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Revision of the northern South American species of *Mortoniella* Ulmer, 1906 (Trichoptera: Glossosomatidae: Protoptilinae)

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Abstract. Species of *Mortoniella* are revised for the northern and Andean part of the South American continent, including the countries of Bolivia, Peru, Ecuador, Colombia, Venezuela, and Guyana. All previously described species from the region are reillustrated and redescribed, except for *Mortoniella santiaga* Sykora, 1999 and *M. quinuas* Harper and Turcotte, 1985, whose types could not be located, and *M. tranquilla* Martynov, 1912, whose type is based on a female specimen and thus is currently unidentifiable. Included in the revision are 35 described species and 59 new species. *Mortoniella similis* Sykora, 1999 is considered a junior synonym of *M. roldani* Flint, 1991, and *M. macuta* (Botosaneanu, 1998) is considered a junior synonym of *M. limona* (Flint, 1981). A new subgenus, *Nanotrichia*, is recognized to accommodate species previously referred to as members of the ormina and velasquezi groups. *Mexitrichia pacuara* Flint, 1974 is designated the type species for the subgenus. Species previously referred to as members of the bilineata and leroda species groups are retained in the nominate subgenus, along with additional taxa not previously placed to species group, and treated within a number of subgroups. Previously described species of *M.* (*Mortoniella*) which are redescribed and reillustrated include: *M. angulata* Flint, 1963; *M. apiculata* Flint, 1963; *M. atenuata* (Flint, 1963); *M. bifurcata* Sykora, 1999; *M. bilineata* Ulmer, 1906; *M. bolivica* (Schmid, 1958); *M. chicana* Sykora, 1999; *M. denticulata* Sykora, 1999; *M. elongata* (Flint, 1963); *M. enchrysa* Flint, 1991; *M. flinti* Sykora, 1999; *M. foersteri* (Schmid, 1964); *M. hodgesi* Flint, 1963; *M. iridescens* Flint, 1991; *M. leei* (Flint, 1974); *M. limona* (Flint, 1981); *M. marini* (Rueda Martín and Gibon, 2008); *M. paralineata* Sykora, 1999; *M. paraenchrysa* Sykora, 1999; *M. pocita* (Flint, 1983); *M. punensis* (Flint, 1983); *M. roldani* Flint, 1991; *M. simla* (Flint, 1974); *M. spinulata* (Flint, 1991); *M. squamata* Sykora, 1999; *M. unilineata* Sykora, 1999; and *M. wygodzinskii* (Schmid, 1958). New species described in *M.* (*Mortoniella*), followed by their respective areas of distribution, include: *M.* ***acutiterga*** (Ecuador); *M.* ***adamsae*** (Peru); *M.* ***akrogeneios*** (Ecuador); *M.* ***applanata*** (Peru); *M.* ***auricularis*** (Colombia); *M.* ***barinasi*** (Venezuela); *M.* ***biramosa*** (Venezuela); *M.* ***bothrops*** (Peru); *M.* ***brevis*** (Ecuador, Venezuela); *M.* ***bulbosa*** (Peru); *M.* ***catherinae*** (Peru); *M.* ***chalalan*** (Peru); *M.* ***cornuta*** (Peru); *M.* ***cressae*** (Venezuela); *M.* ***croca*** (Peru); *M.* ***curtispina*** (Venezuela); *M.* ***curvistylus*** (Ecuador); *M.* ***dentiterga*** (Ecuador); *M.* ***dinotes*** (Peru); *M.* ***draconis*** (Ecuador); *M.* ***emarginata*** (Ecuador, Colombia); *M.* ***esrossi*** (Colombia); *M.* ***flexuosa*** (Colombia); *M.* ***furcula*** (Ecuador); *M.* ***gilli*** (Ecuador); *M.* ***gracilis*** (Venezuela); *M.* ***grandiloba*** (Venezuela); *M.* ***guyanensis*** (Guyana); *M.* ***hamata*** (Colombia); *M.* ***langleyae*** (Ecuador); *M.* ***longiterga*** (Ecuador); *M.* ***membranacea*** (Bolivia); *M.* ***monopodis*** (Colombia, Ecuador); *M.* ***parameralda*** (Ecuador); *M.* ***pica*** (Ecuador); *M.* ***proakantha*** (Ecuador); *M.* ***prolata*** (Peru); *M.* ***quadrispina*** (Ecuador); *M.* ***rectiflexa*** (Ecuador); *M.* ***ruedae*** (Bolivia); *M.* ***schlingeri*** (Colombia); *M.* ***silacea*** (Colombia, Ecuador); *M.* ***sinuosa*** (Bolivia, Peru); *M.* ***spatulata*** (Venezuela); *M.* ***tanyrhabdos*** (Venezuela); *M.* ***tridens*** (Peru); *M.* ***triramosa*** (Bolivia); *M.* ***tusci*** (Venezuela); and ***M. variabilis*** (Venezuela, Colombia). Species assigned to the subgenus *M.* (*Nanotrichia*) which are redescribed and reillustrated include: *M. aequalis* (Flint, 1963); *M. aries* (Flint, 1963); *M. collegarum* (Rueda Martín and Gibon, 2008); *M. eduardoi* (Rueda Martín and Gibon, 2008); *M. macarenica* (Flint, 1974); *M. pacuara* (Flint, 1974); *M. usseglioi* (Rueda Martín and Gibon, 2008); and *M. velasquezi* (Flint, 1991). Previously described species of *Mortoniella*, outside the area of coverage, that are transferred to the subgenus *M.* (*Nanotrichia*) include: *M. alicula* Blahnik and Holzenthal, 2011; *M. bocaina* Blahnik and Holzenthal, 2011; *M. catarinensis* (Flint, 1974); *M. froehlichi* Blahnik and Holzenthal, 2011; *M. ormina* (Mosely, 1939); *M. rodmani* Blahnik and Holzenthal, 2008; and *M. tripuiensis* Blahnik and Holzenthal, 2011. New species in the subgenus *M.* (*Nanotrichia*), followed by their respective areas of distribution, include: *Mortoniella* ***cognata*** (Ecuador, Venezuela); *M.* ***coheni*** (Ecuador); *M.* ***licina*** (Ecuador); *M.* ***paucispina*** (Peru); *M.* ***quadridactyla*** (Venezuela); *M.* ***simplicis*** (Venezuela); *M.* ***spangleri*** (Ecuador); *M.* ***triangularis*** (Ecuador); *M.* ***venezuelensis*** (Venezuela); and *M.* ***zamora*** (Ecuador). A key to the males of species from the region is also provided, as well as a key to females for the major subgroups and a species key to females of the velasquezi group. Finally, a partially resolved phylogeny of the species is presented, along with a discussion of evolutionary trends within the genus.

Key Words. *Mexitrichia*, *Nanotrichia*, new species, new subgenus, caddisfly, Neotropics.

Table of Contents

Introduction

This represents the third paper of a revision of the genus *Mortoniella* Ulmer, 1907. The first paper in the series revised the species from Mexico and Central America (Blahnik and Holzenthal 2008). In the same paper, the genus *Mexitrichia* Mosely, 1937 was synonymized with *Mortoniella*. The second paper of the series treated the species from the austral or southern part of South America (Blahnik and Holzenthal 2011). The current paper treats the species from the northern and Andean part of South America, including members of the bilineata group, which were previously reviewed and treated by Sykora (1999) and formerly constituted the genus *Mortoniella s.s.* All species of this group are reillustrated and redescribed in the current work, except for two species whose types could not be located and *M. tranquilla* Martynov, 1912, whose type is based on an unassociated female specimen. For clarity sake, the "species groups" referred to by Sykora are consistently referred to as "subgroups" of the bilineata group in the current work. Species originally assigned to the genus *Mexitrichia* were previously treated as members of three additional species groups, the leroda, ormina, and velasquezi species groups (Blahnik and Holzenthal 2008, 2011). Species in the ormina and velasquezi groups are here assigned to a new subgenus, *M.* (*Nanotrichia*), in part to recognize their distinct difference from members of the nominate subgenus. The two species groups included in *Nanotrichia* are also quite different from one another, especially the females, which are easily diagnosable, but the overall differences are probably no greater than those within the nominate subgenus. All of the species in the subgenus *Nanotrichia* are very small in size and also have reduced hind wing venation. The larva of *M.* (*Nanotrichia*) *aries* (Flint) was described by Flint (1963), who also described larvae of several species of the bilineata group (subgenus *Mortoniella*) in the same paper. However, almost nothing is known about juvenile life stages or biology of most species in the genus and it is probably premature to consider the differences discussed as diagnostic for either of the taxa. The species previously placed in the bilineata and leroda groups are here recognized as belonging to the subgenus *Mortoniella*. We have continued to place species in the two recognized species groups. Several of the taxa formerly placed in the bilineata group, along with a number of new species described in this paper, seem to be intermediate between the bilineata and leroda species groups, and indicative of the evolutionary relationship of the two groups. They are treated below as "unplaced species" in *M.* (*Mortoniella*), along with a discussion of the possible phylogenetic placement of the individual species.

With the description of 59 new species in the current paper, the total number of species of *Mortoniella* now known from the region of coverage is 97, and the total number of species in the genus is 153. It is the largest genus in the subfamily Protoptilinae, surpassing the genus *Protoptila*, which was previously the most species diverse genus, with 96 species. As discussed in the first paper of this series, and confirmed by Robertson and Holzenthal (2013), *Mortoniella* and *Protoptila* are sister taxa. Collectively they account for nearly 70% of the known species in the subfamily Protoptilinae, which itself is the most diverse of the three subfamilies of Glossosomatidae. Both genera are characterized by males bearing a pair of small digitate appendages on the ventral margin of the phallobase, which fit into a pair of hollowed receptacles on the mesal surface of the inferior appendages. The receptacles each have a spine-like apical projection, which, at least primitively, seems to have been elongate, but is shortened in many lineages, as for instance in most species of the leroda group. The origin or source of the ventral appendages and associated pockets is mysterious, since they do not occur in other protoptilines. The function of the digitate appendages seems to be to translate force from the phallobase to the phallicata, allowing for a greater sensory finesse of the phallic ensemble.

As compared to the regions treated previously for *Mortoniella* (Mexico and Central America, and the southern part of South America), the northern and Andean part of South America is considerably more diverse, both in overall species diversity and also in the number of lineages present. In some localities, species from all four of the major species groups for the genus are present, often with multiple species within the species groups. For instance, in some localities from Ecuador as many as four species in the velasquezi group are present. At the outset of our study, only a single species in the group was recognized. It seems likely that there is a significant degree of endemism in northern South American and that a number of additional species will eventually be described, especially since some regions are still very poorly inventoried.

Materials and Methods

Techniques and procedures used in the preparation and examination of specimens are those outlined by Blahnik and Holzenthal (2004). Terminology follows that established in Blahnik and Holzenthal (2008), with several additions; a synopsis of the terminology precedes the species descriptions, along with reference to figures in which the characters are illustrated. Illustrations were rendered in Adobe Illustrator® and standardized so that similar structures in different species can be easily compared. As in our previous paper, presumptively associated females, those collected at the same time and place as males and with a similar size and coloration, are listed under the material examined for each species. However, because of the large number of species occurring at some sites, it is possible that some specimens may be incorrectly associated. Each pinned specimen, or lot of specimens in alcohol, examined during the study was barcoded (4 mil polyester, 8 x 14 mm, code 49) with a unique alphanumeric sequence beginning with the prefix UMSP. The prefix is not meant to imply ownership by the University of Minnesota Insect Collection, but only to indicate that the specimen was databased at that collection. Specimen collection data are stored in Biota® (v. 2.0 Sinauer Associated, Inc.) (Colwell 2003). Specimen barcode information is included for holotypes in the list of material examined. A detailed list of all material examined, including barcode numbers is maintained at UMSP and can be provided on request.

Phylogenetic analysis was conducted under both parsimony and Bayesian optimality criteria. Parsimony was implemented using PAUP*, version 4.0 (Swofford 2003) and used a model in which all characters were equally weighted and unordered. Gaps were treated as missing data and variable characters treated as uncertainty. Because *Protoptila* fell within the ingroup in an initial analysis, the ingroup, *Mortoniella*, was also constrained to be monophyletic. A heuristic search was used, using the TBR swapping algorithm, random addition sequence, and 100 repetitions. Bayesian analysis was carried out using MrBayes, version 3.2.1 (Huelsenbeck and Ronquist 2001). The model used allowed all characters to follow a gamma distribution. The number of chains was set to 4, parallel runs to 2, and a sampling frequency of 100 was used. The average standard deviation of split frequencies was used to determine when convergence was reached (< .010). The first 20% of trees were discarded as burnin, with 184,410 trees retained from the two runs. The tree presented represents a majority rule consensus tree, with posterior probabilities of 50% or greater indicated.

Holotypes are deposited in University of Minnesota Insect Collection, St. Paul, Minnesota (UMSP), the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (NMNH), the collection of the California Academy of Sciences, San Francisco, California (CAS), the Museo de Historia Natural Noel Kempff Mercado, Santa Cruz de la Sierra, Bolivia (UASC), and the Museo de Historia Natural "Javier Prado", Universidad Nacional Mayor de San Marco, Lima, Perú (MJP), as indicated in the species descriptions. Paratypes are deposited in the same institutions, as well as in the collections of the Museo del Instituto de Zoología Agrícola, Universidad Central de Venezuela, Maracay, Venezuela (MIZA), as designated in the species descriptions. Additionally, holotypes of described species were examined from the Cornell University Insect Collection, Ithaca, New York (CUIC) and the Zoological Museum of Amsterdam, Amsterdam, the Netherlands (ZMA).

Terminology for Adult Males of *Mortoniella*

Although *Mortoniella* has a very specialized morphology, the components of that morphology are subject to an almost unlimited degree of variation, sometimes making homology assessments difficult. A general discussion of the morphology in *Mortoniella* was presented by Blahnik and Holzenthal (2008). Below is a discussion of the terms used in the current paper and is included as a prelude to the species descriptions, use of the key, and for discussing evolutionary trends in the genus. Common alternate character states within *Mortoniella* are also discussed. Terms listed in bold represent modifications of specific structures used in the species descriptions.

Ventral process of abdominal segment VI—A ventromesal process is characteristic of Trichoptera, but variable as to which segment or segments it is located on (VI-IX). A process on segment VI is universally found on both males and females of *Mortoniella*. The process is usually similar in shape in both sexes, but may be slightly shorter in females. The inferred plesiomorphic state for *Mortoniella* is for the ventral process to be elongate, narrow, and posteriorly projecting. This is found in the subgenus *Nanotrichia* (Fig. 79E, 92E), in the bilineata group of the subgenus *Mortoniella* (Fig. 3E) and also in some of the "unplaced species" (Fig. 74E). A shorter, basally wider, and often more ventrally projected process, is typical of species in the leroda group of the subgenus *Mortoniella* (Fig. 31E, 48E, 64E).

Segment IX—A synsclerous capsule formed of a fused tergum and sternum IX is a general feature of Trichoptera, but variable as to shape. Two general character states exist in *Mortoniella*, one in which the anterior margin is uniformly rounded (Fig. 28A), and the other in which the anteroventral margin is more strongly produced (Fig. 1A, 79A). A midlateral expansion of segment IX is typical of Glossosomatidae and probably represents the plesiomorphic state for the family. It is evidenced in *Mortoniella* by the fact that both the dorsal and ventral margins are invaginated mesally, even in species in which the ventral margin is expanded. A uniformly rounded anterior margin is typical of the leroda group and the "unplaced species" of the subgenus *Mortoniella*. An expanded ventral margin is typical of the bilineata group of the subgenus *Mortoniella* and in the subgenus *Nanotrichia*.

Abdominal tergum X—In *Mortoniella*, tergum X (Fig. 1A,B) is present and often completely demarcated, but may be partially fused to tergum IX medially. General character states and specialized derived features of tergum X, applicable to some *Mortoniella*, are discussed below:

apicomesal emargination (*or invagination*)—This is a usual feature of *Mortoniella* (Fig. 28B), but reduced or absent in a few taxa, and apparently secondarily eliminated in some species of the bilineata group by a physical convergence of the apicolateral lobes on the ventral surface, producing a mesal "seam" (Fig. 1B). The mesal emargination apparently accommodates the dorsal phallic spine, which is characteristically dorsally inflected apically. The shape of the apicomesal emargination is an important diagnostic character for many species.

apicolateral lobes—the projecting lobes produced by the mesal invagination, and often sclerotized, especially in the subgenus *Mortoniella* (Fig. 28B). Typically, a sclerotized lateral ridge runs from the base of the tergum, on either side, to the apicolateral lobes, producing ventrolateral lobes. Again, this is generally more evident in the subgenus *Mortoniella*.

ventrolateral lobes—the part of tergum X lateral to the apicolateral lobes and lateral ridge, and generally projecting ventrally (Fig. 60A, 60B). A ventrolateral lobe is not generally evident in the velasquezi group of the subgenus *Nanotrichia*, due to the flattened structure of the tergum. The ventrolateral lobe is characteristically somewhat rounded in species of the leroda group (Fig. 60A, 60B), although much reduced or nearly vestigial in species of the florica/leroda subgroups, and acutely angulate, or at least with an angulate apical process, in species of the bilineata group (Fig. 1A,B).

ventromesal lobes—These are projecting setose lobes from the middle or base of the ventral margin of tergum X, and probably contact the dorsal phallic spine. The lobes are usually distinctly evident in lateral view and are found in some species of the bilineata group (Fig. 1A, 27A). They are characteristically attached to a rounded or spatulate mesal projection (Fig. 1B) that articulates with the dorsal phallic spine. The latter structure is often lightly sclerotized and difficult to see and no discussion is made of it in the species descriptions. An inconspicuous and retracted lobe with a few setae is often (maybe usually) present in species of the leroda group and possibly other taxa (probably the homologue of the ventromesal lobe), but these also are not discussed in the species descriptions, since they are neither projecting nor readily apparent.

apicoventral lobes—projecting lobes on the apicoventral margin of tergum X, found in species of the limona subgroup of the subgenus *Mortoniella* (Fig. 53A,B). The lobes straddle the dorsal phallic spine and are visible in lateral view. They are non-setose and rounded apically, except in *M. guyanensis*, n. sp.

Inferior appendages—In *Mortoniella*, the inferior appendages are one-segmented and usually directly fused to one another (Fig. 1C), and are more or less fused to the ventral margin of the phallic ensemble. Some of the common character modifications are listed below.

dorsolateral lobe—These are upright lobes from the base of the appendages, on either side (Fig. 1A, 28A, 53A). The corresponding character state would be for the lobes to be short and rounded (Fig. 38A) or absent. In some taxa, the lobes are elongate and narrow and posteriorly reflexed (Fig. 78A). This character state is found in a number of the species in the subgenus *Mortoniella* listed as "unplaced species," and also in *M. catherinae* of the bilineata group and also in the akantha and bolivica subgroups of the leroda group.

apicoventral lobes (*or ventral lobes*)—These are symmetrically paired lobes projecting from the apicoventral margin of the individual appendages (Fig. 28A,C). Usually, the apices are acute. Some kind of modification is found in the majority of taxa, but these vary greatly in length and structure and are likely not homologous in different lineages.

ventromesal lobe—This is a single or unpaired lobe projecting from the middle of the fused inferior appendages. It may be relatively broad and symmetrical, as in species of the akantha subgroup and *M. proakantha* of the subgenus *Mortoniella* (Fig. 74C), or narrow and very asymmetrically curved, as in members of the leroda subgroup (Fig. 38A,C).

mesal pockets—these are the pair of excavated pockets on what is inferred to be the mesal surface of the inferior appendages, which serve as a receptacle for the rod-like or articulated appendages of the phallobase (Fig. 1C, 79C). They are found only in the genera *Mortoniella* and *Protoptila*. In *Mortoniella*, each of the pockets invariably has an **apical spine-like projection**, which may be short (Fig. 1C) or very elongate (Fig. 79C).

Phallic ensemble—This is a term introduced especially for *Mortoniella* (Blahnik and Holzenthal, 2008) and corresponds to the term "phallic apparatus," used by Fernand Schmid (1998). The phallic apparatus includes the phallobase, parameres (if present), endotheca, phallicata, and endophallic membrane, including any associated spines or processes. However, the phallicata and endophallic membrane are often reduced or vestigial in many Trichoptera. The phallic ensemble adds to this assemblage the fused inferior appendages and rod-like or articulated appendages of the phallobase, which are peculiar features of *Mortoniella*. This is the structure that is illustrated in ventral view (Part C of Fig. 1-21, 23-44, and 47-96).

Phallobase—This is the sclerotized basal structure of the phallic apparatus or phallic ensemble (Fig. 1A, 35A). Schmid used the term phallotheca instead, and reserved the term phallobase for the composite structure that includes the phallotheca and endotheca (which is often retracted into the phallotheca). Relatively elongate in many Trichoptera, in *Mortoniella* the phallobase is invariably short and has a pair of short appendages ventrally and an elongate dorsal spine that emerges from its dorsal margin, apparently as a separate structure. There is typically a lightly sclerotized sclerite surrounding the phallobase, which anchors the phallobase within the genital capsule and probably corresponds to the structure referred to as a "phallic shield" in other Trichoptera (Fig. 1C). It is included in the majority of the illustrations, but not discussed in the descriptions. Listed below are specialized terms used for *Mortoniella*.

rod-like appendages (*or articulated appendages*)—This refers specifically to the short rod-like appendages that emerge from the base of the phallobase and which articulate with the mesal pockets of the inferior appendages (Fig. 1A). The apices of the rods are probably always membranous in *Mortoniella*, but sometimes (or possibly always) setose in *Protoptila*. The structures are found only in the genera *Mortoniella* and *Protoptila*. Since it is a generic character and there is little variation in the structure, no mention is made of them in most of the species descriptions, except for species in the velasquezi group of the subgenus *Nanotrichia*, in which the appendages are distinctly elongate and flared apically (Fig. 90A,C).

dorsal phallic spine—This is the single dorsal spine that emerges from the phallobase (Fig. 1A) and which is a character unique to and defining the genus *Mortoniella*. However, a somewhat similar structure occurs in some *Itatiaia*, produced by the sclerotized dorsal margin of the phallobase or sclerotized dorsal margin of the endophallic membrane (thus with the spine not freely projecting), and in the genus *Protoptila* a "goose-necked" shaped phallicata, which is sclerously connected to the phallobase, also seems to have a similar function. The shape and inflection of the dorsal phallic spine is one of the most useful diagnostic characters for identifying species of *Mortoniella*.

dorsomesal apodeme—This is a very lightly sclerotized, laterally compressed, apodeme on the dorsal margin of the phallobase of species throughout the genus, but never as prominent a feature as the very enlarged dorsomesal apodeme found in *Protoptila*. It is a typical of most species of the bilineata group (Fig. 23A) and absent from most species of the leroda group.

Parameres—These are appendages, or appendage-like structures that emerge from the endotheca. In *Mortoniella* they are composed of a sclerotized rounded basal structure (Fig. 1C), which is typically fused to the corresponding structure on the opposite side (the composite structure subtending the dorsal phallic spine), and a pair of rod-like or spine-like apical structures attached to the basal structures by a membrane. In some species, the membrane is elongate and the apical rod-like structures are laterally displaced from the basal structure (Fig. 35C). The apical structures in *Mortoniella* are termed **paramere appendages** (Fig. 1A,C**)** and their relative length, orientation, and modifications are important diagnostic characters.

Endotheca—In *Mortoniella*, the endotheca is composed of a short membranous region connecting the phallobase to the phallicata (Fig. 35A) and often has associated microsetae, which are sometimes illustrated when they are conspicuous (Fig. 12A). For most Trichoptera, the term, as it is generally used, probably encompasses the composite structure of the endotheca, phallicata, and endophallic membrane, since the phallicata is reduced or obsolete in most Trichoptera.

Phallicata—In *Mortoniella* the phallicata is usually a defined sclerotized tube (Fig. 35A), often with distinct structures on its dorsal, lateral and ventral surfaces. Some common modifications are listed below. Similarly positioned or developed structures may not be strictly homologous in the various lineages in which they occur.

basodorsal projection—This is a mesal projection that is distinctly sclerotized and raised and articulates with the dorsal phallic spine. It is particularly distinctive feature of some species in the bilineata group, in which the projection articulates with an angular projection from the ventral surface of the dorsal phallic spine (Fig. 23A). Some species of the bilineata subgroup have rounded lateral projections from the projection, most distinctly developed in *M. roldani*.

dorsolateral lobes or processes—These are paired projections from the dorsal margin of the phallicata and are variable in shape and orientation. They are possibly independently derived in different lineages. Typical variants are the rounded, upright lobes found in some species of the florica/leroda subgroups (Fig. 35A), and the digitate or spine-like lobes of the punensis subgroup (Fig. 57A), both in the subgenus *Mortoniella*.

lateral lobes—These are rounded or elongate projections from the lateral margin of the phallicata (Fig. 35A), often dorso-ventrally flattened. At least in cleared specimens, the paramere appendages often rest on top of these projections.

ventral lobe or lobes—The ventral margin of the phallicata is often sclerotized and may project further than the dorsal margin. The apex may have a projection. In some species of the bilineata group, there is a distinct pair of elongate ventral sclerites (Fig. 1C), with the area between them less sclerotized. In the limona subgroup, and in some other taxa, there is a pair of projecting basoventral lobes (Fig. 50A).

Endophallic membrane—This is the membranous structure at the apex of the phallic ensemble (Fig. 35A), emerging from the phallicata, and usually retracted into it. For most Trichoptera, the structure is not generally distinguished from the endotheca, since the phallicata is typically degenerate or obsolete. Often, the exact demarcation between the phallicata and endophallic membrane is ill-defined, with the sclerotization grading into membrane. The endophallic membrane is frequently somewhat sclerotized on its dorsal margin, where it contacts the dorsal phallic spine. Often there are ballooned membranous lateral lobes present, sometimes with small spines (Fig. 12A, 12C). In some cases, the paramere appendages rest on or contact these lobes. These lobes are only readily apparent when the endophallic membrane is completely everted. Common modifications of the endophallic membrane are listed below.

ventromesal spine or spines—Distinct ventral spines are found only in some species and species subgroups of the leroda group of the subgenus *Mortoniella*. A single ventromesal spine (Fig. 35A) (retracted into the endophallus when not fully expanded) is a common feature of many species. The spine is small and occurs near the apex of the phallicata in some species, but is much enlarged and nearly apical on the endophallic membrane in others, notably species in the florica subgroup. Paired ventral spines are found in the bolivica subgroup (Fig. 32C) and a few other taxa and may be an alternate character state representing the same basic character modification.

phallotremal spines—The phallotremal opening at the apex of the endophallic membrane is usually difficult to discern. However, there are often either dorsal or ventral lobes associated with the opening and sometimes the apices of these lobes are acute. When these are distinctly sclerotized, they appear as one or two pairs of small spines, referred to in the descriptions as phallotremal spines (Fig. 38A, 38C). If very lightly sclerotized, or when the endophallic membrane is retracted, they may not be apparent. This kind of modification is found throughout the genus, but is especially common in some subgroups of the leroda group. Much larger paired spines are present in some taxa, as for instance in species of the limona subgroup. Whether these are modified phallotremal spines, or represent some other kind of *de novo* modification, is difficult to determine. Because of this uncertainty, they are referred to in the descriptions as **endophallic spines** (Fig. 28A, 50A), rather than phallotremal spines.

Species Descriptions

Mortoniella (*Mortoniella*)

Type species: *Mortoniella bilineata* Ulmer, 1906.

As a subgenus, distinct from the newly recognized subgenus *Nanotrichia*, this taxon is restricted to include taxa formerly referred to as members of the bilineata and leroda species groups (Blahnik and Holzenthal 2008, 2011), as well as all of the taxa previously unplaced to species group, except for *M. rodmani* Blahnik and Holzenthal, 2008. A formal assignment of all species in the genus to subgenus and species group, including those described in this paper, can be found in Table 1. A generic synonymy for the genus as wholde and a more complete listing of literature citations and distributional records for the individual species can be found in the Catalog of Neotropical Trichoptera (Holzenthal and Calor 2017). We have continued to designate species of *M.* (*Mortoniella*) within the two recognized species groups (the bilineata and leroda groups), since they are diagnostically distinct and represent about 85% of the species. A third group of species is also considered under the category of "unplaced species," but is probably not a natural group. It includes species retaining some plesiomorphic characters, but lacking the apomorphic characters used to define either the bilineata or leroda species groups. The individual species may either be basal to one or the other of these two species groups, or basal to both groups combined. Characters suggestive of their phylogenetic placement are discussed under the subgroup headings or species descriptions and in the accompanying phylogeny.

The subgenus *Mortoniella* can be recognized by a combination of characters. About 75% of the species have more than 1 fork in the hind wing (forks III and/or fork V present, in addition to fork II). Species with the hind wing venation reduced to fork II, as in *M.* (*Nanotrichia*), typically have the costal margin of the hind wing more abruptly angulate (Fig. 101B). These species belong to the leroda group and are also characterized by a relatively short ventral process on segment VI and males with the anterior margin of segment IX broadly rounded (diagnostic characters of the leroda group). Hind wing configuration for other species in the subgenus *Mortoniella* includes having forks II, III, and V present (present in most species of the bilineata group, as well as in the species unplaced to species group) (Fig. 97B, 99B); forks II and III present (various species subgroups of the leroda group) (Fig. 100B); or forks II and V present (the flinti subgroup of the bilineata group) (Fig. 98B). Overall character similarities are difficult to define, due to the variability in genitalia, but there is a tendency for tergum X of males to have the apicolateral lobes distinctly sclerotized and defined, whereas tergum X in members of *M.* (*Nanotrichia*) usually have the apicolateral lobes broadly rounded or simple in form.

Table 1. Mortoniella subgenera and major species groups.

***Mortoniella* (*Mortoniella*)**

bilineata species group
Mortoniella adamsae, **new species**
Mortoniella angulata Flint, 1963
Mortoniella apiculata Flint, 1963
Mortoniella bifurcata Sykora, 1999
Mortoniella bilineata Ulmer, 1906
Mortoniella bulbosa, **new species**
Mortoniella catherinae, **new species**
Mortoniella chicana Sykora, 1999
Mortoniella denticulata Sykora, 1999
Mortoniella enchrysa Flint, 1991
Mortoniella flinti Sykora, 1999
Mortoniella foersteri (Schmid, 1964)
Mortoniella gilli, **new species**
Mortoniella hamata, **new species**
Mortoniella hodgesi Flint, 1963
Mortoniella iridescens Flint, 1991
Mortoniella langleyae, **new species**
Mortoniella longiterga, **new species**
Mortoniella monopodis, **new species**
Mortoniella paraenchrysa Sykora, 1999
Mortoniella paralineata Sykora, 1999
Mortoniella quinuas Harper and Turcotte, 1985
Mortoniella roldani Flint, 1991
Mortoniella similis Sykora, 1999, **new synonym**
Mortoniella silacea, **new species**
Mortoniella squamata Sykora, 1999
Mortoniella tanyrhabdos, **new species**
Mortoniella tusci, **new species**
Mortoniella wygodzinskii (Schmid, 1958)

leroda species group
Mortoniella acauda Blahnik and Holzenthal, 2011
Mortoniella acrogeneios, **new species**
Mortoniella agosta Blahnik and Holzenthal, 2011
Mortoniella akantha Blahik and Holzenethal, 2008
Mortoniella albolineata Ulmer, 1907
Mortoniella anakantha Blahnik and Holzenthal, 2008
Mortoniella applanata, **new species**
Mortoniella armata (Jacquemart, 1963)
Mortoniella asymmetris Blahnik and Holzenthal, 2011
Mortoniella atenuata (Flint, 1963)
Mortoniella auricularis, **new species**
Mortoniella aviceps Blahnik and Holzenthal, 2008
Mortoniella barinasi, **new species**
Mortoniella biramosa, **new species**
Mortoniella bolivica (Schmid, 1958)
Mortoniella bothrops, **new species**
Mortoniella brachyrachos Blahnik and Holzenthal, 2008
Mortoniella brevis, **new species**
Mortoniella buenoi Blahnik and Holzenthal, 2008
Mortoniella carinula Blahnik and Holzenthal, 2008
Mortoniella caudicula Blahnik and Holzenthal, 2008
Mortoniella chalalan, **new species**
Mortoniella crescentis Blahnik and Holzenthal, 2011
Mortoniella cressae, **new species**
Mortoniella curtispina, **new species**
Mortoniella dentiterga, **new species**
Mortoniella dinotes, **new species**
Mortoniella dolonis Blahnik and Holzenthal, 2011
Mortoniella draconis, **new species**
Mortoniella elongata (Flint, 1963)
Mortoniella emarginata, **new species**
Mortoniella falcicula Blahnik and Holzenthal, 2008
Mortoniella flexuosa, **new species**
Mortoniella florica (Flint, 1974)
Mortoniella furcula, **new species**
Mortoniella gracilis, **new species**
Mortoniella grandiloba, **new species**
Mortoniella guyanensis, **new species**
Mortoniella guahybae Blahnik and Holzenthal, 2011
Mortoniella hystricosa Blahnik and Holzenthal, 2011
Mortoniella intervales Blahnik and Holzenthal, 2011
Mortoniella latispina Blahnik and Holzenthal, 2011
Mortoniella leei (Flint, 1974)
Mortoniella longispina Blahnik and Holzenthal, 2011
Mortoniella leroda (Mosely, 1937)
Mortoniella limona (Flint, 1981)
Mortoniella macuta (Botosaneanu, 1998), **new synonym**
Mortoniella marini (Rueda Martín and Gibon, 2008)
Mortoniella meloi Blahnik and Holzenthal, 2011
Mortoniella membranacea, **new species**
Mortoniella meralda (Mosely, 1954)
Mortoniella mexicana Blahnik and Holzenthal, 2008
Mortoniella munozi Blahnik and Holzenthal, 2008
Mortoniella opinionis Blahnik and Holzenthal, 2008
Mortoniella panamensis Blahnik and Holzenthal, 2008
Mortoniella papillata Blahnik and Holzenthal, 2008
Mortoniella paraguaiensis Blahnik and Holzenthal, 2011
Mortoniella parameralda, **new species**
Mortoniella parauna Blahnik and Holzenthal, 2011
Mortoniella paraunota Blahnik and Holzenthal, 2011
Mortoniella pectinella Blahnik and Holzenthal, 2008
Mortoniella pica, **new species**
Mortoniella pocita (Flint, 1983)
Mortoniella prolata, **new species**
Mortoniella pumila Blahnik and Holzenthal, 2011
Mortoniella punensis (Flint, 1983)
Mortoniella pusilla Blahnik and Holzenthal, 2011
Mortoniella quadrispina, **new species**
Mortoniella rancura (Mosely, 1954)
Mortoniella rectiflexa, **new species**
Mortoniella redunca (Flint, 1983)
Mortoniella rovira (Flint, 1974)
Mortoniella ruedae, **new species**
Mortoniella schlingeri, **new species**
Mortoniella sicula Blahnik and Holzenthal, 2008
Mortoniella simla (Flint, 1974)
Mortoniella sinuosa, **new species**

Table 1. Mortoniella subgenera and major species groups.

Mortoniella spatulata, **new species**
Mortoniella stilula Blahnik and Holzenthal, 2008
Mortoniella tapanti Blahnik and Holzenthal, 2008
Mortoniella taurina Blahnik and Holzenthal, 2008
Mortoniella teutona (Mosely, 1939)
Mortoniella truncata Blahnik and Holzenthal, 2011
Mortoniella umbonata Blahnik and Holzenthal, 2008
Mortoniella unota (Mosely, 1939)
Mortoniella uruguaiensis Blahnik and Holzenthal, 2011
Mortoniella variabilis, **new species**

***M.* (*Mortoniella*) "unplaced to species group"**
Mortoniella acutiterga, **new species**
Mortoniella argentinica Flint, 1974
Mortoniella cornuta, **new species**
Mortoniella croca, **new species**
Mortoniella curvistylus, **new species**
Mortoniella esrossi, **new species**
Mortoniella guairica (Flint, 1974)
Mortoniella proakantha, **new species**
Mortoniella santiaga Sykora, 1999
Mortoniella spinulata (Flint, 1991)
Mortoniella tranquilla Martynov, 1912
Mortoniella tridens, **new species**
Mortoniella triramosa, **new species**
Mortoniella unilineata Sykora, 1999

***Mortoniella* (*Nanotrichia*)**
ormina species group
Mortoniella aequalis (Flint, 1963)
Mortoniella alicula Blahnik and Holzenthal, 2011
Mortoniella aries (Flint, 1963)
Mortoniella catarinensis (Flint, 1974)
Mortoniella collegarum (Rueda Martín and Gibon, 2008)
Mortoniella macarenica (Flint, 1974)
Mortoniella ormina (Mosely, 1939)
Mortoniella pacuara (Flint, 1974)
Mortoniella paucispina, **new species**
Mortoniella quadridactyla, **new species**
Mortoniella rodmani Blahnik and Holzenthal, 2008
Mortoniella simplicis, **new species**
Mortoniella triangularis, **new species**
Mortoniella usseglioi (Rueda Martín and Gibon, 2008)
Mortoniella zamora, **new species**

velasquezi species group
Mortoniella bocaina Blahnik and Holzenthal, 2011
Mortoniella cognata, **new species**
Mortoniella coheni, **new species**
Mortoniella eduardoi (Rueda Martín and Gibon, 2008)
Mortoniella froehlichi Blahnik and Holzenthal, 2011
Mortoniella licina, **new species**
Mortoniella spangleri, **new species**
Mortoniella tripuiensis Blahnik and Holzenthal, 2011
Mortoniella velasquezi (Flint, 1991)
Mortoniella venezuelensis, **new species**

Adult—Length of forewing: 2.3-6.8 mm; females slightly larger than males. Forewing with forks I, II, and III, forks I and II sessile, or nearly so; hind wing with forks II, III, and V (Fig. 97B), or with forks V and/or fork III absent (Fig. 98B, 100B, 101B), basal forks of Rs and M veins both at about midlength. Crossveins of forewing (*r, s, r-m, m, m-cu, cu*) linear or nearly so and usually hyaline; hind wing with *r-m* only. Costal margin of hind wing usually with distinct inflection at about midlength. Apex of forewing rather broadly rounded, apex of hind wing subangulate. Spur formula 0:4:4 or 0:3:4. Overall color varying from light brown or yellowish-brown to very dark brown or golden orange in some; forewing either marked with white or whitish setae at anastamosis or unmarked, in some species of bilineata group with second band on proximal part of wing.

Male genitalia—Ventral process of segment VI variable, usually compressed and either elongate, narrow, and posteriorly projecting, or short (length subequal to width) and more or less ventrally projecting. Segment IX with anterolateral margin rounded and produced in ventral ½ (bilineata group) or nearly evenly rounded (leroda group); posterolateral margin usually with slightly rounded projection in dorsal ½, distinctly angularly projecting in some members of bilineata group; segment deeply mesally excised dorsally and ventrally, forming lateral lobes. Tergum X well developed, setose, usually with apicomesal invagination and apicolateral margins produced into moderately or distinctly sclerotized lobes, apex of tergum secondarily entire or subtruncate in a few species. Inferior appendages directly fused to one another and to ventral margin of phallic apparatus, with short to elongate dorsolateral lobes in most, and with ventromesal or paired apicoventral projections in some; always with paired mesal pockets accommodating rod-like projections of phallobase, apices of pockets with short to elongate spine-like projections. Basal segments of parameres usually rounded and fused to one another mesally, subtending dorsal phallic spine; apical segments (paramere appendages) usually present, short to elongate, typically more or less rod-like, often slightly enlarged preapically; armed with short spines or papillate projections in a few species, absent or doubled in others. Phallobase short but prominent, always with short, paired, rod-like projections from the apicoventral margin and with elongate mesal spine from dorsal margin, in some with relatively short rounded, compressed, lightly sclerotized apodeme from dorsal margin (typical of bilineata group); dorsal phallic spine typically curved basally and dorsally inflected apically, and with ventral margin at least slightly widened at about midlength, sometimes distinctly widened, forming rounded or angular projection. Phallicata more or less tubular and relatively short, usually with basodorsal margin sclerotized, forming distinct dorsomesal projection in some, or paired dorsolateral projections (rounded or spine-like) in others, sometimes with lateral projections, ventral margin usually evidently sclerotized, sometimes projecting, forming paired sclerotized lobes in bilineata group. Endophallic membrane very variable, often with pair of small apical phallotremal spines and/or lateral or dorsal balloon-like projections (sometimes armed with small spines); ventral margin typically unarmed in bilineata group, frequently with ventromesal spine or paired spines in leroda group.

bilineata group

As treated here, this is a relatively uniform group, composed of 17 described and 11 new species. It includes the species originally constituting the genus *Mortoniella*, as treated by Sykora (1999), with the exception of several species that have been removed and treated below under the category of "unplaced species" in the subgenus *Mortoniella*. All of the species are characterized by having the Cu_1 in the hind wing forked (thus with 3 forks present–II, III, and V, except for species in the flinti subgroup, which lack fork III). The presence of 3 forks in the hind wing is a character also shared by the species treated below as "unplaced species" in the subgenus *Mortoniella*. The ventral process of segment VI in species in the bilineata group is elongate, narrow (narrow basally and projecting posteriorly), a character also shared by the many of the species listed as "unplaced species" and also by species in the subgenus *Nanotrichia*. In some species, the ventral process of segment VI is quite short, but still has the same general form. All of the species, except *M. catherinae*, n. sp. have the a segment IX in the males with the anterior margin produced in its ventral half, and usually with an elongate dorsal membranous connection between segments VIII and IX (Fig. 13F). Additionally, known females have segment VIII with a posterodorsal invagination, usually with an accompanying extension of the anterior margin of tergum IX (Fig. 105B); the female of *M. catherinae*, n. sp. (Fig. 108B), is the least modified in this respect and that of *M. hodgesi* Flint (Fig. 109B) is only slightly more developed. We would consider both of these characters as probable apomorphies for the group. The modification of segment VIII of the female is considered the defining apomorphy for inclusion in the bilineata group. Most of the species have a well developed and compressed, lightly sclerotized, mesal apodeme on the dorsal margin of the phallobase (Fig. 3A). The character is also present in some of the "unplaced species" discussed below and in in some species in the leroda species group; when occurring, it is usually less distinctly developed than in the bilineata group. The species of the bilineata group are treated as members of 10 subgroups, as opposed to the five subgroups proposed by Sykora, mostly due to uncertainty about the relative relationship of some taxa that Sykora placed in his subgroups. Except for *M. catherinae*, n. sp., new taxa described here mostly fall within the established range of variability for the bilineata group. It may be logical to merge some of these subgroups once relationships among the taxa are more clearly demonstrated. The two species of the argentinica subgroup of Sykora are included among the "unplaced species" of *Mortoniella*, discussed below, as is *M. santiaga* Sykora, which Sykora placed in the flinti subgroup. Members of the apiculata, bilineata, enchrysa, foersteri, iridescens, and wygodzinskii groups seem to be all closely related and represent the majority of the species. All of these species subgroups, and most of the species, have projecting, paired, sclerotized, ventromesal projections on tergum X, with short apical setae (Fig. 1A, 1B) that are attached to a lightly sclerotized mesal projection, which is generally more or less spatulate or spoon-shaped. The cluster of species subgroups discussed above, with one or two individual exceptions within the subgroups, are also generally characterized by a tergum X with the basal part inflated and separated from the apical part.

—apiculata subgroup

Included species: *Mortoniella angulata* Flint; and *M. apiculata* Flint.

The species in this subgroup were included in the bilineata subgroup by Sykora (1999). In general, these two subgroups are very similar and may be sister taxa. In both subgroups tergum X has the apical part of the ventrolateral margin rolled inward and merging along the center line to form a distinctly sclerotized apical cap. The apex of tergum X is more or less truncate, without a distinct rounded apical notch to accommodate the dorsal phallic spine (as in most members of the enchrysa subgroup). The two species included in the apiculata subgroup are here removed to their own subgroup, primarily because of the difference in color from the bilineata subgroup (lack of 2 white wing bars) and because of the several characters indicating their close relationship, as discussed below. The color in *M. apiculata* is a uniform pale tawny brown, without wing bands; that of *M. angulata* is undeterminable from the pharate adult specimens the species is based on. Both species have a dorsal phallic spine without an angular ventral projection (probably an apomorphic character reversal for the group), paired, simple (unforked) mesal processes on the inferior appendages, a very small ventral process on segment VI (as in members of the enchrysa subgroup), and a tergum VIII that is expanded dorsally (possibly accounting for the absence of an elongate membranous connection to segment IX) (Fig. 2A). The latter is considered an apomorphy for the subgroup. The posterolateral margin of segment IX is more abruptly produced than in the foersteri and iridescens subgroups, but not quite so angular as most species in the bilineata and enchrysa subgroups.

***Mortoniella* (*Mortoniella*) *angulata* Flint, 1963**
Fig. 1, 106

Mortoniella angulata Flint 1963: 468; Sykora 1999: 386 [member of bilineata subgroup]; Blahnik and Holzenthal 2008: 70 [member of the bilineata group].

This species is best diagnosed by several features of the male genitalia considered collectively, including an apically truncate tergum X, with a ventral margin that converges to form a linear seam (as in members of the bilineata subgroup), absence of an angular ventral projection on the dorsal phallic spine, paired ventromesal lobes on the inferior appendages, short paramere appendages, and a relatively short tergum X. Like *M. apiculata*, it has the dorsal margin of tergum VIII extended, and thus lacks an elongate dorsal membrane connecting terga VIII and IX. It differs from that species in lacking a distinctly enlarged apex on the dorsal phallic spine.

Adult—Length of forewing: male (pharate adult) ca. 4.0 mm; female (not developed enough to measure). Wing venation not determined. Apex of forewing angulate. Spur formula 0:4:4. Overall color (in alcohol) yellowish brown. Legs yellowish, tibial spurs dark brown, contrasting with legs. Wing without evident bar at anastamosis.

Male genitalia—Ventral process of segment VI posteriorly projecting, very short, narrow basally, length only slightly greater than width at base. Tergum VIII distinctly elongate dorsally, membranous connection to tergum IX only moderately developed. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with rounded (subangular) projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X moderately elongate, bulbous, lateral margins rounded, laterally with subacute lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, subtruncate, with ventrolateral margins incurved and converging mesally to form linear "seam," apicodorsally with lightly sclerotized connection (mesal notch absent); tergum ventromesally with paired, rounded, lightly sclerotized, ventromesal lobes at about midlength, each with short setae. Inferior appendages with short rounded dorsolateral lobes and paired, apically rounded, ventromesal lobes. Mesal pockets of inferior appendage with relatively short, spine-like, posteriorly-directed, apicoventral projections. Paramere appendage short, linear, slightly widened preapically, apex acute. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with undulate contour, strongly curved basally, ventral margin only slightly produced and rounded in middle (not angulate), nearly rectilinearly upturned in apical third, apex rounded (flattened and compressed as viewed dorsally). Phallicata with distinctly sclerotized basodorsal projection and paired, lightly sclerotized, ventral lobes; ventral lobes, as viewed ventrally, relatively short, broad, rounded apically. Endophallic membrane simple in structure, without evident lateral lobes or spines; phallotremal spines absent.

Material examined—**ECUADOR:** 11 mi. W of Pujili, 12500 ft., 15.iii.1958, RW Hodges, male Holotype (pharate adult, USNM type # 66019)–3 males, 1 female Paratypes (pharate adults, in alcohol) (NMNH).

Distribution—Ecuador.

***Mortoniella* (*Mortoniella*) *apiculata* Flint, 1963**
Fig. 2

Mortoniella apiculata Flint 1963: 466; Knutson and Flint 1971: 316 [Empididae predators in pupal cocoons]; Sykora 1999: 386 [member of bilineata subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group].

This species is easily diagnosed from all other species in the bilineata group by the distinctively shaped apex of the dorsal phallic spine of the male, which is compressed (flattened on the median plane), but enlarged and rounded, as viewed laterally.

Adult—Length of forewing: male 5.0 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color medium golden or tawny brown. Tibial spurs darker, contrasting with legs. Wing without distinct bar at anastamosis.

Male genitalia—Ventral process of segment VI posteriorly projecting, very short, narrow basally, length only slightly greater than width at base. Tergum VIII distinctly elongate dorsally, membranous connection to tergum IX only moderately developed. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with rounded (subangular) projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, lateral margins rounded, laterally with subacute lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, subtruncate, with ventrolateral margins incurved and converging mesally to form linear "seam," apicodorsally with lightly sclerotized connection (mesal notch absent); tergum ventromesally with paired rounded, lightly sclerotized ventromesal lobes in basal half, each with short setae. Inferior appendages with short rounded dorsolateral lobes and paired linear, apically tapering, ventromesal lobes. Mesal pockets of inferior appendage with relatively short, spine-like, posteriorly-directed, apicoventral projections. Paramere appendage short, linear, nearly uniform in width, apex acute. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with undulate contour, strongly curved basally, articulating with fused basal segments of paramere appendages, ventral margin only slightly produced and rounded in middle (not angulate), nearly rectilinearly upturned in apical third, apex distinctly enlarged and rounded, slightly recurved (shape somewhat variable, flattened and compressed as viewed dorsally). Phallicata without apparent basodorsal projection, ventrally with paired, lightly sclerotized, ventral lobes; ventral lobes, as viewed ventrally, moderately elongate, broad, rounded apically. Endophallic membrane simple in structure, with only weakly developed membranous lateral lobes; phallotremal spines absent.

*Material examine*d—**ECUADOR: Cañar:** Río Chauchas, 3 km N Zhud, 2910 m, 17.ix.1990, OS Flint, Jr–1 male (pinned) (NMNH); **Pichincha:** 7 km E Pifo, 2950 m, 26-28.ix.1990, OS Flint, Jr–1 male (pinned) (NMNH).

Distribution—Ecuador.

—bilineata subgroup

Included species: *Mortoniella bilineata* Ulmer; *M. bulbosa*, n. sp.; *M. chicana* Sykora; *M. hamata*, n. sp.; *M. monopodis*, n. sp.; *M. paralineata* Sykora; and *M. roldani* Flint.

The species in this subgroup are characterized by having 2 white forewing bands, 1 at the anastamosis, as found in many species of *Mortoniella*, and 1 on the proximal part of the wing. Outside the bilineata subgroup, this character is found only in two species of the flinti subgroup, which are otherwise very different in morphology. *Mortoniella iridescens* Flint, which is here placed in its own species group, also has two wing bands, but these are an iridescent turquoise, rather than white, and other characters do not indicate an obvious close relationship to the taxa included in this subgroup (although it may belong here). The general coloration of species in the bilineata subgroup ranges from a golden brown to brownish-black, but generally not as dark in color as species in the flinti or foersteri subgroups. The species are also characterized by the structure of tergum X, which has the ventrolateral margins curled inward in its apical part, converging on the median plane to form a "linear seam." The resulting apex of the tergum is more or less truncate, without a pronounced apicomesal notch. Species in the apiculata subgroup are similarly developed, but differ from species of the bilineata subgroup in lacking an angulate ventral projection on the dorsal phallic spine, as well as in lacking wing bands. Species in the enchrysa, foersteri, and wygodzinskii subgroups have tergum X with the lateral margins curled inward, as in species in the bilineata subgroup, but the ventral margins of the tergum do not completely converge on the median line, leaving the apex with a distinct apicomesal notch. The loss of this notch in the bilineata and apiculata subgroups, accompanied by the distinct ventromesal seam, is considered a derived apomorphic character, and a probable indication of their close relationship.

***Mortoniella* (*Mortoniella*) *bilineata* Ulmer, 1906**
Fig. 3, 105

Mortoniella bilineata Ulmer 1906: 97; Flint 1963: 466 [illustration]; Flint 1991: 22 [illustration, distribution]; Sykora 1999: 386 [member of bilineata subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group]; Blahnik and Holzenthal 2011: 62 [female genitalia (in error, actually *M. hamata*, n. sp.)].

This species is most similar to, and probably most closely related to *M. paralineata* Sykora. Both of these species have elongate ventral sclerites on the phallicata and inferior appendages with a short unbranched mesal projection. *Mortoniella bilineata* can be distinguished in that the sclerites of the phallicata are *very* elongate and project apically, and the ventral projection of the inferior appendage forms a sharply upturned, trianguloid process, as viewed laterally. The illustration of the female (Fig. 105) is meant to replace the illustration provided in Blahnik and Holzenthal 2011, which is actually *M. hamata*, n. sp. The genitalia are very similar, but the ventrolateral processes of *M. bilineata* are perhaps slightly wider.

Adult—Length of forewing: male 4.5-4.8 mm; female 5.2 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color dark brown. Legs same color, tibial spurs darker, contrasting with legs. Palps and basal segments of antenna blackish-brown, base of antenna contrasting with subsequent whitish or light brown segments, apex of antenna dark brown (like wings). Forewing with 2 distinct white wing bars, 1 at anastomosis and 1 on proximal part of wing, approximately midway between base and anastomosis.

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, narrow basally, length about 2½ times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, lateral margins subparallel, laterally with acute, finger-like, lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, subtruncate, with ventrolateral margins incurved and converging mesally to form linear "seam," apicodorsally with lightly sclerotized connection near apex (mesal notch nearly absent); tergum ventromesally with paired, rounded, lightly sclerotized, ventromesal lobes in basal half, each with short setae. Inferior appendages with short upright dorsolateral lobes, and single tapering ventromesal lobe; mesal lobe, as viewed laterally, short and strongly flexed at base, apex widened and subtruncate. Mesal pockets of inferior appendage with moderately elongate, sinuous, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage elongate, narrow, nearly uniform in width, apex acute, extending about same length as dorsal phallic spine; basal segment of appendage articulating near base of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin strongly curved and arched from base, sinuously and nearly rectilinearly upturned in apical 1/4 or 1/5, apex of spine rounded; base of spine narrow, curved and stalk-like, abruptly and strongly widened on ventral margin at about basal 1/3, forming acute ventral projection, narrowing apically from projection; spine, as viewed dorsally, nearly uniformly narrow in width throughout length. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine, basodorsal projection with lateral margins forming short rounded lobes; phallicata ventrally with very elongate, narrow, projecting, sclerotized lobes, extending about same length as paramere appendages. Endophallic membrane simple in structure, with only weakly developed membranous lateral lobes; phallotremal spines absent.

Material examined—**COLOMBIA: Antioquia:** Quebrada El Aguelo, 2 km E El Retiro, 8.ii.1983, OS Flint, Jr–1 male (pinned) (NMNH); Km 50 Río Aurra, E San Jeronimo, 22.ii.1984, OS Flint, Jr – 1 female (pinned) (NMNH); **ECUADOR: El Oro:** Pinas/Zaruma, Río La Calera, 19-20.viii.1977, LE Peña G–1 male (pinned) (NMNH).

Distribution—Colombia, Ecuador.

***Mortoniella* (*Mortoniella*) *bulbosa*, new species**

Fig. 4

Mortoniella n. sp. 1: Flint 1996: 383.

This species can be distinguished from others in the bilineata subgroup by the distinctive form of the inferior appendages, which have a bulbous, microsetose, ventromesal projection, which forks apically into 2 narrow, hooked processes, each with 1 or 2 branches. The females listed as additional examined material closely resemble the associated female of *M. bulbosa*, but are not included in the paratype material, since they were collected from different localities. The female genitalia generally resemble other examined females in the bilineata subgroup, except that the anterior extension of tergum IX is somewhat shorter and pheromone sacks are absent on both terga VI and VII.

Adult— Length of forewing: male 3.4 mm; females 5.7-6.8. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color (in alcohol) yellowish-brown. Tibial spurs darker, contrasting with legs. Forewing of male without evident wing bars (in alcohol), but anastomosis evident due to unpigmented crossveins. Pinned females dark brown with 2 evident white wing bars.

Male genitalia—Ventral process of segment VI prominent, posteriorly projecting, narrow basally, length about 3 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, margins rounded laterally, subparallel in demarcated dorsal region, laterally with acute, finger-like, lateral lobes, each with prominent apical seta and one or more preapical setae; apex of tergum distinctly sclerotized, bluntly rounded apically, with ventrolateral margins incurved and converging mesally to form linear "seam," apicodorsally with lightly sclerotized connection near apex (mesal notch very narrow and shallow);

tergum ventromesally with paired, rounded, lightly sclerotized, ventromesal lobes in basal half, each with short setae. Inferior appendages with short, upright, dorsolateral lobes and bulbous ventromesal lobe with minute microsetae, lobe divided apically to form pair of narrow processes (forked or unforked). Mesal pockets of inferior appendage with moderately elongate, sinuous, posteriorly-directed, spine-like apicoventral projections. Paramere appendage short, narrow, nearly uniform in width, apex acute, extending slightly more than ½ length of dorsal phallic spine; basal segment of appendage articulating near base of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin strongly curved and arched from base, sinuously and nearly rectilinearly upturned in apical 1/4, apex of spine rounded; base of spine narrow, curved and stalk-like, abruptly and strongly widened on ventral margin at midlength, forming acute ventral projection; spine, as viewed dorsally, nearly uniformly narrow in width (very slightly widened at apical inflection). Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine, phallicata ventrally with paired sclerotized lobes, extending about same length as apical inflection of dorsal phallic spine, lobes very broadly rounded basally; as viewed ventrally, narrowed and rounded apically. Endophallic membrane simple in structure, with only weakly developed, membranous, lateral lobes; phallotremal spines absent.

Holotype male (alcohol)—**PERU: Madre de Dios:** Manu, Erika (near Salvación), 550 m, 4-6.ix.1988, O Flint and N Adams (UMSP000097104) (MJP).

***Paratypes*—PERU: Madre de Dios:** same data as Holotype–1 female (pinned) (NMNH).

Additional material examined—**PERU: Cuzco:** Paucartambo, Puente San Pedro, ca. 50 km NS Pilcopata, 1600 m, 2-3.ix.1988, O Flint and N Adams–1 female (pinned) (NMNH); Paucartambo, Quinta Calzon, ca. 30 km NW Pilcopata, Km 164, 13.15000° S, 71.36667° W, 1030 m, 1-2.ix.1989, N Adams, et al.–1 female (pinned) (NMNH).

Etymology—This species is named *M. bulbosa* for the bulbous ventromesal lobe of the inferior appendage, which character easily distinguishes it from closely related species.

Mortoniella* (*Mortoniella*) *chicana **Sykora, 1999**
Fig. 5

Mortoniella chicana Sykora 1999: 378 [member of bilineata subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group].

This species can be distinguished from others in the bilineata subgroup by several distinctive characters. Perhaps the most readily diagnostic is the shape of the inferior appendages, which have narrow, dorsally curved, projections, as viewed laterally. Also distinctive is the shape of the dorsal phallic spine, which is very strongly bent or "humped" in the middle and has a ventral "dip" before the dorsally reflexed apical bend. The ventral sclerites of the phallicata are not particularly elongate or strongly sclerotized, but they are distinctive in being strongly arched basally, along with the spine-like projections from the mesal pockets of the inferior appendages. An additional diagnostic character is that tergum X, as viewed dorsally, is more evenly rounded apically (and thus less truncate) in *M. chicana* than in other species of the subgroup.

Adult—Length of forewing: male 4.2 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color dark brown. Legs same color as wings, tibial spurs darker, contrasting with legs. Palps and basal segments of antenna blackish-brown, base of antenna contrasting with subsequent whitish or light brown segments, apex of antenna dark brown (like wings). Forewing with 2 distinct white wing bars, 1 at anastomosis and 1 on proximal part of wing, approximately midway between base and anastomosis.

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, narrow basally, length about 3 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX (apparently) elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, margins rounded laterally, subparallel in demarcated dorsal region, laterally with short acute, finger-like, lateral lobes, each with prominent apical seta; apex of tergum very distinctly sclerotized, lateral margins rounded and converging mesally (not truncate), with ventrolateral margins incurved and converging mesally to form linear "seam," mesal notch very narrow; tergum ventromesally with paired, lightly sclerotized, ventromesal lobes in basal half, each with short setae. Inferior appendages with short angular, retrorse, dorsolateral lobes and distinctive and prominent paired, upward-curved, lateral lobes; lobes widely separated, as viewed ventrally, with short angular, closely apposed, mesal projections on posteromesal margin. Mesal pockets of inferior appendage with elongate, narrow, strongly arched, spine-like, apicoventral projections, conforming to arched ventral margin of phallicata. Paramere appendage moderately elongate, narrow, nearly uniform in width, apex acute, extending more than ½ length of dorsal phallic spine; basal segment of paramere articulating near base of dorsal phallic spine. Phallobase without evident dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin very strongly and distinctively arched, sinuously and nearly rectilinearly upturned in about apical 1/6th, with slight dip at point of inflection, apex of spine rounded; base of spine narrow and stalk-like, abruptly and strongly widened on ventral margin in basal ½, forming acute ventral projection, spine narrowing apically from projection; spine, as viewed dorsally, narrow in width throughout length. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine, basodorsal projection with lateral margins forming short rounded lobes; phallicata ventrally with pair of arched and rather weakly sclerotized lobes, extending about same length as apex of paramere appendages. Endophallic membrane simple in structure, with only weakly developed membranous lateral lobes, dorsally with sclerotized mesal "pocket," to accommodate apical inflection of dorsal phallic spine; phallotremal spines absent.

Material examined—**ECUADOR: Napo:** Río Jondachi, 30 km N Tena, 950 m, 10.ix.1990, OS Flint, Jr–1 male Paratype (pinned) (NMNH); **Zamora-Chinchipe:** 6 km E Zumbi, 980 m, 21.ix.1990, OS Flint, Jr–1 male Paratype (pinned) (NMNH).

Distribution—Ecuador.

***Mortoniella* (*Mortoniella*) *hamata*, new species**
Fig. 6

Mortoniella bilineata Ulmer: Blahnik and Holzenthal 2011: 62 [Fig. 33A-D, female genitalia (name misapplied)].

This species is most similar to *M. roldani* Flint. Both species have narrow, paired, ventromesal processes on the inferior appendages and elongate ventral sclerites on the phallicata. *Mortoniella bilineata* Ulmer and *M. paralineata* Sykora also have elongate ventral sclerites on the phallicata, but both of these species have a single ventromesal process on the inferior appendages. As compared to *M. roldani*, the paired mesal processes of the inferior appendages in *M. hamata* are more curved, in lateral view, and hooked or barbed apically. The ventral sclerites of the phallicata, as viewed ventrally, have their apicolateral margins distinctly convexly rounded in *M. roldani* (Fig. 9C), whereas they are nearly straight or slightly concave in *M. hamata* (Fig. 6C); the converse is true of the apicomesal margins of the same structures, which are nearly straight in *M. roldani* and weakly convex in *M. hamata*.

Adult—Length of forewing: male 4.2-4.6 mm; female 5.2-5.4 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color medium brown or golden-brown. Legs same color as wings, tibial spurs only slightly darker, somewhat contrasting with legs. Forewing with 2 distinct white wing bars, 1 at anastomosis and 1 on proximal part of wing, approximately midway between base and anastomosis; apex of wing with fringe of whitish setae.

Male genitalia—Ventral process of segment VI prominent, posteriorly projecting, narrow basally, length about 3 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, lateral margins subparallel, laterally with acute, finger-like, lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, subtruncate, with ventrolateral margins incurved and converging mesally to form linear "seam," apicodorsally with lightly sclerotized connection near apex (mesal notch nearly absent); tergum ventromesally with paired, rounded, lightly sclerotized, ventromesal lobes in basal half, each with short setae. Inferior appendages with subtriangular lateral lobes and short narrow, paired, ventromesal lobes, each forked near apex. Mesal pockets of inferior appendage with moderately elongate, posteriorly-directed, sinuous, spine-like, apicoventral projections. Paramere appendage elongate, narrow, nearly uniform in width, apex acute, extending about same length as dorsal phallic spine; basal segment of appendage articulating near base of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin strongly curved and arched from base, sinuously and nearly rectilinearly upturned in apical 1/5, apex of spine rounded; base of spine narrow, curved and stalk-like, moderately widened on ventral margin at about basal 1/3, forming angular ventral projection, narrowing apically from projection; spine, as viewed dorsally, nearly uniformly narrow in width throughout length. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine, basodorsal projection with lateral margins forming short rounded lobes; phallicata ventrally with elongate, narrow, projecting, sclerotized lobes, extending about same length as paramere appendages; apices of lobes, as viewed ventrally, nearly straight on lateral margins and forming rounded lobes on mesal margins. Endophallic membrane simple in structure, with only weakly developed membranous lateral lobes; dorsal margin with weakly sclerotized area, apparently to accommodate flexed part of dorsal phallic spine; phallotremal spines absent.

Holotype male (pinned)—**COLOMBIA: Cauca:** Municipio de Inzá, Quebrada San Andrés, ca. 500 m W Restaurante "La Portada", San Andrés de Pisimbalá, 2.58222° N, 76.04333° W, 1750 m, 21.xii.1997, F Muñoz-Q et al. (UMSP000209440) (UMSP).

Paratypes—**COLOMBIA: Cauca:** same data as holotype–2 males, 2 females (pinned) (UMSP), 1 male (NMNH); Municipio de Inzá, Quebrada San Andrés, 1km S del centro de San Andrés de Pisimbalá, 2.57667° N, 76.03639° W, 1730 m, 20.xii.1997, F Muñoz-Q et al.–1 female (pinned) (UMSP).

Etymology—This species is named *M. hamata* from the Latin work *hamus*, a hook or barb or angle, and referring to the pair of hooked mesal processes on the inferior appendages.

***Mortoniella* (*Mortoniella*) *monopodis*, new species**
Fig. 7

This species is easily diagnosed by the very elongate, narrow, mesal projection of the inferior appendages. It is unlikely to be confused with any other described species. The left side of segment IX is somewhat deformed in the holotype specimen and the illustration shows the contour of the opposite side. The posterolateral margins of segment IX in this species are rounded and less angular than most other species in the bilineata subgroup, and the ventral lobe or lobes of the phallicata somewhat less developed, but otherwise the species conforms well to the generalized features of the group.

Adult—Length of forewing: male 4.8-5.0 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color dark brown. Legs same color, tibial spurs slightly darker, not greatly contrasting with legs. Palps and basal segments of antenna blackish-brown, base of antenna contrasting with subsequent light brown segments, apex of antenna dark brown (like wings). Forewing with 2 distinct white wing bars, 1 at anastomosis and 1 on proximal part of wing, approximately midway between base and anastomosis.

Male genitalia—Ventral process of segment VI prominent, posteriorly projecting, relatively wide basally, length about 1 to 1½ times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with broadly rounded projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X moderately elongate, lateral margins rounded, laterally with acute, finger-like, lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, rounded laterally, weakly truncate at extreme apex, with ventrolateral margins incurved and converging mesally to form linear "seam," apicodorsally with lightly sclerotized connection near apex (mesal notch nearly absent); tergum ventromesally with paired, lightly sclerotized, rounded and compressed, ventromesal lobes in basal half, each with short setae. Inferior appendages with very short rounded dorsolateral lobes, and with single elongate, narrow ventromesal lobe; mesal lobe, as viewed laterally, upcurved apically, very uniformly tapering and acute apically, as viewed ventrally. Mesal pockets of inferior appendage with short, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage elongate, narrow, slightly widened preapically, apex acute, appendage extending about same length as dorsal phallic spine; fused basal segments of appendages articulating near base of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, curved and arched basally, linearly extended in middle, and sinuously upturned in about apical 1/5, apex of spine rounded; base of spine narrow, curved and stalk-like, abruptly widened on ventral margin in basal ½, forming very acute ventral projection; spine, as viewed dorsally, narrow throughout, only slightly widened in middle, rounded apically. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine; phallicata ventrally with sclerotized lobes, lateral margins compressed and slightly widened near base, narrowed apically, forming single apicomesal projection, mesal projection with several small spines (more extensively developed in paratype specimen). Endophallic membrane with well- developed, pleated and membranous, lateral lobes; phallotremal spines absent.

Holotype male (pinned)—**COLOMBIA: Chocó:** km 130, 86 km E Quibdo, 17.ii.1983, OS Flint, Jr (UMSP000157314) (NMNH).

***Paratype*—ECUADOR: Imbabura:** Reserva Los Cedros, Río los Cedros, 00.30359° N, 78.78233° W, 1312 m, 18-19.x.2011, Holzenthal, Rios, Encalada, Acosta–1 male (pinned) (UMSP).

Etymology—The name *monopodis* is taken from the Greek words *mono* for one and *podos* for foot and referring to the single elongate mesal projection of the inferior appendages.

***Mortoniella* (*Mortoniella*) *paralineata* Sykora, 1999**
Fig. 8

Mortoniella paralineata Sykora 1999: 378 [member of bilineata subgroup]; Blahnik and Holzenthal 2008:70 [member of bilineata group]; Blahnik and Holzenthal 2011: 63 [possible member of enchrysa subgroup].

Mortoniella paralineata is a close sister species to *M. bilineata* Ulmer. Character similarities include the elongate, paired, ventral sclerites of the phallicata and short unbranched mesal projection of the inferior appendages. The ventral sclerites of the phallicata in *M. bilineata* are distinctly longer than in *M. paralineata* and the mesal process of the inferior appendages is strongly bent and trianguloid in shape. It also has distinctly longer paramere appendages, subequal in length to the dorsal phallic spine and ventral sclerites of the phallicata. Although we suggested the possible placement of *M. paralineata* in the enchrysa subgroup (Blahnik and Holzenthal 2011), based on color characters given in the type description, the species was correctly placed in the bilineata subgroup by Sykora. The species is somewhat lighter brown than other species in the bilineata subgroup, but has two obvious white wing bands on the forewing, a defining character of the subgroup. The genitalia are also very similar to other members of the subgroup. A single, non-paratype specimen was examined, from a site not too distant from the paratype specimens. It was much smaller in size (accounting for most of the size variation listed below), but the only significant difference in the genitalia was that the paramere appendages seemed to be more distinctly bent in the middle. We are considering this intraspecific variation. The question may bear reinvestigation when more material is available.

Adult—Length of forewing: male 4.0-5.7 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color medium brown, head and thorax golden brown. Legs same color as wings, tibial spurs darker, weakly contrasting with legs. Palps blackish-brown. Forewing with 2 distinct white wing bars, 1 at anastomosis and 1 on proximal part of wing, approximately midway between base and anastomosis.

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, relatively narrow basally, subacute apically, length about 2 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, lateral margins subparallel, laterally with narrow, apically acute, finger-like, lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, subtruncate, with ventrolateral margins incurved and converging mesally to form linear "seam," apicodorsally with lightly sclerotized connection near apex (mesal notch nearly absent); tergum ventromesally with paired, rounded, lightly sclerotized, ventromesal lobes in basal half, each with short setae. Inferior appendages with short upright dorsolateral lobes and single short ventromesal lobe; mesal lobe bluntly rounded apically, as viewed laterally. Mesal pockets of inferior appendage with moderately elongate, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage only moderately elongate (much shorter than dorsal phallic spine), narrow, nearly uniform in width, nearly straight or very weakly bent in middle; basal segments of appendage fused mesally and articulating near base of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin strongly curved and arched from base, sinuously and nearly rectilinearly upturned in about apical 1/5, apex of spine rounded; base of spine narrow, curved, and stalk-like, abruptly widened on ventral margin in basal ½ , forming acute ventral projection; spine, as viewed dorsally, nearly uniformly narrow in width throughout length, rounded apically. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine, basodorsal projection with lateral margins forming short rounded lobes; phallicata ventrally with moderately elongate, narrow, lightly sclerotized lobes; lobes only slightly projecting apically, extending slightly beyond paramere appendages. Endophallic membrane with evident membranous lateral lobes and distinct sclerotized dorsomesal pocket, apparently to accommodate apical inflection of dorsal phallic spine; phallotremal spines absent.

Material examined—**ECUADOR: Morona-Santiago:** Río Salado, Hwy E46 (via Riobamba Macas), 2.242530° S, 78.277910° W, 1646 m, 26.i.2015, Holzenthall, Huisman, Rios-Touma, Amigo–26 males, 58 females (pinned) (UMSP); **Zamora-Chinchipe:** Río Jamboe, 21 km S Zamora, 1340 m, 22.ix.1990, OS Flint, Jr–2 male Paratypes (pinned) (NMNH)**;** Zamora, 4.xii.1978, JJ Anderson–1 male (alcohol) (NMNH).

Distribution—Ecuador.

***Mortoniella* (*Mortoniella*) *roldani* Flint, 1991**

Fig. 9, 97

Mortoniella roldani Flint 1991: 23; Sykora 1999: 378 [member of the bilineata group].

Mortoniella similis Sykora 1999: 380 [member of bilineata subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group]; Blahnik and Holzenthal 2011: 63 [member of bilineata subgroup]. **New Synonym**.

This species is very similar to *M. hamata*, n. sp., as discussed in the diagnosis for that species. Both species have narrow paired ventromesal processes on the inferior appendages and relatively elongate and distinct ventral sclerites on the phallicata. As compared to *M. hamata*, the paired mesal processes of the inferior appendages are less curved, in lateral view, and lack apical barbs or hooks. These processes vary somewhat in length and appear to have small sensilla or short setae in *M. roldani* (sensilla in the paratype examined and most other specimens, distinct short setae in one specimen from Colombia). The ventral sclerites of the phallicata, as viewed ventrally, have their apicolateral margins distinctly convexly rounded or spatulate in *M. roldani* (Fig. 9C), whereas they are nearly straight or slightly concave in *M. hamata* (Fig. 6C); the converse is true of the apicomesal margins of the same structures, which are nearly straight in *M. roldani* and weakly convex in *M. hamata*. An additional difference is in the shape of tergum X, which is shorter in *M. roldani*, with the apical sclerotized part shorter than the rounded basal part, and with a characteristic wide separation of the apical lobes on the ventral margin. We examined paratypes of both *M. similis* Sykora and *M. roldani* Flint and found no significant differences (*Mortoniella similis* was compared to and differentiated from *M. bilineata*, rather than *M. roldani*, in its original description).

Adult—Length of forewing: male 3.5-4.7 mm; female 4.8-5.2 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color dark brown. Legs same color as wings, tibial spurs slightly darker, not distinctly contrasting with legs. Antennae with several segments after basal 4 or 5 whitish, contrasting with basal and apical segments. Forewing with 2 distinct white wing bars, 1 at anastomosis and 1 on proximal part of wing, approximately midway between base and anastomosis, setae of bands with turquoise iridescence at some light angles; apex of forewing with fringe of whitish setae.

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, narrow basally, length about 3 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X moderately elongate, lateral margins rounded, laterally with acute, finger-like lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, truncate, shorter than basal projection, with ventrolateral margins incurved and nearly converging mesally (typically separated by distinct gap), apicodorsally with lightly sclerotized connection near apex (mesal notch nearly absent); tergum ventromesally with paired, lightly sclerotized, rounded, ventromesal lobes in basal half, each with short setae. Inferior appendage with short rounded lateral lobe, usually with acute posterior projection, and paired narrow ventromesal lobes, each with several small papillae or short setae. Mesal pockets of inferior appendage with moderately elongate, sinuous, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage elongate, narrow, nearly uniform in width, usually with distinct curve near apex, apex acute, extending nearly as far as dorsal phallic spine, subequal in length to ventral lobes of phallicata; fused basal segments of parameres articulating near base of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin sinuous, strongly curved and arched at base, sinuously and nearly rectilinearly upturned in apical 1/4, apex of spine rounded; base of spine narrow, curved and stalk-like, moderately widened on ventral margin at about basal ½, forming angular ventral projection; spine, as viewed dorsally, nearly uniformly narrow in width throughout length, apex rounded. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine, basodorsal projection with lateral margins forming rounded and distinctly projecting lobes; phallicata ventrally with elongate, narrow, sclerotized lobes, extending about same length as paramere appendages; apices of lobes, as viewed ventrally, distinctly rounded or spatulate on lateral margins, nearly straight on mesal margins. Endophallic membrane simple in structure, with short membranous lateral lobes; phallotremal spines absent.

Material examined—**COLOMBIA: Antioquia:** Km 50, Río Aurra San Jeronimo, 14.ii.1983, OS Flint, Jr, 1 male Paratype (pinned) (NMNH);**Valle:** Municipio de Buenaventura, Río Escalerete, 1 km E casa de “AquaValle” (ca. 16 km SE Cordoba), 3.82722° N, 76.87083° W, el 210 m, 2.xii.1997, F Muñoz-Q et al., 1 male (pinned) (UMSP); **ECUADOR: Pichincha:** Santo Domingo de los Colorados, 14 km E, 5.vii.1975, Langley and Cohen, 1 male Paratype (*M. similis*) (NMNH); **VENEZUELA: Zulia:** Parque Nacional Perijá, Río Negro in Toromo, 10.051° N, 72.712° W, el 360 m, 15.i.1994, Holzenthal, Cressa, Rincón, 24 males, 6 females (pinned) (UMSP).

Distribution—Colombia, Ecuador, Venezuela.

—catherinae subgroup

Included species: *Mortoniella catherinae*, n. sp.

As defined here, this group includes only a single unusual species. We initially placed the species with the “unplaced species” in the subgenus *Mortoniella*, because of the apparent absence of a mesal invagination of segment VIII in the female genitalia and the presence of other characters inferred to be primitive and which also characterize a number of the “unplaced species,” including a segment IX with a broadly rounded anterior margin, inferior appendage with an elongate, retrorsely curved, dorsal appendage, and elongate spine-like, projections from the mesal pockets of the inferior appendages. However, close examination shows that there is a very slight invagination in the dorsal margin of segment VIII of the female, although the posteromarginal setae remain evenly spaced and not clustered on either side of the invagination. The character is only suggestively developed, but its presence would allow its inclusion in the bilineata group, as it is strictly defined here. Other characters clearly show a relationship with the bilineata group. Characters indicating this include the very angular ventral margin of the dorsal phallic spine, which is also very abruptly upturned apically; the presence of a distinct mesal apodeme on the dorsal margin of the phallicata, which articulates with the dorsal phallic spine; and an elongate, narrow tergum X, with strongly sclerotized apicolateral lobes and also angular ventrolateral lobes. It seems likely that this is the most basal member of the bilineata group recognized to date. However, the absence of some of the synapomorphies listed above in the flinti and quinuas subgroups makes its definitive placement uncertain.

***Mortoniella* (*Mortoniella*) *catherinae*, new species**
Fig. 10, 108

Mortoniella sp. 4: Flint 1996: 383.

This species has no close relatives and is morphologically distinctive enough so that it is unlikely to be confused with any other species. Particularly diagnostic characters include the form of the dorsal phallic spine, which has its apex subacute, sharply upturned, and covered with many small spines, and also has a sharply angled projection on its ventral margin; the elongate, recurved dorsolateral processes of the inferior appendages; and the form of tergum X, which is elongate, with sharply declivous apical lobes, and densely covered with elongate setae (although with the central area of tergum bare). The female identified by Flint (1996) as *Mortoniella* sp. 4 closely resembles the associated female of this species and we have identified it as such. The genitalia are distinctive and unlike any other described species. However, since it was collected from a different locality, it is not included in the paratype series.

Adult—Length of forewing (pharate adults): about 4 mm. Wing venation not determinable (in pinned specimen of unassociated female, with forks I, II, and III present in forewing, forks II, III, and V present in hind wing). Spur formula 0:4:4. Overall color (in alcohol) yellowish-brown, wings slightly darker. Wing markings not evident (in pinned specimen of unassociated female, uniformly fuscous, without evident wing bar).

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, length about 2 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX slightly elongated. Segment IX with anterolateral margin broadly rounded, with greatest width at about middle of segment, posterolateral margin with distinct, irregularly rounded, projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X moderately elongate, with short inflated basomesal projection, lateral margins subparallel, with elongate setae (setae absent on mesal part of tergum), apicolateral margins of tergum distinctly sclerotized, forming narrow, declivous lobes; tergum laterally with acutely angled ventrolateral lobes, ventromesal lobes absent. Inferior appendages with very elongate, narrow, retrorsely curved, dorsolateral lobes, appendages ventrally without mesal invagination or projection. Mesal pockets of inferior appendage with elongate, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage moderately elongate, narrow, nearly uniform in width, apex acute, extending about same length as apical bend of dorsal phallic spine; fused basal segments of appendage articulating near base of dorsal phallic spine. Phallobase with rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin very slightly arched, sharply and nearly rectilinearly upturned in apical 1/3 or 1/4, apical part with numerous small spines, apex acute; base of spine narrow, stalk-like, nearly straight, abruptly and strongly widened on ventral margin in basal 1/2, forming very prominent acute ventral projection; spine, as viewed dorsally, nearly uniformly narrow in width throughout length, apex acute. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine; phallicata ventrally with lightly sclerotized, rounded and projecting, basal lobes, and much smaller, angular, apicolateral lobes. Endophallic membrane simple in structure, without membranous lateral lobes; phallotremal spines absent.

Holotype male (pharate adult, alcohol)—**PERU: Cuzco:** Paucartambo to Pilcopata rd., Puente Morro Leguia, 13.12400° S, 71.72283° W, el 2200 m, 20-21.vi.1993, R Blahnik and M Pescador (UMSP000097161) (MJP)

***Paratypes*—PERU: Cuzco:** same data as holotype, 4 males, 1 female (NMNH).

Additional material examined—**PERU: Cuzco:** Paucartambo, E Buenos Aires, km 135, 13.13333° S, 71.55000° W, 28-29.viii.1989, NE Adams–1 female (pinned) (NMNH).

Etymology—The first author takes great pleasure in naming this unique and interesting species *M. catherinae* for his mother, Catherine Blahnik, now deceased, without whose support this paper would probably never have been completed.

—enchrysa subgroup

Included species: *Mortoniella adamsae*, n. sp.; *Mortoniella denticulata* Sykora; *M. enchrysa* Flint; *M. langleyae*, n. sp.; *M. paraenchrysa* Sykora; *M. silacea*, n. sp.; and *M. squamata* Sykora.

The species in this subgroup are characterized by a uniformly golden orange forewing coloration, without a wing bar, and with hind wings and setation on the ventral surface of the forewings fuscous. In a few species, the wing membrane is also infuscated, accentuating the overall golden coloration. Exceptions are *M. denticulata* Sykora, which has forewings a uniform light brown in color, and possibly *M. langleyae* n. sp., which is only known from alcohol. Both of these species are placed in the enchrysa subgroup based on structural features of the male genitalia. In general, most species have the ventrolateral margins of the apex of tergum X curved mesally, as in members of the bilineata and *M. apiculata* subgroups, but the ventral margins do not quite converge mesally. As a result, there is a distinct apicomesal notch (shallow to deep) on tergum X, rather than the structure being truncate or nearly truncate apically. Nevertheless, the general appearance is of a distinctly sclerotized apical “cap.” This is less evident in species with a deep mesal invagination. As in members of the bilineata subgroup, the posterolateral margin of segment IX has a more or less angular and very distinctly produced projection. All of the species have a very short ventral process on segment VI, but the general form of the process is typical of species of the bilineata group (narrow basally and posteriorly directed). A very short ventral process is also found in species of the apiculata subgroup.

***Mortoniella* (*Mortoniella*) *adamsae*, new species**
Fig. 11

Mortoniella n. sp. 2, Flint 1996: 383 [related to *M. enchrysa*].

Despite some very obvious differences in the structure of the inferior appendages, including the length of the apical spine on the mesal pockets, this species is probably most closely related to *M. squamata* Sykora. Both species are unusual for members of the bilineata group in having two pairs of paramere appendages, the longer one armed with small spines (the shorter one unarmed in *M. adamsae*). *Mortoniella adamsae* is probably most readily diagnosed by the shape of the inferior appendages, each of which has an elongate and slightly arched posterior process, with a preapical spine-like projection on its ventral margin. The inferior appendages of *M. enchrysa* Flint, which is probably related to *M. adamsae* and *M. squamata*, are somewhat similarly shaped, but the appendages are shorter, more arched, and covered with microsetae. *Mortoniella enchrysa* also has paramere appendages with accessory spines, but has only one pair of appendages. Another distinctive feature of *M. adamsae* is that the ventral margin of the dorsal phallic spine is angular, as in most species of the bilineata group, but the angular projection is unusually produced, making the spine appear very wide at midlength, as viewed laterally.

Adult—Length of forewing: male 6.3 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Dorsal side of forewings, head, basal segments of antennae, and legs, except distal parts of tibiae and tarsi, golden-orange; ventral side of forewings (and apicomarginal setae), hind wings, apices of antennae, palps, and distal part of tibiae and tarsi dark brownish-black. Wing membranes (apparently) somewhat infuscated. Tibial spurs black, contrasting with legs. Wing bars absent.

Male genitalia—Ventral process of segment VI posteriorly projecting, short, narrow basally, length about 2 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X moderately elongate, lateral margins rounded, ventrolaterally with acute, tapering, lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, emarginate, with ventrolateral margins incurved and approaching each other mesally, but separated by distinct gap, apicodorsally with broad U-shaped connection near apex (mesal notch distinct); tergum ventromesally with paired, rounded and sclerotized, ventromesal lobes in basal half each with short setae. Inferior appendages with short narrow setose dorsolateral lobes and paired elongate, narrow, ventromesal lobes; ventromesal lobes curved, each with distinct preapical spine on ventral margin. Mesal pockets of inferior appendage with very elongate, posteriorly-directed, spine-like, apicoventral projections. Parameres with paired appendages on either side, 1 moderately elongate, with small spines on apical ½, the other short, about ½ length of longer spine, without spines, both appendages slightly widened preapically, apices acute; fused basal segments of parameres articulating near base of dorsal phallic spine. Phallobase with relatively small rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin arched, sinuously and nearly rectilinearly upturned in apical ¼, apex of spine rounded; base of spine narrow, undulately curved, and stalk-like, abruptly and very strongly widened on ventral margin in basal ½, forming acute ventral projection, narrowing apically from projection; spine, as viewed dorsally, somewhat widened in middle, apex rounded. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine; phallicata ventrally with moderately elongate sclerotized lobes, extending about same length as longer paramere appendages, lateral margins of lobes subparallel, apices enlarged and mesally curved. Endophallic membrane simple in structure, with membranous lateral lobes; phallotremal spines absent.

Holotype male (pinned)—**PERU: Cuzco:** Paucartambo; Puente San Pedro, ca. 50 km NW Pilcopata, 13.15000° S, 71.43333° W, 1600 m, 2-3.ix.1988, O Flint and N Adams (UMSP000157307) (MJP).

Etymology—We take great pleasure in naming this species *M. adamsae* for Nancy Adams, now deceased, who was co-collector of the type specimen, and spent many years as assistant curator of the Trichoptera collection at the Smithsonian.

***Mortoniella* (*Mortoniella*) *denticulata* Sykora, 1999**
Fig. 12

Mortoniella denticulata Sykora 1999: 382 [member of flinti subgroup]; Blahnik and Holzenthal 2008: 70 [member of the bilineata group]; Blahnik and Holzenthal 2011: 63 [probable member of enchrysa subgroup].

The overall color of this species is nearly uniformly light brown, rather than golden, as in other species of the group; females may have a discontinuous whitish wing bar at the usual anastamosis. This species is distinctive in so many respects that it is unlikely to be confused with any other species. Particularly diagnostic is the elongate, arched and separated, ventrolateral lobe of tergum X. Characters shared with other species, but uniquely combined in *M. denticulata*, include: numerous small spines on the apex of the dorsal phallic spine; minutely spined and projecting lobes on the endophallic membrane; and a narrow, arched dorsolateral projection on the inferior appendage. The latter character is somewhat similar to *M. paraenchrysa* Sykora, but not as dramatically curved.

Adult—Length of forewing: male 4.9-6.0 mm; female 5.8-6.0. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color of male, including dorsal side of forewings, head, legs, and base of antennae, golden-brown, female slightly darker. Wing membrane of fore- and hind wings distinctly infuscated, more distinctly evident on ventral side of forewings and hind wings, due to short scant setae (of same color as dorsal side of wings). Palps, apices of antennae, and marginal setae of wings dark brown. Tibial spurs dark brown, contrasting with legs. Wings of male without wing bars, of female with indistinct or interrupted white wing bar at anastomosis.

Male genitalia—Ventral process of segment VI posteriorly projecting, moderate in length, narrow basally, length about 2 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, dorsal margin somewhat widened, membranous connection to tergum IX moderately elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half, projection with minute microsetae in addition to usual lateral setae; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X moderately elongate, base of segment not inflated, lateral margins constricted at base, subparallel laterally, apex of tergum with deep V-shaped mesal incision, apex sclerotized, but not forming evident “cap,” tergum ventrolaterally with elongate narrow, curved, apically acute, lateral lobes, each with several preapical setae, lobe widely separated from dorsal part of tergum by rounded notch; tergum ventromesally with paired, rounded and sclerotized, ventromesal lobes in basal half, each with short setae (not readily visible in lateral view). Inferior appendages with moderately elongate narrow, posteriorly recurved, dorsolateral lobes and short acute, paired, apicoventral lobes. Mesal pockets of inferior appendage with elongate, posteriorly directed, spine-like, apicoventral projections. Fused basal segments of parameres articulating near middle of stalk-like basal part of dorsal phallic spine, paramere appendages absent. Phallobase with relatively small rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin sinuously undulate, gradually upturned in about apical 1/3, base of spine narrow, stalk-like and sinuously curved, distinctly widened on ventral margin in basal ½, forming acute ventral projection, apical part of spine rather uniformly broad, apex rounded, spine with many small lateral spines in about apical 1/3; spine, as viewed dorsally, slightly widened in middle, apex rounded. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine; phallicata ventrally with indistinct, lightly sclerotized, lobes, extending about same length as recurved dorsal lobe of inferior appendages. Endophallic membrane with subdivided, membranous lateral lobes, basal part distinctly projecting, with minute spines; phallotremal spines absent.

Material examined—**VENEZUELA: Merida:** Río Albarregas, ca. 1 km NW Univ. de los Andes, 8.634° N, 71.158° W, el 1980 m, 24.iv.1995, Holzenthal, Gulic, Segnini–15 males, 3 females (pinned) (UMSP); Parque Nacional Sierra Nevada, Quebrada La Mucuy, 7 km E Tabay, 8.637° N, 71.034° W, 2200 m, 18.i.1994, Holzenthal, Cressa, Rincón–1 male (pinned) (UMSP).

Distribution—Venezuela.

***Mortoniella* (*Mortoniella*) *enchrysa* Flint, 1991**
Fig. 13

Mortoniella enchrysa Flint 1991: 24; Sykora 1999: 386 [member of enchrysa subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group]; Blahnik and Holzenthal 2011: 63 [member of enchrysa subgroup].

Mortoniella enchrysa Flint is most similar overall to *M. adamsae*, n. sp., especially in the shape of the inferior appendages, but those of *M. enchrysa* have the apical processes shorter, more strongly arched, and densely covered with microsetae. Both species have spines or spine-like processes on the paramere appendages, but *M. enchrysa* has only one pair of appendages. An additional similarity between *M. enchrysa* and *M. adamsae* is in the structure of the ventral lobes of the phallicata, which have the basal part forming retrorse lobes. The species differ in that the apical notch of tergum X is shallower in *M. enchrysa*. *Mortoniella enchrysa* also differs in that the posterior margin of segment IX is very sharply, nearly rectilinearly, angular. The latter character state is similarly developed in M. *silacea*, n. sp., but there is otherwise no close resemblance between the two species.

Adult—Length of forewing: male 6.0 mm; female 6.8. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Dorsal side of forewings, head, basal segments of antennae, and legs golden-orange; wing membrane of fore- and hind wings distinctly infuscated, ventral side of forewings (and apicomarginal setae), hind wings, apices of antennae, and palps dark brown. Tibial spurs brownish-black, strongly contrasting with legs. Wing bars absent.

Male genitalia—Ventral process of segment VI posteriorly projecting, short, narrow basally, length about 1½ to 2 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with nearly rectilinearly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, lateral margins rounded, ventrolaterally with subangular lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, emarginate, with ventrolateral margins incurved and approaching each other mesally, but separated by distinct gap, apicodorsally with lightly sclerotized connection near apex (mesal notch shallow, but distinct); tergum ventromesally with paired, sclerotized, rounded (short paddle-like), ventromesal lobes in basal half, each with short setae. Inferior appendages with short upright dorsolateral lobes and short paired ventromesal lobes, ventromesal lobes strongly curved, each with distinct preapical spine on ventral margin; basodorsal lobes and base of ventromesal lobes with numerous microsetae. Mesal pockets of inferior appendage with moderately elongate, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage elongate, narrow, extending about same length as dorsal phallic spine, distinctly dorsally curved and slightly widened near apex, apex acute; ventral margin of appendage with linear row of sensilla; fused basal segments of parameres articulating near base of dorsal phallic spine. Phallobase with rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin arched in middle, sinuously and nearly rectilinearly upturned in apical ¼, apex of spine rounded; base of spine narrow and stalk-like, abruptly and strongly widened on ventral margin in basal ½, forming subangular ventral projection, spine narrowing apically from projection; spine, as viewed dorsally, somewhat widened in middle, apex rounded. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine; phallicata ventrally with 2 pairs of diverging, sclerotized lobes, basal ones retrorsely oriented, rounded laterally, posterior pair diverging from posterior margin of basal lobes, apices bluntly rounded, posteriorly projecting; ventromesal margin of phallicata extending beyond paired lobes, very lightly sclerotized, extending about same length as paramere appendages. Endophallic membrane simple in structure, with very small membranous preapical lateral lobes; phallotremal spines absent.

Material examined—**COLOMBIA: Valle:** Municipio El Cerrito, Río Cerrito, 7.1 km E Hacienda “El Paraiso”, 3.64972° N, 76.17278° W, 1950 m, 3.xii.1997, F Muñoz et al.–1 male, 1 female (pinned) (UMSP).

Distribution—Colombia.

***Mortoniella* (*Mortoniella*) *langleyae*, new species**
Fig. 14

This is a very distinctive species, probably most closely related to *M. denticulata* Sykora, though superficially very different. Both species have a dorsal phallic spine with small apical spines (also present in *M. silacea*, n. sp.) and an endophallic membrane with conspicuous membranous lateral lobes with minute spines. Both species also lack paramere appendages. As compared to either *M. denticulata* or *M. silacea*, the apex of the dorsal phallic spine is much narrower, as viewed laterally. Especially distinctive aspects of *M. langleyae* include the very elongate and apically curved tergum X, with a very deep mesal invagination and very elongate, pencil-like, ventrolateral lobes. Additionally, the tergum has very conspicuously developed, enlarged and projecting, ventromesal lobes. Like *M. denticulata*, the tergum lacks either obvious apicoventral sclerotization or a distinctly inflated and demarcated basal portion. As compared to other species in the bilineata group, the anteroventral margin of segment IX is only weakly produced.

Adult—Length of forewing: male 3.5 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Color (in alcohol) yellowish-brown; setae of forewing (apparently) golden or golden-brown. Wing membranes not obviously infuscated. Wing bars not evident.

