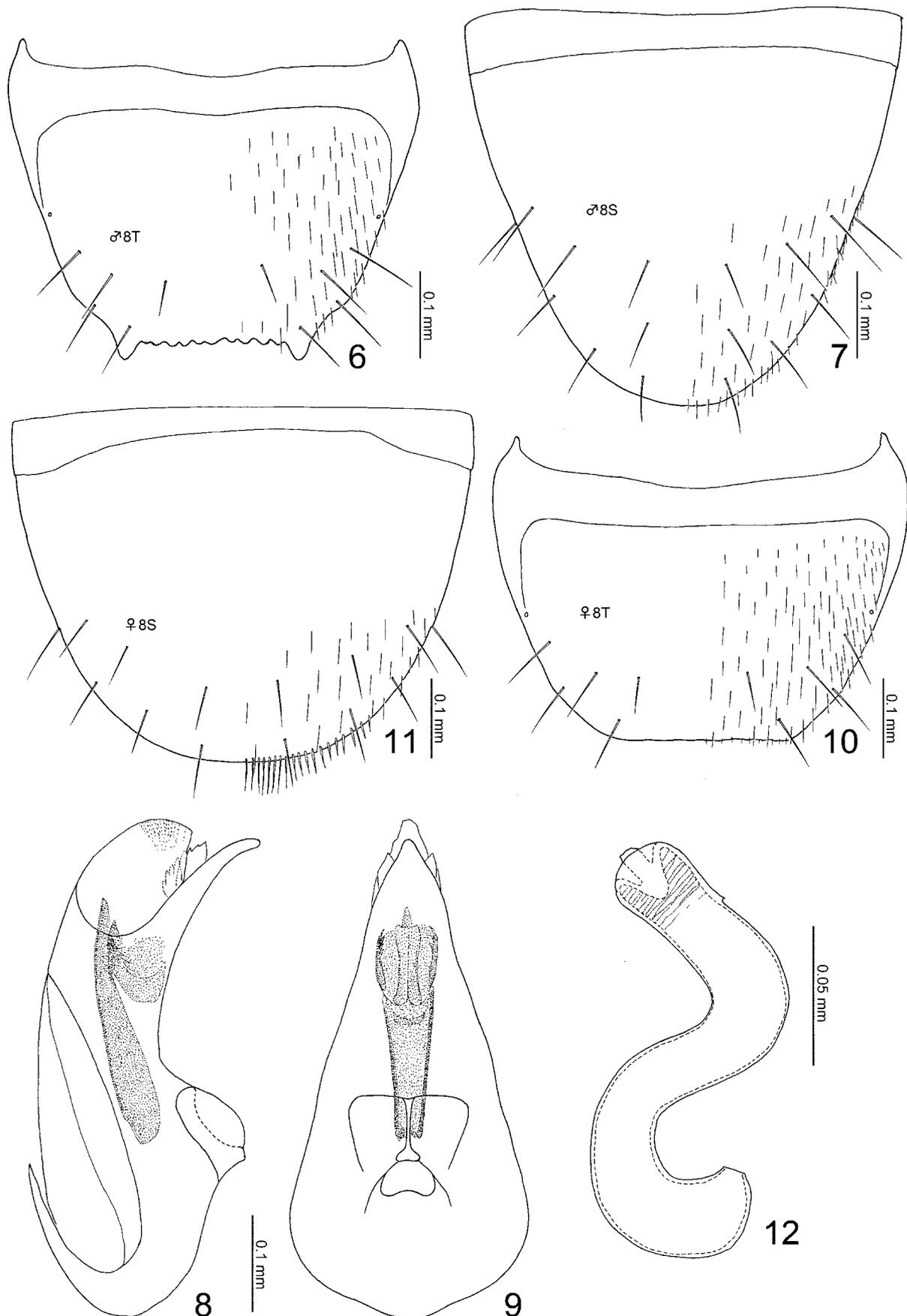
ish brown; elytra paler, but more or less infuscate laterally and sometimes around scutellum. Head (Fig. 1) widest at eyes; surface finely reticulated, moderately covered with setae; setae moderately long, as long as those on pronotum and elytra; length of eyes 0.45–0.46 times as long as head width. Mentum (Fig. 4) trapezoidal, with basal margin emarginate. Labium (Fig. 5) with about 30 minute medial pseudopores. Antennae (Fig. 1) shorter than head, pronotum and elytra combined; 1st segment much shorter than 2nd and 3rd combined; 2nd segment about 0.7 times as long as 3rd; 3rd segment about 0.8 times as long as 1st; 4th to 10th segments almost as long as wide except for stem of each segment; 11th segment conical, longer than 1st. Pronotum (Fig. 1) subelliptical, 1.37–1.44 times as wide as long, widest just after anterior margin; surface finely punctured, finely reticulated among punctures, densely covered with setae, with 5 long macrosetae along anterior to lateral margins; lengths of macrosetae variable, anterolateral one longest. Scutellum with surface smooth, moderately covered with short setae. Elytra (Fig. 1) widened apicad; surface finely punctured, finely reticulated among punctures, densely covered with setae, with 3 small macrosetae laterally. Legs short; hind tibia 0.81–0.84 times as long as elytral width. Abdomen subparallel-sided, slightly narrower than elytra, widest around 4th and 5th segments; surface smooth; 3rd to 7th tergites almost glabrous, but with a row of setae and macrosetae along posterior margins; 8th tergite (Figs. 6, 10) with 5 macrosetae; 9th tergite with 4 macrosetae; 10th tergite with posterior margin slightly emarginate, with 4 macrosetae.