Male genitalia—Ventral process of segment VI posteriorly projecting, relatively short, narrow basally, length about 3 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX; membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and weakly produced in ventral half, posterolateral margin with nearly rectilinearly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X very elongate and curved apically, base of segment not inflated, lateral margins slightly constricted at base, subparallel laterally, apex of tergum with very deep V-shaped mesal incision, apex sclerotized, but not forming evident “cap,” tergum ventrolaterally with very elongate narrow, pencil-like, lateral lobes, each with elongate apical seta, lobe narrowly separated from and subparallel to apicolateral lobes; tergum ventromesally with very prominent, paired, sclerotized and projecting, ventromesal lobes in basal half, each with short setae. Inferior appendages with very short (apparently vestigial) dorsolateral lobes and short paired, curved, apicoventral lobes, each with a distinct apicoventral spine-like projection. Mesal pockets of inferior appendage with elongate, posteriorly-directed, spine-like, apicoventral projections. Fused basal segments of parameres articulating near middle of stalk-like basal part of dorsal phallic spine, paramere appendages absent. Phallobase with relatively small rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin nearly straight, obtusely upturned in about apical 1/3, base of spine narrow, stalk-like and sinuously curved, distinctly widened on ventral margin in basal ½, forming acute ventral projection; upturned apex of spine very distinctly narrowed, with scattered small lateral spines, apex rounded; spine, as viewed dorsally, narrow basally and apically, slightly widened in middle, apex rounded. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine; phallicata ventrally with indistinct, paired, lightly sclerotized lobes, extending beyond lateral lobes of endophallic membrane. Endophallic membrane with distinct projecting membranous lateral lobes at midlength, each with minute spines; phallotremal spines absent.

Holotype male (alcohol)—**ECUADOR: Zamora-Chinchipe:** Cumbaratza, 12.vi.1976, A Langley et al. (NMNH) (UMSP000097033).

Etymology—This species is named in honor of Andrea Langley, who collected the type specimen as part of a Peace Corps project in the 1970's, in recognition of the value of this endeavor to the study of Neotropical caddisflies.

***Mortoniella* (*Mortoniella*) *paraenchrysa* Sykora, 1999**
Fig. 15

Mortoniella n. sp. 3, Flint 1996: 383 [member of enchrysa subgroup].

Mortoniella paraenchrysa Sykora 1999: 381 [member of enchrysa subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group]; Blahnik and Holzenthal 2011: 63 [member of enchrysa subgroup].

This species is probably most readily diagnosed by its golden color and the form of the inferior appendage, which has an elongate, narrow dorsal projection that is very strongly and almost hemispherically curved. The projection is somewhat similar to that in *M. denticulata* Sykora, which differs in so many other respects (the separated and angulate ventrolateral projection of segment X, spines on the apex of the dorsal phallic spine, and minutely spined membranous lobes of the endophallic membrane) that it is hardly likely to be confused.

Adult—Length of forewing: male 6.4 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Dorsal side of forewings, head, basal segments of antennae, and legs golden-orange; ventral side of forewings (and apicomarginal setae), hind wings, apices of antennae, and palps dark brownish-black (fuscous). Wing membrane not apparently infuscated. Tibial spurs brownish-black, contrasting with legs. Wing bars absent.

Male genitalia—Ventral process of segment VI posteriorly projecting, very short, narrow basally, length about 1½ times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X with basal part slightly inflated, distinctly set off from apical part, tergum moderately elongate, lateral margins rounded, ventrolaterally with short acute lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized, emarginate, with ventrolateral margins incurved and approaching each other mesally, but separated by distinct gap, apicodorsally with broad U-shaped connection near apex (mesal notch distinct); tergum ventromesally with paired, rounded and sclerotized, ventromesal lobes in basal half, each with short setae. Inferior appendages with short narrow setose dorsolateral lobes and paired ventromesal lobes, each with narrow, strongly hemispherically curved, dorsal process and short acute apicomesal process. Mesal pockets of inferior appendage with very elongate, posteriorly-directed, spine-like, apicoventral projections. Paramere appendages elongate, narrow, slightly widened preapically, apices acute, subequal in length to dorsal phallic spine; fused basal segments of parameres articulating near base of dorsal phallic spine. Phallobase with relatively small rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin curved basally, slightly undulate in middle, and nearly rectilinearly upturned in apical ¼, apex of spine rounded; base of spine narrow, undulately curved and stalk-like, abruptly and very strongly widened on ventral margin in basal ½, forming obtusely angular ventral projection, narrowing apically from projection; spine, as viewed dorsally, somewhat widened in middle, apex rounded. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine; phallicata ventrally with elongate, lightly sclerotized, lobes, extending about same length as paramere appendage, lateral margins of lobes subparallel, apices mesally curved. Endophallic membrane with conspicuous, membranously pleated, lateral lobes; phallotremal spines absent.

Material examined—**PERU: Cuzco:** Paucartambo, E Buenos Aires, km 135, 13.13333° S, 71.55000° W, 2150 m, 28-29.viii.1989, N Adams–1 male (NMNH).

Distribution—Bolivia, Peru.

***Mortoniella* (*Mortoniella*) *silacea*, new species**

Fig. 16

This species probably bears the greatest overall resemblance to *M. denticulata* Sykora, especially because of the minute spines near the apex of the dorsal phallic spine, which is also distinctly broadened and club-shaped apically (as viewed laterally). *Mortoniella langleyae*, n. sp., also has small spines on the apex of the dorsal phallic spine, but the spine is greatly narrowed apically, in lateral view, and its general resemblance to *M silacea* is not very strong. *Mortoniella silacea* is more distinctly golden in coloration and differs in a number of other details from *M. denticulata*. Very distinctive is the nearly rectilinear angle on the posterior margin of segment IX. Other differences from *M. denticulata* include the structure of the inferior appendage, which has a ventral apex that is posteriorly-directed and nearly straight, rather than strongly arched; ventrolateral projections on tergum X that are only very narrowly separated from the dorsal part of the tergum; a ventral margin of the dorsal phallic spine that is obtusely, rather than acutely, angled; and the absence of spines on the membranous lateral projections of the endophallic membrane.

Adult—Length of forewing: male 6.1 mm; female 7.2 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color of male, including dorsal side of forewings, head, legs, and base of antennae, golden-orange, female lightly darker. Wing membrane of fore- and hind wings somewhat infuscated, setae on ventral side of forewings and hind wings dark brown. Palps and apices of antennae dark brown. Tibial spurs brownish-black, contrasting with legs. Wing bars absent.

Male genitalia—Ventral process of segment VI posteriorly projecting, short, narrow basally, length about 2 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, dorsal margin somewhat widened, membranous connection to tergum IX moderately elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with nearly rectilinearly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X moderately elongate, base of segment inflated, lateral margins subparallel, apex of tergum with deep V-shaped mesal incision, apex truncate, sclerotized, but not forming evident "cap" (only suggestively developed), tergum ventrolaterally with tapering, apically acute, lateral lobes, each with elongate apical seta, lobes narrowly separated from dorsal part of tergum; tergum ventromesally with paired, rounded and sclerotized, ventromesal lobes in basal half, each with short setae. Inferior appendages with narrow, lightly sclerotized, apically recurved, dorsolateral lobes and paired narrow, apically acute, apicoventral lobes, each with short acute projection on ventral surface at about midlength. Mesal pockets of inferior appendage with very elongate, posteriorly-directed, spine-like, apicoventral projections. Fused basal segments of parameres articulating near middle of stalk-like basal part of dorsal phallic spine, paramere appendages relatively short, narrow, acute apically. Phallobase with relatively small rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin strongly curved basally, then straight, and strongly, nearly rectilinearly, upturned in about apical 1/3; base of spine narrow, stalk-like, strongly curved, spine distinctly widened on ventral margin in basal ½, forming obtuse, subangular, ventral projection, apical part of spine relatively wide, apex rounded, slightly widened and knob-like, with small lateral spines in about apical 1/3; spine, as viewed dorsally, slightly widened in middle, basal and apical parts narrow, apex compressed. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine; phallicata ventrally with moderately elongate, subparallel, lightly sclerotized, lobes, extending slightly past elongate spine-like projections of mesal pockets of inferior appendages. Endophallic membrane with prominent, membranously pleated, lateral lobes; phallotremal spines absent.

Holotype male (pinned)—**COLOMBIA: Cauca:** Municipio de Silvi, Río Piendamó, ca. 5 km NE Silvia, 2.63194° N, 76.33806° W, 2610 m, 30.xii.1997, F Muñoz-Q et al., (UMSP000209642) (UMSP).

Paratypes**—COLOMBIA: Cauca:** same data as holotype, 2 females (pinned) (UMSP); **ECUADOR: Bolivar:** W Pilalo, 1800 m, 9-10.x.1977, LE Peña G, 1 male (pinned) (NMNH).

Etymology—This species is named *M. silacea* from the Latin word *silaceus*, the color of yellow ochre, and referring to the color of the forewings of this species.

***Mortoniella* (*Mortoniella*) *squamata* Sykora, 1999**
Fig. 17

Mortoniella squamata Sykora 1999: 379 [member of bilineata subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group].

This species was considered a member of the bilineata subgroup by Sykora 1999, who commented on its color as golden beige. The color is actually very similar to other species in the enchrysa subgroup, though perhaps not quite as brilliantly colored. Other characters also indicate that this is where it should be placed. It is smaller than most of the species in the group. The species is probably most closely related to *M. adamsae*, n. sp. Both species have 2 pairs of paramere appendages. Those of *M. squamata* are both armed with small accessory spines, whereas only the longer pair in *M. adamsae* is spined. The general form of tergum X is also similar, with a relatively shallow apical notch. The two species are easily distinguished by the overall shape of the inferior appendages, in addition to the difference in the paramere appendages.

Adult—Length of forewing: male 5.0 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Dorsal side of forewings, head, basal segments of antennae, and legs, except distal parts of tibiae and tarsi, golden (ochraceous); ventral side of forewings (and apicomarginal setae), hind wings, apices of antennae, and palps, dark brownish-black; legs with scattered dark setae, especially at apices of tibiae and tarsal segments. Forewings (apparently) somewhat infuscated. Tibial spurs brownish-black, contrasting with legs. Wing bars absent

Male genitalia—Ventral process of segment VI posteriorly projecting, short, narrow basally, length about 2 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X with basal part inflated and distinctly set off from apical part, tergum moderately elongate, lateral margins weakly rounded, ventrolaterally with short acute lateral lobes, each with prominent apical seta; apex of tergum distinctly sclerotized and emarginated mesally, lateral lobes truncate, with ventrolateral margins incurved and approaching each other mesally, but separated by distinct gap, apicodorsally with short U-shaped connection near apex (mesal notch distinct); tergum ventromesally with paired, rounded and sclerotized, ventromesal lobes in basal half, each with short setae. Inferior appendages with short setose dorsolateral lobes and single short ventromesal lobe, as viewed ventrally. Mesal pockets of inferior appendage with only moderately elongate, posteriorly-directed, spine-like, apicoventral projections, projections apparently fused to ventral margin of phallicata. Parameres with paired appendages on either side, both relatively elongate, narrow, with numerous small adpressed, spine-like projections, dorsal pair relatively straight, ventral pair strongly bowed or curved in apical ½; fused basal segments of parameres articulating near base of dorsal phallic spine, ventral margins with numerous microsetae and (apparently) sclerously fused to and more or less continuous with base of phallicata. Phallobase with relatively small rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin curved basally, nearly straight in middle part and strongly, nearly rectilinearly, upturned in apical ¼, apex of spine rounded; base of spine narrow, undulately curved and stalk-like, widened on ventral margin in basal ½, forming rounded, non-angular, ventral projection, narrowing apically from projection; spine, as viewed dorsally, somewhat widened at ventral enlargement, basal and apical parts narrow, apex rounded. Phallicata with sclerotized basodorsal projection, articulating with rounded ventral projection of dorsal phallic spine; phallicata ventrally with 2 pairs of diverging sclerotized lobes (butterfly-like), basal ones retrorsely oriented, rounded laterally, posterior pair diverging from posterior margin of basal lobes, apices bluntly rounded, posteriorly projecting; ventromesal margin of phallicata extending somewhat beyond paired lobes, very lightly sclerotized, extending about same length as paramere appendages. Endophallic membrane simple in structure, without apparent membranous lateral lobes; phallotremal spines absent.

Material examined—**ECUADOR: Napo:** 5 km S Baeza, 1900 m, 10.ix.1990, OS Flint, Jr–1 male Paratype (pinned) (NMNH).

Distribution—Ecuador.

—flinti subgroup

Included species: *Mortoniella bifurcata* Sykora; *M. flinti* Sykora; *M. tanyrhabdos*, n. sp.; and *M. tusci*, n. sp.

This subgroup of the bilineata group was originally proposed by Sykora (1999), but included what is probably a heterogeneous assemblage of species. We are restricting the definition of the group to include two species listed by Sykora, *M. flinti* and *M. bifurcata*, and two new species. A distinct, but unassociated, female specimen reveals that at least 1 additional species belongs to the group. As redefined, the group is very homogeneous and all of the species are obviously closely related. Known species in the group are restricted to Venezuela. All of the species are relatively small for species in the bilineata group and very dark in color, with the mesotarsi white or whitish, except at the very apex. A white or whitish band is also evident in the basal part of the antennae in most specimens; the band occurs in the apical part of the antennae in the undescribed female specimen. Similar white markings are found on the legs and antennae of at least some species of the bilineata subgroup, but this is probably a homoplasious similarity, since the overall differences between the two subgroups are considerable. The flinti subgroup shares basic features that characterize the bilineata group as a whole, including an anteroventrally produced segment IX, elongate narrow ventral process on segment VI, and females with a strongly invaginated tergum VIII. However, unlike most other species in the bilineata group, the posterior margin of segment IX of males in the flinti subgroup is not angular and only slightly produced, the ventral margin of the of the dorsal phallic spine is not angularly articulated with the phallicata, and the apex of the dorsal phallic spine is neither abruptly upturned nor rounded apically in lateral view. In all of the species of this group the inferior appendages have very fine, elongate setae on the dorsal margin of the dorsal lobe, and the assemblage of the inferior appendages with the phallicata seems to be more or less fused, so that the elongate spines from the mesal pockets of the inferior appendages are separated from and project below the ventral margin of the phallicata, which is characteristically arched. Tergum X is elongate and more or less entire (notched apically in *M. flinti*), without the paired sclerotized apicolateral lobes that characterize species in the M bilineata, apiculata, and enchrysa subgroups. The species in this subgroup also lack the projecting ventromesal lobes on tergum X that characterize the species of the bilineata, apiculata, enchrysa, foersteri, iridescens, and wygodzinskii subgroups. The flinti subgroup species are unusual for species of the bilineata group in having only 3 tibial spurs on the mesotibiae and in lacking fork III in the hind wing (only forks II and V present). The latter venational combination is unique with the genus *Mortoniella*.

***Mortoniella* (*Mortoniella*) *bifurcata* Sykora, 1999**
Fig. 18

Mortoniella bifurcata Sykora 1999: 382 [member of flinti subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group].

This species is probably most closely related to *M. flinti* Sykora. Both species are very dark in color and have 2 white wing bands, and also have the apex of the dorsal phallic spine modified, bifurcate or asymmetric (as in the specimen illustrated) in *M. bifurcata* and trifurcate in *M. flinti*. The other two species in the group are dark in color, without wing bands, and have the dorsal phallic spine symmetric and either narrowed or rounded apically. The most diagnostic difference between *M. bifurcata* and *M. flinti* is in the apex of tergum X, which is only very shallowly notched apically in *M. bifurcata* and much more distinctly so in *M. flinti*. The difference in the shape of the inferior appendages, as illustrated by Sykora, is inaccurate and does not seem to be diagnostic. However, the spines from the mesal pockets of the inferior appendages in *M. bifurcata* are somewhat longer than In *M. flinti*; also, the paramere appendages are longer, but not nearly as long as in *M. tanyrhabdos*, n. sp.

Adult—Length of forewing: male 3.8 mm. Forewing with forks I, II, and III present, hind wing with forks II and V. Spur formula 0:3:4. Overall color dark brownish-black (fuscous). Mesotarsi whitish, except at very apex. Tibial spurs slightly darker than legs, not strongly contrasting with legs. Forewing with distinct white wing bar at anastomosis, and evidence (on one wing of somewhat rubbed specimen) of second white wing bar on proximal part of wing, closer to base than anastomosis.

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, narrow basally, length about 3½ times width at base. Tergum VIII narrow, subtending ventral margin of segment IX, membranous connection to tergum IX moderately elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin nearly straight, without distinct projection; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X elongate, apex rounded, with only slight mesal invagination, lateral margins subparallel, with paired longitudinal ridges extending from basolateral margins to past midlength, ridges somewhat converging posteriorly; tergum with bluntly rounded ventrolateral lobes, ventromesal lobes absent. Inferior appendages with short rounded dorsolateral lobes, each with fringing row of very elongate setae, and short, bluntly rounded, ventromesal projection, subtending apical spine-like projections of mesal pockets of inferior appendages. Mesal pockets of inferior appendage with moderately elongate, posterodorsally curved, spine-like, apicoventral projections, projecting distinctly below ventral margin of phallicata. Paramere appendage relatively elongate, not extending to apex of dorsal phallic spine, narrow, nearly uniform in width, apex acute, strongly bent in about apical 1/3; fused basal segments of appendages articulating near base of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, relatively narrow throughout, tapering apically, slightly dorsally curved in about apical 1/4, apex acutely bifid in holotype, unilaterally asymmetric in paratype (Fig. 18D); base of spine with short, curved stalk and distinct, rounded, ventral deflection in basal ¼; spine, as viewed dorsally, nearly uniformly narrow in width throughout length, apex bifid or acute and asymmetric. Phallicata with elongate sclerotized basodorsal projection, articulating with rounded ventral deflection of dorsal phallic spine, basolaterally with small rounded projection, ventral margin sclerotized and strongly arched. Endophallic membrane simple in structure, without membranous lateral lobes; phallotremal spines absent.

Material examined—**VENEZUELA: Barinas:** 22 km NW Barinitas, 19.ii.1976, CM and OS Flint, Jr–1 male Paratype (pinned) (NMNH).

Distribution—Venezuela.

***Mortoniella* (*Mortoniella*) *flinti* Sykora, 1999**
Fig. 19

Mortoniella flinti Sykora 1999: 382 [member of flinti subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group].

This species is undoubtedly most closely related to *M. bifurcata*, as discussed in the diagnosis for that species. Both species are nearly black in color and have 2 white wing bars on the wings, and both species have the apex of the dorsal phallic spine modified. This is very distinctive in *M. flinti* in being trifurcate. *Mortoniella flinti* differs from all of the other species in this group by having the apex of tergum X distinctly invaginated, as opposed to being only shallowly notched. The elongate apex of the inferior appendages, as featured in the illustration of the type, appears to be in error, and was not observed in either the holotype or paratype males examined.

Adult—Length of forewing: male 3.1-3.4 mm; female 3.5-3.7 mm. Forewing with forks I, II, and III present, hind wing with forks II and V. Spur formula 0:3:4. Overall color dark brownish-black (fuscous). Mesotarsi whitish, except at very apex; antennae with indistinct whitish band or annulus, from about segments 4-6. Tibial spurs only slightly darker than legs, not strongly contrasting with legs. Forewing with 2 distinct white wing bars, 1 at anastomosis, and 1 on proximal part of wing, closer to base than anastomosis.

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, narrow basally, acute apically, length about 3½ times width at base. Tergum VIII narrow, subtending ventral margin of segment IX, membranous connection to tergum IX moderately elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin nearly straight, without distinct projection; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X elongate, apex with distinct shallow mesal invagination, extending less than ¼ length of tergum, lateral margins slightly converging apically, with paired longitudinal ridges, extending from basolateral margins to past midlength, ridges somewhat converging posteriorly; tergum with bluntly rounded ventrolateral lobes, ventromesal lobes absent. Inferior appendages with short rounded dorsolateral lobes, each with fringing row of very elongate setae, and short ventromesal projection, subtending apical spine-like projections of mesal pockets of inferior appendages. Mesal pockets of inferior appendage with relatively short and strongly curved, spine-like, apicoventral projections, projecting below ventral margin of phallicata. Paramere appendage relatively elongate, not extending to apex of dorsal phallic spine, narrow, tapering from base to apex, apex acute, appendage ventrally curved (falcate); fused basal segments of appendages articulating near base of dorsal phallic spine. Phallobase with small rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, relatively narrow throughout, tapering apically, slightly dorsally curved in about apical 1/4, apex acutely trifid; base of spine with short curved stalk and distinct rounded ventral deflection in basal 1/3; spine, as viewed dorsally, nearly uniformly narrow in width throughout length, apex trifid (Fig. 19D). Phallicata with sclerotized basodorsal projection, articulating with rounded ventral deflection of dorsal phallic spine, basolaterally with small rounded projection, ventral margin sclerotized and very strongly arched, with protruding rounded lateral lobes near base and in apical 1/2. Endophallic membrane simple in structure, with slightly produced membranous lateral lobes; phallotremal spines absent.

Material examined—**VENEZUELA: Aragua:** Est. Exp. Cataurito, 1.ii.1983, OS Flint, Jr–male Holotype, 1 male, 2 female Paratypes (pinned) (NMNH).

Distribution—Venezuela.

***Mortoniella* (*Mortoniella*) *tanyrhabdos*, new species**
Fig. 20

This species is most similar to *M. bifurcata* Sykora, especially in the shape of tergum X, which is only weakly notched apicomesally, and in the relative length of the spine from the mesal pockets of the inferior appendages. The apex of the dorsal phallic spine is symmetrically curved, without preapical projections. Characters considered diagnostic for the species include the elongate paramere appendages and the sclerotized apical lobes of the endophallic membrane.

Adult—Length of forewing: male 4.0-4.8 mm; female 5.0 mm. Forewing with forks I, II, and III present, hind wing with forks II and V. Spur formula 0:3:4. Overall color dark brownish-black (fuscous). Mesotarsi whitish, except at very apex; antennae of female with indistinct whitish band or annulus, from about segments 4-6, males without annulus. Tibial spurs slightly darker than legs, not strongly contrasting with legs. Forewing without wing bars.

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, narrow, length about 4 times width at base. Tergum VIII narrow, subtending ventral margin of segment IX, membranous connection to tergum IX moderately elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin nearly straight, without distinct projection; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X elongate, apex rounded, with slight mesal invagination, lateral margins subparallel, with paired longitudinal ridges extending from basolateral margins to past midlength, ridges somewhat converging posteriorly; tergum with very short, apically rounded, ventrolateral lobes, ventromesal lobes absent. Inferior appendages with short rounded dorsolateral lobes, each with fringing row of very elongate setae, and short ventromesal projection, apparently fused to apical spine-like projections of mesal pockets of inferior appendages. Mesal pockets of inferior appendage with moderately elongate, posterodorsally curved, spine-like, apicoventral projections, projecting distinctly below ventral margin of phallicata. Paramere appendage elongate, extending nearly to apex of dorsal phallic spine, narrow, nearly uniform in width, bowed or curved mesally at apex, apex acute; fused basal segments of appendages articulating near base of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, relatively narrow throughout, distinctly undulate in contour, nearly straight (not upturned) apically, apex rounded in both lateral and dorsal views; base of spine with short, curved stalk and distinct rounded ventral deflection in basal 1/3; spine, as viewed dorsally, nearly uniformly narrow in width throughout length. Phallicata with elongate sclerotized basodorsal projection, articulating with rounded ventral deflection of dorsal phallic spine, basolaterally with small rounded projection, ventrally with rounded lateral lobes near base and paired rounded, ventrally deflexed, apical lobes (apparently somewhat separated from sclerotized basal part of phallicata). Endophallic membrane simple in structure, without prominent membranous lateral lobes; phallotremal spines absent.

Holotype male (pinned)—**VENEZUELA: Tachira:** Quebrada Mesa del Palmar, 5 km S El Cobre, 7.99750° N, 72.06325° W, 2370 m, 18-20.iv.1995, Holzenthal, Cressa, Gulic (UMSP000001394) (UMSP).

Paratypes—**VENEZUELA: Tachira:** same data as holotype—1 male, 1 female (pinned) (UMSP); Quebrada La Honda, 10 km E La Grita, 8.14695° N, 71.93378° W, 2300 m, 23.iv.1995, Holzenthal, Cressa, Gulic—3 males (pinned) (UMSP), 1 male (pinned) (NMNH), 1 male (pinned) (MIZA).

Etymology–This species is named *M. tanyrhabdos* from the Greek words *tany*, meaning long, and *rhabdos*, a rod, and referring to the elongate paramere appendages of this species, which help to distinguish it from other species in the flinti subgroup.

***Mortoniella* (*Mortoniella*) *tusci*, new species**
Fig. 21, 98, 107

Among species in the flinti subgroup, this species is most readily diagnosed by the very elongate spines from the mesal pockets of the inferior appendages. The phallicata is also distinctive in having elongate microsetae from its ventral margin and a widened and extended dorsal margin with minute spines. Like *M. tanyrhabdos*, n. sp., it is black in color, without wing bars. In addition to the characters mentioned, it differs from this species in having much shorter paramere appendages and in having the apex of the dorsal phallic spine more narrowed apically, as viewed both laterally and dorsally.

Adult—Length of forewing: male 3.0-3.4 mm; female 3.2-3.4 mm. Forewing with forks I, II, and III present, hind wing with forks II and V. Spur formula 0:3:4. Overall color dark brownish-black (fuscous). Mesotarsi whitish, except at very apex; antennae of female with indistinct whitish band or annulus, from about segments 4-6, males apparently without annulus. Tibial spurs slightly darker than legs, not strongly contrasting with legs. Forewing without wing bars.

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, narrow, length about 3½ times width at base. Tergum VIII narrow, subtending ventral margin of segment IX, membranous connection to tergum IX moderately elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with very slight rounded projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X elongate, apex rounded, with slight mesal invagination, lateral margins subparallel, with paired longitudinal ridges extending from basolateral margins to past midlength, ridges somewhat converging posteriorly; tergum without apparent ventrolateral lobes, ventromesal lobes absent. Inferior appendages with short rounded dorsolateral lobes, each with fringing row of very elongate setae, and ventral projection, apparently fused to apical spine-like projections of mesal pockets of inferior appendages. Mesal pockets of inferior appendage with very elongate, posteriorly directed, spine-like (or tusk-like), apicoventral projections, projecting distinctly below ventral margin of phallicata. Paramere appendage moderately elongate, shorter than dorsal phallic spine, narrow, nearly uniform in width, ventrally curved, apex acute; fused basal segments of appendages articulating near base of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, relatively narrow throughout, somewhat undulate in contour, but overall nearly straight, only weakly upturned at extreme apex, apex acute in both lateral and dorsal views; base of spine with short curved stalk and distinct rounded ventral deflection in basal 1/4; spine, as viewed dorsally, nearly uniformly narrow in width throughout length. Phallicata very elongate, with dorsal margin sclerotized and flattened, lateral margins forming projecting longitudinal ridges, with minute spines in basal part; phallicata laterally with small rounded projection, ventral margin strongly arched, with distinct microsetae in basal part; as viewed ventrally, with basal part subparallel, apically with small subangular lateral lobes. Endophallic membrane very reduced and simple in structure, without membranous lateral lobes; phallotremal spines absent.

Holotype male (pinned)—**VENEZUELA: Merida:** La Campana, 12 km SE Santo Domingo, 24.ii.1976, CM and OS Flint, Jr (UMSP000157406) (NMNH).

***Paratypes*—VENEZUELA: Merida:** same data as Holotype–3 males, 3 females (pinned) (NMNH).

Etymology—This species is named *M. tusci*, from the Anglo-Saxon word tusk (or tusc), in reference to the elongate spines from the mesal pockets of the inferior appendages, which appear somewhat like an elephant's tusk.

—foersteri subgroup

Included species: *Mortoniella foersteri* (Schmid); and *M. longiterga*, n. sp.

Mortoniella foersteri was considered a member of the bilineata subgroup by Sykora (1999), but is removed and treated separately here, largely because of its lack of a proximal white forewing band. The second species in this group, *M. longiterga* n. sp., is obviously closely related. Wing color in both species is a dark brownish-black or fuscous, somewhat darker than in members of the bilineata subgroup. Both species have the posterior margin of segment IX broadly rounded, as opposed to the distinctly angular margin in the *M. bilineata* and *M. enchrysa* subgroups. Like (most) members of both the bilineata and enchrysa subgroups, the ventral margin of the dorsal phallic spine is angular and articulates with a protuberance on the dorsal margin of the phallicata; the angular development in both *M. foersteri* and *M. longiterga* is notably exaggerated and very acute. Both species of this subgroup also have elongate paramere appendages and inferior appendages without a distinct ventromesal projection.

***Mortoniella* (*Mortoniella*) *foersteri* (Schmid, 1964)**
Fig. 22

Mexitrichia foersteri Schmid 1964: 311.
Mortoniella foersteri (Schmid): Sykora 1999: 378 [sic *M. foesteri*, member of bilineata subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group]

Mortoniella foersteri (Schmid) is most readily diagnosed from all other species of the bilineata group, except *M. longiterga* n. sp., and *M. irid*escens Flint by the combination of the rounded posterior margin of segment IX and the very angular ventral development of the dorsal phallic spine. It is distinguished from *M. longiterga* by its larger size and its distinctly shorter tergum X, and from *M. iridescens* by its absence of iridescent wing bars, longer and less apically truncate tergum X, and longer paramere appendages. The specimen illustrated is from a paratype specimen, with the genitalia preserved in lateral view on a mini balsam slide mount attached to the pin. The apex of the dorsal phallic spine is strongly reflexed, but this is undoubtedly an artifact of the mounting technique, since it was not featured in the illustration accompanying the original description. The dashed outline of the dorsal phallic spine in the illustration provided shows the configuration of the spine as figured in the original illustration.

Adult—Length of forewing: male 6.2 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color brownish-black (fuscous). Tibial spurs slightly darker than legs, but not greatly contrasting in color. Forewing without white wing bars, but anastomosis distinct because of unpigmented veins.

Male genitalia—Ventral process of segment VI posteriorly projecting, moderately prominent, narrow basally, length about 2-2½ times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX (apparently) elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin broadly rounded; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X moderately elongate, basal part distinctly inflated and set off from short sclerotized apical part, laterally with very short rounded ventrolateral lobes, each with 1 or 2 prominent setae; apex of tergum distinctly sclerotized, with ventrolateral margins incurved and converging mesally, mesal notch (apparently) either small or nearly absent; tergum ventromesally with paired, lightly sclerotized ventromesal lobes in basal half, each with short setae. Inferior appendages with short upright dorsolateral lobes, ventromesal lobe either very short or absent. Mesal pockets of inferior appendage with very short curved, spine-like, apicoventral projections. Paramere appendage elongate, narrow, nearly uniform in width, slightly widened preapically, apex acute, extending about same length as dorsal phallic spine; fused basal segments of appendage articulating near base of dorsal phallic spine. Phallobase with rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, relatively narrow, with dorsal margin curved basally, very strongly upturned in apical 1/3, slightly deflected before apical inflection, apex of spine rounded; base of spine narrow, curved and stalk-like, abruptly and strongly widened on ventral margin at about basal 1/2, forming very acute, spine-like, ventral projection, narrowing apically from projection. Phallicata with sclerotized basodorsal projection, articulating with spine-like ventral projection of dorsal phallic spine, sclerotization extending dorsally from spine and conforming to ventral margin of dorsal phallic spine; phallicata ventrally with pair of sclerotized and projecting basal lobes, ventral sclerotization not extending much beyond lobes. Endophallic membrane simple in structure, without apparent membranous lateral lobes; small phallotremal sclerite present, but without distinct spines.

Material examined—**COLOMBIA: Cundinamarca:** Monterredonda, 10.xii.1958, JE Foerster–1 male Paratype (pinned) (NMNH).

Distribution—Colombia.

***Mortoniella* (*Mortoniella*) *longiterga*, new species**
Fig. 23

This species is most closely related to *M. foersteri* (Schmid) and like that species has the posterior margin of segment IX broadly rounded and the ventral margin of the dorsal phallic spine very angularly developed. It is distinguished from *M. foersteri* by its distinctly longer tergum X and also by its smaller size.

Adult—Length of forewing: male 4.7 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color brownish-black (fuscous). Tibial spurs slightly darker than legs, but not greatly contrasting in color. Forewing without white wing bars.

Male genitalia—Ventral process of segment VI posteriorly projecting, moderately prominent, narrow basally, length about 2-2½ times width at base, apex acute. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin broadly rounded; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, basal part slightly inflated and set off from elongate sclerotized apical part, laterally with very short rounded ventrolateral lobes, each with 1 or 2 prominent setae; tergum, as viewed dorsally, very elongate, narrow, lateral margins subparallel, apices truncate; apex of tergum distinctly sclerotized, with ventrolateral margins incurved and nearly converging mesally, mesal notch small, but distinct, dorsally, with short U-shaped connection; tergum ventromesally with paired, lightly sclerotized, ventromesal lobes in basal half, each with short setae. Inferior appendages with short upright dorsolateral lobes, ventromesal lobes absent. Mesal pockets of inferior appendage with short, posteriorly-curved, spine-like, apicoventral projections. Paramere appendage elongate, narrow, nearly uniform in width, apex acute, extending about same length as dorsal phallic spine; fused basal segments of appendage articulating near base of dorsal phallic spine. Phallobase with rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, relatively narrow, dorsal margin nearly straight from base, sinuously deflected and then strongly, nearly rectilinearly, upturned in apical 1/4, apex of spine rounded; base of spine narrow and stalk-like, abruptly and strongly widened on ventral margin at about basal half, forming acute spine-like ventral projection, narrowing apically from projection; as viewed dorsally, nearly uniformly narrow throughout length. Phallicata with sclerotized basodorsal projection, articulating with spine-like ventral projection of dorsal phallic spine, sclerotization extending dorsally from spine and conforming to ventral margin of dorsal phallic spine; phallicata ventrally with pair of projecting sclerotized basal lobes, sclerotization not extending beyond lobes. Endophallic membrane with pleated membranous lateral lobes; phallotremal spines absent.

Holotype male (pinned)—**ECUADOR: Pichincha:** 2.3 km S Tandayapa, 1800 m, 6.ix.1990, OS Flint, Jr (UMSP000157312) (NMNH).

Etymology—This species is named *M. longiterga* for its very elongate tergum X, which helps to distinguish it from *M. foersteri*.

—hodgesi subgroup

Included species: *Mortoniella hodgesi* Flint.

This species was included in the bilineata subgroup by Sykora, but is removed and placed in its own subgroup here because of its unusual combination of characters. The only specimens examined were from alcohol, but the color is apparently brownish black (fuscous), without forewing wing bars. Males of this species have tergum X very deeply invaginated mesally, without the evident enrolling of the lateral margins typically found in the apiculata, bilineata, and enchrysa subgroups. Like species in the *M. apiculata* and *M. enchrysa* groups, the ventral process of segment IV is very small. Otherwise, the angular posterolateral margin of segment IX and the dorsal phallic spine, with a very distinctly produced ventral margin (although rounded and not angular), and with the apical part bent at nearly a right angle and with the apex rounded, as viewed laterally, is very similar to species of several subgroups, including the bilineata, apiculata, and enchrysa subgroups. The primary feature distinguishing this species group and suggesting a relatively basal position in the entire bilineata group clade, is the structure of the female genitalia (Fig. 109), which is rather minimally modified, with the usual mesal notch in tergum VIII indicated only by being lightly sclerotized, and without an anterior projection of tergum IX, which normally extends into the mesal notch of tergum VIII in other members of the bilineata group. Male characters that are unusual include a basal part of tergum X that is not inflated or distinctly separated from the apical part; elongate, curved apicolateral processes of tergum X with very elongate setae; and very minimally developed ventromesal processes of tergum X, which lack a spatulate mesal projection and are retracted so that they are not directly visible in lateral view.

***Mortoniella* (*Mortoniella*) *hodgesi* Flint, 1963**
Fig. 24, 109

Mortoniella hodgesi Flint, 1963: 470; Sykora 1999: 386 [member of bilineata subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group].

This species, as noted above, is distinctive in a number of details. Particularly diagnostic is the shape and structure of tergum X, which has a very deep mesal invagination and elongate, curved apicolateral processes with elongate setae. The inferior appendages are simple in structure, without pronounced dorsolateral projections, and with a single broad, tapering mesal projection. The ventral projection of segment VI is also very small and slender, compared to most species of the bilineata group, with the usual posterolateral sclerotized line either absent or only minimally developed (Fig. 24E).

Adult—Length of forewing: male 4.7 mm; female 5.2 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color (in alcohol) dark brown (fuscous), tibiae and tarsi slightly paler. Tibial spurs darker than tibiae and tarsi, contrasting in color. Forewing without apparent wing bands. Head noticeably small.

Male genitalia—Ventral process of segment VI posteriorly projecting, short and very narrow, length about 3 times width at base, process without sclerotized posterolateral line (in specimens examined). Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin with distinctly angular projection in dorsal half; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, lateral margins broadly curved in dorsal view, ventrolateral lobes acute, tapering,,, each with prominent apical seta; apex of tergum, in dorsal view with deep U-shaped mesal invagination, extending nearly ½ length of segment, apicolaterally with distinctly sclerotized and ventromesally curved projections, dorsum of tergum with prominent elongate, curved setae; tergum ventromesally with paired, lightly sclerotized, ventromesal lobes with short setae, lobes retracted and not directly visible in lateral view. Inferior appendages with very short rounded dorsolateral lobes and single tapering, deltoid ventromesal lobe. Mesal pockets of inferior appendage with short, posteriorly-directed, spine-like, apicoventral projections, projecting somewhat below ventral margin of phallicata. Paramere appendage relatively short, nearly uniform in width, apex acute, extending about same length as ventral lobes of phallicata; fused basal segments of appendages articulating near base of dorsal phallic spine. Phallobase with small rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin curved and arched from base, sinuously and nearly rectilinearly upturned in apical 1/3, apex of spine rounded; base of spine narrow, curved and stalk-like, abruptly and strongly widened on ventral margin in basal ½, forming rounded ventral projection, narrowing apically from projection; spine, as viewed dorsally, nearly uniformly narrow in width throughout length. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine, and with lightly sclerotized dorsal area extending into endophallic membrane; phallicata ventrally with moderately elongate, lightly sclerotized, apically rounded, lobes, extending about same length as paramere appendages. Endophallic membrane inflated, but without distinct lateral lobes, ventromesally with lightly sclerotized projection; phallotremal spines absent.

Material examined—**ECUADOR: Napo:** 5 mi S Antisana, 13500 ft., 28.iv.1958, RW Hodges, male Holotype (U.S.N. type 66020, pharate adult, alcohol) (NMNH); Reserva Ecologica Antisana, streams draining Crespo Glacier, 9.6 mi SE Secas, 0.53472° S, 78.225560° W, 18.i.2012, B Kondratieff–1 male, 1 female (alcohol) (NMNH).

Distribution—Ecuador.

—iridescens subgroup

Included species: *Mortoniella iridescens* Flint.

This species was originally placed in the bilineata subgroup by Sykora (1999) and was also speculatively placed in that subgroup by Blahnik and Holzenthal (2011), mostly based on the presence of 2 wing bars. However, as noted by Flint in its original description, the wing bars are unusual in that they more or less disappear when the light source is directly overhead, and only appear when the light strikes the wing at an angle. The color of the wing bars is a brilliant iridescent turquoise. Species in the bilineata subgroup with white wing bars may also have a slight turquoise iridescence at some light angles, but direct examination of the genitalia of *M. iridescens* makes its placement in the bilineata subgroup problematic, since it lacks some of the defining characters of that subgroup and has some unusual features of its own, notably the shape of tergum X, which is short and peculiarly truncate apically, as viewed laterally, and also has a distinct mesal notch. Other features of the genitalia, such as the rounded posterior margin of segment IX, simple inferior appendages, with absence of a mesal process, and the very acute ventral projection on the dorsal phallic spine suggest a relationship with the foersteri subgroup, which Sykora also included in the bilineata subgroup. We are presently placing *M. iridescens* in its own species group to draw attention to its unusual combination of characters.

***Mortoniella* (*Mortoniella*) *iridescens* Flint, 1991**
Fig. 25

Mortoniella iridescens Flint 1991: 24; Sykora 1999: 386 [member of bilineata subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group]; Blahnik and Holzenthal 2011: 63 [member of bilineata subgroup].

This is a very distinctive species that is unlikely to be confused with any other species. Flint discussed the unusual iridescent bands on the forewing in the original description of the species. The character is probably unique for this species, but likely evident only in pinned specimens. The structure of the tergum X is the most diagnostic feature in that it is short and truncately thickened apically, as viewed laterally, and has a distinct rounded apicomesal notch. Other useful diagnostic characters, considered collectively, include the ventrolateral lobes of the endophallic membrane, which are covered with minute spines, the very acutely angled ventral projection from the dorsal phallic spine, the obtusely angled apical bend of same structure, and the absence of a mesal projection on the inferior appendages.

Adult—Length of forewing: male 4.8-5.1 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color dark brown (fuscous). Legs with basal part of mesotibiae and apices of mesotarsi somewhat paler. Tibial spurs slightly darker than legs, not greatly contrasting in color. Forewing with 2 iridescent turquoise wing bands, 1 at anastomosis and 1 on proximal part of wing, bands only visible at oblique angle, disappearing with light directly overhead.

Male genitalia—Ventral process of segment VI posteriorly projecting, prominent, length about 2 times width at base. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX elongate. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin broadly rounded; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X short, basal part inflated and set off from apical part; overall shape, as viewed dorsally, subquadrate, with distinct small U-shaped apicomesal invagination, tergum laterally with short rounded ventrolateral lobes, each with prominent apical setae; apex of tergum, in lateral view, distinctly sclerotized, subtruncate, with ventrolateral margins incurved and nearly converging mesally, mesal notch distinct; tergum ventromesally with paired, lightly sclerotized, ventromesal lobes at about midlength, each with short setae. Inferior appendages with short rounded setose dorsolateral lobes, appendages constricted ventromesally, without mesal projection. Mesal pockets of inferior appendage with short, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage short, narrow, nearly uniform in width, apex acute; fused basal segments of appendage articulating near middle of basal stem of dorsal phallic spine. Phallobase with evident rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, with dorsal margin curved basally, then extending nearly straight and obtusely angled in apical ¼, apex of spine rounded; base of spine narrow, curved and stalk-like, abruptly and strongly widened on ventral margin at about midlength, forming very acute ventral projection, narrowing apically from projection; spine, as viewed dorsally, distinctly widened at ventral projection, narrowing basally and apically, apex rounded. Phallicata with sclerotized basodorsal projection, articulating with angular ventral projection of dorsal phallic spine; phallicata lightly sclerotized ventrally, sclerotization narrowly extending mesally. Endophallic membrane with well-developed membranous dorsolateral lobes, and smaller ventrolateral lobes with minute spines; phallotremal spines absent.

Material examined—**COLOMBIA: Antioquia:** 12 km N Fredonia, 2000 m, 22.ii.1983, OS Flint, Jr–2 male Paratypes (pinned) (NMNH).

Distribution—Colombia.

—quinuas subgroup

Included species: *Mortoniella gilli*, n. sp. and *M. quinuas* Harper and Turcotte.

Mortoniella quinuas Harper and Turcotte was placed in the flinti subgroup by Sykora (1999), possibly because of the contour of the dorsal phallic spine, which lacks an angular ventral projection. However, the species is distinctly different from species in the flinti subgroup. We have placed the two species considered here in their own subgroup, even though it is conceivable that the two subgroups may be related. *Mortoniella quinuas* does seem to be correctly placed in the bilineata group, based on overall structural considerations. Female genitalia, which are distinctive for the group, would help to confirm this, but are not known or not available for confirmation. The second species described in this subgroup, *M. gilli*, n. sp., has a similarly developed dorsal phallic spine, with the apex very strongly recurved and covered with minute spines, and apparently also has a similarly shaped tergum X, with projecting apicolateral lobes. Both species also have elongate spine-like projections from the mesal pockets of the inferior appendages. The structure of the inferior appendages seems to be very different in the two species. Nevertheless, their relationship seems likely. Unfortunately, the holotype of *M. quinuas*, which was reillustrated by Sykora, could not be located for direct comparison. *Mortoniella gilli* lacks ventromesal processes on tergum X and also lacks an elongate membranous extension between segments VIII and IX. It is likely that the same is true for *M. quinuas*.

***Mortoniella* (*Mortoniella*) *gilli*, new species**

Fig. 26

This species is most closely related to *M. quinuas* Harper and Turcotte. Both species have a dorsal phallic spine with a strongly dorsally curved apex covered with minute spines, but lack the acute or spine-like ventrolateral lobes of tergum X, typical of most species in the bilineata group. *Mortoniella gilli* differs significantly from *M. quinuas* in having paramere appendages with numerous small spines in the apical half, rather than a single apical spine, and in having very differently formed inferior appendages, which lack spiniform processes. Also, it possesses a very prominent, posteroventrally-oriented, ventral process on segment VI, rather than a small weakly formed one.

Adult—Length of forewing: male 5.0-5.2 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color (in alcohol) brown. Legs paler than body, tibial spurs very dark, contrasting with legs. Forewing largely denuded, apparently without wing bars. Head noticeably small.

Male genitalia—Ventral process of segment VI posteroventrally projecting, prominent, length about 2 times width at base, apex acute. Tergum VIII relatively narrow, subtending ventral margin of segment IX, membranous connection to tergum IX normal (not elongate). Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin weakly produced and rounded in dorsal ½; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X, as viewed dorsally, moderately elongate, basal part very slightly inflated and set off from sclerotized apical part, lateral margins subparallel, apex with deep V-shaped mesal invagination, extending almost ½ length of segment; as viewed laterally, with rounded setose ventrolateral lobes at about midlength, apex of tergum distinctly sclerotized and forming bluntly rounded and slightly ventrally curved apical projections, ventromesal lobes absent. Inferior appendages prominent, setose, moderately elongate, without distinct dorsolateral lobe; as viewed ventrally, without mesal projection (lateral appendages separated by deep mesal invagination). Mesal pockets of inferior appendage with elongate, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage elongate, narrow, extending about same length as dorsal phallic spine, bowed outward in apical ½, apical part with numerous spines on lateral margin; fused basal segments of appendages articulating near base of dorsal phallic spine. Phallobase without dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, nearly uniform in width, slightly ventrally bowed in basal 2/3, conforming to sclerotized dorsal margin of phallicata, apical 1/3 with sinuous deflection and strong apical dorsal inflection, apex acutely narrowed and with numerous small spines; spine, as viewed dorsally, nearly uniformly narrow in width throughout length, apex acute. Phallicata without basodorsal projection, sclerotized dorsal margin extending into endophallic membrane, with nipple-like projection apically, conforming to sinuous apical inflection of dorsal phallic spine; phallicata lightly sclerotized ventrally, extending about as far as paramere appendages, lateral margins bowed outward and converging apically. Endophallic membrane with projecting and pleated membranous lateral lobes; phallotremal spines absent.

Holotype male (alcohol)—**ECUADOR: Napo:** PAP8 unnamed trib., Papallacta River, Hwy E-28, ca. 1.7 mi SW Papallacta, 0.385893° S, 78.143530° W, 25.i.2012, B Gill (NMNH) (UMSP000097165).

***Paratypes*—ECUADOR: Napo:** same data as holotype, 2 males (alcohol) (NMNH).

Etymology—This species is named *M. gilli* after its collector.

Mortoniella (*Mortoniella*) *quinuas* Harper and Turcotte, 1985

Mortoniella quinuas Harper and Turcotte 1985: 137; Sykora 1999: 384 [reillustration, member of flinti subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group].

Unfortunately, the type of the species could not be located. Diagnostic differences between this species and *M. gilli*, n. sp., which appears to be closely related, are discussed under that species and in the discussion of the quinuas subgroup.

Distribution—Ecuador.

—wygodzinskii subgroup

Included species: *Mortoniella wygodzinskii* (Schmid, 1958).

This species subgroup, with a single contained species, was recognized by Sykora (1999) and is retained here because of its unusual morphology and lack of characters that would clearly place it in one of the other species groups. *Mortoniella wygodzinskii* is a uniform brownish in color, without wing bars. The species has a very distinct ventromesal process of tergum X, as in species of the apiculata, bilineata, enchrysa, foersteri, and iridescens subgroups. The other modifications of tergum X, with the apicolateral angles distinctly sclerotized and enrolled ventrally to form an apical cap, but with a distinct mesal notch, resembles species in the enchrysa*,* foersteri, and iridescens subgroups. The posterior margin of segment IX is slightly produced, but this is neither distinctly angular nor broadly rounded, as in members of the other species groups mentioned above.

***Mortoniella* (*Mortoniella*) *wygodzinskii* (Schmid)**
Fig. 27

Mexitrichia wygodzinskii Schmid, 1958: 194; Flint 1963: 465 [possibly in *Mortoniella*]; Knutson and Flint 1979: 32 [Empididae predators in pupal cocoons].
Mortoniella wygodzinskii (Schmid): Sykora 1999: 385 [distribution, member of wygodzinskii subgroup]; Rueda Martín and Gibon 2008: 223 [reillustration, distribution]; Blahnik and Holzenthal 2008: 70 [member of bilineata group]; Blahnik and Holzenthal 2011: 63 [redescription, reillustration].

This species was redescribed in the paper by Blahnik and Holzenthal (2011) and is refigured here for completeness of coverage. Specimens seem to vary somewhat in the length of the inferior appendages, which are unusually elongate as a species characteristic. The elongate inferior appendages, strongly arched and elongate tergum X, and very short (almost vestigial) paramere appendages are all diagnostic features of this very distinctive species.

Material examined—**VENEZUELA: Trujillo:** Quebrada Potrerito, 7.5 km NE Boconó, 9.27392° N, 70.21837° W, 1530 m, 29-30.iv.1995, Holzenthal, Cressa, Gulic–1 male (pinned) (UMSP).

Distribution—Argentina, Bolivia, Ecuador, Venezuela.

leroda group

This is the predominant species group of the subgenus *Mortoniella* found in Central America and the austral part of South America, excluding the Chilean region, and is also very species diverse in the northern South American fauna. As a group, it is defined here to include only taxa that have lost fork V in the hind wing, and includes species and/or subgroups that have either retained or lost fork III. It seems likely that fork III has been independently lost in more than one lineage. A similar character state (only fork II present in the hind wing) is also found in the subgenus *Nanotrichia*. However, unlike *Nanotrichia*, females of the leroda group have the dorsum of tergum VIII entire, without a posteromesal invagination. The setation along the posterior margin of this segment is uniformly distributed, rather than grouped on the lateral margins. Most species have a relatively short ventral process on segment VI, with the length no more than 1-1½ times the width at the base. The shape of the process in males and females is similar, although sometimes slightly shorter in females. The process is usually more or less ventrally projected. However, some species groups have a short, but more posteriorly directed process. In general, the shape of the process is a useful first diagnostic character for referring species to different species subgroups, or at least in narrowing the potential species subgroups to which a species might be referred. The shape of segment IX of the male is almost always uniformly rounded anteriorly, reaching is maximum width in about the middle. The lateral lobes of the segment, in dorsal view, are also usually very narrowly divided, rather than widely divided, as in the bilineata group. However, the width of the dorsal separation of the lobes and the shape of the anterolateral margin of segment IX (whether evenly rounded or produced ventrally) probably represent correlated characters. In males, a compressed dorsomesal apodeme on the phallobase, which is the usual character state in the bilineata group, is almost always absent. The dorsal phallic spine is generally contoured to the shape of the phallicata, but lacks the angular projection common in most subgroups of the M bilineata group. However, in various species or species groups the phallicata may have paired, sclerotized basodorsal projections, which seem to either seat or guide the dorsal phallic spine or paramere appendages or both. The majority of species have some kind of endophallic armature, either a ventromesal spine or paired ventral spines, or paired dorsolateral spines (possibly modifications of phallotremal spines, at least in some cases). If the latter is present, there may be either 1 or 2 pairs. In some, such as those in the atenuata subgroup, both types of armature are present.

—atenuata subgroup

Included species: *Mortoniella atenuata* (Flint); *M. brevis*, n. sp.; *M. dinotes*, n. sp.; and *M. leei* (Flint).

This group was alluded to, but not described, in a previous paper by the authors (Blahnik and Holzenthal 2011). This distinctive subgroup contains two described species and 2 new ones. Species in this group are apomorphically characterized by having both fore- and hind wings in the male covered with scale-like setae. They also have a reduced hind wing venation (only fork II present, as in several other subgroups of the leroda group. Some species in the velasquezi group (subgenus *Nanotrichia*) also have wings with scales, but this is an obviously independently derived condition. The ventral process of species in the atenuata subgroup is short and subtruncate apically, usually with the anterobasal margin slightly retracted, similar to many species in the leroda subgroup. The species in the atenuata subgroup are otherwise typical of members of the leroda group: males with a broadly rounded segment IX and with lobes narrowly separated dorsomesally. Females are also characteristic of the leroda group (segment VIII unmodified dorsally). All of the species of the atenuata subgroup have a distinctive and characteristic structure of the male genitalia. Tergum VIII has a distinct apodeme and is connected to segment IX by an elongate membrane, which may be somewhat ballooned when the segments are expanded. This connecting membrane is often noticeably textured. It is possible that there is an underlying glandular function, which might also explain the development of scale-like setae on the wings. Segment IX is very broadly rounded and distinctly setose on its posterior margin. Tergum X is very short, with a deep and rather narrow mesal incision and a sclerotized, posteriorly curved, ventromesal projection which seems to articulate with the dorsal phallic spine. The dorsal phallic spine is short, strongly curved, and S-shaped, with is apex acutely narrowed and strongly upturned; basally it articulates with the fused bases of the paramere appendages and with a basodorsal projection from the phallicata. The paramere appendages are short and seem to be forked in all of the species, the relative length and sclerotization of the forks being distinctive for the different species. The species are unusual for members of the leroda group in having a distinct mesal apodeme on the phallobase. The phallicata and endophallic membrane are both very short, the latter with paired, sclerotized, dorsolateral spines (possibly modified phallotremal spines) and a small, weakly sclerotized ventromesal spine. The consistent and very unusual morphology of species in this subgroup indicates that the included species are all closely related. Several characters suggest that *M. meloi* Blahnik and Holzenthal, which occurs in southeastern Brazil and was previously unplaced to species group, may be related to the atenuata subgroup. Due to uncertainty, we have not placed it within the subgroup. The most likely affinity of this subgroup is with the albolineata and pumila subgroups from Brazil, which share the combined character similarities of having the hind wing with fork II only (fork III absent), and females lacking glandular sacks on the posterior margin of both segments VI and VII, and also lacking pockets on tergum IX.

***Mortoniella* (*Mortoniella*) *atenuata* (Flint, 1963)**
Fig. 28, 110

Mexitrichia atenuata Flint 1963: 473.
Mortoniella atenuata (Flint): Blahnik and Holzenthal 2008: 69 [member of leroda group].

Mortoniella atenuata is perhaps most similar to *M. brevis*, n. sp. due to the similarity in the shape of the paramere appendages of both species: each appendage is widely forked, with the ventral branch longer and both branches distinctly sclerotized. It is distinguished from *M. brevis* by the elongate ventral projections of the inferior appendages. Although the latter character is shared by the other species in the group, the ventral projections are differently formed in each species. They are distinctly shorter and less sclerotized in *M. leei* Flint and strongly rounded in *M. dinotes*, n. sp. Additionally, the shape of the paramere appendages is different in each of these species.

Adult—Length of forewing: male 2.9-3.6 mm; female 3.5-4.0 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:4:4. Overall color medium brown. Tibial spurs somewhat darker than legs, not strongly contrasting in color. Wing bar absent in male, forewing sometimes marked with whitish setae at arculus in female. Male with both surfaces of fore- and hind wings densely covered with short prostrate scale-like setae (sometimes lost in alcohol); female with unmodified setation.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Tergum VIII relatively wide (nearly as wide as previous segment), subtending ventral margin of segment IX, anterior margin of tergum with evident apodeme, posterior margin densely setose; membranous connection to tergum IX elongate, ballooned when expanded, surface slightly textured. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin very slightly projecting, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short and strongly sclerotized, with deep U-shaped mesal excision, extending more than ½ length of segment; mesally with short sclerotized, apically rounded, ventral projection, apparently articulating with dorsal phallic spine. Inferior appendages with tapering setose dorsolateral lobes and elongate, narrow, tapering, ventral lobes. Mesal pockets of inferior appendage with apical processes short, dorsally curved. Paramere appendages relatively short, widely forked near base, forming 2 narrow, apically acute projections, ventral projection longer than dorsal one; fused basal segments of paramere articulating with dorsal phallic spine before sinuous middle flexure. Phallobase with rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, more or less uniform in width, broadly S-shaped over its length, apex acutely narrowed and upturned; in dorsal view, nearly uniform in width throughout length. Phallicata very short, with short sclerotized dorsal projection and short rounded ventral lobe. Endophallic membrane short, with prominent pair of strongly sclerotized, spine-like sclerites on basodorsal margin (possibly phallotremal sclerites), and very small mesal spine distal to basal sclerites; ventrally with short curved, lightly sclerotized, ventromesal spine.

Material examined—**BOLIVIA: La Paz:** AMNI Madidi, Río Tuichi and tributary at entrance to Chalalan lodge, 14.41695° S, 67.90630° W, 300 m, 27.vii.2003, Robertson and Blahnik–1 male (pinned) (UMSP); Rayo Mayo river at Wabacuro trail, Chalalan Ecolodge, 14.44257° S, 67.91095° S, 351 m, 28.vii.2003, Robertson and Blahnik–1 male, 1 female (pinned) (NMNH); **Santa Cruz:** Saaveda Exp. Station, 1.iv.1960, R Cumming–1 male, 2 females (alcohol) (NMNH); PN and ANMI Amboró, Guardia Parque Mataracú, Río Yapacaní, 17.52072° S, 63.86795° W, 329 m, 26.xi.2004, Robertson, Garcia, Vidaurre–8 males, 8 females (alcohol) (UMSP); **PERU:** Yurac, 67 mi E Tingo Maria, EI Schlinger and ES Ross, 28.ix.1954–2 males, 1 female (alcohol) (CAS); Avispas, -.x.1962, LE Peña G–1 male (alcohol) (NMNH); **Cuzco:** Pilcopata, premontane moist forest, 600 m, 8-10.xii.1979, JB Heppner–2 males, 3 females (alcohol) (NMNH); **Madre de Dios:** Manu, Pakitza Biological Station, Quebrada Paujil-Picoflor, 11.94417° S, 71.28300° W, 350 m, 2.vii.1993 Blahnik and Pescador–1 male (pinned) (NMNH); Manu, Erika (near Salvacion), 12.88333° S, 71.23333° W, 550 m, 4-6.ix.1988, O Flint and N Adams–6 males, 15 females (alcohol) (NMNH); Hostel Erica (near Salvacion), 12.88333° S, 71.23333° W, 3-5.ix.1989, RA Faitoute, et al.–8 males, 6 females (alcohol) (NMNH); same locality and date, N Adams et al.–8 males, 8 females (alcohol) (NMNH); Amazonia Lodge, Río Alto Madre de Dios, 12.87033° S, 71.37600° W, 500 m, 30.vi.1993, R Blahnik and M Pescador–5 males, 4 females (alcohol) (NMNH); **Pasco:** Puerto Bermudez, Río Pichis, 10.2964° S, 74.9364° W, 15.vii.1920–3 males (alcohol) (NMNH).

Distribution—Bolivia, Peru.

Mortoniella (*Mortoniella*) *brevis*, new species

Fig. 29, 112

Mortoniella brevis, n. sp. is perhaps most similar overall to *M. atenuata* Flint, especially because of its similarly shaped paramere appendages, which are broadly forked, with the ventral projection of the fork more elongate. *Mortoniella brevis* is the only species in the atenuata subgroup to have inferior appendages very short, without elongate ventral projections and thus is easily diagnosed based on this character. As an additional character difference, the apicolateral lobes of tergum X are also more rounded in *M. brevis* than in *M. atenuata*.

Adult—Length of forewing: male 3.0-3.5 mm, female 3.4-4.0 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:4:4. Overall color (in alcohol) medium brown. Tibial spurs somewhat darker than legs, not strongly contrasting in color. Wing bar absent in male, forewing sometimes marked with whitish setae at arculus in female. Male with both surfaces of fore- and hind wings densely covered with short prostrate scale-like setae; female with unmodified setation.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Tergum VIII relatively wide (nearly as wide as previous segment), subtending ventral margin of segment IX, anterior margin of tergum with evident apodeme, posterior margin densely setose; membranous connection to tergum IX elongate, ballooned when expanded, surface distinctly textured. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin very slightly projecting, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short and strongly sclerotized, with deep U-shaped mesal excision, extending more than ½ length of segment; mesally with short sclerotized, apically rounded, ventral projection, apparently articulating with dorsal phallic spine. Inferior appendages with tapering setose dorsolateral lobes and very short acute ventral lobes. Mesal pockets of inferior appendage with apical processes short, dorsally curved. Paramere appendages relatively short, widely forked near base, forming 2 narrow, apically acute projections, ventral projection longer than dorsal one; fused basal segments of paramere articulating with dorsal phallic spine before sinuous middle flexure. Phallobase with rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, more or less uniform in width, broadly S-shaped over its length, apex acutely narrowed and upturned; in dorsal view, nearly uniform in width throughout length. Phallicata very short, with short sclerotized dorsal projection and short rounded ventral lobe. Endophallic membrane short, with prominent pair of strongly sclerotized, spine-like sclerites on basodorsal margin (possibly phallotremal sclerites), and very small mesal spine distal to basal sclerites; ventrally with short curved, lightly sclerotized, ventromesal spine.

Holotype male (alcohol)—**VENEZUELA: Barinas:** Río Singüis in Caño Grande, 8.40000° N, 70.77417° W, 520 m, 22.iii.1997, Holzenthal (UMSP00092465) (UMSP).

***Paratypes*—ECUADOR: Napo:** Puyo, 6.v.1977, PJ Spangler and DR Givens–1 male, 2 females (alcohol) (NMNH); Puerto Nuevo, 8.vii.1976, J Cohen–1 male, 1 female (alcohol) (NMNH); Tena (17 km SW), 28.v.1977, PJ Spangler and DR Givens–3 males, 21 females (alcohol) (NMNH); Río Misahuallí, Archidona, 650 m, 11.ix.1990, OS Flint, Jr–1 male, 1 female (pinned) (NMNH); **Pastaza:** Puyo, 5.v.1977, PJ Spangler and DR Spangler–4 males, 11 females (alcohol) (NMNH); same locality and collectors, 6.v.1977–1 male (alcohol) (NMNH); same locality and collectors

10.v.1977–2 males (alcohol) (NMNH); same locality and collectors, 13.v.1977–9 males, 16 females (alcohol) (NMNH); same locality and collectors, 14.v.1977–1 male, 2 females (alcohol) (NMNH); same locality and collectors, 16.v.1977–1 male, 3 females (alcohol) (NMNH); same locality and collectors, 21.v.1977–5 males, 7 females (alcohol) (NMNH); Puyo, 30.i.1976, Spangler et al.–15 males, 3 females (alcohol) (NMNH); same locality and collectors, malaise trap, 1-7.ii.1976–1 male (alcohol) (NMNH); Puyo (27 km N) Est. Fluvia Metrica, 4.ii.1976, Spangler et al.–2 males (alcohol) (NMNH); **VENEZUELA: Barinas:** same data as Holotype–2 males (pinned), 8 males (alcohol) (UMSP), 4 males, 6 females (alcohol) (MIZA); Río Santo Domingo, 17.ii.1976, CM and OS Flint, Jr–40 males, 29 females (alcohol) (NMNH); **Zulia:** El Tucuco, Sierra de Perija, montane forest, 28-29.i.1978, JB Heppner–1 male (alcohol) (NMNH); Perijo El Tucuco, Missíon El Tucuco, Río El Tucucu, 1/2 km from church, 1-5.x.1979, HM Savage–4 males (alcohol) (NMNH); El Tucuco (45 km SW of Machiques), 5-6.vi.1976, AS Menke and D Vincent–1 male, 10 females (alcohol) (NMNH).

Etymology—This species is named *M. brevis*, from the Latin word *brevis*, meaning short, in reference to the short inferior appendages of this species, which helps distinguish it from closely related species.

Mortoniella (*Mortoniella*) *dinotes*, new species

Fig. 30

Mortoniella dinotes n. sp. is most similar to *M. atenuata* Flint in having inferior appendages with elongate ventral projections and noticeably forked paramere appendages. However, the ventral projections of the inferior appendages are more distinctly curved and rounded basally in *M. dinotes* and have a less prominent, upright, dorsal processes. Additionally, the paramere appendages in *M. dinotes* are more narrowly forked and the dorsal branch is very short.

Adult—Length of forewing: male 3.2-3.4 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:4:4. Overall color medium brown. Tibial spurs somewhat darker than legs, not strongly contrasting in color. Wing bar absent in male. Male with both surfaces of fore- and hind wings densely covered with short prostrate scale-like setae.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Tergum VIII relatively wide (nearly as wide as previous segment), subtending ventral margin of segment IX, anterior margin of tergum with evident apodeme, posterior margin densely setose; membranous connection to tergum IX elongate, ballooned when expanded, sur-face noticeably textured. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin very slightly projecting, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short and strongly sclerotized, with deep U-shaped mesal excision, extending more than ½ length of segment; mesally with short sclerotized, apically rounded, ventral projection, apparently articulating with dorsal phallic spine. Inferior appendages with very short, nearly obsolete, dorsolateral lobes and very strongly curved, elongate, tapering, ventral lobes. Mesal pockets of inferior appendage with apical processes short, dorsally curved. Paramere appendages moderately elongate, narrowly forked near base, forming 2 narrow, apically acute projections, dorsal projection very short, ventral projection elongate; fused basal segments of paramere articulating with dorsal phallic spine before sinuous middle flexure. Phallobase with rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, more or less uniform in width, broadly S-shaped over its length, apex acutely narrowed and upturned; in dorsal view, nearly uniform in width throughout length. Phallicata very short, with short sclerotized dorsal projection and short rounded ventral lobe. Endophallic membrane short, with prominent pair of strongly sclerotized, spine-like, sclerites on basodorsal margin (possibly phallotremal sclerites), and very small mesal spine distal to basal sclerites; ventrally with short curved, lightly sclerotized, ventromesal spine.

Holotype male (pinned)—**PERU: Huanuco:** Tingo Maria, premontane rain forest, 672 m, 1-6.ii.1980, JB Heppner (UMSP000118533) (MJP).

Paratypes—**PERU: Huanuco:** same data as Holotype–2 males (alcohol) (NMNH).

Etymology—This species is named *M. dinotes*, from the Greek word *dinotos*, meaning turned or rounded, and referring to the strongly rounded ventral projections of the inferior appendages in this species.

***Mortoniella* (*Mortoniella*) *leei* (Flint, 1974)**

Fig. 31

Mexitrichia leei Flint: 1974; Flint 1991: 21 [distribution].

Mortoniella leei (Flint): Blahnik and Holzenthal 2008 [member of the leroda species group].

Mortoniella leei is perhaps most similar overall to *M. atenuata* Flint, differing most distinctly in the shape of its paramere appendages. In its original description, it was differentiated from *M. atenuata* by having a short curved, unbranched, paramere appendage. However, in material examined (which did not include the holotype) the appendage seems to be consistently branched, with the ventral branch very narrow and hyaline or very lightly sclerotized (and thus easily overlooked). The shape and length of this ventral branch varies, and it is possible that it is absent in some specimens. The short, thick, curved, dorsal branch is distinctive for this species. The inferior appendages are more elongate than in *M. brevis*, n. sp., but the apices of the appendages are only lightly sclerotized, and thus may not be readily noticed. This is in contrast to the distinctly sclerotized apices of the inferior appendages in *M. atenuata* and *M. dinotes*, n. sp. The characteristic difference in the structure of the paramere appendage is diagnostic, and generally evident even in uncleared specimens.

Adult—Length of forewing: male 2.9-3.4 mm, female 3.4-3.8 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:4:4. Overall color medium brown. Tibial spurs somewhat darker than legs, not strongly contrasting in color. Wing bar absent in male, forewing sometimes marked with whitish setae at arculus in female. Male with both surfaces of fore- and hind wings densely covered with short prostrate scale-like setae; female with unmodified setation.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Tergum VIII relatively wide (nearly as wide as previous segment), subtending ventral margin of segment IX, anterior margin of tergum with evident apodeme, posterior margin densely setose; membranous connection to tergum IX elongate, ballooned when expanded, surface slightly textured. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin very slightly projecting, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short and strongly sclerotized, with deep U-shaped mesal excision, extending more than ½ length of segment; mesally with short sclerotized, apically rounded, ventral projection, apparently articulating with dorsal phallic spine. Inferior appendages with setose, apically rounded, dorsolateral lobes and elongate, narrow, tapering, lightly sclerotized, ventral lobes. Mesal pockets of inferior appendage with apical processes short, dorsally curved. Paramere appendages short, forked near base, forming 2 apically acute projections, ventral projection longer than dorsal one, very narrow and lightly sclerotized (easily overlooked), dorsal projection short, ventrally curved, and strongly sclerotized; fused basal segments of paramere articulating with dorsal phallic spine before sinuous middle flexure. Phallobase with rounded, laterally compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, more or less uniform in width, broadly S-shaped over its length, apex acutely narrowed and upturned; in dorsal view, nearly uniform in width throughout length. Phallicata very short, with short sclerotized dorsal projection and very short rounded ventral lobe. Endophallic membrane short, with prominent pair of strongly sclerotized, spine-like, sclerites on basodorsal margin (possibly phallotremal sclerites), and very small mesal spine distal to basal sclerites; ventrally with short curved, lightly sclerotized, ventromesal spine.

Material examined—**COLOMBIA: Antioquia:** Río Claro, 5.59000° N, 75.86720° W, 3.v.1984, U Matthias–1 male (alcohol) (NMNH); **Chocó:** Río Atrato, Yuto, 18.ii.1983, OS Flint, Jr–2 males, 1 female (pinned), 13 males, 2 females (alcohol) (NMNH); Valle de Cauca: Río Raposo, -iii.1965, 3.8933 °N, 77.0697° W, VH Lee–40 males, 10 females (Paratypes-alcohol) (NMNH); **ECUADOR: Cotopaxi:** Latacunga, 133 km W, 1080 m, 2.vii.1975, Langley and Cohen–28 males, 1 female (alcohol) (NMNH); Quevedo (36 km NE), 21.vii.1976, 335 m, J Cohen–3 males, 5 females (alcohol) (NMNH); **El Oro:** 9 mi S Santa Rosa, 3.45000° S, 79.96667° W, 23.i.1955, EI Schlinger and ES Ross, 23.i.1955–8 males, 24 females (alcohol) (CAS); Canton de Arenillas, Las Lajas, 600 m, 30.v.1979, JJ Anderson–1 male (alcohol) (NMNH); Pasaje (6 km E), 13.i.1978, PJ Spangler and J Anderson–2 males, 1 female (pinned), 7 males, 5 females (alcohol) (NMNH); **Loja:** Río Puyango, 300 m, 17-18.viii.1977, LE Peña G–32 males, 15 females (alcohol) (NMNH); **Los Rios:** Quevedo (56 km N), Río Palenque Biological Station, 1.03306° S, 79.45000° W, 250 m, 28-29.vii.1976, J Cohen–93 males, 1 female (alcohol) (NMNH); Quevedo (11 km S), 3.vii.1975, Langley and Cohen–1 male, 2 females (alcohol) (NMNH); **Manabi:** Santo Domingo (29 km SW), Rancho Ronald, 20.vii.1976, JJ Anderson–1 male (alcohol) (NMNH); **Pichincha:** Santo Domingo (47 km S), Río Palenque Biol. Station, 750 m, 29.vii.1976, J Cohen–254 males (alcohol) (NMNH); **Tungurahua:** Yanayacu, 300 m, 29-30.viii.1977, LE Peña G–3 males (alcohol) (NMNH).

Distribution—Colombia, Ecuador.

—bolivica subgroup

Included species: *Mortoniella bolivica* (Schmid); *M. flexuosa*, n. sp.; and *M. spatulata,* n. sp.

Only three closely related species are included in this subgroup. The species have retained fork III in the hind wing and have inferior appendages with an elongate and more or less recurved dorsal process, both probably plesiomorphic characters. They also lack basodorsal processes on the phallicata. Paired ventrolateral spines are present on the endophallic membrane, but a ventromesal spine is absent. It seems likely that these are alternate character states representing the same character development. The species have a general similarity to members of the punensis subgroup in having a dorsal phallic spine that is somewhat expanded and compressed (dorsoventrally flattened) apically and in the form of tergum X, which has the apical lobes separated by a nearly horizontal mesal invagination. The shape of the ventral process of segment VI, which is short, but posteriorly directed, is also similar. Among species in the leroda group, only *M. guyanensis*, n. sp., in the limona subgroup, has similarly shaped inferior appendages; reasons for assigning *M. guyanensis* to the limona subgroup are given in the discussion of that subgroup. It is easily distinguished from species in the bolivica subgroup by the presence of small apical spines on the dorsal phallic spine.

***Mortoniella* (*Mortoniella*) *bolivica* (Schmid, 1958)**
Fig. 32

Mexitrichia bolivica Schmid 1958: 193.
Mortoniella bolivica (Schmid): Blahnik and Holzenthal 2008: 69 [member of the leroda species group].

This species is closely related to *M. flexuosa*, n. sp. and the two form a closely related species pair. Both species are unusual for species in the leroda group in having an inferior appendage with an elongate, reflexed, dorsolateral projection. *Mortoniella bolivica* can be diagnosed in that the dorsal projection of its inferior appendage is shorter and more uniformly curved.

Adult—Length of forewing: male 4.4-5.0 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color light brown. Tibial spurs slightly darker in color, contrasting with legs. Wing bar at anastamosis relatively indistinct, interrupted, marked with whitish setae.

Male genitalia—Ventral process of segment VI laterally compressed, very large, subtriangular, posteroventrally projecting, width at base nearly as long as segment, subequal to length. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin convexly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X with excision between lateral lobes nearly linear; apicolateral lobes distinctly sclerotized, acute, curved inward from lateral margins, mesal margins subparallel. Inferior appendages relatively large and prominent, setose, nearly completely divided ventromesally, apicolateral angles acute, dorsolateral lobes narrow and posteriorly recurved, apices acute. Mesal pockets of inferior appendage with apical processes relatively short, dorsally curved. Paramere appendages moderately elongate, narrow, extending about as far as apical inflection of dorsal phallic spine. Dorsal phallic spine, as viewed laterally, nearly uniform in width, narrowing apically, base distinctly curved, apex weakly and obtusely upturned in about apical ¼ or 1/5; in dorsal view, with apical inflection distinctly widened (dorsoventrally flattened), apex irregularly serrate or bifurcate (Fig. 32D and inset). Phallicata with dorsal margin weakly sclerotized, apparently to accommodate dorsal phallic spine. Endophallic membrane moderately elongate and relatively simple, with small membranous apical and preapical lobes, ventrally with pair of distinctly sclerotized, curved spines; phallotremal spines absent.

Material examined—**BOLIVIA:** Coroico, 3-13.xii.1955, LE Peña G–2 male Paratypes (pinned) (NMNH); **PERU: Cuzco:** Paucartambo to Pilcopata rd., river at Puente Unión, 13.07033° S, 71.56667° W, 1670 m, 21-23.vi.1993, Blahnik and Pescador–2 males (pinned) (NMNH); Paucartambo to Pilcopata rd., Río San Pedro at Puente San Pedro, 13.05500° S, 71.64633° W, 1445 m, 24.vi.1993, Blahnik and Pescador–1 male (pinned) (UMSP).

Distribution—Bolivia, Peru.

***Mortoniella* (*Mortoniella*) *flexuosa*, new species**

Fig. 33, 111

This species is very similar to *M. bolivic*a (Flint), as discussed in the diagnosis for that species, and the two form a closely related species pair. The species are unusual for members of the M leroda species group in having an elongate, reflexed, dorsolateral lobe on each of the inferior appendages. That of *M. flexuosa* is diagnostic in being more elongate and sinuously bent, and the apicoventral projection of the inferior appendage is also much more acute. *Mortoniella flexuosa* also has a small, sclerotized projection or tubercle on the phallicata that is apparently absent in *M. bolivica*. There is some size variation in the material examined. The holotype appears as in the illustration; the paratypes, which include the female specimens, are smaller in size and have the ventral projection of the inferior appendages slightly shorter. There are no other significant structural differences and we infer the differences to be populational variation.

Adult—Length of forewing: male 3.8-4.8 mm; female 4.1-4.6 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color light brown. Tibial spurs slightly darker in color, contrasting with legs. Wing bar at anastamosis relatively indistinct, interrupted, marked with whitish setae.

Male genitalia—Ventral process of segment VI laterally compressed, very large, subtriangular, posteroventrally projecting, width at base nearly as long as segment, subequal to length. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly convexly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X with excision between lateral lobes nearly linear; apicolateral lobes distinctly sclerotized, acute, curved inward from lateral margins, mesal margins subparallel. Inferior appendages relatively large and prominent, setose, nearly completely divided ventromesally, apicolateral angles projecting and very acutely narrowed, dorsolateral lobes elongate, narrow, sinuous, posteriorly recurved, apices acute. Mesal pockets of inferior appendage with apical processes relatively short, dorsally curved. Paramere appendages moderately elongate, narrow, extending about as far as apical inflection of dorsal phallic spine. Dorsal phallic spine, as viewed laterally, only slightly widened in basal ½, narrowing apically, base distinctly curved, apex weakly and obtusely upturned in about apical 1/3 or 1/4; in dorsal view, with apical inflection distinctly widened (dorsoventrally flattened), apex asymmetrical and irregularly serrate. Phallicata with dorsal margin weakly sclerotized, apparently to accommodate dorsal phallic spine, laterally with rounded protrusion, apparently to accommodate flexed dorsal lobe of inferior appendages. Endophallic membrane moderately elongate and relatively simple, with small membranous apical and preapical lobes, ventrally with pair of distinctly sclerotized, curved spines; phallotremal spines absent.

Holotype male (pinned)—**COLOMBIA: Quindió:** Río Quindió, Retén "La Playa", ca. 2 km NE Salento, 4.64028° N, 75.55667° W, 1890 m, 2.i.1998, F Muñoz-Q et al. (UMSP000209628) (UMSP).

Paratypes—**COLOMBIA: Cauca:** Municipio de Belalcazar, Quebrada Tálaga, ca. 14 km N Páez (Belalcazar), 2.70667° N, 76.01806° W, 1680 m, 22.xii.1997, F Muñoz-Q et al.–2 males, 2 females (pinned) (UMSP), 1 male, 1 female (pinned) (NMNH).

Etymology—This species is named *M. flexuosa* from the Latin *flexuosus*, meaning winding or with many bends, and referring to the sinuously bent dorsolateral process of the inferior appendage in this species.

***Mortoniella* (*Mortoniella*) *spatulata*, new species**

Fig. 34

Mortoniella spatulata bears a general similarity to the other species of the bolivica subgroup, but the dorsolateral lobes of the inferior appendages are shorter and not as strongly flexed. Also, the dorsal phallic spine, while being widened and spatulate apically, is more nearly symmetrical, the ventrolateral lobes of tergum X are acutely developed (separated from the apicolateral lobes by a distinct notch), and the ventral spines of the endophallic membrane are very weakly developed. The holotype specimen is over cleared and only the genital capsule (segments IX-X and phallic apparatus) is present.

Adult—Length of forewing: male 3.8 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color light brown, apices of tarsi and basal segments of antennae slightly paler. Tibial spurs about same color as legs, not contrasting in color. Wing bar at anastamosis relatively indistinct, interrupted, marked with whitish setae.

Male genitalia—Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin convexly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X with excision between lateral lobes slightly concave; apicolateral lobes acute, curved inward from lateral margins, mesal margins subparallel. Inferior appendages only moderately large, setose, incompletely divided ventromesally, apicolateral angles short and acute, dorsolateral lobes narrow and slightly posteriorly recurved, apices acute. Mesal pockets of inferior appendage with apical processes relatively short, dorsally curved. Paramere appendages elongate, narrow, extending about as far as dorsal phallic spine. Dorsal phallic spine, as viewed laterally, distinctly undulate in contour, nearly uniform in width, narrowing apically, base distinctly curved, apex very weakly and obtusely upturned in about apical ¼; in dorsal view, with apex slightly widened and spatulate in shape (dorsoventrally flattened). Phallicata with dorsal margin weakly sclerotized, apparently to accommodate dorsal phallic spine. Endophallic membrane moderately elongate and relatively simple, ventrally with pair of very short, weakly sclerotized spines; phallotremal spines (apparently) present, very small.

Holotype male (pinned)—**VENEZUELA: Barinas:** Parque Nacional Sierra Nevada, Quebrada San Juan in Santa Rosa, 8.46450° N, 70.84867° W, 1000 m, 21.iii.1997, Holzenthal (UMSP000041337) (UMSP).

Etymology—This species is named *M. spatulata* for the dorsal phallic spine of the male, which has its apex flattened and distinctly spatulate in shape.

—florica/leroda subgroups

included species (South America): *Mortoniella bothrops*, n. sp.; *M. cressae*, n. sp.; *M. curtispina*, n. sp.; *M. draconis*, n. sp.; *M. elongata* (Flint); *M. furcula*, n. sp.; *M. grandiloba* n. sp., *M. ruedae*, n. sp.; *M. schlingeri*, n. sp.; and *M. simla* (Flint).

Blahnik and Holzenthal (2008) defined the leroda and florica subgroups based on species from Central America and commented that the two groups were probably related. As in the majority of the subgroups of the leroda group treated in the current work, the hind wings in both subgroups have both forks II and III present. Also, the dorsolateral projections of the inferior appendages are either absent or greatly reduced in both subgroups, usually appearing as short rounded projections. The latter is considered an apomorphy for the combined subgroups, since a projecting dorsal lobe is probably the plesiomorphic state for the subgenus *Mortoniella*. Many of the species, especially of the leroda subgroup, have a rather characteristically formed ventral process on segment VI, which is short, ventrally projecting, and with the apex more or less blunt or bluntly rounded. The anterobasal margin of the ventral process is characteristically somewhat retracted (Fig. 38E). However, many species in the florica subgroup from Central America have the ventral process more angular apically, and not as evidently retracted anteriorly, though always distinctly ventrally deflected. A bluntly rounded ventral process otherwise occurs only in the atenuata subgroup, which is apomorphically distinct, and also in *M. guyanensis,* n. sp., in the limona subgroup. An additional, although more difficult to define, character uniting the two subgroups is the general structure of the dorsal phallic spine, which has a characteristic undulate or sinuous inflection, probably due to the tendency for the ventral margin of the spine to have a rounded deflection that articulates with a corresponding contour in the dorsal margin of the phallicata. However, this may be a plesiomorphic character for the leroda group as a whole, since a similar character state also occurs in the akantha and bolivica subgroups. Another character, which seems to characterize most of the species of the two subgroups, is that the paramere appendages are displaced ventrally on elongate membranous lobes, with the base of the appendages curved inward. This is already evident in *M. leroda*, which seems to be a basal, or near basal, species in the combined subgroups. The character is more developed in species with paired dorsolateral processes on the phallicata, especially those of the florica subgroup (eg. Fig. 35C, 36C). An additional character similarity of the two subgroups is the structure tergum X, which has apicolateral lobes that are distinctly sclerotized and projecting and have a very reduced or nearly absent ventrolateral lobes. There is also some tendency for the lobes to be flattened and converge mesally, and for the dorsomesal margin to be projecting.

Although the majority of species from Central America seemed to fall into 2 groups, based on a combination of characters, in treating the species from South America the distinctness of the two groups is less evident. It therefore seems prudent to combine them here. The primary character difference used to define the two groups was the structure of the inferior appendages; members of florica subgroup have paired symmetrical apical processes on the inferior appendages (long or short), and those of the leroda subgroup have a single asymmetrical apicomesal process. Because the names were used previously, and the primary defining character is diagnostically useful, we have continued to group the species from South America in the two subgroups, while recognizing that they may not be mutually monophyletic. Many of the species of the leroda subgroup from South America have upright dorsal processes on the phallicata, a ventromesal spine on the endophallic membrane, and scabrous apices of the paramere appendages (characters generally found in the florica subgroup of Central America, but absent in the species assigned to the leroda subgroup). These characters occur in addition to the presence of a prominent asymmetric ventromesal process on the inferior appendages, used to characterize the leroda subgroup. Most of the South American species of the leroda subgroup also have the apex of this mesal process scabrous (or sensillate), as in *M. meralda* (Mosely) and *M. panamensis* Blahnik and Holzenthal from Central America. It seems likely that an asymmetric ventromesal process on the inferior appendages is a plesiomorphic character that has been subsequently lost in the florica subgroup. This may also explain the presence (retention) of this character in a number of species of the albolineata subgroup from Brazil, and an indication of the relationship of these subgroups. The most likely explanation for the presence of paired rounded or upright basodorsal processes on the phallicata in the majority of species of the florica subgroup is that they represent a lineage from within the leroda subgroup that derived this apomorphy, followed by the subsequent loss of the ventromesal process and gain of apicolateral projections on the inferior appendages. The new species described below as *M. cressae* (Fig. 39) possibly represents a transitional species (or one that has converged on similar character modifications), with apicolateral projections on the inferior appendages present, but with the ventromesal process much reduced. Absence of a ventromesal spine on the endophallic membrane in various species of the leroda subgroup, especially those from Central America, probably represents a character loss, judging by its general presence (retention) in the florica subgroup and in a number of other subgroups. However, there seems to be no parsimonious solution for its loss, which must have occurred repeatedly. Possibly, the plesiomorphic state was for the spine to be very small, as in *M. leroda*, or in the species of the atenuata subgroup, making its loss more probable. If redefined in a combined sense to include both members of the leroda and florica subgroups, the composite subgroup would include all of the species from Central America, in addition to the species described below, with the exception of the three species of the akantha subgroup and *M. pacuara* (Flint) and *M. rodmani* Blahnik and Holzenthal of the subgenus *Nanotrichia*. This entire group constitutes a revised definition of the leroda subgroup, and will be referred to subsequently as the leroda subgroup, *sensu lato*.

—"florica" subgroup

***Mortoniella* (*Mortoniella*) *elongata* (Flint, 1963)**
Fig. 35

Mexitrichia elongata Flint: 1963: 474; Flint 1991: 20 [male, distribution].
Mortoniella elongata (Flint): Blahnik and Holzenthal 2008: 69 [member of leroda group].

This species has all or most of the characters present in members assigned to the florica subgroup: phallicata with upright, rounded projections, inferior appendages with paired apical projections and without a mesal process, and an endophallic membrane with a single ventromesal spine and without sclerotized phallotremal spines. It is distinctive among species assigned to this subgroup in the strongly downcurved apices of the lateral projections of the inferior appendages. Similarly developed inferior appendages occur in *munozi* Blahnik and Holzenthal, but that species lacks upright, rounded projections on the phallicata. Other characters useful for diagnosing this species include the elongate, narrow paramere appendages, which are slightly enlarged preapically and have apices that are narrowed and awl-like (and not at all scabrously developed), and the prominent mesal projection of tergum X.

Adult—Length of forewing: male 3.4-4.0 mm; female 4.0-4.2 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae whitish. Tibial spurs slightly darker than legs, not distinctly contrasting in color. Wing bar at anastamosis relatively indistinct, marked with light brown setae.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin convexly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderately elongate, lateral margins slightly converging from base, with acute, trianguloid apicomesal projection, apicolateral lobes moderately elongate, sclerotized, slightly mesally curved; ventrolateral lobe nearly obsolete; ventromesal lobes with few short setae, extending from ventral margin of apicolateral lobes. Inferior appendages setose, without distinct dorsolateral projections, apically with pair of narrow, attenuate, ventrally curved projections. Mesal pockets of inferior appendage with apical processes short, dorsally curved. Paramere appendages elongate, narrow, extending beyond dorsal phallic spine, slightly widened preapically, apex very acutely narrowed, awl-like; base of appendage emerging from projecting membranous lobe. Dorsal phallic spine, as viewed laterally, undulate in contour, slightly widened on ventral margin in basal ½, apex acute, weakly and obtusely upturned in about apical ¼; in dorsal view, nearly uniform in width, apex very acutely narrowed. Phallicata relatively elongate, with upright, sclerotized, more or less rounded projections on dorsal margin; basolaterally with slightly produced, rounded and compressed projection. Endophallic membrane relatively simple, with single prominent curved ventromesal spine; phallotremal spines absent.

Material examined—**COLOMBIA: Antioquia:** Quebrada Honda, 12 km SW Fredonia, 1450 m, 22.ii.1983, OS Flint, Jr–1 male (pinned), 1 male, 1 female (alcohol) (NMNH); Quebrada La Ayura, Municipio Envigado, 1750 m, 8.viii.1983, U Matthias–1 male, 1 female (alcohol) (NMNH); same locality and collector, 20-28.iv.1984–1 male, 1 female (alcohol) (NMNH).

Distribution—Colombia.

***Mortoniella* (*Mortoniella*) *grandiloba*, new species**
Fig. 36

Mortoniella grandiloba very closely resembles *M. florica* (Flint) and *M. propinqua* Blahnik and Holzenthal in having upright dorsal projections on the phallicata and short inferior appendages, without elongate mesal or apicolateral projections. It can be distinguished from either of those species in that the dorsal projections of the phallicata are very prominent and enlarged, and also in the distinctive shape of the dorsal phallic spine, which is relatively thick through the middle, as viewed laterally, and has the apex narrowed and slightly ventrally recurved.

Adult—Length of forewing: male 3.8 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color dark brown, apices of tarsal segments and basal segments of antennae whitish. Tibial spurs slightly darker than legs, not distinctly contrasting in color. Wing bar at anastamosis relatively indistinct, marked with light brown setae.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderately elongate, lateral margins subparallel, apically with subacute, trianguloid apicomesal projection, apicolateral lobes bluntly rounded, slightly mesally curved; ventrolateral lobe nearly obsolete; ventromesal lobes with few short setae, extending from ventral margin of apicolateral lobes. Inferior appendages setose, with short rounded dorsolateral projections, and very short acute mesal projection. Mesal pockets of inferior appendage with apical processes short, posteroventrally curved. Paramere appendages elongate, narrow, extending beyond dorsal phallic spine, slightly widened preapically, apex acute; base of appendage emerging from projecting membranous lobe. Dorsal phallic spine, as viewed laterally, with dorsal margin broadly curved, ventral margin slightly undulate in contour, spine distinctly widened in middle, apex narrow, acute, slightly ventrally recurved; spine in dorsal view, widened through middle, gradually narrowed to acute apex. Phallicata relatively elongate, with very prominent, upright, sclerotized, rounded and inflated projections on dorsal margin; laterally with slightly produced, crease-like projection. Endophallic membrane simple, with single prominent curved, asymmetrically positioned, ventral spine; phallotremal spines absent.

Holotype male (pinned)—**VENEZUELA: Barinas:** 22 km NW Barinitas, 19.ii.1976, CM and OS Flint, Jr, (UMSP000157413) (NMNH).

Etymology—This species is named *M. grandiloba* for the enlarged, upright basodorsal lobes of the phallicata.

***Mortoniella* (*Mortoniella*) *schlingeri*, new species**
Fig. 37

This species probably most closely resembles *M. munozi* Blahnik and Holzenthal, especially in the shape of the dorsal phallic spine, which has a pronounced rounded ventral bulge that articulates with the base of the phallicata. It can be distinguished in that the acute apicolateral projections of the inferior appendages are not down-turned apically. It also lacks the pair of acute scabrous sclerites that are associated with the phallicata in *M. munozi*; instead, it has a pair of apically acute, wing-like, dorsolateral processes. The endophallic membrane has a very small curved spine. The combination of characters possesses by these two species make it possible that they are not closely related to the core of species included in the florica subgroup, and thus the placement of *M. schlingeri* in this subgroup is partly a matter of diagnostic convenience.

Adult—Length of forewing: male 3.6 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color (in alcohol) yellowish brown (specimen faded and largely denuded).

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderately elongate, lateral margins subparallel, apically with very weakly developed mesal projection, apicolateral lobes elongate, slightly mesally curved; ventrolateral lobes very small, rounded; ventromesal lobes not evident. Inferior appendages with short rounded dorsolateral lobes and elongate, narrow, paired, apicoventral projections, apices of projections acute. Mesal pockets of inferior appendage with apical processes short, dorsally curved. Paramere appendage elongate, narrow, extending about same length as dorsal phallic spine, distinctly widened and somewhat cupped preapically, apex acute. Dorsal phallic spine, as viewed laterally, undulate in contour, spine distinctly widened on ventral margin at about middle, ventral bulge articulating with dorsal margin of phallicata, apex of spine narrow, acute, obtusely upturned in about apical 1/5; spine, in dorsal view, widened in middle, apex acute. Phallicata moderately elongate, basodorsal margin with upright, apically acute, dorsolateral projections. Endophallic membrane simple, with single small curved ventromesal spine; phallotremal spines absent.

Holotype male (alcohol)—**COLOMBIA:** 3 mi W Villavicencio, 11.iii.1955, EI Schlinger and ES Ross (UMSP000129555) (CAS).

Etymology—The species is named *M. schlingeri* in honor of Evert I. Schlinger, one of the co-collectors of this species.

—"leroda" subgroup

***Mortoniella* (*Mortoniella*) *bothrops*, new species**
Fig. 38

Mexitrichia n. sp. 2: Flint 1996: 381.

This species very closely resembles *M. panamensis* Blahnik and Holzenthal, agreeing in having a mesal process on the inferior appendages that is inflated, scabrous, and curled up apically, and in having short paramere appendages. It is possible that these two will eventually be found to represent variation within a single species. However, *M. bothrops* has small, but distinct, dorsolateral projections on the phallicata, absent in *M. panamensis*, longer apicolateral projections on tergum X, and also has the apex of the paramere appendage somewhat scabrous. It also appears that the apex of the mesal process of the inferior appendage in this species is not quite as inflated or strongly flexed as in *M. panamensis*. However, the latter is known only from the unique holotype specimen.

Adult—Length of forewing: male 2.3-2.8 mm; female 2.9-3.2 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:3:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae whitish. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis relatively indistinct, marked with light brown setae.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X elongate, lateral margins subparallel, apicomesal projection either suggestively developed or absent, apicolateral lobes relatively elongate, subacute, slightly mesally curved; ventrolateral lobes rounded, weakly developed. Inferior appendages with short rounded dorsolateral projections, and very elongate, asymmetric, mesal projection, apex of mesal projection distinctly inflated and dorsally curved, with numerous sensilla. Mesal pockets of inferior appendage with apical processes short, posteroventrally curved. Paramere appendages short (much shorter than dorsal phallic spine), narrow, apex scabrous and slightly enlarged; base of appendage emerging from projecting membranous lobe. Dorsal phallic spine, as viewed laterally, with dorsal margin undulate in contour, ventral margin widened in about middle, apex narrow, acute, only slightly dorsally curved; spine, in dorsal view, widened in middle, apex very acutely narrowed. Phallicata with small rounded and sclerotized projections on dorsal margin, ventrally with microsetae at base. Endophallic membrane elongate, simple in structure, without ventromesal spine; phallotremal spines distinct, small, spine-like.

Holotype male (pinned)—**PERU: Madre de Dios:** Manu, Pakitza Biol. Station, 11.94417° S, 71.28300° W, Quebrada Trompetero, 350 m, 6.vii.1993, Blahnik and Pescador (MJP) (UMSP000157376).

***Paratypes*—PERU: Madre de Dios:** same data as Holotype, 7 males, 6 females (pinned) (NMNH), 3 males, 3 females (pinned) (UMSP); same locality and collectors, 3.vii.1993–3 females (pinned), 38 females (alcohol) (NMNH); Manu, Pakitza Biol. Station, Quebrada Paujil-Picoflor, 11.94417° S, 71.28300° W, 350 m, 2.vii.1993, Blahnik and Pescador–4 females (pinned) (NMNH), 2 females (pinned) (UMSP); same locality and collectors, 4-6.vii.1993–3 females (pinned) (NMNH); Manu, Pakitza Biol. Station, Quebrada Pachija near intersection with Río Manu, 350 m, 4.vii.1993, Blahnik and Pescador–1 female (pinned) (NMNH); Manu, Pakitza, 11.93333° S, 71.30000° W, 250 m, 12-23.ix.1989, N Adams et al.–1 female (pinned), 4 males, 16 females (alcohol) (NMNH); Manu, Pakitza, 11.93333° S, 71.30000° W, 250 m, 9-14.ix.1988, O Flint and N Adams–1 female (alcohol) (NMNH); Manu, Pakitza, 12.11667° S, 70.96667° W, malaise trap (day collection), 250 m, 14-23.ix.1988, O Flint and N Adams –1 male, 2 females (pinned), 9 males, 22 females (alcohol) (NMNH); same locality and collectors, 18.ix.1988–1 male, 14 females (alcohol) (NMNH); same locality and collectors, 17-20.ix.1988, –1 female (pinned), 8 males, 27 females (alcohol) (NMNH); same locality and collectors 18.ix.1988–2 females (pinned) (NMNH).

Etymology—This species is named *M. bothrops*, from the generic name for a rattlesnake, used as a noun in apposition, for the scabrous apex of the mesal process of the inferior appendages, which is characteristically curled upward in this species and somewhat resembles the rattle of a rattlesnake.

***Mortoniella* (*Mortoniella*) *cressae*, new species**

Fig. 39

This is perhaps the most distinctive of the South American species placed in the leroda subgroup. It has a very narrow and lightly sclerotized ventromesal process on the inferior appendages, without an enlarged scabrous apex. Because the process is very reduced and lightly sclerotized, it may not always be readily evident. The species is easily diagnosed by the distinctive form of the dorsal phallic spine, which has its apex very much narrowed and recurved downward.

Adult—Length of forewing: male 2.8-3.2 mm; female 3.0-3.5 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:3:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae whitish. Tibial spurs slightly darker than legs, contrasting in color. Wing bar at anastamosis relatively indistinct, marked with light brown setae.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin convexly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X elongate, lateral margins subparallel, apicomesal projection only weakly developed, apicolateral lobes short, acute, slightly mesally curved, with small acute lateral point at flexure with ventrolateral lobe; ventrolateral lobes rounded, weakly developed. Inferior appendages without dorsal lobes, apicoventral lobes relatively broad, acute apically, ventromesal projection short, very narrow, lightly sclerotized, and asymmetrically curved to one side. Mesal pockets of inferior appendage with apical processes short, posteroventrally curved. Paramere appendage moderate in length (shorter than dorsal phallic spine), relatively broad, apex scabrous; base of appendage emerging from projecting membranous lobe. Dorsal phallic spine, as viewed laterally, strongly curved at base, dorsal margin nearly straight, ventral margin widened in basal 1/2, apex very narrow, acute, and ventrally recurved; spine in dorsal view, somewhat widened in middle, apex very acutely narrowed. Phallicata with rounded sclerotized projections on dorsal margin; laterally with crease-like projection, ventrolateral margins with weakly developed longitudinal sclerites. Endophallic membrane simple in structure, without ventromesal spine; phallotremal spines very lightly sclerotized, indistinct, appearing as acutely tapering membranous projections.

Holotype male (pinned)—**VENEZUELA: Lara:** Parque Nacional Terepaima, Río Auro, near Sabana Alta, 9.74567° N, 69.27690° W, 480 m, 16.vi.2001, Holzenthal, Blahnik, Paprocki, Cressa (UMSP000074409) (UMSP).

Paratypes—**VENEZUELA: Aragua:** Est. Exp. Cataurito, ca. 32 km E Villa de Cura, 1100 m, OS Flint, Jr–1 male, 1 female (alcohol) (NMNH); **Guárico:** Parque Nacional Guatopo, Quebrada Guatopo, 0.5 km N Estacion L Colina, 10.014° N, 66.363° W, 600 m, Holzenthal, Cressa, Rincón–3 males, 10 females (alcohol) (UMSP), 1 male, 5 females (alcohol) (MIZA).

Etymology—We take pleasure in naming this species *M. cressae* for Dra. Claudia Cressa, (Central University of Venezuela, Caracas), who helped in collecting the type specimen, in recognition of our numerous collaborations and also gratitude for organizing the collecting expedition during which the type specimen was collected.

***Mortoniella* (*Mortoniella*) *curtispina*, new species**
Fig. 40

As discussed in the diagnosis for *M. simla* (Flint), both this species and *M. ruedae*, n. sp., are very similar to *M. simla*. Unlike other species with an elongate, asymmetric mesal process on the inferior appendages, and with a scabrous apex, all of these species have prominent upright lateral projections on the phallicata. The species differ in the relative lengths of the paramere appendages: very short in *M. curtispina*, n. sp., of intermediate length (generally shorter than the dorsal phallic spine or mesal process of the inferior appendages) in *M. simla*, and elongate (longer than either the dorsal phallic spine or mesal process of the inferior appendages) in *M. ruedae*. Additionally, this species lacks a ventromesal endophallic spine, although it does have paired sclerotized phallotremal spines. In contrast, *Mortoniella simla* has a prominent ventromesal endophallic spine and *M. ruedae* has a relatively small one. The very short paramere appendages of *M. curtispina* are especially distinctive and should easily distinguish this species.

Adult— Length of forewing: male 2.5 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:3:4. Overall color (in alcohol) yellowish brown (specimen largely denuded and faded).

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin broadly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X elongate, lateral margins subparallel, apicomesal projection obtusely angular, weakly projecting, apicolateral lobes relatively elongate, subacute, slightly mesally curved; ventrolateral lobes rounded, weakly developed. Inferior appendages with short rounded dorsolateral projections, and very elongate, asymmetric, mesal projection, apex of mesal projection somewhat inflated, with numerous sensilla. Mesal pockets of inferior appendage with apical processes very short. Paramere appendage very short and spine-like, apex acute. Dorsal phallic spine, as viewed laterally, with dorsal margin undulate in contour, ventral margin distinctly widened in basal ½, apex narrow, acute, only slightly dorsally curved; spine, in dorsal view, relatively narrow throughout, apex very acutely narrowed. Phallicata with rounded, sclerotized, projections on dorsal margin. Endophallic membrane simple in structure, without ventromesal spine; phallotremal spines distinct, small, spine-like.

Holotype male (alcohol)—**VENEZUELA: Zulia:** El Tucuco, Sierra de Perija, montane forest, 28-29.i.1978, JB Heppner (UMSP000124881) (NMNH).

Etymology—This species is named *M. curtispina*, Latin for short-spined, in reference to the very short paramere appendages of this species, which helps to distinguish it from closely related species.

***Mortoniella* (*Mortoniella*) *draconis*, new species**

Fig. 41

This species is easily diagnosed by the structure of the mesal process of the inferior appendages, which is very asymmetrically positioned, with its base strongly arched and armed with what are apparently short papillae. The apex of the process is acutely narrowed, unlike most of the new species of the leroda subgroup considered here. The asymmetric ventral process can be located on either the right or left side (which is typical of the asymmetry of the leroda subgroup). The figured specimen has the process on the left side; a specimen with the process on the right side would obviously appear different from the illustration.

Adult—Length of forewing: male 2.6-3.0 mm; female 2.7-3.3 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:3:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae whitish or pale brown. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin broadly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X elongate, lateral margins subparallel, apicomesal projection only suggestively developed, apicolateral lobes relatively short, subacute, slightly mesally curved; ventrolateral lobes rounded, weakly developed. Inferior appendages with short, apically acute, dorsolateral projection (generally only unilaterally present), and elongate, very asymmetrically developed, ventromesal projection (variably appearing as emerging from either right or left side), ventromesal projection dorsally looped at base, with distinct papillae or sensilla, apex acute, tapering, not scabrous. Mesal pockets of inferior appendage with apical processes very short. Paramere appendage elongate, narrow, subequal in length to dorsal phallic spine, noticeably enlarged and indistinctly scabrous preapically, apex acute; base of appendage emerging from projecting membranous lobe. Dorsal phallic spine, as viewed laterally, with dorsal margin undulate in contour, ventral margin distinctly widened at about middle, rounded ventral projection articulating with base of phallicata, apex of spine acutely narrowed, only weakly dorsally curved; spine, in dorsal view, relatively narrow throughout length, apex tapering and very acutely narrowed. Phallicata with rounded sclerotized projections on dorsal margin. Endophallic membrane apparently simple in structure, without ventromesal spine; phallotremal spines small, spine-like, lightly sclerotized.

Holotype male (pinned)—**ECUADOR: Pastaza:** Puyo, 30.i.1976, Spangler et al. (UMSP000095068) (NMNH).

Paratypes—**ECUADOR: Pastaza:** Puyo, 5.v.1977, PJ Spangler and DR Givens–9 males, 28 females (alcohol) (NMNH); same locality and collectors, 6.v.1977– 6 males, 15 females (alcohol) (NMNH); same locality and collectors, 8.v.1977–4 males, 6 females (alcohol) (UMSP); same locality and collectors, 14.v.1977–1 male, 1 female (alcohol) (NMNH); same data as Holotype–7 males, 195 females (alcohol) (NMNH); Puyo, riverside, 29.v.1975, Cohen and Langley–3 males, 3 females (alcohol) (NMNH); Puyo (3 km N), 30.v.1975, Cohen and Langley–1 male, 1 female (pinned) (NMNH); Puyo (3 km W), 15.vii.1976, J Cohen–19 males, 127 females (alcohol) (NMNH).

Etymology—This species is named *M. draconis*, from the Latin word *draco*, a fabulous lizard-like animal (dragon), and in this case pertaining to the very asymmetric and ornamented ventromesal process of the inferior appendages of this species, with some semblance of a dragon's tail.

***Mortoniella* (*Mortoniella*) *furcula*, new species**

Fig. 42

Among species in the leroda subgroup that are characterized by an asymmetric and apically modified ventromesal process on the inferior appendages, this species is unique in having the apex of this structure forked, with small spines or sensilla. It is also characterized by having paramere appendages that are relatively thick and downward curved, with the apices scabrous. The latter character is useful in separating it from *M. parameralda*, n. sp., with which it co-occurs. In *M. parameralda* the appendages are narrower and dorsally curved. Both species lack rounded basodorsal processes on the phallicata.

Adult—Length of forewing: male 2.6-3.0 mm; female 2.8-3.0 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color (in alcohol) yellowish brown (specimen faded and largely denuded).

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin slightly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X elongate, lateral margins subparallel, apicomesal projection only suggestively developed, apicolateral lobes short, subacute, slightly mesally curved; ventrolateral lobes rounded, weakly developed. Inferior appendages with short rounded dorsolateral projections, and elongate, asymmetric mesal projection, mesal projection forked preapically, apices with small spines or sensilla. Mesal pockets of inferior appendage with apical processes very short. Paramere appendages long, relatively thick, rod-like, distinctly ventromesally curved, subequal in length to dorsal phallic spine, apex scabrous and slightly enlarged. Dorsal phallic spine, as viewed laterally, with dorsal margin undulate in contour, ventral margin widened in basal ½, apex acute, slightly dorsally curved; spine in dorsal view, relatively narrow throughout, slightly widened preapically, apex abruptly and acutely narrowed. Phallicata without distinct basodorsal projections, ventral margin with short lateral sclerites. Endophallic membrane short, inflated, with short curved ventromesal spine; phallotremal spines consisting of 2 pairs of widely separated processes, dorsal ones lightly sclerotized, subtending apex of dorsal phallic spine, ventral ones submembranous, projecting apically.

Holotype male (alcohol)—**ECUADOR: Los Rios:** Quevedo (56 km N), 28-29.vii.1976, J Cohen (UMSP000124889) (NMNH).

***Paratypes*—ECUADOR: Cotopaxi:** Quevedo (36 km NE), 335 m, 21.vii.1976, J Cohen–2 males (alcohol) (NMNH); **Los Rios:** same data as Holotype–2 males (alcohol) (NMNH); **Pichincha:** Santo Domingo (47 km S), Río Palenque Biol. Station, 29.vii.1976, J Cohen–27 males (alcohol) (NMNH), 5 males (alcohol) (UMSP); **Tungurahua:** Yanayacu, 300 m, 29-30.viii.1977, LE Peña G–4 males, 2 females (alcohol) (NMNH).

Etymology—This species is named *M. furcula*, as a diminutive form of the Latin *furca*, meaning fork, and referring to the forked apex of the ventromesal process of the inferior appendages.

***Mortoniella* (*Mortoniella*) *parameralda*, new species**

Fig. 43

This species is most similar to *M. meralda* (Mosely), agreeing in a number of details, especially in having an elongate, asymmetric mesal process on the inferior appendages, a phallicata lacking distinct upright lateral processes, and in the absence of a ventromesal endophallic spine. Also, in both species, the mesal process of the inferior appendages is uniformly narrow throughout, rather than distinctly enlarged apically. *Mortoniella parameralda* differs from *M. meralda* in the form of the paramere appendages; in both species they are relatively elongate, but they are more uniformly wide in *M. meralda*, flattened and ribbon-like, and lack scabrous apices, whereas in *M. parameralda* they are narrow, except preapically, scabrously developed, and distinctly upturned. The dorsal phallic spine in *M. parameralda* also appears to be more narrowed apically, very attenuate and needle-like. In the form of the paramere appendages, *M. parameralda* closely resembles *M. ruedae*, n. sp., but that species has distinct upright processes on the phallicata, and also a small ventromesal endophallic spine. *Mortoniella parameralda* was found to occur sympatrically with *M. furcula*, n. sp., which it also generally resembles. It can be distinguished from that species in lacking a forked ventromesal process of the inferior appendages and also in the orientation of the paramere appendages, broad and downward curved in *M. furcula* and upturned apically in *M. parameralda*.

Adult—Length of forewing: male 2.3-2.6 mm; female 3.0 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:3:4. Overall color (in alcohol) yellowish brown (specimens faded and largely denuded).

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X elongate, lateral margins subparallel, apicomesal projection only suggestively developed, apicolateral lobes elongate, subacute, slightly mesally curved; ventrolateral lobes rounded, weakly developed. Inferior appendages with short rounded dorsolateral projections, and very elongate, asymmetric ventromesal projection, apex of ventromesal projection scabrous, projecting nearly straight, not or only indistinctly inflated. Mesal pockets of inferior appendage with apical processes very short. Paramere appendage elongate, narrow, subequal in length to dorsal phallic spine, distinctly enlarged and scabrous preapically, apex acute. Dorsal phallic spine, as viewed laterally, with dorsal margin undulate in contour, ventral margin widened in basal ½, apical 1/3 very acutely narrowed, needle-like, distinctly dorsally inflected; spine in dorsal view, widened through middle, apex very acutely narrowed. Phallicata relatively elongate and tube-like, without sclerotized dorsolateral projections. Endophallic membrane inflated, with pair of projecting lateral membranous lobes, ventromesal spine absent; phallotremal spines indistinct, rounded, weakly sclerotized.

Holotype male (alcohol)—**ECUADOR: Los Rios:** Quevedo (56 km N), 28-29.vii.1976, J Cohen (UMSP000124888) (NMNH).

Paratypes—**ECUADOR: Cotopaxi:** Latacunga (133 km W), 329 m, 2.vii.1975, Langley and Cohen–1 male, 1 female (alcohol) (NMNH); Quevedo (36 km NE), 335 m, 21.vii.1976, J Cohen–2 males (alcohol) (NMNH); **Esmeraldas:** La Union, 3.ii.1979, JJ Anderson–1 male (alcohol) (NMNH); **Los Rios:** same data as Holotype–8 males (alcohol) (NMNH); **Pichincha:** Santo Domingo (47 km S), 29.vii.1976, J Cohen–15 males (alcohol) (NMNH), 3 males (alcohol) (UMSP).

Etymology—This species is named *M. parameralda* from the Greek *para*, meaning beside or near, and referring to the close similarity of this species to *M. meralda*.

***Mortoniella* (*Mortoniella*) *ruedae*, new species**
Fig. 44, 45

Mexitrichia simla Flint: Rueda Martín and Gibon 2008: 224 (fig. 10).

This species was originally illustrated by Rueda Martín and Gibon, who considered it to be *M. simla* (Flint). They did note, however, a difference in the length of the paramere appendages, from the illustration of the type. We also observed this difference, based on direct comparison of the two forms, and also noted differences in the female genitalia (Fig. 45 and 46). We believe them to be distinct species. *Mortoniella ruedae* is also very similar to *M. curtispina*, n. sp., as noted in the diagnosis for *M. simla*. All of these species have inferior appendages, with an elongate, asymmetric, and apically scabrous mesal process, and also prominent rounded lateral projections on the phallicata. The three species differ in the relative lengths of the paramere appendages: very short in *M. curtispina*, of intermediate length (generally shorter than the dorsal phallic spine or mesal process of the inferior appendages) in *M. simla*, and elongate (longer than either the dorsal phallic spine or mesal process of the inferior appendages) in *M. ruedae*. The ventromesal spine of the endophallic membrane also differs in the three species: absent in *M. curtispina*, small in *M. ruedae*, and large and prominent in *M. simla*. *Mortoniella ruedae* could also be confused with *M. parameralda*, n. sp., due to the very similar length and development of the paramere appendages in the two species. However, *M. parameralda* lacks rounded processes on the phallicata and also lacks a ventromesal endophallic spine (and thus is more similar in overall characteristics to *M. meralda*.).

Adult—Length of forewing: male 2.4-3.0 mm; female 2.5-3.1 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:3:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae whitish or pale brown. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis relatively indistinct, marked with light brown setae.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X elongate, lateral margins subparallel, apicomesal projection only suggestively developed, apicolateral lobes elongate, subacute, slightly mesally curved; ventrolateral lobes rounded, weakly developed. Inferior appendages with short rounded dorsolateral lobes, and very elongate, asymmetric ventromesal projection, apex of ventromesal projection scabrous, projecting nearly straight, not (or only indistinctly) inflated. Mesal pockets of inferior appendage with apical processes very short. Paramere appendage elongate, narrow, subequal in length to dorsal phallic spine, distinctly enlarged and scabrous preapically, apex acute. Dorsal phallic spine, as viewed laterally, with dorsal margin undulate in contour, ventral margin widened in basal ½, apex of spine acute, slightly dorsally inflected; spine in dorsal view, widened through middle, apex very acutely narrowed. Phallicata relatively elongate and tube-like, with rounded, sclerotized, dorsolateral projections, laterally with longitudinal, flattened, crease-like projection. Endophallic membrane relatively simple in structure, elongate, ventromesal spine very short; phallotremal spines present, short and spine-like.

Holotype male (pinned)—**BOLIVIA: La Paz:** San Buenaventura-Ixiamas rd., km 23, Hacienda Chiquitos, Arroyo Chiquitos, 14.33470° S, 67.70340° W, el 284 m, 23.vii.2003, Robertson and Blahnik (UMSP000093907) (UASC).

Paratypes—**BOLIVIA: La Paz:** same data as holotype–1 male, 11 females (pinned) (UMSP); AMNI Madidi, Comun. San Miguel de Bala, Arroyo Bacuatra Grande, 14.51228° S, 67.52308° W, el 280 m, 17-19.vii.2003, Robertson, Blahnik, Apaza–3 males, 5 females (pinned) (UMSP), 1 male, 2 females (pinned) (NMNH).

Etymology—This species is named *M. ruedae* for P. A. Rueda Martín, who recorded it from Bolivia under the name of *M. simla* and also illustrated it.

***Mortoniella* (*Mortoniella*) *simla* (Flint, 1974)**
Fig. 46, 47

Mexitrichia simla Flint 1974: 11; Botosaneanu and Sakal 1992: 201 [biology]; Botosaneanu and Alkins-Koo 1993: 7 [female, larva, distribution]; Flint 1996: 70 [distribution]; Rueda Martín and Gibon 2008: 24 [illustration, distribution (material transferred to *M. ruedae*, n. sp. in this paper)].
Mortoniella simla (Flint): Blahnik and Holzenthal 2008: 69 [member of leroda group].

Among previously described species, *Mortoniella simla* is most similar to *M. meralda* (Mosely) and *M. panamensis* Blahnik and Holzenthal. All of these species possess an elongate, asymmetric, apically scabrous, ventromesal process on the inferior appendages. Additional new species with the same character state, described in the current paper, include *M. bothrops*, *M. curtispina*, *M. parameralda*, and *M. ruedae*. Among these, *M. simla*, *M. curtispina* and *M. ruedae*, are distinctive in having prominent rounded dorsolateral projections on the phallicata (a character previously used to characterize species of the florica subgroup). The character is also suggestively developed in *M. bothrops*, but probably different enough so that it would not be confused with the three species mentioned. *Mortoniella simla* can be distinguished from *M. curtispina* and *M. ruedae* by the relative lengths of their paramere appendages: very short in *M. curtispina*, of intermediate length (generally shorter than the dorsal phallic spine or mesal process of the inferior appendages) in *M. simla*, and elongate (longer than either the dorsal phallic spine or mesal process of the inferior appendages) in *M. ruedae*. The development of the ventromesal spine of the endophallic membrane is also different in the three species: absent in *M. curtispina*, very short in *M. ruedae*, and large and prominent in *M. simla*. The overall similarity is probably greatest between *M. simla* and *M. ruedae*. Differences between the female genitalia for the two species are illustrated in Figures 45 and 46.

Adult—Length of forewing: male 2.6-3.0 mm; female 2.7-3.2 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:3:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae whitish or pale brown. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X elongate, lateral margins subparallel, apicomesal projection not, or only suggestively, developed, apicolateral lobes elongate, subacute, mesally curved; ventrolateral lobes rounded, weakly developed. Inferior appendages with short rounded dorsolateral projections, and very elongate, sinuous, asymmetric, ventromesal projection, apex of ventromesal projection scabrous, slightly inflated, distinctly bent or inflected. Mesal pockets of inferior appendage with apical processes very short. Paramere appendage moderately elongate, shorter than dorsal phallic spine, irregular in contour, scabrous apically. Dorsal phallic spine, as viewed laterally, with dorsal margin slightly undulate in contour, ventral margin widened in about middle, apex of spine acute, slightly dorsally inflected; spine, in dorsal view, widened through middle, apex very acutely narrowed, needle-like. Phallicata relatively elongate and tube-like, with rounded, sclerotized, dorsolateral projections, laterally with longitudinal, flattened, crease-like projection. Endophallic membrane relatively simple in structure, short, ventromesal spine prominent, curved; phallotremal spines present, narrow and needle-like.

Material examined—**TRINIDAD:** Simla, 9-11.ii.1966, Duckworths–81 males, 116 females (Paratypes-alcohol) (NMNH); Tacarigua, Río Caura Rec. Area, 10°43'N, 61°17'W, 22.vi.1993, Flint and Adams–1 male (pinned) (NMNH); Verdant Vale, Arima R., 10.68333° N, 61.30000° W, 170 m, 19.vi.1993, N Adams and W Mathis–33 males, 252 females (alcohol) (NMNH); **VENEZUELA: Sucre:** Río Cocollar, 1.5 km SE Las Piedras de Cocollar, 10.16028° N, 63.79342° W, 810 m, 7-8.iv.1995, Holzenthal and Flint–30 males, 88 females (alcohol), 3 males, 5 females (pinned) (UMSP) (NMNH); Quebrada Zapateral, 1.5 km SE Las Piedras de Cocollar, 10.16255° N, 63.79312° W, 810 m, 9.iv.1995, Holzenthal and Flint–5 males, 4 females (alcohol) (UMSP) (NMNH).

Distribution—Trinidad, Venezuela.

—limona subgroup

Included species: *Mortoniella akrogeneios*, n. sp.; *M. auricularis*, n. sp.; *M. gracilis*, n. sp.; *M. guyanensis*, n. sp.; *M. limona* (Flint); *M. prolata*, n. sp.; *M. quadrispina*, n. sp.; *M. variabili*s, n. sp.

This subgroup is comprised of *Mortoniella limona* Flint and the seven new species recognized here. Species range from Guyana to Peru. In general, the dorsal phallic spine is compressed (laterally flattened) in species of this subgroup. The most diagnostic character defining this group is the presence of a pair of ventral (and usually rounded) apicomesal processes on tergum X, which more or less straddle the dorsal phallic spine (Fig. 52A). Additionally, all of the species have 1 or 2 pairs of enlarged endophallic spines. When 2 pairs are present, it is obvious that the second pair is part of the same process. The spines possibly represent a modification of the small phallotremal spines bordering the phallotremal opening in a number of other species subgroups. Although these large paired spines are present, a ventromesal endophallic spine, which is a common feature in many subgroups of the leroda group, is absent. Species in the *M. limona* subgroup also lack dorsolateral sclerotized processes on the phallicata, but most of the species have the ventral margin of the phallicata modified into a kind of projecting lobe, only slightly developed in some species, but distinctly projecting in others. The ventral process of segment VI is generally large and subtriangular, decidedly ventrally projecting, and very wide basally. This compares to a more posteriorly directed process in members of the punensis subgroup. The anterior margin of this process is not retracted, as in many members of the florica/leroda subgroup, with the sole exception of *M. guyanensis*, n. sp., whose ventral process is more or less typical of species in that subgroup.

***Mortoniella* (*Mortoniella*) *akrogeneios*, new species**

Fig. 48

Mortoniella akrogeneios, n. sp. is superficially most similar to *M. limona* (Flint), due to the shape of the apex of the dorsal phallic spine, which has a very pronounced rounded ventral projection in both species. However, the ventral projection of *M. akrogeneios* is narrower (and thus may appear more prominent). Additional diagnostic characters distinguishing it from *M. limona* include its apically projecting inferior appendages, short paramere appendages, and shallower emargination of tergum X. Also, *M. akrogeneios* has only small rounded, ventral projections on the phallicata, not nearly as projecting as those in *M. limona* and its two closely related species, *M. gracilis*, n. sp. and *M. variabilis*, n. sp.

Adult—Length of forewing: male 3.0-3.1 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color (in alcohol) light brown. Wing bar not evident

Male genitalia—Ventral process of segment VI laterally compressed, ventrally projecting, large, subtriangular, length about equal to width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short, lateral margins subparallel, apical margin concave, apicolateral lobes very weakly projecting; apicomesal lobes visible in lateral view, rounded apically; ventrolateral lobes distinct, irregular, projecting. Inferior appendages without dorsolateral projections, apicoventral projections paired, projecting, upturned and acute apically. Mesal pockets of inferior appendage with apical processes short, posterodorsally curved. Paramere appendage short (much shorter than dorsal phallic spine) and relatively thick, apex acute. Dorsal phallic spine, as viewed laterally, with pronounced compressed apical expansion, upturned and acute dorsally, enlarged and rounded ventrally, dorsal and ventral projections connected almost linearly on posterior margin; spine, in dorsal view, very slightly widened in middle, apex acute. Phallicata with dorsal margin somewhat elevated and sclerotized, ventrally with pair of small rounded and sclerotized basal projections. Endophallic membrane short, with 2 pairs of enlarged spines (possibly phallotremal complex), 1 pair extending straight, the other strongly curved; ventromesal spine absent.

Holotype male (alcohol)—**ECUADOR: Pastaza:** Puyo (27 km N), Est. Fluvia Metrica, 4.ii.1976, Spangler, et al. (UMSP000097078) (NMNH).

Paratypes—**ECUADOR: Pastaza:** same data as holotype–1 male (alcohol) (NMNH).

Etymology—This species is named *M. akrogeneios* from a Greek word meaning “with a prominent chin,” and referring to the projecting ventral margin of the dorsal phallic spine in this species.

***Mortoniella* (*Mortoniella*) *auricularis*, new species**
Fig. 49

This species is very similar to *M. quadrispina*, n. sp. Both species have relatively elongate, narrow ventrolateral projections from the inferior appendages and a pair of apicolateral projections from the apical expansion of the dorsal phallic spine. *Mortoniella auricularis* differs in that the ventral margin of the expansion of the dorsal phallic spine is rounded, rather than angulate.

Adult—Length of forewing: male 2.8-3.0 mm; female 3.1-3.7. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae pale brown. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI laterally compressed, ventrally projecting, large, subtriangular, length about equal to width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short, lateral margins subparallel, apicomesal margin nearly straight between apicolateral lobes, apicolateral lobes distinctly projecting, tapering, acute apically; apicomesal lobes visible in lateral view, rounded apically; ventrolateral lobes distinct, irregular, projecting. Inferior appendages with very short rounded dorsolateral projections, apicoventral projections paired, elongate, narrow, nearly linear, acute apically. Mesal pockets of inferior appendage with apical processes moderately large, prominent, posterodorsally curved. Paramere appendage elongate (nearly as long as dorsal phallic spine), nearly uniformly narrow, apex acute. Dorsal phallic spine compressed apically, as viewed laterally, with distinct rounded apicoventral expansion, preapically (or apically) with pair of small lateral projections; spine, in dorsal view, nearly uniform in width, apicolateral projections evident. Phallicata with dorsal margin sclerotized, laterally with pair of protruding, apically rounded projections, ventrally with pair of small rounded sclerotized basal projections. Endophallic membrane short, with pair of enlarged spines (possibly phallotremal complex); ventromesal spine absent.

Holotype male (pinned)—**COLOMBIA: Meta:** Quebrada Blanca, 3 km W Restrapo, 11.ii.1983, OS Flint, Jr (UMSP000146422) (NMNH).

***Paratypes*—COLOMBIA: Meta:** Quebrada Blanca, 3 km W Restrepo, 11.ii.1983, OS Flint, Jr–1 male, 4 females (pinned), 2 males, 27 females (alcohol) (NMNH).

Etymology—This species is named *M. auricularis*, derived from the Latin word *auricula,* for ear, referring specifically to the apicolateral projections of the dorsal phallic spine in this species.

***Mortoniella* (*Mortoniella*) *gracilis*, new species**
Fig. 50

Mortoniella gracilis is very similar to *M. variabilis*, n. sp. and *M. limona* (Flint), as discussed in the diagnoses for those species. All of these species are characterized by elongate sclerotized projections from the ventral surface of the phallicata. The ventral projection is variable in length and shape, even within the respective species, and thus the exact shape is not reliably diagnostic. *Mortoniella gracilis* can generally be distinguished from the other two species by the much more slender, less projecting, ventral protrusion of the apex of the dorsal phallic spine. There is often a spine-like projection from the posterior margin of this apical expansion; this is more likely to be preapical and slightly downturned, rather than upturned from the ventral margin, which is more typical of *M. variabilis*. The armature of the endophallic membrane is most similar to *M. limona* in that it is composed of 2 pairs of distinctly sclerotized spines. In *M. variabilis*, 1 of the pairs of spines is typically either small and lightly sclerotized (and thus not readily visible), or possibly absent in some specimens.

Adult—Length of forewing: male 2.9-3.4 mm; female 3.0-3.8. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae pale brown. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI laterally compressed, ventrally projecting, large, subtriangular, length slightly greater than width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X relatively short, lateral margins subparallel, apicomesal margin with V-shaped (usually) or U-shaped emargination between apicolateral lobes, emargination extending about 1/3 length of segment, apicolateral lobes tapered, acute apically, lobes very short and narrow as viewed laterally; apicomesal lobes visible in lateral view, rounded apically; ventrolateral lobes distinct, projecting. Inferior appendages with short rounded dorsolateral projections and very short acute paired apicoventral projections. Mesal pockets of inferior appendage with apical processes moderately large, posterodorsally curved. Paramere appendage elongate (subequal to dorsal phallic spine), narrow, nearly uniformly in width, apex acute. Dorsal phallic, as viewed laterally, compressed apically, with weakly rounded apicoventral expansion, posterior margin usually with evident acute, slightly down-turned, preapical projection; spine in dorsal view, nearly uniform in width, apex acute. Phallicata with dorsal margin sclerotized, extending into endophallic membrane, basoventrally with pair of very prominent curved, apically rounded sclerotized projections. Endophallic membrane short, with 2 pairs of enlarged sclerotized spines (possibly phallotremal complex); ventromesal spine absent.

Holotype male (pinned)—**VENEZUELA: Sucre:** Peninsula de Paria, Puerto Viejo, "Río el Pozo," 10.71788° N, 62.47615° W, el 20 m, 2-3.iv.1995, Holzenthal, Flint, Cressa (UMSP000001425) (UMSP).

***Paratypes*—VENEZUELA: Barinas:** 22 km NW Barinas, 24.ii.1976, CM and OS Flint, Jr–1 male, 8 females (pinned) (NMNH); **Monagas:** Guachero Cave N. P., 10.172033° N, 63.555250° W, el 1110 m, 20-21.vii.2010, Holzenthal, Thomson, Cressa–2 males, 1 female (pinned) (UMSP); **Sucre:** Quebrada Zapateral, 1.5 km SE Las Piedras de Cocollar, 10.16255° N, 63.79312° W, el 810 m, 9.iv.1995, Holzenthal and Flint–2 males, 4 females (pinned); 3 males, 2 females (alcohol) (NMNH); Peninsula de Paria, Santa Isabel, Río Santa Isabel, 10.67157° N, 62. 64923° W, el 20 m, 4.iv.1995, Holzenthal, Flint, Cressa–1 male, 12 females (pinned); 3 males, 45 females (alcohol) (UMSP); same data as Holotype–9 males, 12 females (pinned), 23 males, 45 females (alcohol) (UMSP); Peninsula de Paria, Puerto Viejo, Río Puerto Viejo, 10.71895° N, 68.47905.° W, el 15 m, 2.iv.1995, Holzenthal, Flint, Cressa–

7 males, 11 females (alcohol) (MIZA); Río Cocollar, 1.5 km SE Las Piedras de Cocollar, 10.16028° N, 63.79342° W, el 810 m, 7-8.iv.1995, Holzenthal and Flint–9 males, 9 females (pinned), 66 males, 58 females (alcohol) (UMSP).

Etymology—This species is named *M. gracilis*, from the Latin word for slender, and referring to the relatively narrow apex of the dorsal phallic spine, which character helps to distinguish it from its most closely related species.

***Mortoniella* (*Mortoniella*) *guyanensis*, new species**

Fig. 51

This species is very different from others in this group and was placed here largely because of the pair of apicomesal processes on tergum X and the enlarged pair of endophallic spines. It is the only species of *Mortoniella* currently recorded from Guyana. Additional collecting may prove that it would be better treated as the prototype of an additional species subgroup. It differs from other species of the limona subgroup in that the dorsal phallic spine is depressed (dorsoventrally flattened), rather than compressed. The ventral process of segment VI is more or less typical of species in the florica/leroda subgroup (and unlike species in the limona subgroup) in that it is truncate apically and slightly retracted anterobasally. Among species in the leroda group, it is also unusual in having a lightly sclerotized dorsomesal apodeme on the phallobase and a recurved dorsal lobe on the inferior appendages. The only other species of the leroda group with a strongly recurved dorsal lobe on the inferior appendages are members of the akantha and bolivica subgroups. The spined apex of the dorsal phallic spine, in combination with the characters discussed above, is especially distinctive and diagnostic for this species.

Adult—Length of forewing: male 3.0-3.1 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color (in alcohol) yellowish brown (specimen badly faded). Wing bar not evident.

Male genitalia—Ventral process of segment VI laterally compressed, short, ventrally projecting, truncately rounded apically, length slightly greater than width at base, process slightly retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X short, lateral margins subparallel, apicomesal margin V-shaped, apicolateral lobes short, truncate; apicomesal lobes short, narrow, with several apical setae, visible in dorsal and lateral views; ventrolateral lobes distinct, projecting, rounded. Inferior appendages with narrow, recurved dorsal lobes, ventral lobe prominent, setose, acutely projecting mesally. Mesal pockets of inferior appendage with apical processes short, posteriorly curved. Paramere appendage moderate in length (shorter than dorsal phallic spine), posteroventrally projecting, uniform in width, apex acute. Phallobase with lightly sclerotized, compressed, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, curved basally, relatively narrow, only slightly widened ventrally, distinctly dorsally curved and nearly rectilinearly inflected in about apical ¼, apex depressed (flattened), with numerous small spines; spine, in dorsal view, nearly uniform in width throughout length, apex acute. Phallicata with dorsal margin sclerotized, ventrally with pair of very small rounded sclerotized basal projections. Endophallic membrane short, with pair of very prominent enlarged spines (possibly modified phallotremal spines); ventromesal spine absent.

Holotype male (alcohol)—**GUYANA:** Potaro River, Kaeteur Falls, 5.17500° N, 59.48167° W, 1350 ft., 21-23.viii.1997, OS Flint, Jr (UMSP000124864) (NMNH).

***Paratypes*—GUYANA:** same data as Holotype–1 male (alcohol) (NMNH).

Etymology. This species is named *M. guyanensis* for Guyana, the country in which it was collected.

***Mortoniella* (*Mortoniella*) *limona* (Flint, 1981)**

Fig. 52, 100

Mexitrichia limona Flint, 1981: 9.
Mortoniella limona (Flint): Blahnik and Holzenthal 2008: 69 [member of leroda group].
Mexitrichia macuta Botosaneanu, 1998: 460. **New Synonym**.
Mortoniella macuta (Botosaneanu): Blahnik and Holzenthal 2008: 69 [member of leroda group].

Mortoniella limona is closely related to *M. variabilis*, n. sp. and *M. gracilis*, n. sp. All of these species have the ventral margin of the phallicata modified into elongate projecting lobes, and the apex of the dorsal phallic spine compressed, with a preapical ventral expansion. Among these, *M. limona* can be distinguished by having the ventral projection of the dorsal phallic spine very strongly produced and rounded. The posterior margin of the compressed apex may be somewhat serrate or laciniate (as in species of the subgroup in general), but without a distinct angulate projection. For other character differences, see the diagnoses for *M. variabilis* and *M. gracilis*.

The male holotype of *Mexitrichia macuta* Botosaneanu was examined. It differs in no substantial way from *M. limona* and we consider it to be a synonym. The setae on dorsal phallic spine, discussed by Botosaneanu as a distinguishing feature, appear to have been either an artifact, or minute striae that may have appeared to be setae. The dorsal phallic spine, in many species of the limona subgroup, is often minutely serrate or laciniate on the apicocaudal surface; this may alternatively account for what Botosaneanu described as setae.

Adult—Length of forewing: male 2.9-3.3 mm; female 3.2-3.9. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae pale brown. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI laterally compressed, ventrally projecting, large, subtriangular, length about equal to width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X relatively short, lateral margins subparallel, apicomesal margin concavely emarginate between apicolateral lobes, emargination extending about 1/3 length of segment, apicolateral lobes tapered, rounded apically, lobes short and narrow as viewed laterally; apicomesal lobes visible in lateral view, rounded apically; ventrolateral lobes distinct, projecting. Inferior appendages irregular in shape, with short tapering dorsolateral projections and short narrow paired apicoventral projections. Mesal pockets of inferior appendage with apical processes moderately large, posterodorsally curved. Paramere appendage elongate (subequal to dorsal phallic spine), narrow, nearly uniformly in width, apex acute. Dorsal phallic, as viewed laterally, compressed apically, with very prominent rounded apicoventral expansion, posterior margin often evidently serrulate or micro-laciniate; spine in dorsal view, nearly uniform in width, apex acute. Phallicata with dorsal margin sclerotized, extending into endophallic membrane, with apical depression to accommodate apicoventral projection of dorsal phallic spine, basoventrally with pair of very prominent sclerotized, curved, apically rounded projections. Endophallic membrane short, with 2 pairs of enlarged sclerotized spines (possibly phallotremal complex); ventromesal spine absent.

Material examined—**VENEZUELA:** Macuto, Río del Teleferico, 26.ii.1982, L Botosaneanu–male Holotype of *Mexitrichia macuta* (ZMA); **Aragua:** Est. Exp. Cataurito, 1.ii.1983, OS Flint, Jr–1 male (pinned) (NMNH): **Falcón:** P. N. Sierra de San Luis, Cataratas del Río Hueque, 11.17847° N, 69.56220° W, el 583 m, 6.vi.2001, Holzenthal, Blahnik, Paprocki, Cressa–14 males, 51 females (pinned), 22 males, 63 females (alcohol) (UMSP); **Guarico:** P. N. Guatopo, Quebrada Guatopo, 0.5 km N Est. La Colina, 10.014° N, 66.363° W, el 600 m, 22.i.1994, Holzenthal, Cressa, Rincón–1 male (pinned), 30 males, 21 females (alcohol) (UMSP); **Lara:** P. N. Terepaima, Quebrada San Antonio, 9.86257° N, 69.21830° W, el 631 m, 17.vi.2001, Holzenthal, Blahnik, Paprocki, Cressa–10 males, 4 females (pinned), 1 male, 1 female (alcohol) (UMSP).

Distribution—Venezuela.

***Mortoniella* (*Mortoniella*) *prolata*, new species**
Fig. 53

Among species in the limona subgroup, *Mortoniella prolata* most closely resembles *M. auricularis*, n. sp. and *M. quadrispina*, n. sp. in having elongate apicoventral projections from the inferior appendages; those of *M. prolata* differ in being extremely elongate. Additionally, it differs in lacking the distinctive apicolateral projections from the apex of the dorsal phallic spine that characterize the other two species.

Adult—Length of forewing: male 3.1 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color (in alcohol) yellowish brown. Wing bar not evident

Male genitalia—Ventral process of segment VI laterally compressed, ventrally projecting, large, subtriangular, length about equal to width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short, lateral margins subparallel, apical margin concave, apicolateral lobes very weakly projecting; apicomesal lobes visible in lateral view, broadly rounded apically; ventrolateral lobes distinct, irregular, projecting. Inferior appendages with short tapering dorsolateral projections, apicoventral projections paired, very elongate, narrow, acute apically. Mesal pockets of inferior appendage with apical processes short, posterodorsally curved. Paramere appendage short (much shorter than dorsal phallic spine), dorsally curved, apex acute. Dorsal phallic spine, as viewed laterally, with apex strongly upturned and acute, ventral margin extended as rounded expansion; spine, in dorsal view, very slightly widened in middle, apex acute. Phallicata with dorsal margin somewhat elevated and sclerotized (to accommodate ventral margin of dorsal phallic spine), ventrally with pair of small rounded, sclerotized basal projections; endophallic membrane with pair of elongate, apically acute spines (possibly phallotremal complex); ventromesal spine absent.

Holotype male (alcohol)—**PERU: Huanuco:** Tingo Maria, premontane rain forest, 672 m, 1-6.ii.1980, JB Heppner (UMSP000097160) (MJP).

***Paratypes*—PERU: Huanuco:** same data as holotype–1 male (alcohol) (NMNH).

Etymology—This species is named *M. prolata*, from the Latin *prolatus* (to carry forward), used in the sense of being extended or elongate, and referring specifically to the very elongate apicoventral projections of the inferior appendages in this species.

***Mortoniella* (*Mortoniella*) *quadrispina*, new species**
Fig. 54

This species is apparently very closely related to *M. auricularis*, n. sp., differing primarily in the shape of the apex of the dorsal phallic spine. *Mortoniella quadrispina* has two apicolateral projections, as in *M. auricularis*, but also has the ventral lobe sharply angulate, rather than rounded, thus producing 4 spine-like projections on the apex of the dorsal phallic spine (1 apicodorsal, 2 lateral, and 1 apicoventral).

Adult—Length of forewing: male 3.5 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color (in alcohol) medium brown.

Male genitalia—Ventral process of segment VI laterally compressed, ventrally projecting, large, subtriangular, length about equal to width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short, lateral margins subparallel, apicomesal margin with U-shaped emargination, extending about 1/3 length of tergum, apicolateral lobes tapering, acute apically, relatively short and narrow as viewed laterally; apicomesal lobes visible in lateral view, rounded apically; ventrolateral lobes distinct, projecting. Inferior appendages without dorsolateral projections, apicoventral projections paired, narrow, nearly linear, moderately elongate, acute apically. Mesal pockets of inferior appendage with apical processes large, prominent, posterodorsally curved. Paramere appendage moderately elongate (shorter than dorsal phallic spine), nearly uniformly narrow, apex acute. Dorsal phallic spine compressed apically; as viewed laterally, with acute apicoventral projection, preapically (or apically) with pair of small acute lateral projections, apicomesally with additional small acute projection; spine, in dorsal view, nearly uniform in width, apicolateral projections evident. Phallicata with pair of small rounded basoventral projections, and somewhat indistinct, rounded, apicoventral lobes. Endophallic membrane short, with pair of very enlarged, curved, sclerotized spines (possibly phallotremal complex); ventromesal spine absent.

Holotype male (alcohol)—**ECUADOR: Pastaza:** Puyo (27 km. N), Estación Fluvia Metrica, 4.ii.1976, Spangler, et al. (UMSP000097062) (NMNH).

Etymology—This species is named *M. quadrispina* for the four acute projections on the apex of the dorsal phallic spine.

***Mortoniella* (*Mortoniella*) *variabilis*, new species**
Fig. 55

Mortoniella variabilis is very similar to *M. gracilis*, n. sp. and *M. limona* (Flint). All of these species have elongate basoventral projections from the phallicata, a distinguishing feature of this complex. The shape of these projections is variable in each of these species, but in *M. variabilis* the projections tend to be narrower and longer than in *M. gracilis*. The most diagnostic feature distinguishing the species in this complex is the shape of the apex of the dorsal phallic spine. Unfortunately, this is somewhat variable, even within the species, and this is especially so for *M variabilis*. In general, the ventral projection at the apex of the dorsal phallic spine is less produced in *M. variabilis* than in *M. limona*, but more so than in *M. gracilis*. The ventral projection often (or perhaps usually) has a distinct, upturned, spine-like projection, not present in *M. limona*. The development of this spine is quite variable in the material examined, as is the length of the paramere appendages (see Fig. 55D for an extreme variant from Colombia). We are interpreting this as variation within a species, but the issue may be worthy of reinvestigation when more material is available. There was no evident difference in the female genitalia of specimens from Colombia and Venezuela. *Mortoniella variabilis* is probably more likely to be confused with *M. limona* than *M. gracilis*, because the ventral projection of the dorsal phallic spine is distinctly produced in both species, but the character state in *M. variabilis* never reaches the extreme condition found in *M. limona*. Also, the apex of the dorsal phallic spine, above the ventral expansion, tends to be narrower and more attenuate in *M. variabilis* than in *M. limona*. In most material of *M. variabilis*, only 1 pair of endophallic spines is evident, but in specimens with the armature fully expanded, a second, very lightly sclerotized pair may also be evident; the second pair may be a consistent feature, not easily observed unless the armature is completely everted. In the other two species, 2 pairs of sclerotized spines are generally evident, even when the armature is not expanded.

Adult—Length of forewing: male 2.7-3.4 mm; female 3.0-3.9. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color medium brown, apices of tarsal segments and basal segments of antennae pale brown. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI laterally compressed, ventrally projecting, large, subtriangular, length about equal to width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X relatively short, lateral margins subparallel, apicomesal margin with V-shaped or U-shaped emargination between apicolateral lobes, extending about 1/3 length of tergum; apicolateral lobes tapered, acute apically, short and narrow as viewed laterally; apicomesal lobes visible in lateral view, rounded apically; ventrolateral lobes distinct, projecting. Inferior appendages somewhat variable shape, with short tapering dorsolateral lobes and apicoventral projections very short or absent. Mesal pockets of inferior appendage with apical processes moderately large, posterodorsally curved. Paramere appendage short or moderate in length (shorter than dorsal phallic spine), narrow, nearly uniformly in width, apex acute. Dorsal phallic, as viewed laterally, compressed apically, with prominent rounded apicoventral expansion and (usually) an acute, dorsally-oriented projection from ventral margin; apex of dorsal phallic spine narrowing and attenuate, often slightly posteriorly curved; spine, in dorsal view, nearly uniform in width, apex acute. Phallicata with dorsal margin sclerotized, extending into endophallic membrane, with apical depression to accommodate apicoventral projection of dorsal phallic spine, basoventrally with pair of very prominent curved, apically rounded, sclerotized, projections. Endophallic membrane short, with one pair of prominent sclerotized spines, and second pair of smaller, lightly sclerotized spines (possibly sometimes absent); ventromesal spine absent.

Holotype male (pinned)—**VENEZUELA: Zulia:** Parque Nacional Perijá, Río Negro in Toromo, 10.051° N, 72.712° W, el360 m, 15.i.1994, Holzenthal, Cressa, Rincón (UMSP000001386) (UMSP).

Paratypes**—COLOMBIA: Magdalena:** Municipio Ciénaga, Río Cordoba, 25 km NS "Estacion Exp. San Lorenzo," Sierra Nevada de Santa Marta, 11.03944° N, 74.03833° W, el 930 m, 12.xii.1997, F Muñoz-Q et al.–5 males, 14 females (pinned) (UMSP); Municipio de Santa Marta, Río Minca en Minca, 11.14306° N, 74.11611° W, el 570 m, 9.xii.1997, F. Muñoz-Q et al.–1 male, 1 female (pinned) (UMSP); **Meta:** Quebrada Blanca, 3 km W Restrepo, 11.ii.1983, OS Flint, Jr–1 male (alcohol) (NMNH); **VENEZUELA: Barinas:** Parque Nacional Sierra Nevada, Quebrada San Juan in Santa Rosa, 8.46450° N, 70.84867° W, el 1000 m, 21.iii.1997, Holzenthal–2 males, 5 females (alcohol) (UMSP); 22 km N Barinitas, 24.ii.1976, CM & OS Flint, Jr–1 male, 2 females (alcohol) (NMNH); **Zulia:** same data as Holotype–2 males, 2 females (pinned), 3 males (alcohol) (UMSP), 2 males, 2 females (alcohol) (NMNH), 2 males, 2 females (alcohol) (MIZA).

Etymology—This species is named *M. variabilis* because of the variability in the structure of the apex of the dorsal phallic spine and length of the paramere appendages.

—pocita subgroup

Included species: *Mortoniella pocita* (Flint).

This subgroup was proposed by Blahnik and Holzenthal (2011) to contain only *M. pocita* (Flint). The species was originally described from Argentina and subsequently listed from Bolivia by Rueda Martín and Gibon (2008). It has a general similarity to several of the species listed below as leroda group species "unplaced to subgroup," especially in having elongate inferior appendages and a modified apex of the dorsal phallic spine. However, none of these species have elongate dorsal processes on the phallicata, a character found in *M. pocita* and also used to define the punensis subgroup. Because of our uncertainty about whether this reflects a relationship between these 2 subgroups, and because of its unusual overall combination of characters, we are continuing to list *M. pocita* in its own subgroup.

Mortoniella pocita **(Flint, 1983)**
Fig. 56

Mexitrichia pocita Flint, 1983: 8; Rueda Martín and Gibon 2008: 223 [reillustration, distribution].
Mortoniella pocita (Flint): Blahnik and Holzenthal 2008: 69 [member of leroda group]; Blahnik and Holzenthal 2011: 39 [redescription, reillustration, member of pocita subgroup].

This species was redescribed and reillustrated by Blahnik and Holzenthal (2011) and the reader is referred to that paper for the description. The illustration is included here for completeness of coverage. The species has the apex of the dorsal phallic spine enlarged, similar to some species of the limona subgroup. It differs from *M. limona*, and other species with this characteristic, in having a very elongate, curled dorsolateral processes on the phallicata.

Distribution—Argentina, Bolivia.

—punensis subgroup

Included species: *Mortoniella armata* (Jacquemart)?; *M. chalalan*, n. sp.; *M. dentiterga*, n. sp.; *M. emarginata*, n. sp.; *M. marini* (Rueda Martín and Gibon); *M punensis* (Flint); *M. sinuosa*, n. sp.

This subgroup was proposed by Blahnik and Holzenthal (2011) to contain specifically *M. punensis* (Flint) and *M. marini* (Rueda Martín and Gibon). A somewhat broader interpretation of the group is required to include the assemblage of species listed below and we are not altogether certain that all of the species placed here are closely related. The primary character used to indicate monophyly of the group is the structure of the dorsal processes of the phallicata, which have either elongate, digitate or spine-like processes, which seems to hold or direct the paramere appendages; in many of the species the paramere appendages are directed mesally, so that they cross over one another. Whether this is a native configuration, or an assumed state resulting from clearing the genitalia, is difficult to say. Upright processes from the ventral margin of the phallicata, previously discussed as a character of the group, seem to apply only to *M. punensis* and *M. marini*, which are undoubtedly closely related taxa. In general, the species in this group have the dorsal phallic spine somewhat depressed apically (dorsoventrally flattened); the apex may be somewhat asymmetrical in some species. The hind wing has either forks II and III present or fork II only (smaller species). The ventral process of segment VI is prominent and more distinctly posteriorly directed than in most other species subgroups of the leroda group (*M. sinuosa* an exception). There is considerable variation among the species included here in the armature of the endophallic membrane, as for instance, presence or absence of a ventromesal spine, and whether 1 or 2 spines are present. There is also variation in the structure of the inferior appendages, and in the length of the spine-like apical processes of the mesal pockets. *Mortoniella sinuosa* is perhaps the most divergent of the taxa placed here, as noted in its description; its placement is speculative and based primarily on the presence of spine-like processes on the phallicata. Although *M. pocita* (Flint) and *M. rectiflexa*, n. sp. also possesses elongate dorsal processes on the phallicata, they differ enough from species of the subgroup to make their placement here doubtful. The former was placed in its own species subgroup by Blahnik and Holzenthal (2011) and the latter is included in the species listed as "unplaced to subgroup." *Mortoniella armata* (Jacquemart, 1963), which is very inadequately illustrated and known only from Argentina, is speculatively included in this subgroup, largely because it seems to possess the elongate hooked processes on the dorsal margin of the phallicata that characterizes this group. Only fragments of the genitalia were illustrated in the original description. Flint et al. (1999) noted that the genitalia are missing from the holotype slide mount. The structure of the spines of the phallicata in *M. armata* (and apparently also the upright lobes from the phallicata) are very similar to *M. punensis* itself, but the structure of the dorsal phallic spine seems to be different (based on the original illustration) in being narrower in lateral view and lobed or divided apically.

***Mortoniella* (*Mortoniella*) *chalalan*, new species**
Fig. 57

This diminutive species has a relatively simple overall morphology, but is reasonably distinctive. In addition to the spine-like dorsal processes of the phallicata, which character was used to place it in the punensis subgroup, the species has two straight, narrow endophallic spines, 1 ventromesal spine and 1 apicodorsal spine. This combined configuration is not known for any other species. The dorsal phallic spine is symmetrical in shape and has its apex depressed (dorsoventrally flattened), as is typical of the subgroup. The shape of tergum X, which is short, with relatively broad apicolateral processes and a concave mesal invagination, is also distinctive.

Adult—Length of forewing: male 2.6-2.7 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color medium brown, apices of tarsal segments whitish or pale brown. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI relatively small, laterally compressed, posteriorly directed, length about 1½ times width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin weakly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short, lateral margins subparallel, apicomesal margin somewhat concave between apicolateral lobes, apicolateral lobes relatively short and broad, subtruncate; ventrolateral lobes rounded, weakly projecting. Inferior appendages short, without dorsolateral projections, apicoventral projections short, acute apically, ventromesal margin with very short subtruncate projection. Mesal pockets of inferior appendage with spine-like apical processes short, posterodorsally curved. Paramere appendage moderately elongate (shorter than dorsal phallic spine), nearly uniformly narrow, apex acute, opposite appendages converging mesally. Dorsal phallic spine stout, nearly uniform in width, without distinct ventral projection, depressed apically, apex gradually upturned, acute in both lateral and dorsal views. Phallicata with dorsal margin sclerotized and produced anteriorly into anvil-like projection, laterally with pair of curved spine-like projections, projections hooked over paramere appendages; ventral margin of phallicata simple, without lobes or projections. Endophallic membrane elongate, with small rounded membranous preapical and apicomesal lobes; ventromesal spine nearly straight, very narrow and nail-like; endophallic membrane with additional apical dorsomesal spine, spine very narrow, attenuate, slightly longer than ventromesal spine; phallotremal spines absent.

Holotype male (pinned)—**BOLIVIA: LaPaz:** ANMI Madidi, Chalalan Ecolodge, Raya Mayo river at Anta Trail, 14.43557° S, 67.92935° W, el 264 m, 26.vii.2003, Robertson and Blahnik (UMSP000094778) (UASC).

Paratypes—**BOLIVIA: Santa Cruz:** PN and ANMI Amboró, Guardia Parque Mataracú, Quebrada Verde Uno, 17.55389° S, 63.86917° W, el 374 m, 19-23.xi.2004, Robertson, Garcia and Vidaurre–2 males (alcohol) (UMSP); PN & ANMI Amboró, Guardia Parque Mataracú, Río Yapacani, 17.52072° S, 63.86795° W, 329 m, 26.xi.2004, Roberson, Garcia, Vidaurre–1 male (UMSP).

Etymology—This species is named *M. chalalan*, used as a noun in apposition, for the name of the Ecolodge in Madidi National Park where the type specimen was collected.

***Mortoniella* (*Mortoniella*) *dentiterga*, new species**
Fig. 58

Mortoniella dentiterga is most readily diagnosed by the hooked, spine-like processes from the dorsal margin of the phallicata and by the characteristic structure of tergum X in dorsal view, which has the apicolateral processes subtruncate (tooth-like) and inset laterally. It lacks the upright processes from the ventral margin of the phallicata found in *M. punensis* (Flint) and *M. marini* (Rueda Martín and Gibon), and also has a narrower apex on the dorsal phallic spine. The asymmetry of the spine-like projections from the phallicata seems to be a consistent feature, although possibly variable as to whether the longer spine is on the right or left side (as is often the case for asymmetrical features).

Adult—Length of forewing: male 2.3-2.9 mm; female 2.7-3.0 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color (in alcohol) medium brown (specimens largely denuded and faded).

Male genitalia—Ventral process of segment VI laterally compressed, short, posteriorly projecting, subtriangular, acute apically, length slightly greater than width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin convexly rounded dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X relatively short, lateral margins subparallel, mesal margin straight or slightly convex, apicolateral lobes short, tooth-like, inset from acute lateral angles of tergum; ventrolateral lobe short, rounded. Inferior appendages with very short rounded dorsal projections, apically with pair of narrow, attenuate ventral projections, ventromesal projection very short, rounded. Mesal pockets of inferior appendage with apical processes posteriorly projected, moderately elongate (shorter than ventral projections of inferior appendage). Paramere appendage elongate, narrow, nearly uniform in width, extending about same length as dorsal phallic spine, apex acute; appendages curved mesally and crossing over one another. Dorsal phallic spine, as viewed laterally, widened in about middle, gradually upturned and narrowed apically, apex slightly notched; in dorsal view, distinctly widened in middle, apex narrow, subacute. Phallicata with pair of curved, spine-like projections from dorsal margin, crossing over paramere appendages (one projection typically more curved than the other). Endophallic membrane relatively simple, with single curved ventromesal spine; phallotremal spines only suggestively developed, short, weakly sclerotized.

Holotype male (alcohol)—**ECUADOR: Los Rios:** Quevedo (56 km N), Río Palenque Biol. Station, 28-29.vii.1976, J Cohen (UMSP000124865) (NMNH).

Paratypes—**ECUADOR**: **Cotopaxi:** Quevedo (36 km NE), Río Palenque Biol. Station, 335 m, 21.vii.1976, J Cohen–3 males, 3 females (alcohol) (NMNH); **El Oro:** Canton de Arenillas, Las Lajas, 600 m, 30.v.1979, JJ Anderson–2 males (alcohol) (NMNH); **Esmeraldas:** La Union, 3.ii.1979, JJ Anderon–2 males 1 female (alcohol) (NMNH); **Loja:** Río Puyango, 300 m, 17-18.viii.1977, LE Peña G–19 males (alcohol) (NMNH); **Los Rios:** same data as Holotype–34 males (alcohol) (NMNH), 5 males (alcohol) (UMSP); **Manabi:** Santo Domingo (29 km SW), Rancho Ronald, 20.vii.1978, JJ Anderson–2 males (alcohol) (NMNH); **Pichincha:** Santo Domingo (47 km S), 29.vii.1976, J Cohen–8 males (alcohol) (NMNH).

Etymology—This species is named *M. dentiterga*, from the Latin *dens*, for tooth, and *tergum*, for back (referring to the dorsal sclerites in Insecta), for the characteristic shape of tergum X of this species, which has somewhat tooth-like apicolateral projections.

Mortoniella (*Mortoniella*) *emarginata*, new species

Fig. 59

Mortoniella emarginata is probably most similar to *M. dentiterga*, n. sp., especially in the relatively spine-like dorsal projections from the phallicata. It is most readily distinguished by the structure of tergum X, which has a small V-shaped apicomesal emargination, and apicolateral projections of the tergum that are acute, rather than bluntly toothed. Neither the holotype specimen from Ecuador, nor paratypes from the same country, have the paramere appendages crossed over one another. The single specimen from Colombia has the spines crossed and held in place by the rounded posterior margin of the phallicata spines. This is an unusual configuration and whether it is normal is difficult to say without additional material. The apex of the dorsal phallic spine in the specimen from Colombia is also slightly less upturned. Despite these differences, a close comparison of specimens from the two countries reveals no significant structural differences; we infer that the differences only represent regional or individual variation.

Adult—Length of forewing: male 3.2-3.6 mm; female 3.6-4.1 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color (in alcohol) medium brown. Tibial spurs darker than legs, contrasting in color. Wing bar not evident.

Male genitalia—Ventral process of segment VI laterally compressed, short, posteriorly projecting, subtriangular, acute apically, length about 1½ times width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin somewhat produced dorsally, rounded laterally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderate in length, lateral margins subparallel, apical margin with small, but distinct, V-shaped mesal emargination, apicolateral lobes short, subtriangular, acute apically; ventrolateral lobe short, rounded. Inferior appendages with dorsolateral margin rounded, apically with pair of relatively short, apically acute, ventral projections, ventromesal projection very short (about ½ length of ventral projections), acute apically. Mesal pockets of inferior appendage with apical processes short, posteriorly projected. Paramere appendage moderately elongate (shorter than dorsal phallic spine), narrow, nearly uniform in width, apex acute; appendages curved mesally, but not crossing over one another (except in specimen from Colombia). Dorsal phallic spine, as viewed laterally, relatively stout, undulate in contour, upturned in about apical ¼; in dorsal view, relatively broad, distinctly widened in apical 1/2, apex narrowed and notched mesally. Phallicata with pair of curved, spine-like projections from dorsal margin, basoventrally with pair of rounded, sclerotized lobes. Endophallic membrane with pair of short curved ventromesal spines (or ventromesal spine divided apically into pair of spines); phallotremal spines short, blunt, weakly sclerotized.

Holotype male (alcohol)—**ECUADOR: Pichincha:** Pachijal, 26.vi.1976, J Cohen (UMSP000097042) (NMNH).

Paratypes—**COLOMBIA: Antioquia:** Km. 50, Río Aurra, San Jeronimo, 14.ii.1983, OS Flint, Jr–1 male, 1 female (alcohol) (NMNH); **ECUADOR: Pastaza:** Pachijal, 26.vi.1976, J Cohen–3 males, 2 females (alcohol) (NMNH); **Pichincha:** same data as Holotype–2 males, 4 females (alcohol) (NMNH); Río Umachaca, Forest Station Maquipucuna, ca. 5 km E Nanegal, 0.12500° N, 78.61667° W, 1250 m, 4-5.ix.1990, OS Flint, Jr–2 males (alcohol) (NMNH); Nanegal, 335 m, 19-20.ix.1977, LE Peña G–1 male, 1 female (alcohol) (UMSP).

Etymology—This species is named *M. emarginata* for tergum X of the male, which has a characteristic narrow, V-shaped apicomesal emargination or notch.

***Mortoniella* (*Mortoniella*) *marini* (Rueda Martín and Gibon, 2008)**
Fig. 60

Mexitrichia marini Rueda Martín and Gibon 2008: 219.
Mortoniella marini (Rueda Martín and Gibon): Blahnik and Holzenthal 2011: 45 [member of punensis subgroup].

This species is most similar to *M. punensis* Flint. The latter species was reillustrated by Blahnik and Holzenthal (2011). Both species have a second acute sclerotized lobe on each side of tergum X, in additional to the usual apical lobe, and also similarly developed, upturned lobes emerging from the ventral margin of the phallicata. As in many other species of the group, the paramere appendages cross over one another. *Mortoniella marini* can be easily distinguished from *M. punensis* by the shape of tergum X, which is invaginated between the apicolateral lobes in *M. marini*, with the mesal margin more or less linear, and is projecting and rounded mesally in *M. punensis*.

Adult—Length of forewing: male 3.5-4.4 mm; female 3.9-4.8 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color medium brown, apices of tarsal segments whitish or pale brown. Tibial spurs darker than legs, somewhat contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI large, laterally compressed, subtriangular (rather variable in shape), posteriorly or posteroventrally directed, length about 1 to 1½ times width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin distinctly produced and rounded in dorsal ½, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderate in length, lateral margins subparallel, apicomesal margin straight or somewhat concave between apicolateral lobes, apicolateral lobes divided or forked into subacute dorsal and ventral lobes, dorsal lobes mesally curved from lateral margins, relatively narrowly separated mesally; ventrolateral lobes rounded, projecting. Inferior appendages short, without dorsolateral projections, apicoventral projections very short (shorter than ventromesal projection), ventromesal margin with short, apically rounded projection. Mesal pockets of inferior appendage with spine-like apical processes short, posteriorly curved. Paramere appendage moderately elongate (shorter than dorsal phallic spine), nearly uniformly narrow, apex acute; opposite appendages converging and crossing over one another mesally. Dorsal phallic spine stout, with distinct ventral projection in about middle, apex gradually upturned; as viewed dorsally, with apex of spine acutely bifid (depressed), lateral margins of bifid apex distinctly sclerotized. Phallicata with pair of curved, narrow, spine-like projections from dorsal margin, projections hooked over paramere appendages; basoventral margin of phallicata with large upright lobe, extending transversely to dorsal margin, apex of lobe subacute. Endophallic membrane relatively elongate, with rounded membranous lobes; ventromesal spine short, bluntly rounded apically; phallotremal spines lightly sclerotized, but distinct, projecting apicolaterally.

Material examined—**BOLIVIA: Cochabamba:** rd. to Villa Tunari, Chapare, 1300 m, 8-10.xii.1984, LE Peña G–1 male, 11 females (pinned) (NMNH); Carrasco N. P., Río San Mato, at cable crossing to park, 17.06392° S, 65.47558° W, el 449 m, 12.xi.2004, Robertson, Garcia, Vidaurre–1 male (pinned) (UMSP); **La Paz:** Quebradas de Río Zongo, 1400 m, 24-30.x.1984, LE Peña G–2 males, 8 females (pinned) (NMNH); PN and ANMI Cotapata, Estación Biol. Tunquini, Río Huarinilla, 16.20272° S, 67.83748° W, el 1253 m, 8.xii.2004, Robertson and Valdivia–5 males, 44 females (pinned) (UMSP); PN and ANMI Cotopata, Estación Tunquini, Quebrada El Padrini, 16.20322° S, 67.84487° W, el 1343 m, 6-7.xii.2004, Robertson and Valdivia, 3 males, 16 females (pinned) (UMSP); PN and ANMI Cotopata, Estación Biol. Tunquini, Río Santa Catarina, 16.19477° S, 67.86805° W, el 1525 m, 2-5.xii.2004, Robertson and Valdivia–27 males, 195 females (pinned) (UMSP); **Santa Cruz:** Caballero Prov., PN Amboró, 17.83556° S, 64.38972° W, el 2050 m, 15-21.x.2001, S Spector and J Ledezma–1 male (pinned) (UMSP); **PERU:** Huanuco, 16.ix.1954, EI Schlinger and ES Ross–7 males, 11 females (alcohol) (CAS); **Cuzco:** Paucartambo to Pilcopata rd., Río San Pedro at Puente San Pedro, 13.05500° S, 71.54633° W, 1445 m, 24.vi.1993, Blahnik and Pescador–1 male (pinned) (NMNH); Paucartambo to Pilcopata rd., Quebrada Quitacalzon at Puente Quitacalzon, 13.02617° S, 71.49950° W, 1050 m, 25-27.vi.1993, Blahnik and Pescador–1 male, 1 female (pinned) (NMNH); Buenos Aires, 53 km W Pilcopata, lower montane wet forest, 2280 m, 3-6.xii.1979, JB Heppner–1 male, 1 female (alcohol) (NMNH).

Distribution—Bolivia, Peru.

***Mortoniella* (*Mortoniella*) *punensis* (Flint, 1983)**

Fig. 61

Mexitrichia punensis Flint, 1983: 9; Rueda Martín and Gibon 2008: 223 [reillustration, distribution].
Mortoniella punensis (Flint): Blahnik and Holzenthal 2008: 69 [member of leroda group]; Blahnik and Holzenthal 2011: 45 [redescription, reillustration, member of punensis subgroup].

This species was originally described from Argentina and subsequently recorded from Bolivia by Rueda Martín and Gibon (2008). It was assigned to the punensis subgroup by Blahnik and Holzenthal (2011), who also redescribed the species. The reader is referred to that publication for the redescription. The reillustration is included here for completeness of coverage. *Mortoniella punensis* can be distinguished from all of the species of the punensis subgroup by the structure of tergum X, which has the apicomesal margin expanded and rounded. Like *M. marini* (Rueda Martín and Gibon), it has upright lobes from the ventral margin of the phallicata. The two species undoubtedly form a closely related species pair.

Distribution—Argentina, Bolivia.

***Mortoniella* (*Mortoniella*) *sinuosa*, new species**
Fig. 62

Mexitrichia n. sp. 8: Flint 1996: 383.

This is another distinctive and easily diagnosed species and does not seem to be closely related to the other species of the subgroup. Diagnostic characters include the very elongate, sinuous, ventral projections of the inferior appendages, the spine-like projections from the dorsal margin of the phallicata, and the paired endophallic spines. We have provisionally placed the species in the punensis subgroup, largely because of the spine-like projections from the dorsal margin of the phallicata, but the paramere appendages are very short, and thus do not cross over one another. Other characters, particularly the paired endophallic spines and unmodified apex of the dorsal phallic spine, are also unusual for members of the punensis subgroup.

Adult—Length of forewing: male 4.3-4.7 mm; female 4.5-5.1 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Overall color dark brown, apices of tarsal segments whitish or pale brown. Tibial spurs slightly darker than legs, not greatly contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI very large, laterally compressed, subtriangular, ventrally projecting, length about equal to width at base, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin somewhat rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short to moderate in length, lateral margins subparallel, apicomesal margin with broad U-shaped invagination, extending nearly ½ length of segment; apicolateral lobes formed by mesal invagination, apices distinctly sclerotized, narrow, subtruncate; apex, as viewed laterally, truncate, with tiny acute projection from ventral margin; ventrolateral lobes nearly obsolete. Inferior appendages with short dorsolateral projections and very elongate, narrow, sinuous, ventral projections. Mesal pockets of inferior appendage with spine-like apical processes very short, posteriorly projected. Paramere appendage very short, spine-like, tapering from base, apex acute. Dorsal phallic spine relatively narrow throughout, without distinct ventral projection, apical ½ narrow, attenuate, gradually dorsally curved; as viewed dorsally, relatively narrow throughout, apex acute. Phallicata with pair of posterolaterally curved, horn-like projections from dorsal margin; basoventral margin of phallicata with short, apically rounded, posteriorly projecting, lobe. Endophallic membrane relatively short, rounded, with pair of prominent, dorsolaterally curved, spines from ventral margin, apparently subtending apical projections of inferior appendages; phallotremal spines absent.

Holotype male (pinned)—**BOLIVIA: La Paz:** PN and ANMI Cotapata, Estación Biol. Turquini, Quebrada El Padríni, 16.20322° S, 67.84487° W, el 1343 m, 6-7.xii.2004, Robertson and Valdivia (UMSP000094220) (UASC).

Paratypes—BOLIVIA: La Paz: same data as holotype–4 females (pinned), 1 male, 1 female (alcohol) (UMSP); **PERU: Cuzco:** Paucartambo, Quita Calzon, ca. 30 km NW Pilcopata, km 164, 13.15000° S, 71.36667° W, 1030 m, 1-2.ix.1989, N Adams, et al.–8 females (alcohol) (NMNH); Paucartambo, Quita Calzon, ca. 30 km NW Pilcopata, km 164, streamlet 50 m E Quita Calzon, 13.15000° S, 71.36667° W, 1030 m, 2.ix.1989, N Adams, et al.–1 male, 3 females (alcohol) (NMNH); Paucartambo to Pilcopata rd., Quebrada Quitacalón at Puente Quitacalzón, 13.02617° S, 71.49950° W, el 1050 m, 25-27.vi.1993, R Blahnik & M Pescador–1 male, 6 females (pinned) (NMNH).

Etymology—This species is named *M. sinuosa* for the elongate sinuous ventral projections from the inferior appendages, which is a distinctive characteristic for this species.

—leroda group taxa, unplaced to subgroup

The following species may have their closest relationships to the limona, pocita, or punensis subgroups, but the character evidence for allying them with those subgroups (or with one another) was too weak to be anything more than speculative. Despite this, the majority of the species grouped here do share some character similarities, which might be indicative of their relationship. All of the taxa, except *M. pica*, n. sp. have only fork II present in the hind wing. Within the region covered, this character state is otherwise found only in species of the atenuata subgroup and in two species placed in the punensis subgroup. Similar reduced hind wing venation also occurs in the albolineata and pumila subgroups from southeastern Brazil. An additional character similarity is that, females of all of the species, except *M. applanata* and *M. pica* (for which no female was associated), have well developed pheremonal sacks on both segments VI and VII. The character state was not observed in any other taxa in the leroda group, for which the most common state is for sacks to be present on only segment VI. It does, however, characterize at least some species in the bilineata group. Possibly it reflects a plesiomorphic state for the taxa grouped here; it could also represent a character reversal, since very minute and vestigial sacks are present on segment VII of various other subgroups of the leroda group. Of the species placed here, only *M. rectiflexa* has dorsolateral projections on the phallicata (as in the punensis subgroup). Three of the species, *M. biramosa*, *M. membranacea*, and *M. rectiflexa* have elongate projections from the mesal pockets of the inferior appendages, an unusual character for leroda group tax (inferred to be plesiomorphic, but possibly a character reversal for these taxa). In its unusual combination of characters, each of the taxa placed here is unique and interesting in its own way.

***Mortoniella* (*Mortoniella*) *applanata*, new species**

Fig. 63, 101

Mexitrichia n. sp. 1: Flint 1996: 381.

This species is distinctive because of the shape of the inferior appendages, which are relatively elongate and projecting apically and very much flattened, appearing relatively narrow in lateral view and distinctly broadened in ventral view. The dorsal phallic spine, which is asymmetrically forked apically to form 2 acute apices, is also distinctive. The dorsal phallic spine is more nearly depressed, as in members of the punensis subgroup, than compressed, as in members of the limona subgroup. An interesting feature is the presence of 2 pairs of paramere appendages, one of them very short. Doubled paramere appendages are found in various lineages of *Mortoniella*, but within the leroda group is otherwise found only in *M. biramosa*, n. sp., discussed below. The two species are not otherwise similar. The ventromesal spine of the endophallic membrane is nearly continuous with ventral margin of the phallicata, possibly suggesting the origin of this structure, which is common feature of a number of the other subgroups of the leroda group. The spine could have originated as a projection from the distal margin of the phallicata, which subsequently became detached, isolated, and surrounded by membrane.

Adult—Length of forewing: male 2.5-3.2 mm; female 3.0-3.4 mm. Forewing with forks I, II, and III present, hind wing fork II only. Spur formula 0:4:4. Overall color medium brown, apices of tarsal segments whitish or pale brown. Tibial spurs darker than legs, somewhat contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI large, laterally compressed, subtriangular, ventrally or posteroventrally directed, length slightly greater width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin broadly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X short, lateral margins subparallel, apicomesal margin nearly straight, apicolateral lobes relatively broad and short, irregular in shape; ventrolateral lobes short, rounded. Inferior appendages distinctly setose, without dorsolateral projections, apicoventral projections relatively elongate, very distinctly depressed (dorsoventrally flattened), narrow in lateral view, broad in ventral view, with narrow, attenuate apices. Mesal pockets of inferior appendage with spine-like apical processes short, posteriorly curved. Paramere appendages apparently doubled, one pair very short, other pair moderately elongate, narrow (extending about as far as dorsal phallic spine), apices acute. Dorsal phallic spine relatively short and stout, ventrally deflected in about middle, apex broadly and asymmetrically bifurcate (more or less depressed), apices of bifurcation acute. Phallicata tubular, without dorsal projections, ventral margin distinctly sclerotized. Endophallic membrane short rounded, with paired membranous lobes; ventromesal spine short, apparently nearly continuous with ventral margin of phallicata; phallotremal spines absent.

Holotype male (pinned)—**PERU: Madre de Dios:** Manu, Pakitza, 12.11667° S, 70.96667° W, malaise trap (day collection), 250 m, 14-23.ix.1988, O Flint and N Adams (UMSP000157355) (MJP).

***Paratypes*—PERU: Madre de Dios:** same data as Holotype–3 males, 3 females (pinned) (NMNH); Manu, Pakitza, 11.93333° S, 71.30000° W, 250 m, 19-23.ix.1989, N Adams et al.–1 male (pinned) (NMNH); Manu, Pakitza, 12.11667° S, 70.96667° W, trail 2, 1st stream, 250 m, 14-23.ix.1988. O Flint and N Adams–16 males, 3 females (alcohol) (NMNH), 3 males, 1 female (alcohol) (UMSP).

Etymology—This species is named *M. applanata* from the Latin word *applanatus*, meaning flattened, and referring to the inferior appendages of this species, which are dorsoventrally flattened.

***Mortoniella* (*Mortoniella*) *barinasi*, new species**

Fig. 64

Mortoniella barinasi is most readily diagnosed by the elongate, curved ventral projections of the inferior appendages and by the shape and enlarged apex of the dorsal phallic spine. In both of these characters it has a similarity to *M. pocita*, which differs in having elongate projections from the dorsal margin of the phallicata and in lacking a ventromesal endophallic spine. The similarity of the two species may be only superficial.

Adult—Length of forewing: male 2.3-2.8 mm; female 3.0-3.5 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3/4:4. Overall color light brown (in alcohol, specimens faded). Wing bar not evident.

Male genitalia—Ventral process of segment VI laterally compressed, subtriangular, posteroventrally directed, length about 2 times width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin broadly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X relatively short, lateral margins subparallel, apicomesal margin nearly straight, apicolateral lobes relatively broad and short, subtruncate, apicolateral margin of each lobe with small, acute point; ventrolateral lobes short, rounded. Inferior appendages with short dorsolateral projections, apicoventral projections elongate, sinuous, apices acute and curved mesally. Mesal pockets of inferior appendage with spine-like apical processes narrow, moderate in length, posteriorly projecting. Paramere appendage elongate (extending about as far as dorsal phallic spine), somewhat irregular in contour, apex very narrow, acute, with sinuous dorsal inflection. Dorsal phallic spine stout, with ventral margin very sinuously indentate to accommodate rounded projection on endophallic membrane, apex enlarged and inflated, ventral margin of apex rounded, dorsal margin somewhat hood-like. Phallicata very short, with basodorsal projection, articulating with dorsal phallic spine, laterally with prominent sclerotized, posteriorly projecting, apically rounded, lobe. Endophallic membrane with narrow, curved ventromesal spine; phallotremal spines relatively elongate, narrow, narrowly divided, emerging from rounded basal projection that articulates with sinuous ventral indentation of dorsal phallic spine.

Holotype male (alcohol)— **VENEZUELA: Barinas:** Río Santo Domingo, 17.ii.1976, CM and OS Flint, Jr (UMSP000097090) (NMNH).

***Paratypes*—VENEZUELA: Barinas:** same data as holotype– 6 males, 71 females (alcohol) (NMNH), 2 males, 6 females (alcohol) (UMSP).

Etymology—This species is named *M. barinasi* for the state of Barinas in Venezuela, where the type specimens were collected.

***Mortoniella* (*Mortoniella*) *biramosa*, new species**
Fig. 65, 113

Mortoniella biramosa is best diagnosed by having 2 pairs of subequal paramere appendages and paired ventral endophallic spines. Paired endophallic spines are typical of members of the bolivica subgroup, which differ in having a reflexed dorsal lobe on the inferior appendages. The relatively short, but distinctly posteriorly directed ventral process of segment VI is similar to species in the punensis subgroup. The elongate, spine-like projections from the mesal pockets of the inferior appendages are also distinctive and represent a relatively unusual character within the leroda group, most of whose species have short curved projections.

Adult—Length of forewing: male 2.6 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color light brown (in alcohol). Wing bar not evident.

Male genitalia—Ventral process of segment VI laterally compressed, subtriangular, posteriorly directed, length slightly greater than width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin broadly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderate in length, lateral margins subparallel, apicomesal margin with shallow V-shaped emargination, apicolateral lobes narrow, moderately elongate, subacute; ventrolateral lobes short, rounded. Inferior appendages without dorsolateral lobes, apicoventral projections moderately elongate, upturned apically, apices acute. Mesal pockets of inferior appendage with spine-like apical processes elongate, narrow, posteriorly projected. Paramere appendages doubled, appendages on each side elongate, narrow, subequal in length, apices acute, extending about as far as dorsal phallic spine. Dorsal phallic spine undulate in contour, nearly uniform in width, strongly upturned in about apical 1/3, apex acute or subacute. Phallicata moderately elongate, without basodorsal projection, basoventral margin with short rounded lobes on either side. Endophallic membrane with membranous or lightly sclerotized basodorsal lobes and projecting, divided apex, ventrally with pair of prominent curved spines; phallotremal spines absent.

Holotype male (alcohol)—**VENEZUELA: Barinas:** Río Sinigüis in Caño Grande, 8.4000° N, 70.77417° W, el 520 m, 1997.iii.22, Holzenthal (UMSP000092464) (UMSP).

Etymology—This species is named *M. biramosa*, from the Latin *ramosus*, or branch, and referring to the doubled paramere appendages that characterizes this species.

***Mortoniella* (*Mortoniella*) *membranacea*, new species**
Fig. 66

This species has the distinctive feature of having the apex of the dorsal phallic spine modified into a membranous lobe, and can be diagnosed on that basis alone, since it is found in no other described species. Other characters, considered in combination, are also distinctive and do not suggest a close relationship of *M. membranacea* to any other described species. Characters of note, most probably plesiomorphic for the leroda group, are the simple tubular phallicata, without distinct processes, the elongate, spine-like projections from the mesal pockets of the inferior appendages, the absence of endophallic spines, the general shape of tergum X, which has a general similarity to species in the florica/leroda subgroups, and the short, posteriorly projected, ventral process of segment VI. It also lacks fork III in the hind wing, a presumably derived character state.

Adult—Length of forewing: male 2.9-3.2 mm; female 3.2-3.6 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:4:4. Overall color light brown, apices of tarsal segments whitish or pale brown. Tibial spurs darker than legs, contrasting in color. Wing bar at anastamosis indistinct, marked with light brown setae, most evident at arculus.

Male genitalia—Ventral process of segment VI laterally compressed, subtriangular, posteriorly directed, length slightly greater than width at base, apex acute, process not retracted anterobasally.

Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin rounded in dorsal half, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderate in length, lateral margins subparallel, apicomesal margin nearly straight, apicolateral lobes narrow, moderately elongate, acute or subacute apically, somewhat mesally curved from lateral margin; ventrolateral lobes short, rounded. Inferior appendages with short dorsolateral lobes, apicoventral projections moderately elongate, narrow, acute apically. Mesal pockets of inferior appendage with spine-like apical processes narrow, elongate, posteriorly projecting. Paramere appendage elongate (extending about as far as dorsal phallic spine), uniformly narrow, acute apically, dorsally inflected at base and ventrally curved apically. Dorsal phallic spine nearly uniform in width, strongly upturned in about apical ¼, upturned apex with projecting membranous posterior lobe. Phallicata simple in structure, elongate, tubular, without distinct projections. Endophallic membrane without spines, but with conspicuous membranous basodorsal lobes (apparently subtending apices of paramere appendages); phallotremal spines absent.

Holotype male (pinned)—**BOLIVIA: Santa Cruz:** PN and ANMI Amboró, Guardia Parque Mataracú, Quebrada Verde Uno, 17.55389° S, 63.86917° W, el 374 m, 19-23.xi.2004, Robertson, Garcia and Vidaurre (UMSP000094105) (UASC).

***Paratypes*—BOLIVIA: Santa Cruz:** same data as Holotype–6 males, 65 females (pinned); 7 males (alcohol) (UMSP), 1 male (pinned) (NMNH); PN and ANMI Amboró, Guardia Parque Mataracú, Río Yapacaní, 17.52072° S, 63.86795° W, el 329 m, 26.xi.2004 , Robertson, Garcia and Vidaurre–21 males (alcohol) (UMSP); same locality and collectors, 28.xi.2004–1 male, 12 females (pinned) (UMSP); PN and ANMI Amboró, Guardia Parque Mataracú, Las Cataratas, 17.56972° S, 63.85013° W, el 375 m, 24-25.xi.2004, Robertson, Garcia and Vidaurre–1 male, 9 females (pinned) (NMNH).

Etymology—This species is names *M. membranacea* for the membranous apex of the dorsal phallic spine, a diagnostic character for this species.

***Mortoniella* (*Mortoniella*) *pica*, new species**
Fig. 67

Mortoniella pica has the general appearance of species in the limona subgroup, with enlarged, paired spines (possibly modified phallotremal spines) on the endophallic membrane, and with the apex of the dorsal phallic spine compressed and modified. However, it lacks the rounded apicomesal processes of tergum X that characterize members of the limona subgroup, and it possesses a small ventromesal spine on the endophallic membrane, which is not present in any of described species of that subgroup. However, it is conceivable that it could be a relatively basal or unusually modified species of the limona subgroup. Regardless of its affinity, *M. pica* is readily diagnosed by the structure of the apex of the dorsal phallic spine, which has a very acute ventral projection, unlike any other species of *Mortoniella.*

Adult—Length of forewing: male 3.6 mm. Forewing with forks I, II, and III present, hind wing with forks II and III. Spur formula 0:4:4. Color (in alcohol) medium brown. Wing bar not evident.

Male genitalia—Ventral process of segment VI laterally compressed, subtriangular, posteriorly directed, length slightly greater than width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin rounded in dorsal half, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderate in length, base with raised mesal process bearing long apical setae, lateral margins subparallel, apicomesal margin broadly U-shaped, apicolateral lobes narrow, moderately elongate, acute apically, somewhat mesally curved from lateral margin; ventrolateral lobes rounded, projecting. Inferior appendages with short, subtruncate dorsolateral lobes and short, subtriangular ventromesal projection. Mesal pockets of inferior appendage with spine-like apical processes short, posterodorsally curved. Paramere appendage moderate in length, shorter than dorsal phallic spine, relatively stout, uniform in width, acute apically, weakly arched and downcurved. Dorsal phallic spine with slight ventral protrusion in basal ½, upturned in about apical ¼, apex acute, ventral margin with acute projection at point of inflection. Phallicata short, weakly sclerotized, simple in structure, with short basodorsal projection. Endophallic membrane with short curved ventromesal spine and pair of large sclerotized endophallic spines; phallotremal spines absent.

Holotype male (alcohol)—**ECUADOR: Pastaza:** Puyo (27 km N), Estación Fluvia Metrica, 4.ii.1976, Spangler et al. (UMSP000097063) (NMNH).

Etymology—The name *M. pica* was suggested by the apex of the dorsal phallic spine of this species, somewhat resembling a pike or a woodpecker's bill (family Picidae).

***Mortoniella* (*Mortoniella*) *rectiflexa*, new species**

Fig. 68

This is a very distinctive species, unlikely to be confused with any other described species. Especially diagnostic is the strongly upturned and widened apex of the dorsal phallic spine, which is acute apically and has minute spines on its posterior (ventral) surface. Equally diagnostic are the helical projections from the dorsal margin of the phallicata, which cause the paramere appendages to cross over one another. This character could indicate a relationship to the punensis subgroup, but other character evidence is equivocal.

Adult—Length of forewing: male 2.9-3.4 mm; female 3.0-3.9 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:4:4. Overall color (in alcohol) medium brown. Wing bar not evident.

Male genitalia—Ventral process of segment VI large, laterally compressed, subtriangular, posteriorly directed, length about 1½ to 2 times width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin distinctly rounded in dorsal ½, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderate in length, lateral margins subparallel, apicomesal margin with shallow indentation, apicolateral lobes moderately elongate, subacute apically, weakly mesally curved from lateral margins; ventrolateral lobes rounded, distinctly projecting. Inferior appendages short, without distinct dorsolateral or apicoventral projections. Mesal pockets of inferior appendage with spine-like apical processes relatively elongate, posteriorly projecting, subtending ventral margin of phallicata. Paramere appendage elongate (longer than apical inflection of dorsal phallic spine), nearly uniformly narrow, apex acute; opposite appendages converging and crossing one another mesally. Dorsal phallic spine stout, with only slight ventral bulge in about middle, apex very abruptly and nearly rectilinearly upturned in about apical 1/3, spine slightly widened at point of inflection, narrowing to acute apex, posterior margin of flexed apex with numerous small spines; as viewed dorsally, very distinctly widened in about middle, less so at apical inflection. Phallicata with pair of narrow, helically curved, spine-like projections from dorsal margin, projections hooked over paramere appendages, causing them to cross over one another mesally. Endophallic membrane without ventromesal spine; phallotremal spines very small.

Holotype male (pinned)—**ECUADOR**: Pastaza: Puyo (27 km N) Estación Fluvia Metrica, 4.ii.1976, Spangler, et al. (UMSP000146419) (NMNH).

***Paratypes*—ECUADOR: Esmeralda:** La Union, 3.ii.1979, JJ Anderson–2 males, 1 female (alcohol) (NMNH); **Napo:** Tena (17 km SW), 28.v.1977, PJ Spangler and DR Givens–1 male, 8 females (alcohol) (NMNH); Puyo, 6.v.1977, PJ Spangler and DR Givens–1 male, 7 females (alcohol) (NMNH); **Pastaza:** Puyo, 5.v.1977, PJ Spangler and DR Givens–4 males, 20 females (alcohol) (NMNH); same locality and collectors, 6.v.1977–2 males, 1 female (alcohol) (NMNH); same locality and collectors, 8.v.1977–1 male (alcohol) (NMNH); same locality and collectors, 10.v.1977–1 male, 1 female (alcohol) (NMNH); same locality and collectors, 13.v.1977–1 male, 6 females (alcohol) (NMNH); same locality and collectors, 14.v.1977–1 male, 2 females (alcohol) (NMNH); same locality and collectors, 16.v.1977–1 male (alcohol) (NMNH); same locality and collectors, 21.v.1977–5 males, 9 females (alcohol) (UMSP); Puyo, 30.i.1976, Spangler et al.–8 males, 11 females (alcohol) (NMNH); Puyo, malaise trap, 8-10.ii.1976, Spangler et al.–1 male (alcohol) (NMNH); Puyo (27 km N), Est. Fluvia Metrica, 4.ii.1976, Spangler, et al.–3 males, 1 female (pinned), 14 males, 6 females (alcohol) (NMNH); Puyo (3 km W) 15.vii.1976, J Cohen–6 males, 20 females (alcohol) (NMNH); **Zamora-Chinchipe:** Zamora, at lights, 1-5.vi.1976, A Langley et al.–1 male (pinned) (NMNH); Zamora, 4.xii.1978, JJ Anderson–6 males, 15 females (alcohol) (NMNH).

Etymology—This species is named *M. rectiflexa* for the apex of the dorsal phallic spine, which is bent or flexed at nearly a right angle and is particularly diagnostic.

***Mortoniella* (*Mortoniella*) "unplaced species"**

All of the taxa treated here have the same primitive venational character as species in the bilineata group, as discussed above (hind wing with Cu_1 forked, thus with 3 forks–II, III and V). Many of them also have an elongate, narrow ventral process on segment VI. Exceptions to the latter are several species of the argentinica and tridens subgroups, discussed below. Unlike the two major species groups of *Mortoniella* (*Mortoniella*), which are morphologically coherent in many respects, the species in the subgroups discussed below are markedly divergent, suggesting that they are not "closely" related. Despite this, a number of the species tend to have similar character attributes, in particular the presence of elongate, retrorsely reflexed dorsal lobes on the inferior appendages; elongate, spine-like projections on the mesal pockets of the inferior appendages; and the absence of endophallic spines. It is likely that these characters, along with the more complete venation and the elongate, narrow ventral process of segment VI, are plesiomorphic characters within the subgenus *Mortoniella*. Most of the species within this "group" are newly described below. Rather tenuous and speculative support for a relationship between the argentinica, esrossi, and tridens subgroups is included in the discussions of those subgroups. The remaining taxa treated here are each distinctive and do not seem to be closely related.

—argentinica subgroup

Included species: *M. argentinica* (Schmid); *M. cornuta*, n. sp.; *M. croca*, n. sp.; *M. curvistylus*, n. sp.; *M. spinulata* (Flint).

The similarity of *Mortoniella argentinica* (Schmid) to *M. spinulata* (Flint) was discussed in a previous paper (Blahnik and Holzenthal 2011) and the reader is referred to that paper for a redescription and reillustration of *M. argentinica*. *Mortoniella spinulata* and 3 related new species are described below. Of the species assigned to this subgroup, only *M. argentinica* has an elongate, narrow ventral process on segment VI; the others have the process more or less trianguloid, relatively short and wide basally and more or less ventrally projecting, thus more like species in the leroda group. Females of *M. argentinica* and *M. cornuta*, n. sp., which are the only species of the subgroup for which females were available, have genitalia similar to those in the leroda group, without an invaginated dorsal margin of segment VIII. All of the species in the argentinica subgroup, except *M. curvistylus*, n. sp., are characterized by having 2 pairs of paramere appendages (considered an apomorphy for the subgroup); elongate, narrow, lance-like projections from the mesal pockets of the inferior appendages; and an elongate, recurved dorsal lobe on the inferior appendages. As discussed above, the latter characters may be plesiomorphic for the subgenus *Mortoniella* as a whole, though absent or lost in the majority of taxa, in both the leroda and bilineata groups. The general shape of segment IX of species in the argentinica subgroup resembles species of the leroda species group: posterior margin uniformly rounded and with the lobes narrowly separated dorsally, or relatively narrowly separated. Most of the species seem to have at least a small mesal apodeme on the dorsal margin of the phallobase, as in species of the bilineata group. Species lack distinct dorsal projections on the base of the phallicata and also lack a ventromesal endophallic spine, although sclerotized phallotremal spines or paired endophallic spines (possibly modified phallotremal spines) are present. On balance, the subgroup seems to be more closely related to the leroda group than to the bilineata group.