Male. Eighth abdominal tergite (Fig. 6) with posterior margin truncate, its truncate apex crenate, and with a protrusion laterally; 8th sternite (Fig. 7) with posterior margin rounded, with 8 macrosetae; 9th sternite with posterior margin rounded. Aedeagus (Figs. 8, 9) somewhat tear-shaped in parameral view; apical lobe gently curved paramerally in lateral view, pointed at apex in lateral and parameral views; basal ridge convex.

Female: Eighth abdominal tergite (Fig. 10) with posterior margin truncate; 8th sternite (Fig. 11) with 7 macrosetae; sensory setae of 8th sternite generalised, almost the same as the other setae in shape. Spermatheca (Fig. 12) curved twice, S-shaped.



FIGURES 3–5. Mouthparts of *Myrmedonota aidani*. 3: maxilla; 4: mentum; 5: labium.



FIGURES 6–12. Terminalia of *Myrmedonota aidani*. 6: male 8th tergite; 7: male 8th sternite; 8: median lobe of aedeagus, lateral view; 9: median lobe of aedeagus, parameral view; 10: female 8th tergite; 11: female 8th sternite; 12: spermatheca.

Measurements. BL, ca. 2.6–3.0; FBL, ca. 1.2–1.4; HW, 0.49–0.52; EL, 0.220–0.237; AL, 1.03–1.13; PL, 0.43–0.47; PW, 0.59–0.67; ELW, 0.75–0.86; HTL, 0.63–0.68.

Comments. This species, as well as the next species, are distinguishable from the other congeners in having 5 macrosetae along the lateral margin of the pronotum. The other species are characterized by having 3 or 4 setae along lateral margin of pronotum (Kistner, 2003).

Bionomics. This species was readily caught in pitfall traps with a 50/50 solution of water/propylene glycol. The habitat was an annually mown old-field grassland dominated by the European cool season grasses, *Bromus inermis* Leys., *Festuca arundinacea* Schreb., *Phleum pratense* L., and *Anthoxanthum odoratum* L. The species was captured frequently in anthropogenically disturbed areas, especially with moderate to high plant productivity, and with moderate to high plant litter accumulation.

The type series specimens of *M. aidani* were caught with ants (Formicidae), though the exact species of ants were not determined, only the subfamily. Captured with the type series of this species were several specimens in each of the following subfamilies: Mymicinae, Dolichoderinae, and Formicinae. Additionally, a single specimen of the subfamily Ponerinae (presumably *Ponera pennsylvanica* Buckley) was captured with the holotype of *M. aidani*. Additional specimens of *M. aidani* not in the type series were captured with the following ant species: *Lasius neoniger* Emery, *Lasius alienus* (Foerster), *Lasius umbratus* (Nylander), *Brachymyrmex depilis* Emery, *Prenolepis imparis* (Say), *Formica nitidiventris* Emery, *Myrmica latifrons* Starcke, *Myrmica americana* Weber, *Myrmica fracticornis* Forel, *Stenammina brevicorne* (Mayr), *Stenammina impar* Forel, *Solenopsis molesta* (Say), *Aphaenogaster rudis* complex (Enzmann), and *Ponera pennsylvanica* Buckley. Further, *M. aidani* of the type series were captured with the following beetle species: *Amara lunicollis* Schiodte and *Poecilus lucublandus* (Say) in the family Carabidae, *Barypeithes pallucidus* (Boheman) in the family Curculionidae, and *Apocellis sphaericollis* (Say), *Falagria dissecta* Erichson, *Philhygra clemens* (Casey), *Amischa* sp., and *Meronera venustula* Erichson in the family Staphylinidae.

This species, as well as the next species, is most probably myrmecophilous, though none of the type series of the next species were collected with ants. Most species of the Lomechusini are considered to be myrmecophilous (Maruyama, 2006), and the present new species are closely similar to the type species, which has been presumed to be a myrmecophile. Further field investigation is needed for confirmation of their myrmecophily.

***Myrmedonota lewisi* Maruyama & Klimaszewski, sp. nov.**

Figs. 2, 13–21

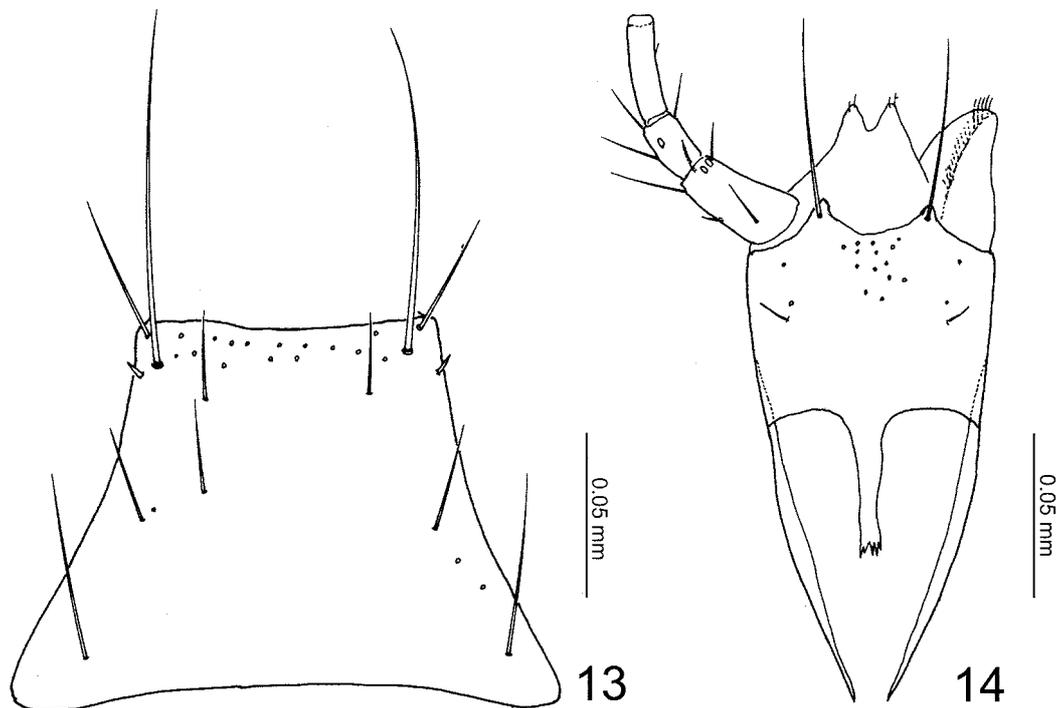
Type series. Holotype, ♂, **UNITED STATES OF AMERICA: Indiana:** Clark County, Burns Hollow, ca 2 mi E Borden, 30 VII 2006, J. Lewis (LFC). Paratypes. 2 ♂♂, 8 ♀♀, 1 sex?, same data as holotype (LFC, CNC, FMNH, cMM).

Etymology. Named in honour of Jerry Lewis, the collector of the original series.

Diagnosis. This species is closely similar to *M. aidani* in facies and body size but may be easily distinguished by the basically blackish brown body color, the character states of the genital organs, especially the narrower dorsal bridge of the median lobe of the aedeagus and the V-shaped spermatheca. This species can easily be separated from the other known species of *Myrmedonota* by having 5 macrosetae along the lateral margin of the pronotum.