***Mortoniella* (*Mortoniella*) *cornuta*, new species**
Fig. 69, 99

Mortoniella cornuta, n. sp. is most similar to *M. spinulata* (Flint), especially in the shape of tergum X, which has a very narrow apicomesal cleft, apparently to accommodate a sharply upturned and much narrowed apex of the dorsal phallic spine. The most distinctive and diagnostic character of this species is a pair of conical horn-like projections emerging from the lateral margins of the dorsal phallic spine at about midlength. *Mortoniella cornuta* also differs from *M. spinulata* in that the reflexed dorsal branch of inferior appendages is longer and lacks spines; also, the paired paramere appendages are more or less subequal in length, rather than being distinctly different in length and shape.

Adult—Length of forewing: male 3.6-4.0 mm; female 3.9 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Head distinctly small. Overall color dark brown, apices of mesotarsal segments whitish. Tibial spurs slightly darker than legs, weakly contrasting in color. Wing bar at anastamosis marked with white setae.

Male genitalia—Ventral process of segment VI laterally compressed, large, subtriangular, ventrally directed, length subequal to width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin slightly produced, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X relatively short, basally with rounded elevation, lateral margins converging apically, apicomesal margin with very narrow incision, apicolateral lobes very narrowly separated, acute apically; ventrolateral lobes prominent, rounded. Inferior appendages with very elongate, narrow posteriorly recurved, dorsolateral projections, apicoventral projections absent. Mesal pockets of inferior appendage with spine-like apical processes narrow, very elongate, posteriorly projecting. Paramere appendages doubled, both elongate (extending about as far as dorsal phallic spine), more lateral one very narrow basally, slightly widened in apical ½, mesal one narrow, more distinctly widened preapically, apices of both acute. Dorsal phallic spine widened in middle, with very distinct conical lateral projections, apical 1/3 distinctly dorsally inflected and very narrow, apex acute. Phallobase with small, but distinct, lightly sclerotized mesal apodeme. Phallicata simple in structure, elongate tubular, with short basodorsal projection. Endophallic membrane elongate, without ventromesal spine; phallotremal spines small, distinct, apical.

Holotype male (pinned)—**ECUADOR: Tungurahua:** 13 km E Baños, el 1550 m, 15.ix.1990, OS Flint, Jr (UMSP000146416) (NMNH).

***Paratypes*—ECUADOR: Tungurahua:** same data as holotype–3 males, 1 female (pinned) (NMNH).

Etymology—This species is named *M. cornuta* from the Latin *cornu*, a horn, and referring to the conical horn-like processes on the lateral margin of the dorsal phallic spine.

***Mortoniella* (*Mortoniella*) *croca*, new species**
Fig. 70

Mexitrichia n. sp. 6: Flint 1996: 382.

This species bears a general similarity to other species in the argentinica subgroup and is perhaps most similar to *M. argentinica* Flint, especially in having a wide mesal emargination of tergum X and a pair of very differently shaped paramere appendages on each side. It differs in that the recurved dorsal lobe of the inferior appendages is much smaller (nearly degenerate) and the mesal invagination of tergum X of *M. coca* is broadly V-shaped, rather than U-shaped. Additionally, the ventral process of segment VI is broadly triangular, rather than elongate and narrow, and the shorter of the two paramere appendages is very distinctly hooked apically. In the latter character *M. croca* more nearly resembles *M. spinulata* (Flint), but that species has a very narrow mesal invagination of tergum X, as well as a spined dorsal lobe on the inferior appendages.

Adult—Length of forewing: male 3.5-3.7 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Head distinctly small. Overall color dark brown, apices of mesotarsal segments whitish. Tibial spurs slightly darker than legs, weakly contrasting in color. Wing bar at anastamosis marked with white setae.

Male genitalia—Ventral process of segment VI laterally compressed, large, subtriangular, posteroventrally directed, length subequal to width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin slightly produced, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderate in length, basally with rounded elevation, lateral margins subparallel, apicomesal margin with very wide, V-shaped emargination, apicolateral lobes subacute, slightly mesally curved; ventrolateral lobes relatively prominent, rounded. Inferior appendages with dorsal projection apparently vestigial, lightly sclerotized, very narrow, attenuate, posteriorly curved. Mesal pockets of inferior appendage with spine-like apical processes narrow, very elongate, posteriorly projecting. Paramere appendages doubled, one pair elongate (extending about as far as dorsal phallic spine), slightly widened in apical ½, apex acute, lateral pair about ½ length of other pair, very narrow, apex distinctly hooked. Dorsal phallic spine, in lateral view, narrow, attenuate, apical ½ retrorsely recurved; in dorsal view, relatively narrow throughout. Phallobase with small, but distinct, lightly sclerotized mesal apodeme. Phallicata simple in structure, with pair of short rounded basoventral projections. Endophallic membrane elongate, with prominent paired ventrolateral membranous lobes, phallotremal spines small, apical.

Holotype male (pinned)—**PERU: Cuzco:** Paucartambo, Puente San Pedro, ca. 50 km W Pilcopata, 1600 m, 2-3.ix.1988, O Flint and N Adams (UMSP000157345) (MJP).

Paratypes—PERU: Cuzco: same data as Holotype–1 male (pinned) (NMNH).

Etymology—This species is named *M. croca*, from the Medieval Latin word *croca*, a shepherd's crook (used as a noun in apposition), referring to the shorter of the two paramere appendages in this species, which is very distinctly hooked apically.

Mortoniella (*Mortoniella*) *curvistylus*, new species

Fig. 71

Mortoniella curvistylus has a general similarity to other species in the argentinica subgroup, particularly in the possession of an elongate and strongly curved dorsal process on the inferior appendages and very elongate spine-like processes from the mesal pockets of the inferior appendages. Unlike the other species in this group, it seems to have only 1 pair of paramere appendages (possibly a secondary loss?). It has a relatively narrow V-shaped emargination of tergum X, but wider and more distinct than in either *M. cornuta*, n. sp. or *M. spinulata* (Flint). The most unusual and diagnostic feature of this species is that the dorsal phallic spine seems to be fused or semi-fused to the endophallic membrane, from which point a retrorse spine emerges that articulates with a depression on the basodorsal margin of the phallicata.

Adult—Length of forewing: male 3.8 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Head distinctly small. Overall color dark brown. Tibial spurs slightly darker than legs, contrasting in color. Wing bar at anastamosis marked with white setae. anterolaterally, length greatest midlaterally, posterolateral margin slightly produced, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderate in length, basally with rounded elevation, lateral margins subparallel, apicomesal margin with narrow V-shaped incision, apicolateral lobes formed by apical incision, apices of lobes somewhat ventrally curved, subacute; ventrolateral lobes prominent, rounded. Inferior appendages with very elongate, narrow, posteriorly recurved, dorsolateral lobes, apicoventral projections absent. Mesal pockets of inferior appendage with spine-like apical processes narrow, very elongate, posteriorly projecting. Paramere appendage single on each side, narrow, elongate (extending about as far as dorsal phallic spine), distinctly widened preapically, widened preapical expansion with several spines, apex acute. Dorsal phallic spine, in lateral view, almost uniformly narrow, apical 1/3 weakly upturned, spine possibly fused or semifused to phallicata at inflection; as viewed dorsally, relatively broad in middle, gradually narrowing apically, apex acute. Phallobase with very small, lightly sclerotized, mesal apodeme. Phallicata relatively elongate, tubular, apicodorsal margin (or base of endophallic membrane) with retrorse, spine-like projection, emerging at inflection point of dorsal phallic spine, apex of spine articulating with basodorsal margin of phallicata. Endophallic membrane short, simple in structure, without spines; phallotremal spines apparently absent.

Holotype male (pinned)—**ECUADOR: Zamora-Chinchipe:** 30 km E Loja, el 2000 m, 23.ix.1990, OS Flint, Jr (UMSP000146418) (NMNH).

Etymology—This species is named *M. curvistylus* from the Latin *curvus*, meaning bent, and *stylus*, a sharp pointed instrument, and referring to the unusual retrorse spine on the endophallic membrane that hooks backward to contact a depression in the dorsal margin of the phallicata.

***Mortoniella* (*Mortoniella*) *spinulata* (Flint, 1991)**

Fig. 72

Mexitrichia spinulata Flint 1991: 22.

Mortoniella spinulata (Flint): Blahnik and Holzenthal 2008 [member of leroda species group]; Blahnik and Holzenthal 2011 [*incertae sedis* to species group].

Mortoniella spinulata is probably most similar to *M. cornuta*, n. sp. Both species have very narrowly divided apical lobes on tergum X, and a correspondingly narrowed apex of the dorsal phallic spine. *Mortoniella spinulata* can be distinguished from *M. cornuta*, and other species of the argentinica subgroup, by the presence of spinose dorsal lobes on the inferior appendages. *Mortoniella spinulata* also lacks the horn-like lateral projections on the dorsal phallic spine that characterizes *M. cornuta*. The two pairs of paramere appendages in *M. spinulata* differ in shape and most closely resemble those of *M. croca*, n. sp. in that the shorter one is very narrow and hooked apically. *Mortoniella croca* can be easily distinguished in having a very wide V-shaped mesal invagination of tergum X, and by having a much reduced, nearly vestigial, dorsal lobe on the inferior appendages.

Adult—Length of forewing: male 4.1 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Head distinctly small. Overall color dark brown. Tibial spurs slightly darker than legs, contrasting in color. Wing bar at anastamosis indistinctly marked with white setae.

Male genitalia—Ventral process of segment VI laterally compressed, large, subtriangular, ventrally directed, length subequal to width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin slightly produced, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X short with very elongate setae, basally with rounded elevation, ventrolateral lobes prominent, projecting laterally; overall shape of tergum, in dorsal view, subquadrate, with mesal pair of very narrowly separated, spine-like, apicolateral lobes; apices of ventrolateral lobes angular, prominent. Inferior appendages with elongate, narrow, posteriorly recurved, dorsolateral lobes, with row of spines in apical ½, apex of dorsolateral lobe very narrowly attenuate; apicoventral projections absent. Mesal pockets of inferior appendage with spine-like apical processes elongate, posteriorly projecting. Paramere appendages doubled, one pair elongate, narrow (extending about as far as dorsal phallic spine), slightly widened in apical ½ and strongly mesally curved, widened apex covered with minute spines; second, lateral pair about ½ length of first pair, very narrow throughout, distinctly hooked apically, apex acute. Dorsal phallic spine distinctly widened in middle in both lateral and dorsal views, apical 1/3 dorsally inflected and very narrow, apex acute, ventral margin of spine at apical inflection with distinct small tubercle or protuberance, articulating with sclerotized depression in dorsal margin of endophallic membrane. Phallobase with small, lightly sclerotized, mesal apodeme. Phallicata tubular, with pair of short rounded ventrolateral projections and additional pair of rounded ventromesal projections near apex. Endophallic membrane elongate, with depressed dorsal sclerite, accommodating reflexed apex of dorsal phallic spine; phallotremal spines small, distinct, apical.

Material examined—**COLOMBIA: Antioquia:** Quebrada Espadera, 7 km N Medellín, 24.ii.1983, OS Flint, Jr–2 male Paratypes (pinned) (NMNH).

—esrossi subgroup

Included species: *Mortoniella esrossi*, n. sp.

The single species listed here is placed in its own subgroup because it is morphologically distinct from other species. It is characterized by having paramere appendages that lack typical rounded basal processes; instead, the appendages lie parallel to the dorsal phallic spine and are each accompanied by a projecting ventral lobe (which could be a modification of the usual basal process). *Mortoniella esrossi* is also unusual in that the dorsal phallic spine seems to have a ventral "foot" in its apical part. This may reflect a fusion of the dorsal phallic spine with dorsal margin of the endophallic membrane. A similar development seems to occur in *M. curvistylus*, n. sp. in the argentinica subgroup, but whether an actual fusion occurs in either species is not easily determinable. An additional unusual feature of *M. esrossi* is a large endophallic spine with two branches, which may be a modification of the small phallotremal spines found in some other taxa. Like a number of the "unplaced species" discussed here, the inferior appendages have narrow, reflexed dorsal lobes, and spine-like projections from the mesal pockets of the inferior appendages that are relatively elongate. The presence of these features in what are otherwise very divergent taxa suggests that they may be plesiomorphic for the subgenus *Mortoniella* in general, in which case they would have had to been lost in various lineages, including the majority of taxa in both the leroda and bilineata groups. Other aspects of the morphology of *M. esrossi* suggest a possible relationship to the tridens subgroup, but these are admittedly subject to interpretation. Among these are the paramere appendages, which seem to be in a transitional stage of fusing to the dorsal phallic spine; also, the projecting ventral lobe at the base of each of the appendages is similar to that from which a second pair of appendages emerges in the tridens subgroup. If the latter represents a homology, a second pair of appendages may also have been present in the ancestor of *M. esrossi*, but secondarily lost. An additional character suggesting a relationship is the more or less subquadrate tergum X found in both *M. esrossi* and members of the tridens subgroup.

***Mortoniella* (*Mortoniella*) *esrossi*, new species**
Fig. 73

This species is best diagnosed by the reflexed dorsal lobe of the inferior appendages, subquadrate tergum X, without distinct apicolateral processes, and by the structure of the dorsal phallic spine, which has a projecting ventral "foot" in its apical ½.

Adult—Length of forewing: male 3.0 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V; both wings broadly rounded apically. Spur formula 0:4:4. Color (in alcohol) yellowish brown (specimen faded and partially denuded). Wing bar not evident.

Male genitalia—Ventral process of segment VI laterally compressed, narrow, elongate, posteriorly directed, length about 2 times width at base, apex subacute. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin broadly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X moderately elongate, subquadrate, lateral margins subparallel, apicomesal margin nearly straight, apicolateral lobes absent (or not evident in dorsal view); ventrolateral lobes elongate, more or less truncate apically. Inferior appendages with elongate, narrow, posteriorly recurved, dorsolateral projections, reflexed apices attenuate, lightly sclerotized, acute apically, apicoventral projections absent. Mesal pockets of inferior appendage with spine-like apical processes narrow, elongate, posteriorly projecting; as viewed ventrally, sinuously curved at base, subparallel apically. Paramere appendage elongate (extending about as far as dorsal phallic spine), narrow, nearly uniform in width, acute apically. Basal segment of parameres not evident as such, but with projecting, rounded, flattened lateral lobes. Dorsal phallic spine, as viewed laterally, nearly uniform in width, apex slightly upturned, acute, ventral margin at about apical 1/3, with foot-like projection, possibly fused to dorsal margin of endophallic membrane; spine, as viewed dorsally, relatively broad, apex very acutely narrowed. Phallicata simple in structure, without distinct projections. Endophallic membrane with prominent, forked sclerite (possibly modified phallotremal spines), apices of branches acute.

Holotype male (alcohol)—**COLOMBIA:** 3 mi W Villavicencio, 11.iii.1955. EI Schlinger and ES Ross (UMSP000095053) (CAS).

Etymology—This species is named *M. esrossi* in honor of Edward S. Ross, co-collector of the type specimen.

—proakantha subgroup

Included species: *Mortoniella proakantha,* n. sp.

Except for its primitive hind wing venation (3 forks present, II, III, and V) and the very elongate, narrow ventral process of segment VI, this species could easily pass as a member of the akantha subgroup of the leroda species group. Characters suggestive of this include the overall structure of the inferior appendages, with a symmetrical ventromesal projection and elongate, reflexed dorsal lobes. The latter character, as discussed above, is likely a plesiomorphic character for the subgenus *Mortoniella* (present in the immediate ancestor of the group). Other character similarities to the leroda group include a segment IX with uniformly rounded anterior margin and with lobes narrowly separated dorsally; short, curved, spine-like projections from the mesal pockets of the inferior appendages; and the general shape of tergum X, with a rounded mesal excavation and projecting lateral lobes. Female genitalia for the species are highly unusual, and unlike any other species of *Mortoniella* examined, in having a segment VIII with elongate, wiry setae and in having a segment X that is bulbous, rather than flattened and fused to segment IX (Fig. 114). It is conceivable that the female is incorrectly associated, but there is no other described species within Protoptilinae that it could be assigned to. Despite the name given to the included species, a basal or even close relationship to the akantha group cannot be inferred and we are uncertain about its actual relationship.

***Mortoniella* (*Mortoniella*) *proakantha*, new species**
Fig. 74, 114

Mortoniella proakantha bears an overall similarity to members of the akantha subgroup of the leroda group, particularly in the shape of the inferior appendages, which have a symmetrical mesal projection and narrow, recurved dorsolateral projections, and also have mesal pockets with short spine-like ventral projections. It differs diagnostically in having fork V of the hind wing present (Cu_1

forked apically) and in having a very elongate, narrow ventral process on segment VI (both probably plesiomorphic characters). Additionally, the dorsal phallic spine is unusual in having a long curved basal stalk (as in many members of the bilineata group) and an apex that is bifid and has many minute spines.

Adult—Length of forewing: male 3.5-3.7 mm; female 4.0 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Color (in alcohol) brown. Tibial spurs darker than legs, contrasting in color. Wing bar not evident.

Male genitalia—Ventral process of segment VI very narrow and elongate, posteriorly directed, length about 6 times width at base, apex acute. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin broadly rounded, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X moderately elongate, lateral margins subparallel, apicomesal margin with relatively shallow U-shaped or V-shaped emargination, apicolateral lobes short, inset from lateral margin, apices distinctly sclerotized and somewhat ventrally curved; ventrolateral lobes narrow, elongate, projecting, rounded apically, with elongate setae. Inferior appendages with very elongate, narrow, posteriorly recurved, dorsolateral projections, somewhat detached or inset from lateral margin, apices acute, with few minute spines, apicoventral projection of appendages prominent, elongate, apex subtruncate. Mesal pockets of inferior appendage with spine-like apical processes short, posterodorsally curved. Paramere appendage relatively short (much shorter than dorsal phallic spine), slightly widened in apical ½, apex acute, with numerous small spines-. Basal segment of paramere enlarged and elevated, subtending dorsal phallic spine at apex of long basal stalk. Dorsal phallic spine, as viewed laterally, with elongate, narrow basal stalk, apical ½ narrow, undulate in contour, apex with minute spines, slightly upturned; spine, as viewed dorsally, narrow throughout (basal ½ very narrow), apex acutely bifid, with minute spines. Phallicata narrow basally, expanded dorsally to form rounded elevation, apparently articulating with dorsal phallic spine. Endophallic membrane simple, without spines; phallotremal spines absent.

Holotype male (alcohol)—**ECUADOR: Napo:** OY10 unnamed trib. to Oyacachi R., ca. 5.2 mi W of Oyacachi (UMSP000097164) (NMNH).

***Paratypes*—ECUADOR: Napo:** same data as holotype–1 male, 1 female (alcohol) (NMNH).

Etymology—This species is named *M. proakantha*, from the Latin or Greek prefix *pro*-, meaning before, and referring to its retention of primitive characters and overall resemblance to species in the akantha subgroup.

—santiaga subgroup

Included species: *Mortoniella acutiterga*, n. sp.; *M. santiaga* Sykora.

The members of this subgroup are very unusual and have no obvious close relationship to other subgroups. *Mortoniella santiaga* was placed by Sykora in the flinti subgroup of the bilineata group. However, it has very few character similarities to either members of the flinti subgroup or to the bilineata group, other than its hind wing venation (Cu_1 forked or fork V present) and the narrow, elongate ventral process of segment VI, both undoubtedly plesiomorphic characters. Characters suggestive of a relationship to the bilineata group include the short, paired, sclerotized, ventral lobes of the phallicata and the sharply angled ventrolateral lobe of tergum X. Characters suggestive of a relationship to the leroda group include the overall shape of segment X (broadly rounded laterally and with lobes narrowly separated dorsally), the very short spine-like projections from the mesal pockets of the inferior appendages, and the absence of a dorsal apodeme on the phallobase. None of these characters are decisive. The rounded, elevated base of the phallicata somewhat resembles that of *M. proakantha*, n. sp. and *M. unilineata* Sykora, but whether this reflects a relationship is also uncertain. All of these species also have a very elongate, narrow ventral process on segment VI.

***Mortoniella* (*Mortoniella*) *acutiterga*, new species**
Fig. 75

This species is apparently very closely related to *M. santiaga* Sykora. Unfortunately, the type of *M. santiaga* could not be located for a direct comparison. Both species are characterized by an unusual and expanded, almost laciniate, apicolateral margin of the dorsal phallic spine, and arched, spine-like apices of tergum X. Diagnostic differences, based on the description of *M. santiaga*, include the form of the paramere appendages, which lack projections in *M. acutiterga*, and the structure of tergum X, which has the ventrolateral projections more narrow and spine-like.

Adult—Length of forewing: male 4.2 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:3:4. Color (in alcohol) yellowish brown. Tibial spurs darker than legs, contrasting in color. Wing bar not evident.

Male genitalia—Ventral process of segment VI very narrow elongate, posteriorly directed, length about 6 times width at base, apex somewhat depressed, acute as viewed laterally, rounded as viewed ventrally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin slightly produced, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X moderate in length, lateral margins somewhat converging apically, apicomesal margin with very short, acute projection, apicolateral lobes distinctly sclerotized, diverging as viewed dorsally, elongate tapering, acute apically, ventrally curved; ventrolateral lobes with one or two narrow projections with prominent apical setae. Inferior appendages short and very strongly fused to phallic ensemble, lateral margins slightly projecting, narrowing to acute ventromesal projection. Mesal pockets of inferior appendage with spine-like apical processes short, posteriorly projecting. Paramere appendage elongate (surpassing dorsal phallic spine), uniformly narrow, apex acute, dorsally curved apically. Dorsal phallic spine, as viewed laterally, relatively stout, curved basally, gradually dorsally curved apically, preapically with lateral expansion with numerous minute spines or scale-like projections; as viewed dorsally, relatively narrow throughout, except for preapical lateral expansion. Phallicata narrow basally, expanded dorsally to form rounded elevation, apparently articulating with dorsal phallic spine, ventrally with retrorse lateral projections. Endophallic membrane simple, without spines; phallotremal spines absent.

Holotype male (alcohol)—**ECUADOR: Napo:** PAP8 unnamed trib. Papallacta R., HwyE-28, ca. 1.7 mi SW Papallacta, 0.385893° W, 78.143530° W, 25.i.2012, B Gill (UMSP000097163) (NMNH).

Etymology—This species is named *M. acutiterga* for the very acutely angled apicolateral lobes of tergum X.

***Mortoniella* (*Mortoniella*) *santiaga* Sykora, 1999**

Mortoniella santiaga Sykora 1999: 383 [member of flinti subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group].

Unfortunately, the holotype of the species could not be located and thus was not available for direct comparison to *M. acutiterga*, n. sp. Apparent differences, based on the original description, include paramere appendages with several projections at midlength and a tergum X with flattened ventrolateral processes. This compares to a simple, narrow paramere appendage, without projections, and a tergum X with only narrow, almost spine-like, ventrolateral projections in *M. acutiterga*. We take these differences to indicate that the two are different species, although the overall similarities are otherwise extensive. The expanded, almost laciniate, apicolateral margin of the dorsal phallic spine, and arched, spine-like apices of tergum X are diagnostic characters for the species pair.

Distribution—Ecuador.

—tridens subgroup

Included species: *Mortoniella tridens*, n. sp., *M. triramosa*, n. sp.

The two species included here constitute a closely related species pair and are unusual in that the dorsal phallic spine is apparently 3-partite, deeply divided to form a mesal and 2 lateral projections. A similar character state seems to be indicated in the illustration of *M. armata* (Jacquemart). The overall illustration of that species is so inadequate that it is difficult to make direct comparisons, but it does not seem to be closely related and we have speculatively placed it in the punensis subgroup (see for more extensive explanation). An unusual feature of the tridens subgroup is that the basal segment of the parameres is flattened and fused to the dorsal margin of the phallobase, appearing as a projecting, flattened lobe. This is connected to the lateral paramere appendage by an elongate membrane, such that the base of the paramere appendage emerges ventrally to the phallic ensemble, with the apical part strongly dorsally curved. A plausible explanation for the tripartite dorsal phallic spine is that the original paramere appendage structure was doubled, as in members of the argentinica subgroup, and the dorsolateral pair, along with the basal structure of the paramere, became fused with the dorsal phallic spine, producing the tripartite assemblage. On this basis, we speculate that the two groups may be related, with *M. esrossi*, n. sp. (in the esrossi subgroup) as a possible connecting species (which see for a more complete explanation). Like most members of the argentinica subgroup, the ventral process of the species in the tridens subgroup is large, subtriangular, and ventrally projected, thus resembling species in the leroda group. It seems likely that both of these subgroups are related to that lineage. Unlike species in the argentinica subgroup, the inferior appendages of species in the tridens subgroup are very strongly fused to the phallicata, forming a short setose ventromesal projection, and lack narrow, reflexed dorsolateral lobes. Additionally, the spine-like projections from the mesal pockets of the inferior appendages are not nearly so elongate.

***Mortoniella* (*Mortoniella*) *tridens*, new species**
Fig. 76

Mexitrichia n. sp. 7: Flint 1996: 383.

This species is very closely related to *M. triramosa*, n. sp. Both species have a very unusual tripartite dorsal phallic spine, as discussed in the subgroup description above. *Mortoniella tridens* can be distinguished from *M. triramosa* by its longer paramere appendages and shorter inferior appendages, as well as by having a pair of rounded apicoventral lobes on the phallicata (rather than a decurved ventromesal lobe) and also by having a pair of wart-like projections on tergum X.

Adult—Length of forewing: male 3.2-3.3 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color dark brown, Tibial spurs slightly darker than legs, weakly contrasting in color. Wing bar at anastomosis distinct, marked with white setae.

Male genitalia—Ventral process of segment VI laterally compressed, very large, subtriangular, ventrally directed, length subequal to width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin slightly produced in dorsal ½, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X relatively short, subquadrate, with pair of small raised setose processes at about midlength, lateral margins subparallel, apicolateral lobes reduced to small trianguloid processes, inset from lateral margin, acute apically; ventrolateral lobes prominent, rounded. Inferior appendages short, strongly fused to phallicata, distinguishable as such mostly by setae, lateral lobes obsolete, apicomesal margin slightly projecting, bluntly truncate. Mesal pockets of inferior appendage with spine-like apical processes relatively short, narrow, sinuous, posteriorly projecting. Paramere appendage moderately elongate, narrow, with base displaced ventrally on membranous lobe, apex posterodorsally curved. Dorsal phallic spine cleft apically to form 3 narrow branches, mesal one dorsally inflected, lateral ones subparallel basally, divergently and laterally curved near apex. Phallicata with pair of small rounded ventral lobes near apex. Endophallic membrane elongate, without membranous lobes or ventral spine; phallotremal spines very small, indistinct, apical.

Holotype male (pinned)—**PERU: Cuzco:** Paucartambo; Pilcopata to Atlaya, 4.ix.1988, O Flint and N Adams (UMSP000157321) (MJP).

***Paratype*—PERU: Cuzco:** same data a holotype–1 male (pinned) (NMNH).

Etymology—This species is named *M. tridens*, from the Latin word for a fork with three tines, and referring to the tripartite structure of the dorsal phallic spine.

Mortoniella (*Mortoniella*) *triramosa*, new species

Fig. 77

This species is closely related to *M. tridens*, n. sp., as discussed in the diagnosis for that species. It can be distinguished by its shorter paramere appendages and more elongate inferior appendages, as well as by having a decurved ventromesal projection near the apex of the phallicata, rather than a pair of apicolateral lobes. It also lacks the wart-like projections on tergum X found in *M. tridens*.

Adult—Length of forewing: male 4.0 mm. Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Overall color medium brown, apices of tarsal segments paler. Tibial spurs slightly darker than legs, weakly contrasting in color. Wing bar at anastomosis distinct, marked with white setae.

Male genitalia—Ventral process of segment VI laterally compressed, very large, subtriangular, ventrally directed, length subequal to width at base, apex acute, process not retracted anterobasally. Segment IX nearly evenly rounded anterolaterally, length greatest midlaterally, posterolateral margin slightly produced in dorsal ½, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by much less than ½ width of segment. Tergum X relatively short, subquadrate, lateral margins subparallel, apicolateral lobes reduced to small trianguloid processes, inset from lateral margin, acute apically, barely visible in dorsal view; ventrolateral lobes prominent, rounded. Inferior appendages strongly fused to phallicata, distinguishable as such mostly by setae, lateral lobes obsolete, apicomesal margin slightly projecting. Mesal pockets of inferior appendage with spine-like apical processes moderately elongate, sinuous, posteriorly projecting. Paramere appendage short, narrow, with base displaced ventrally on membranous lobe, apex posterodorsally curved. Dorsal phallic spine cleft apically to form 3 narrow branches, mesal one dorsally inflected, lateral ones subparallel basally, divergently and laterally curved near apex. Phallicata with small ventromesal projection at apex. Endophallic membrane elongate, without membranous lobes or ventral spine; phallotremal spines only suggestively developed, very lightly sclerotized.

Holotype male (pinned)—**BOLIVIA: Yungas La Paz:** Circuata to Cajuata, 2400 m, 3-5.xii.1984, LE Peña G (UMSP000118512) (NMNH).

Etymology—This species is named *M. triramosa*, Latin for three-branched, and referring to tripartite dorsal phallic spine of this species.

—unilineata subgroup

The single unusual species placed here was placed in the argentinica subgroup by Sykora, albeit with some hesitation. Sykora did not discuss the characters he used to establish his subgroups. Blahnik and Holzenthal (2012) suggested that both species of the argentinica subgroup should probably be removed from the bilineata group and were possibly unrelated. The only obvious characters linking the two species are the broadly rounded anterior margin of segment IX and the reflexed dorsal lobe of the inferior appendages. It should be noted that Sykora described the reflexed dorsal processes of the inferior appendages as being lateral paired processes (paramere appendages). True paramere appendages seem to be absent in this species. Both of the character similarities listed are probably plesiomorphic characters, and the latter of these would not have been evident to Sykora, based on his interpretation of the structure. *Mortoniella unilineata* has the anterior margin of segment IX somewhat produced in its ventral ½, as in species of the bilineata group, and the lobes are also further apart dorsally than most species in the leroda group. On the other hand, the female genitalia lack the mesal invagination of segment VIII that characterizes the bilineata group (Fig. 115), implying that if it is related to this group, it must be in a more basal position than other described species. The very elongate ventral process of segment VI and elevated basal projection of the phallicata somewhat resembles the character states in *M. proakantha*, n. sp. and *M. gilli*, n. sp., both treated here as "unplaced species." If these species are related, it cannot be a very close relationship, because they are all very apomorphically distinct. Possibly, they represent divergent members of a lineage basal to both the bilineata and leroda groups.

***Mortoniella* (*Mortoniella*) *unilineata* Sykora, 1999**
Fig. 78, 115

Mortoniella unilineata Sykora 1999: 385 [member of argentinica subgroup]; Blahnik and Holzenthal 2008: 70 [member of bilineata group]; Blahnik and Holzenthal 2011: 63 [doubtful member of bilineata group].

This is a unique species and is not likely to be confused with any other described species. Particularly distinctive are the broadened and upturned apex of the dorsal phallic spine, which seems to articulate with a membranous lobe on the endophallic membrane; the short tergum X, with only a weak mesal invagination and without distinctive apicolateral lobes; the strongly reflexed dorsolateral projections of the inferior appendages; and the elongate, narrow ventral process of segment VI.

Adult—Length of forewing: male 4.6-6.0 mm; female (undeterminable, from pharate pupa). Forewing with forks I, II, and III present, hind wing with forks II, III, and V. Spur formula 0:4:4. Color (in alcohol) medium brown. Tibial spurs slightly darker than legs, contrasting in color. Wing bar not evident (one white band at midlength, in original description).

Male genitalia—Ventral process of segment VI very narrow elongate, posteriorly directed, length about 6 times width at base, apex acute as viewed laterally and ventrally. Segment IX with anterolateral margin rounded, somewhat more produced in ventral ½, posterolateral margin slightly produced dorsally, narrowing ventrally; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X short, apicomesal margin with weak emargination, apicolateral lobes not evident as such, broadly rounded; ventrolateral lobes prominent and projecting, continuous with apicolateral lobes. Inferior appendages with very elongate, narrow, reflexed dorsolateral projections, acute apically, ventromesal margin narrow, without projection. Mesal pockets of inferior appendage with spine-like apical processes moderately elongate, posteriorly projecting, apparently fused to and projecting below ventral margin of phallicata. Paramere appendages absent. Phallobase with short, lightly sclerotized, dorsomesal apodeme. Dorsal phallic spine, as viewed laterally, relatively uniform in width, distinctly upturned in about apical 2/5, apical inflection hollowed on ventral surface, apparently to accommodate large membranous lobe from dorsal margin of endophallic membrane; as viewed dorsally, with broadly rounded lateral expansions at apical inflection, narrowing apically, apex rounded. Phallicata with broadly rounded and distinctly sclerotized basodorsal expansion, ventrally with projecting mesal sclerite, arched above and fused to spine-like projections of mesal pockets of inferior appendages. Endophallic membrane elongate, with projecting lateral and dorsomesal membranous lobes, spines absent; phallotremal spines absent.

Material examined—**VENEZUELA: Merida:** Laguna de Murubaji, Paramos zone, site 1, rocky stream below lake, el 3300 m, 10.vii.1991, GS Vick–2 males, 1 female (alcohol, pharate adults) (NMNH).

Distribution—Venezuela.

***Mortoniella* (*Mortoniella*) *tranquilla* Martynov, 1912**

Mortoniella tranquilla Martynov, 1912: 38; Flint 1963: 465 [unidentifiable]; Sykora 1999: 385 [unknown group]; Blahnik and Holzenthal 2008: 70 [member of bilineata group].

No attempt was made to borrow this species because of its reported condition and the unlikelihood of being able to associate it. This species was based on a single "defective" female specimen collected from Callanga, Peru. It was described as having the same neuration as *M. bilineata*, except for a clearly marked transverse vein in the hind wing connecting the base of the median cell with the beginning of the first apical sector. The latter character, however, seems to be generally true for species in the bilineata group and also species listed here as "unplaced species" (Fig. 97B, 99B). The color of the specimen was also described in some detail. The forewing is described as being fuscous, iridescent, without wing bars, but with an indistinct yellowish marking at the arculus and with an elongate, pale-greyish fringe at the apex; the hind wings were described as being paler, also with a fringe of pale-greyish setae. The color attributes more nearly describe species of the leroda group, which typically have a wing bar or incomplete wing bar at the anastamosis with setae that are yellowish or whitish-yellow, rather than distinctly white. If wing bars are present in the bilineata group, they are usually distinctly white. The same is true for most of the species in the subgenus *Mortoniella* listed as "unplaced species" and also generally characterizes species of the subgenus *Nanotrichia*. However, the color description does more or less match *M. argentinica*, and it is conceivable that it could correspond to some females in the bilineata group, very few of which were examined in the current study. Without confirmation of the venational characters, it is difficult to state exactly where this species has its closest affinity. If the description of the type specimen as being "defective" refers to the condition of the genitalia, then the exact identity of this species may remain in doubt.

***Mortoniella* (*Nanotrichia*), new subgenus**

Type species: *Mexitrichia pacuara* Flint, 1974.

This new subgenus can be distinguished from the subgenus *Mortoniella* by several characters considered collectively. One of these, the small size of the species, is suggested by the name assigned to the subgenus. The most distinctive character defining the subgenus is the reduction of the hind wing venation to include only fork II. A similar reduction occurs in some species and species subgroups of the leroda group of the subgenus *Mortoniella*, but generally the costal margin of these species has a distinct bend or inflection (Fig. 101B). This is much less distinct in species of *Nanotrichia*, such that the overall wing shape is more spear-like (Fig. 102B, 103B, 104B). Another character synapomorphy that seems to be consistent for the included species is that the middle legs have only 3 spurs (rarely 2). A similar reduction occurs in various species in the leroda and bilineata groups of the subgenus *Mortoniella*, but the usual spur formula in both of these groups is 0:4:4. Additionally, the anterior margin of segment IX of males in the subgenus *Nanotrichia* is distinctly produced in its ventral ½ and the posterior margin is nearly linear. The lobes of the segment are separated dorsally by ½ or more of the width of the segment (with several exceptions). Species in the bilineata group of the subgenus *Mortoniella* also have the anterior margin of segment IX produced in the ventral ½ and the lobes widely separated dorsally, but these species are larger and have retained fork V in the hind wing, and usually also fork III. In general, the very shortened phallobase and relatively simple structure of tergum X of species in *Nanotrichia* also support their separation from the subgenus *Mortoniella*. Two very distinctive species groups are assigned to *Nanotrichia*, the ormina and velasquezi groups. These are most convincingly defined by differences in the female genitalia. Of these, the ormina group is the more variable and the placement of *M. rodmani* Blahnik and Holzenthal and *M. simplicis*, n. sp. within this group is conjectural, since females are not known for these species. Some species in both the ormina and velasquezi groups have modified scale-like setae paralleling the major veins of the fore- and/or hind wings. A similar development occurs in a few species of the leroda group of the subgenus *Mortoniella*. The character is mostly hidden by the normal setae present and may not be readily evident. The scales seem to be readily lost in alcohol preserved specimens. In some species of the velasquezi group, there is a more general and readily apparent field of scale-like setae on the hind wing. These are of somewhat different morphology than the scale-like setae paralleling the veins (stalked basally and upright, rather than leaf-like and flattened). Whether the presence of scale-like setae represents an independent character development in the two groups, or an apomorphy for the group, lost in some taxa, is uncertain.

Adult—Length of forewing: 1.7-4.0 mm; females slightly larger than males. Forewing with forks I, II, and III, forks I and II usually sessile, sometimes with fork II stalked (Fig. 104A); hind wing with fork II only (Fig. 102B, 103B, 104B), basal forks of Rs and M veins at about midlength and narrowly separated (ormina group), or with basal fork of Rs more proximal (velasquezi group). Crossveins of forewing (*r, s, r-m, m, m-cu, cu*) linear or nearly so and usually hyaline; hind wing with *r-m* only (ormina group, Fig. 103B, 104B), or with crossveins absent (velasquezi group, Fig. 102B). Costal margin of hind wing without distinct inflection, wings more or less spear-shaped. Forewing rather broadly rounded apically in velasquezi group (Fig. 102A), narrow and angulate in ormina group (Fig. 103A, 104A), apex of hind wing angulate. Fore- and/or hind wing frequently with adpressed scale-like setae paralleling veins; some species of velasquezi group also with patch of upright scale-like or hair-like setae on hind wing. Spur formula 0:3:4 (0:2:4, as variant in *M. usseglioi*). Overall color varying from light brown to dark brown; forewing usually marked with white or whitish setae at anastamosis, in some species of ormina group with small white spots apically.

Male genitalia—Ventral process of segment VI relatively elongate, narrow, and posteriorly projecting (length usually 2 times width or more). Segment IX with anterolateral margin rounded and produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, lobes usually separated dorsally by ½ or more of width of segment. Tergum X well developed, setose, usually with deep V-shaped or U-shaped apicomesal invagination (*M. aequalis* an exception); apicolateral lobes usually simple in structure and not strongly sclerotized. Inferior appendages directly fused to one another and to ventral margin of phallic ensemble, generally short and reduced in ormina group, or in velasquezi group with more distinct dorsolateral process and apex sometimes elongate and fused to mesal spine-like process; appendages always with paired mesal pockets accommodating rod-like projections of phallobase, these very enlarged in velasquezi group, apices of pockets with relatively short to very elongate spine-like projections, typically narrow in ormina group, widened in velasquezi group. Basal segments of parameres variable, usually relatively simple in structure in velasquezi group (short, rounded and fused to one another), often more modified in ormina group, sometimes with elongate rod-like projections; apical segments (paramere appendages) usually present, short to elongate, typically more or less rod-like, often strongly curved. Phallobase short or very short, always with, paired rod-like projections from the apicoventral margin, these short in ormina group (sometimes with apex flared), long and with apices flared in velasquezi group; dorsal margin with moderately elongate mesal spine, relatively simple in structure in some, more often with lateral margins projecting; dorsal phallic spine without basal articulation with phallicata, apex strongly reflexed in most. Phallicata usually short and only indistinctly sclerotized, with distinctly sclerotized, rounded, lateral projection in velasquezi group. Endophallic membrane very variable, usually relatively short and simple in structure, sometimes with dorsal or lateral spines or spine-like structures or with membranous lateral lobes; in velasquezi group with pair of ventral sclerites or spine-like projections and dorsomesal projection, typically with small spines or short spine-like projection; phallotremal spines not usually evident (*M. collegarum* a notable exception).

Etymology—This subgenus is named *Nanotrichia* from the Greek words *nanos*, meaning small, and referring to the small size of the species in the subgenus, and *trich-* for hair, a term generally applied to species in the order Trichoptera because of their hairy wings. The name is feminine in gender.

ormina group

This species group can be distinguished from the velasquezi group by having males with the rod-like appendages of the phallobase much shorter, although with the membranous apices of the appendages widely flared in a couple of species. Other differences are that the mesal invagination of tergum X is not quite so wide and the ventrolateral lobes of the tergum are more defined; the inferior appendages are smaller, without a distinct dorsal projection, and with the ventral surface not fused apically to the spine-like processes of the mesal pockets. Both fore- and hind wings are narrowed and acute apically in the ormina group, whereas only the hind wings are in the velasquezi group. In the latter group, the forewings are more or less rounded apically, as is typical of the genus *Mortoniella*. Some species in the ormina group have small white apical spots on the forewings, similar to many species in the genus *Protoptila*, which also has the apex of the forewings acute, and thus can superficially resemble members of the ormina group. Females, of known species, are distinctive in that the posterior margin of tergum VIII is invaginated, but with a rounded, tab-like mesal projection remaining, which bears exactly two setae (possibly erratically with several setae). Females of the velasquezi group have tergum VIII unmodified and have distinctive elongate setae ventrally on segment VII.

***Mortoniella* (*Nanotrichia*) *aequalis* (Flint, 1963)**
Fig. 79

Mexitrichia aequalis Flint: 1963: 472.
Mortoniella aequalis (Flint): Blahnik and Holzenthal 2008: 70 [member of ormina group].

This species probably compares most closely to *M. macarenica* (Flint) and *M. usseglioi* (Rueda Martín and Gibon), particularly in the shape of tergum X, which is elongate and narrow, and in the shape of the dorsal phallic spine, which is also elongate and narrow and lacks lateral wings. It can be distinguished from either of those species by having the apex of tergum X only shallowly notched, rather than deeply invaginated, and by having only one elongate paramere spine, as opposed to 2 in *M. macarenica* and 3 in *M. usseglioi*. The structure of the rod-like appendage of the phallobase, which is short, but distinctly inflated apically, along with the inflated mesal pockets of the inferior appendages, each with a greatly enlarged and elongate apical spine, is similar to *M. zamora*, new species. These two species are otherwise morphologically dissimilar and not likely to be confused.

Adult—Length of forewing: male 2.0 mm. Forewing with forks I, II, and III present, hind wing with fork II only; both wings narrow, acute apically. Spur formula 0:3:4. Overall color (in alcohol) pale brown. Forewing with membrane pale at anastomosis. Presence of scale-like setae on fore- and hind wings of male not ascertained.

Male genitalia—Ventral process of segment VI posteriorly projecting, short, narrow basally, length about 2½ times width at base. Segment VIII relatively narrow. Segment IX with anterolateral margin rounded and produced in ventral half, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X elongate, lateral margins, as viewed dorsally, distinctly invaginated in middle; apex of tergum with very shallow apicomesal invagination, thus without distinct apicolateral lobes; tergum, in lateral view, with shallow rounded apicolateral incision, forming angularly projecting ventrolateral lobe. Inferior appendages small, with short, posteriorly directed lobes. Mesal pockets of inferior appendage large, with elongate and relatively wide, posteriorly-directed, spine-like, apicoventral projections, apices narrowed and slightly decurrent. Paramere with elongate, narrow projection, apparently from enlarged basal lobe of appendage, extending about as far as apical inflection of dorsal phallic spine; paramere appendage probably vestigial, composed of short, lightly sclerotized, projection, mesal to basal lobe. Phallobase with short, rounded, lightly sclerotized, dorsomesal apodeme; ventrally with short ventral rod-like projections, widely flared apically. Dorsal phallic spine, as viewed laterally, nearly uniform in width, strongly upturned in about apical ¼, slightly widened preapically, apex rounded; as viewed dorsally, nearly uniform in width, slightly enlarged preapically, apex subacute, entire. Structure of phallicata not completely evident, apparently tubular, unmodified. Endophallic membrane simple, without spines; phallotremal spines not evident.

Material examined—**PERU**: Puerto Bermudez, Rio Pichis, 17.vii.1920, male Holotype, type 3892 (CUIC).

Distribution—Peru.

***Mortoniella* (*Nanotrichia*) *aries* (Flint, 1963)**

Fig. 80

Mexitrichia aries Flint: 1963: 470.

Mortoniella aries (Flint): Blahnik and Holzenthal 2008: 70 [member of ormina group].

This species is probably most similar to *M. paucispina*, n. sp., *M. pacuara* (Flint), and *M. zamora*, n. sp., particularly in having a short dorsal phallic spine with sharply upturned apex and projecting lateral wing-like appendages. It can be distinguished from any of these species by the unusual and diagnostic pair of enlarged spiral endophallic spines.

Adult—Length of forewing: male ca. 2.0 mm. Forewing venation not evident (pharate adult). Spur formula 0:3:4. Overall color (in alcohol) yellowish-brown. Scale-like setae on wings of male not evident, probably absent.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow basally, length about 3½ times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X moderate in length, lateral margins subparallel; apex of tergum with deep V-shaped emargination, extending less than ½ length of tergum; apicolateral lobes not evident as such, formed by mesal invagination, apicolateral margin subtruncate; tergum, in lateral view, with weakly projecting ventrolateral lobes, more or less continuous with apicolateral margin. Inferior appendages hardly evident as such, strongly fused to phallic ensemble. Mesal pockets of inferior appendage with short, posterodorsally curved, spine-like, apicoventral projections. Paramere appendage short, narrow, nearly uniform in width, apex acute, extending about same length as apical inflection of dorsal phallic spine; Phallobase with short ventral rod-like projections, not flared apically. Dorsal phallic spine, as viewed laterally, short, strongly upturned in about apical 1/3, apex acute; as viewed dorsally, with distinct lateral wing-like appendages at about midlength. Phallicata very short and weakly sclerotized. Endophallic membrane with pair of prominent lateral, helically coiled, sclerites; phallotremal spines apparently absent.

Material examined—**ECUADOR: Napo-Pastaza:** Río Chingual, 8 mi E of El Pun, 8000 ft., 4.v.1958, RW Hodges–male Holotype (pharate adult, alcohol) (USNM type # 66021) (NMNH).

Distribution—Ecuador.

***Mortoniella* (*Nanotrichia*) *collegarum* (Rueda Martín and Gibon, 2008)**

Fig. 81, 103, 116

Mexitrichia collegarum Rueda Martín and Gibon, 2008: 216.

Mortoniella collegarum (Rueda Martín and Gibon): Blahnik and Holzenthal 2011: 51 [redescription, reillustration, distribution, member of ormina group].

This species was described from Bolivia by Rueda Martín and Gibon and subsequently recorded from Argentina and Chile by Blahnik and Holzenthal, who also redescribed and reillustrated the species. The reader is referred to that paper for the redescription and discussion of the variability encountered. The species is readily identified by the emarginate apicolateral margin of tergum X and by the form of the dorsal phallic spine, which has its apex sharply upturned and mesally cleft. The type and the reillustration by Blahnik and Holzenthal (2011), based on a specimen from Chile, are characterized by having the margin of the apex of the dorsal phallic spine serrate and covered with small spines. The latter character was absent from some of the specimens examined in a series from Argentina, and is also absent in the specimen from Bolivia that is reillustrated here. Although other examined specimens from the series from Bolivia were consistent in the character variation illustrated, the difference from the type is relatively minor and we are interpreting this as intraspecific variation.

Material examined—**BOLIVIA: Santa Cruz:** PN and ANMI Amboró, Guardia Parque Mataracú, Río Yapacaní, 17.52072° S, 63.86795° W, el 329 m, 26.xi.2004, Robertson, Garcia and Vidaurre–9 males, 16 females (pinned), 1890 males, 408 females (alcohol) (UMSP); Provincia Florida, Bermejo, viejo caretera S.C.-CBBA, Río Bermejo @ Quebrada Chorro Viejo, 18.16642° S, 63.58023° W, el 749 m, 15.xi.2004, Robertson and Vidaurre–13 males, 32 females (pinned) (UMSP).

Distribution—Argentina, Bolivia, Chile.

***Mortoniella* (*Nanotrichia*) *macarenica* (Flint, 1974)**

Fig. 82, 118

Mexitrichia macarenica Flint, 1974: 11.
Mortoniella macarenica (Flint): Blahnik and Holzenthal 2008: 70 [member of ormina group].

This tiny species is a closely related sister species to *M. usseglioi* (Rueda Martín and Gibon). Both species have an elongate tergum X with a deep mesal invagination and a dorsal phallic spine that lacks lateral projections and has its apex upturned and weakly bifurcate. It also bears some similarity to *M. aequalis* (Flint), as noted in the diagnosis for that species. *Mortoniella macarenica* differs from *M. usseglioi* in having only 2 pairs of lateral “paramere” spines, rather than 3. One of these pairs probably represents processes from the basal structure of the paramere, but the other seems to be a true paramere appendage. The latter extends dorsally over, rather than crossing under, the phallic apparatus. This is the most readily observed difference between the two species. The female genitalia of both this species (Fig. 118) and *M. usseglioi* (Fig. 117) are distinctive in having very elongate ventrolateral processes, but otherwise are typical of members of the ormina group. The female of *Mortoniella macarenica* can be distinguished from *M. usseglioi* in that the setose, shelf-like projections of segment IX are less protruding, as viewed dorsally.

Adult—Length of forewing: male 1.7-2.0 mm; female 1.9-2.3 mm. Forewing with forks I, II, and III present, fork II with very long stalk, hind wing with fork II only; both wings narrow, acute apically. Spur formula 0:3:4. Overall color (in alcohol) yellowish-brown. Tibial spurs short, apparently same color as legs. Forewing with distinct wing bar at anastomosis. Males with scale-like setae paralleling veins of both fore- and hind wings.

Male genitalia—Ventral process of segment VI posteriorly projecting, short, narrow basally, length about 2½ times width at base. Segment VIII relatively narrow. Segment IX with anterolateral margin rounded and distinctly produced in ventral half, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X elongate, lateral margins subparallel, slightly invaginated in middle; apex of tergum with deep V-shaped emargination, extending less than ½ length of tergum; apicolateral lobes simple, subacute apically, formed by mesal invagination; tergum, in lateral view, with shallow, rounded, apicolateral incision, forming angularly projecting ventrolateral lobe. Inferior appendages with short upright dorsolateral lobes. Mesal pockets of inferior appendage small, with very elongate, narrow, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage elongate, narrow, nearly uniform in width, apex acute, extending about same length as apical inflection of dorsal phallic spine; basal segment of parameres, lateral to paramere appendage, forming rounded lateral sclerite with elongate spine-like projection from dorsal margin, slightly longer than paramere appendage. Phallobase with short rounded, lightly sclerotized, dorsomesal apodeme; ventrally with short ventral rod-like projections, not flared apically. Dorsal phallic spine, as viewed laterally, nearly uniform in width, strongly upturned in about apical 1/3, slightly widened preapically, apex acute; as viewed dorsally, slightly widened in basal ½, apex weakly divided mesally, forming 2 acute apical projections. Phallicata distinctly tube-like, without basal projection, apicolateral margins rounded. Endophallic membrane apparently short, without spines (but with indistinct apical sclerite); phallotremal spines absent.

Material examined—**ECUADOR: Napo:** Pano, 580 m, 12.ix.1990, OS Flint, Jr–1 male (alcohol) (NMNH); 5.2 km SW Pano, 640 m, 13.ix.1990, OS Flint, Jr–1 male (alcohol) (NMNH); Santa Cecilia, 16.v.1975, PJ Spangler–2 males (alcohol) (NMNH); Lago Agrio (5 km N), 26.ix.1975, A Langley–1 male (pinned), 4 males, 2 females (alcohol) (NMNH); **Pastaza:** Puyo, 13.v.1977, PJ Spangler and DR Givens–3 males, 11 females (alcohol) (NMNH); same locality and collectors, 17.v.1977–2 males, 1 female (alcohol) (NMNH); same locality and collectors, 21.v.1977–13 males, 41 females (alcohol) (NMNH); Puyo (27 km N) Est. Fluvia Metrica, 4.ii.1976, Spangler, et al.–6 males, 15 females (alcohol) (NMNH); **Zamora-Chinchipe:** Río Chicaña, 9 km N Yanzatza, 880 m, 20.ix.1990, OS Flint, Jr–1 male, 1 female (alcohol) (UMSP).

Distribution—Colombia, Ecuador.

***Mortoniella* (*Nanotrichia*) *pacuara* (Flint, 1974)**

Fig. 83

Mexitrichia pacuara Flint 1974: 11; Flint et al. 1999: 27 [distribution].
Mortoniella pacuara (Flint): Blahnik and Holzenthal 2008: 39 [reillustration, redescription, member of ormina group].

This species was redescribed in Blahnik and Holzenthal (2008) and the reader is referred to that publication for a description. It is refigured in the current paper for comparative purposes. *Mortoniella pacuara* is generally similar to *M. aries* (Flint), *M. paucispina*, n. sp., and *M. zamora*, n. sp., as noted in the diagnoses for those species, but is easily recognized by the large rounded, saddle-like, lateral protrusions of the dorsal phallic spine and the distinctly recurved apex of the same structure.

Additional material examined—**ECUADOR: El Oro:** 9 mi S Santa Rosa, 3.45000° S, 79.96667° W, 1.23.1955, EI Schlinger and ES Ross–3 males, 1 female (alcohol) (CAS); **Loja:** Río Puyango, 300 m, 17-18.viii.1977, LE Peña G–3 males (alcohol) (NMNH).

Distribution—Costa Rica, Colombia, Ecuador.

***Mortoniella* (*Nanotrichia*) *paucispina*, new species**

Fig. 84

This species is very similar to *Mortoniella aries* (Flint), especially in the shape of the dorsal phallic spine, which is strongly reflexed apically and has subquadrate lateral wings. It can be distinguished by lacking the spiral processes present on the endophallic membrane in *M. aries*; instead, it has a few scattered spines.

Adult—Length of forewing: male 2.6 mm. Forewing with forks I, II, and III present, fork II with short stalk, hind wing with fork II only; both wings narrow, acute apically. Spur formula 0:3:4. Tibial spurs short. Overall color (in alcohol) yellowish-brown (specimen faded and partially rubbed, wing bar not evident). Fore- and hind wings of male with scale-like setae paralleling major veins (except apically).

Male genitalia— Ventral process of segment VI posteriorly projecting, narrow basally, length about 2½ times width at base. Segment IX with anterolateral margin rounded and produced in ventral

½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X moderate in length, lateral margins subparallel; apex of tergum with deep U-shaped emargination, extending more than ½ length of tergum; apicolateral lobes not evident as such, formed by mesal invagination, apicolateral margin subtruncate; tergum, in lateral view, with ventrolateral lobes more or less continuous with apicolateral margin, not distinctly defined. Inferior appendages with short setose dorsolateral projections. Mesal pockets of inferior appendage with moderately elongate, posterodorsally curved, spine-like, apicoventral projections. Paramere appendage moderately elongate, narrow, nearly uniform in width, apex acute, extending slightly beyond apical inflection of dorsal phallic spine; basal segment of paramere rounded, with short spine-like projection from posterior margin. Phallobase with short ventral rod-like projections, not flared apically. Dorsal phallic spine, as viewed laterally, short, strongly upturned in about apical 1/3, apex subacute in lateral view, rounded in dorsal view; as viewed dorsally, with distinct lateral, wing-like, appendages in basal ½. Phallicata scarcely evident, very short and weakly sclerotized. Endophallic membrane with a couple of clusters of needle-like spines on either side (mostly in pairs); phallotremal spines absent.

Holotype male (alcohol)—**PERU: Huánuco:** 16.ix.1954, EL Schlinger and ES Ross (UMSP000130031) (CAS).

Etymology—The species is named *M. paucispina*, Latin for few-spined, in reference to the scattered (and generally paired) spines on the endophallic membrane of this species.

Mortoniella (*Nanotrichia*) *quadridactyla*, new species

Fig. 85

This species is probably most closely related to *M. triangularis*, n. sp. Both species have a deep mesal incision at the apex of the dorsal phallic spine. *Mortoniella quadridactyla* can be easily distinguished by having the dorsal phallic spine much narrower in lateral view, with the apex upturned, and with each half of the divided apex subdivided into a pair of acute spines. Tergum X is also simpler in construction, with the apicolateral lobes very broadly rounded.

Adult—Length of forewing: male 1.7-1.9 mm; female 2.0 mm. Forewing with forks I, II, and III present, hind wing with fork II only; both wings narrow, acute apically. Spur formula 0:3:4. Overall color (in alcohol) yellowish-brown (specimen faded and partially rubbed, wing bar not evident). Forewings of male with scale-like setae paralleling major veins (except apically).

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow basally, length about 3 times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X moderately elongate, lateral margins subparallel, apicomesally with deep V-shaped emargination, extending more than ½ length of tergum; apicolateral lobes simple, rounded apically, formed by mesal invagination; tergum, in lateral view, with rounded apicolateral invagination, demarcating prominent and apically rounded ventrolateral lobe. Inferior appendages with small setose lateral projections, apparently fused ventrally to spine-like projections of mesal pockets. Mesal pockets of inferior appendage small, with very elongate, narrow, posteriorly-directed, spine-like, apicoventral projections. Paramere appendage elongate, strap-like, apex acute, extending about same length as dorsal phallic spine. Phallobase with very short ventral rod-like projections, each distinctly flared apically. Dorsal phallic spine, as viewed laterally, relatively narrow, strongly and sinuously upturned in about middle, apex distinctly forked into pair of acute projections; as viewed dorsally, distinctly widened in apical ½, apicomesally with deep U-shaped invagination, extending about ½ length of spine, each half of divided apex forked preapically to produce 4 apical spine-like projections. Phallicata relatively lightly sclerotized and difficult to discern. Endophallic membrane elongate, with large basodorsal, balloon-like lobe; phallotremal spines very small.

Holotype male (alcohol)—**VENEZUELA: Barinas:** Barinas, Río Santo Domingo, 17.ii.1976, CM and OS Flint, Jr (UMSP000097089) (NMNH).

Paratypes—**VENEZUELA: Barinas:** same data as holotype–2 males, 2 females (alcohol) (NMNH).

Etymology—This species is named *Mortoniella quadridactyla*, derived from Latin for four fingers or appendages, and referring to the four acute projections at the apex of the dorsal phallic spine of the species.

***Mortoniella* (*Nanotrichia*) *simplicis*, new species**
Fig. 86

This is a very distinctive species with several character attributes similar to *M. rodmani* Blahnik and Holzenthal. The two species are probably related. Both are provisionally placed in the ormina group, because this is the group with which they share the greatest superficial similarity. Female genitalia, which are distinctive for the ormina group, would more conclusively demonstrate this, but are unknown for either species. Possibly, the two form the nucleus of an additional species group. Character similarities to *M. rodmani* include the possession of ventromesal lobes on tergum X, which probably serve as guides for the dorsal phallic spine; the general shape of the paramere appendages, which are curved ventrally from their base and dorsally curved apically; the basoventral projections from phallicata, which seem to form a ventral support for the paramere appendages (the projections in *M. rodmani* with an apical spine); and the prominent 3-lobed apicoventral sclerite on the endotheca. Neither of the species seems to have scale-like setae paralleling the veins of the wings. *Mortoniella simplicis* is easily distinguished by the shape of the dorsal phallic spine, which is sinuously curved in the middle and rounded apically, and rests in a depression formed by the dorsal margin of the phallicata (or phallicata/endotheca), and by the shape of tergum X and its ventromesal lobes.

Adult— Length of forewing: male 2.3 mm. Forewing with forks I, II, and III present, hind wing with fork II only; both wings narrow, acute apically. Spur formula 0:3:4. Overall color medium brown. Tibial spurs relatively short, darker than legs, contrasting in color. Forewing with distinct white wing bar at anastomosis. Males without scale-like setae on wings.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow basally, length about 2 times width at base, apex subacute. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X relatively short, lateral margins subparallel; apex of tergum with deep U-shaped emargination, extending about ½ length of tergum; apicolateral lobes formed by mesal invagination, apices of lobes rounded laterally, acute on margin bordering mesal invagination; tergum, in lateral view, with projecting, broadly rounded, non-setose, ventromesal lobes, apparently straddling dorsal phallic spine. Inferior appendages very small, setose, rounded dorsally. Mesal pockets of inferior appendage with moderately elongate, posterodorsally curved, spine-like, apicoventral projections. Paramere appendage elongate, narrow, nearly uniform in width, apex acute; appendage uniformly curved, ventrally from base and dorsally projecting apically. Phallobase with short ventral rod-like projections, not flared apically. Dorsal phallic spine, as viewed laterally, nearly uniform in width, rounded apically, with pronounced sinuous deflection in about middle. Phallicata with raised dorsal projection, articulating with sinuous deflection of dorsal phallic spine, basoventrally with depressed, rounded, lateral projections (apparently as resting platform for ventral deflection of paramere appendage). Endophallic membrane with small internal sclerite (possibly phallotremal sclerite), and prominent elongate, narrow ventral sclerite, branched apically into 3 acute lobes; phallotremal spines absent.

Holotype male (pinned)—**VENEZUELA: Miranda:** Parque Nacional Guatopo, Quebrada Macanilla at La Macanilla, 10.113° N, 66.516° W, el 550 m, 23.i.1994, Holzenthal, Cressa, Rincón (UMSP000041336) (UMSP).

Etymology—This species is named *M. simplicis*, derived from the Latin word for simple, in reference to the relatively simple and unspecialized genitalia of this species.

***Mortoniella* (*Nanotrichia*) *triangularis*, new species**
Fig. 87

This species is easily diagnosed by the shape of the dorsal phallic spine, which is trianguloid in lateral view, widening from the base to the apex, with apical spines on the dorsal and ventral margins. Like *M. quadridactyla*, n. sp., which is probably the most closely related species, the spine is deeply cleft mesally. In the case of *M. triangularis*, the cleft extends almost to the base of the spine.

Adult—Length of forewing: male 2.0 mm; female 2.2-2.3 mm. Forewing with forks I, II, and III present, fork II with long stalk, hind wing with fork II only; both wings narrow, acute apically. Spur formula 0:3:4. Overall color medium brown, legs slightly paler. Tibial spurs short, slightly darker than legs, weakly contrasting in color. Forewing with white wing bar at anastomosis (evident in some specimens). Forewings of male with scale-like setae paralleling major veins (except apically).

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow basally, length about 3 times width at base, apex subacute. Segment IX with anterolateral margin rounded and slightly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by less than ½ width of segment. Tergum X moderately elongate, lateral margins slightly converging from base; apex of tergum with U-shaped emargination, extending less than ½ length of tergum; apicolateral lobes simple, with small angulate projection; tergum, in lateral view, with subtruncate apex and broadly rounded basal ventrolateral lobe. Inferior appendages with small setose dorsolateral projections, apices acute and posteriorly directed. Mesal pockets of inferior appendage with elongate, narrow, posteriorly-directed, spine-like, apicoventral projections, apparently fused to ventral margin of phallicata basally. Paramere appendage elongate, narrow, apex acute, strongly and nearly evenly curved, apex dorsally directed, extending about same length as dorsal phallic spine. Phallobase with short ventral rod-like projections. Dorsal phallic spine, as viewed laterally, subtriangular in shape, narrow basally, very wide apically, with apical spine-like projections from dorsal and ventral margins, and additional spine on dorsal margin at about midlength; as viewed dorsally, with deep mesal incision, extending almost entire length of spine, spine-like projections from ventral margin projecting laterally, dorsal spines posteriorly projecting. Phallicata relatively lightly sclerotized, simple in structur-e. Endophallic membrane somewhat inflated, with large, lightly sclerotized, dorsal lobes; phallotremal spines absent.

Holotype male (alcohol)—**ECUADOR: Zamora-Chinchipe:** Zamora, 31.v.1976, A Langley, et al. (NMNH) (UMSP000095073).

Paratypes—**ECUADOR: Zamora-Chinchipe:** Zamora, 4.xii.1978, J Anderson–2 males, 4 females (alcohol) (NMNH).

Etymology—This species is named *M. triangularis* for the shape of the dorsal phallic spine of the male, which is distinctly trianguloid in appearance, as viewed laterally.

***Mortoniella* (*Nanotrichia*) *usseglioi* (Rueda Martín and Gibon, 2008), new combination**
Fig. 88, 104, 117

Mexitrichia n. sp. 3: Flint 1996: 382.
Mexitrichia usseglioi Rueda Martín and Gibon 2008: 219.

This tiny species is a close sister species to *M. macarenica* (Flint), differing primarily in having the parameres each with 3 elongate appendages (2 in *M. macarenica*). Two of these emerge from the basal structure of the appendage and the third and longest appendage appears to be a true paramere appendage. The latter are distinctive in subtending the phallic ensemble, where they cross over one another, and thus are easily observed, even in uncleared specimens.

Adult—Length of forewing: male 1.8-2.0 mm; female 1.8-2.2 mm. Forewing with forks I, II, and III present, fork II with very long stalk, hind wing with fork II only; both wings narrow, acute apically.

Spur formula 0:2/3:4. Overall color medium brown, legs slightly paler. Tibial spurs short, slightly darker than legs, weakly contrasting in color. Forewing with interrupted white wing bar at anastomosis, apices of wings with indistinct white spots. Males with scale-like setae paralleling veins of both fore- and hind wings.

Male genitalia—Ventral process of segment VI posteriorly projecting, short, narrow basally, length about 2½ times width at base. Segment VIII relatively narrow. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by slightly less than ½ width of segment. Tergum X elongate, lateral margins subparallel; apex of tergum with deep V-shaped mesal emargination, extending less than ½ length of tergum; apicolateral lobes simple, subtruncate apically, as viewed dorsally, formed by mesal invagination; tergum, in lateral view, with very shallow apicolateral incision, forming angularly projecting ventrolateral lobe. Inferior appendages scarcely evident, strongly fused to venter of phallic ensemble. Mesal pockets of inferior appendage small, with elongate, narrow, posteriorly-directed, spine-like, apicoventral projections. Paramere with 3 elongate, narrow, subequal appendages, 1 emerging from dorsal of margin of rounded basal segment, 1 evidently emerging mesal to basal segment (possibly from mesal surface), 1 (probably true paramere appendage) emerging lateral to basal segment and crossing over corresponding appendage from opposite side, ventral to phallic ensemble. Phallobase with short rounded, lightly sclerotized, dorsomesal apodeme; ventrally with short ventral rod-like projections, not flared apically. Dorsal phallic spine, as viewed laterally, nearly uniform in width, strongly upturned in about apical 1/3, slightly widened preapically, apex acute; as viewed dorsally, nearly uniform in width, apex weakly divided mesally, forming 2 acute apical projections. Phallicata distinctly tube-like, with pair of short spine-like basolateral projections, apicolateral margins flared. Endophallic membrane somewhat ballooned, with indistinct apical sclerite; phallotremal spines very small, but distinct.

Material examined—**BOLIVIA: La Paz:** ANMI Madidi, Chalalan Ecolodge, Río Tuichi and tributary at entrance to lodge, 14.41695° S, 67.90630° N, 300 m, 27.vii.2003, Robertson and Blahnik–392 males, 972 females (alcohol) (UMSP); **PERU:** Avispas, -x.1962, LE Peña G–38 males, 15 females (alcohol) (NMNH); **Junin:** Mission Cutivireni at Río Namiri, 6-25.iii.1985, HM Savage–4 males, 1 female (alcohol) (NMNH); **Madre de Dios:** Tambopata Wildlife Res., 30 km SW Pto. Maldonado, 12.83333° S, 69.28333° W, 290 m, 1-14.i.1983, JJ Anderson–1 male (pinned) (NMNH); Manu, Erika (nr. Salvacion), 550 m, 4-6.ix.1988, O Flint and N Adams–1 male, 2 females (pinned), 35 males, 136 females (alcohol) (NMNH); Manu, Río Manu, Limonal (10 km N Boca Manu), 200 m, 7.ix.1988, O Flint and N Adams–8 females (alcohol) (NMNH); Manu, Pakitza, 12.11667° S, 70.96667° W, 250 m, 9.ix.1988, O Flint and N Adams–1 male (alcohol) (NMNH); Hostel Erica (nr. Salvacion), 12°53'S, 71°14'W, 550 m, 3-5.ix.1989, RA Faitoute et al.–2 males, 5 females (alcohol) (NMNH); same location and date, N Adams et al.–1 male (alcohol) (NMNH); between Boca Manu and Romera, along Manu River, 250 m, 16.ix.1989, RA Faitoute–1 female (alcohol) (NMNH).

Distribution—Bolivia, Peru.

***Mortoniella* (*Nanotrichia*) *zamora*, new species**

Fig. 89

The genital morphology of this species is rather difficult to interpret and we are not exactly sure whether the prominent lateral spines with enlarged bases should be considered paramere appendages, with the basal segment of the paramere modified into short spines, or if the short basal spines are paramere appendages and the lateral spine-like processes are endophallic sclerites, homologous to those in *M. aries* (Flint). The description follows the latter interpretation and, based on this interpretation, *M. zamora* is probably most similar to *M. aries*, differing in the structure of the lateral sclerites of the endothecal membrane and also in having the dorsal phallic spine more strongly reflexed, with its lateral wing-like processes posteriorly projected. *Mortoniella zamora* also has some (probably superficial) similarities to species in the velasquezi group, including rod-like appendages from the ventral margin of the phallobase that are inflated apically (although very short); relatively large mesal pockets on the inferior appendages; very elongate, curved, spine-like projections from the mesal pockets; and inferior appendages with short, upright dorsal lobes, fused apically to the lateral margin of the phallicata. The most diagnostic features of *M. zamora* are probably found in the form of the basal sclerites of the endophallic membrane and in the very elongate, curved, spine-like projections from the mesal pockets of the inferior appendages. The strongly recurved dorsal phallic spine and posteriorly projecting lateral wing-like projections from the same structure are also usefully diagnostic.

Adult—Length of forewing: male 2.3-2.5 mm; female 2.6 mm. Forewing with forks I, II, and III present, hind wing with fork II only; both wings narrow, acute apically. Spur formula 0:3:4. Overall color (in alcohol) yellowish-brown (specimen badly faded). Wing bar not evident. Males with at least some scale-like setae paralleling veins of forewing.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow basally, length about 3 times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X moderate in length, lateral margins subparallel; apex of tergum with deep U-shaped emargination, extending nearly ½ length of tergum; apicolateral lobes not evident as such, formed by mesal invagination, apicolateral margin subtruncate; tergum, in lateral view, with broadly rounded ventrolateral lobes, more or less continuous with apicolateral margin. Inferior appendage with short setose, thumb-like, dorsal projection, evidently fused to phallicata posteriorly. Mesal pockets of inferior appendage large, with very elongate and strongly posterodorsally curved, spine-like, apicoventral projections. Paramere appendage very short, acute apically. Phallobase with short ventral rod-like projections, strongly flared apically. Dorsal phallic spine, as viewed laterally, short, strongly reflexed in about apical 1/3, apex acute; as viewed dorsally, with distinct lateral, posteriorly curved, wing-like appendages at about midlength. Phallicata short and membranous or weakly sclerotized, hardly evident as such, continuous with endophallic membrane. Endophallic membrane inflated, with pair of prominent lateral sclerites, enlarged basally and with apical spine-like projections from ventral margin; phallotremal spines absent.

Holotype male (alcohol)—**ECUADOR: Zamora-Chinchipe:** Zamora, 4.xii.1978, JJ Anderson (UMSP000097035) (NMNH).

Paratypes—**COLOMBIA: Cauca:** Municipio de Inzá, Quebrada San Andrés, ca 500 m W Restaurante “La Portada,” San Andrés de Pisimbalá, 2.58222° N, 76.04333° W, el 1750 m, 21.xii.1997, F Muñoz-Q, et al.–1 male (pinned) (UMSP); **ECUADOR: Zamora-Chinchipe:** same data as holotype–2 males, 1 female (alcohol) (NMNH).

Etymology—This species is names *M. zamora*, used as a noun in apposition, for the name of the collection locality where the type specimen was collected.

velasquezi species group

The species in this group have a very uniform morphology and are undoubtedly all closely related. The male of the type species for the group, *M. velasquezi* (Flint), has a distinct field of scale-like setae on the hind wings, and this also characterizes several other species in the group. The majority of the species have scale-like setae paralleling the major veins, as in a number of the species in the ormina group. All of the species have the ventral rod-like appendages of the phallobase distinctly elongate and flared apically. The accompanying mesal pockets of the inferior appendages are correspondingly enlarged, and have very enlarged and elongate apical spine-like projections. The inferior appendages have a setose, digitate dorsolateral lobe and are fused apically to the ventral spines of the mesal pockets. In some species, the composite structure is widened apically, producing large projecting lobes. Usually, this structure is surrounded basally by enlarged rounded lobes that emerge from the phallicata. All of the species have a very short phallobase, and a dorsal phallic spine with the dorsolateral margins distinctly projecting; the rachis, or central part of the spine, can often be seen projecting ventrally, in lateral view. The apex of the spine is invariably strongly reflexed and most of the species have a “dimple” on the ventral surface, near the apical bend, that articulates with a small rounded projection on the endophallic membrane, which may be either membranous, armed with minute spines, or modified into a distinct spine-like projection. The endophallic membrane is also characterized by a pair of distinct apicoventral sclerites, which are often spine-like. Tergum X is characteristically short, with a deep and wide mesal invagination, to accompany the wide dorsal phallic spine; the ventrolateral lobes are nearly disappeared, causing the dorsal lobes to appear narrow, as viewed laterally. One of the most distinctive aspects of this group is the female genitalia, which can be readily identified because of a row of very elongate setae on the ventral surface of segment VII (Fig. 119A, 119B). Also, the dorsal margin of segment VIII lacks a tab-like projection with 2 setae that characterizes the ormina group, and instead has a uniform row of setae along the posterior margin. The segment is typically somewhat elevated over tergum IX, which has a nearly vertical orientation.

***Mortoniella* (*Nanotrichia*) *cognata*, new species**
Fig. 90, 120

Mortoniella cognata is very similar to *M. velasquezi* Flint. Both species have relatively short, bluntly rounded lobes on what appear to be inferior appendages, but probably represents elongate lateral lobes of the phallicata. The most readily diagnosed difference is that the hind wings of males of *M. cognata* do not have a distinct field of upright scale-like setae, although it does have a field of upright, narrow setae. There are several other differences. The dorsal phallic spine is narrower in lateral view (i.e. it lacks a distinct protruding "belly"), the apex is slightly less reflexed, and the angular projection on the posteroventral margin is less defined. Additionally, the paramere appendages are shorter and the dorsomesal projection on the endophallic membrane tends to be membranous or only weakly sclerotized, rather than distinctly sclerotized and spine-like.

Adult—Length of forewing: male 2.5-3.0 mm; female 2.8-3.5 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color medium brown, apices of tarsi slightly paler. Tibial spurs darker than legs, contrasting in color. Forewing with narrow white wing bar at anastomosis. Males with forewings densely covered with short, adpressed setae; hind wings with scale-like setae paralleling major veins and with field of elongate, upright setae, but without darkened, semi-erect scale-like setae.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow and slightly constricted basally, length about 3½ times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X, as viewed laterally, short and narrow, rod-like, basomesally with pair of setose sclerites; as viewed dorsally, short and very wide, apicomesally with deep and very wide U-shaped emargination, extending more than ½ length of tergum; ventrolateral lobes obsolete. Inferior appendage with short digitate, setose dorsolateral projections, fused apicoventrally to spine-like projections of mesal pockets. Mesal pockets of inferior appendage very large, with moderately elongate, thick, posterodorsally curved, spine-like, apicoventral projections. Paramere appendage very short, apex acute, emerging near dorsal margin of basal segment. Phallobase very short, with elongate ventral rod-like projections, strongly flared apically. Dorsal phallic spine, as viewed laterally, short and relatively narrow, dorsolateral margins expanded, spine weakly reflexed in about apical 2/5, basal part with weakly projecting "belly," ventral margin with rounded indentation at apical inflection, reflexed apex with distinct, but rather weakly produced, angular projection on posterior margin, apex acute; as viewed dorsally, very wide, lateral margins subparallel, apex bluntly rounded. Phallicata short, continuous with endophallic membrane apically, laterally with relatively elongate, apically rounded, sclerotized projections, subequal in length to spine-like projections of mesal pockets of inferior appendage; projections appearing ventrally as broad, apically rounded lobes of inferior appendages. Endophallic membrane continuous with phallicata, without membranous lateral lobes, dorsomesally with membranous or blunt, weakly sclerotized projection, apparently articulating with indentation in dorsal phallic spine; ventrally with pair of short blunt sclerites (modified phallotremal spines?).

Holotype male (pinned)—**VENEZUELA: Barinas:** Río Sinigüis in Caño Grande, 8.40000° N, 70.77417° W, el 520 m, 22.iii.1997, Holzenthal (UMSP000001557) (UMSP).

Paratypes—**ECUADOR: Napo:** Río Jondachi, 30 km N Tena, 950 m, 10.ix.1990, OS Flint, Jr–2 males, 5 females (pinned), 2 males, 8 females (alcohol) (NMNH); **Pastaza:** Puyo, 30.i.1976, Spangler, et al.–1 male (alcohol) (NMNH); Puyo, 5.v.1977, PJ Spangler and DR Givens–2 males, 5 females (pinned); 1 male, 17 females (alcohol) (NMNH); **VENEZUELA: Barinas:** same data as holotype–5 males (pinned), 47 males (alcohol) (UMSP), 15 males (alcohol) (MIZA); **Portuguesa:** Río Las Marias at Finca Los Cerajones, ca. 5 km NE Potrero, 9.20550° N, 69.70750 ° W, el 270 m, 25.iii.1997, Holzenthal and Flecker–1 male (alcohol) (UMSP).

Etymology—This species is named *M. cognata* from the Latin word *cognatus*, meaning kindred or related, and referring to the close similarity between this species and *M. velasquezi*.

***Mortoniella* (*Nanotrichia*) *coheni*, new species**
Fig. 91, 125

Mexitrichia n. sp. 5: Flint 1996: 382.

This is a fairly distinctive species and can be distinguished from others in the velasquezi group by having the reflexed apex of the dorsal phallic spine distinctly inflated, with the posterior margin rounded, rather than angular. The dorsal projection on the endophallic membrane is very strongly sclerotized and spine-like, as are the apicoventral sclerites. An additional identifying feature is that scale-like setae are absent on both fore- and hind wings of males.

Adult—Length of forewing: male 2.3-2.6 mm; female 2.6-2.9 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color (in alcohol) medium brown, legs slightly paler. Tibial spurs darker than legs, contrasting in color. Forewing with distinct white wing bar at anastomosis, Males without scale-like setae on wings.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow basally, length about 3 times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X, as viewed laterally, relatively short and narrow, rod-like, apex rounded; as viewed dorsally, short and wide, apicomesally with deep emargination, extending about ½ length of tergum; ventrolateral lobes obsolete. Inferior appendage with prominent digitate, setose dorsolateral projections, fused apicoventrally to spine-like projections of the mesal pockets. Mesal pockets of inferior appendage very large, with elongate thick, spine-like, apicoventral projections. Paramere appendage elongate, narrow, extending nearly straight, nearly uniform in width, apex acute. Phallobase very short, with elongate ventral rod-like projections, each strongly flared apically. Dorsal phallic spine, as viewed laterally, short and wide, strongly reflexed in about apical 2/5; ventral margin with dimple-like indentation at point of inflection; reflexed apex strongly inflated, rounded on posterior margin, subacute apically; as viewed dorsally, with distinct rounded dorsolateral projections in basal ½, gradually narrowing apically, reflexed apex rounded. Phallicata short, continuous with endophallic membrane apically, laterally with broadly rounded sclerotized projections, surrounding mesal pockets of inferior appendage, Endophallic membrane short and wide, continuous with phallicata, dorsomesally with strongly sclerotized, short, preapical, spine-like projection, articulating with dimple-like indentation in dorsal phallic spine; ventrally with pair of strongly sclerotized, curved, spine-like projections (modified phallotremal spines?).

Holotype male (alcohol)—**ECUADOR: Pastaza:** Puyo (3 km W), 15.vii.1976, J Cohen (UMSP000097141) (NMNH).

Paratypes—**ECUADOR: Napo:** Puyo, 6.v.1977, PJ Spangler and DR Givens–1 male (alcohol) (NMNH); Archidona, Río Misahuallí, 650 m, 11.ix.1990, PJ Spangler–1 male, 2 females (alcohol) (NMNH); **Pastaza:** Puyo, riverside, 29.v.1975, Cohen and Langley–4 males (alcohol) (NMNH); Puyo, 5.v.1977, PJ Spangler and DR Givens–10 males 14 females (alcohol) (NMNH); same locality and collectors, 6.v.1977–3 males, 6 females (alcohol) (NMNH); same locality and collectors, 7.v.1977–3 males, 4 females (alcohol) (NMNH); same locality and collectors, 8.v.1977–2 males, 5 females (alcohol)

(NMNH); same locality and collectors, 10.v.1977–4 male, 1 female (alcohol) (NMNH); same locality and collectors, 11.v.1977–1 male (alcohol) (NMNH); same locality and collectors, 13.v.1977–10 males, 15 females (alcohol) (NMNH); same locality and collectors, 14.v.1977–14 males, 31 females (alcohol) (NMNH); same locality and collectors, 21.v.1977–4 males (alcohol) (NMNH); Puyo, 30.i.1976, Spangler, et al.–170 males, 185 females (alcohol) (NMNH); same locality and collectors, 1.ii.1976–1 male, 1 female (alcohol) (NMNH); same locality and collectors, 8-11.ii.1976–1 male, 3 females (alcohol) (NMNH); Puyo (1.5 km S), 14.v.1977, PJ Spangler and DR Givens–14 males, 31 females (alcohol) (NMNH); same data as Holotype–51 males, 52 females (alcohol) (NMNH) 5 males, 5 females (alcohol) (UMSP); **PERU:** Monson Valley, Tingo Maria, 18.1x.1954, EI Schlinger and ES Ross –1 male (alcohol) (CAS); **Cuzco:** Pilcopata, premontane moist forest, 600 m, 11-14.xii.1979, JB Heppner–1 male (alcohol) (NMNH); **Madre de Dios:** Manu, Erika (near Salvación), 550 m, 4-6.ix.1988, O Flint and N Adams–2 males, 1 female (alcohol) (NMNH); Manu, Erika Hostel (near Salvación), 12.0500° S, 71.2333 ° W, 550 m, 3-5.ix.1989, N Adams et al.–1 male, 1 female (alcohol) (NMNH); same locality and date, RA Faitoute et al.–2 males (alcohol) (NMNH).

Etymology—This species is named *M. coheni* for Jeffrey Cohen, in recognition of the contribution he made in furthering the knowledge of the aquatic insects of Ecuador through his Peace Corps collecting efforts.

***Mortoniella* (*Nanotrichia*) *eduardoi* (Rueda Martín and Gibon, 2008)**
Fig. 92, 102, 121

Mexitrichia n. sp. 4: Flint 1996: 382.
Mexitrichia eduardoi Rueda Martín and Gibon, 2008: 216.
Mortoniella eduardoi (Rueda Martín and Gibon): Blahnik and Holzenthal 2011: 53 [member of velasquezi group].

Mortoniella eduardoi is very closely related to *M. licina*, n. sp. and *M. venezuelensis*, n. sp. All of these species have the apical spine-like projections from the mesal pockets of the inferior appendages very elongate and fused to the ventral part of the inferior appendages to form elongate, projecting lobes. All of the species also have an endophallic membrane that is ornamented with a dorsomesal projection with minute spines, membranous lateral lobes with minute spines, and paired ventral sclerites, each with a somewhat forked apex. Among these species, *M. eduardoi* can be easily diagnosed by the modified apices of the paramere appendages, which are slightly widened preapically and have a spine-like apical projection. Additionally, the color is different, dark brown with a distinct white wing bar, rather than medium or light brown. Like *M. venezuelensis*, *M. eduardoi* has a distinct field of slightly darkened, upright, scale-like setae on the hind wing. The setae differ from those that parallel the major veins, both in this species and others in the subgenus *Nanotrichia*, which are leaf-like and uniformly tapered on each end. The upright setae on the hind wings are narrow and stalk-like basally, with the apices widened and flattened.

Adult—Length of forewing: male 2.6-3.0 mm; female 3.0-3.5 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color dark brown, apices of tarsi paler. Tibial spurs slightly darker than legs, not or only weakly contrasting in color. Forewing with distinct white wing bar at anastomosis. Males with scale-like setae paralleling veins in forewing, hind wing with extensive field of slightly darkened, semi-erect, scale-like setae.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow basally, length about 3 times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, lobes separated dorsomesally by more than ½ width of segment. Tergum X, as viewed laterally, relatively short, narrowed and slightly ventrally curved apically; as viewed dorsally, short and wide, apicomesally with deep U-shaped emargination, extending more than ½ length of tergum; ventrolateral lobes slightly produced basally, obsolete apically. Inferior appendage with short digitate, setose, dorsolateral projections, fused apicoventrally to spine-like projections of the mesal pockets; composite apical structure forming prominent elongate, curved, ventral lobes. Mesal pockets of inferior appendage very large, with elongate, thick, spine-like apicoventral projections. Paramere appendage moderately elongate, narrow, extending nearly straight, slightly swollen preapically, with short spine-like apical projection. Phallobase very short, with elongate ventral rod-like projections, each strongly flared apically. Dorsal phallic spine, as viewed laterally, relatively narrow, strongly reflexed in about apical 1/3, apex rounded; as viewed dorsally, with distinct subparallel dorsolateral projections, narrowed basally and apically, reflexed apex rounded. Phallicata short, continuous with endophallic membrane apically, laterally with broadly rounded sclerotized projections, surrounding mesal pockets of inferior appendage. Endophallic membrane continuous with phallicata, dorsomesally with slightly raised projection with numerous minute spines, laterally with projecting membranous lobes with minute spines, apically with narrow projecting lobe, ventrally with pair of sclerotized projections, each with v-shaped apical notch (modified phallotremal spines?).

Material examined—**BOLIVIA: Cochabamba:** PN and ANMI Carrasco, Paracticito, Río San Rafaél, Puente Panchito, 800 m from Guarda Parque, 17.06077° S, 65.48272° W, 438 m, 9-10.xi.2004, Robertson, Garcia, Valdiva–2 males, 17 females (pinned), 1 male (alcohol) (UMSP); Río San Maleo, Carrasco N.P. at cable crossing to park, 17.06392° S, 65.47558° W, 449 m, 11.xi.2004, Robertson, Garcia, Vidaurre–27 males, 43 females (pinned), 15 males, 957 females (alcohol) (UMSP); **Santa Cruz:** PN and ANMI Amboró, Guardia Parque Mataracú, Río Yapacani, 17.52072° S, 63.86795° W, 329 m, 26.xi.2004, Robertson, Garcia, Vidaurre–2 males, 5 females (pinned), 352 males, 125 females (alcohol) (UMSP); **PERU: Madre de Dios:** Manu, Erika (nr. Salvacion), 550 m, 4-6.ix.1988, O Flint and N Adams–2 males, 9 females (pinned), 3 males, 27 females (alcohol) (NMNH); Manu, Hostel Erika (nr. Salvacion), 12.88333° S, 71.23333° W, 550 m, 3-5.ix.1989, N Adams et al.–1 male, 1 female (alcohol) (NMNH); same locality and date, RA Faitoute et al.–2 males, 4 females (alcohol) (NMNH); Amazonia Lodge, Río Alto Madre de Dios, 12.87033° S, 71.37600° W, 500 m, 30.vi.1993, R Blahnik and M Pescador–2 males, 13 females (alcohol) (NMNH).

Distribution—Bolivia, Peru.

***Mortoniella* (*Nanotrichia*) *licina*, new species**

Fig. 93, 122

Mortoniella licina is very closely related to *M. eduardoi* (Rueda Martín and Gibon) and *M. venezuelensis*, n. sp. All of these species have the apical spine-like projections from the mesal pockets of the inferior appendages very elongate and fused to the ventral part of the inferior appendages to form elongate, projecting lobes. All of the species also have an endophallic membrane that is ornamented with a dorsomesal projection with minute spines, membranous lateral lobes with minute spines, and paired ventral sclerites, each with a somewhat forked apex. *Mortoniella licina* differs from the other two species in lacking a field of upright scale-like setae on the hind wings of males. It most resembles *M. venezuelensis* in that the paramere appendages are uniform in width and do not have modified apices. Those in *M. licina* are usually distinctly curved apically, rather than being straight. A subtle, but distinctive character is that the ventral lobes of the inferior appendages and attached spine-like projections of the mesal pockets, are longer and more distinctly upturned in *M. licina*.

Adult—Length of forewing: male 2.7-3.1 mm; female 2.8-3.5 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color (in alcohol) medium brown. Forewing with narrow whitish wing bar at anastomosis. Males with scale-like setae paralleling veins in fore- and hind wings, hind wing without additional field of darkened, semi-erect, scale-like setae.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow basally, length about 3½ times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X, as viewed laterally, relatively short, narrowed and slightly ventrally curved apically, basomesally with pair of setose sclerites; as viewed dorsally, short and wide, apicomesally with deep U-shaped emargination, extending more than ½ length of tergum; ventrolateral lobes slightly produced basally, obsolete apically.

Inferior appendage with setose, digitate dorsolateral projections, fused apicoventrally to spine-like projections of mesal pockets; composite apical structure forming prominent and very elongate, curved, ventral lobes. Mesal pockets of inferior appendage very large, with elongate, thick, strongly posterodorsally curved, spine-like, apicoventral projections. Paramere appendage elongate, narrow, nearly uniform in width, apex acute, usually distinctly curved in apical part. Phallobase very short, with elongate ventral rod-like projections, each strongly flared apically. Dorsal phallic spine, as viewed laterally, somewhat widened basally, strongly reflexed in about apical 1/3, apex rounded; as viewed dorsally, with distinct dorsolateral projections, widest in basal ½, tapering apically, reflexed apex rounded. Phallicata short, continuous with endophallic membrane apically, laterally with rounded sclerotized projections, surrounding mesal pockets of inferior appendage. Endophallic membrane continuous with phallicata, dorsomesally with slightly raised projection with numerous minute spines, laterally with projecting membranous lobes with minute spines, apically with narrow projecting lobe, ventrally with pair of sclerotized projections, each with v-shaped apical notch (modified phallotremal spines?).

Holotype male (alcohol)— **ECUADOR: Zamora-Chinchipe:** Yanzaza (5 km N), 29.xi.1978, JJ Anderson (UMSP000096933) (NMNH).

Paratypes—**ECUADOR: Napo:** Puerto Nuevo, 8.vii.1976, J Cohen–1 male, 1 female (alcohol) (NMNH); **Pastaza:** Puyo, 21.v.1977, PJ Spangler and DR Givens–1 male (alcohol) (NMNH); Puyo, 30.i.1976, Spangler et al.–9 males (alcohol) (NMNH); Tewaeno, 500m, 18.v.1976, J Cohen–1 male (alcohol) (NMNH); Tzapino, 32 km NE Tigueno, 1.31667° S, 77.46667° W, 400 m, 22.v.1976, J Cohen–1 male (alcohol) (NMNH); **Zamora-Chinchipe:** Zamora, 4.xii.1978, JJ Anderson–232 males, 280 females (alcohol) (NMNH); Río Chicaña, 9 km N Yanzatza, 880 m, 20.ix.1990, OS Flint, Jr–11 males, 32 females (alcohol) (UMSP); same data as Holotype–13 males, 110 females (alcohol) (NMNH); 6 km E Zumbi, 980 m, 21.ix.1990, OS Flint, Jr–1 male (pinned), 1 male, 1 female (alcohol) (NMNH).

Etymology—This species is named *M. licina* from the Latin word *licinus*, meaning bent or turned upward, in reference to the strongly upturned ventral lobes of the inferior appendages in this species.

***Mortoniella* (*Nanotrichia*) *spangleri*, new species**

Fig. 94, 124

This is a distinctive species, unlikely to be confused with any other species in the velasquezi group. Especially diagnostic is the structure of the dorsal phallic spine, which has a patch of minute spines on its posteroventral surface. Other useful diagnostic characters include the strongly curved paramere appendages, relatively short inferior appendages, and the distinctively arched tergum X (as viewed laterally). Additionally, males have an extensive field of darkened scale-like setae on the hind wings. The female is also distinctive in that it has an arched and projecting tergum VIII.

Adult—Length of forewing: male 2.8-3.2 mm; female 3.0-3.5 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color (in alcohol) light brown. Tibial spurs slightly darker than legs, contrasting in color. Forewing with distinct white wing bar at anastomosis. Males with scale-like setae paralleling veins in fore- and hind wing, hind wing with extensive field of darkened, semi-erect, scale-like setae.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow and slightly constricted basally, length about 4 times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by about ½ width of segment. Tergum X, as viewed laterally, relatively short and narrow, distinctly arched in middle; as viewed dorsally, short and moderate in width, lateral margins subparallel, apicomesally with deep emargination, extending more than ½ length of tergum, basomesally with pair of setose sclerites; ventrolateral lobes obsolete. Inferior appendage with digitate, setose, dorsolateral projections, fused apicoventrally to spine-like projections of the mesal pockets. Mesal pockets of inferior appendage very large, with moderately elongate, thick, spine-like, apicoventral projections. Paramere appendage moderately elongate, narrow, distinctly curved, ventrally near base and dorsally at apex, apex acute.

Phallobase very short, with elongate ventral rod-like projections, each strongly flared apically. Dorsal phallic spine, as viewed laterally, almost evenly dorsally curved from base, apex slightly inflated, ventral margin with distinct notch near middle, apparently to accommodate lightly sclerotized projection on endophallic membrane, upturned part with slight indentation bearing numerous small spines; as viewed dorsally, with distinct dorsolateral projections, widest in basal ½, narrowing apically, reflexed apex rounded. Phallicata short, continuous with endophallic membrane apically, laterally with broadly rounded sclerotized projections, surrounding mesal pockets of inferior appendage. Endophallic membrane continuous with phallicata, dorsomesally with lightly sclerotized projection, ventrally with pair of short sclerotized projections (modified phallotremal spines?), each bluntly rounded as viewed ventrally, apices with minute spines.

Holotype male (alcohol)—ECUADOR: Pastaza: Puyo, 5.v.1977, PJ Spangler and DR Givens (UMSP000097077) (NMNH).