Description. Body slender and subparallel (Fig. 2). Blackish brown in ground color; head, 1st to 3rd segments of antennae, shoulders and posterior margins of elytra yellowish brown. Head (Fig. 1) widest at eyes; surface finely reticulated, moderately covered with setae; setae moderately long, as long as those on pronotum and elytra; length of eyes 0.38–0.40 times as long as head width. Mentum (Fig. 13) trapezoidal, with basal margin shallowly emarginated. Labium (Fig. 14) with about 15 medial pseudopores. Antennae (Fig. 2) shorter than head, pronotum and elytra combined; 1st segment much shorter than 2nd and 3rd combined; 2nd segment

about 0.8 times as long as 3rd; 3rd segment about 0.7 times as long as 1st; 4th to 10th segments almost as long as wide except for stem of each segment; 11th segment conical, longer than 1st. Pronotum (Fig. 2) subelliptical, 1.54–1.60 times as wide as long, widest just after anterior margin; surface finely punctured, finely reticulated among punctures, densely covered with setae, with 5 long macrosetae along anterior to lateral margins; lengths of macrosetae almost same. Scutellum with surface smooth, moderately covered with short setae. Elytra (Fig. 2) widened apicad; surface finely punctured, finely reticulated among punctures, densely covered with setae, with 3 distinct macrosetae laterally. Legs short; hind tibia 0.72–0.75 times as long as elytral width. Abdomen subparallel-sided, slightly narrower than elytra, widest around 4th and 5th segments; surface smooth; 3rd to 7th tergites almost glabrous, but with a row of setae and macrosetae along posterior margins; 8th tergite (Figs. 15, 19) with 5 macrosetae; 9th tergite with 4 macrosetae; 10th tergite with posterior margin slightly emarginate, with 4 macrosetae.



FIGURES 13, 14. Mouthparts of *Myrmedonota lewisi*. 13: mentum; 14: labium.

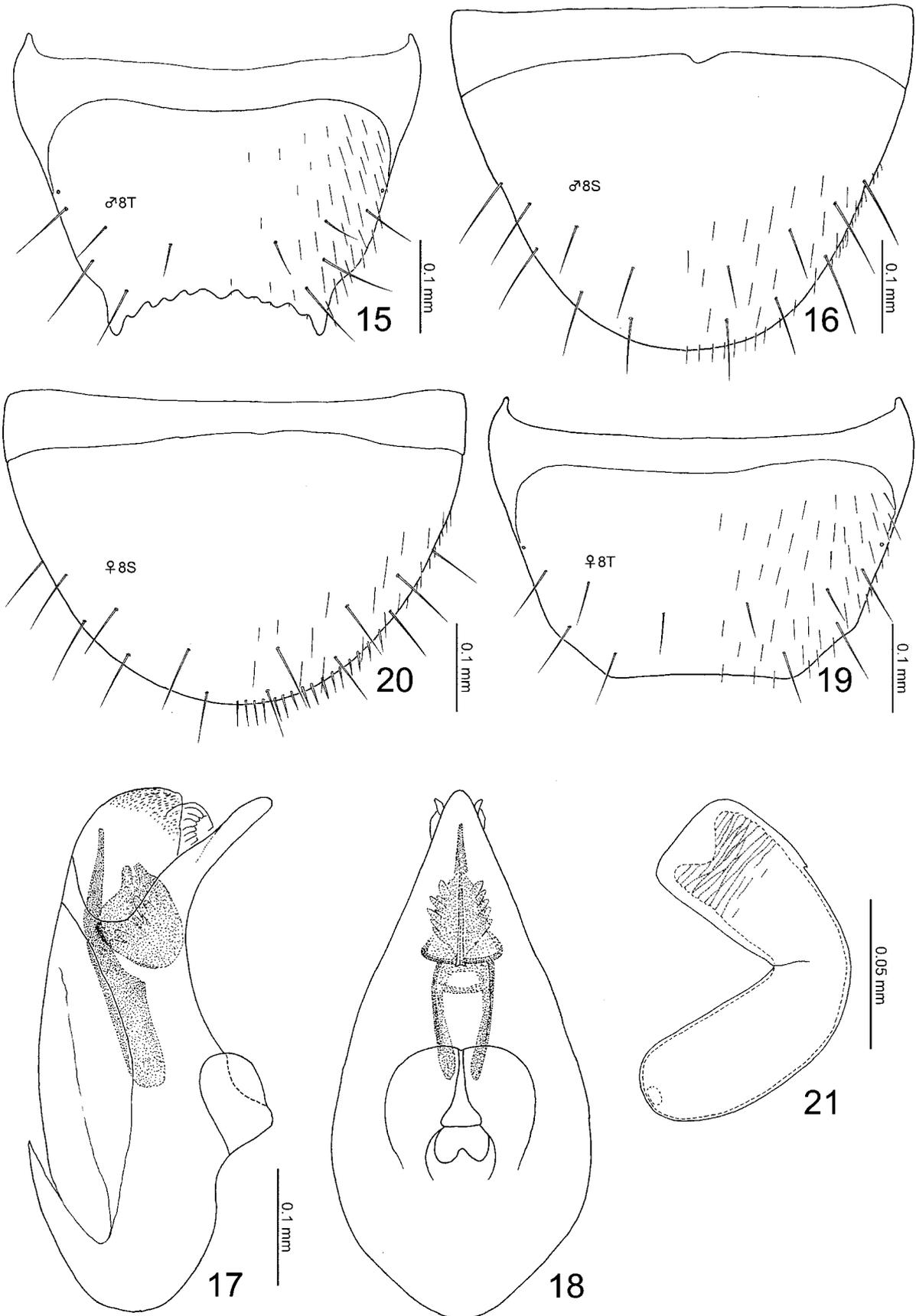
Male: Eighth abdominal tergite (Fig. 15) with posterior margin emarginate, its emarginate apex crenate, and protruded laterally; 8th sternite (Fig. 16) with posterior margin rounded, with 7 macrosetae; 9th sternite with posterior margin truncated. Aedeagus (Figs. 17, 18) somewhat tear-shaped in parameral view; apical lobe gently curved paramerally in lateral view, pointed at apex in lateral and parameral views; basal ridge convex.