Paratypes—ECUADOR: Napo: Puyo, 6.v.1977, PJ Spangler and DR Givens–1 male, 1 female (alcohol) (NMNH); Lago Agrio (30 km E) Via a Tarapoa, 17.x.1975, A Langley–22 males, 25 females (alcohol) (NMNH); **Pastaza:** Puyo, 5.v.1977, PJ Spangler and DR Givens–5 males, 7 females (alcohol) (NMNH); same locality and collectors, 6.v.1977–3 males, 2 females (alcohol) (UMSP); same locality and collectors, 7.v.1977–3 females (alcohol) (NMNH); Puyo, 30.i.1976, Spangler et al.–1 male, 7 females (alcohol) (NMNH); same locality and collectors, 1-7.ii.1976–1 male (alcohol) (NMNH); same locality and collectors, 8-11.ii.1976–1 female (alcohol) (NMNH); Puyo (27 km N) Est. Fluvia Metrica, 4.ii.1976, Spangler et al.–3 females (alcohol) (NMNH); Puyo (16 km W), 3.ii.1976, Spangler et al.–18 males, 41 females (alcohol) (NMNH); **Tungurahua:** Baños, 1798 m, 28.v.1975, Cohen and Langley–3 males, 2 females (alcohol) (NMNH); Baños (34 km E), 25.i.1976, 1280 m, Spangler et al.–9 males, 15 females (alcohol) (NMNH); **Zamora-Chinchipe:** Zamora, at lights, 1-5.vi.1976, A Langley, et al.–1 male (pinned) (NMNH); Zamora, 4.xii.1978, JJ Anderson–3 males, 10 females (alcohol) (NMNH).

Etymology—We take pleasure in naming this species for Dr. Paul Spangler, retired aquatic beetle specialist at the Smithsonian Institution, who also collected many specimens of Trichoptera during his career, including the majority of type specimens of this species.

***Mortoniella* (*Nanotrichia*) *velasquezi* (Flint, 1991)**
Fig. 95, 119

Mexitrichia velasquezi Flint, 1991: 22.
Mortoniella velasquezi (Flint): Blahnik and Holzenthal 2008: 70 [member of velasquezi group].

Mortoniella velasquezi is very similar to *M. cognata*, n. sp. and the two undoubtedly form a closely related species pair. Both species are characterized by having lateral lobes of the phallicata that are comparatively elongate and projecting, forming what appear to be short blunt apical lobes of the inferior appendages. The exact shape and length of these lobes appears to be variable in both species. *Mortoniella velasquezi* can be diagnosed by the shape of the dorsal phallic spine, which has the upturned apical part more sharply reflexed and the angular apicoventral projection more pronounced. Additionally, the ventral “belly” of the spine is more projecting and not as flat as in *M. cognata*. Other useful characters are the more elongate paramere appendages and more distinctly developed dorsal and ventral sclerites of the endophallic membrane. Finally, the hind wings of the male have a distinct patch of upright scale-like setae in *M. velasquezi*, whereas in *M. cognata* the setal patch of the hind wings have setae that are hair-like, rather than scale-like.

Adult—Length of forewing: male 2.5-2.9 mm; female 3.3-4.0 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color medium brown, apices of tarsi slightly paler. Tibial spurs darker than legs, contrasting in color. Forewing with narrow white wing bar at anastomosis. Males with forewings densely covered with short, adpressed, and somewhat thickened setae; those paralleling major veins in hind wings scale-like; hind wing with additional field of slightly darkened, short, semi-erect, scale-like setae.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow and slightly constricted basally, length about 4 times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X, as viewed laterally, relatively short and narrow, rod-like, declivous apically, basomesally with pair of setose sclerites; as viewed dorsally, short and very wide, apicomesally with deep and very wide U-shaped emargination, extending more than ½ length of tergum; ventrolateral lobes obsolete. Inferior appendage with short digitate, setose, dorsolateral projections, fused apicoventrally to spine-like projections of the mesal pockets. Mesal pockets of inferior appendage very large, with moderately elongate, thick, posterodorsally curved, spine-like, apicoventral projections. Paramere appendage short, narrow, apex acute, emerging near dorsal margin of basal segment, weakly dorsally curved. Phallobase very short, with elongate ventral rod-like projections, each strongly flared apically. Dorsal phallic spine, as viewed laterally, short and relatively wide, dorsolateral margins expanded, spine weakly reflexed in about apical 2/5, basal part with distinct projecting "belly," ventral margin with rounded indentation at apical inflection, reflexed apex with distinctly angular projection on posterior margin, apex acute; as viewed dorsally, very wide, lateral margins subparallel, apex bluntly rounded. Phallicata short, continuous with endophallic membrane apically, laterally with relatively elongate, apically rounded, sclerotized projections, projecting beyond spine-like projections of mesal pockets of inferior appendage; projections appearing ventrally as broad, apically rounded lobes of inferior appendages. Endophallic membrane continuous with phallicata, without membranous lateral lobes, dorsomesally with strongly sclerotized, short, spine-like projection, articulating with indentation in dorsal phallic spine; ventrally with pair of short blunt sclerites (modified phallotremal spines?).

Material examined—**COLOMBIA: Antioquia:** Finca Velasquez, Sopetran, 14.ii.1983, OS Flint, Jr–1 male Paratype (pinned) (NMNH); Quebrada El Poso, 8 km W El Penol, 9.ii.1983, OS Flint, Jr–1 male Paratype (pinned) (NMNH); **Cauca:** Municipio de Inzá, Quebrada San Andrés, ca. 500 m W Restaurante "La Portada," San Andrés de Pisimbalá, 2.58222° N, 76.04333° W, el 1750 m, 21.xii.1997, F Muñoz-Q, et al.–7 males, 11 females (pinned) (UMSP); **Risaralda:** 4 km E Santa Rosa de Cabal, 29.ii.1984, CM and OS Flint, Jr–1 male (alcohol) (NMNH); **Valle:** Municipio de Buga, Río Guadalajara, "La Piscina," ca. 4 km SE La Habana, 3.87472° N, 76.16889° W, el 1620 m, 8.i.1998, F Muñoz-Q, et al.–1 male, 5 females (pinned) (UMSP); **ECUADOR: Cotopaxi:** Quevedo (36 km NE), 335 m, 21.vii.1976, J Cohen–15 males, 23 females (alcohol) (NMNH); **Imbabura:** Río Chota, 10.ix.1977, LE Peña G–3 males, 2 females (pinned) (NMNH); **Pichincha:** Río Umachaca, Forest Station Maquipucuna, 0.12500° N, 78.61667° W, 1250 m, 4-5.ix.1990, OS Flint, Jr–1 male (pinned), 12 males, 13 females (alcohol) (NMNH); Nanegal, 1100 m, 19-20.ix.1977, LE Peña G–7 males, 3 females (alcohol) (NMNH); N Perucho, 18-19.ix.1977, LE Peña G–1 male, 28 females (alcohol) (NMNH); Santo Domingo (47 km S) 29.vii.1976, J Cohen–106 males, 10 females (alcohol) (NMNH); Santo Domingo de los Colorados (14 km E), 5.vii.1975, Langley and Cohen–2 males (alcohol) (NMNH).

Distribution—Colombia, Ecuador.

***Mortoniella* (*Nanotrichia*) *venezuelensis*, new species**

Fig. 96, 123

Mortoniella venezuelensis is very closely related to *M. eduardoi* Rueda Martín and Gibon and *M. licina*, n. sp. All of these species have the apical spine-like projections from the mesal pockets of the inferior appendages very elongate and fused to the ventral part of the inferior appendages to form elongate, projecting lobes. All of the species also have an endophallic membrane that is ornamented with a dorsomesal projection with minute spines, membranous lateral lobes with minute spines, and paired ventral sclerites, each with a somewhat forked apex. *Mortoniella venezuelensis* differs from *M. eduardoi* in having paramere appendages that are uniform in width and not modified apically. Additionally, the color is different, medium brown, rather than very dark brown. *Mortoniella licina* differs in having slightly longer paramere appendages, which are also usually curved apically, rather than projecting straight. It also differs in that the fused ventral lobes of the inferior appendages are more elongate and more strongly dorsally curved than in *M.*

venezuelensis. Additionally, *M. licina* differs in lacking a field of upright scale-like setae on the hind wing, which characterizes both *M. venezuelensis* and *M. eduardoi*.

Adult—Length of forewing: male 2.6-2.9 mm; female 3.0-3.3 mm. Forewing with forks I, II, and III present, hind wing with fork II only. Spur formula 0:3:4. Overall color medium brown, apices of tarsi paler. Tibial spurs slightly darker than legs, weakly contrasting in color. Forewing with narrow whitish wing bar at anastomosis. Males with scale-like setae paralleling veins in fore- and hind wings, hind wing with additional field of darkened, semi-erect, scale-like setae.

Male genitalia—Ventral process of segment VI posteriorly projecting, narrow basally, length about 3 times width at base. Segment IX with anterolateral margin rounded and distinctly produced in ventral ½, posterolateral margin nearly straight; segment deeply mesally excised dorsally and ventrally, forming lateral lobes, separated dorsomesally by more than ½ width of segment. Tergum X, as viewed laterally, relatively short, narrow, slightly declivous; as viewed dorsally, short and wide, apicomesally with deep U-shaped emargination, extending more than ½ length of tergum; ventrolateral lobes obsolete. Inferior appendage with digitate, setose, dorsolateral projections, fused apicoventrally to spine-like projections of the mesal pockets; composite apical structure forming prominent, elongate ventral lobes. Mesal pockets of inferior appendage very large, with elongate, thick, spine-like, apicoventral projections. Paramere appendage elongate, narrow, nearly uniform in width, extending nearly straight, apex acute. Phallobase very short, with elongate ventral rod-like projections, each strongly flared apically. Dorsal phallic spine, as viewed laterally, somewhat widened basally, strongly reflexed in about apical 1/3, apex rounded; as viewed dorsally, with distinct dorsolateral projections, widest in basal ½, tapering apically, reflexed apex rounded. Phallicata short, continuous with endophallic membrane apically, laterally with broadly rounded, sclerotized projections, surrounding mesal pockets of inferior appendage. Endophallic membrane continuous with phallicata, dorsomesally with slightly raised projection with numerous minute spines, laterally with projecting membranous lobes with minute spines, ventrally with pair of sclerotized projections, each with v-shaped apical notch (modified phallotremal spines?).

Holotype male (pinned)—**VENEZUELA: Barinas:** Río Sinigüis in Caño Grande, 8.40000° N, 70.77417° W, el 520 m, 22.iii.1997, Holzenthal (UMSP000001551) (UMSP).

Paratypes—**VENEZUELA: Barinas:** same data as Holotype–8 males, 7 females (pinned), 42 males (alcohol) (UMSP), 15 males (alcohol) (MIZA); Río Santo Domingo, Barinas, 17.ii.1976, CM and OS Flint, Jr–81 males, 198 females (alcohol) (NMNH); **Zulia:** Perija El Tucuco, Missión El Tucuco, small stream nr. church, 27.ix.1979, HM Savage–1 male, 1 female (alcohol) (NMNH); Perijo El Tucuco, Missión El Tucuco, Río El Tucuco, 1/2 km from church, 1-5.x.1979, HM Savage–47 males, 31 females (alcohol) (NMNH); El Tucuco, Sierra de Perija, montane forest, 28-29.i.1978, JB Heppner–4 males (alcohol) (NMNH); Zulia: Parque Nacional Perijá, Río Negro in Toromo, 10.0510° N, 72.7120° W, el 360 m, 15.i.1994, Holzenthal, Cressa, Rincón–3 males (alcohol) (UMSP).

Etymology—This species is named *M. venezuelensis* for Venezuela, the country of origin of the holotype specimen.

Key to males of northern South American *Mortoniella*

(The key is to known species and should be used cautiously, in conjunction with the figures and diagnoses for the species, since many undescribed species probably exist.)

1. Segment IX with anterolateral margin produced in ventral ½ (Fig. 1A, 82A, 90A), lateral lobes of segment *usually* widely divided dorsally (more than ½ width of segment (Fig. 1B, 82B, 90B)), exception in flinti subgroup of the bilineata group (Fig. 19B), and *M. triangularis* of the ormina group (Fig. 86B), with lobes narrowly divided [intermediate species, *M. unilineata* Sykora (Fig. 78), with segment IX slightly produced ventrally and lateral lobes separated by about ½ width of segment, treated below under couplet 41]; ventral process of segment VI elongate, narrow, and posteriorly directed (length usually 2 times width at base or more) **2**

— Segment IX with anterolateral margin almost evenly rounded (Fig. 28A, 35A); lateral lobes of segment narrowly divided dorsally (usually much less than ½ width of segment) (Fig. 28B, 35B); ventral process of segment VI usually short (length 1-1½ times width at base), but very elongate in a few species listed as “unplaced to species group”) (subgenus *Mortoniella*, in part) **30**

2(1). Size smaller (forewing usually less than 3 mm); hind wing with fork II only (Fig. 102B, 103B, 104B) (subgenus *Nanotrichia*) **3**

— Size larger (forewing usually more than 4 mm); hind wing with forks II, III and V present (Fig. 97B, 99B), or with forks II and V (Fig. 98B) (subgenus *Mortoniella,* bilineata group) **4**

3(2). Rod-like processes of phallobase short (membranous apex sometimes flared) (Fig. 79A); dorsal phallic spine either without expanded lateral margins (Fig. 79D), or with saddle-like or wing-like projections at about midlength (Fig. 83A, 80D) (subgenus *Nanotrichia*, ormina group) **80**

— Rod-like processes of phallobase elongate and inflated apically, accompanying pockets very bulbously enlarged (Fig. 90A, 90C); dorsal phallic spine wide, with lateral margins expanded throughout length (Fig. 92D) (subgenus *Nanotrichia*, velasquezi group) **90**

M. (*Mortoniella*), bilineata group

4(2). Dorsal phallic spine without projection from ventral margin, or ventral projection only slightly produced; dorsal phallic spine either not sharply upturned apically, or apex not rounded in lateral view (Figs 18A, 26A) **5**

— Dorsal phallic spine with very acutely angular, or distinctly produced and rounded ventral projection (Fig. 3A, 16A) [least so in apiculata subgroup, Fig. 1A]; dorsal phallic spine usually sharply upturned apically, with apex rounded in lateral view (Fig. 1A, 7A) **10**

5(4). Dorsal phallic spine sharply reflexed apically and covered with minute spines (Fig. 26A); hind wing with forks II, III, and V (Fig. 98B), Ecuador (quinuas subgroup) **6**

— Dorsal phallic spine not sharply reflexed apically and not covered with minute spines (Fig. 18A); hind wing with forks II and V only (Fig. 98B), Venezuela (flinti subgroup) **7**

6(5). Paramere appendage with single spine apically (not figured, see original figure, or Sykora 1999, Fig. 19-21) .... ***M. quinuas* Harper and Turcotte**

— Paramere appendage with numerous spines preapically (Fig. 26A, 26C) .... ***M. gilli*, n. sp.**

7(5). Dorsal phallic spine with apex bifurcate (or asymmetric) or trifurcate (Fig. 18D, 19D); wings fuscous, with 2 white bands **8**

— Dorsal phallic spine symmetric apically, not asymmetric or forked (Fig. 20C, 21D); wings uniformly fuscous, without white bands **9**

8(7). Tergum X distinctly emarginate apically (Fig. 19B); dorsal phallic spine trifurcate apically (Fig. 19D) .... ***M. flinti*** **Sykora**
— Tergum X not, or only slightly emarginate apically (Fig. 18B); dorsal phallic spine bifurcate or asymmetric apically (Fig. 18D) .... ***M. bifurcata*** **Sykora**

9(7). Paramere appendage elongate (subequal to dorsal phallic spine); spine-like projection of mesal pocket of inferior appendage shorter (Fig. 20A) .... ***M. tanyrhabdos*, n. sp.**
— Paramere appendage short (much shorter than dorsal phallic spine); spine-like projection of mesal pocket of inferior appendage very elongate (Fig. 21A) .... ***M. tusci*, n. sp.**

10(4). Paired ventral projections of inferior appendages very elongate, narrow; tergum X very bulbously expanded dorsally, (Fig. 27A) .... ***M. wygodzinskii*** **(Schmid)**
— Ventral projections of inferior appendages much shorter, or not paired; tergum X not, or not so distinctly, expanded dorsally **11**

11(10). Inferior appendage with single elongate, narrow ventromesal projection (Fig. 7A, 7C) .... ***M. monopodis*, n. sp.**
— Inferior appendage without ventromesal projection, or mesal projection much shorter **12**

12(11). Posterior margin of segment IX, in lateral view, broadly rounded, but distinctly produced (Fig. 22A, 25A); ventral projection of dorsal phallic spine, in lateral view, very acutely angular (Fig. 22A, 25A) **13**
— Posterior margin of segment IX, in lateral view, more angularly produced (Fig. 1A, 3A, 13A); ventral projection of dorsal phallic spine, in lateral view, either less acutely angular (Fig. 3A) or rounded (Fig. 1A) **15**

13(11). Tergum X relatively short, apex subtruncate in lateral view (Fig. 25A); endophallic membrane with lobes bearing minute spines (Fig. 25A, 25C); wings with 2 iridescent turquoise bands, only visible at some light angles .... ***M. iridescens*** **Flint**
— Tergum X moderate in length or very elongate, apex not (or not as distinctly) truncate in lateral view (Fig. 1A, 3A); endophallic membrane without lobes bearing minute spines; wings fuscous, without wing bands **14**

14(13). Tergum X very elongate; paramere appendage uniformly narrow throughout length (Fig. 23A) .... ***M. longiterga*, n. sp.**
— Tergum X less elongate; paramere appendage slightly widened preapically (Fig. 22A) .... ***M. foersteri*** **(Schmid)**

15(12). Tergum X, in dorsal view, either deeply emarginate (Fig. 12B), or with evident apicomesal notch (Fig. 17B) [least so in *M. enchrysa* Flint (Fig. 13B)]; wings without wing bands, color golden orange in most (enchrysa subgroup and *M. hodgesi* Flint) **16**
— Tergum X, in dorsal view, without distinct mesal emargination (Fig. 1B, 3B); wings light to dark brown, either unicolorous or with 2 distinct white wing bands (apiculata and bilineata subgroups) **23**

16(15). Apex of dorsal phallic spine with minute spines (Fig. 12A, 14A); color brown or golden orange **17**
— Apex of dorsal phallic spine without minute spines (Fig. 13A); color golden orange, except for *M. hodgesi* Flint **19**

17(16). Paramere appendages absent (Fig. 12A, 14A); membranous lateral lobes of endophallic membrane with minute spines (Fig. 12C, 14C) **18**

— Paramere appendage present, relatively short (Fig. 16A); membranous lateral lobes of endophallic membrane without minute spines (Fig. 16C); color golden orange .... ***M. silacea*, n. sp.**

18(17). Ventrolateral lobe of tergum X arched and widely separated from apicolateral lobe; dorsal lobe of inferior appendage narrow, arched, posteriorly reflexed; apex of dorsal phallic spine relatively wide (Fig. 12A); color light brown; Venezuela .... ***M. denticulata* Sykora**

— Ventrolateral lobe of tergum X elongate, narrow, narrowly separated from apicolateral lobe; inferior appendage with dorsal lobe very short, not reflexed; apex of dorsal phallic spine narrow (Fig. 14A); color not determined; Ecuador .... ***M. langleyae*, n. sp.**

19(16). Paramere appendages doubled (2 pairs present on each side, one pair may be short) (Fig. 11A, 17A) **20**

— Paramere appendages single on each side (Fig. 13A) **21**

20(19). Both pairs of paramere appendages with small accessory spines, appendages subequal in length; ventral projection of inferior appendage not paired, only moderately elongate (Fig. 17) .... ***M. squamata* Sykora**

— Longer pair of paramere appendages with small spines, shorter pair unarmed; ventral projections of inferior appendage paired, elongate, each with preapical spine on ventral margin (Fig. 11) .... ***M. adamsae*, n. sp.**

21(19). Paramere appendage relatively short (much shorter than dorsal phallic spine) (Fig. 24A); mesal emargination of tergum X deep and distinct; apicolateral lobes of tergum X ventrally curved; color not golden orange .... ***M. hodgesi* Flint**

— Paramere appendage elongate (subequal in length to dorsal phallic spine); mesal emargination of tergum X less distinct; apicolateral lobes of tergum X not ventrally curved (Fig. 13A, 15A); color golden orange **22**

22(21). Paramere appendage with row of spines on ventral margin; inferior appendage with microsetae, shape characteristic; posterolateral margin of segment IX with very angular projection (Fig. 13) .... ***M. enchrysa* Flint**

— Paramere appendage without spines; inferior appendage of characteristic shape, with hemispherically curved dorsal projection, setation normal; posterolateral margin of segment IX with rounded projection (Fig. 15) .... ***M. paraenchrysa* Sykora**

23(15). Ventral projection of dorsal phallic spine broadly rounded, relatively weakly produced (Fig. 1A, 2A); dorsal margin of segment VIII distinctly expanded (Fig. 2A); forewings unicolorous, without bands (state undetermined In *M. angulata*) (apiculata subgroup) **24**

— Ventral projection of dorsal phallic spine distinctly angular, strongly produced (Fig. 3A, 8A); dorsal margin of segment VIII normal, only slightly expanded; forewings with 2 white bands (bilineata subgroup) **25**

24(23). Apex of dorsal phallic spine compressed, in lateral view with distinct and characteristically shaped enlargement (Fig. 2A) .... ***M. apiculata* Flint**

— Apex of dorsal phallic spine not compressed and enlarged, spine upturned and rounded apically (as in bilineata subgroup) (Fig. 1A) .... ***M. angulata* Flint**

25(23). Dorsal phallic spine very strongly and conspicuously "humped" in middle (Fig. 5A); apicolateral lobes of tergum X tapered laterally, not truncate apically (Fig. 5B); inferior appendage of characteristic shape, projecting dorsally (Fig. 5A) .... ***M. chicana* Sykora**

— Dorsal phallic spine variously shaped, but not as strongly or conspicuously "humped" in middle (Fig. 3A, 4A); apicolateral lobes of tergum X more nearly truncate apically (Fig. 3B, 4B); inferior appendages different in shape **26**

26(25). Inferior appendages with ventral margin bulbous and microsetose, apices with 1 or 2 small projections (Fig. 4A); ventral lobes of phallicata shorter, expanded basally in ventral view (Fig. 4C) .... ***M. bulbosa*, n. sp.**
— Inferior appendages various, but not as above; ventral lobes of phallicata elongate, margins more parallel, not expanded basally **27**

27(26). Inferior appendages with ventromesal projection short, undivided; ventral lobes of phallicata with apices nearly parallel sided apically (Fig. 3C, 8C) **28**
— Inferior appendages with ventromesal projection divided into 2 narrow projections; ventral lobes of phallicata with apices more distinctly lobed on lateral or mesal margins (Fig. 6C, 9C) **29**

28(27). Ventral lobes of phallicata extremely elongate and projecting apically; ventromesal projection of inferior appendage, in lateral view, with apex sharply upturned and forming trianguloid projection; paramere appendage elongate (subequal in length to dorsal phallic spine) (Fig. 3A) .... ***M. bilineata* Ulmer**
— Ventral lobes of phallicata less elongate, not or only slightly projecting apically; ventromesal projection of inferior appendage less sharply upturned, not forming trianguloid process; paramere appendage moderate in length (shorter than dorsal phallic spine) (Fig. 8A) .... ***M. paralineata* Sykora**

29(27). Ventral projections of phallicata with apico*lateral* margins rounded, spatulate, mesal margins subparallel (Fig. 9C); apicoventral projections of inferior appendages more or less straight, with small setae or spines, not barbed apically (Fig. 9A) .... ***M roldani* Flint**
— Ventral projections of phallicata with apico*mesal* margins rounded, subspatulate; lateral margins subparallel (Fig. 6C); apicoventral projections of inferior appendage with apex distinctly barbed or forked (Fig. 6A) .... ***M. hamata*, n. sp.**

30(13). Hind wing with forks II, III, and V (Fig. 99B) **31**
— Hind wing with forks II and III, or with fork II only (Fig. 100B, 101B) (subgenus *Mortoniella*, leroda group) **42**

31(30). Dorsal phallic spine with very acute ventral projection; inferior appendage with strongly reflexed dorsal projection; apex of dorsal phallic spine strongly upturned and covered with minute spines, apex acute (Fig. 10) (subgenus *Mortoniella*, bilineata group) .... ***M. catherinae*, n. sp.**
— Dorsal phallic spine without acute ventral projection; inferior appendage with or without reflexed dorsal projection; apex of dorsal phallic spine usually without minute spines (subgenus *Mortoniella*, species “unplaced to species group”) **32**

M. (*Mortoniella*), species “unplaced to species group”

32(31). Ventral process of segment VI subtriangular, wide basally, length 1 to 1½ times width at base (Fig. 69E) (longest in *M. curvistylus*, n. sp., Fig. 71E) **33**
— Ventral process of segment VI elongate, narrow basally, length 2 or more times width at base (Fig. 73E, 75E) **38**

33(32) . Dorsal phallic spine (apparently) with 3 elongate branches, 1 mesal and 2 lateral (Fig. 76D); inferior appendage without reflexed dorsal process (Fig. 76A) .. (tridens subgroup) **34**
— Dorsal phallic spine simple, unbranched (Fig. 69D, 70D); inferior appendage with reflexed dorsal process (Fig. 69A, 70A) (argentinica subgroup, in part) **35**

34(33). Paramere appendage shorter (Fig. 77A, 77C); ventral margin of phallicata with sclerotized apicomesal projection (Fig. 77A, 77C); tergum X without pair of setose projections at midlength (Fig. 77B) .... ***M. triramosa*, n. sp.**

— Paramere appendage longer (Fig. 76A, 76C); ventral margin of phallicata with pair of sclerotized apicolateral lobes (Fig. 76A, 76C); tergum X with pair of setose projections at midlength (Fig. 76B) .... ***M. tridens*, n. sp.**

35(33). Only one pair of paramere appendages present, elongate, widened apically, with several spines (Fig. 71A); apex of tergum X with small V-shaped emargination (Fig. 71B); spine-like projections from mesal pockets of inferior appendage very elongate (Fig. 71A, 71C) .... ***M. curvistylus*, n. sp.**

— Two pairs of paramere appendages present, often differing in shape and length (Fig. 69A, 70A); tergum X variable, but not as above **36**

36(35). Tergum X with very wide V-shaped mesal emargination (Fig. 70B); reflexed dorsal projections of inferior appendages very narrow and lightly sclerotized (nearly vestigial) (Fig. 70A) .... ***M. croca*, n. sp.**

— Tergum X with very narrow mesal emargination (apicolateral lobes of tergum proximate, Fig. 69B, 72B); reflexed dorsal projections of inferior appendage prominent, not vestigial (Fig. 69A, 72A) **37**

37(36). Dorsal phallic spine with prominent conical lateral projections (69D); dorsal process of inferior appendages without spines; paramere appendages subequal in length and shape (Fig. 69A) .... ***M. cornuta*, n. sp.**

— Dorsal phallic spine without conical lateral projections (Fig. 72D); dorsal process of inferior appendages with spines; paramere appendages very different in length and shape, longer ones widened and scabrous in apical ½; shorter ones very narrow and hooked apically (Fig. 72A) .... ***M. spinulata* Flint**

38(32). Ventral process of segment VI only moderately elongate (length about 2 times width at base (Fig. 73E); reflexed dorsal process of inferior appendages very narrow, attenuate (Fig. 73A); tergum X subquadrate, without distinct apicolateral projections (Fig. 73B) .... ***M. esrossi*, n. sp.**

— Ventral process of segment VI very elongate, narrow (length 5 times width at base, or more) (Fig. 75E); inferior appendage with prominent reflexed dorsal process (Fig. 74A) or process absent (Fig. 75A); tergum X variable **39**

39(38). Tergum X with prominent and acutely projecting apicolateral lobes (Fig. 75B); dorsal phallic spine with preapical lateral expansions with minute spines or scale-like projections (Fig. 75A, 75D); inferior appendages without reflexed dorsal process (Fig. 75A) (santiaga subgroup) **40**

— Tergum X with apicolateral lobes absent or relatively short and rounded apically (Fig. 78B, 74B); dorsal phallic spine without apicolateral expansions, apex with spines or not (Fig. 74D, 78D); inferior appendages with reflexed dorsal process (Fig. 74A, 78A) **41**

40(39). Paramere appendages with several sclerotized projections at midlength; ventrolateral lobes of tergum X more prominent and setose (Sykora 1999, Fig. 17-18) ...... ***M. santiaga* Sykora**

— Paramere appendages narrow throughout length, without projections (Fig. 75A); ventrolateral lobes of tergum X with 1 or 2 very narrow projections, each with prominent apical seta (Fig. 75A) .... ***M. acutiterga*, n. sp.**

41(38). Inferior appendage without prominent ventromesal projection (Fig. 78A, 78C); tergum X very short, emarginate mesally, without distinct apicolateral lobes (Fig. 78B); dorsal phallic spine upturned and broadly laterally expanded in apical ½ (Fig. 78D) ...... ***M. unilineata* Sykora**

— Inferior appendage with prominent ventromesal projection (Figs 74A, 74C); tergum X moderate in length, with short, rounded apicolateral lobes (Fig. 74B); dorsal phallic spine narrow throughout, apex divided and covered with minute spines (Fig. 74D) .... ***M. proakantha*, n. sp.**

leroda group

42(30). Inferior appendages with single asymmetrical ventromesal projection, often with apex scabrous or spined (Fig. 38, 39, 41) (“leroda” subgroup) **43**
— Inferior appendages with ventral projections paired and symmetrical (Fig. 28, 35), or without ventral projections (Fig. 36) **50**

43(42). Ventromesal projection of inferior appendages very narrow, apex not scabrous (Fig. 39A, 39C); dorsal phallic spine with apex ventrally curved (Fig. 39A); Venezuela ....***M. cressae*, n. sp.**
— Ventromesal projection of inferior appendage more prominent, apex usually scabrous or with small spines (Fig. 40, 41, 42); dorsal phallic spine with apex dorsally curved (Fig. 40A) **44**

44(43). Ventromesal projection of inferior appendages very asymmetrically curved, base with papillate projections, apex unarmed (Fig. 41) .... ***M. draconis*, n. sp.**
— Ventromesal projection of inferior appendages less asymmetrically developed, apex scabrous or with small spines (Fig. 40, 42) **45**

45(44). Ventromesal projection of inferior appendages with apex forked and armed with small spines (Fig. 42) .... ***M. furcula*, n. sp.**
— Ventromesal projection of inferior appendages with apex not forked, apex at least slightly enlarged and scabrous (Fig. 38) **46**

46(45). Phallicata without rounded dorsolateral processes bordering dorsal phallic spine; paramere appendages elongate and upturned apically, apices scabrous (Fig. 43) .... ***M. parameralda*, n. sp.**
— Phallicata with rounded dorsolateral processes bordering dorsal phallic spine (Fig. 40A) (smallest in *M. bothrops*, n. p., with short paramere appendages, Fig. 38A); paramere appendages variable, long or short **47**

47(46). Apex of ventromesal process of inferior appendages distinctly bent; dorsolateral processes of phallicata relatively small; endophallic membrane without ventromesal spine; paramere appendages short (shorter than dorsal phallic spine) (Fig. 38) .... ***M. bothrops*, n. sp.**
— Apex of ventromesal process of inferior appendages not or only slightly bent; dorsolateral processes of phallicata prominent; endophallic membrane with or without ventromesal spine; paramere appendages long or short **48**

48(47). Paramere appendages very short, spine-like, apices not scabrous; endophallic membrane without ventromesal spine (Fig. 40) .... ***M. curtispina*, n. sp.**
— Paramere appendages intermediate in length (Fig. 47), or elongate (Fig. 44), apices scabrous; endophallic membrane with ventromesal spine (long or short) **49**

49(48). Paramere appendages elongate (subequal to dorsal phallic spine); endophallic membrane with very short ventromesal spine (Fig. 44) .... ***M. ruedae*, n. sp.**
— Paramere appendages moderate in length (shorter than dorsal phallic spine); endophallic membrane with prominent ventromesal spine (Fig. 47) .... ***M. simla* Flint**

50(42). Both pairs of wings covered with scale-like setae (males only) (atenuata subgroup) **51**
— Wings without scale-like setae **54**

51(42). Inferior appendages short, without elongate apicoventral projections (Fig. 29) .... ***M. brevis*, n. sp.**
— Inferior appendages with elongate, paired, apicoventral projections (may be lightly sclerotized) (Fig. 28, 30) **52**

52(51). Paramere appendage short, thick, ventrally curved (often, or usually, with lightly sclerotized ventral branch, not readily apparent) (Fig. 31) .... ***M. leei* (Flint)**
— Paramere appendage longer, distinctly forked or branched **53**

53(52). Paramere appendage very widely forked near base; ventral projections of inferior appendages not strongly curved (Fig. 28) .... ***M. atenuata* (Flint)**
— Paramere appendage narrowly forked; ventral projections of inferior appendage very strongly curved (Fig. 30) .... ***M. dinotes*, n. sp.**

54(50). Phallicata with distinct rounded or elongate, spine-like dorsolateral projections (Fig. 35, 57) **55**
— Phallicata without dorsolateral projections **64**

55(54). Dorsolateral processes of phallicata upright and rounded (Fig. 35A); endophallic membrane with single ventromesal spine; tergum X with at least slight apicomesal projection (Fig. 36B) ("florica" subgroup, in part) **56**
— Dorsolateral processes of phallicata elongate, spine-like or digitate (Fig. 56A, 57A, 68A) (*M. rectiflexa* and pocita and punensis subgroups) **57**

56(55). Inferior appendages very short, without distinct ventral projections; dorsolateral processes of phallicata very large and inflated apically; apex of dorsal phallic spine narrowed and slightly ventrally recurved (Fig. 36); Venezuela .... ***M. grandiloba*, n. sp.**
— Inferior appendage with distinct paired, ventrally curved, ventral projections (Fig. 35); Colombia .... ***M. elongata* (Flint)**

57(55). Dorsal phallic spine with apex compressed and with rounded apicoventral expansion; inferior appendages with relatively elongate, paired ventral projections (Fig. 56) (pocita subgroup) .... ***M. pocita* (Flint)**
— Dorsal phallic spine with apex depressed, narrow, or differently modified; inferior appendages with or without paired ventral projections, elongate only in *M. sinuosa*, n. sp. (punensis subgroup) **58**

58(57). Inferior appendages with very elongate, narrow, sinuous, ventral projections (Fig. 62) .... ***M. sinuosa*, n. sp.**
— Inferior appendages with ventral projections, if present, much shorter and not sinuous (Fig. 58) **59**

59(58). Tergum X with apicomesal margin convexly rounded (Fig. 61B) .... ***M. punensis* (Flint)**
— Tergum X with apicomesal margin concave, straight, or with V-shaped emargination **60**

60(59). Dorsal phallic spine with apex rectilinearly dorsally flexed, widened and with minute spines; dorsal processes of phallicata almost spiral in shape (Fig. 68A); Ecuador .... ***M. rectiflexa*, n. sp.**
— Dorsal phallic spine without minute spines apically; dorsal processes of phallicata digitate or spine-like, not spiral **61**

61(60). Tergum X with apicolateral processes divided into sclerotized dorsal and ventral projections; phallicata with upright lobe from ventral margin; dorsal projections from phallicata digitate (elongate, narrow, curved) (Fig. 60A) .... ***M. marini* (Rueda Martín and Gibon)**

— Tergum X with apicolateral processes not divided into dorsal and ventral projections; ventral margin of phallicata without lobe or lobe not upright (Fig. 59A); dorsal projections of phallicata more spine-like (tapering, acute apically) (Fig. 57A, 59A) **62**

62(61). Tergum X with small V-shaped apicomesal emargination (Fig. 59B) .... ***M. emarginata*, n. sp.**

— Tergum X with mesal margin straight or concave, without V-shaped emargination (Fig. 57B, 58B) **63**

63(62). Tergum X with apicolateral lobes tooth-like, inset from lateral margin and truncate apically (Fig. 58B); dorsal processes of phallicata asymmetrically developed, differing in length and curvature (Fig. 58A, 58C); endophallic membrane with short, thick ventromesal spine only . ... ***M. dentiterga*, n. sp.**

— Tergum X with apicolateral lobes not inset from lateral margin, relatively broad and subtruncate; dorsal processes of phallicata not asymmetric (both spine-like); endophallic membrane with very narrow and nearly straight ventromesal and dorsomesal spines (Fig. 57) .... ***M. chalalan*, n. sp.**

64(54). Inferior appendage with relatively elongate, narrow, posteriorly recurved dorsal process (Fig. 32A, 34A) **65**

— Inferior appendage with dorsal process short or absent (Fig. 53A, 63A) **68**

65(64). Dorsal phallic spine with apex sharply upturned and covered with minute spines (Fig. 51A); Guyana (limona subgroup) .... ***M. guyanensis*, n. sp.**

— Dorsal phallic spine with apex neither sharply upturned nor covered with minute spines, apex of spine more or less depressed and widened (Fig. 32A, 34A) (bolivica subgroup) **66**

66(54). Dorsal process of inferior appendage shorter, only weakly recurved (Fig. 34A) .... ***M. spatulata*, n. sp.**

— Dorsal process of inferior appendage longer, strongly recurved (Fig. 32A, 33A); endophallic membrane with paired ventral spines **67**

67(66). Dorsal process of inferior appendage with apex very sinuously reflexed (Fig. 33A); Colombia .... ***M. flexuosa*, n. sp.**

— Dorsal process of inferior appendage more evenly curved (Fig. 32A); Bolivia, Peru .... ***M. bolivica* (Schmid)**

68(64). Dorsal phallic spine with apex acutely narrowed, unmodified (Fig. 65A) **69**

— Dorsal phallic spine with apex evidently modified (expanded or forked) (Fig. 53A, 54A, 63A) **70**

69(68). Paramere appendages doubled, 2 subequal pairs on each side (Fig. 65A) .... ***M. biramosa*, n. sp.**

— Paramere appendages not doubled, 1 pair on each side; ventral margin of dorsal phallic spine with very evident rounded expansion, articulating with phallicata (Fig. 37A) ("florica" subgroup) .... ***M. schlingeri*, n. sp.**

70(68). Tergum X with rounded apicomesal lobes, bordering dorsal phallic spine (Fig. 52A) (usually very lightly sclerotized and may not be immediately evident); endophallic membrane with 1 or 2 pairs of enlarged spines (limona subgroup) **71**

— Tergum X without apicomesal lobes (Fig. 66A); endophallic armature various (leroda group species, unplaced to subgroup) **77**

71(70). Inferior appendages with ventral projections moderately to very elongate; phallicata with ventral lobes short or absent (Figs 48A, 53A) **72**

— Inferior appendages without or with very short ventral projections; phallicata with elongate, projecting ventral lobes (Fig. 52A) **75**

72(71). Inferior appendage with ventral projections wider, upturned apically; dorsal phallic spine with ventral apex rounded and strongly deflexed; paramere appendage short and stout (Fig. 48) .... ***M. akrogeneios*, n. sp.**

— Inferior appendage with ventral projections very narrow, projecting straight (Fig. 53A, 54A) **73**

73(72). Apex of dorsal phallic spine with 4 acute projections (dorsal, ventral, and 2 dorsolateral); inferior appendages with ventral projections only moderately elongate (Fig. 54) .... ***M. quadrispina*, n. sp.**

— Apex of dorsal phallic spine without 4 acute projections (ventral projection rounded); inferior appendages with ventral projections more elongate (Fig. 49A, 53A) **74**

74(73). Apex of dorsal phallic spine with acute apicolateral projections (ventral projection rounded); inferior appendage less elongate (Fig. 49); Colombia .... ***M. auricularis*, n. sp.**

— Apex of dorsal phallic spine without acute apicolateral projections (ventral projection rounded); inferior appendage very elongate (Fig. 53); Peru .... ***M. prolata*, n. sp.**

75(71). Apex of dorsal phallic spine with ventral expansion very produced and rounded (posterior margin often micro-serrate, but without angular projections) (Fig. 52) .... ***M. limona* (Flint)**

— Apex of dorsal phallic spine with ventral expansion less produced; posterior margin often with angular projection, preapically, or from ventral margin (Fig. 50A, 55A) **76**

76(75). Apex of dorsal phallic spine with ventral margin only slightly produced, posterior margin often with acute preapical projection; endophallic membrane with 2 evident pairs of sclerotized spine-like processes (Fig. 50) .... ***M. gracilis*, n. sp.**

— Apex of dorsal phallic spine with ventral margin more distinctly produced, often with acute, dorsally inflected projection (Fig. 55D); endophallic membrane often with only 1 evident pair of sclerotized spine-like processes (2nd pair probably present, but small and lightly sclerotized) (Fig. 55A) .... ***M. variabilis*, n. sp.**

77(70). Apex of dorsal phallic spine with membranous projection; endophallic membrane without spines; spine-like projections from mesal pockets of inferior appendages elongate (Fig. 66); Bolivia .... ***M. membranacea*, n. sp.**

— Apex of dorsal phallic spine without membranous projection; endophallic membrane with at least ventromesal spine; spine-like projections from mesal pockets of inferior appendages short **78**

78(77). Apex of dorsal phallic spine with very acute ventral projection; inferior appendages short; endophallic membrane with prominent pair of large spines and small ventromesal spine (Fig. 67) .... ***M. pica*, n. sp.**

— Apex of dorsal phallic spine without acute ventral projection; inferior appendages with relatively elongate ventrolateral projections **79**

79(78). Inferior appendage depressed, narrow as viewed laterally, wide as viewed ventrally; apex of dorsal phallic spine asymmetrically forked (Fig. 63); Peru .... ***M. applanata*, n. sp.**

— Inferior appendage not depressed, apex curved mesally; apex of dorsal phallic spine expanded, rounded ventrally, dorsal expansion concave; dorsal phallic spine with very evident invagination on ventral margin (Fig. 64); Venezuela .... ***M. barinasi*, n. sp.**

ormina group

80(3). Dorsal phallic spine with lateral projections (saddle-like or wing-like) at about midlength, apex of spine strongly recurved (Fig. 83A, 84A) **81**
— Dorsal phallic spine various, but without distinct lateral projections **84**

81(80). Dorsal phallic spine with lateral projections very broad and downturned (saddle-like) (Fig. 83) .... ***M. pacuara* (Flint)**
— Dorsal phallic spine with lateral projections narrower (wing-like) (Fig. 84D, 89D) **82**

82(81). Endophallic membrane with pair of distinctive spiral sclerites (Fig. 80) ..... ***M. aries* (Flint)**
— Endophallic membrane without spiral sclerites **83**

83(82). Endophallic membrane with pair of spine-like sclerites; spine-like projections from mesal pockets of inferior appendage very elongate and curved; rod-like appendages of phallobase short, strongly flared apically (Fig. 89) .... ***M. zamora*, n. sp.**
— Endophallic membrane with scattered, shorter spines; spine-like projections from mesal pockets of inferior appendage shorter (moderate in length); rod-like appendages of phallobase not flared apically (Fig. 84) .... ***M. paucispina*, n. sp.**

84(80). Tergum X distinctly elongate, narrow (Fig. 79B, 82B) **85**
— Tergum X short or moderate in length (Fig. 81B) **87**

85(84). Parameres with only 1 pair of elongate appendages; apex of tergum X not strongly emarginate (Fig. 79) .... ***M. aequalis* (Flint)**
— Parameres with 2 or 3 pairs of elongate appendages; tergum X with distinct V-shaped mesal emargination (Fig. 82, 88) **86**

86(85). Parameres with 2 pairs of elongate appendages (Fig. 82) .... ***M. macarenica* (Flint)**
— Parameres with 3 pairs of elongate appendages, 1 of them crossed ventral to phallic ensemble (Fig. 88) .... ***M. usseglioi* (Rueda Martín and Gibon)**

87(84). Dorsal phallic spine divided apicomesally (deeply or apex only) (Fig. 81D, 87D) **88**
— Dorsal phallic spine not divided apicomesally (Fig. 86) .... ***M. simplicis*, n. sp.**

88(87). Dorsal phallic spine only divided apically, lateral margins of apex sometimes serrate (Blahnik and Holzenthal 2011, fig. 25); paramere appendages short or vestigial (Fig. 81) .... ***M. collegarum* (Rueda Martín and Gibon)**
— Dorsal phallic spine deeply divided apicomesally); paramere appendages elongate, or relatively so (Fig. 85D, 87D) **89**

89(88). Dorsal phallic spine subtriangular in lateral view, apex very wide, with spine-like dorsal and ventral projections (Fig. 87); Ecuador .... ***M. triangularis*, n. sp**.
— Dorsal phallic spine much narrower in lateral view, apex distinctly forked on either side of mesal divide (Fig. 85); Venezuela .... ***M. quadridactyla*, n. sp.**

velasquezi group

90(3) Inferior appendages with ventral margin and spine-like projection of mesal pocket fused to form elongate projecting lobes (Fig. 92) **91**
— Inferior appendages without projecting ventral lobes, or lobes relatively short (Fig. 95) **93**

91(90). Hind wing without patch of scale-like setae; apex of paramere appendage usually distinctly curved, apex unmodified; ventral lobes of inferior appendages very elongate and dorsally curved (Fig. 93) .... ***M. licina*, n. sp.**
— Hind wing with patch of scale-like setae; apex of paramere appendage not curved, apex modified or not; ventral lobes of inferior appendages not quite as elongate or strongly dorsally curved (Fig. 92) **92**

92(91). Paramere appendage slightly swollen preapically, with apex spine-like (Fig. 92); color dark brown with distinct white band .... ***M. eduardoi* Rueda Martín and Gibon**
— Paramere appendage uniformly narrow throughout length (Fig. 96); color light brown with narrow white band .... ***M. venezuelensis*, n. sp.**

93(90). Dorsal phallic spine with patch of minute spines on posterior upturned margin; tergum X distinctly flexed in lateral view (Fig. 94); scale-like setae of hind wing very dark .... ***M. spangleri*, n. sp.**
— Dorsal phallic spine without patch of minute spines; tergum X linear or less distinctly flexed in lateral view (Fig. 91, 95); scale-like setae of hind wing absent or not as dark **94**

94(93). Upturned apex of dorsal phallic spine, in lateral view, distinctly inflated; ventral projections of inferior appendage narrow (defined by spine-like projections of mesal pockets); paramere appendage relatively elongate and straight (Fig. 91A); hind wings without scale-like setae .... ***M. coheni*, n. sp.**
— Upturned apex of dorsal phallic spine less inflated, posterior margin distinctly angular; ventral projections of inferior appendage short and broad apically; paramere appendage short or very short (Fig. 95); hind wings with or without scale-like setae **95**

95(94). Paramere appendage not as short; dorsal phallic spine with apex slightly more upturned and "belly" of basal part more protruding in lateral view (Fig. 95); hind wing with patch of scale-like setae .... ***M. velasquezi* (Flint)**
— Paramere appendage very short; dorsal phallic spine with apex less upturned and "belly" of basal part less protruding in lateral view (Fig. 90); hind wing with patch of elongate, upright setae .... ***M. cognata*, n. sp.**

Female morphology

Because females are unknown or only provisionally associated for a number of species, only a general treatment of the overall morphology and diversity among the major species groups is included below. An accompanying key to the major species groups is also included. An exception was made for females of the velasquezi group of the subgenus *Nanotrichia*, which are illustrated in Figures 119-125 and identified to species in the key.

The difficulty of associating females is particularly true for species in the leroda group (which includes the majority of species). It is often the case in Trichoptera that males and females are not collected in equal numbers. The most common disparity is for females to be much more abundantly collected than males, and this seems to be especially true for species in the leroda group. A similar disparity is not as evident in collections of the other species groups of *Mortoniella*. As an example, from an alcohol collection from Bolivia that was sorted by the first author and which represented a sample with an unusually large number of specimens, four species were found to be present. These included one species in the ormina group of the subgenus *Nanotrichia* (*M. collegarum*), and three species in the leroda group of the subgenus *Mortoniella* (*M. membranacea, M. chalalan*, and *M. atenuata*). The former was represented by 1990 males and 508 females. The latter by a single male of *M. chalalan*, 21 males of *M. membranacea*, 8 males of *M. atenuata*, and 1823 females, probably belonging to these three species (although the possibility that other species were represented cannot be discounted). Females can sometimes be reasonably well sorted by differences in the shape of the ventral process, and the latter character allowed eight females from the leroda group specimens to be associated with *M. atenuata* (the same number as the number of males). Thus, the female bias may not be universal for all species of the leroda group, or may only reflect collections from specific dates and localities. Nevertheless, it is common for collections of specimens in the leroda group, from throughout its distribution, to include one or a few males and a long series of females. From the example cited, it should be obvious that in some instances not all of the females may belong with the males collected at a site; indeed, there is the possibility that none of them do and that the males corresponding to the females were not collected. Despite this, it is often possible to make associations of males and females by a process of deduction or by subtle differences in color or in the shape of the ventral process, especially if collections of the same species are available from multiple locations. This is the basis on which females were identified and by which characters were scored in the data matrix in the phylogenetic section of the paper. From the above discussion, it should be obvious that the possibility of error in some associations exists, and this should be kept in mind. The synopsis of characters and character states listed below is based on examination of species for which females were more or less confidently associated.

In treating female morphology, the primary goal in this paper has been limited to providing comparative examples of females from the different species groups (which can generally be easily separated), and to developing terminology and character state definitions for use in the accompanying data matrix. Although subtleties in the differences between females, and the difficulty of producing illustrations for characters that are internalized and often difficult to view, make working on females a challenge, we do believe there is value in doing so. This is because of the bias in female specimens in many collections, and also because the female genitalia provide useful adjunct characters in determining phylogenetic relationships.

General aspects of female biology—Most females that are collected have the entire abdomen distended with eggs. The eggs are round, relatively large in size, and moderately numerous. In occasional individuals preserved in alcohol, a linear string of eggs can be seen protruding from the abdomen, connected to each other by a narrow band of adhesive. One of the most distinctive aspects of the morphology of the genitalia of female *Mortoniella*, but also found in *Protoptila*, is the presence of a ventral gland (Fig. 110C, 113). This is often seen as a darkened spot in uncleared specimens and is more obvious in *Mortoniella* than in *Protoptila*. A similar structure was not observed in other genera of Protoptilinae, either because the gland is absent, not as obvious, or because it is differently developed. The apex of this gland may be forked and, if so, is less sclerotized; the base of the gland has an elongate tube leading into it (Fig. 110C), which may or not survive the clearing process. Typically, the gland is surrounded by and secured in place by a ventral sclerite. A reasonable hypothesis is that the gland functions in administering adhesive or spumulin to the eggs, something like a nozzle, and that the surrounding sclerite anchors the gland in place. The ventral sclerite is further anchored by attachment to a dorsal sclerite that connects to the ventral margin of segment IX, described in more detail below. That females enter the water to lay eggs is evidenced by their modified mesotibiae, which are typically slightly enlarged and fringed with setae. The fringe extends onto the tarsal segments.

As discussed above, in at least some species of the leroda group, females are more commonly collected than males. Whether this reflects a different activity pattern from males, greater sensitivity to light, longer survival after mating, or some other factor is not known. However, it probably does reflect some basic biological difference of this group from the other recognized major species groups and serves as a complication in discovering new species. Additionally, although a sex bias is not evident in collections of the bilineata group, most of the described species of this group have been collected at high elevations (above 1500 m) and most of these are known from only a very small number of specimens. Some were described from pharate pupae. In a relatively recent paper by Etnier et al. (2010), a large number of new species of *Agapetus* were described from the eastern part of the United States by rearing pupae and mature larvae. This proved effective because *Agapetus* has a relatively narrow period of emergence in early spring when temperatures are cool and other collecting techniques are not as effective. It seems likely that a similar technique of rearing specimens will prove useful in discovering species of *Mortoniella* at high elevations, or in species in which females are disproportionately collected.

Terminology for female genitalia

Ventral process of segment VI—A ventral process on segment VI (Fig. 119A) is found in both males and females of *Mortoniella*. Usually, this is similarly developed in both sexes, although the ventral process in females may be somewhat shorter. The shape, length, and orientation of the process (whether posteriorly or ventrally directed), is a useful character in assigning species to the major species groups. It is also valuable as an adjunct character in separating species, or members of different subgroups.

Glands of terga VI and VII—A pair of small sack-like glands (probably pheremonal) are found on the posterior margin of segments VI and/or VII of many species. Within the subgenus *Mortoniella*, well developed glands are present on both segments in examined females of the bilineata subgroup of the bilineata group (Fig. 105D) (except for *M. bulbosa*, n. sp.,), and they are also present on both segments in most species listed as leroda group species unplaced to subgroup (*M. applanata*, *M. barinasi*, *M. biramosa*, *M. membranacea*, and *M. rectiflexa*). Functional glands are present only on segment VI, or absent on both segments, in other members of the leroda group; the same variability is found within the bilineata group (except for the species the bilineata subgroup, as noted above). The character state of "glands absent" on both segments is apparently typical of species in the albolineata, pumila, and atenuata subgroups of the leroda group. Minute, vestigial glands are sometimes evident on segment VII in individual species of various subgroups of the leroda group (in addition to the large functional glands on segment VI). Because they are easily overlooked and difficult to note, they are recorded as "glands absent" in the phylogenetic data matrix. In the subgenus *Nanotrichia*, glands are present only on segment VII and never on segment VI. These glands are reduced in size, or possibly vestigial, in the ormina group (Fig. 116D) and small in members of the velasquezi group (Fig. 119D). It seems likely that the plesiomorphic state for the genus as a whole is for glands to be present on both segments, and that they have been frequently lost, from one or both segments, in various lineages.

Sternum VII setal comb—A linear array of very elongate setae (Fig. 119A, 119B), emerging from the anterior margin of an unpigmented, diagonally transverse, linear "seam," is a diagnostic feature of females of the velasquezi group of the subgenus *Nanotrichia*. The function of these is unknown. The setae are frequently deciduous in alcohol preserved material, but the accompanying "seam" and setal bases are still obvious.

Segment VIII—This segment is synsclerous in some species (Fig. 110A) and distinctly divided in others (Fig. 119A). Commonly, the sternum and tergum are semi-fused (Fig. 111A). The tergum is invaginated from the posteromesal margin in species of the bilineata group, typically with a group of setae on either side of the emargination (Fig. 105B). This is only suggestively developed in *M. catherinae* (Fig. 108A). The tergum is more or less invaginated, with a projecting mesal tab with 2 elongate setae, in species of the M ormina group of the subgenus *Nanotrichia* (Fig. 116A, 116B). Both of these character states are considered diagnostic for the respective groups. The tergum in members of the leroda and velasquezi groups (Fig. 110B, 119C), as well as in known females of the subgenus *Mortoniella* listed as "unplaced to species group," is relatively unmodified.

Segment IX—This segment is more or less divided into a short tergum and sternum in most species. The tergum has a pair of setose apical regions, which are interpreted as an adnate or fused **tergum X** (Fig. 111A), each with a narrow projecting **cercus** (Fig. 110B, 111A). The tergum has a relatively vertical orientation in species of the velasquezi group (Fig. 119A). Some typical character modifications of segment IX are listed below:

tergal pockets—a pair of shallow, invaginated pockets are present in the majority of species of the leroda group (Fig. 111A), and also in the two examined species of the argentinica subgroup. They seem to be consistently absent in species of the albolineata, pumila, and atenuata subgroups (and possibly individual species in other subgroups). Their presence is likely a plesiomorphic character within the leroda group. The function of these is uncertain.

ventrolateral process—A projecting ventrolateral sternal lobe is a character typical of *Mortoniella* (Fig. 111A, 111B). The lobe is usually setose, but may be sensillate or asetose in some species. The lobe seems to be secondarily reduced or weakly projecting in some species (Fig. 110A).

ventromesal lobe (*or process*)—This seems to be a continuation of the ventral margin of sternum IX beyond the ventrolateral processes. Typically, these are paired on either side of the ventral gland (Fig. 111A, 111B); usually they are membranous and may be difficult to discern. In some species (as in *M. akantha*) they are more distinctly sclerotized and/or setose. In the latter case, they could be confused with the ventrolateral processes, especially if the latter are reduced. As a distinction, the ventrolateral processes are more distantly separated from the ventral gland.

Segment X—This is reduced to a flattened and fused, setose region on the apical part of tergum IX, as discussed above, with a pair of narrow apical cerci. Unusually, in *M. proakantha*, the lobes of tergum X are enlarged and bulbous (Fig. 114A). It is uncertain whether this reflects a primitive state or a secondary enlargement

Crypt—The word crypt can be used to refer to a concealed or hidden chamber. We have coined this term to refer to the internalized sclerites of the female genitalia, which seem to be composed of 2 parts that are connected to one another. Although a general feature of the genus, the elements of the crypt are most evident in species of the leroda group (Fig. 112). The dorsal part of the crypt is an anterior projection from the posteroventral margin of tergum IX. Usually, this is connected or fused to the anteroventral margin of the same tergum, either narrowly as a kind of "post" (Fig. 112), or more broadly. The very enlarged and knob-like projection found on the anterior margin of tergum IX of *M. bilineata* (Fig. 105A, 105B) represents the latter kind of fusion. This dorsal sclerite is connected to a ventral sclerite housing the ventral gland by a pair of (usually narrow), ventrally curved, lateral wings. The lateral wings of this dorsal sclerite may have a lateral flange (Fig. 113), causing the composite structure to appear trilobed. The sclerite housing the ventral gland forms the ventral part of the crypt. The main part of this sclerite seems to lie dorsal to the ventral gland itself and it also has lateral wings that connect to the lateral wings of the dorsal sclerite, though usually much shorter. The two sclerites may be continuous, but sometimes the fusion line is demarcated by a lightly sclerotized joint. The function of the crypt seems to be to reinforce and anchor the ventral gland. Because it is internal, the crypt is both difficult to view and to illustrate. Its structure is diagnostically useful, particularly in species of the leroda group and is probably best appreciated when viewed caudally (Fig. 111B, 112, and 113). However, it will appear different with even a slight change of perspective.

Ventral gland—As discussed above, this is a characteristic feature of both *Mortoniella* and *Protoptila*. In *Mortoniella*, it appears as a dark spot, even in uncleared specimens, and thus is usefully diagnostic. The apical part of the gland often (or usually) has a pair of apical projections (Fig. 113), only weakly sclerotized and varying in length in different species. The gland is encased in a sclerite that forms part of the crypt and usually a tube leading to the gland is evident (Fig. 111A), though easily lost when a specimen is cleared. The homology and function of the gland is unknown, but a speculative function is to apply adhesive to the eggs as they are laid, as discussed above. The lobes surrounding this gland apparently have minute setae associated with them and a similar horizontal pair of setose lobes is often evident just dorsal to the glands. The latter is extended as a prominent shelf-like projection in *M. usseglioi* (Fig. 117A, 117B).

Cupped sclerite—This ventral sclerite (Fig. 110B) has been variously referred to in previous literature as a cup-like or key-hole sclerite. It is a characteristic feature in many or most genera of Trichoptera and in *Mortoniella* usually has a short to elongate, handle-like projection from the posterior margin, making it appear more "dipper-like" than cup-like.

Vaginal apparatus—This is usually membranous and posterior to the cupped sclerite. It is not included in most of the figures, because it is easily damaged and its exact outline difficult to determine. However, in some species the vaginal apparatus, or regions within it, may be distinctly sclerotized and usefully diagnostic.

Key to females of the subgenera and species groups of *Mortoniella*, and species of the velasquezi group

1. Sternum VII with transverse row of very elongate setae (Fig. 119A, B) velasquezi group, subgenus (*Nanotrichia*) **4**
— Sternum VII without row of elongate setae **2**
2(1). Tergum VIII with posterior margin invaginated, setation on posterior margin grouped or with 2 setae on mesal projection (except in *M. catherinae*, n. sp., Fig. 108, with only weak posteromesal invagination) **3**
— Tergum VIII without posteromesal invagination, setae more or less uniformly distributed on posterior margin .... **leroda group and species "unplaced to species group," subgenus (*Mortoniella*)**

3(2). Tergum VIII with elongate setae on posterior margin grouped on either side of mesal invagination (Fig. 105B, 106B, 107B, 109B) .... **bilineata group, subgenus (*Mortoniella*)**
— Tergum VIII with tab-like posteromesal projection bearing 2 elongate setae (Fig. 116B, 117B) .... **ormina group, subgenus (*Nanotrichia*)**

4(1). Tergum IX with a distinct projecting dorsal lobe (Fig. 124A, 124B) ...... ***M. spangleri*, n. sp**.
— Tergum IX without distinct projecting dorsal lobe **5**

5(4). Tergum IX, in dorsal view, with posteromesal invagination (Fig. 119C, 125) **6**
— Tergum IX, in dorsal view, with rounded apicomesal projection (Fig. 121B) **8**

6(5). Apicomesal invagination of tergum IX relatively wide, lateral lobes more rounded (Fig. 125) .... ***M. coheni*, n. sp.**
— Apicomesal invagination of tergum IX narrow, lateral lobes more quadrate (Fig. 119C, 120) **7**

7(6). Lateral lobes of tergum IX distinctly quadrate, anteromesal margin with "post" of crypt more evident (Fig. 119C) .... ***M. velasquezi* (Flint)**
— Lateral lobes of tergum IX subquadrate; anteromesal margin with "post" of crypt less evidently projecting (Fig. 120) .... ***M. cognata*, n. sp.**

8(4). Apicomesal projection of tergum IX weakly produced; lateral lobes less evidently rounded (Fig. 123) .... ***M. venezuelensis*, n. sp.**
— Apicomesal projection of tergum IX more distinctly produced (evident also in lateral view, Fig. 121A); lateral lobes distinctly rounded (Fig. 121B, 122) **9**

9(8). Lateral lobes of tergum IX very small (Fig. 122) .... ***M. licina*, n. sp.**
— Lateral lobes of tergum IX more broadly rounded (Fig. 121B) .... ***M. eduardoi* (Rueda Martín and Gibon)**

Phylogenetic relationships

The accompanying phylogenetic structure is based on 112 coded characters, mostly from male genitalic structures that are evident in the accompanying illustrations, or from color, spur formula, and wing venational characters included in the species descriptions. Additionally, a few female genitalic characters were included, based on presumptively associated specimens. A list of the characters used is included in Table 2 and the resulting character matrix is included in Table 3. A nexus file of the character matrix of the data is included as the supplementary file "Mortoniella.nex" from the University of Minnesota

Libraries Digital Conservancy at the following URL: http://hdl.handle.net/11299/191069. Character states that did not pertain to a specific taxon were coded as "-" and character states that could not be ascertained were coded as "?". The latter included a small number of instances in which the character under question was observable, but the character state for a given taxon was ambiguous or uncertain. The data were analyzed in a number of ways, including distance, parsimony and Bayesian optimality criteria. These were compared to the subjectively assessed groups and subgroups included in the current and previous revisionary treatments of *Mortoniella*.

The results from the parsimony and Bayesian analyses are presented in Figures 126 and 127. The Bayesian analysis was conducted using MrBayes 3.2. (Huelsenbeck and Ronquist 2001). and used a model that allowed for the frequency of character change to follow a gamma distribution, which was found to have superior performance in recovering relationships, especially with missing data (Wright and Hillis 2014). The phylogram presented for the Bayesian analysis represents a majority rule consensus tree (Fig. 127), with support for nodes indicated by the number of trees retained in the analysis with the node represented, generally referred to as a posterior probability. Recognized species groups and subgroups are also indicated. The parsimony analysis was implemented in PAUP* (Swofford 2003), using a heuristic search, and followed a model in which all characters were equally weighted and unordered. Both methods of analysis placed the immediate outgroup*, Protoptila,* within the ingroup, probably because the taxon is very apomorphic and the characters used are either homoplastic or uniquely derived within the genus. However, it seems highly unlikely, based on the significant overall morphological differences between the two taxa, that *Protoptila* is only a deviant clade within *Mortoniella*. Consequently, the ingroup, *Mortoniella*, was constrained to be monophyletic in the parsimony analysis and this is the phylogram presented (Fig. 126), based on the strict consensus of 75 equally parsimonious trees. The difference in length by this assumption amounted to only 1 additional step. The constrained trees have a length of 715 steps, a CI of .242, RI of .777, and RI of .758. The high amount of homoplasy and weak character support for most relationships made conducting a bootstrap analysis for the parsimony analysis impractical. Some assessment of support for the relationships can be made by their congruence with the Bayesian analysis and by examining the branch lengths of the phylogram. However, it may be assumed that significant bootstrap support for most nodes is nonexistent.

All of the methods of analysis disagreed in relationships among individual taxa and the relative arrangement of some species groups. However, there was a general agreement on the monophyly of most of the major species groups and subgroups recognized. Both the Bayesian and parsimony analyses found the subgenus *Nanotrichia* to be monophyletic, as well as the velasquezi group within *Nanotrichia*. However, neither method found support for a monophyletic ormina group, mostly due to a lack of resolution; support for nonmonophyly of the ormina group was also lacking. Both methods of analysis also found the leroda group within the subgenus *Mortoniella* to be monophyletic. The bilineata group was monophyletic in the parsimony analysis, as were the majority of the species in this group in the Bayesian analysis, but the relationships of several basal subgroups were unresolved with respect to species labeled as "unplaced to species group" in the latter analysis. The relative placement of the species in the subgenus *Mortoniella* considered "unplaced to species group" differed in the two analyses, but agreed in being either basal to one of the two major species groups, or unresolved at the base of the groups. The species listed as "unplaced to subgroup" within the leroda group were variably distributed in the different analyses, but mostly grouped basal to or within the clade including the punensis, pocita, bolivica, and limona subgroups, which collectively were related, although not necessarily reciprocally monophyletic.

Phylogenetic and evolutionary comments

The historical placement of species into the genera *Mortoniella* and *Mexitrichia* was primarily based on the presence or absence of fork V in the hind wing. As pointed out previously (Blahnik and Holzenthal, 2008), one of these character states is undoubtedly plesiomorphic, probably the presence of fork V. Species historically placed in *Mortoniella*, as well as those species listed here as "unplaced to species group" possess fork V in the hind wing. *Mexitrichia* was distinguished by the absence of fork V. Because of the essential morphological similarity of *Mortoniella* and *Mexitrichia*, and absence of evidence that they were reciprocally monophyletic, the two genera were formally synonymized by Blahnik and Holzenthal (2008). Flint (1963) commented that two groups could be recognized among species historically placed in *Mexitrichia*, based on presence or absence of fork III. However, we have determined that this represents a parallel loss in different groups. The species included in the subgenus *Nanotrichia*, in this paper, have lost both forks III and V, and a similar loss has also occurred within the leroda group of the subgenus *Mortoniella* (and probably in more than one lineage). Despite this parallel character evolution, the venational loss in *M.* (*Nanotrichia*), along with several additional characters similarities, undoubtedly serves as a good indication of the monophyly of the subgenus.

Failure to find support for monophyly of the subgenus *Mortoniella* itself is probably for several reasons, but is consistent with the idea that character loss has played an important role in the evolution of the subgenus. Many of the species listed as "unplaced to species group," most newly described in this paper, resemble each other in having an inferior appendage with an elongate and recurved dorsal lobe. Examples are included in figures 132-134. Many of these species also have elongate, spine-like processes from the mesal pockets of the inferior appendages, a character that is also found in the majority of species in the subgenus *Nanotrichia*, as exemplified in Fig. 130 and 131. Despite the character similarity of the "unplaced species" in the subgenus *Mortoniella*, they are very divergent in overall morphology. An elongate, recurved dorsal process on the inferior appendage also occurs in *M. catherinae*, inferred to be a basal species in the bilineata group (Fig. 135), and also in the akantha subgroup of the leroda group (Fig. 136). The relative distribution of the character states for the two characters discussed (an elongate, reflexed dorsal lobe of the inferior appendages, and elongate spine-like projections from the mesal pockets of the inferior appendages) is included in Fig. 126. It is difficult to make any other inference than that these two apparently very specialized and apomorphic characters have been lost during the course of evolution, and probably in more than one lineage. Parallel character loss of this sort makes phylogeny reconstruction inherently difficult, due to the uneven rate of loss of the character in different lineages, and runs contrary to the usual expectation that complex characters emerge and are elaborated on over the course of evolution. It also begs the question of why this loss should have occurred. What was the original advantage of the complex characters and why were they lost? The following is offered as one potential explanation.

A primary character development defining the *Protoptila-Mortoniella* lineage is the development of the small rod-like appendages from the ventral margin of the phallobase and accompanying mesal pockets of the inferior appendages, with their apical spine-like projections. The origin of the rod-like appendages is difficult to account for, since they do not occur in other genera, but they may represent segmental analogs of the inferior appendages, derived from segment X, which has its sternite degenerate, but nevertheless could have given rise to the appendages as a *de novo* mutation. Regardless of their origin, the function of these appendages appears to be to transmit force from the phallobase to the phallicata and apical portions of the phallic ensemble, countered dorsally in *Mortoniella* by the dorsal phallic spine, which contacts or pushes against the apicomesal invagination of tergum X. It would seem that the original development of using the small basal rods to raise the phallic ensemble from below was inadequate to its function and has been improved on or modified in different ways. In *Protoptila* (Fig. 128) this was accomplished by the extension of the ventral margin of segment VIII beneath the phallic ensemble. This was accompanied by the development of a very enlarged apodeme on the dorsal margin of the phallobase, as an attachment for a muscle, required by the basal transmission of force. We hypothesize that in *Mortoniella*, the apical spine-like projections of the mesal pockets originally served the same function as the enlarged sternum VIII in *Protoptila*, to raise and lift the phallic ensemble from below. They were elongate in the immediate ancestor of extant lineages, directly subtending the phallicata, as in *M. cornuta,* n. sp. of the subgenus *Mortoniella* (Fig. 133), or *M. aequalis* in the subgenus *Nanotrichia* (Fig. 131). In *Protoptila* small spine-like projections are often evident projecting from the mesal pockets. However, due to the development of the elongate sternum VIII, and also to the fusion of the phallobase with the phallicata, it is impossible to say what the ancestral character state was in this taxon, since the spine-like projections are never elongate in surviving members of the genus. In contrast, elongate spine-like projections are found in all of the major lineages of *Mortoniella* (although only a few taxa of the leroda group, where the character, when present, is variably developed and may represent a character reversal). Probably, the support provided by the spine-like projections was relatively weak and various evolutionary modifications evolved to provide additional support, eventually replacing the function of the spines, which subsequently became reduced. In the subgenus *Mortoniella*, an additional method of support was found in the elongate, recurved dorsal lobes of the inferior appendages (Fig. 132-136). Although a plesiomorphic character for the subgenus, it is now relictually found in only a few widely divergent taxa. Its original functional significance is most evidently suggested by species such as *M. akantha* (Fig. 136), in which the lobes engage lateral projections from the dorsal margin of the phallicata. Their current utility is not as evident in other taxa, where they may already be in a process of being lost, as judged, for instance, by the very reduced lobes found in *M. croca* (Fig. 70) of the argentinica subgroup, whose other species have elongate lobes, as in *M. cornuta* (Fig. 133). Although supplanted by other methods of support in advanced species of both the bilineata and leroda groups, evidence of these recurved lobes is found in individual taxa, such as the shortened, recurved apices of the inferior appendages in *M. guyanensis* of the limona subgroup (Fig. 51), or species of the *M. bolivica* subgroup (Fig. 32-34), or the very tiny recurved apices of the inferior appendages found in several species of the albolineata subgroup (Fig. 12, 17, 18, Blahnik and Holzenthal 2011). Other alternative methods of support were derived in various lineages, and in some cases, themselves subsequently lost or reduced. The closest analogy to the character state in *Protoptila* is found in the elongate spine-like projection from the ventral margin of segment IX in *M. rodmani* of the subgenus *Nanotrichia* (Fig. 129). This represents a unique character development within the genus. In the bilineata group, ancillary support was derived by complementary angular outgrowths from the dorsal margin of the phallicata and ventral margin of the dorsal phallic spine, which are more or less functionally hinged, as exemplified by *M. catherinae* (Fig. 135). However, this probably functions more as a fulcrum to provide leverage than a method of direct support. In the "leroda" subgroup, support was provided by the development of an elongate, asymmetric ventromesal projection on the inferior appendages (Fig. 137). A similar, less apomorphic feature is found in about half the species of the albolineata subgroup, undoubtedly indicating a relationship between the two groups. In both subgroups, the feature is subsequently lost, replaced in the "florica" subgroup of the leroda group *s.l.* by paired extensions from the apices of the inferior appendages. Fusion of the phallobase and phallicata (with each other or the inferior appendages) has probably also played a role in the evolution of a support system, allowing the ventral margin of the phallicata to serve as a kind of direct support, as in the ventral outgrowths of the phallicata in the limona subgroup (Fig. 50), or the elongate, paired ventral sclerites in the bilineata group (Fig. 3). In the flinti subgroup, fusion of the inferior appendages to the phallicata has left the spine-like projections of the mesal pockets freely projecting below the phallicata, rather than providing support, and the spines are variably reduced in the different species of the group, presumably due to their functional obsolescence (Fig. 18-21). Other modifications of this kind can be surmised.

The scenario presented above is a hypothesis and probably not provable in any strict sense. We do not claim that it is the only way that character evolution could be interpreted. It does, however, provide a predictive model for how character evolution of male genitalia progresses in the genus, and an explanation of why character acquisition and character loss may be correlated. As certain structures are replaced by others, the original modification becomes functionally obsolete. The correlation, however, is imperfect, because remnants of the original structure are retained in various lineages, where they are lost multiple times and at various rates. Nevertheless, if the evolutionary hypothesis is correct, the character suite observed in newly described species should more or less make sense. This model of evolution is not particularly parsimonious. Neither does it conform to a Bayesian model in which characters follow a gamma distribution, because the same character may evolve at very different rates at different points in its evolution, depending on its functional utility. Ultimately, molecular data will be useful in testing the hypothesis of relationships presented, or in providing a counter hypothesis, since it evolves under very different constraints than morphological characters. COI sequences, provided by the BOLD initiative, are available for a limited number of taxa, but both the amount of sequence data and its taxonomic coverage are inadequate at this point to make useful comments. Although more sequence data will undoubtedly improve the situation, this will probably have to wait until additional specimens are collected, since many species are based on very old material or only a limited number of specimens. Hopefully, the hypothesis presented will provide a useful framework for interpreting evolution in the genus, once molecular data are available.

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Table 2. List of characters used in the *Mortoniella* character matrix (Table 3) and subsequent phylogenetic analyses.

Characters

Adult

1. Spur formula: 0=0:4:4; 1=0:3:4.
2. Forewing (color): 0=light or medium brown; 1=brownish-black (fuscous); 2=golden-orange.
3. Forewing, wing bars (number): 0=0 or 1 (often incomplete, at usual anastomosis; 1= 2.
4. Forewing, wing bar (color): 0=pale yellowish or whitish-brown (not distinctly white); 1=distinctly white; 2=iridescent turquoise.
5. Hind wing fork V: 0=present; 1=absent.
6. Hind wing fork III: 0=present; 1=absent.
7. Hind wing, costal margin: 0=with distinct inflection; 1=without distinct inflection; 2=with very pronounced inflection (apex of wing very narrow).
8. Male hind wing (venational setation): 0=without scale-like setae paralleling veins; 1=with scale-like setae paralleling veins.
9. Male hind wing (field of upright setae or scales): 0=absent; 1=present.
10. Sternum VI ventral process (relative length): 0=elongate (2 times width or more); 1=short (length no more than 1½ times width at base).
11. Sternum VI ventral process (orientation): 0=posteriorly directed; 1=ventrally directed.
12. Sternum VI ventral process (shape of short process): 0=subtriangular; 1=rounded apically, retracted basally.
13. Sternum VI ventral process (posterior margin): 0=not concave; 1=concave.

Female

14. Ventral gland: 0=absent; 1=present.
15. Female tergum VI: 0=with pheromone sacks; 0=without pheromone sacks (or sacks minute and vestigial).
16. Female tergum VII: 0=with pheromone sacks; 1=without pheromone sacks (or sacks minute and vestigial).
17. Female sternum VII: 0=without elongate setae; 1=with elongate setae.
18. Female tergum VIII: 0=unmodified; 1=invaginated, with mesal tab-like projection bearing 2 setae; 2=invaginated, without mesal projection.
19. Female tergum VIII (mesal invagination): 0=shallow or weak; 1=distinct.
20. Female tergum VIII (setation of posterior margin): 0=with linear row of setae; 1=with clustered seate (on either side of invagination).
21. Female tergum IX (caudal view): 0=invaginated in middle; 1=with vaulted mesal projection; 2=evenly rounded (not invaginated or projecting).
22. Female tergum IX (dorsomesal development): 0=nearly straight or evenly rounded; 1=with distinct indentation; 2=produced or projecting.
23. Female tergum IX (pockets): 0=absent; 1=with pair of small, but distinct pockets.
24. Female genitalia (cupped sclerite): 0=with short (or no) “handle”; 1=with elongate “handle”; 2=forming enlarged, laterally expanded sclerite.
25. Female vaginal apparatus (sclerites): 0=sclerites small or not evident; 1=with enlarged, laterally projecting sclerites; 2=with quadrate ventral sclerite.

Male genitalia

26. Tegum VIII (apodemes): 0=without distinct apodemes; 1=with well developed anterolateral apodemes.
27. Tergum VIII (length): 0=slight expanded (normal); 1=distinctly expanded (much longer than sternum.

Table 2. List of characters used in the *Mortoniella* character matrix (Table 3), continued.

28. Sternum VIII: 0=unmodified; 1=greatly expanded and produced.
29. Terga VIII-IX (connecting membrane): 0=short (normal); 1= elongate; 2=ballooned (and more or less textured).
30. Segment IX (development of anterolateral margin): 0=evenly rounded; 1=produced in ventral ½.
31. Segment IX (dorsal separation of anterolateral lobes): 0=narrowly separated (less than half width of segment); 1=widely separated (half or more width of segment).
32. Segment IX (shape of posterolateral margin): 0=nearly straight; 1=slightly produced in dorsal ½; 2=distinctly, angularly produced in dorsal ½; 3=distinctly produced and broadly rounded; 4=concave.
33. Tergum X (mesal division): 0=entire or partially divided mesally; 1= completely divided mesally (sometimes with membranous mesal projection).
34. Tergum X (length): 0=short (subquadrate); 1=intermediate (distinctly longer than wide); 2=elongate (much longer than wide).
35. Tergum X, apicolateral lobes (form): 0=relatively simple and rounded; 1=forming sclerotized projections; 2=absent or very reduced.
36. Tergum X, apicolateral lobes (shape): 0=broadly rounded; 1=elongate, acute, and arched; 2=subtruncate; 3=short, subacute, inset laterally; 4=sclerotized, projecting, acute or subacute apically; 5=converging ventrally, not meeting; 6=converging and meeting ventrally (apex apparently entire); 7=simple, subtriangular.
37. Tergum X (ventromesal lobes): 0=absent or inconspicuous; 1=present and conspicuously projecting.
38. Tergum X (basal inflation): 0=not or only slightly inflated basally; 1=distinctly inflated basally.
39. Tergum X (ventrolateral lobe): 0=rounded, projecting ventrally; 1=absent or reduced; 2=angulate, or with angulate seta-bearing projection; 3=with crescentic apical incision; 4=short, blunt, and sclerotized; 5=digitate.
40. Tergum X (apicomesal development): 0=nearly entire, without distinct emargination; 1=with relatively deep U-shaped or V-shaped emargination; 2=with very narrow slit-like emargination; 3=nearly straight between apicolateral lobes; 4=with distinct, shallow emargination; 5=rounded and projecting mesally; 6= with acute mesal projection (usually more dorsally produced than apicolateral lobes).
41. Tergum X, apicolateral lobes (position): 0=not inset from lateral margin; 1=inset from lateral margin.
42. Tergum X (bifurcation of apicolateral lobes): 0=not bifurcate; 1=bifurcate.
43. Tergum X, apicoventral lobes (presence/absence): 0=absent; 1=present.
44. Tergum X (apicomesal projection): 0=absent; 1=short, weakly developed; 2=with distinct, subtriangular apicomesal projection.
45. Inferior appendage (presence/absence): 0=present; 1=absent (apparently).
46. Inferior appendage (mesal pockets): 0=absent; 1=present.
47. Inferior appendage (mesal pocket spines–length): 0=short (usually dorsally curved); 1=elongate (directly subtending phallicata); 2=elongate (projecting below phallicata); 3=moderately elongate and sinuous (apparently fused); 4=relatively elongate and strongly curved.
48. Inferior appendage (shape of dorsolateral projection): 0=elongate, not recurved; 1=elongate, apex distinctly recurved; 2=short and rounded; 3=dorsolateral projection absent.
49. Inferior appendage (ventromesal development): 0=without ventromesal projection; 1=with single, broad, symmetrical projection; 2=with single, narrow, symmetrical projection; 3=with paired symmetrical projections; 4=with single, asymmetrically curved projection.
50. Inferior appendage, asymmetrical mesal process (shape): 0=tapering, acute apically; 1=uniform in width, not distinctly acute apically; 2=apex enlarged.
51. Inferior appendage, asymmetrical mesal process (apical development): 0=without scabrosity or small spines; 1=apex scabrous or with small spines.
52. Inferior appendage, asymmetrical mesal process (preapical inflection): 0=nearly straight, without distinct inflection; 1=with distinct preapical inflection.

Table 2. List of characters used in the *Mortoniella* character matrix (Table 3), continued.

53. Inferior appendage (apicoventral projections): 0=absent, or nearly so; 1=with acute, symmetrical apicoventral projections; 2=fused to spine-like projections of mesal pockets.
54. Inferior appendage (fused projections-length): 0=short or moderate; 1=very elongate.
55. Inferior appendage (setation of dorsolateral lobe): 0=without linear array of elongate setae; 1=with linear row of elongate setae.
56. Parameres (basal structure): 0=membranous or absent; 1=rounded and fused mesally; 2=flattened and fused to dorsal margin of phallobase.
57. Paramere basal segment: 0=unmodified (without elongate projections); 1=with 1 or more elongate projections.
58. Paramere appendages (number): 0=1 pair; 1=2 pairs (or more); 2=absent (or vestigial); 3=single (asymmetric, on one side only).
59. Paramere appendages (length): 0=elongate; 1=intermediate; 2=short; 3=asymmetric (long on one side, short on other).
60. Paramere appendages (symmetry): 0=symmetric; 1=asymmetric (differing in length and orientation on either side).
61. Paramere appendages (basal fork): 0=rod-like, without basal fork; 1=with basal fork; 2=spiral, without basal fork.
62. Paramere appendages (orientation): 0=not crossing over one another; 1=crossing over one another.
63. Paramere appendages (minute spines or papillae–basal or generally distributed): 0=absent; 1=present.
64. Paramere appendages (flattening): 0=rod-like (not, or slightly flattened); 1=distinctly flattened and strap-like.
65. Paramere appendages (apical development): 0=without spines or scabrous development; 1=with many short spines; 2=scabrous.
66. Paramere appendages (preapical widening): 0=slightly widened preapically, acute apically; 1=nearly straight, without preapical widening; 2=widened in apical half.
67. Phallobase (dorsal apodeme): 0=absent (or inconspicuous); 1=present, short; 2=present, very enlarged.
68. Phallobase (length): 0=moderate; 1=very short.
69. Phallobase, articulated appendages (presence/abasence): 0=absent; 1=present.
70. Phallobase, articulated appendages (length): 0=short; 1=long.
71. Phallobase, articulated appendages (apex): 0=membranous; 1=with setal brush.
72. Phallobase, articulated appendages (apical flare): 0=not or weakly flared; 1=distinctly flared.
73. Dorsal phallic spine (presence/absence): 0=absent; 1=present.
74. Dorsal phallic spine (apical bifurcation): 0=absent; 1=with shallow mesal invagination (bifurcate or trifurcate); 2=with very deep mesal invagination.
75. Dorsal phallic spine (lateral explanation): 0=not, or only slightly widened; 1=with distinct, projecting lateral explanation; 2=entire spine flattened and widened.
76. Dorsal phallic spine (projecting lateral explanations): 0=broad; 1=narrow and wing-like.
77. Dorsal phallic spine (basoventral projection): 0=absent (or only slightly developed); 1=with rounded projection; 2=with angulate projection.
78. Dorsal phallic spine (apicolateral margin): 0=not flared and laciniate; 1=flared and laciniate.
79. Dorsal phallic spine (apical narrowing): 0=apex not abruptly narrowed; 1=apex abruptly narrowed and posteriorly projecting.
80. Dorsal phallic spine (apical flattening): 0=neither distinctly compressed or depressed; 1=distinctly depressed (wider in dorsal than lateral view); 2=distinctly compressed (wider in lateral than dorsal view).
81. Dorsal phallic spine (preapical ventral projection): 0=without angulate preapical projection on ventral margin; 1=with angulate preapical projection on ventral margin.
82. Dorsal phallic spine (apical enlargement): 0=not distinctly enlarged (acute or rounded); 1=with compressed apical enlargement; 2=with depressed apical enlargement.

Table 2. List of characters used in the *Mortoniella* character matrix (Table 3), continued.

83. Dorsal phallic spine (apicolateral projections): 0=without small ear-like apicolateral projections; 1=with small ear-like apicolateral projections.
84. Dorsal phallic spine (minute apical spines): 0=absent; 1=present.
85. Dorsal phallic spine (ventral margin): 0=without distinct deflection before apical inflection; 1=with distinct deflection before apical inflection.
86. Phallicata (flattened basolateral projection): 0=absent; 1=short; 2=elongate and fused to inferior appendage.
87. Phallicata (base of ventral margin–laterally projecting lobes): 0=absent; 1=present.
88. Phallicata (basodorsal development): 0=not or minimally modified; 1=constricted, with raised anville-like platform; 2=with protuberant projection, articulating with dorsal phallic spine.
89. Phalllicata (basodorsal protuberance): 0=without lateral projections; 1=with lateral projections.
90. Phallicata (dorsolateral processes): 0=absent; 1=paired, upright and rounded; 2=paired, spine-like.
91. Phallicata, rounded dorsolateral processes (inflation): 0=simple, not distinctly inflated; 1= inflated.
92. Phallicata, ventrally projecting lobes on ventral margin (presence/absence): 0=absent; 1=present (short or elongate).
93. Phallicata (length of ventrally projecting lobes on ventral margin): 0=short or rounded; 1=elongate.
94. Phallicata (projection from basoventral lobes): 0=absent; 1=with upright lobes.
95. Phallicata, ventral margin (sclerotization): 0=not forming elongate, paired sclerites; 1=forming elongate, paired sclerites.
96. Phallicata ventral lobes (orientation): 0=posteriorly projecting; 1=retrorsely developed basally, projecting apically.
97. Phallicata, paired ventral sclerites (length): 0=short and/or rounded; 1=elongate and projecting.
98. Phallicata, paired ventral sclerites (relative width): 0=narrow; 1=wide.
99. Endophallic membrane, dorsal protuberance (presence/absence): 0=absent; 1=present.
100. Endophallic membrane, dorsal protuberance (development): 0=membranous (simple, without spines); 1=membranous, with minute spines; 2=sclerotized (not spine-like); 3=sclerotized and spine-like.
101. Endophallic membrane, phallotremal spines (presence/absence): 0=not present, not evident, or not spine-like; 1=sclerotized, short and spine-like.
102. Endophallic membrane, ventral spines (presence/absence): 0=absent; 1=present.
103. Endophallic membrane, ventral spines (number): 0=single mesal spine; 1=with pair of spines.
104. Endophallic membrane, doubled ventral spines (development): 0=without biangulate projections; 1=with biangulate projections.
105. Endophallic membrane, single ventral spine (length): 0=short; 1=moderate; 2=elongate.
106. Endophallic membrane, single ventral spine (position): 0=close to moderately separated from ventral margin of phallicata; 1=nearly apical, widely separated from phallicata.
107. Endophallic membrane, single ventral spine (basal width): 0=not distinctly widened basally, gradually tapering; 1=distinctly widened basally; 2=very narrow basally (and nearly straight).
108. Endophallic membrane (basodorsal spines): 0=absent (or not enlarged); 1=present (enlarged).
109. Endophallic membrane (sclerotized dorsal cup): 0=absent; 1=present.
110. Endophallic membrane, membranous lateral projections (presence/absence): 0=absent; 1=present.
111. Endophallic membrane, membranous lateral projections (number); 0=1 pair; 1= 2 pairs.
112. Endophallic membrane, membranous lateral projections (minute spines): 0=absent; 1=present.

Table 3. Character matrix used in the *Mortoniella* phylogenetic analyses. Characters with alternate states for the same character are designated "A" for the character state pair (0,1), and "B" for the character state pair (1,2).

	10 20 30 40 50 60 70 80 90 100 110
Mastigoptila_ruizi	01000000000-0011021120010000001002140011000000-30---0--0-3010-0001010---0------------00?-0-0--0---0-00-----000--
Itauara_julia	01001000000-001100-1100000000010002-0000--0010---------0-?????????110---0------------000-0-0--0---0-00-----000--
Itauara_rodmani	00001010000-0011021120002000001000141055000010---------0-000000021010---0------------000-0-0--0---0-00-----00100
Protoptila_diablita	000011210110111100-010020001001411----------01033---2000-00020----2010100------------000-0-0--0---0-00-----000--
Protoptila_fimbriata	00001120010-011100-01002?001001012----------01033---2100----------2010100------------000-0-0--0---0-00-----000--
Protoptila_maculata	00001120000-011100-010020001001411----------01033---2000-01020----2010100------------000-0-0--0---0-00-----000--
Protoptila_tojana	00001120010-011100-0?0020001001412----------?1000---0-00-2--------2010100------------000-0-0--0---0-00-----00100
M. (Nanotrichia) aequalis	1???111?000-0????????????0000110022-0030000001100---1-0112--------111001100-00000000000-0-0--0---0-00-----000--
M. (Nanotrichia) macarenica	1?0?1111000-0110011120000000110020-0031000001100---0-0110000000111100011 0-00000000000-0-0--0---0-00-----000--
M. (Nanotrichia) usseglioi	11011111000-0110011120000000110020-0031000001100---0-0110000100011110001 10-00000000000-0-0--0---0-00-----000--
M. (Nanotrichia) collegarum	10011111000-0110011120000000110000-0031000001000---0-0112000000010110001 20-0000000A0000-0-0--0---1110-----000--
M. (Nanotrichia) quadridactyla	1???1111000-011001112000000001100000000100000110 1---0-0100000001011110001 20-00002000000-0-0--0---0-10-----000--
M. (Nanotrichia) triangularis	10011111000-011001112000000001000002000100000110 1---1-0100000000010110001 20-00002000000-0-0--0---0-00-----000--
M. (Nanotrichia) pacuara	10011110000-0110011120000000011000000000100000110 0---1-0101100000010110001 01000000100?000-0-0--0---0-00-----?00--
M. (Nanotrichia) catarinensis	1???111?000-0????????????00001100000000010000011 00---1-0101000000010110001 0000000001000000-0-0--0---0-00-----000--
M. (Nanotrichia) zamora	1???1111000-0110011120000000011000000000100000110 0---0-0???????????0110011011000000100000200-0--0---0-00-----?00--
M. (Nanotrichia) paucispina	1???1111000-0????????????0000110000000001000001?00---0-0110000000010110001 011000001000000-0-0--0---0-00-----000--
M. (Nanotrichia) aries	1???111?000-0????????????000011000000000100000100 0---0-0100100000010110001 011000001000000-0-0--0---0-00-----?00--
M. (Nanotrichia) ormina	1?0?111?000-0????????????000011000000000100000100 0---1-0100100000010110001 00-00100100000 0-0-0--0---1100-----00?--
M. (Nanotrichia) alicula	1001111?000-0????????????000011000000000100000100 0---0-01000000000000110001 01?00110000000 0-2-0--0---0-00-----000--
M. (Nanotrichia) simplicis	10011110000-0????????????00001100000101100100 1?00---0-01000000000000110001 00-000000000011-0-0-00---0-0??????000--
M. (Nanotrichia) rodmani	11011110000-0????????????00001100000101100100 1000---0-0100000000010110001 00-000000000011-0-0-00---0-0??????000--
M. (Nanotrichia) tripuiensis	11011110000-011010-021000000011000000011000001100---2001000000000101110110 2-000100000100-0-0--0---0-00-----000--
M. (Nanotrichia) froehlichi	11011110000-011010-021000000011000000011000001100---2101000000000101110110 2-000110000100-0-0--0---120110---000--
M. (Nanotrichia) bocaina	11011110000-011010-021000000011000000011000001100---2001000000000101110110 2-000100000000-0-0--0---100110---000--
M. (Nanotrichia) spangleri	1?011111100-011010-022000000011000000011000001100---2001000000000101110110 2-000110010000-0-0--0---0-0110---000--
M. (Nanotrichia) venezuelensis	11011111100-011010-022000000011000000011000001100---2101000000000101110110 2-000100000100-0-0--0---110111---00111
M. (Nanotrichia) licina	1?011111000-011010-022000000011000000011000001100---2101000000000101110110 2-000100000100-0-0--0---110111---00111
M. (Nanotrichia) eduardoi	11011111100-011010-022000000011000000011000001100---2101000000000101110110 2-000100000100-0-0--0---110111---00111
M. (Nanotrichia) coheni	1?011110000-011010-021000000011000000011000001100---2001000000000101110110 2-000101000100-0-0--0---130110---000--
M. (Nanotrichia) velasquezi	10011111100-011010-021000000011000000011000001100---2001002000000101110110 2-000111000200-0-0--0---130110---000--
M. (Nanotrichia) cognata	10011111100-011010-021000000011000000011000001100---2001002000000101110110 2-?00111000200-0-0--0---1000-----000--
M. (Mortoniella) guairica	0????????1100????????????00001100013010110000101 0---0-01000000000110100010 0-200000000000-0-0--0---0-00-----000--
M. (Mortoniella) proakantha	0???0000000-01??00-0200000000000101140021000001011---0-01001000110000100011 0-000100010001-0-0--0---0-00-----000--
M. (Mortoniella) acutiterga	1???0000000-0????????????000001100110 0?1000001021---0-01000000000100100010 0-010100000001-0-0--?---0-00-----000--
M. (Mortoniella) santiaga	????00???00-0?????????????000?01?001100???000010??---0-0100000?0?100100010 0-010100000001-0-0--?---0-00-----000--
M. (Mortoniella) unilineata	0?0?0000000-011100-0200000000011002-0000000001210---0-0102--------101000100-000000000001-0-0--0---1000-----00100
M. (Mortoniella) esrossi	0???0000000-0????????????0000001002-0000000001110---0-0201000000010010001 00-000000000000-0-0--0---0-00-----?00--
M. (Mortoniella) tridens	010100001100????????????0000001002-0000100101001---0-0201000000010010001 00-000000000000-0-0--0---0-10-----000--
M. (Mortoniella) triramosa	000100001100????????????0000001002-0000100001101---0-0201100000010010001 00-000000000000-0-0--0---0-?0-----000--
M. (Mortoniella) spinulata	010100001100????????????0000001002-0002100001110---0-0101000010220010001 00-101010000000-0-1000---0-10-----000--
M. (Mortoniella) cornuta	010100000110010100-0201000000001002-0002100001110---0-0101000000001010001 00-001000000000-0-0--0---0-10-----0?0--
M. (Mortoniella) curvistylus	0101000010-0????????????0000001002-0002000001110---0-0100000000?00010001 00-000000000000-0-0--0---??00-----000--
M. (Mortoniella) croca	010100001100????????????000000100140001000001110---0-0101000000001010001 00-000000000000-0-0--0---0-10-----00100
M. (Mortoniella) argentinica	01010000000-010100-0201000000001001300011000011 10---0-0101000000001010001 00-000000000000-0-0--0---0-10-----000--
M. (Mortoniella) catherinae	010-00?0000-0111020020000000000?1021400230001011 10---0-0100000000000101000100-20000001000200-1000---0-00-----000--
M. (Mortoniella) hodgesi	010-00?0000-0111020120000000001120214002100000102 1---0-0100100000001101000100-10000000000200-0--10010-00-----000--
M. (Mortoniella) tanyrhabdos	110-0100000-011102112000000 0?101022-0010--0001223---0-110000000101101000100-0000000000000 0-0--0---0-00-----00???
M. (Mortoniella) tusci	110-0100000-011102112000000 0?101022-0010--0001203---0-110010000001101000100-0000000000000 0-0--0---0-00-----000--

Table 3. Character matrix used in the *Mortoniella* phylogenetic analyses, continued.

	10 20 30 40 50 60 70 80 90 100 110
M. (Mortoniella) bifurcata	11110100000-0????????????000?101022-0010--0001203---0-110010000001101000110-0000000000000-0--0---0-00-----000--
M. (Mortoniella) flinti	11110100000-01110211200000000?101022-0011000001002---0-110010000001101000110-0000000000000-0--0---0-00-----000--
M. (Mortoniella) gilli	0???000??00-0????????????000011102100101000001100---0-010000000010001000100-00000001000000-0--0---1200-----0?100
M. (Mortoniella) quinuas	?????????00-0?????????????000?1?10214010100000111?---??0?000000001?01000100-00000001000?00-0--??????00-----0????
M. (Mortoniella) wygodzinskii	000-0000000-0????????????000111102151144000001100---1-010020000?0?101000100-2000000000200-0--0---0-00-----00100
M. (Mortoniella) paraenchrysa	020-0000000-0????????????000111202151124000001103---1-010000000000101000100-2000000000200-0--10100-00-----000--
M. (Mortoniella) enchrysa	020-0000000-0111021120000000111202161120000001103---0-010000001000101000100-2000000000200-0--11010-00-----000--
M. (Mortoniella) adamsae	020-0000000-0????????????000111202151124000001103---0-010100001000101000100-2000000000200-0--11100-00-----00100
M. (Mortoniella) squamata	020-0000000-0????????????000111202151124000001?02---0-010100001010101000100-1000000000200-0--11010-00-----00100
M. (Mortoniella) silacea	020-0000000-0111021120000000?11202121121000001100---1-010020000000101000100-1000000100200-0--10100-00-----00100
M. (Mortoniella) denticulata	000-0000000-0100021100000000111202121021000001100---1-0102--------101000100-2000000100200-0--10100-00-----00101
M. (Mortoniella) langleyae	0???0000000-0????????????000111202101021000001100---1-0102--------101000100-2000000100200-0--10100-00-----00101
M. (Mortoniella) iridescens	01120000000-0????????????000111300151124000001000---0-010020000001101000100-2000000000200-0--10100-00-----00111
M. (Mortoniella) foersteri	010-0000000-0????????????0001113021?112?000001000---0-010000000000101000100-2000000100200-0--1?0??00-----00100
M. (Mortoniella) longiterga	010-0000000-0????????????000111302151124000001000---0-010000000001101000100-2000000100200-0--10001000-----00100
M. (Mortoniella) angulata	0????????00-0111021120000010011202161120000001103---0-010020000000101000100-1000000000200-0--10110-00-----000--
M. (Mortoniella) apiculata	000-0000000-0????????????010011202161120000001103---0-010020000001101000100-1002010000200-0--10110-00-----000--
M. (Mortoniella) monopodis	01110000010-0????????????000111302161120000001002---0-010000000000101000100-2000000000200-0--10100-00-----00100
M. (Mortoniella) chicana	01110000000-0100021120000000111202161120000001103---1-010010000001001000100-2000000100200-0--10100-00-----01100
M. (Mortoniella) bilineata	01110000000-0100021120000000111202161120000001002---0-010000000001101000100-2000000000210-0--10100-00-----0?100
M. (Mortoniella) paralineata	00110000000-0100021120000000111202161120000001002---0-010010000001101000100-2000000000210-0--10100-00-----01100
M. (Mortoniella) bulbosa	01110000000-0111021120000000111202161120000001103---0-000010000001101000100-2000000001200-0--10010-00-----00100
M. (Mortoniella) roldani	01110000000-0100021120000000111202161120000001103---0-000000000001101000100-2000000000210-0--10100-00-----00100
M. (Mortoniella) hamata	01110000000-0100021120000000111202161120000001103---0-000000000001101000100-2000000000210-0--10100-00-----0?100
M. (Mortoniella) tapanti	000010000110010100-020100000000100140001000201011---0-000000000000001000100-100100000000-0-0--0---0-00-----000--
M. (Mortoniella) akantha	000010000110010100-020100000000100140001000201011---0-000000000002001000100-100100000000-0-0--0---0-00-----000--
M. (Mortoniella) anakantha	000010000110010100-020100000000100140001000201011---0-000000000002001000100-100100000000-0-0--0---0-00-----000--
M. (Mortoniella) pusilla	100011000110111100-0200000000001002-0020--0001020---0-000010000000101000100-1001000000200-0--0---0-010-000000--
M. (Mortoniella) pumila	100011000111011100-0000000000001002-0020--0001020---0-000000000000101000100-1001000000200-0--0---0-010-000000--
M. (Mortoniella) meloi	000011000111 0????????????100?00000140001000001020---0-000000000001001000100-0000000000200-0--0---0-?0-----?00--
M. (Mortoniella) dinotes	000-110111110????????????100200100140011000001000---1-000020100001101000100-0000000000200-1000---0-010-002100--
M. (Mortoniella) leei	000011011111011100-020000100200100140011000001000---1-000020100001101000100-0000000000200-1000---0-010-002100--
M. (Mortoniella) brevis	000011011111011100-020000100200100140011000001000---0-000020100001101000100-0000000000200-1000---0-010-002100--
M. (Mortoniella) atenuata	000011011111011100-020000100200100140011000001000---1-000020100001101000100-0000000000200-1000---0-010-002100--
M. (Mortoniella) spatulata	000010000 1??????????????000000100140033000001010---1-000000000001001000100-100100000000-0-1000---0-?110000000--
M. (Mortoniella) bolivica	0000100001 0-0????????????000000100130003100001010---1-000000000001001000100-000102000000-0-0--0---0-0110000000--
M. (Mortoniella) flexuosa	0000100001 0-010100-020100000000100130013100001010---1-000000000001001000100-100102000000-0-1000---0-01100000100
M. (Mortoniella) chalalan	1000110001 0-0????????????000000100140003000001020---1-000010010001001000100-000100000000-2-0--0---0-010-00200100
M. (Mortoniella) sinuosa	0100100001 1-010100-0200000000000100140?11000001020---1-000020000001001000100-000000000000-2-1000---0-01100200100
M. (Mortoniella) dentiterga	11??1100010-0????????????000000100130003100001020---1-000000010001001000100-000000000000-2-0--0---0-?10-000000--
M. (Mortoniella) emarginata	0???1000010-010100-020?0000000010014000300000102?---1-0000000A0001001000100-100100000000-2-1000---0-?110002000--
M. (Mortoniella) marini	00001000010-010100-020100000000100130003?1000102?---0-000000010001001000100-200100000000-2-1010---0-111000?00???
M. (Mortoniella) punensis	00001100010-0????????????000000100140005010?01020---0-0000?0010001001000100-000100000000-2-1010---0-00-----00???
M. (Mortoniella) membranacea	00001100010-010000-020100000000100140003000101200---1-000000000001001000100-00010?000000-0-0--0---0-00-----00100
M. (Mortoniella) pocita	1???1100010-0????????????000000100130011100001020---1-000000000001101000100-100201000000-2-0--0---0-10-----000--
M. (Mortoniella) rectiflexa	00??1100010-010000-020100000000100140001000001120---0-000000010001001000100-000102010000-2-0--0---0-10-----00100
M. (Mortoniella) biramosa	10??1100010-01000????????000000100140001000001120---1-000100000000001000100-000000001010-0-0--0---0-0110---00100
M. (Mortoniella) barinasi	A0??1100010-010000-020100000000100120003000101020---1-000000000001001000100-1000100000200-0--0---1211001?0000--
M. (Mortoniella) applanata	000011000110010100-020000000000100120003000001020---1-000000000000001000100-000102000000-0-0--0---0-0100000000--
M. (Mortoniella) pica	00??1100010-0????????????000000100140001000001021---0-000000000001001000100-00020100000200-0--0---0-1100000100--

Table 3. Character matrix used in the *Mortoniella* phylogenetic analyses, continued.

	10 20 30 40 50 60 70 80 90 100 110
M. (Mortoniella) guyanensis	0???10000111 0?????????????0000001001200010010010 10---0-000010000001101000100-000100010000-0-1000---0-?0-----100--
M. (Mortoniella) gracilis	000010000110010100-020000000000100170001001001000---0-00001000000000 1000100-000201000000-0-1100---0-?0-----100--
M. (Mortoniella) variabilis	000010000110010100-020000000000100170001001001000---0-0000B000000100 1000100-000201000000-0-1100---0-?0-----100--
M. (Mortoniella) limona	000010000111010100-020000000000100170001001001000---0-00000000000100 1000100-000201000000-0-1100---0-?0-----100--
M. (Mortoniella) prolata	0???10000110 0?????????????0000001001700040010010 00---1-00002000000100 1000100-000201000000-0-1000---0-?0-----10100
M. (Mortoniella) auricularis	000010000110010100-020000000000100170003001001420---1-00000000000100 1000100-000201100000-0-1000---0-?0-----100--
M. (Mortoniella) quadrispina	00??10000110 0?????????????0000001001700010010014 20---1-00000000000100 1000100-000201100000-0-1000---0-?0-----100--
M. (Mortoniella) akrogeneios	00??10000110 0?????????????000000 1001?00000010010 20---1-00002000000000 1000100-000201000000-0-1000---0-?0-----100--
M. (Mortoniella) agosta	010011000110011100-010000000000100170001000001000---0-00000000000000 1000100-000000000000210-0--0---0-010-200000--
M. (Mortoniella) acauda	000011000110 0?????????????0000001001400010000010 00---0-00000000000000 1000100-0001000000?210-0--0---0-010-100001?0
M. (Mortoniella) teutona	000011000110011100-010000000000100170001000001004 0000-000000000000001000100-0001000000 1210-0--0---0-010-10000110
M. (Mortoniella) latispina	010011000110011100-010000000000100170001000001004 0000-000000000000001000100-0001000000 1210-0--0---0-010-10000110
M. (Mortoniella) albolineata	000011010110011100-010000000000100170001000001004 0000-000000000001001000100-0001000000 0210-0--0---0-010-20000110
M. (Mortoniella) dolonis	000011010110011100-010000000000100170001000001004 0000-000020000001001000100-0001000000 0210-0--0---0-010-20000110
M. (Mortoniella) parauna	000011000110011100-020000000000100170001000001000---0-00000000000000 1000100-000000000000210-0--0---0-010-100000--
M. (Mortoniella) longispina	000011000110111100-000000000000100170001000001000---0-00002000000 1?01000100-000000000000210-0--0---0-010-2?0000--
M. (Mortoniella) intervales	010111000110111100-00?00000000010?140001000001004 0000-000020000001001000100-000000000000210-0--0---0-010-100000--
M. (Mortoniella) guahybae	010111000110011100-0?00000000000100140002000001000---0-00002000000 1101000100-000000010000210-0--0---0-010-000000--
M. (Mortoniella) crescentis	010111000110111100-000000000000100170001000001004 0000-000010000001101000100-000201010000210-0--0---0-010-100000--
M. (Mortoniella) hystricosa	010111000110111100-000000000000100120002000001004 0000-000000000001101000100-000000010000210-0--0---0-010-000000--
M. (Mortoniella) asymmetris	1???11000110011100-0?00000000000100170001000001300---0-00003100000 1001000100-00000000100200-0--0---11010-002000--
M. (Mortoniella) truncata	1?0011000110011100-000000000000100120002000001300---0-00003100000 1101000100-00000000100200-0--0---0-00-----000--
M. (Mortoniella) paraunota	000011000110011100-000000000000100170002000001000---0-00000000000 1101000100-00020000100210-0--0---0-010-100000--
M. (Mortoniella) uruguaiensis	0???11000110 0?????????????0000001001700020000010 00---0-00002000000 1101000100-00020000100210-0--0---0-010-100000--
M. (Mortoniella) paraguaiensis	100011000110 0?????????????0000001001700010000010 00---0-00002000000 1?01000100-00020000100210-0--0---0-010-100000--
M. (Mortoniella) unota	1???11000110 0?????????????0000001001700020000010 11---0-00002000000 1101000100-00020000100210-0--0---0-010-100000--
M. (Mortoniella) mexicana	0???10000111 0?????????????0000001011400110000?01022000?-00000000?00001000100-000000000000-0-0--0---0-00-----000--
M. (Mortoniella) leroda	0???1000011?0?????????????0000001011400130001010240000-00000000?00001000100-000000000000-0-0--0---0-110-002000--
M. (Mortoniella) rovira	000010000111010100-020100000000101140013000101020---0-00000000000000 1000100-100000000000-0-0--0---0-110-101000--
M. (Mortoniella) buenoi	0???10000111 0?????????????0000001011400130001010240010-000000001102001000100-100000000000-0-0--0---0-1100101000--
M. (Mortoniella) caudicula	00??10000111 0?????????????0000001001400160002010240010-000000000000001000100-100000000000-0-0--0---0-10-----000--
M. (Mortoniella) stilula	000010000111010100-020110000000101140013000001024 2000-000000000102001000100-000000000000-0-0--0---0-10-----000--
M. (Mortoniella) meralda	000010000111010100-020100000000101140013000A0102411 00-000000000102001000100-100000000000-0-0--0---0-10-----000--
M. (Mortoniella) parameralda	1???10000111010100-02010?0000000101140013000101024 1100-000000000020001000100-100000000000-0-0--0---0-?0-----00100
M. (Mortoniella) furcula	0???10000111010100-000100000000101140013000101024 1100-000000000010001000100-100000000000-0-0--0---0-110-100000--
M. (Mortoniella) draconis	100010000111010100-020110000000101140013000101004 0010-000000000020001000100-100000000000-100--0---0-10-----000--
M. (Mortoniella) ruedae	100010000111010100-020110000000101140013000101024 1100-000000000020001000100-100000000000-100--0---0-110-000000--
M. (Mortoniella) simla	100010000111010100-020100000000101140013000101024 2110-000010000002000 1000100-100000000000-100--0---0-110-100000--
M. (Mortoniella) curtispina	1???10000111 0?????????????0000001011400130002010242110-00002000 0?0?001000100-100000000000-100--0---0-10-----000--
M. (Mortoniella) bothrops	100010000111010100-020100000000101140013000101024 2110-000020000002100 1000100-100000000000-100--0---0-10-----000--
M. (Mortoniella) panamensis	?00010000 11?0?????????????0000001011400130001010242110-000020000000100 1000100-100000000000-0-0--0---0-10-----000--
M. (Mortoniella) cressae	000010000111 0?????????????0000001011400130001010240001-000010000002100 1000100-100000000000-100--0---0-10-----000--
M. (Mortoniella) schlingeri	0???10000111 0?????????????000000101140013000101020---1-00000000000000 1000100-100000000000-?00--0---0-010-0?000???
M. (Mortoniella) munozi	000010000110010100-020100000000101120013000101020---1-00000000002010 1000100-100000000000-2-0--0---0-00-----00???
M. (Mortoniella) aviceps	00??10000110010100-020100000000101140016000201020---1-000000000?0200 1000100-100000000010-2-1000---0-00-----00???
M. (Mortoniella) taurina	00??10000110 0?????????????000000101120013000101020---?-000000000?1200 1000100-100000000000-2-1000---0-010-1?000101
M. (Mortoniella) brachyrhacos	0???10000110 0?????????????000000100120016000201020---0-00002000?0110 01000100-000100000000-100--0---0-010-1?0000--
M. (Mortoniella) florica	000010000110 0?????????????000000100120016000201020---0-00000000A02A00 1000100-000000000000-100--0---0-010-110000--
M. (Mortoniella) papillata	000010000110010100-020110000000100120016000201020---0-000000001021 001000100-000000000000-100--0---0-010-110000--
M. (Mortoniella) rancura	0???10000110 0?????????????000000100140016000201020---0-00001000000?01000100-?0000000000????0--0---??010-1?000???

Table 3. Character matrix used in the *Mortoniella* phylogenetic analyses, continued.

	10 20 30 40 50 60 70 80 90 100 110
M. (Mortoniella) pectinella	0???100001100????????????000000101140016000201020---0-000000000011001000100-100000000000-100--0---0-010-1?0000--
M. (Mortoniella) grandiloba	0100100001110????????????000000101140016000201020---0-000000000000001000100-100000000000-110--0---0-010-210000--
M. (Mortoniella) sicula	000010000110010100-020110000000101140013000101020---1-000000000001001000100-000000000000-110--0---0-010-112000--
M. (Mortoniella) carinula	000010000110010100-020111000000100140013000101020---1-000000000020001000100-000200000000-100--0---0-010-112000--
M. (Mortoniella) opinionis	010010000110011100-020111000000100140013000101020---1-000000000000001000100-000000000000-110--0---0-010-112000--
M. (Mortoniella) elongata	0000100001110????????????000000101140016000201020---1-000000000000001000100-100000000000-100--0---0-010-110000--
M. (Mortoniella) falcicula	0???100001100????????????000000101140013000101020---1-000000000000001000100-000000000000-100--0---0-010-1?0000--
M. (Mortoniella) propinqua	010010000110010100-020110000000101140013000101020---0-000000000020001000100-000000000000-100--0---0-010-1?0000--
M. (Mortoniella) redunca	000010000110010100-020110000000100140013000101020---1-000010000021001000100-000200000000-100--0---0-010-11?000--
M. (Mortoniella) umbonata	0???100001110????????????000000101140016000201020---1-000000000020001000100-000000000000-100--0---0-010-110000--

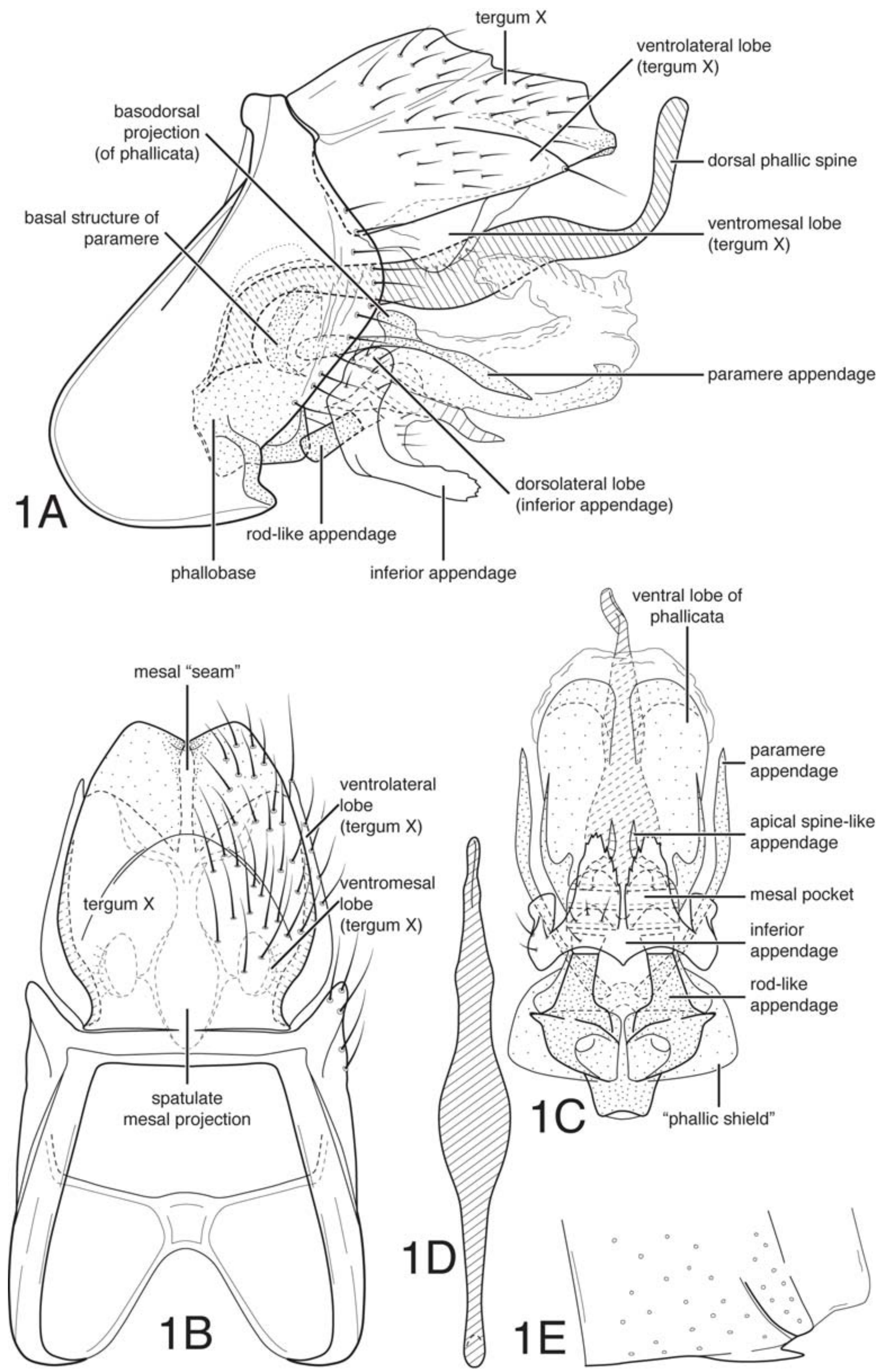


Figure 1. *Mortoniella* (*Mortoniella*) *angulata* Flint, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

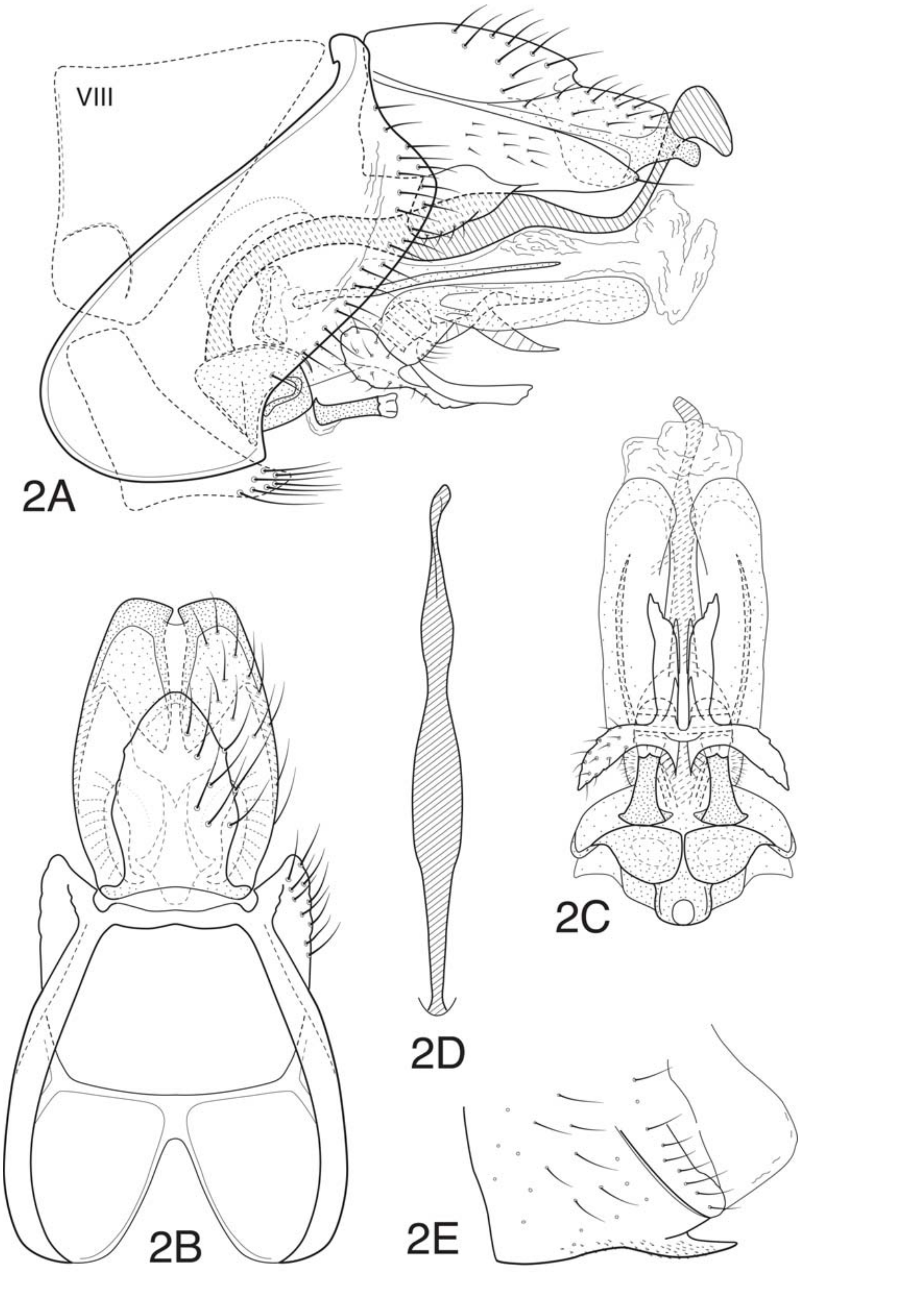


Figure 2. *Mortoniella* (*Mortoniella*) *apiculata* Flint, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

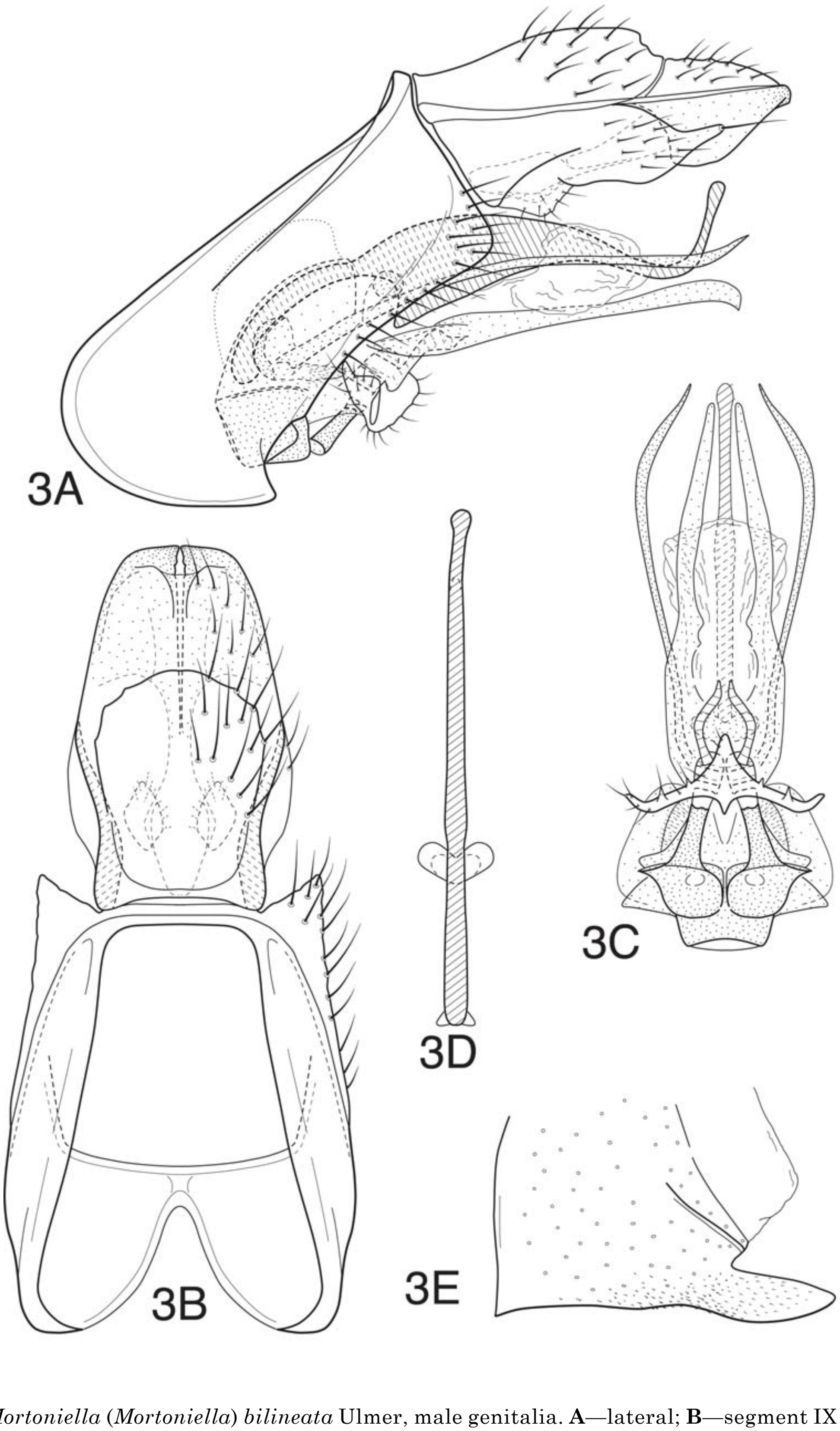


Figure 3. *Mortoniella* (*Mortoniella*) *bilineata* Ulmer, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

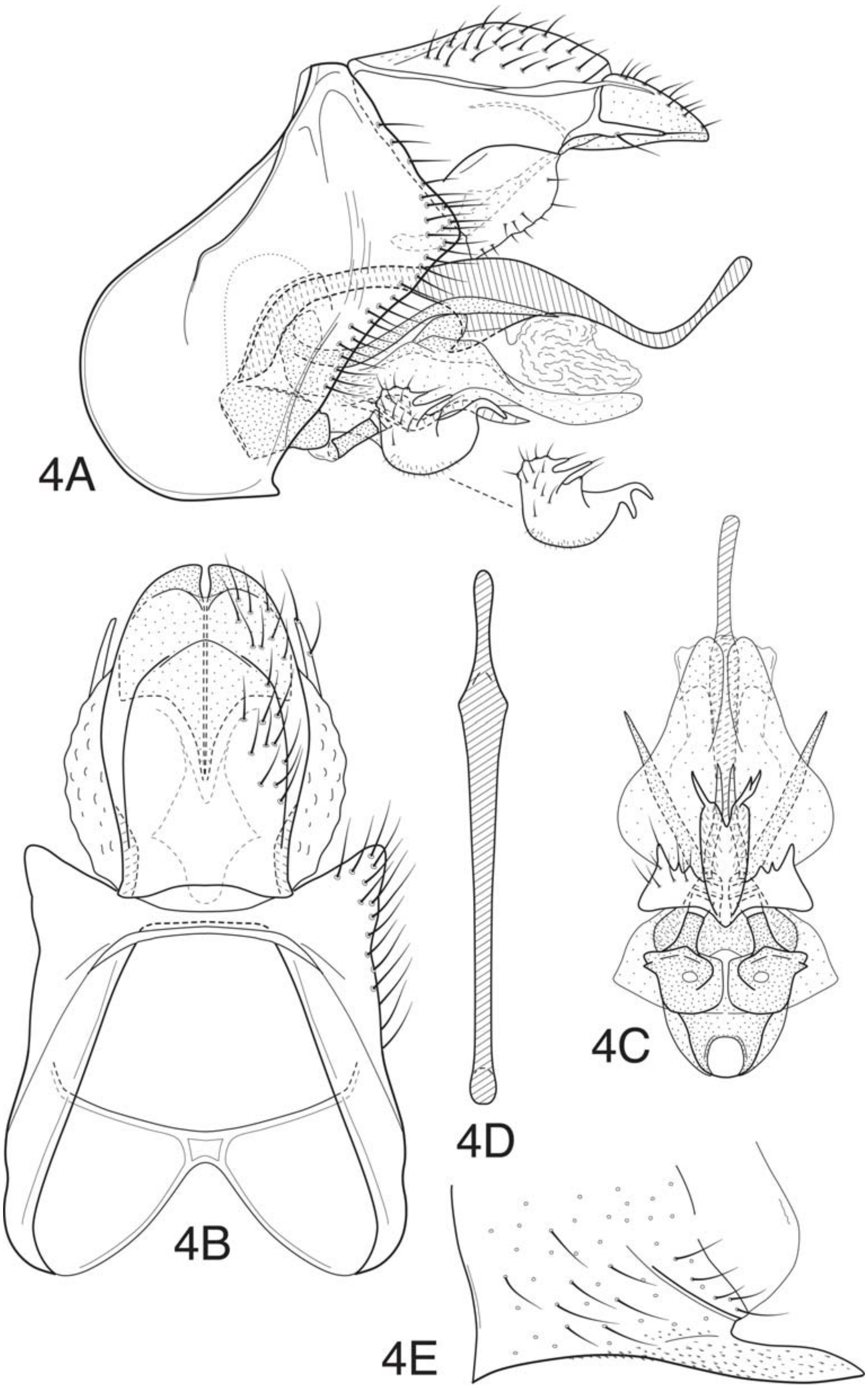


Figure 4. *Mortoniella* (*Mortoniella*) *bulbosa*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

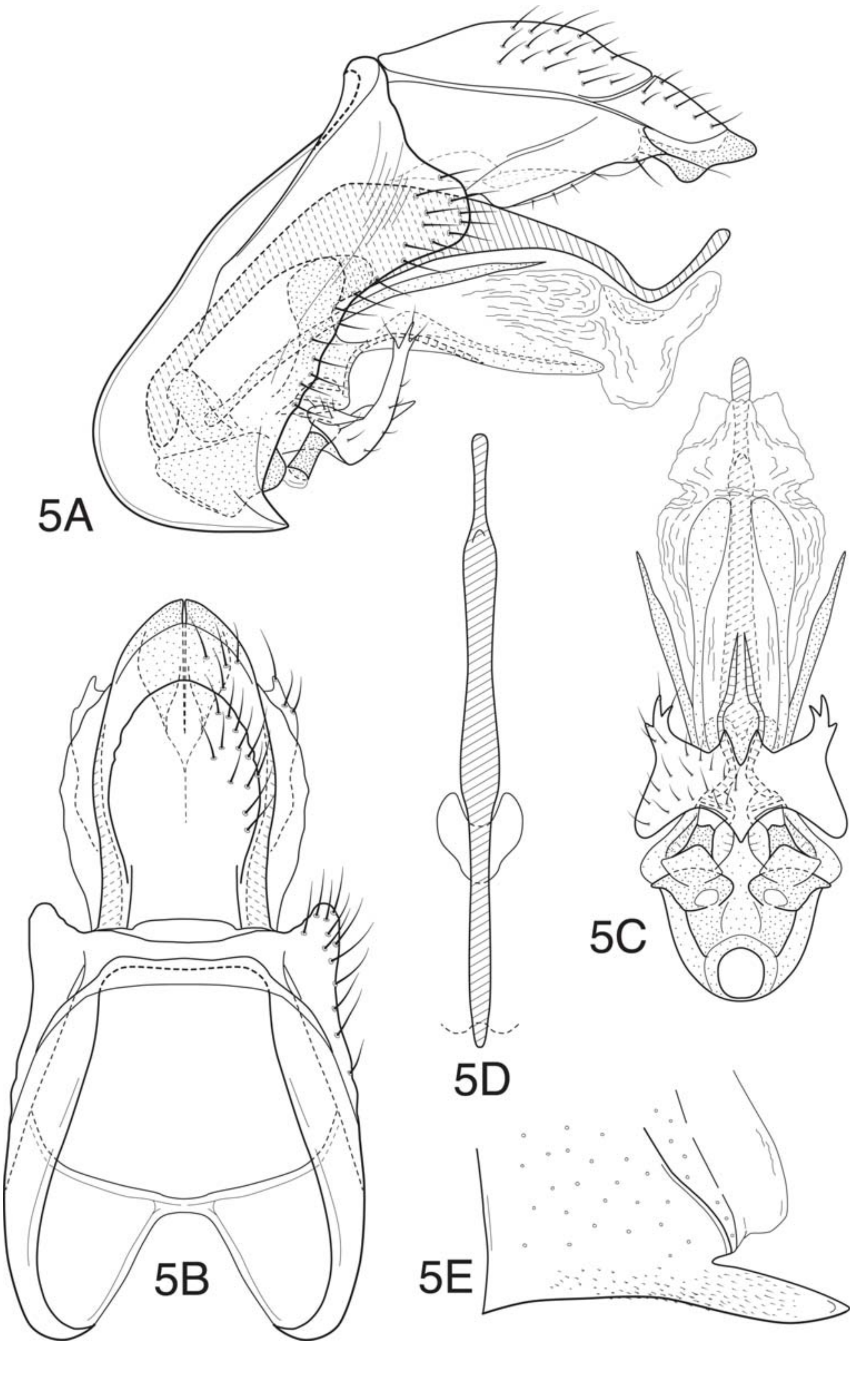


Figure 5. *Mortoniella* (*Mortoniella*) *chicana* Sykora, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

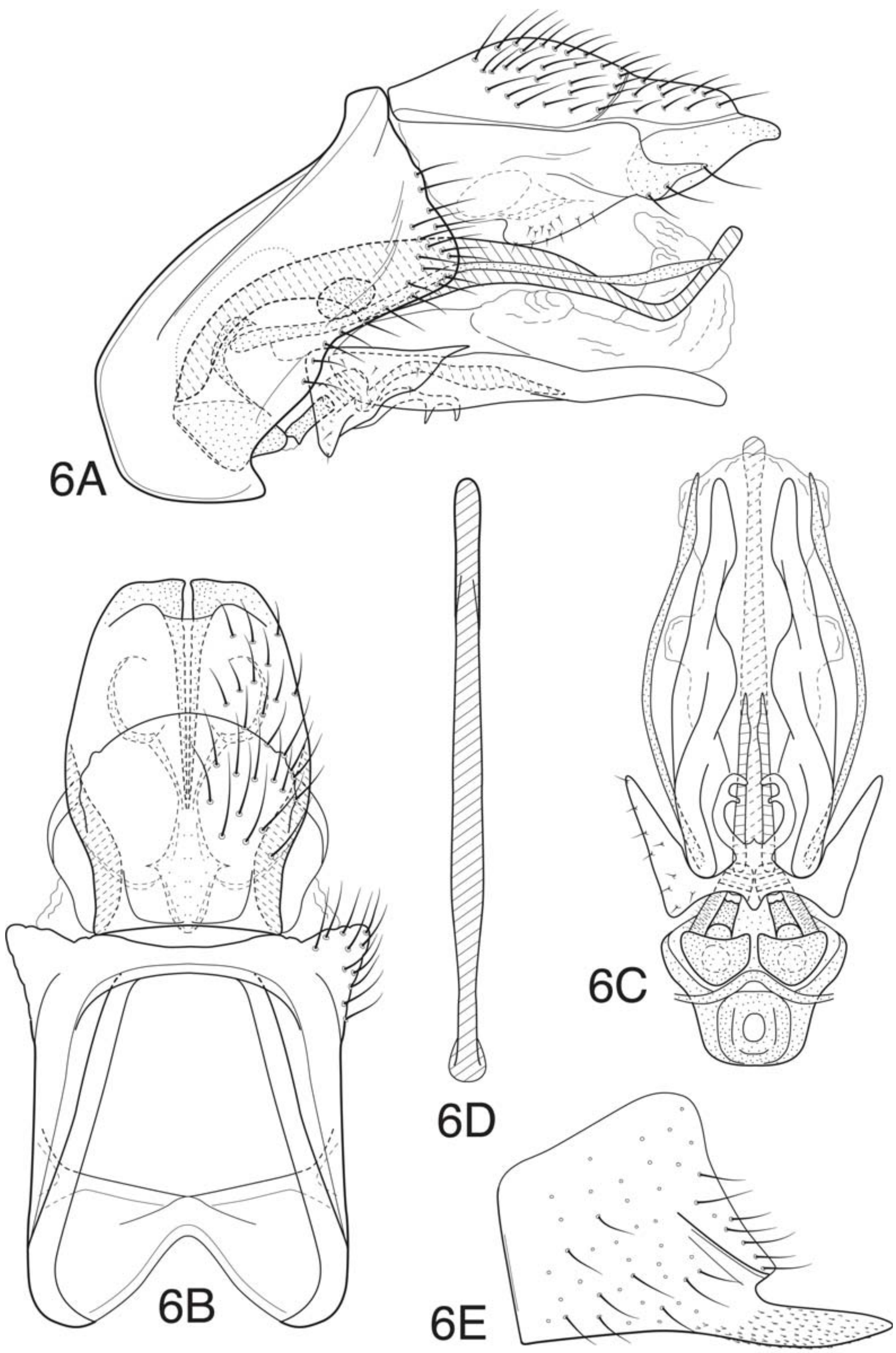


Figure 6. *Mortoniella* (*Mortoniella*) *hamata*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

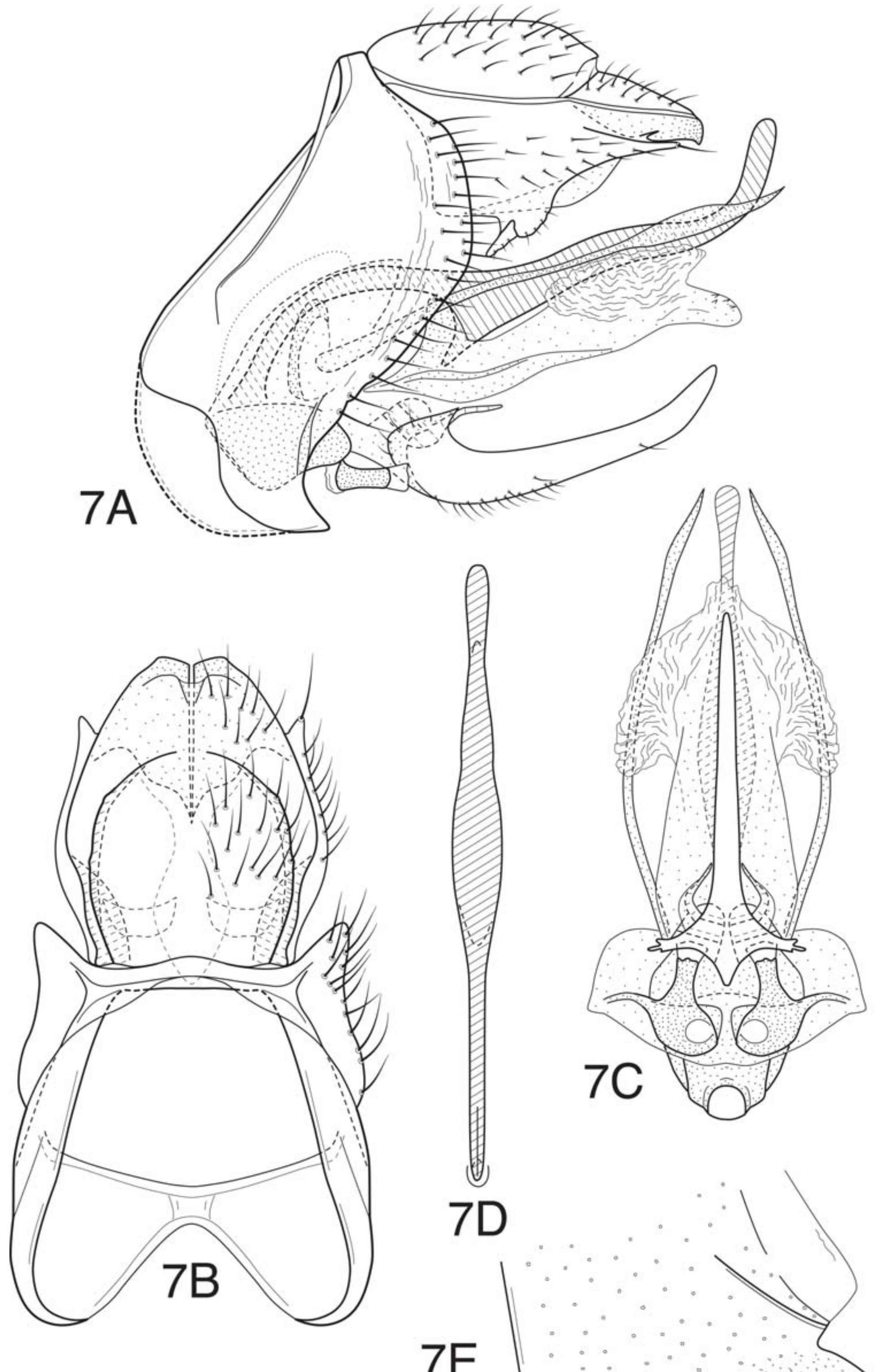


Figure 7. *Mortoniella* (*Mortoniella*)*monopodis*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

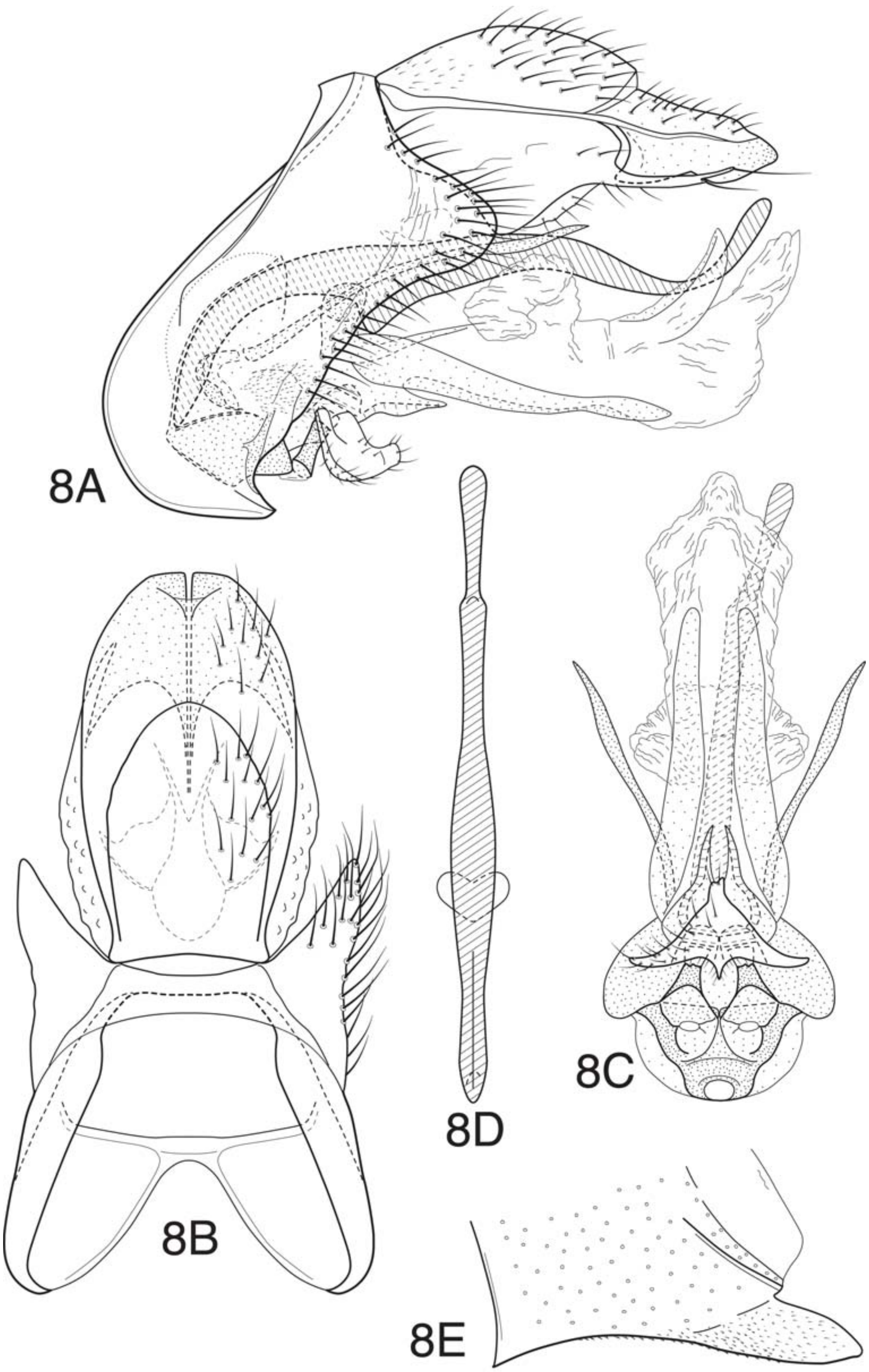


Figure 8. *Mortoniella* (*Mortoniella*) *paralineata* Sykora, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

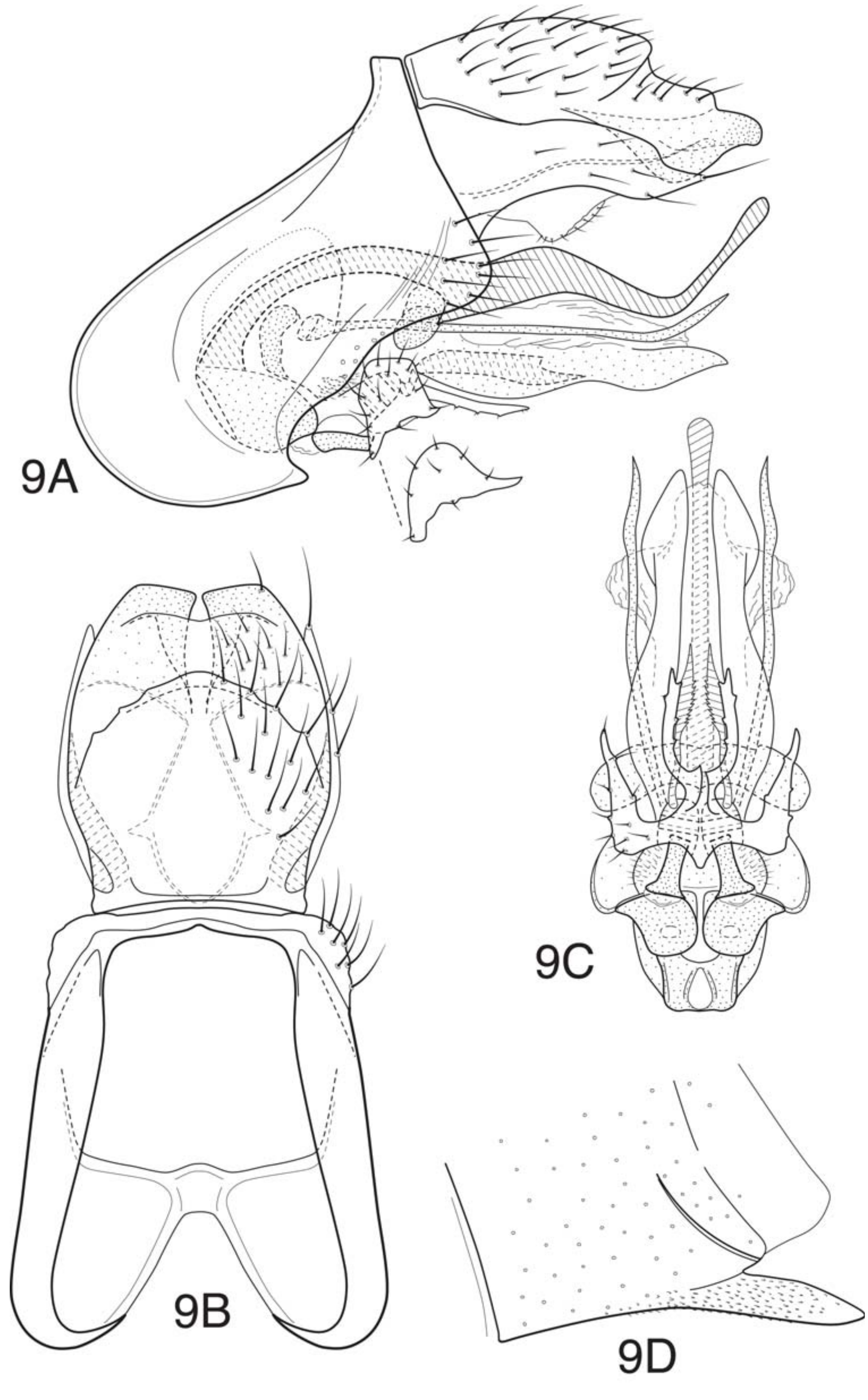


Figure 9. *Mortoniella* (*Mortoniella*) *roldani* Flint, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—ventral process of segment VI, lateral.

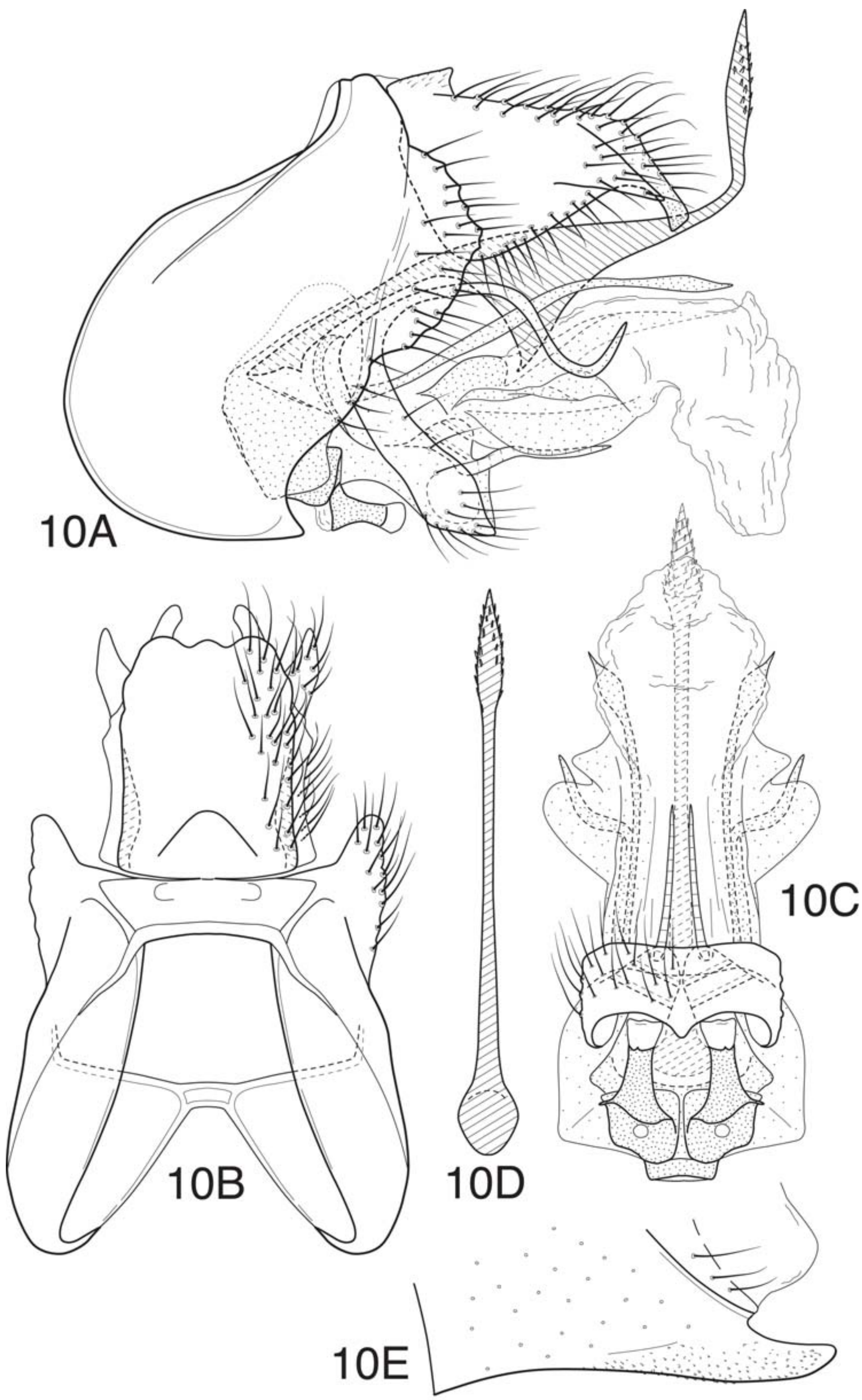


Figure 10. *Mortoniella* (*Mortoniella*) *catherinae*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment.

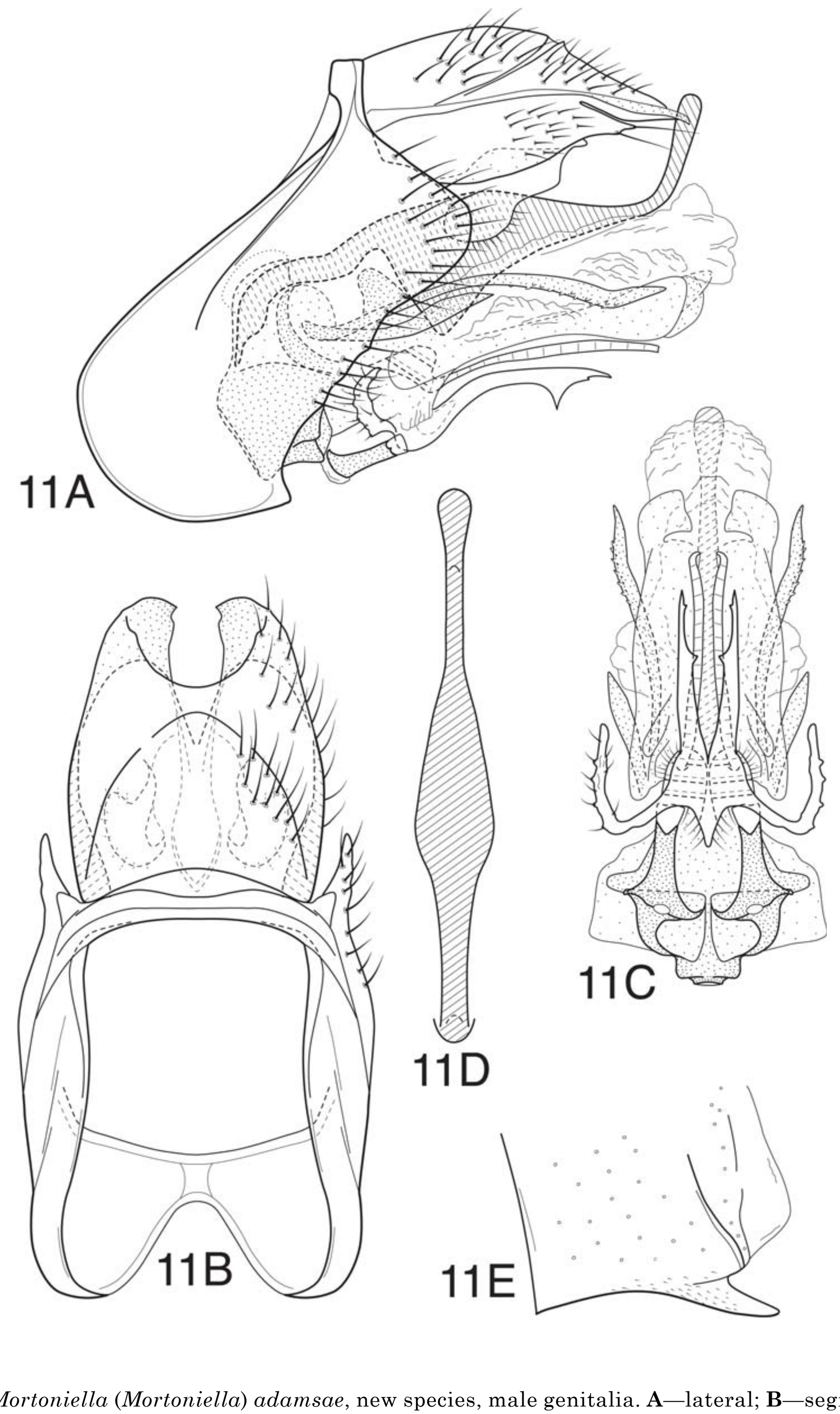


Figure 11. *Mortoniella* (*Mortoniella*) *adamsae*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

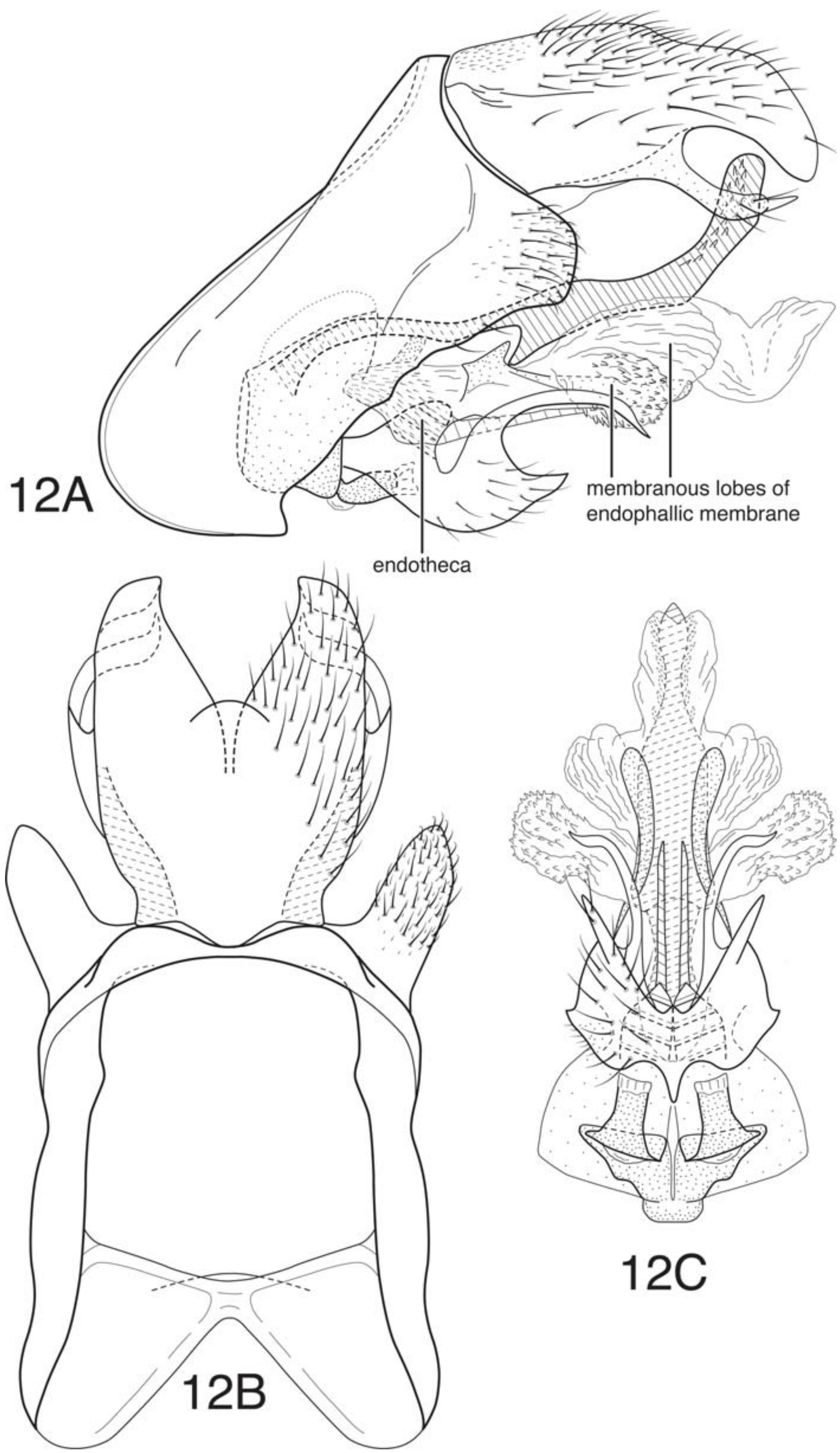


Figure 12. *Mortoniella* (*Mortoniella*) *denticulata* Sykora, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral.

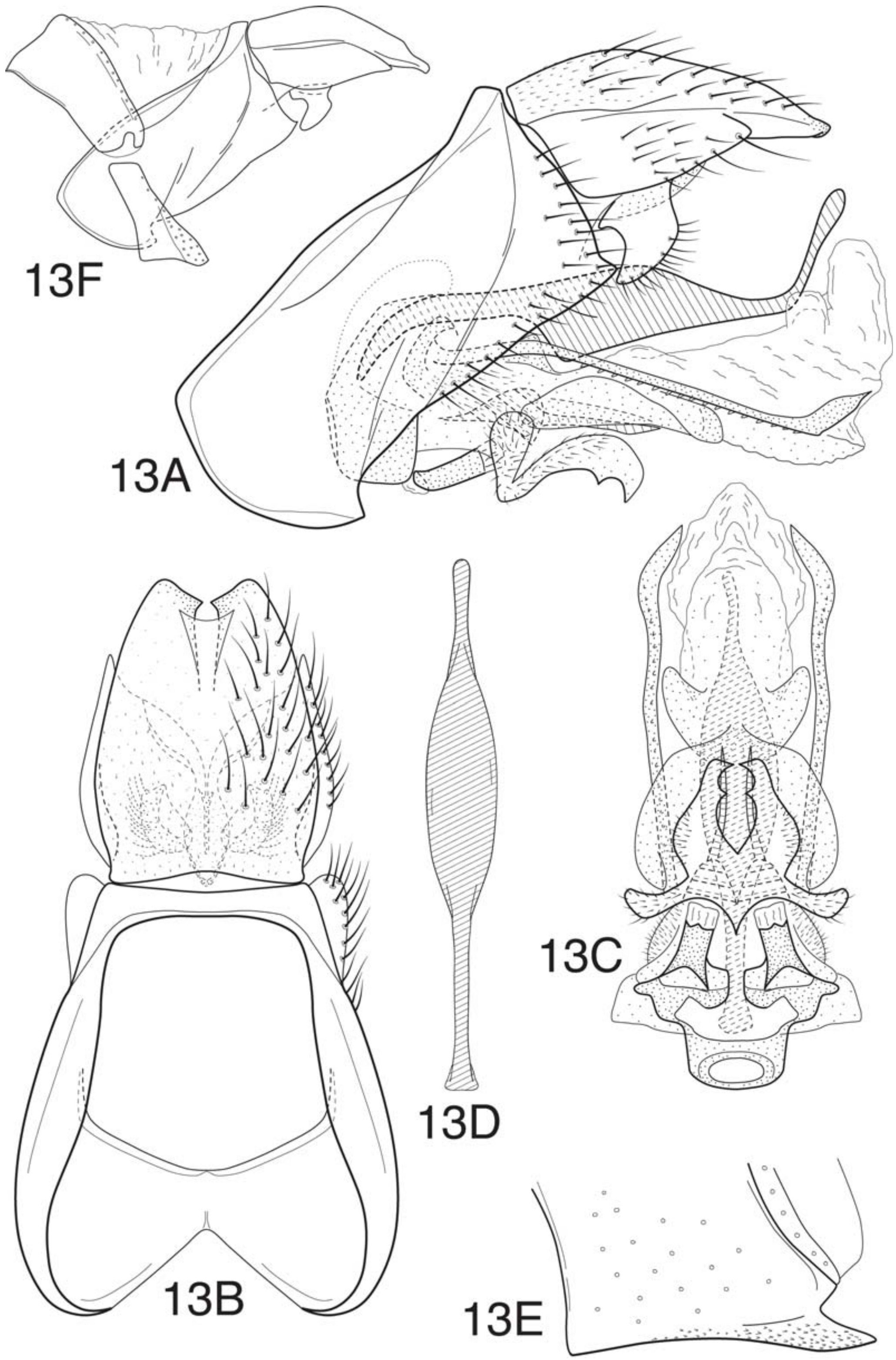


Figure 13. *Mortoniella* (*Mortoniella*) *enchrysa* Flint, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral; **F**—membranous connection between segments VIII and IX.

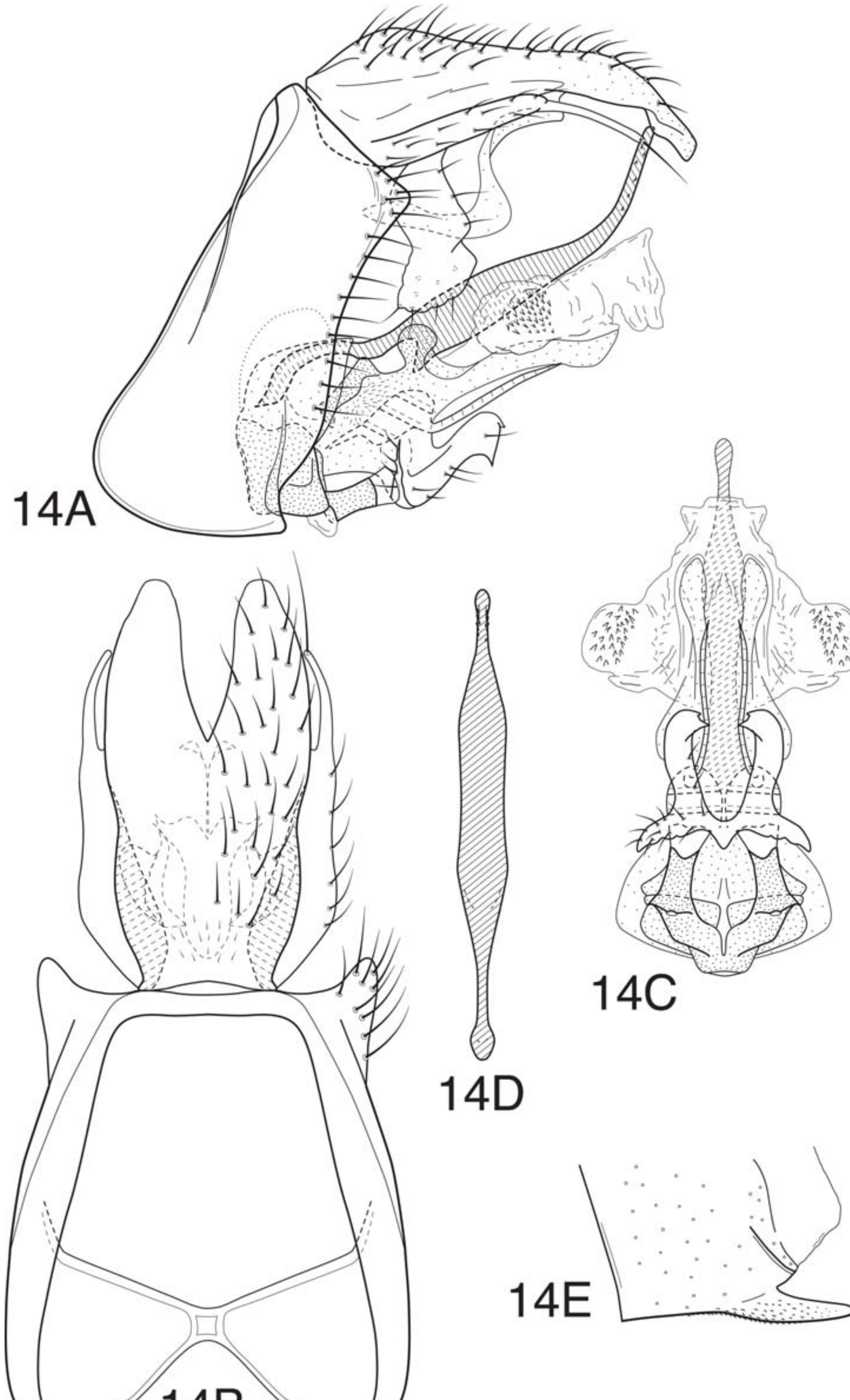


Figure 14. *Mortoniella* (*Mortoniella*) *langleyae*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

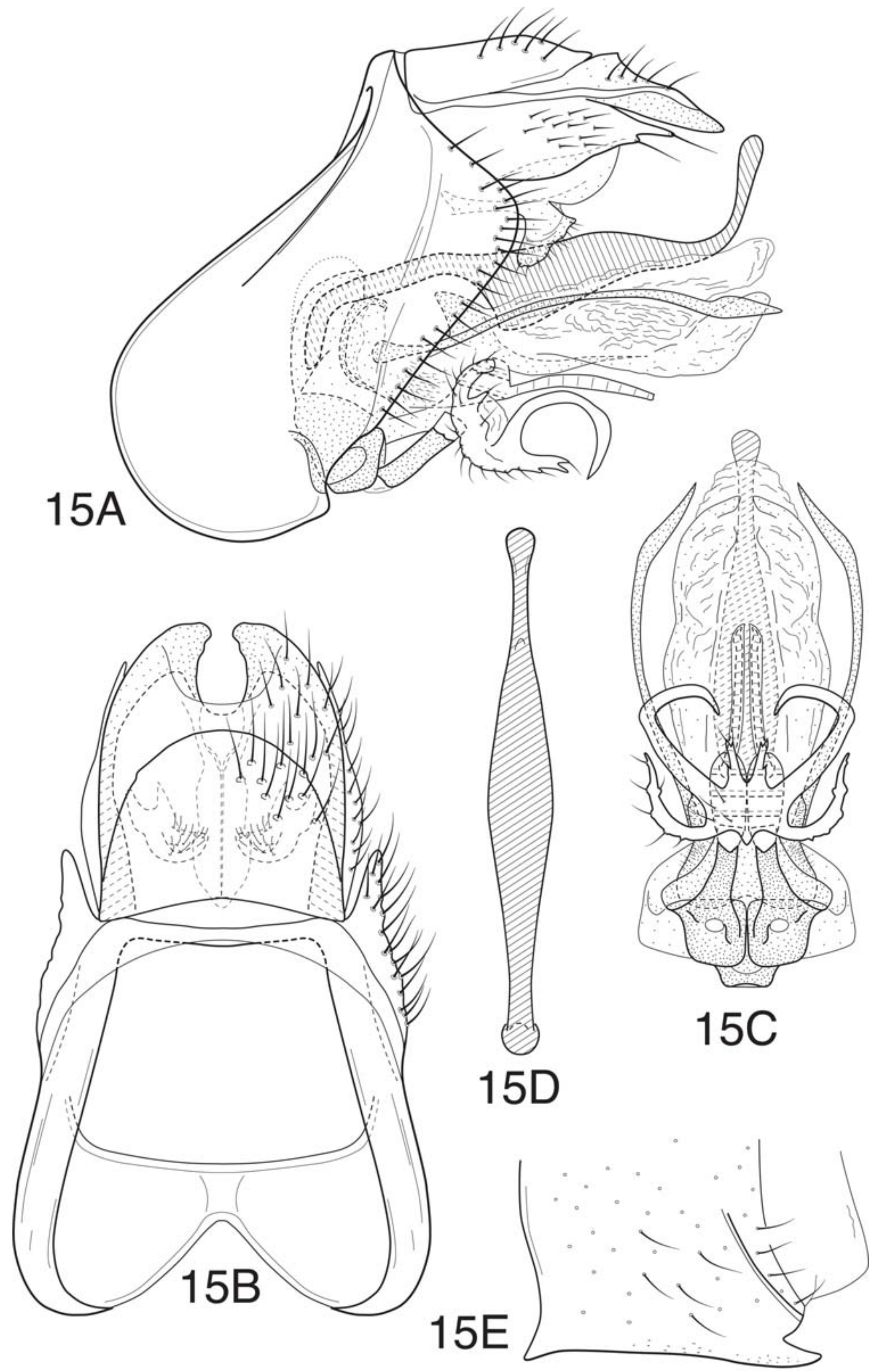


Figure 15. *Mortoniella* (*Mortoniella*) *paraenchrysa* Sykora, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

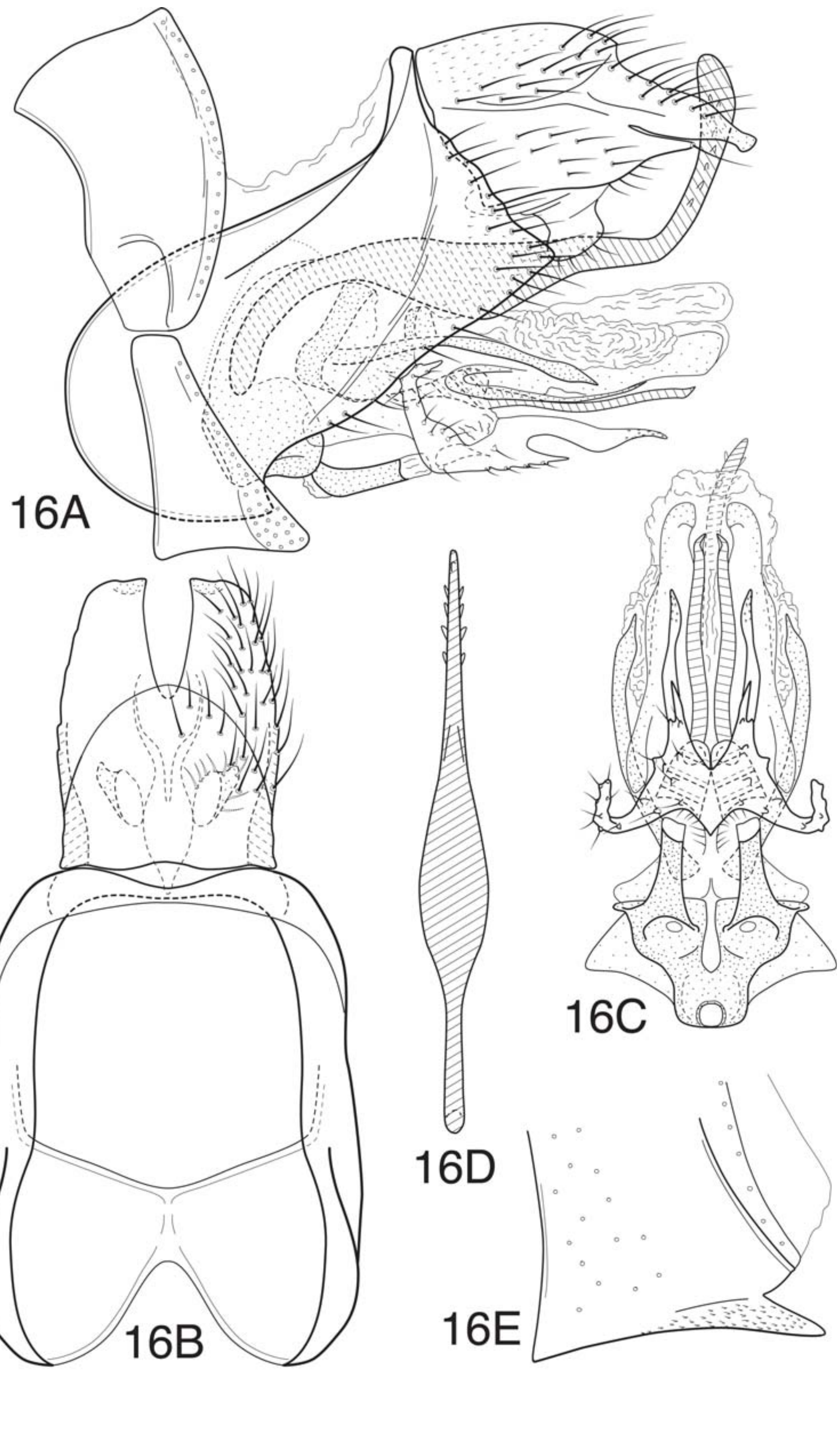


Figure 16. *Mortoniella* (*Mortoniella*) *silacea*,new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

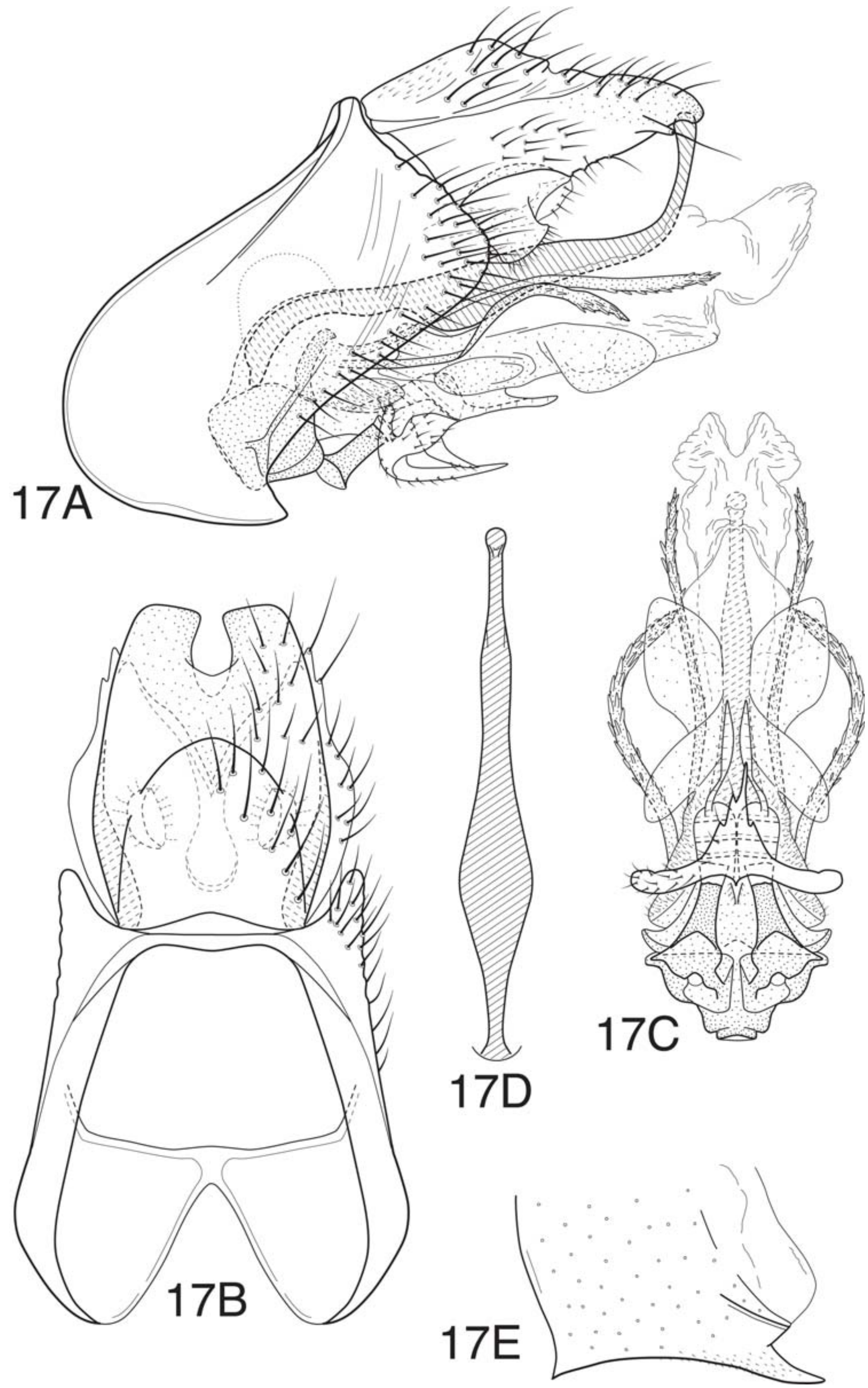


Figure 17. *Mortoniella* (*Mortoniella*) *squamata* Sykora, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

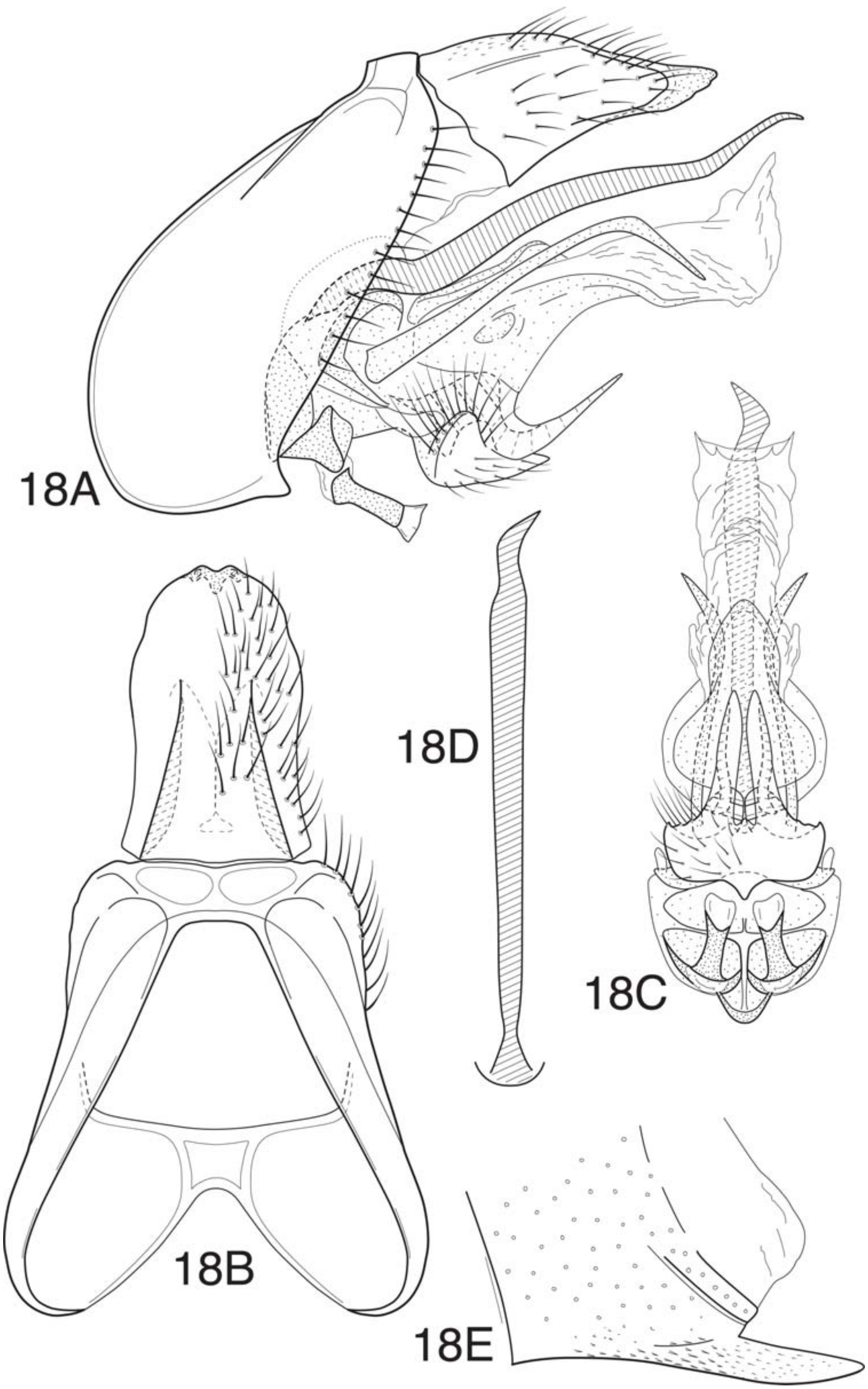


Figure 18. *Mortoniella* (*Mortoniella*) *bifurcata* Sykora, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

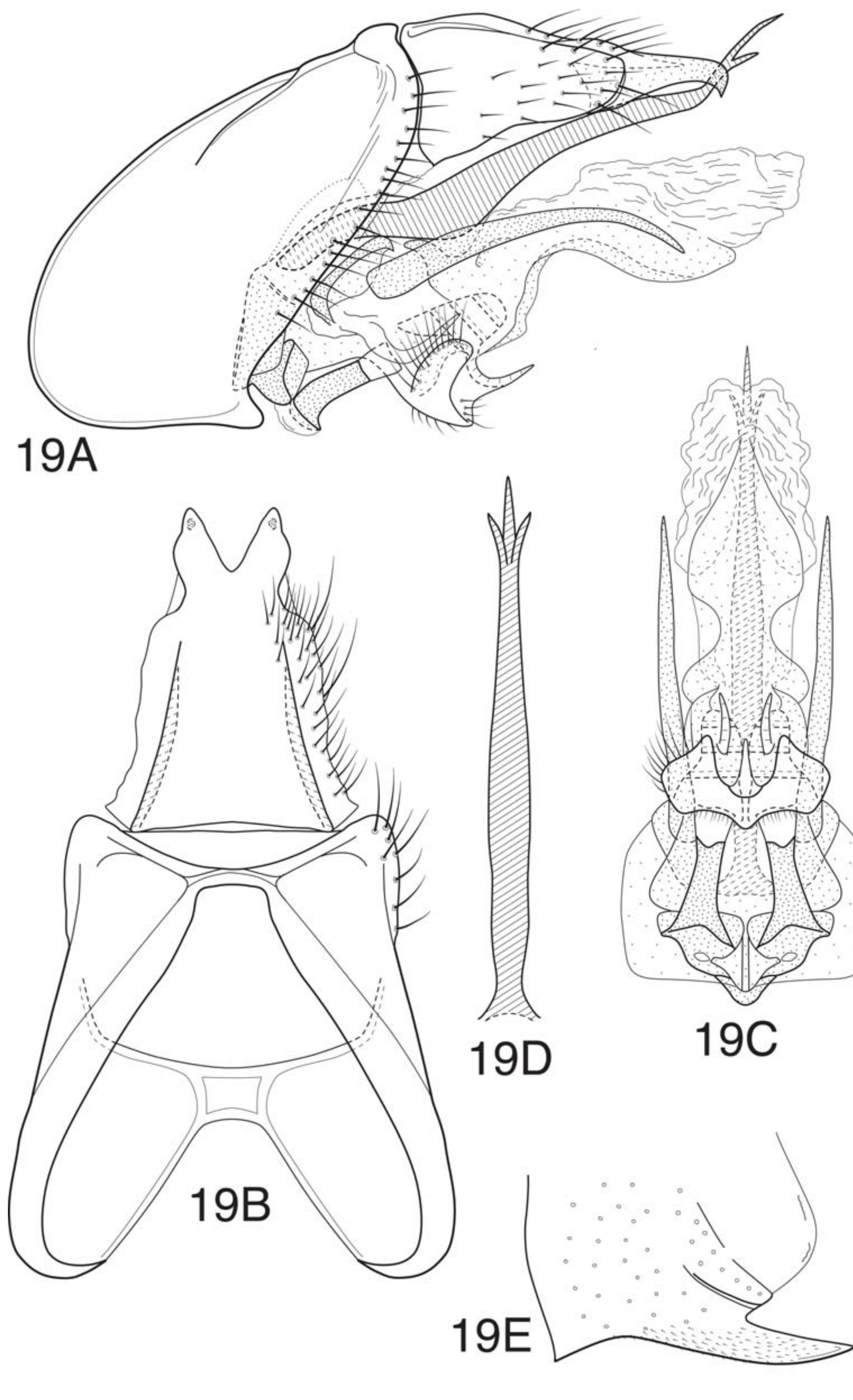


Figure 19. *Mortoniella* (*Mortoniella*) *flinti* Sykora, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

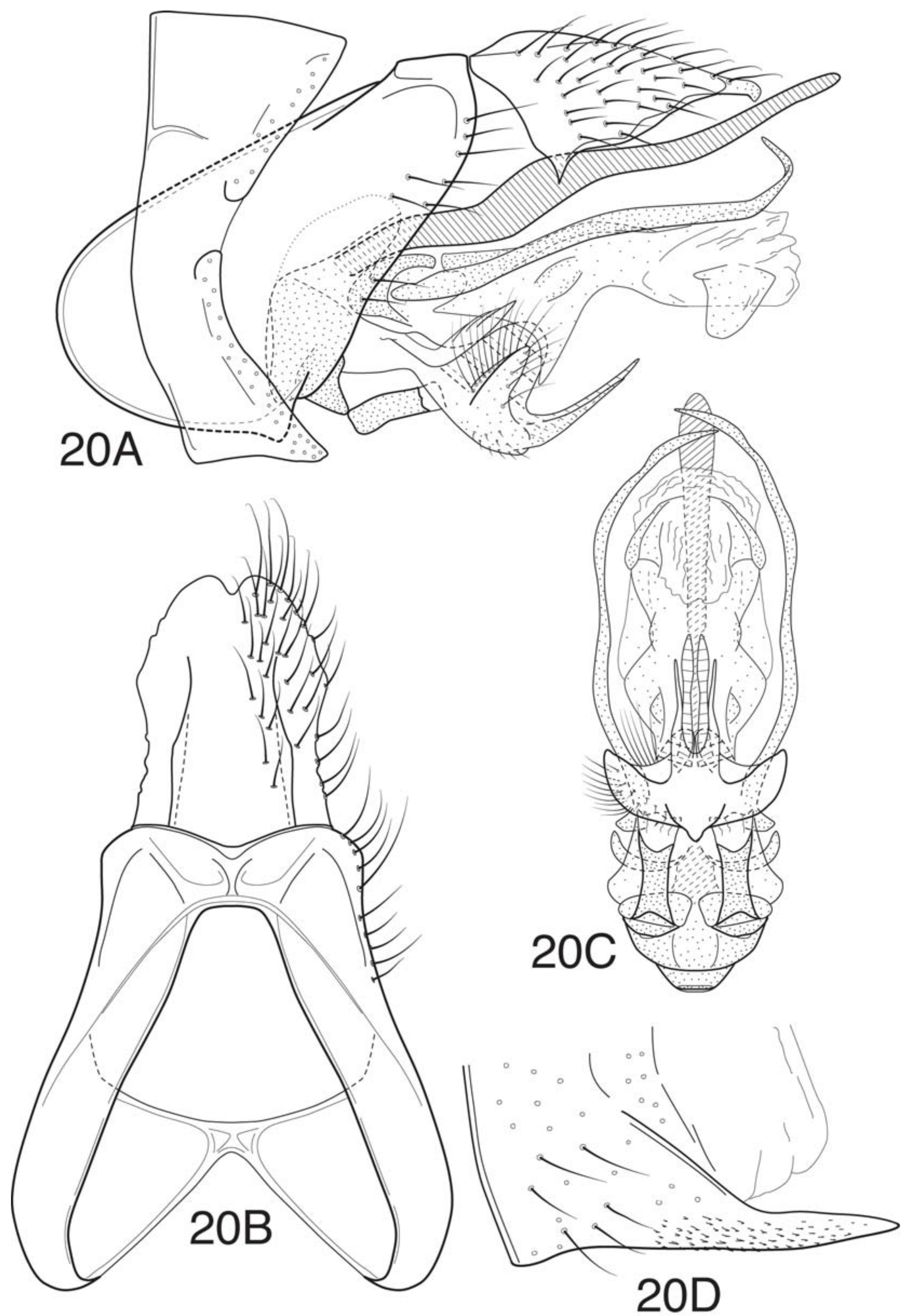


Figure 20. *Mortoniella* (*Mortoniella*) *tanyrhabdos*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—ventral process of segment VI, lateral.