Female: Eighth abdominal tergite (Fig. 19) with posterior margin almost truncate; 8th sternite (Fig. 20) with 7 macrosetae; sensory setae of 8th sternite generalised, almost the same as the other setae in shape. Spermatheca (Fig. 21) curved once.

Measurements. BL, ca. 2.3–2.6; FBL, ca. 1.0–1.1; HW, 0.48–0.50; EL, 0.175–0.181; AL, 0.88–0.99; PL, 0.35–0.40; PW, 0.56–0.61; ELW, 0.68–0.76; HTL, 0.51–0.56.

Comments. This species, as well as the previous species, are keyed out in first couplet of the key (Kistner, 2003) in having 5 macrosetae along the lateral margin of the pronotum.

Bionomics. All the specimens were attracted to paint thinner set in a cave.



FIGURES 15–21. Terminalia of *Myrmedonota lewisi*. 15: male 8th tergite; 16: male 8th sternite; 17: median lobe of aedeagus, lateral view; 18: median lobe of aedeagus, parameral view; 19: female 8th tergite; 20 female 8th sternite; 21: spermatheca.

Modified key to species of *Zyras* group of genera in America North of Mexico

These are proposed modifications for the key published by Klimaszewski *et al.* (2005, p. 708).

[p. 708, line 36] elytra without flanged sutural groove ... 8'

- 8' Body larger, usually > 3.5 mm; mouthparts: cardo of maxilla does not covers bases of stipes and lacinia; lacinia narrowed apicad; mentum transverse; apodeme of labium without medial projection; 1st segment of labial palpus almost as long as 2nd segment; each lobe of ligula with 4 campaniform sensillae (sockets of setulae) (*Pella*) 8
- Body smaller, usually < 3.0 mm; mouthparts: cardo of maxilla covers bases of stipes and lacinia; lacinia extremely narrowed and parallel-sided; mentum almost as long as wide; apodeme of labium with medial projection; 1st segment of labial palpus longer than 2nd segment; each lobe of ligula with 2 setulae (*Myrmedonota*) 16
- 16 Body color mostly reddish-brown; dorsal bridge of median lobe of aedeagus wide (Fig. 8); spermatheca S-shaped (Fig. 12) *M. aidani* Maruyama & Klimaszewski, sp. nov.
- Body color mostly blackish brown; dorsal bridge of median lobe of the aedeagus narrow (Fig. 17); spermatheca V-shaped (Fig. 21) *M. lewisi* Maruyama & Klimaszewski, sp. nov.

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