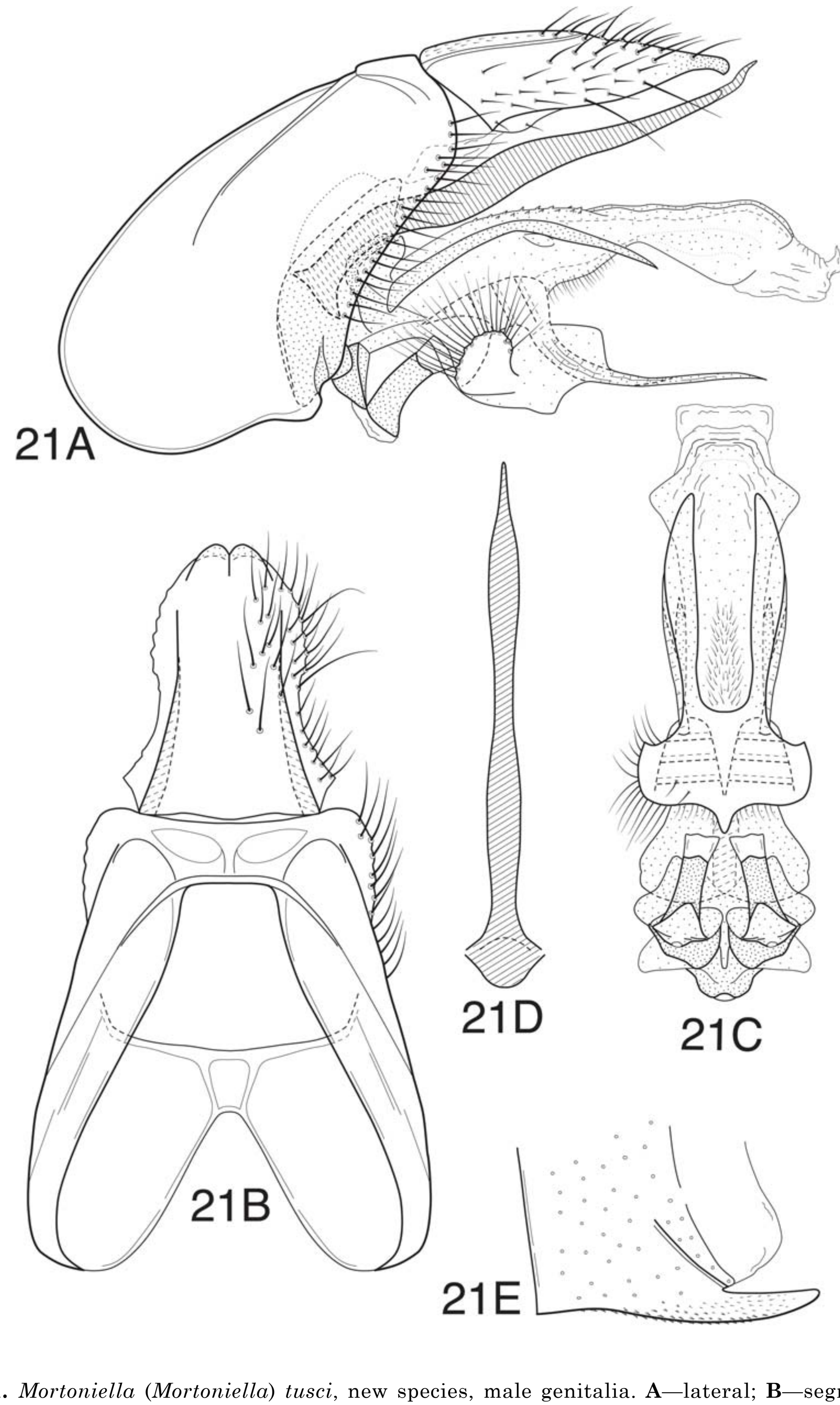


Figure 21. *Mortoniella* (*Mortoniella*) *tusci*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

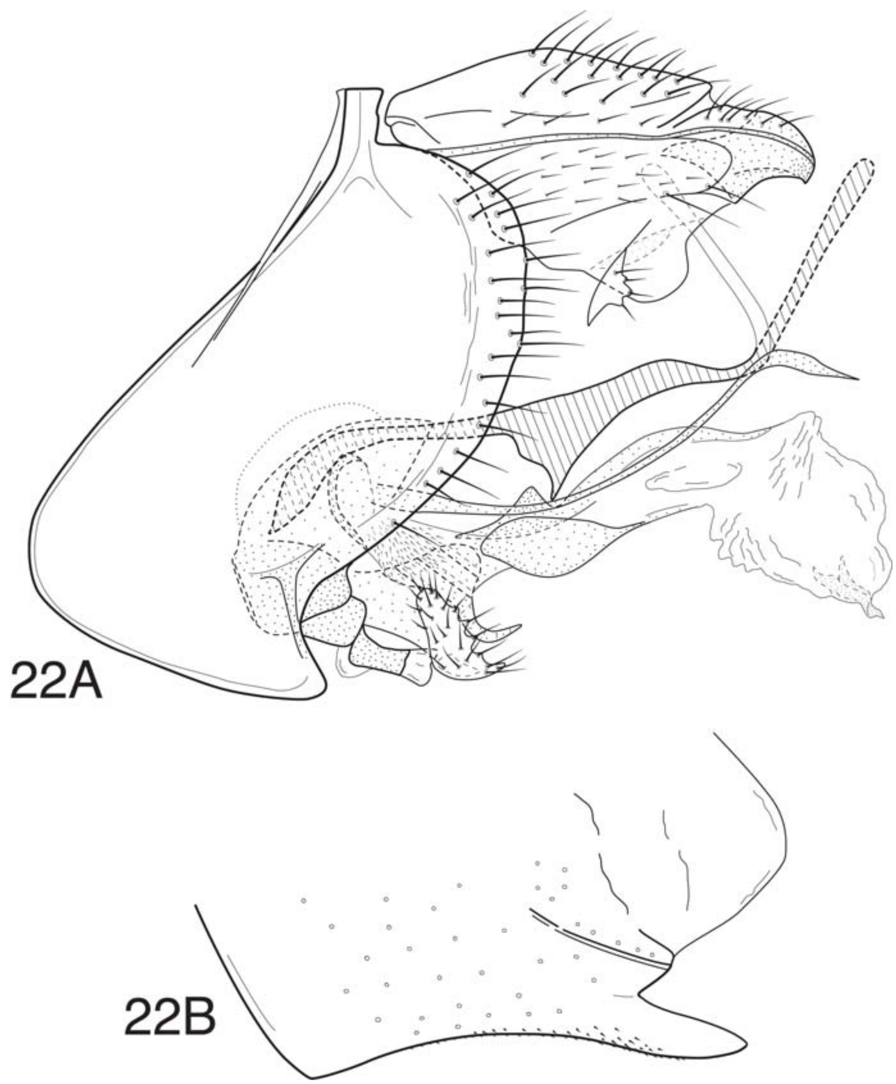


Figure 22. *Mortoniella* (*Mortoniella*) *foersteri* (Schmid), male genitalia. **A**—lateral; **B**—ventral process of segment VI, lateral.

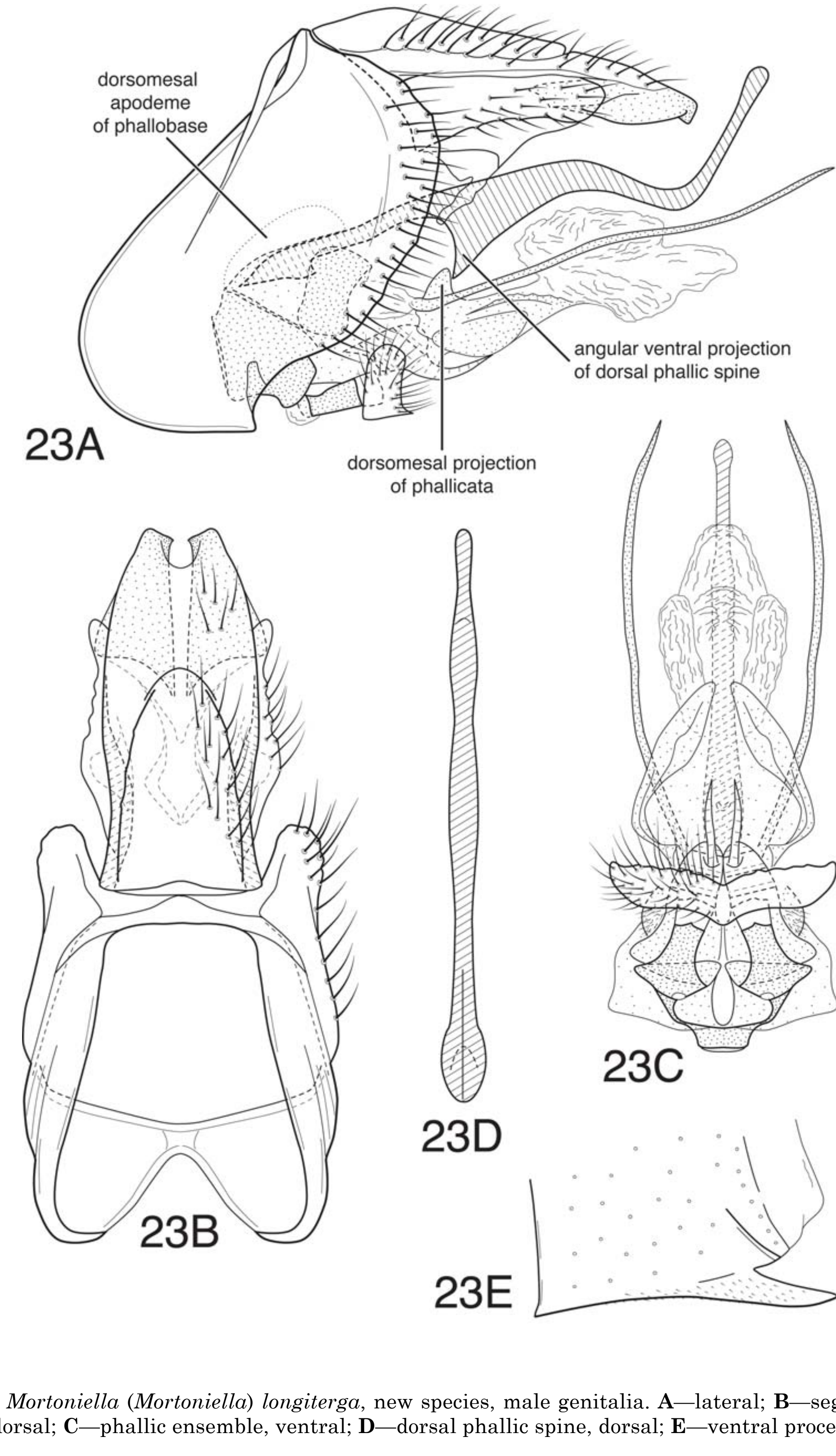


Figure 23. *Mortoniella* (*Mortoniella*) *longiterga*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

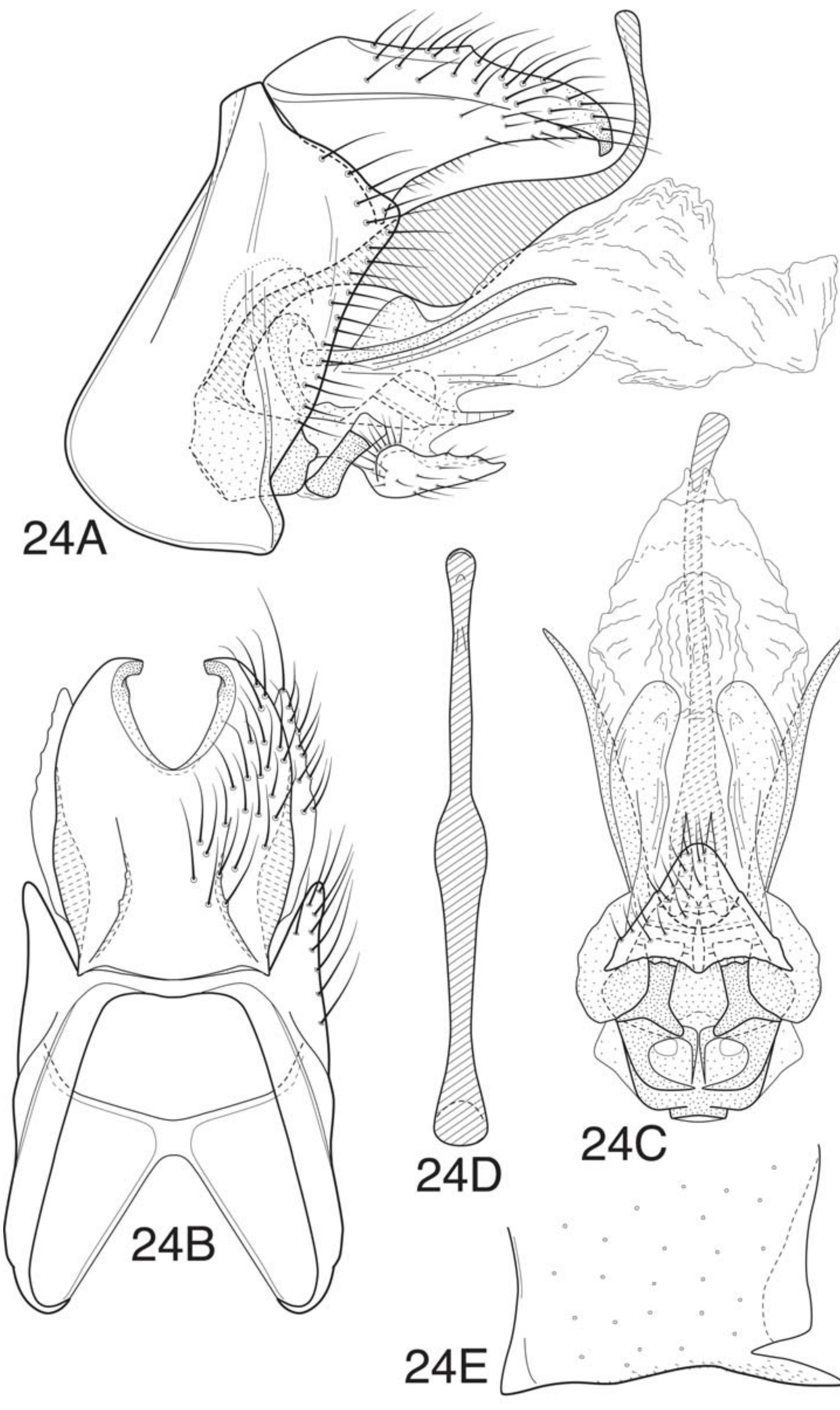


Figure 24. *Mortoniella* (*Mortoniella*) *hodgesi* Flint, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

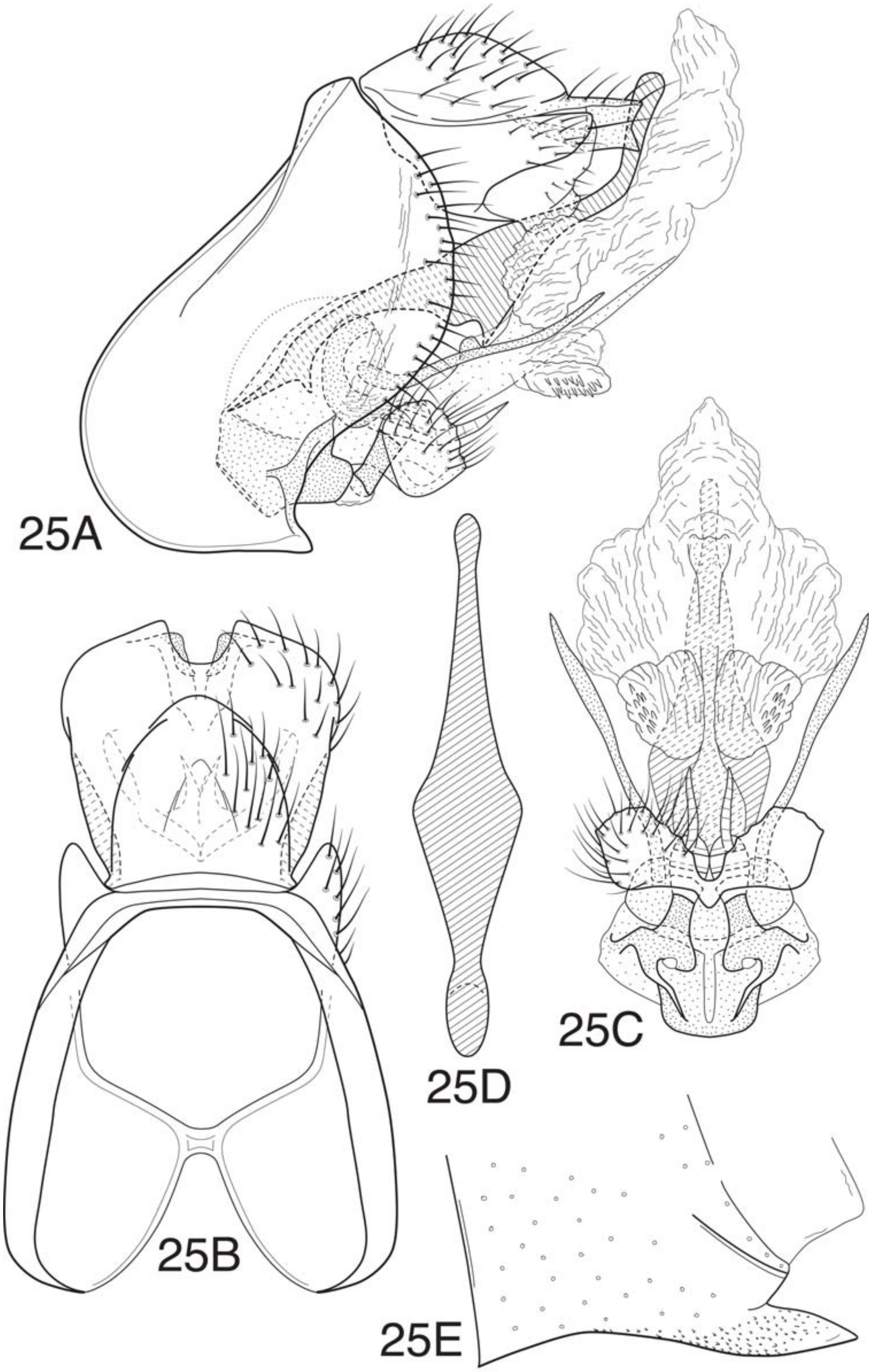


Figure 25. *Mortoniella* (*Mortoniella*) *iridescens* Flint, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

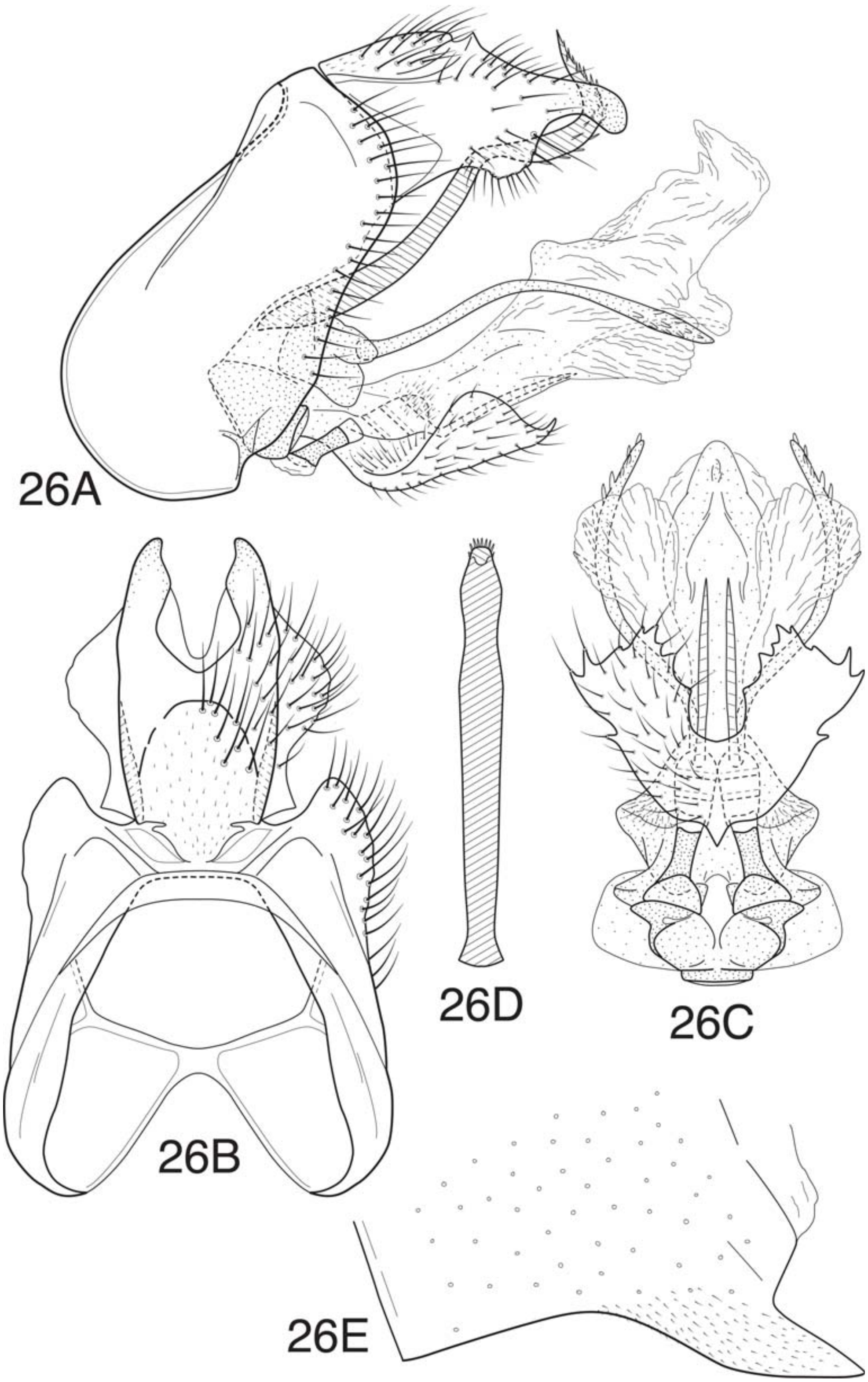


Figure 26. *Mortoniella* (*Mortoniella*) *gilli*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

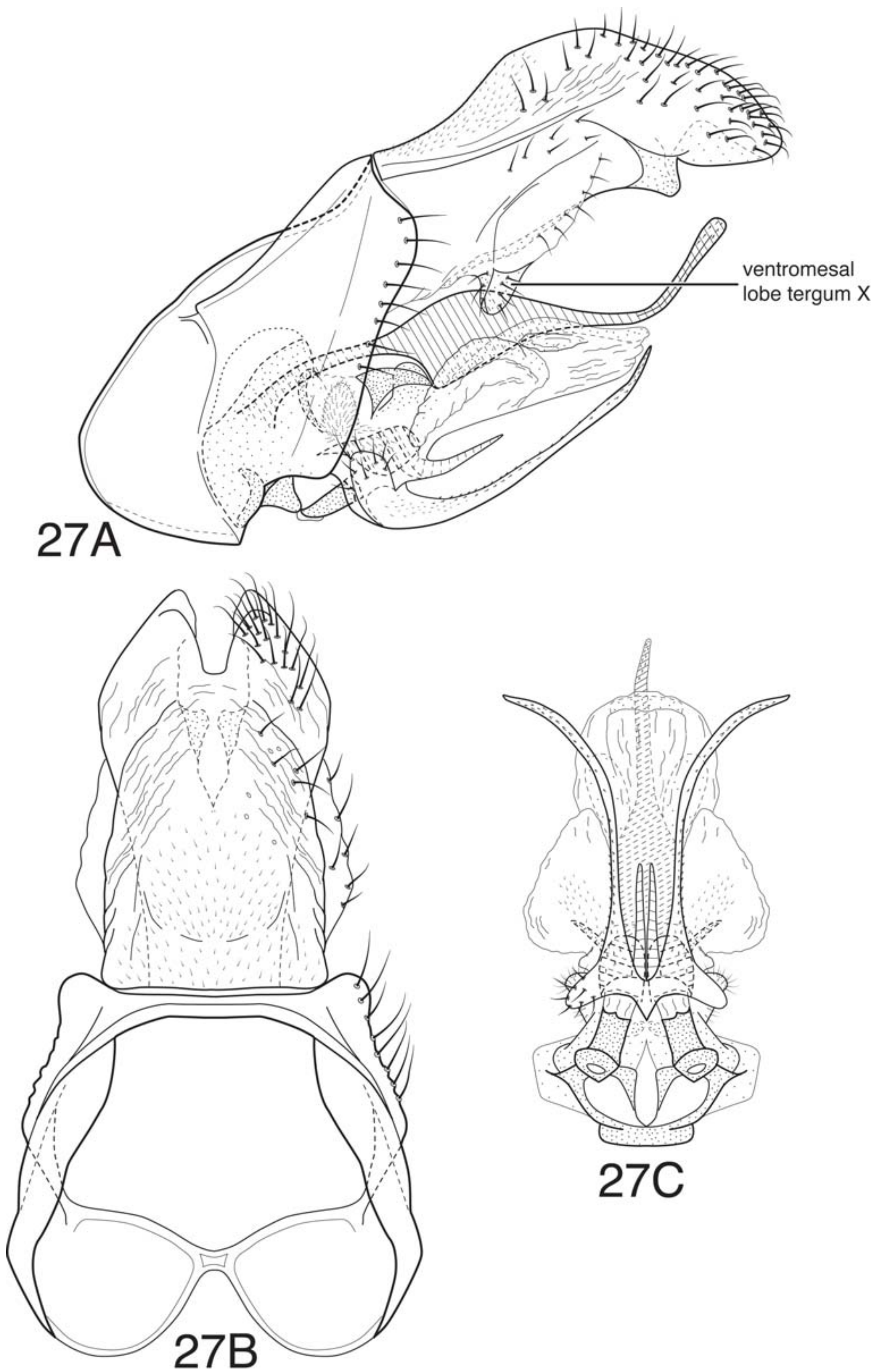


Figure 27. *Mortoniella* (*Mortoniella*) *wygodzinskii* (Schmid), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral.

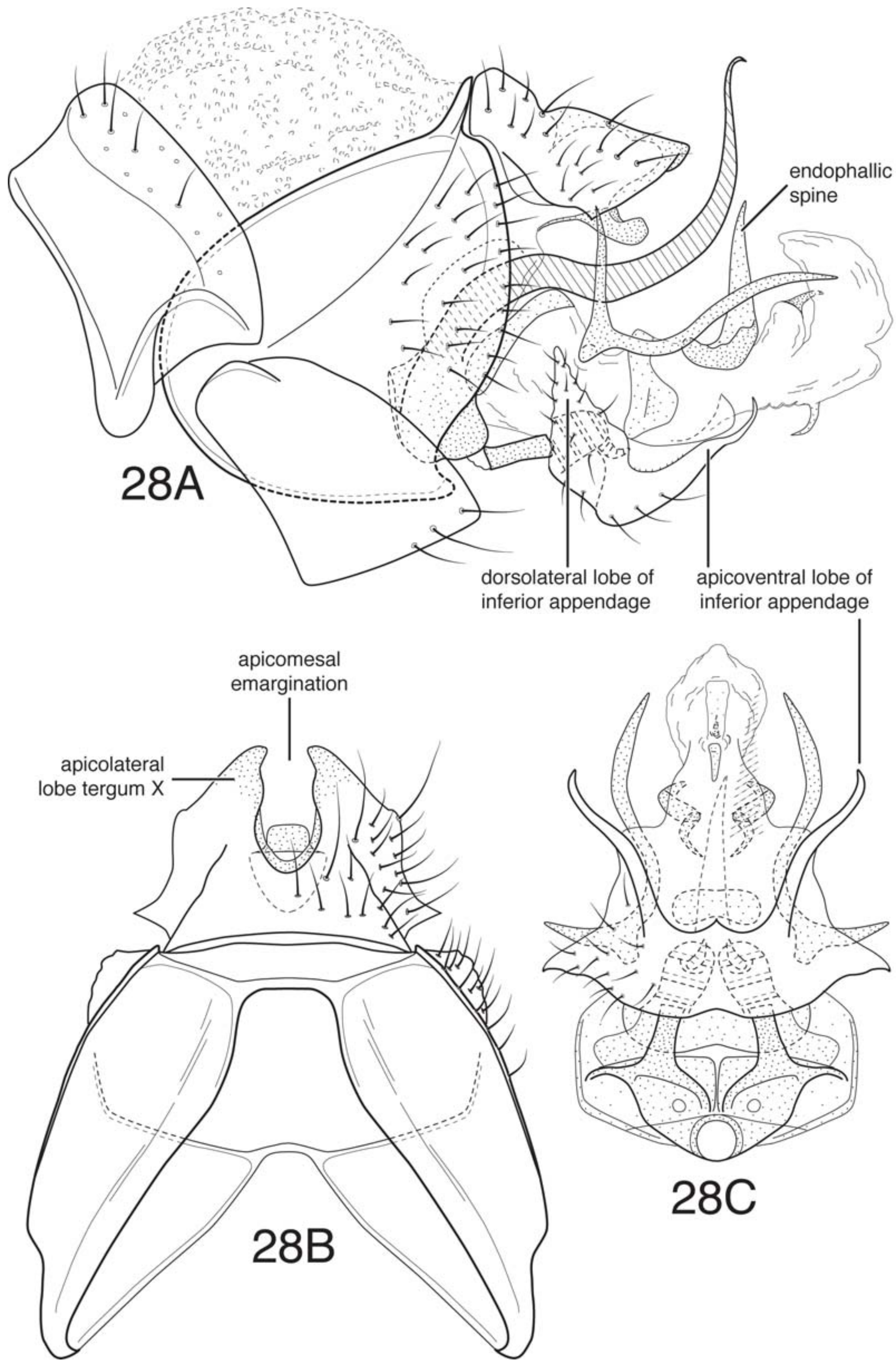


Figure 28. *Mortoniella* (*Mortoniella*) *atenuata* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral.

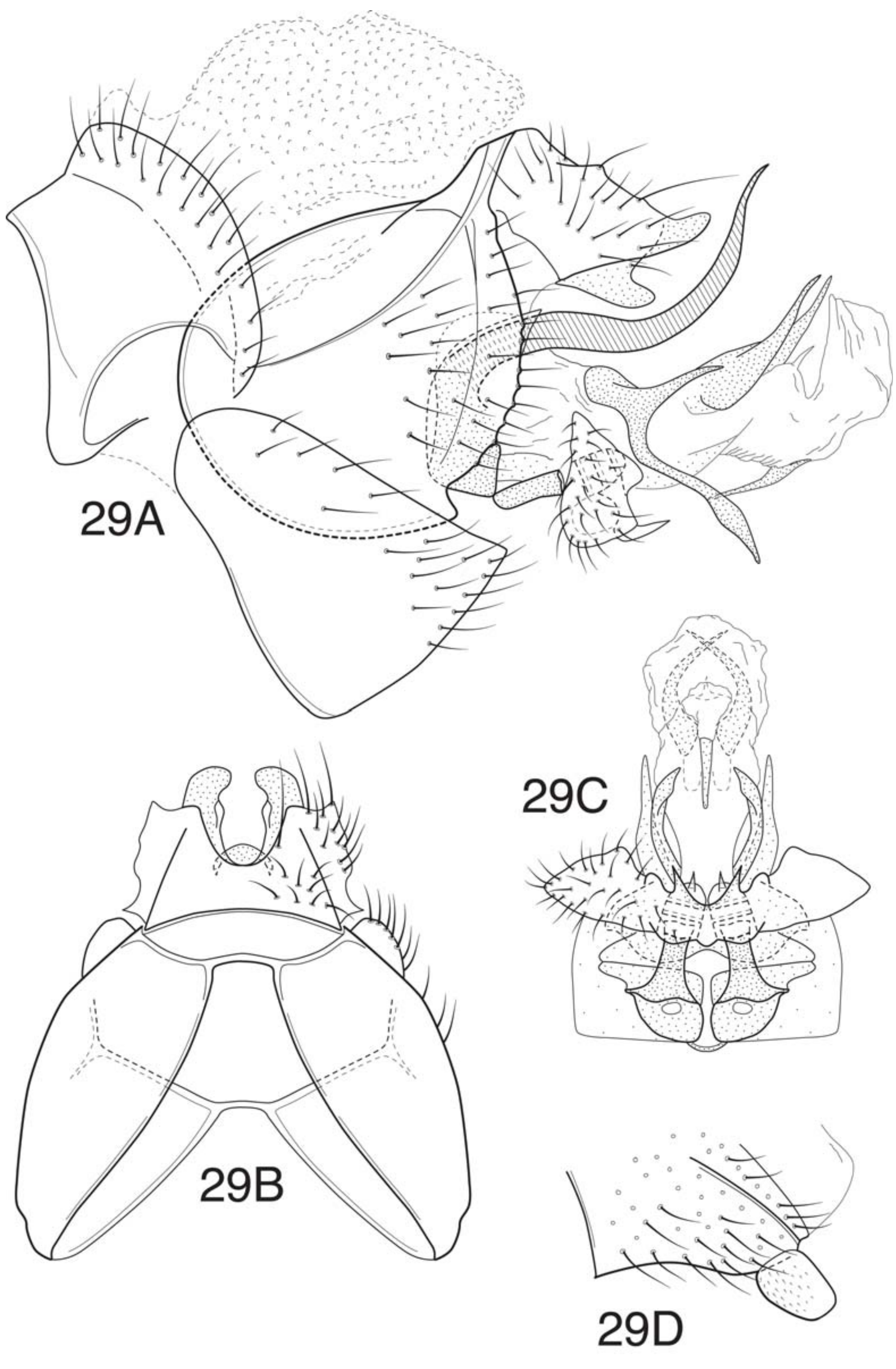


Figure 29. *Mortoniella* (*Mortoniella*) *brevis*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—ventral process of segment VI, lateral.

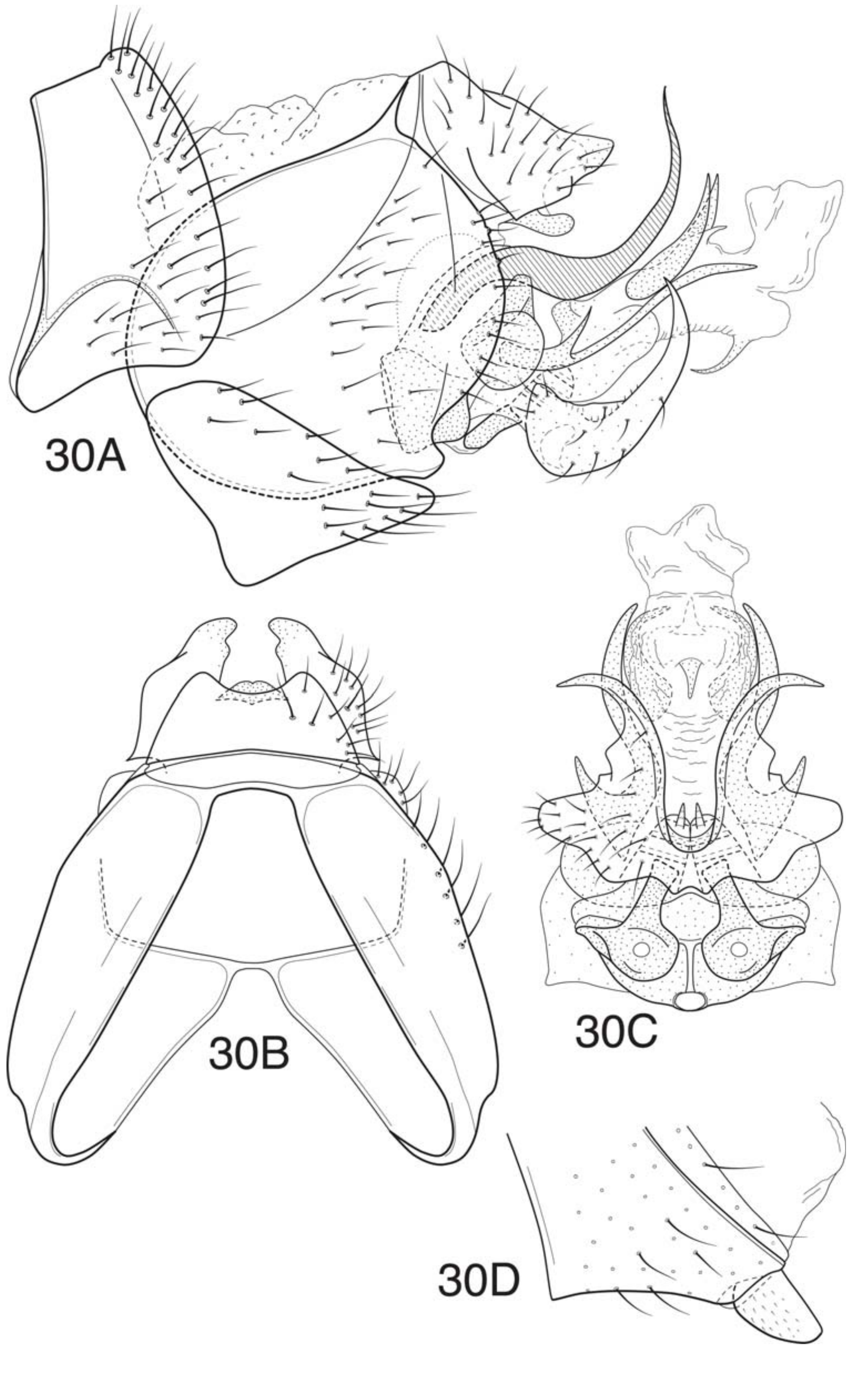


Figure 30. *Mortoniella* (*Mortoniella*) *dinotes*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—ventral process of segment VI, lateral.

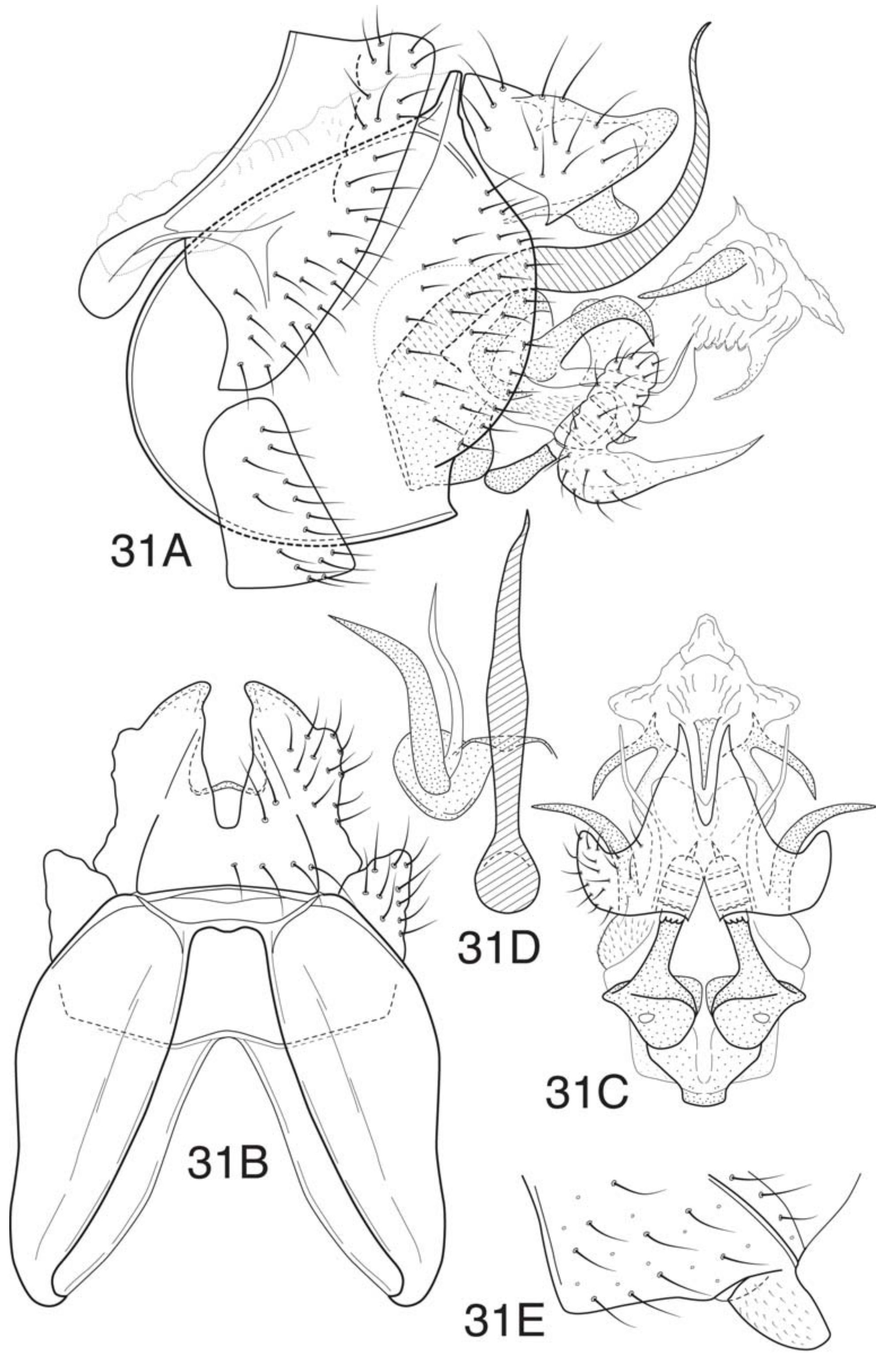


Figure 31. *Mortoniella* (*Mortoniella*) *leei* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—ph**a**llic ensemble, ventral; **D**—dorsal phallic spine and right paramere, dorsal; **E**—ventral process of segment VI, lateral.

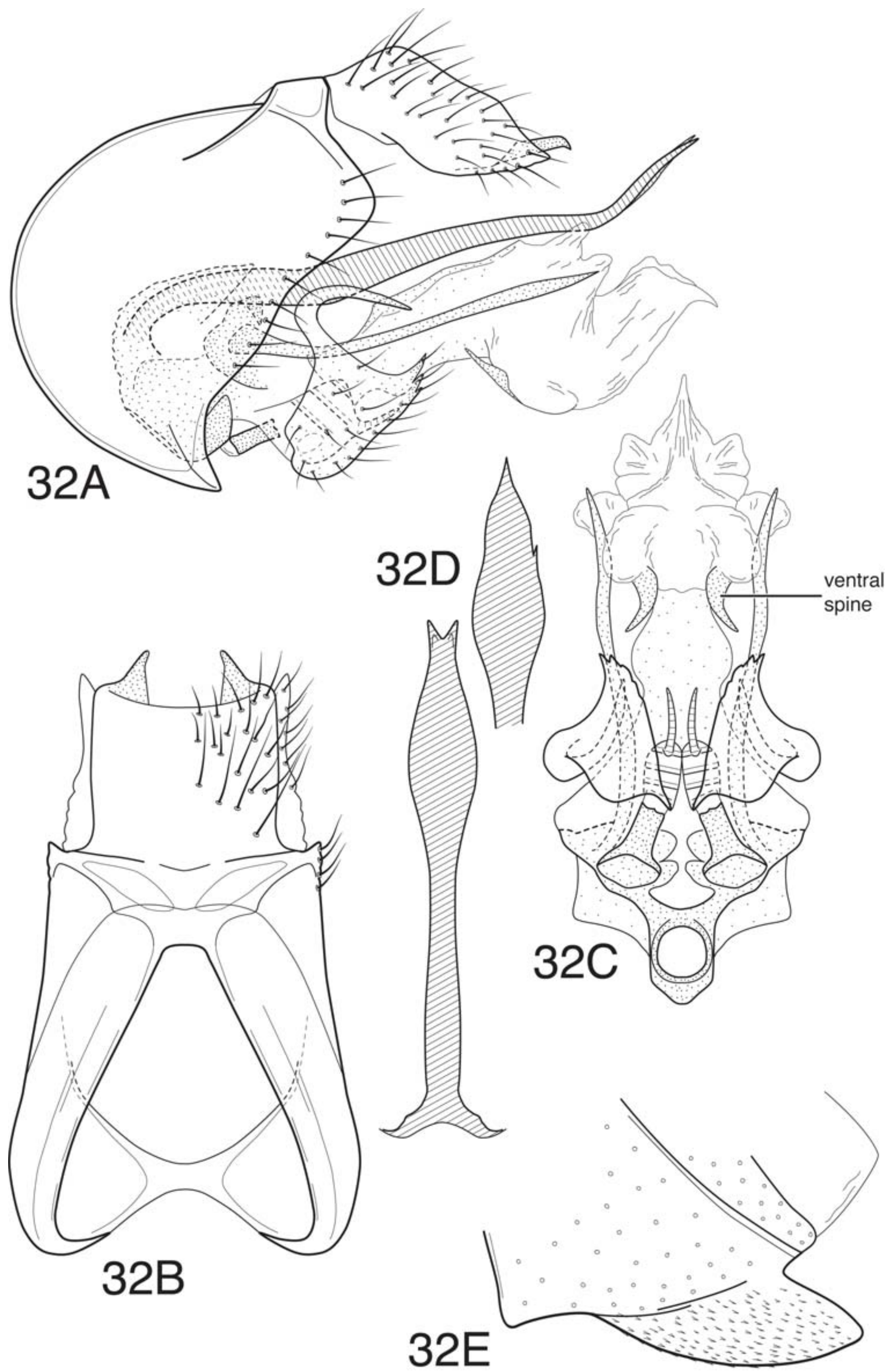


Figure 32. *Mortoniella* (*Mortoniella*) *bolivica* (Schmid), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and apex of variant, dorsal; **E**—ventral process of segment VI, lateral.

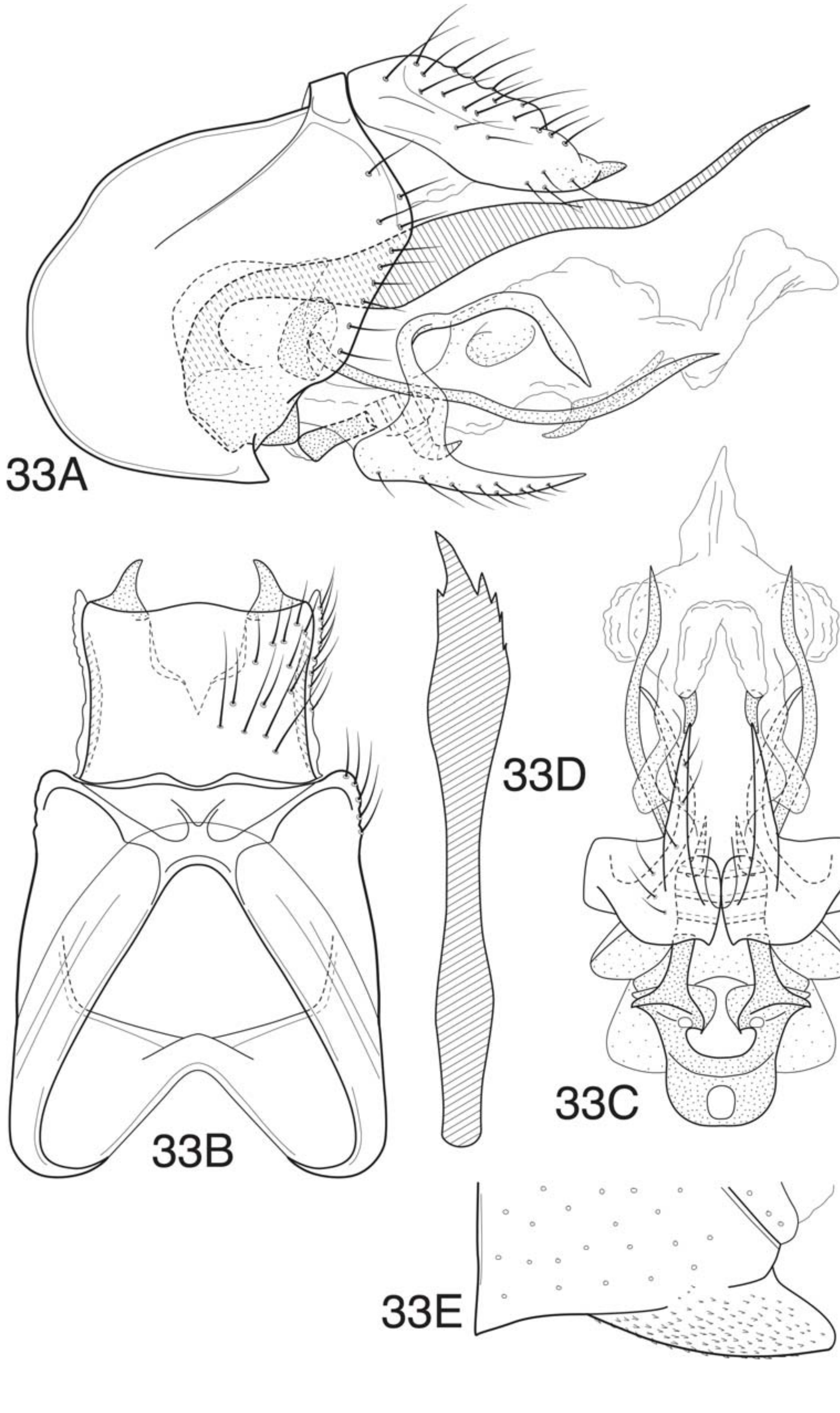


Figure 33. *Mortoniella* (*Mortoniella*) *flexuosa*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

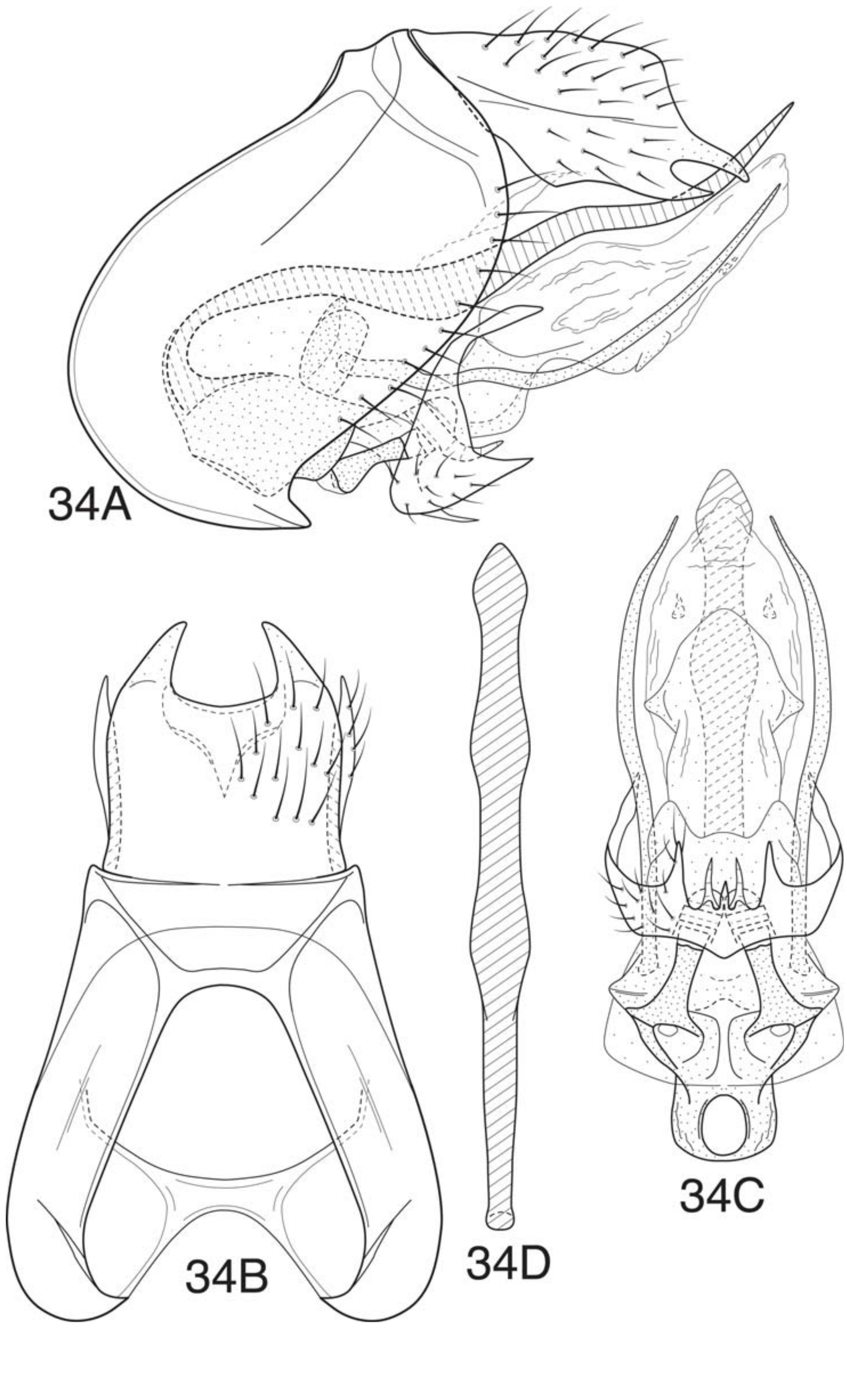


Figure 34. *Mortoniella* (*Mortoniella*) *spatulata*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal.

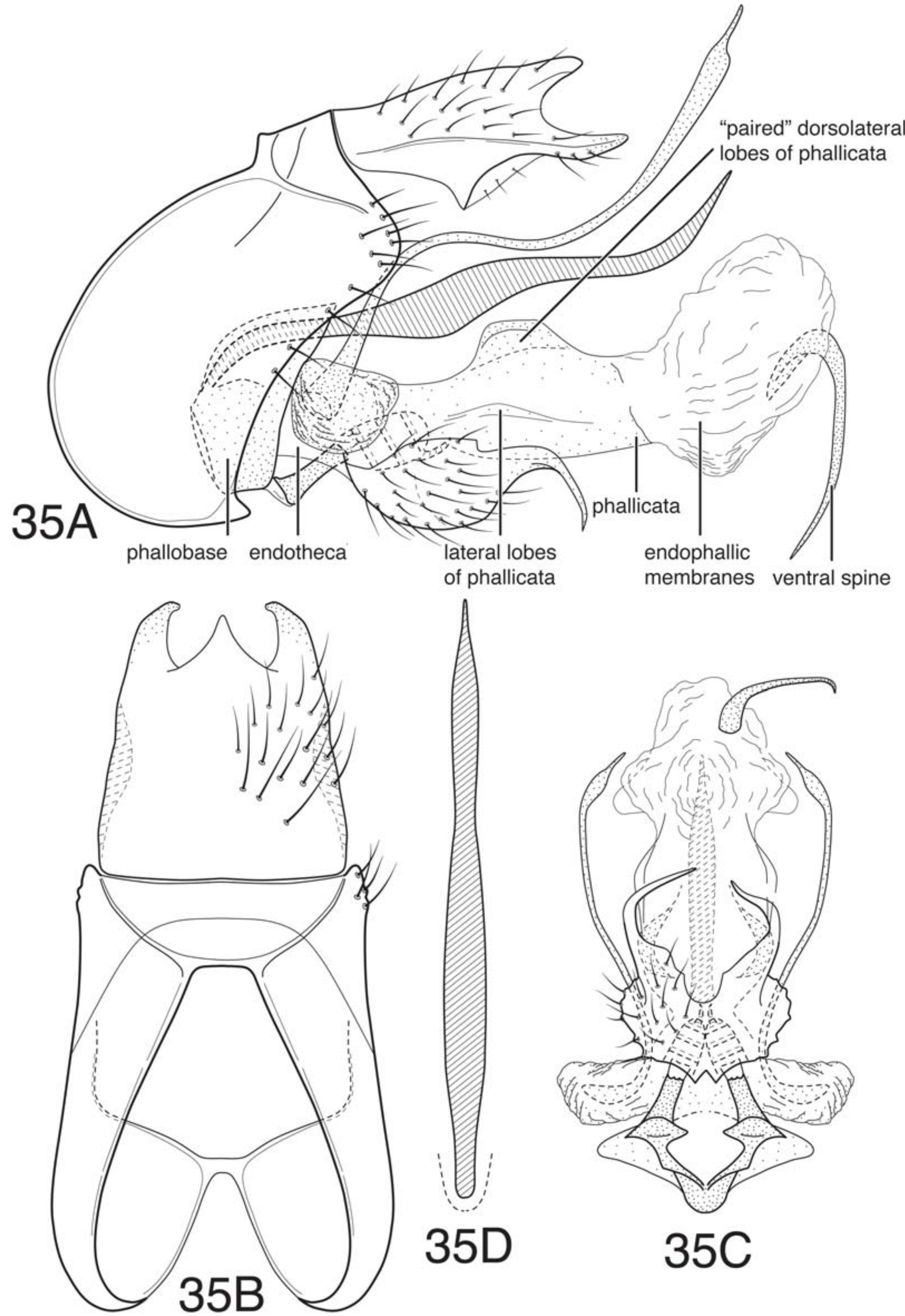


Figure 35. *Mortoniella* (*Mortoniella*) *elongata* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal.

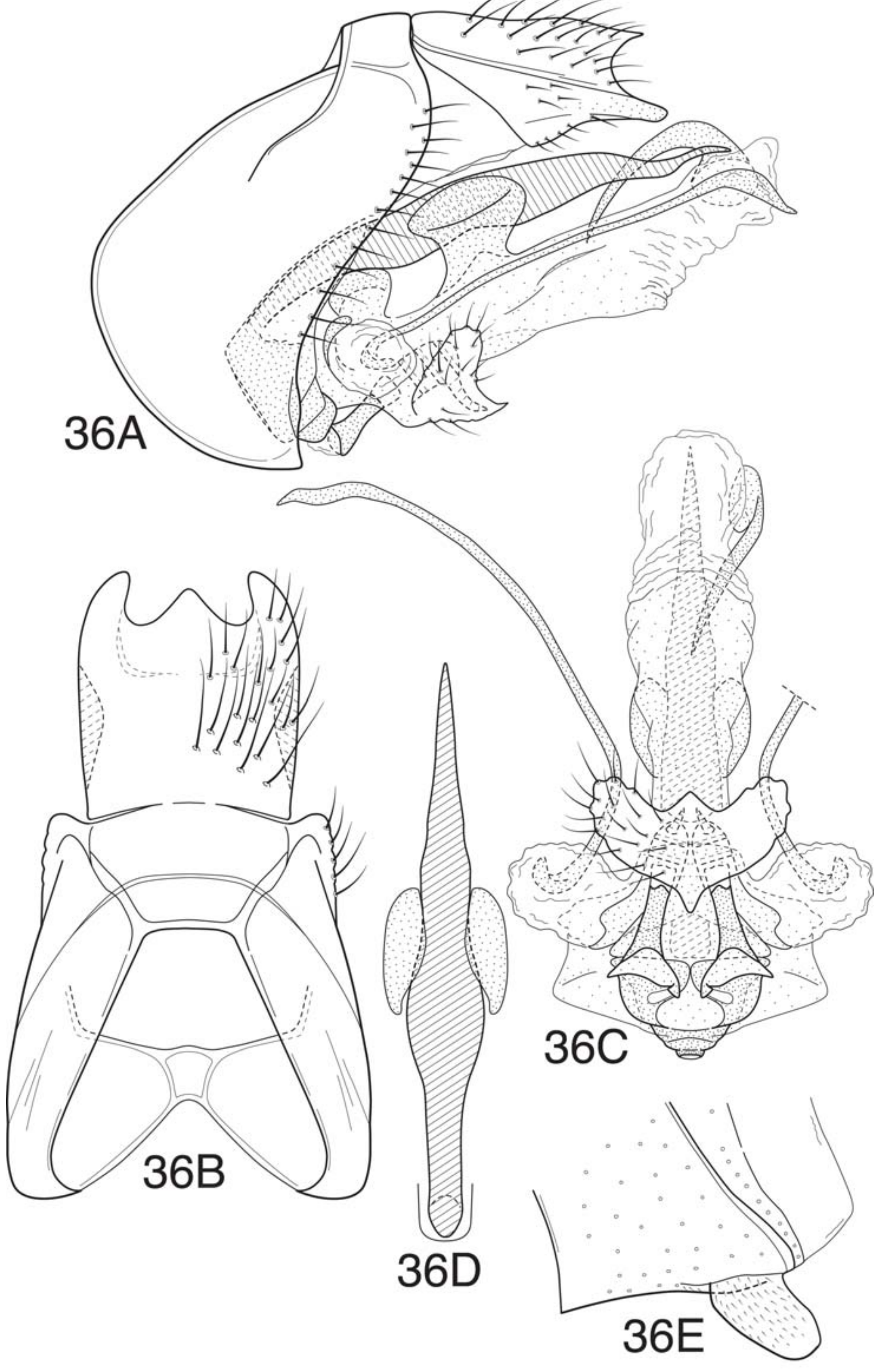


Figure 36. *Mortoniella* (*Mortoniella*) *grandiloba*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and dorsolateral projections of phallicata, dorsal; **E**—ventral process of segment VI, lateral.

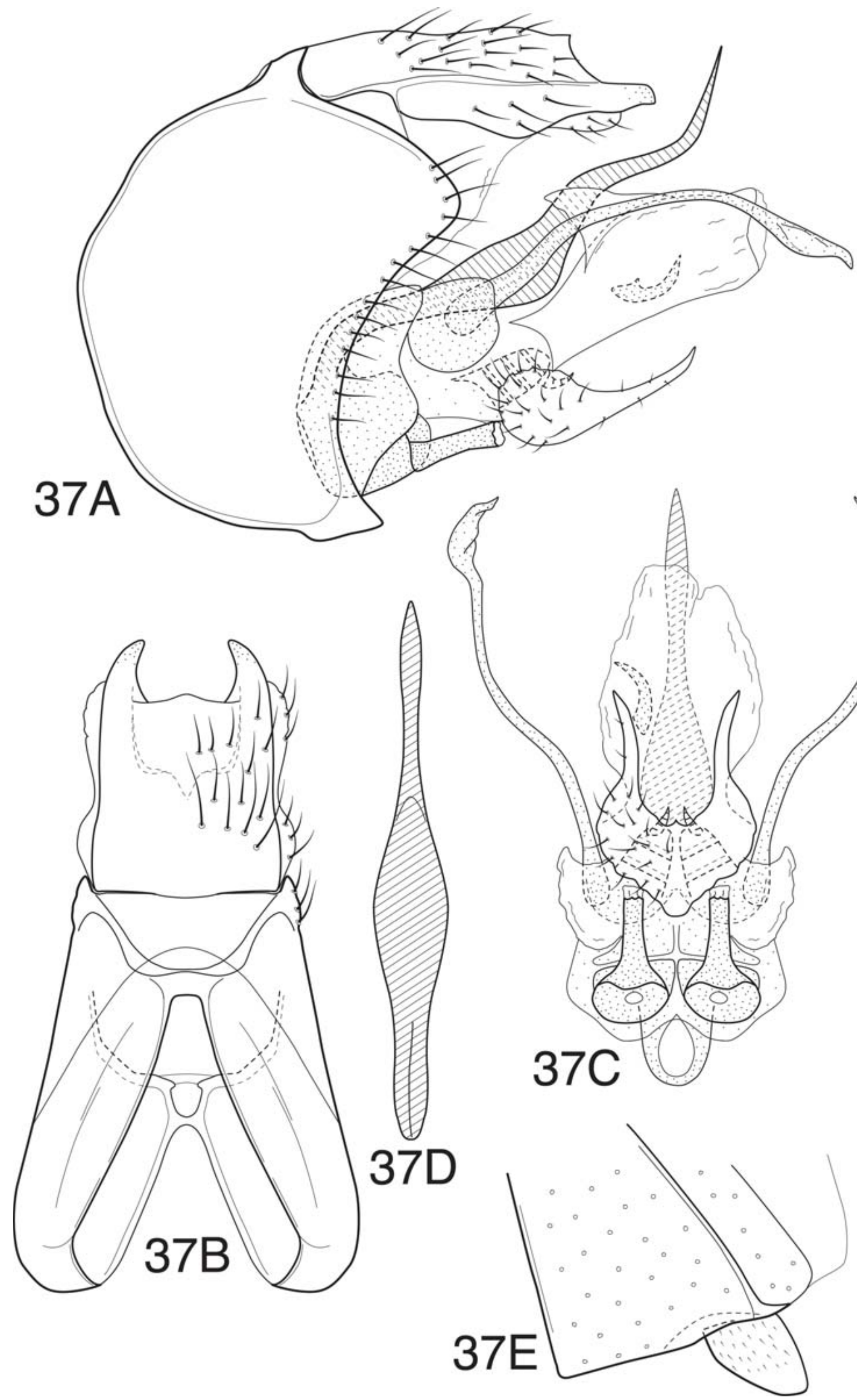


Figure 37. *Mortoniella* (*Mortoniella*) *schlingeri*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

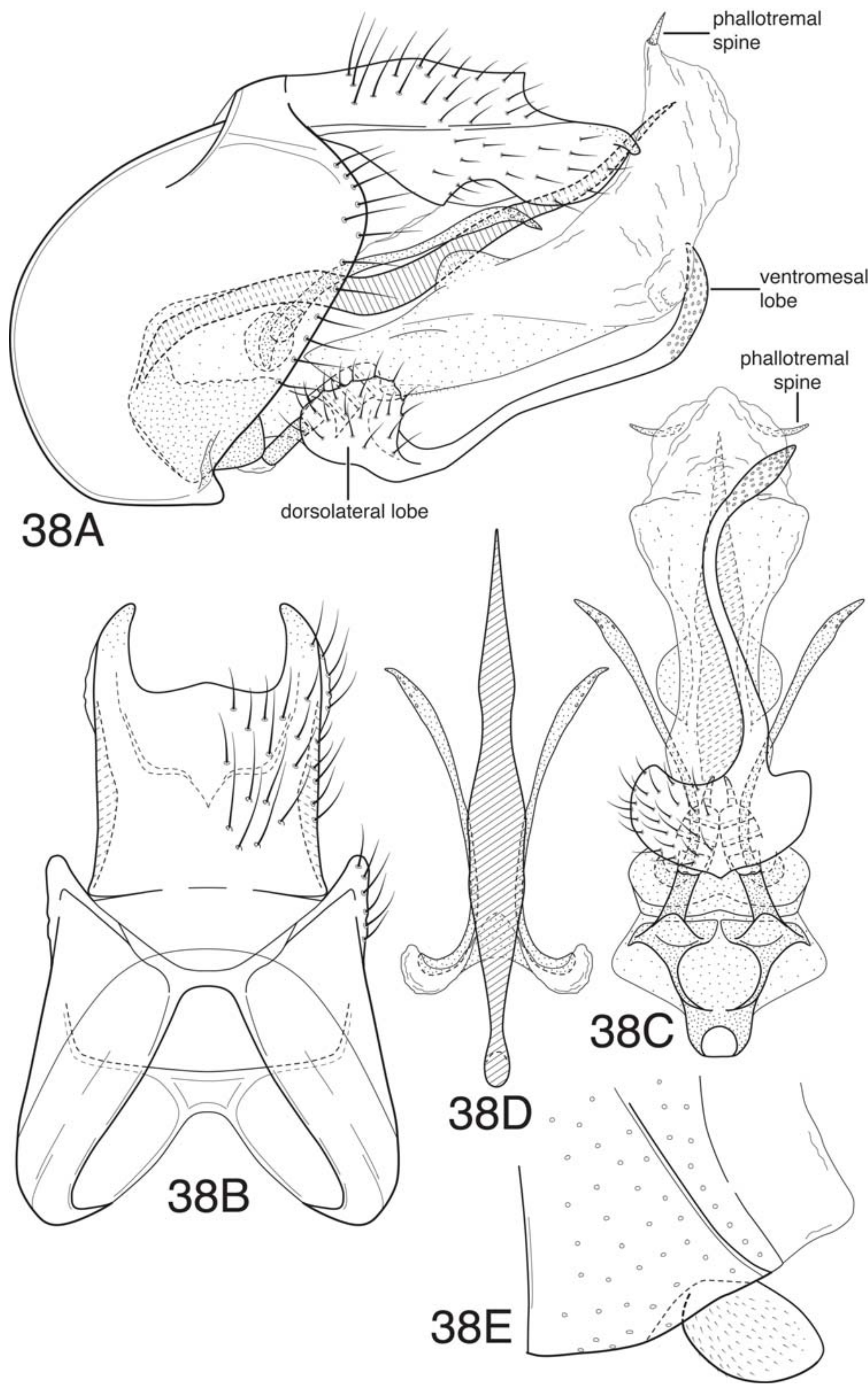


Figure 38. *Mortoniella* (*Mortoniella*) *bothrops*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and paramere appendages, dorsal; **E**—ventral process of segment VI, lateral.

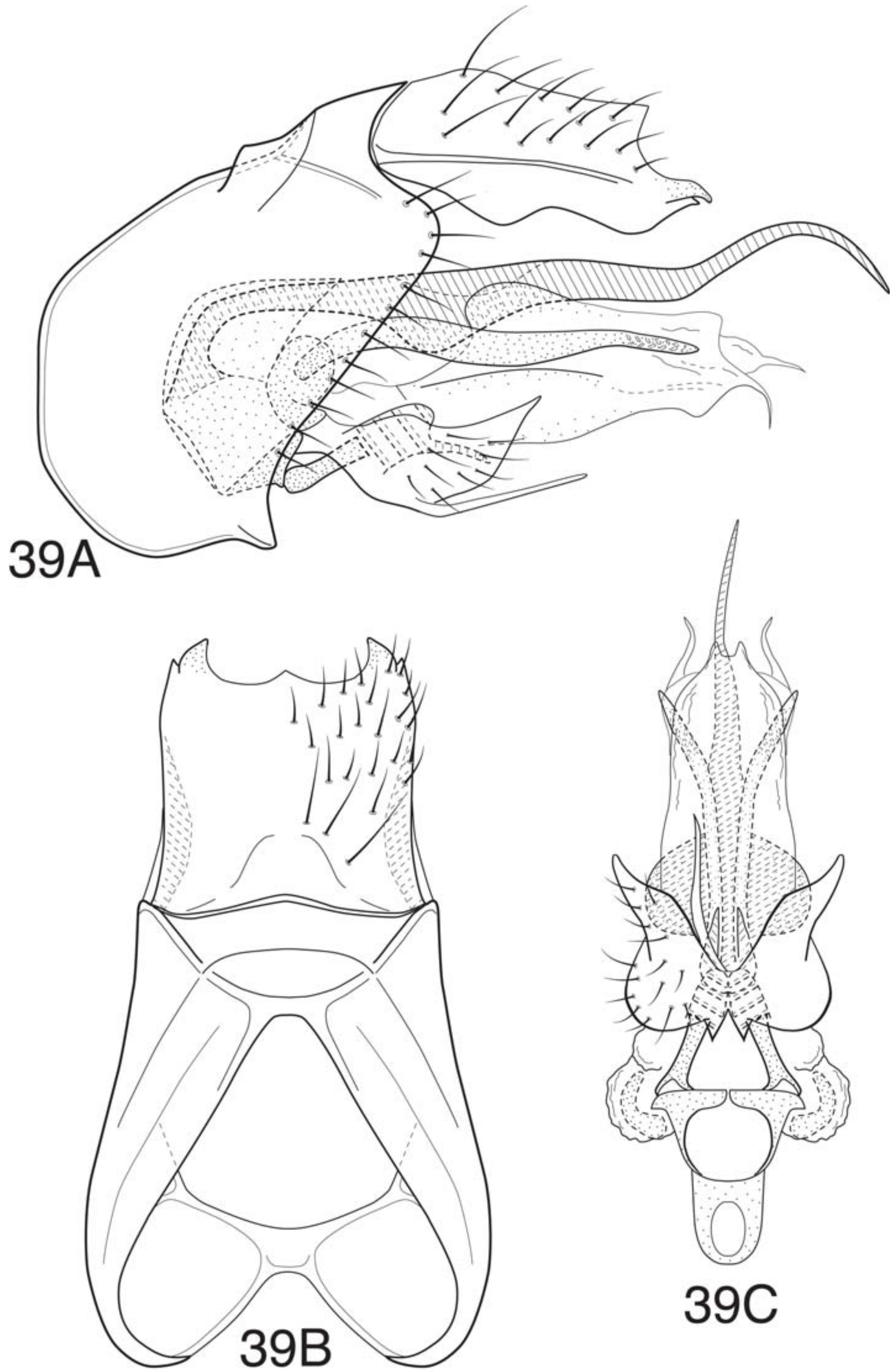


Figure 39. *Mortoniella* (*Mortoniella*) *cressae*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral.

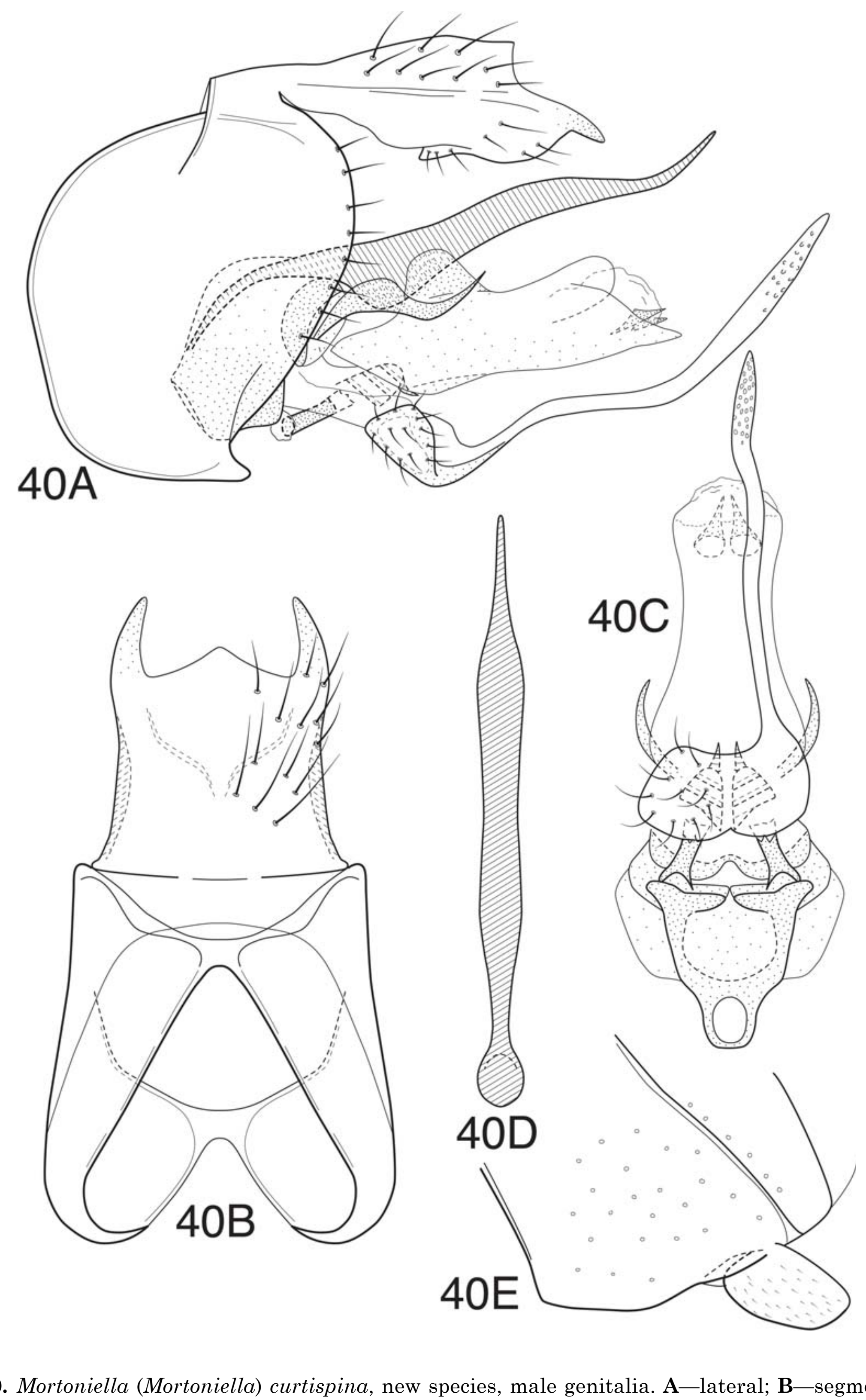


Figure 40. *Mortoniella* (*Mortoniella*) *curtispina*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

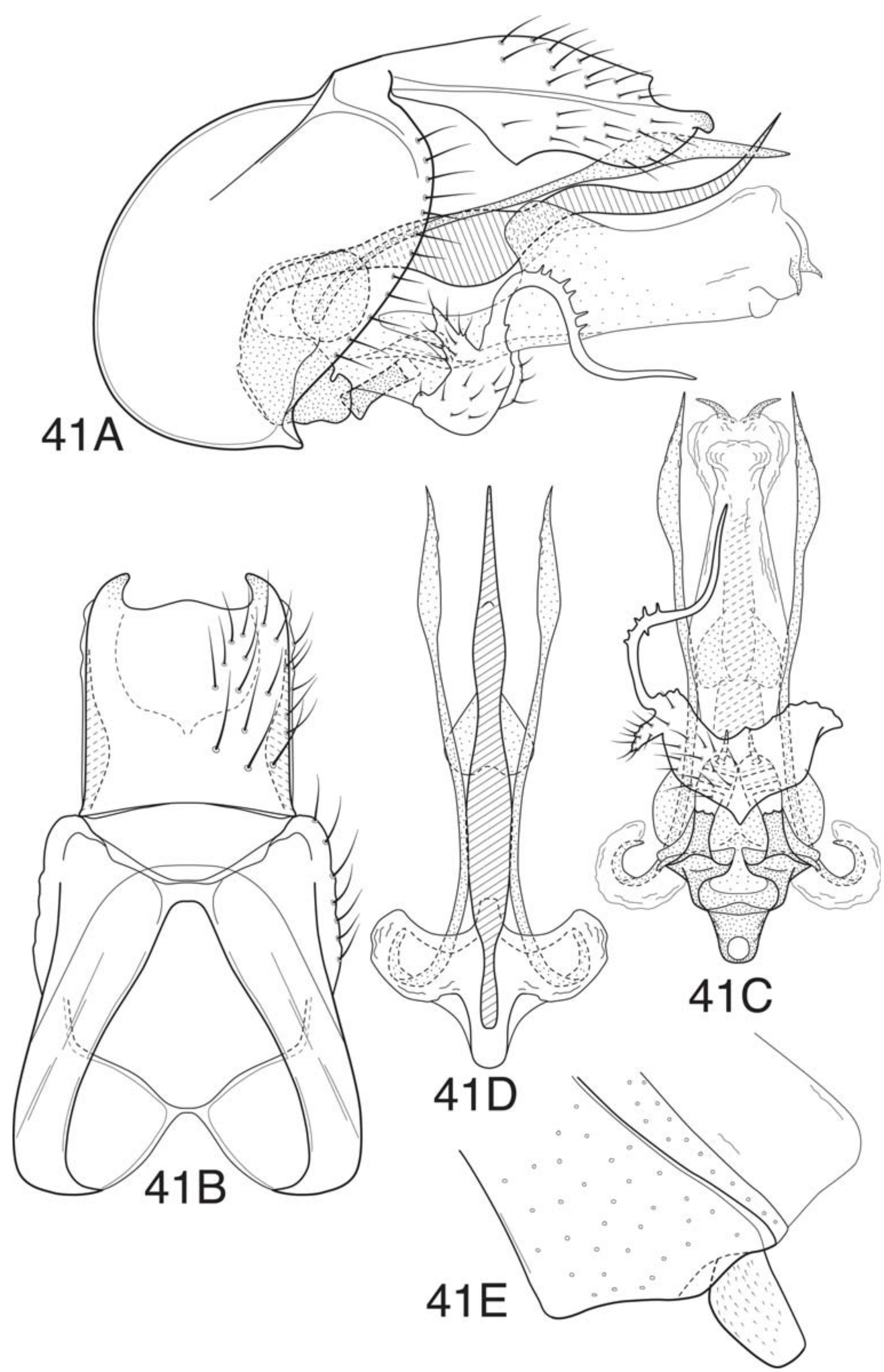


Figure 41. *Mortoniella* (*Mortoniella*) *draconis*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, paramere appendages, and dorsolateral projections of phallicata, dorsal; **E**—ventral process of segment VI, lateral.

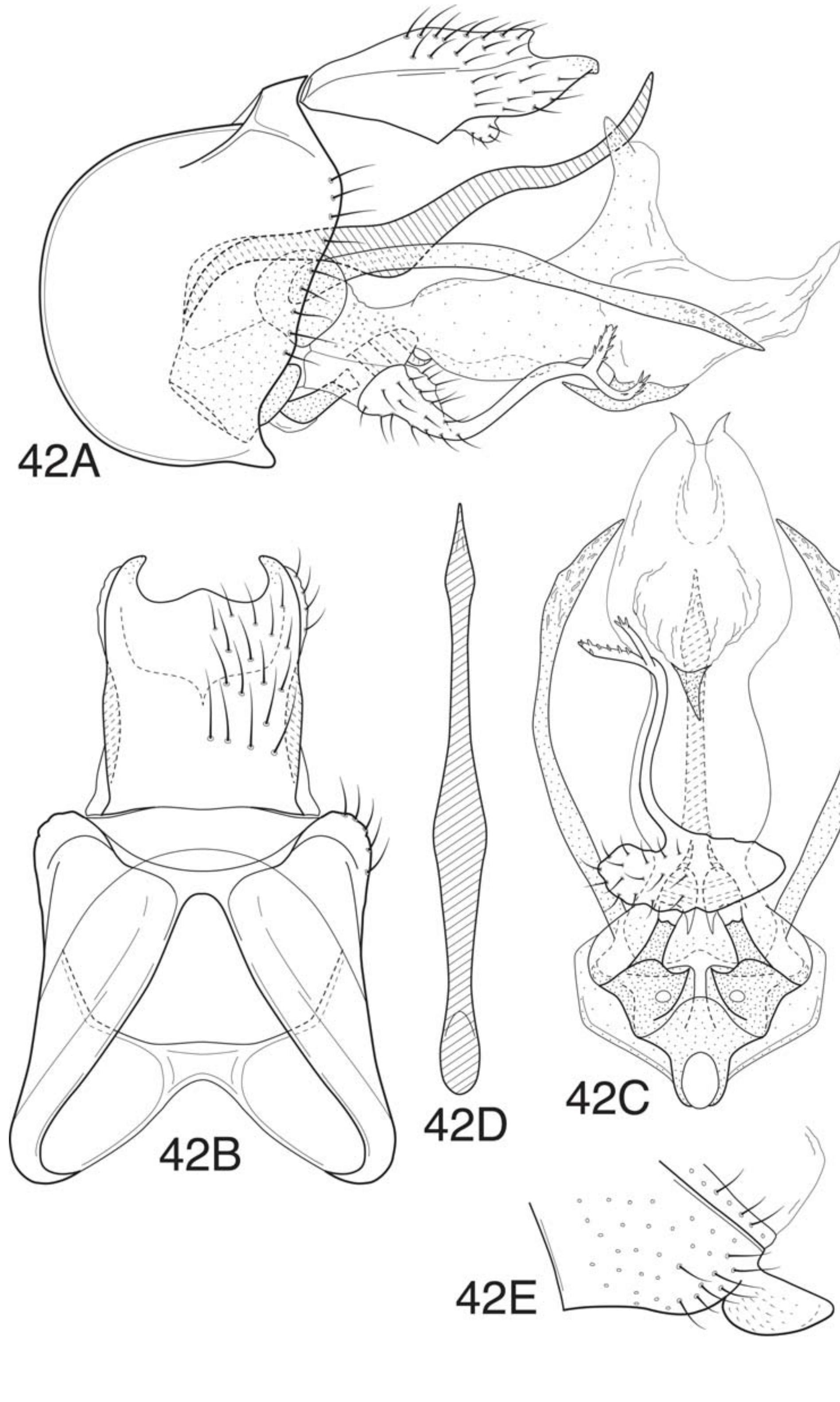


Figure 42. *Mortoniella* (*Mortoniella*) *furcula*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

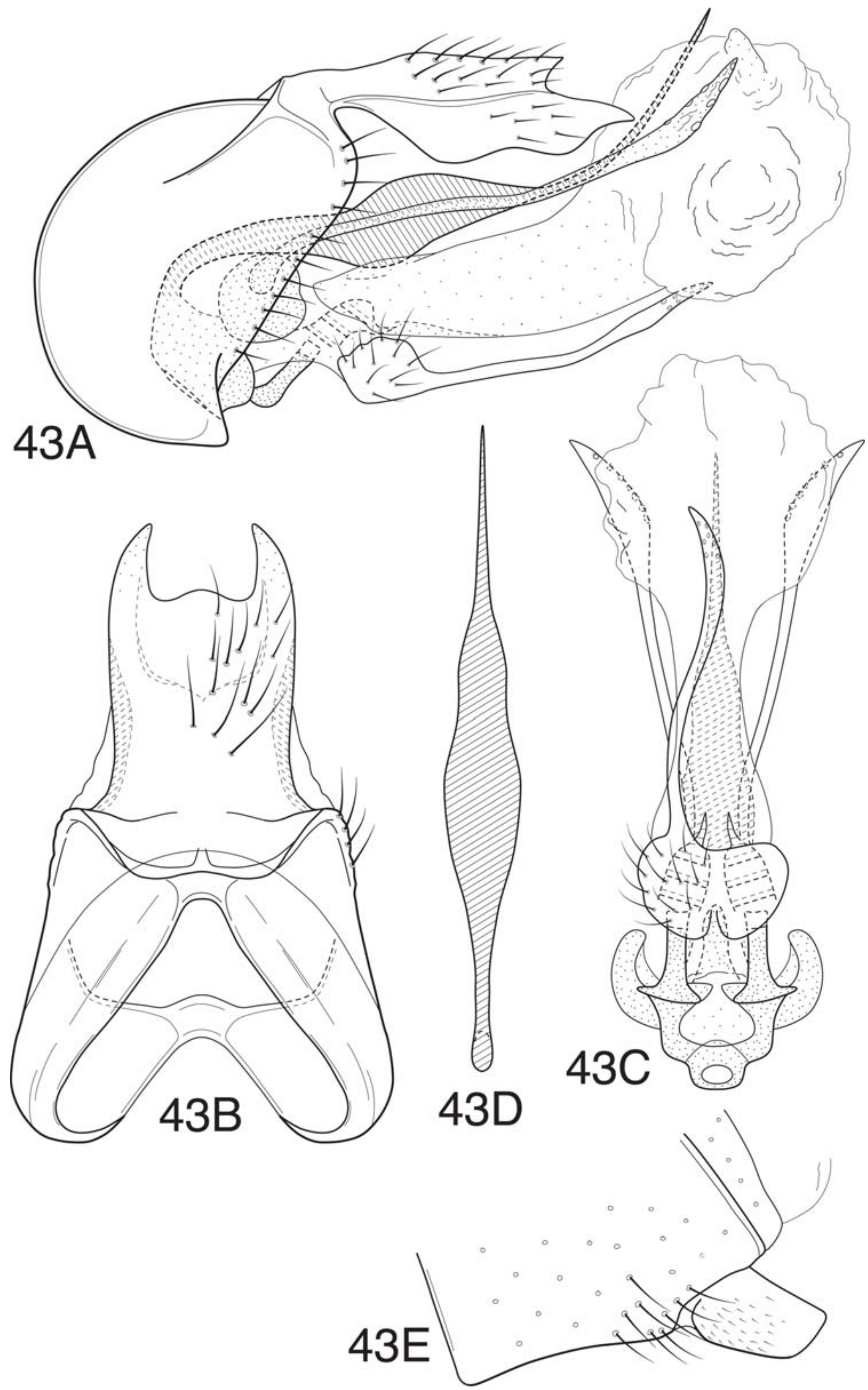


Figure 43. *Mortoniella* (*Mortoniella*) *parameralda*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

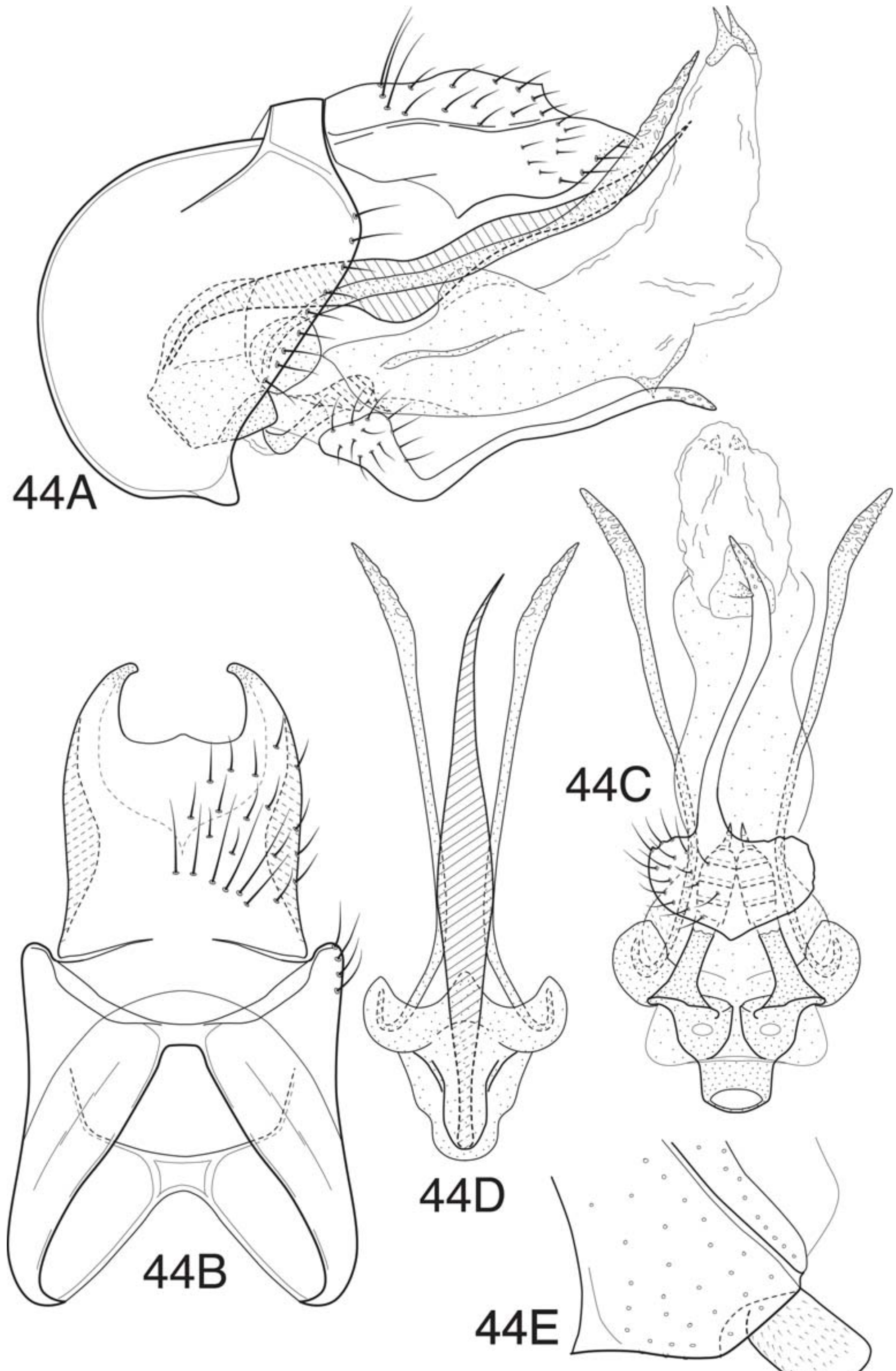
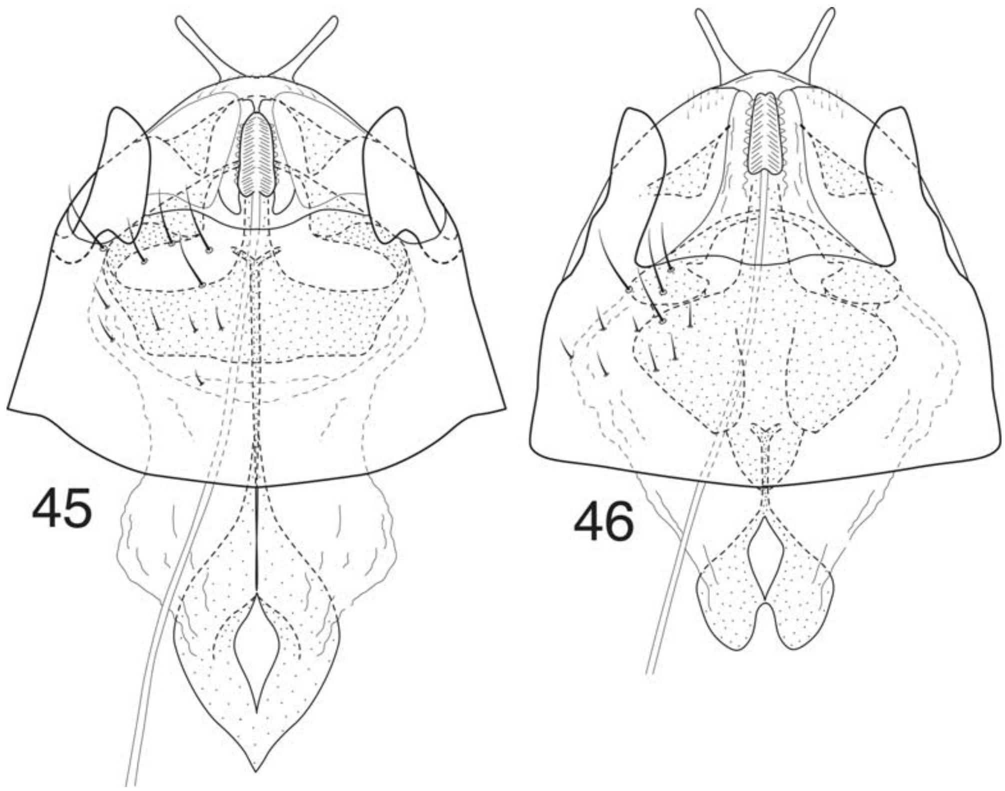


Figure 44. *Mortoniella* (*Mortoniella*) *ruedae*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and paramere appendages, dorsal; **E**—ventral process of segment VI, lateral.



Figures 45-46. *Mortoniella ruedae* and *Mortoniella simla*, female genitalia.**45**—*Mortoniella* (*Mortoniella*) *ruedae*, new species, ventral. **46**—*Mortoniella* (*Mortoniella*) *simla* (Flint), ventral.

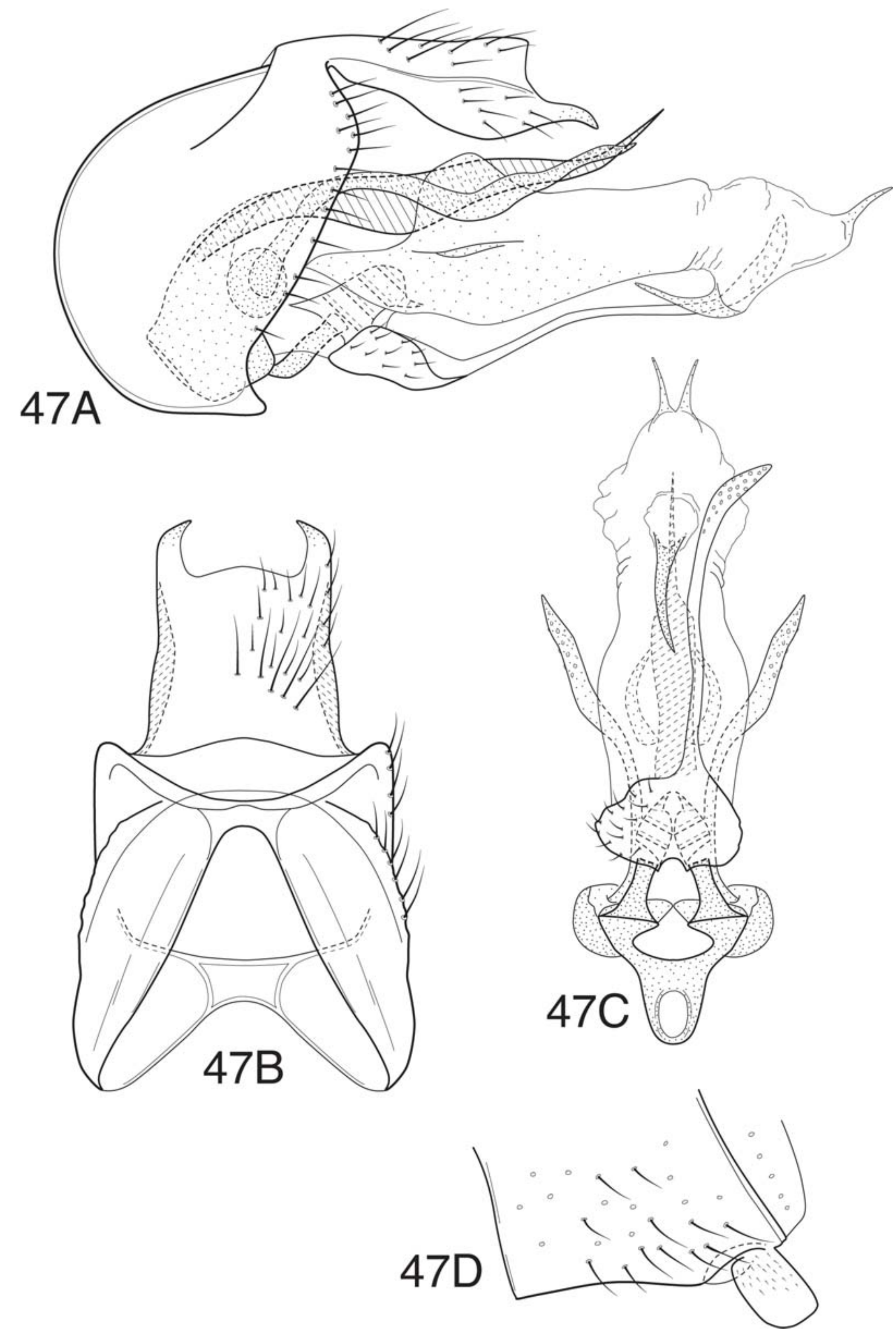


Figure 47. *Mortoniella* (*Mortoniella*) *simla* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—ventral process of segment VI, lateral.

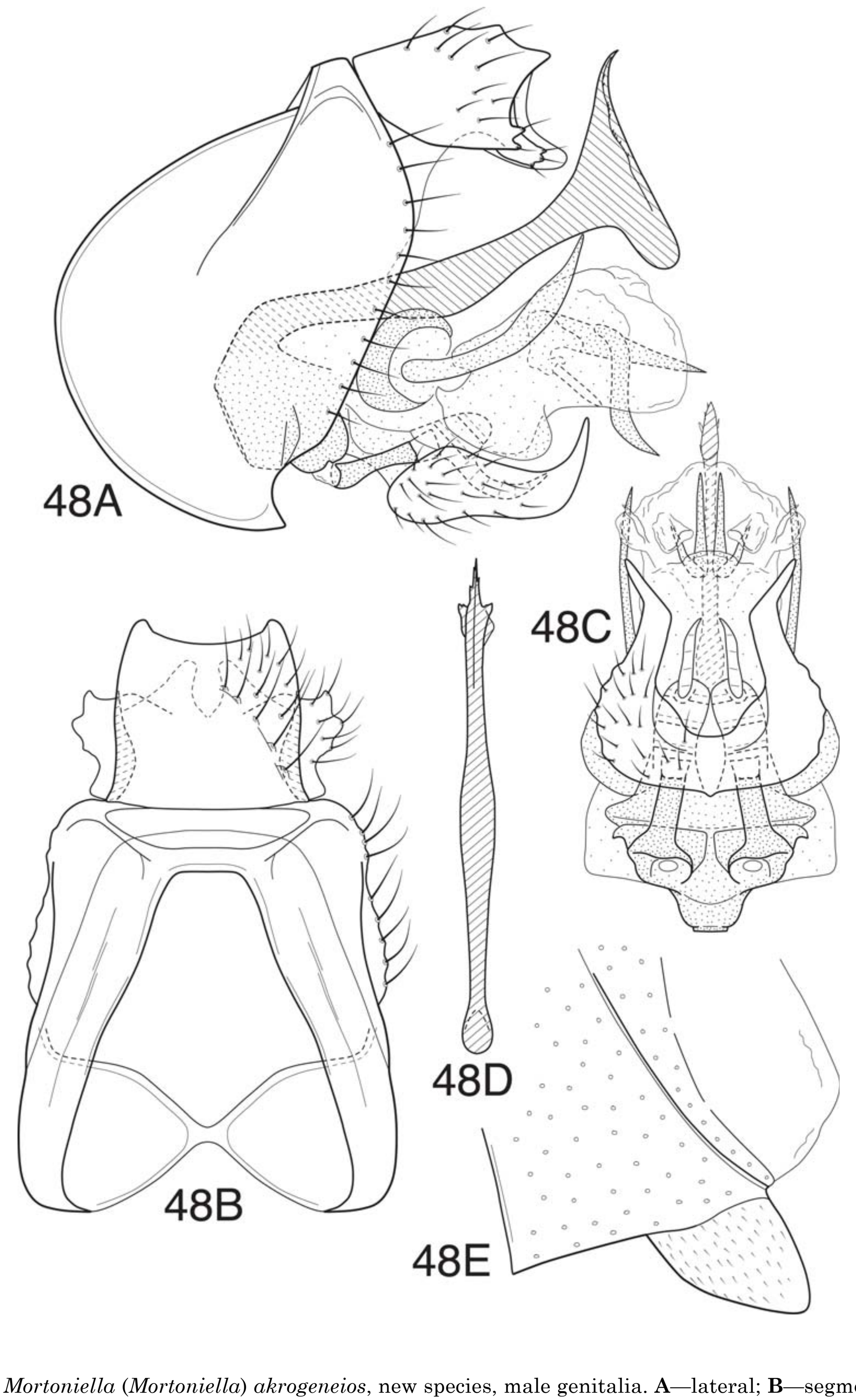


Figure 48. *Mortoniella* (*Mortoniella*) *akrogeneios*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

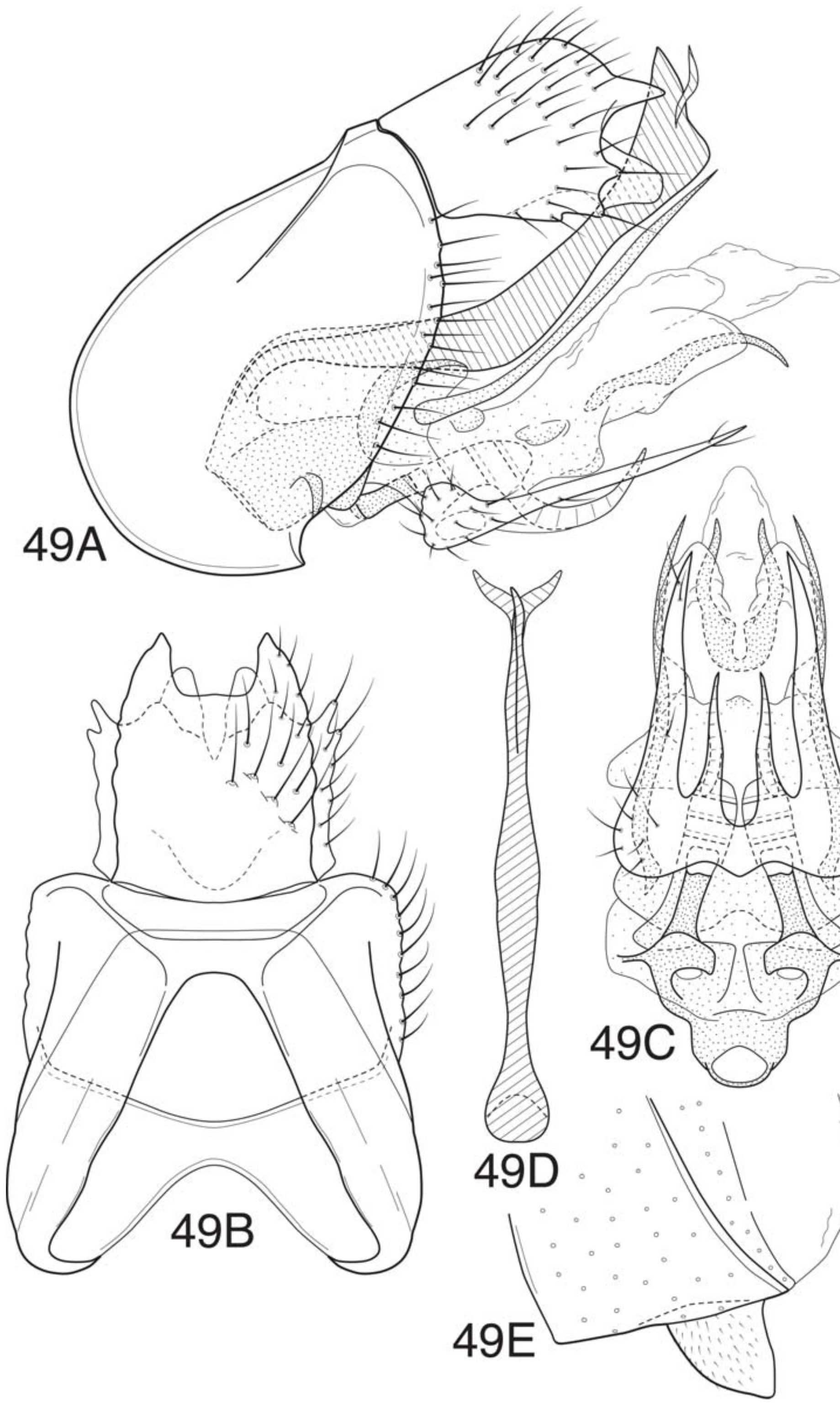


Figure 49. *Mortoniella* (*Mortoniella*) *auricularis*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

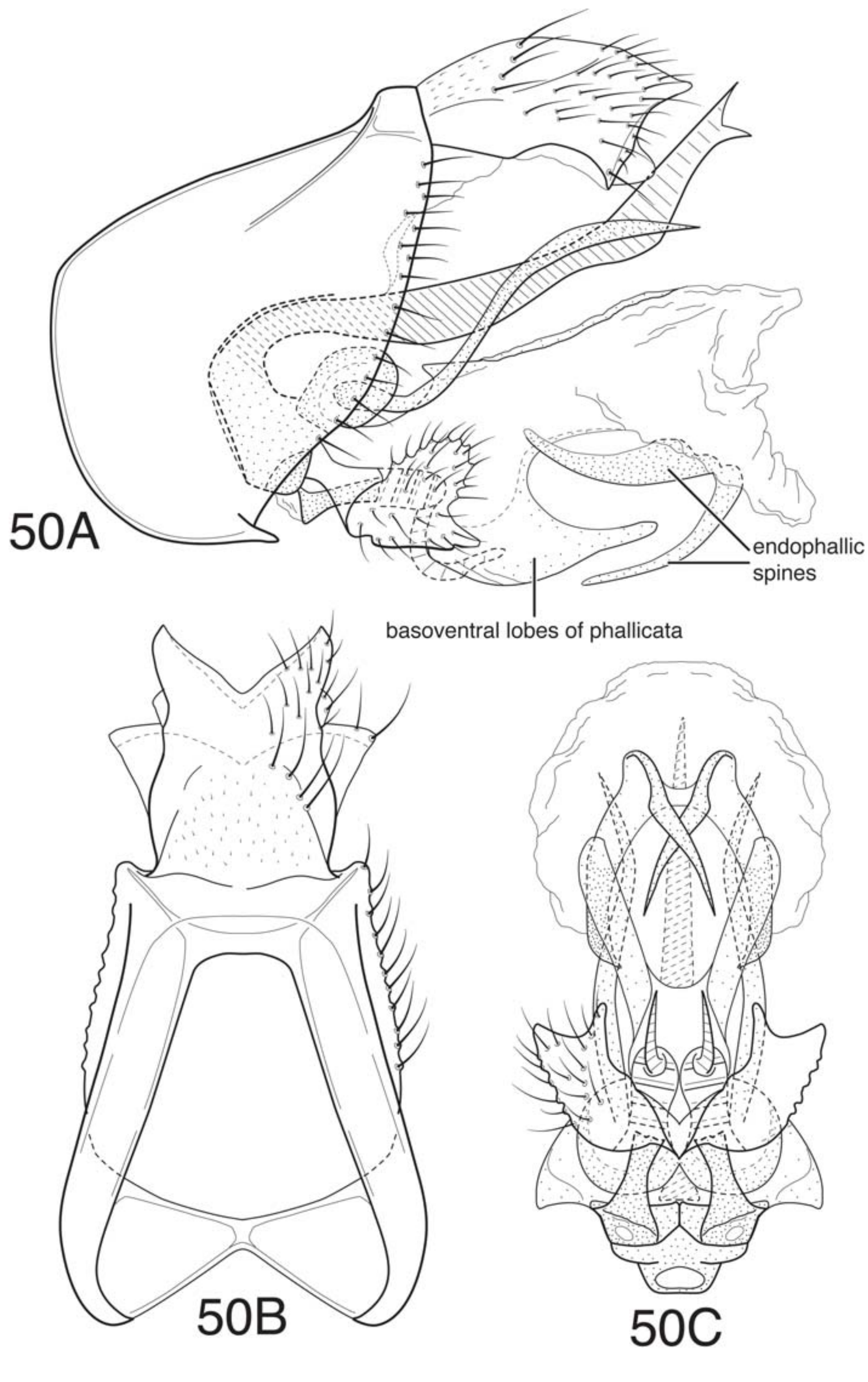


Figure 50. *Mortoniella* (*Mortoniella*) *gracilis*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral.

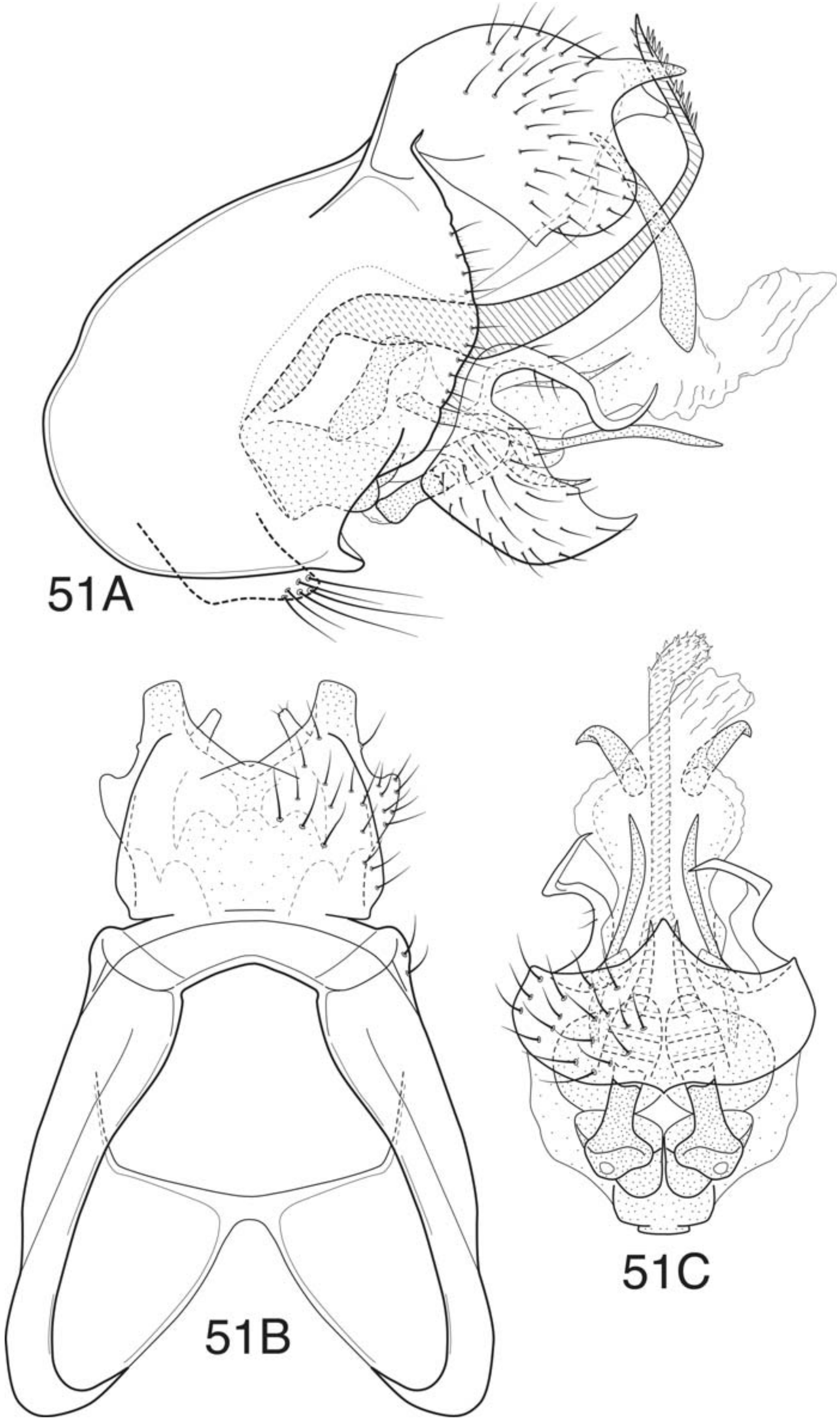


Figure 51. *Mortoniella* (*Mortoniella*) *guyanensis*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral.

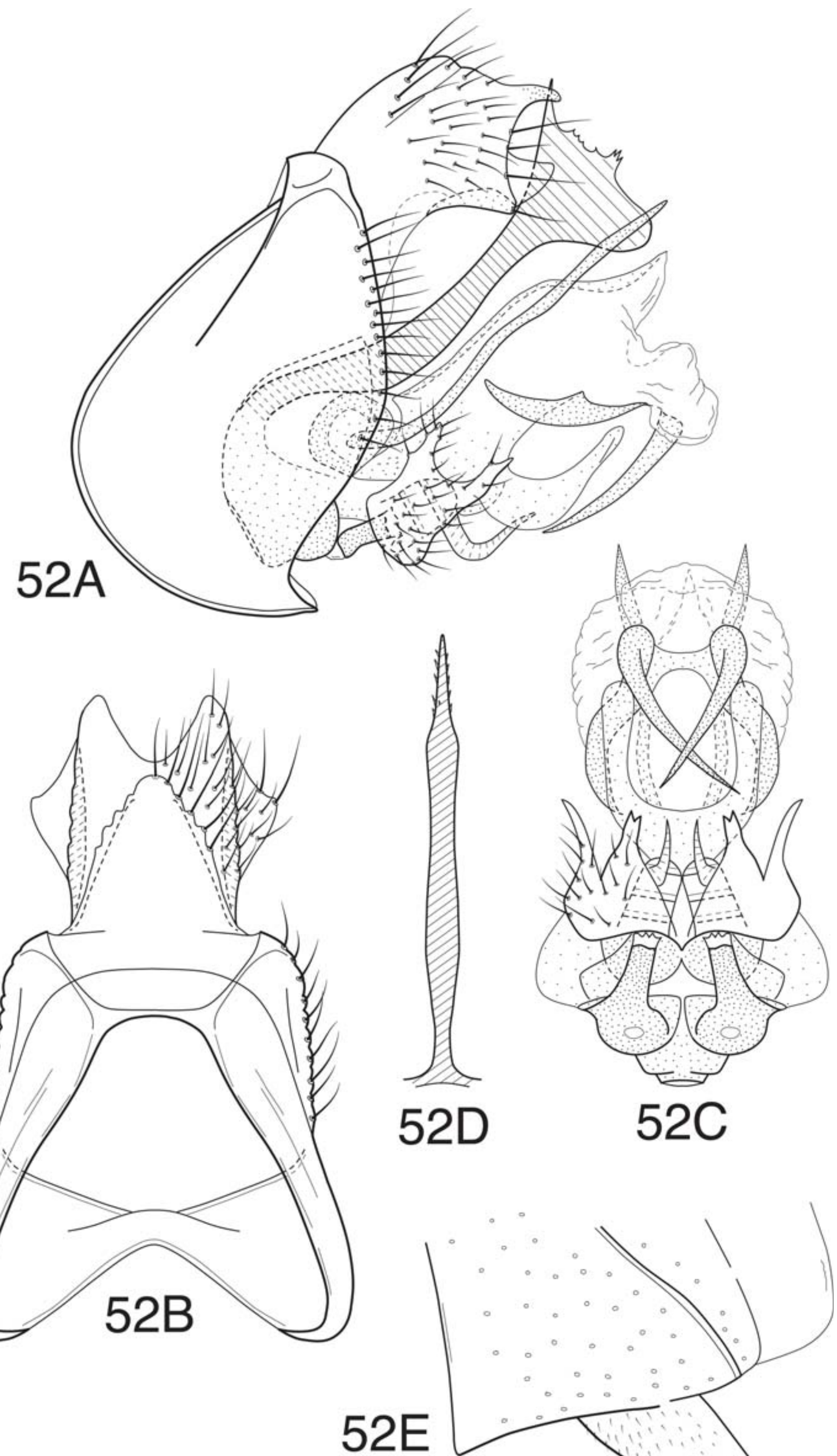


Figure 52. *Mortoniella* (*Mortoniella*) *limona* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

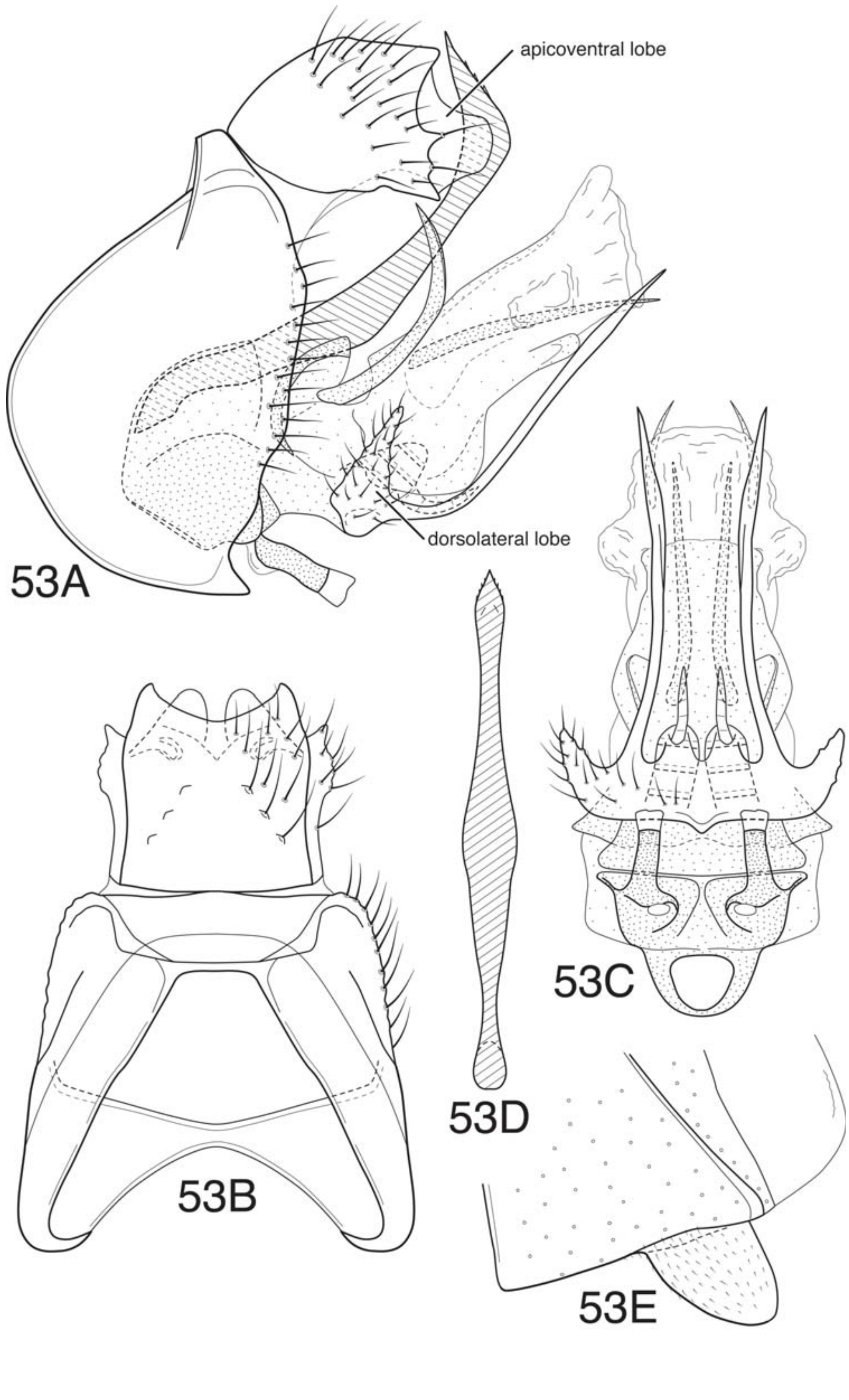


Figure 53. *Mortoniella* (*Mortoniella*) *prolata*, new species, male genitalia;**A**—lateral.**B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

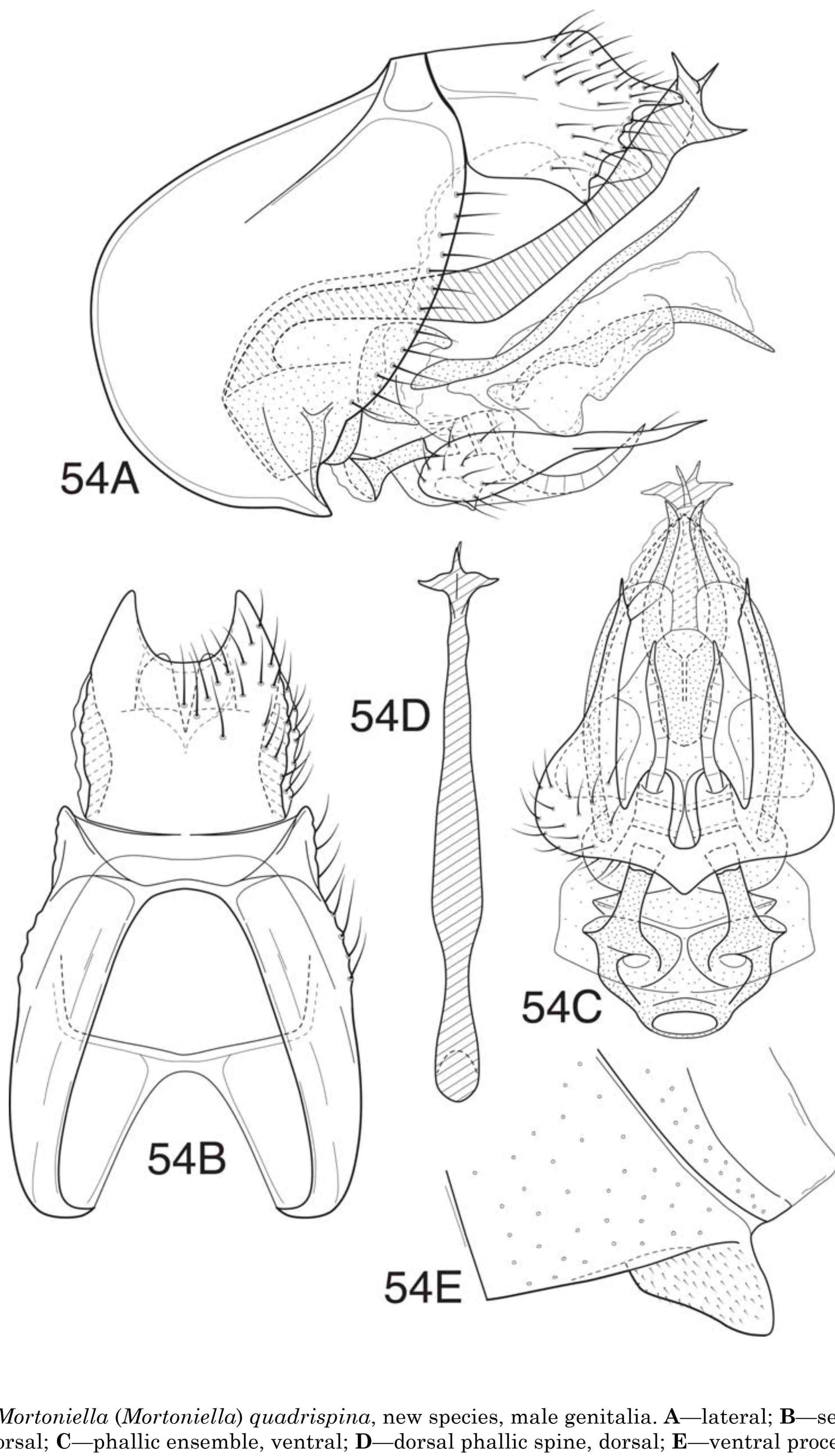


Figure 54. *Mortoniella* (*Mortoniella*) *quadrispina*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

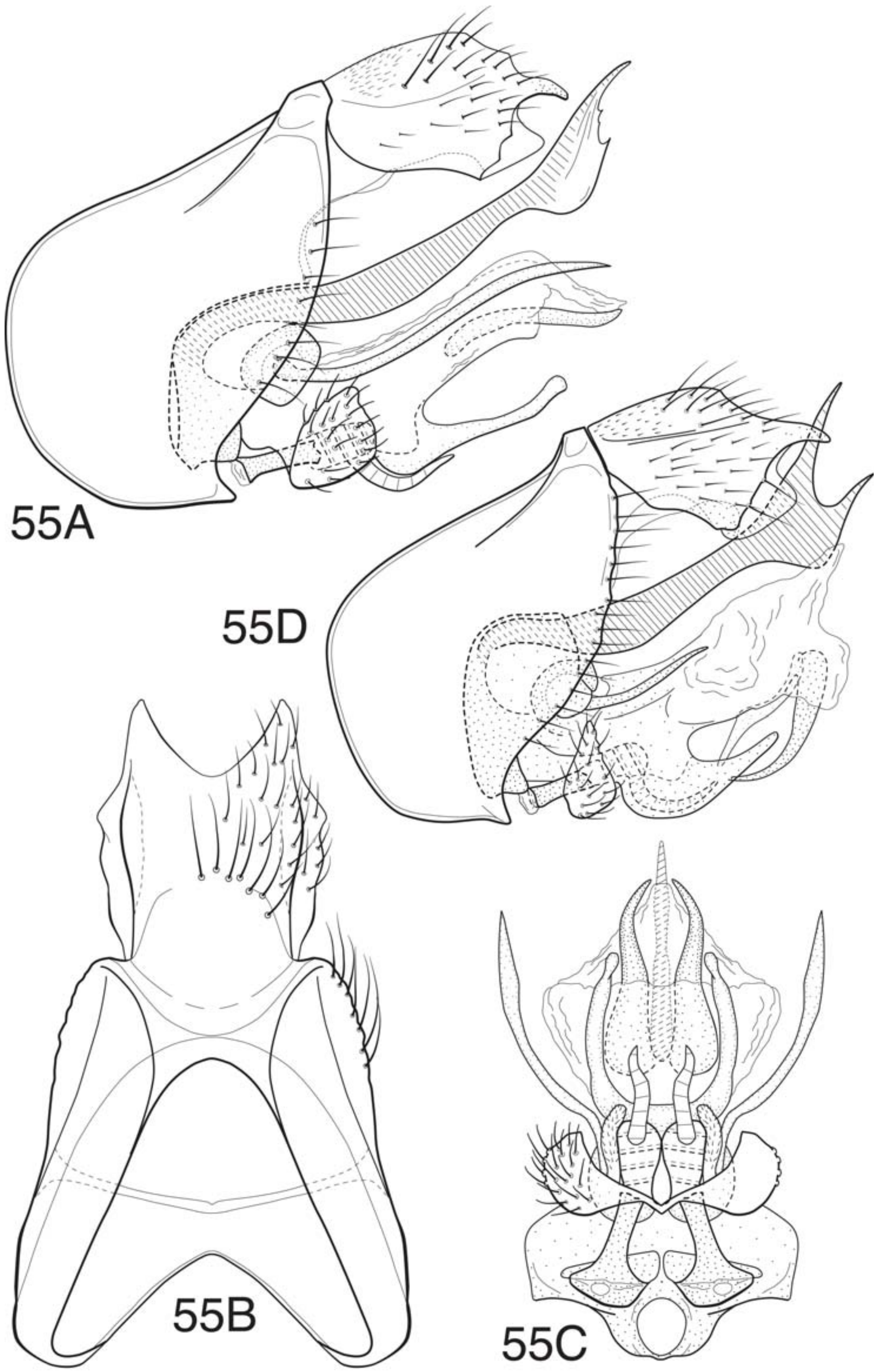


Figure 55. *Mortoniella* (*Mortoniella*) *variabilis*, new species male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—lateral, specimen from Colombia.

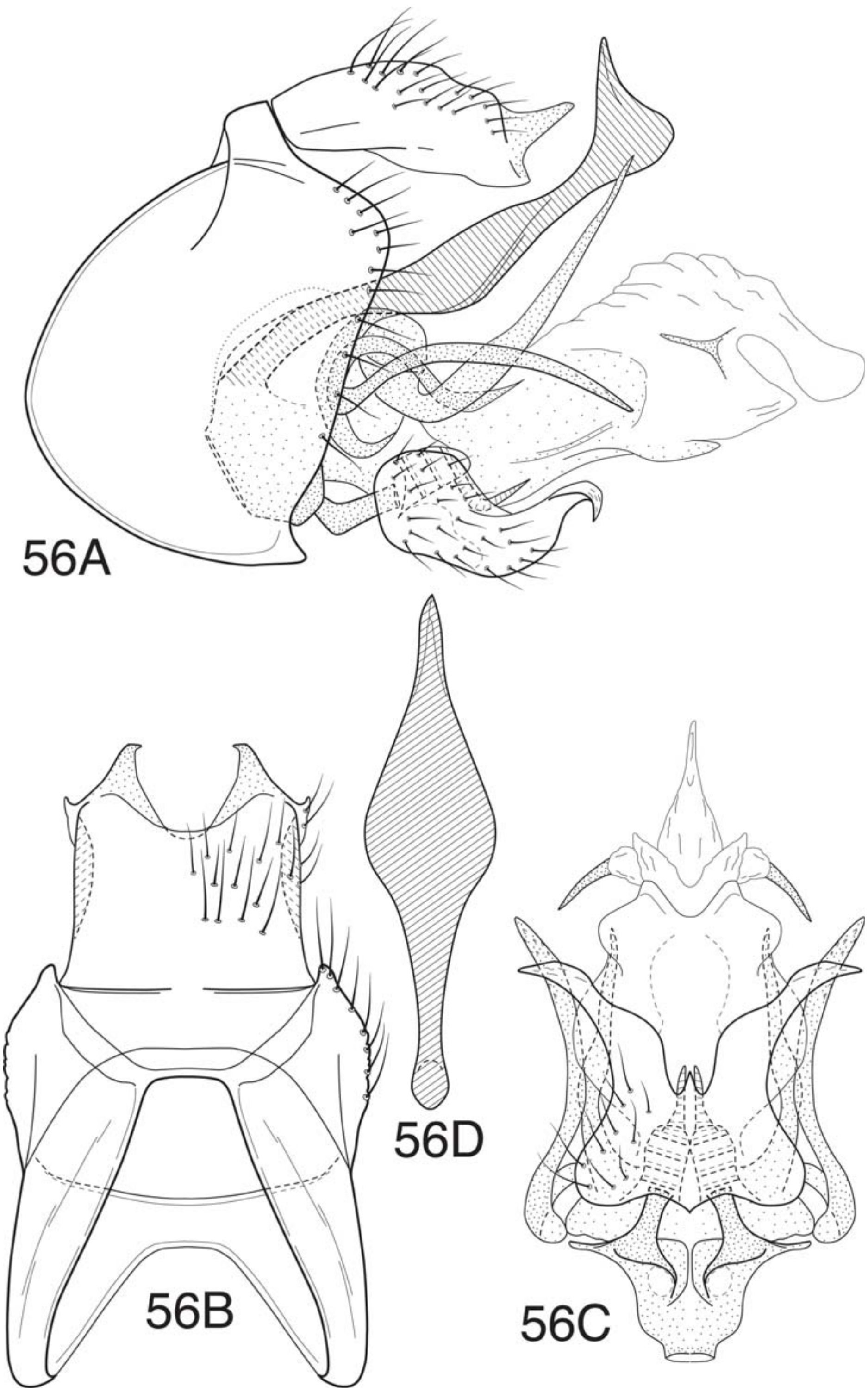


Figure 56. *Mortoniella* (*Mortoniella*) *pocita* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal.

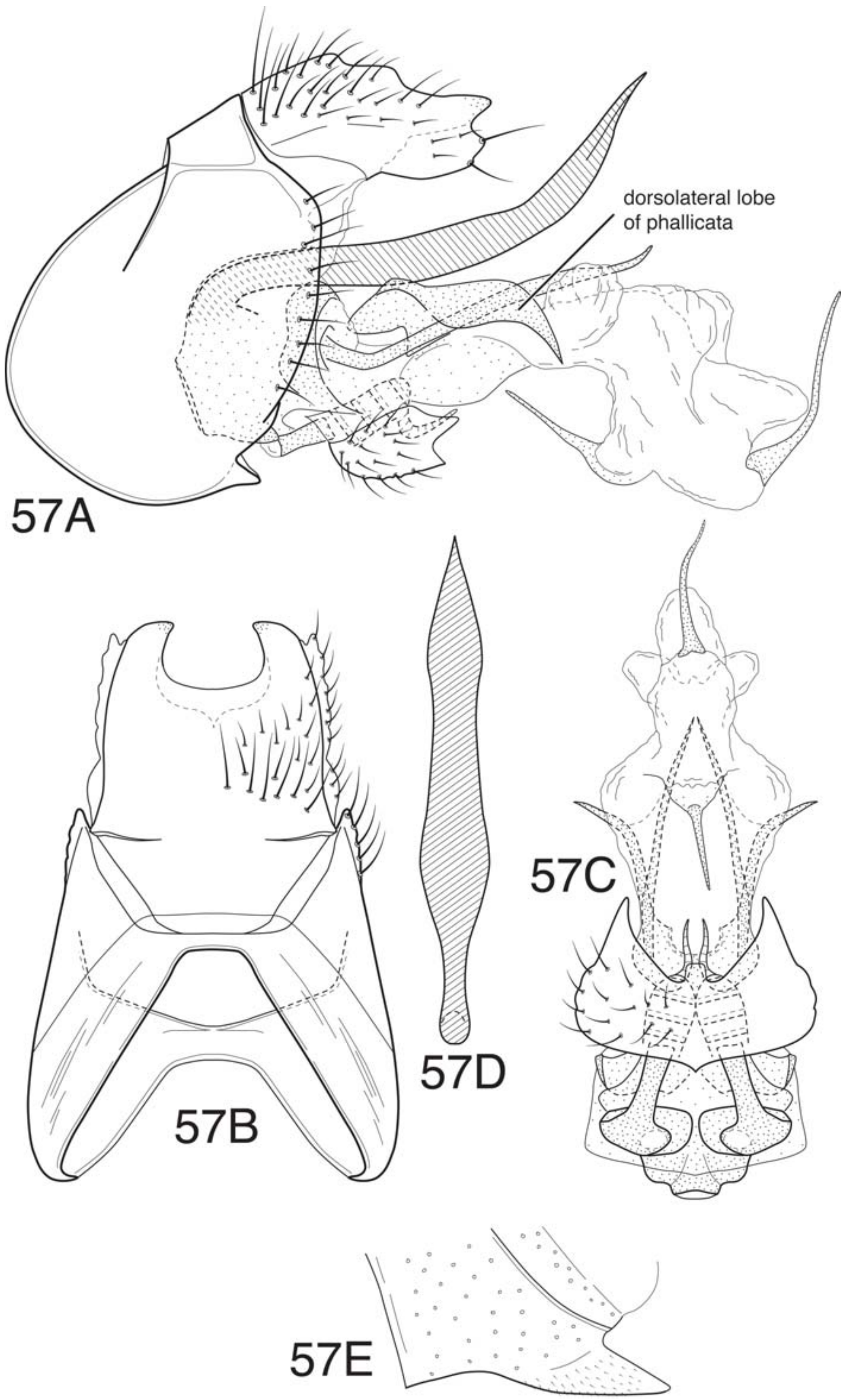


Figure 57. *Mortoniella* (*Mortoniella*) *chalalan*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

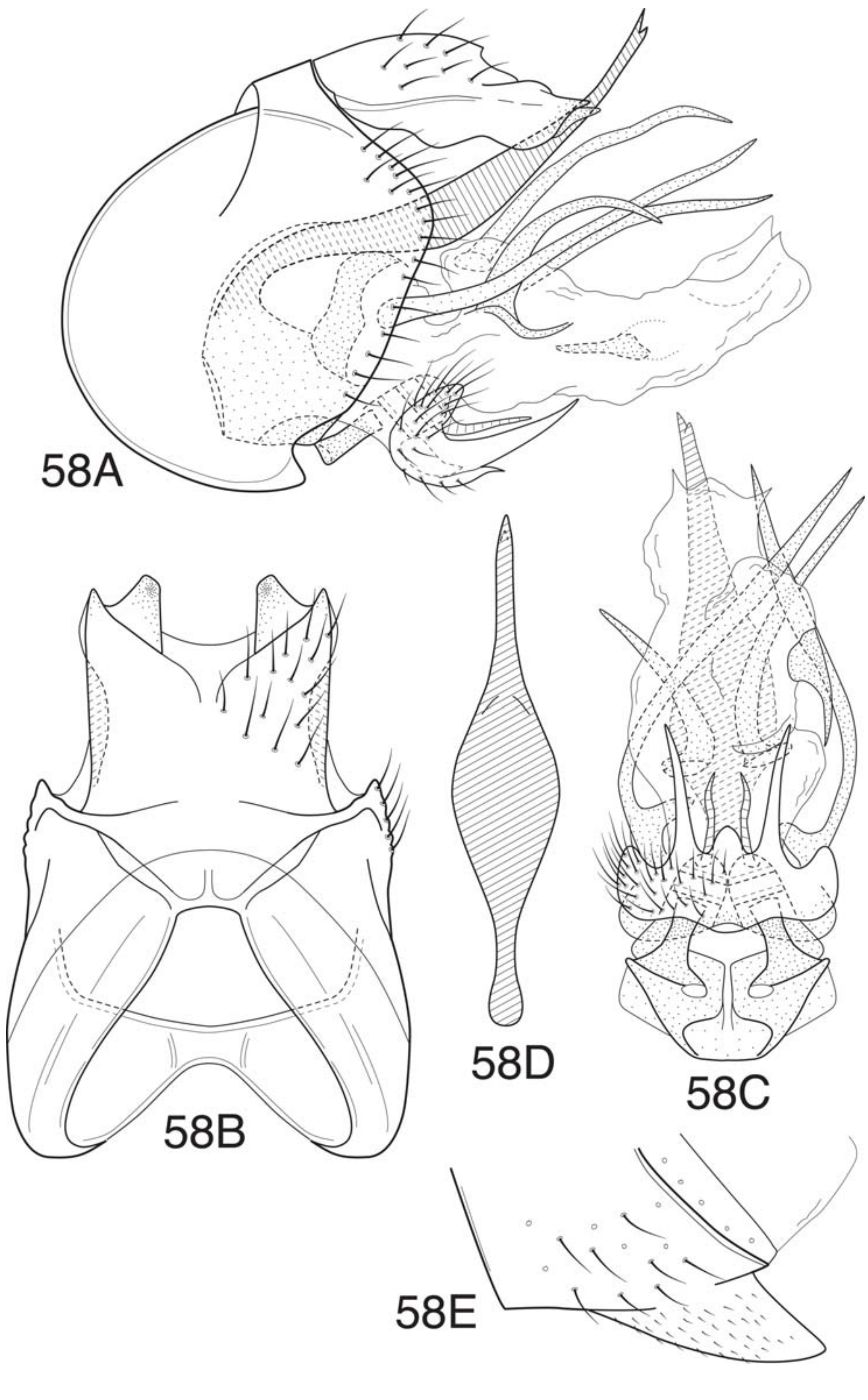


Figure 58. *Mortoniella* (*Mortoniella*) *dentiterga*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

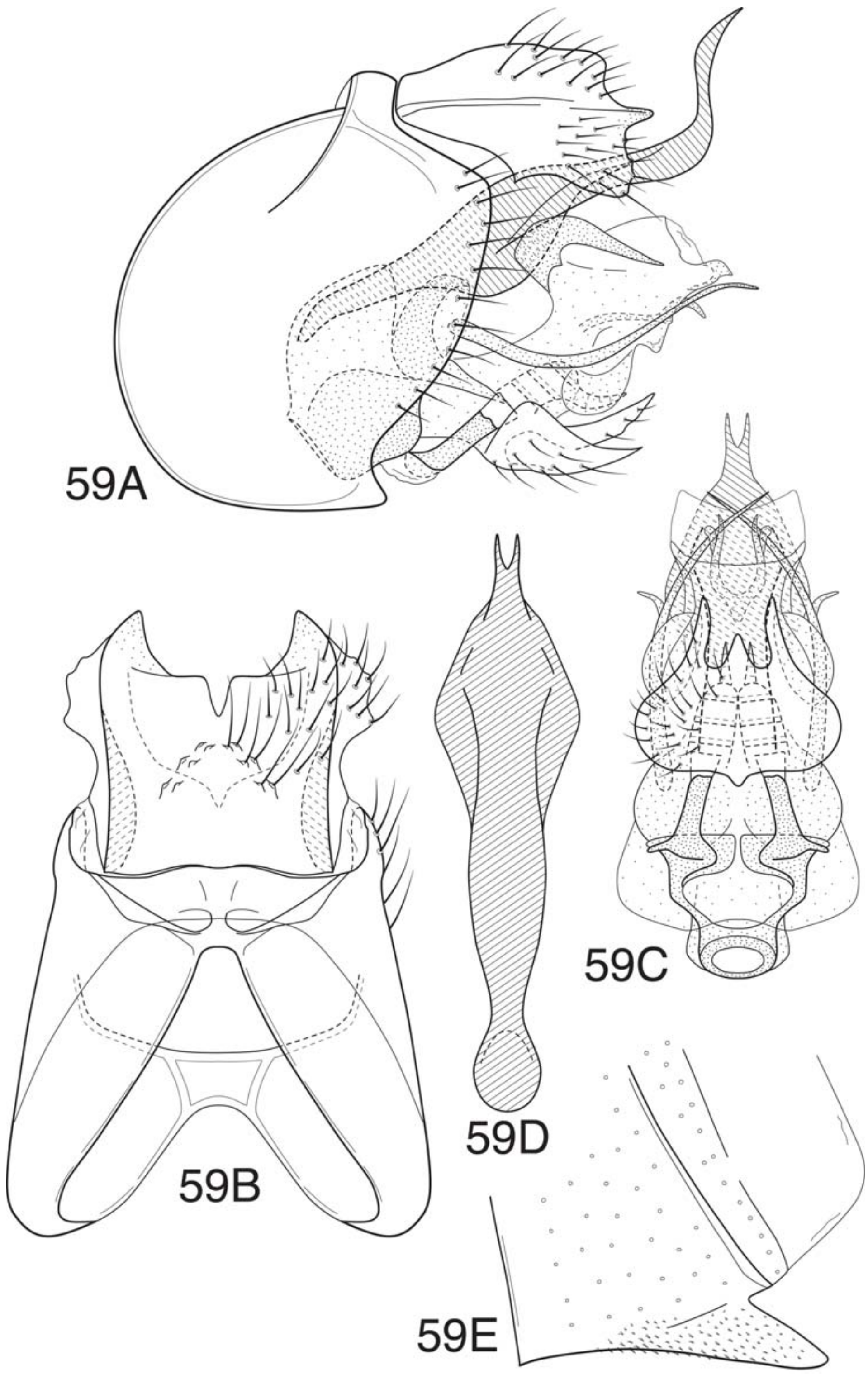


Figure 59. *Mortoniella* (*Mortoniella*) *emarginata*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

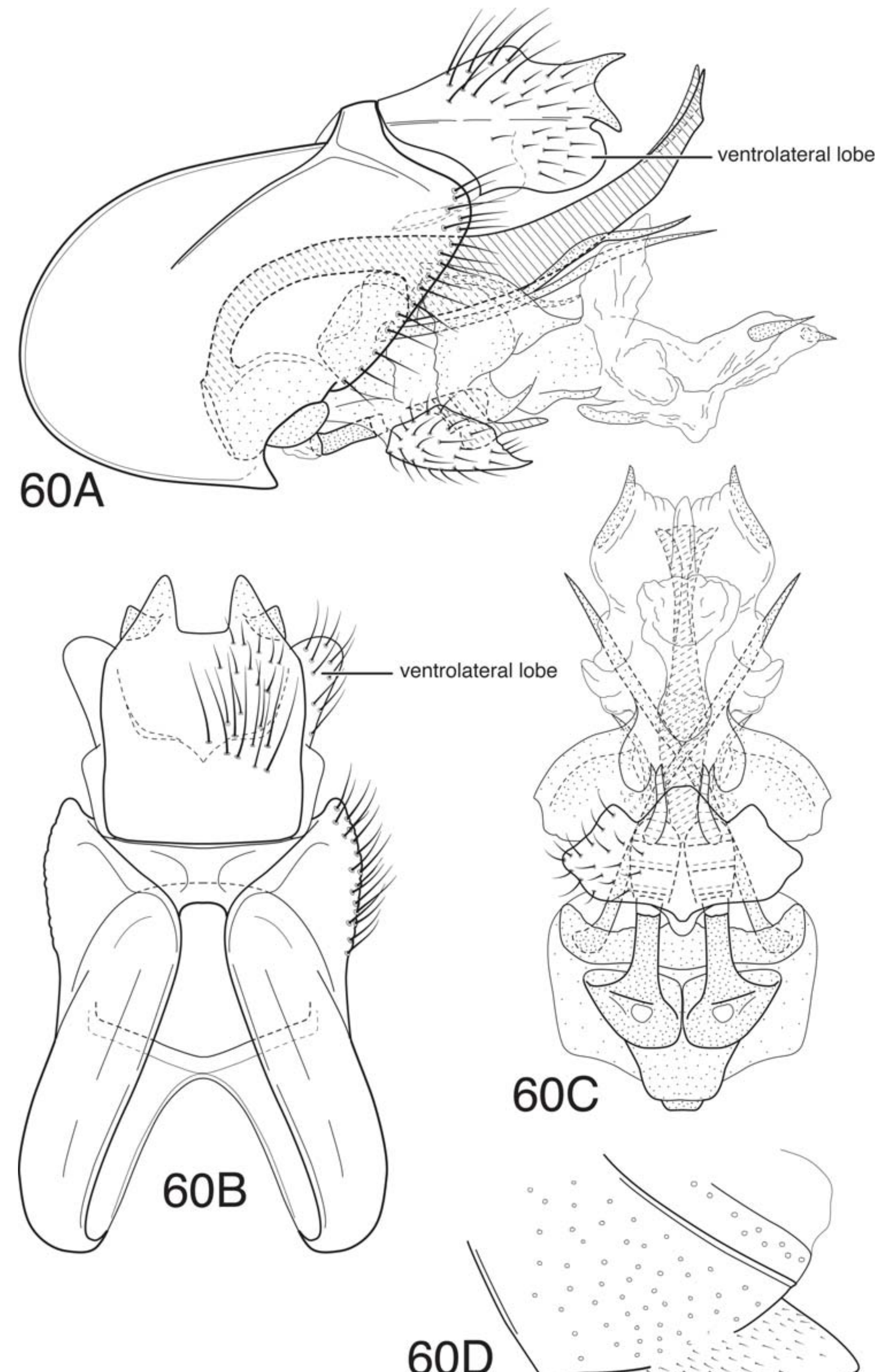


Figure 60. *Mortoniella* (*Mortoniella*) *marini* (Rueda Martín and Gibon), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—ventral process of segment VI, lateral.

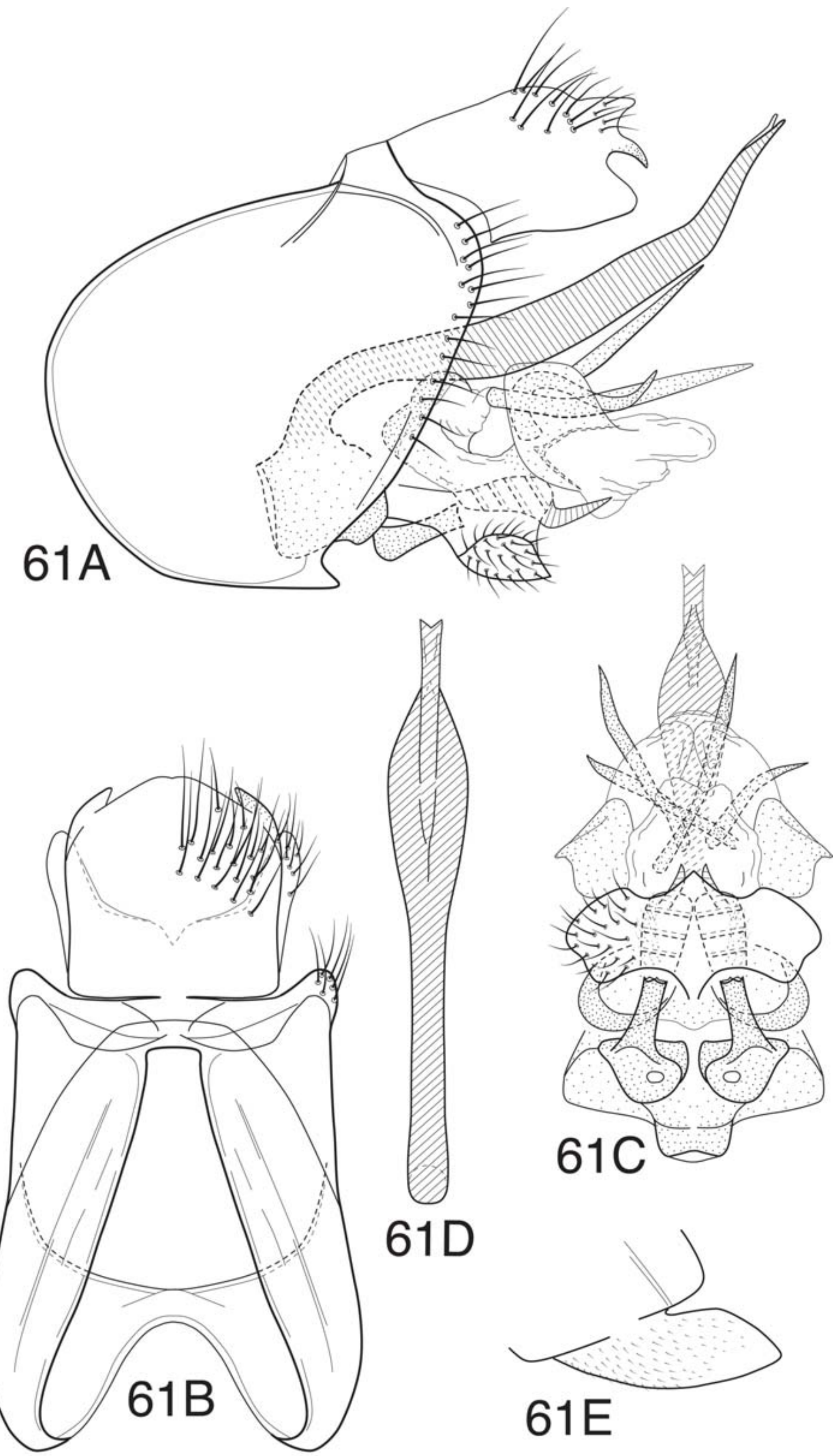


Figure 61. *Mortoniella* (*Mortoniella*) *punensis* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

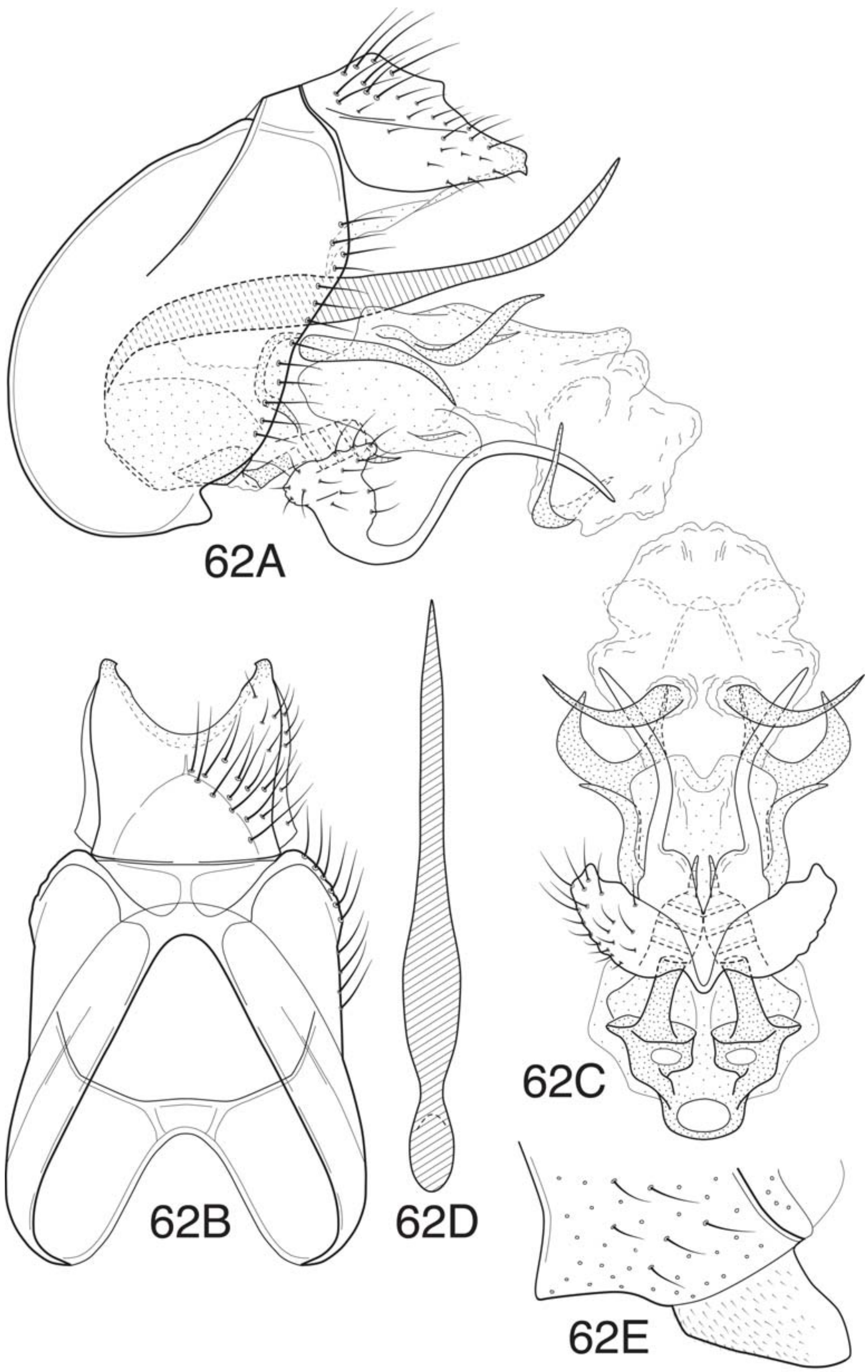


Figure 62. *Mortoniella* (*Mortoniella*) *sinuosa*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

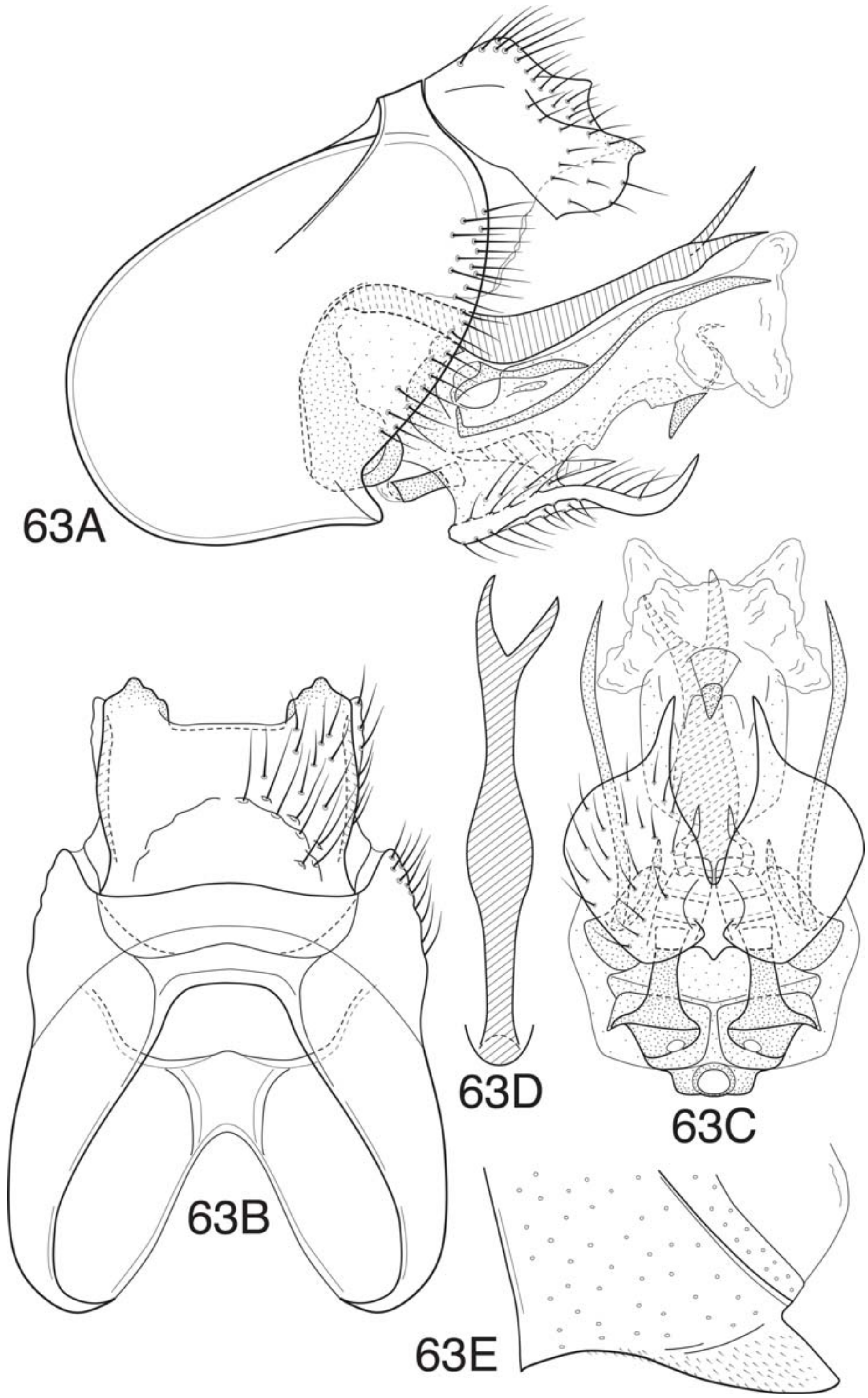


Figure 63. *Mortoniella* (*Mortoniella*) *applanata*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

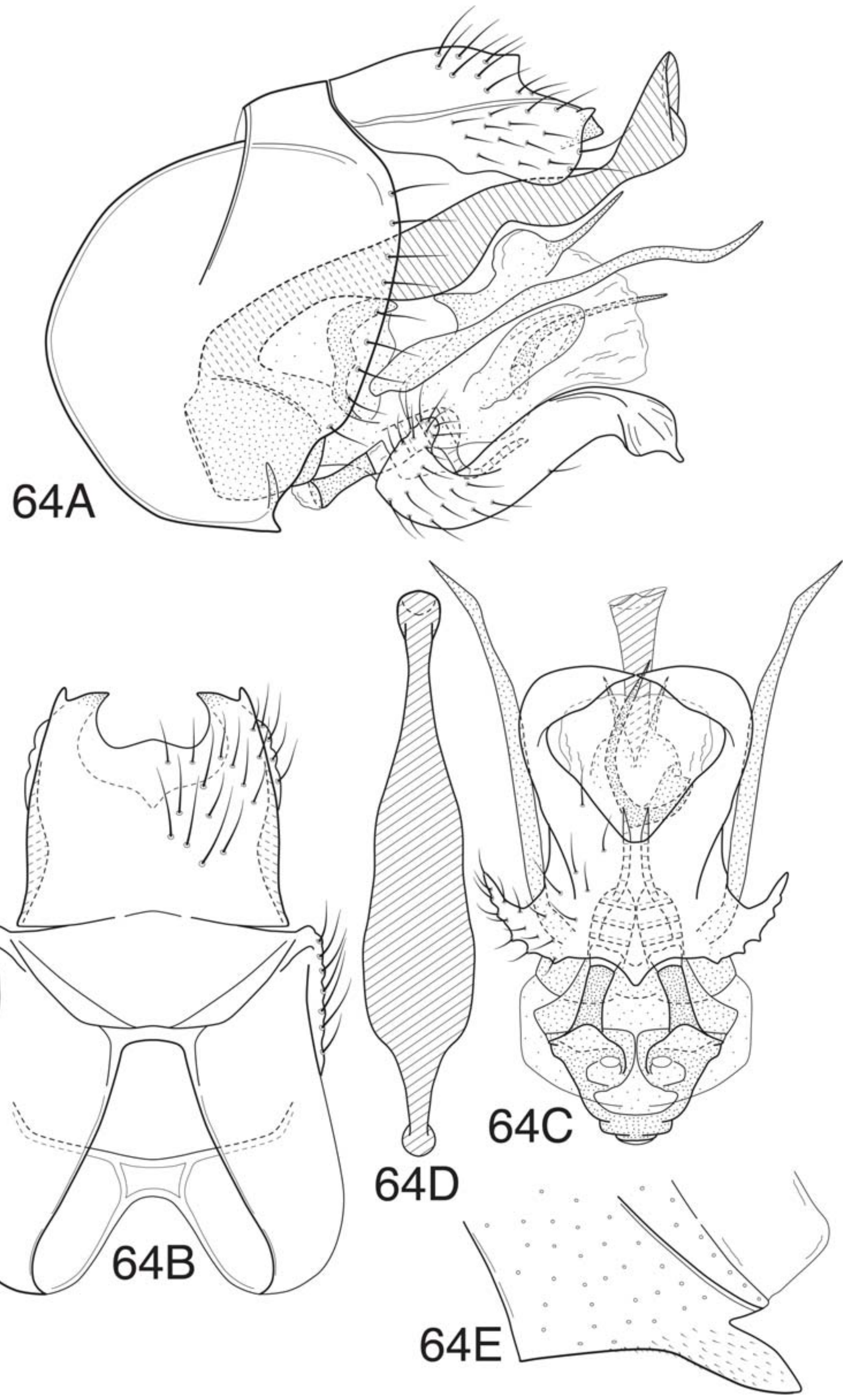


Figure 64. *Mortoniella* (*Mortoniella*) *barinasi*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

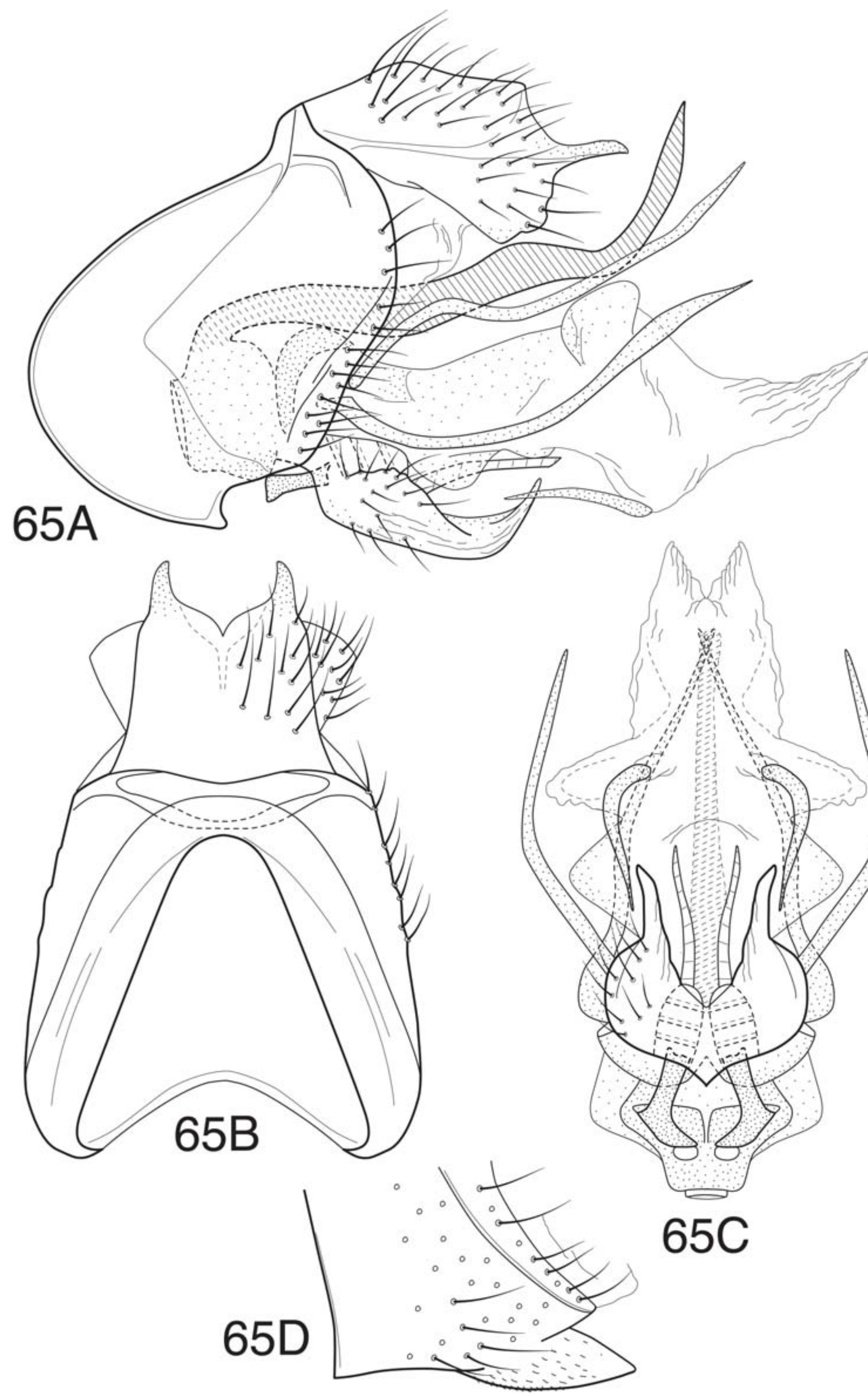


Figure 65. *Mortoniella* (*Mortoniella*) *biramosa*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—ventral process of segment VI, lateral.

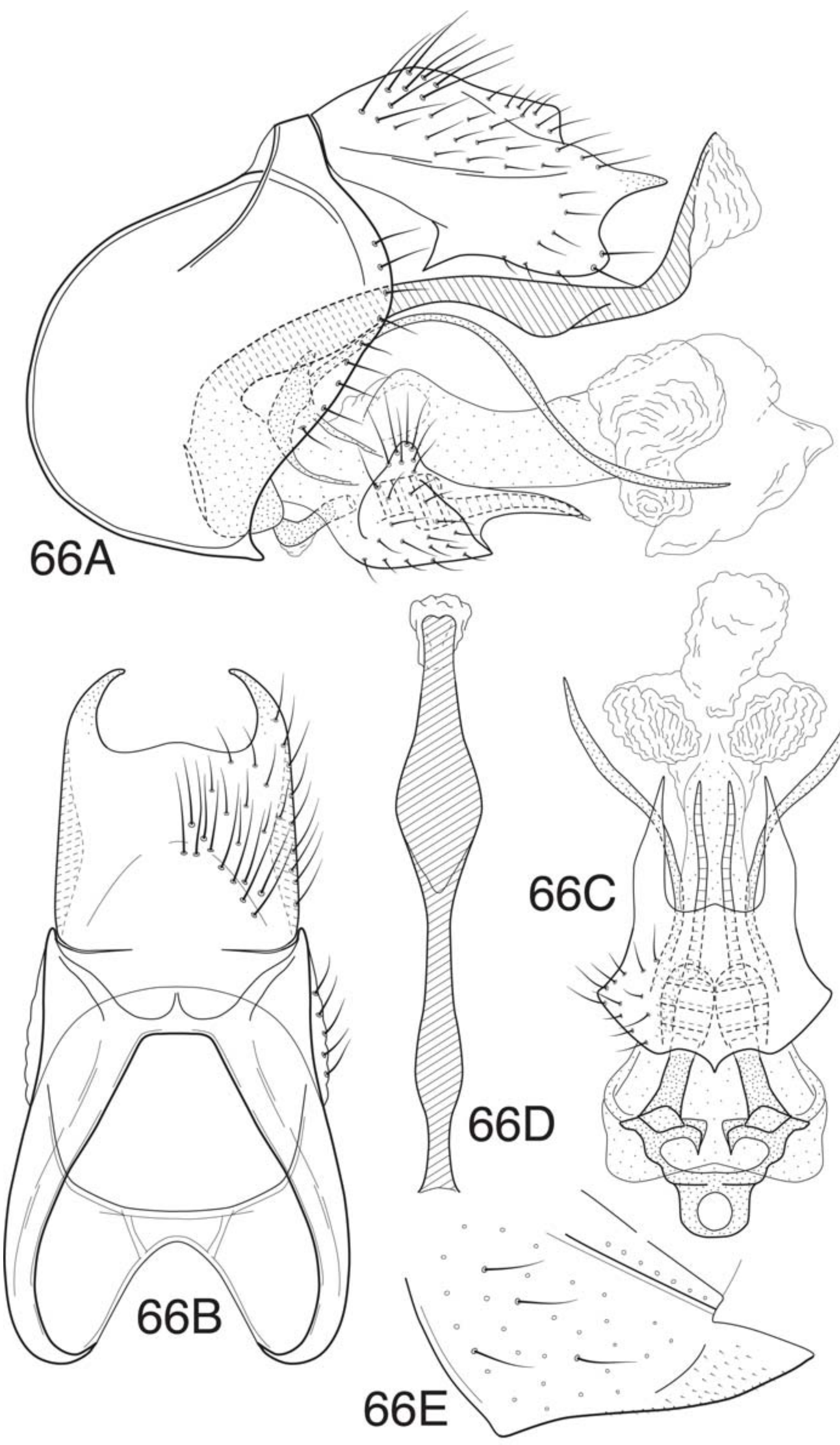


Figure 66. *Mortoniella* (*Mortoniella*) *membranacea*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

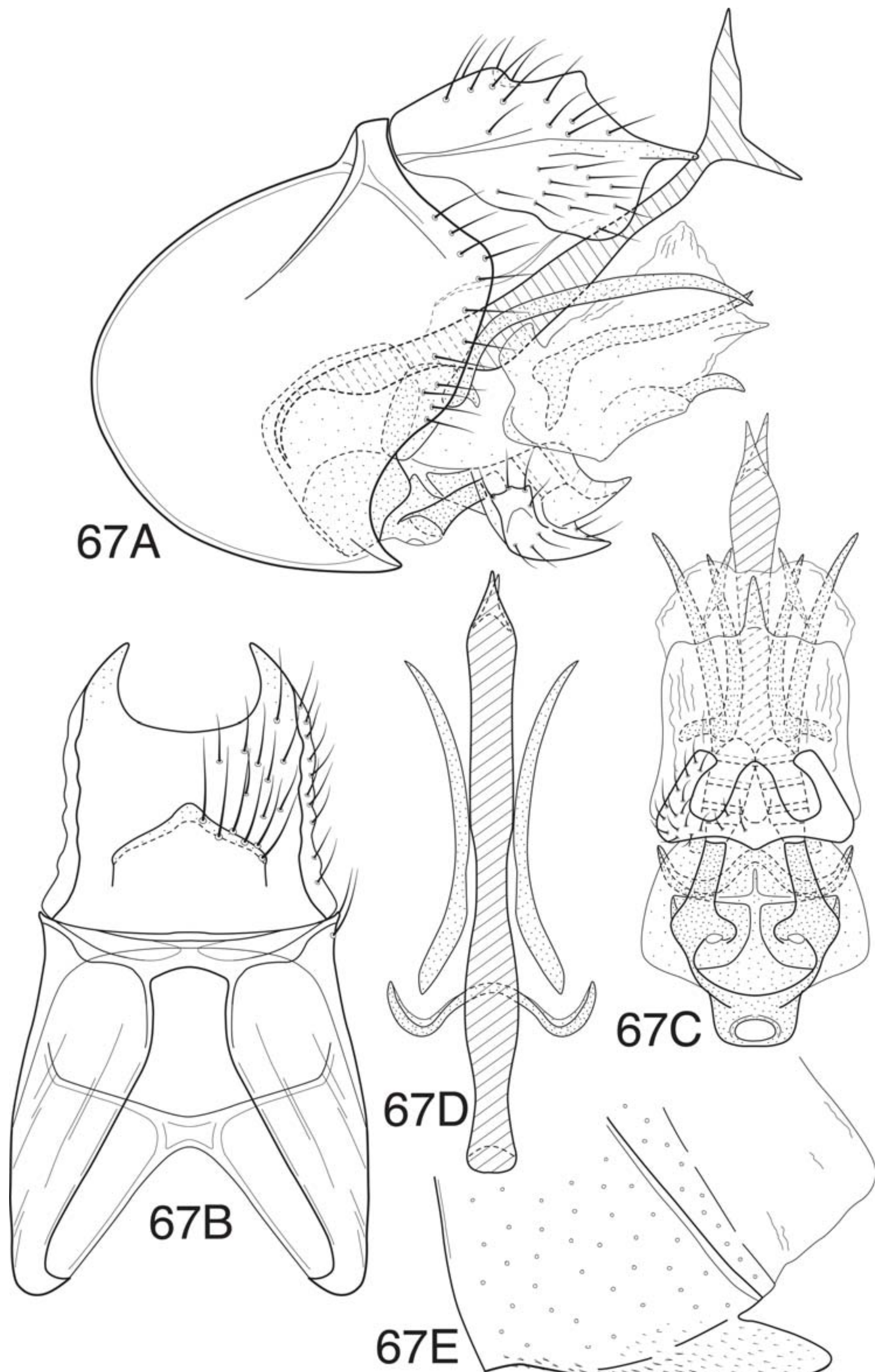


Figure 67. *Mortoniella* (*Mortoniella*) *pica*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and paramere appendages, dorsal; **E**—ventral process of segment VI, lateral.

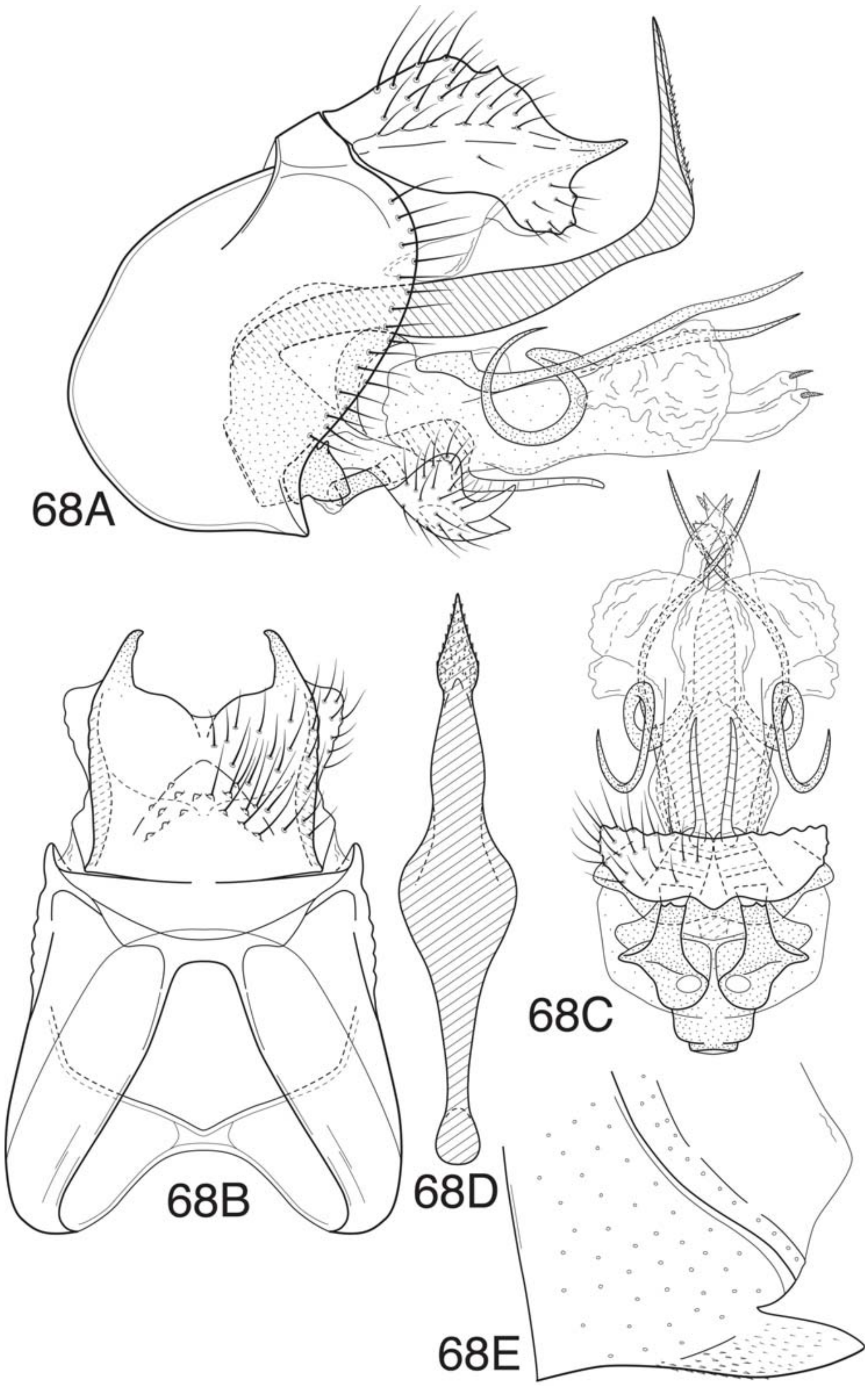


Figure 68. *Mortoniella* (*Mortoniella*) *rectiflexa*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

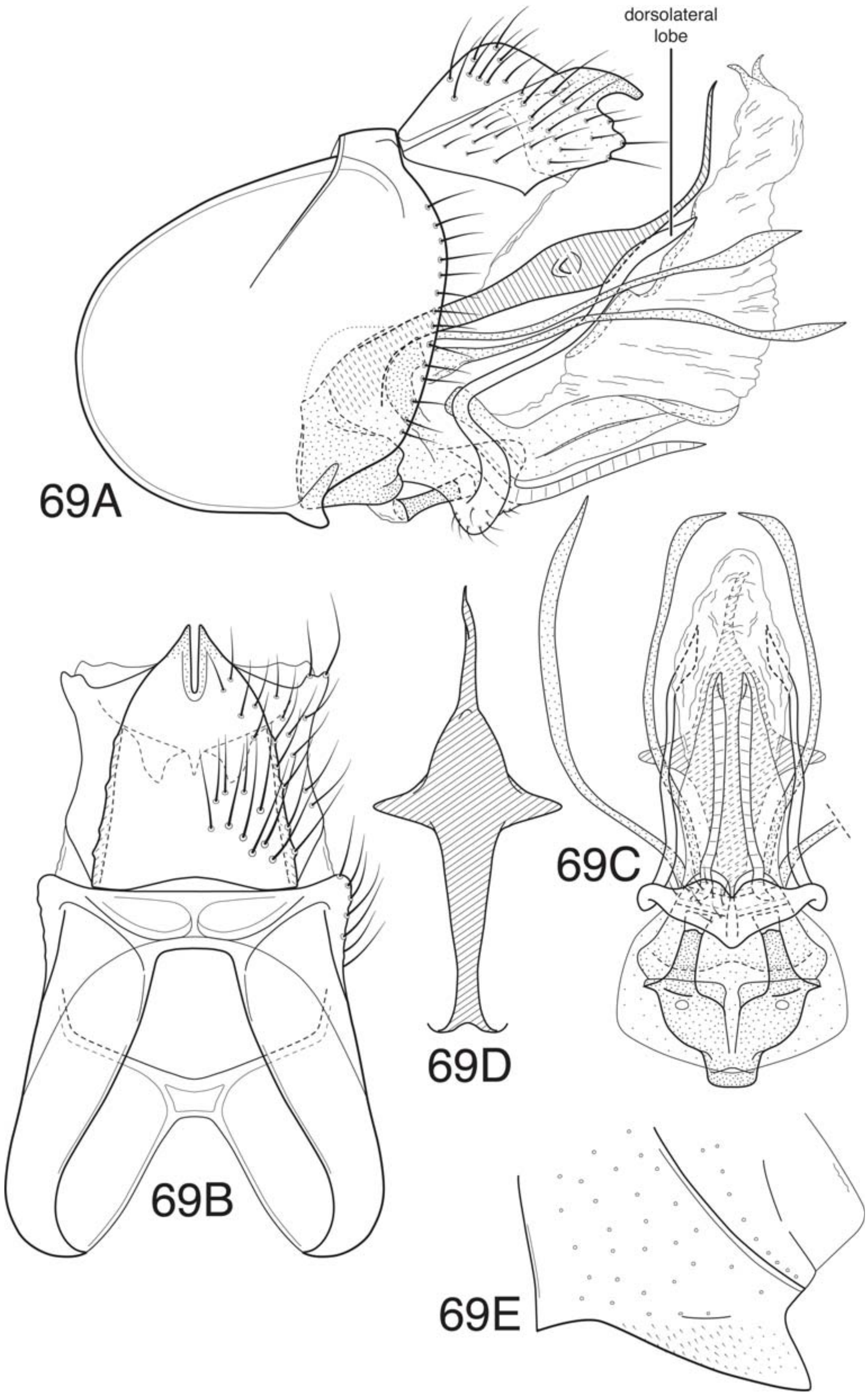


Figure 69. *Mortoniella* (*Mortoniella*) *cornuta*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

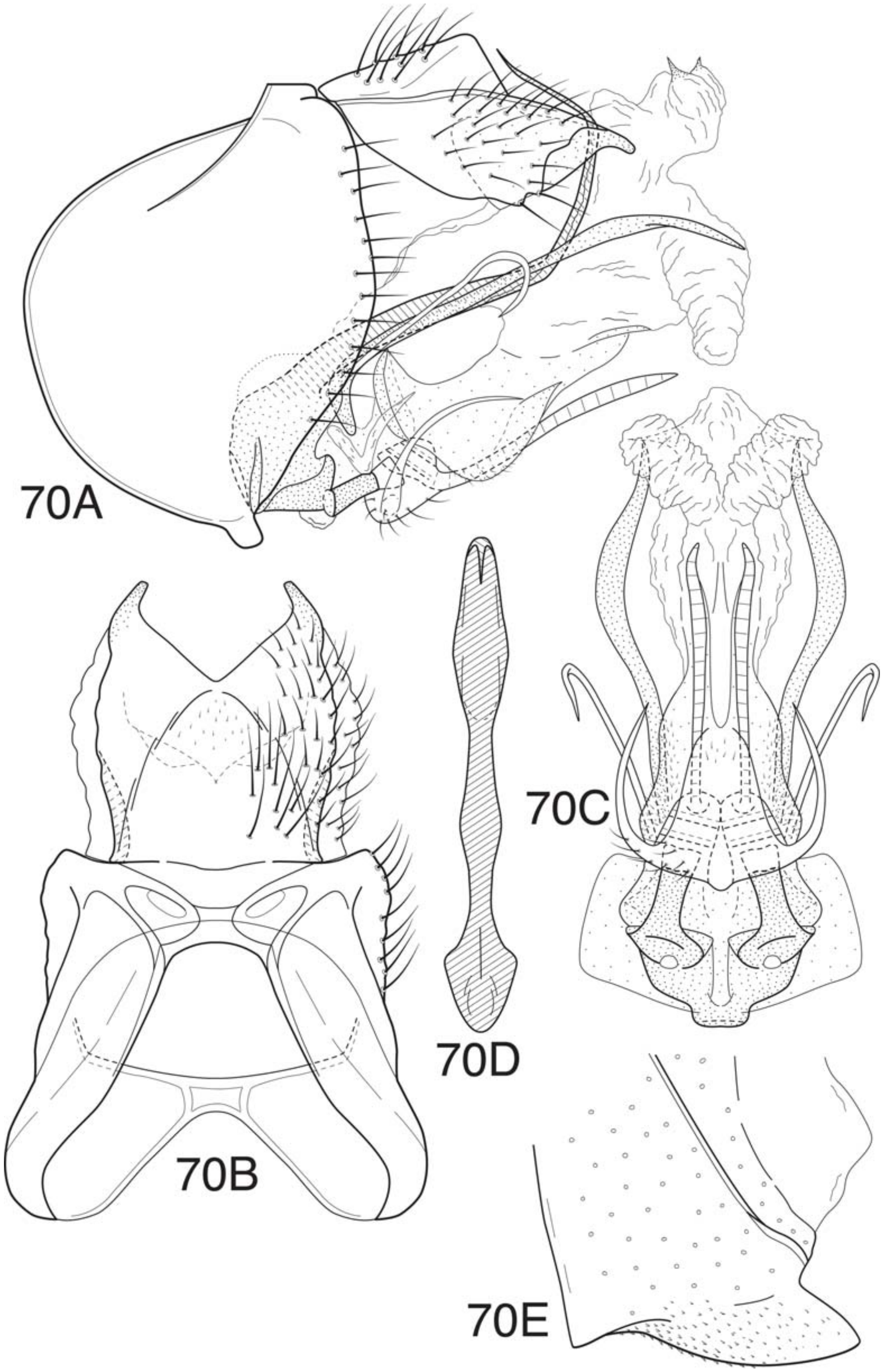


Figure 70. *Mortoniella* (*Mortoniella*) *croca*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

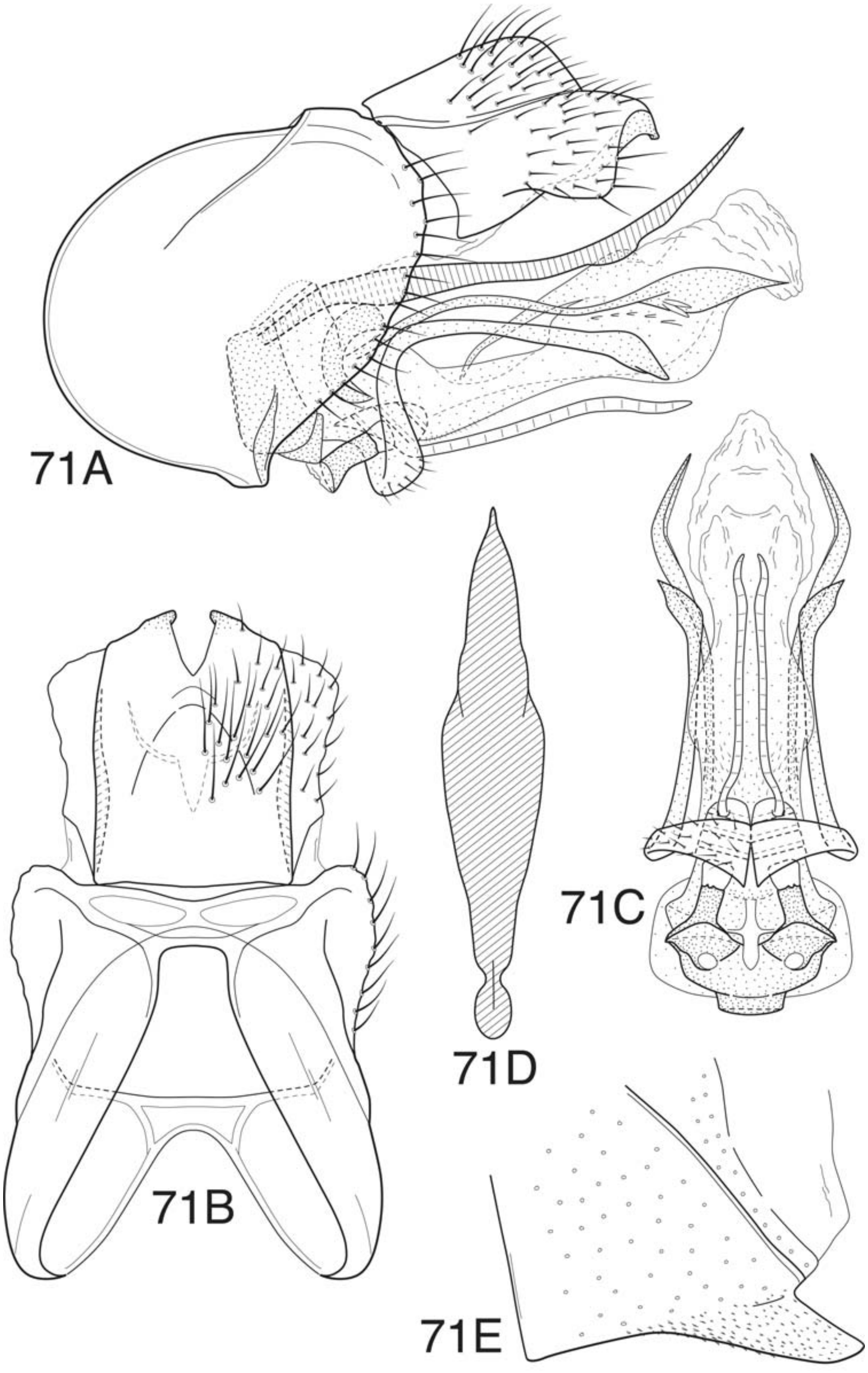


Figure 71. *Mortoniella* (*Mortoniella*) *curvistylus*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

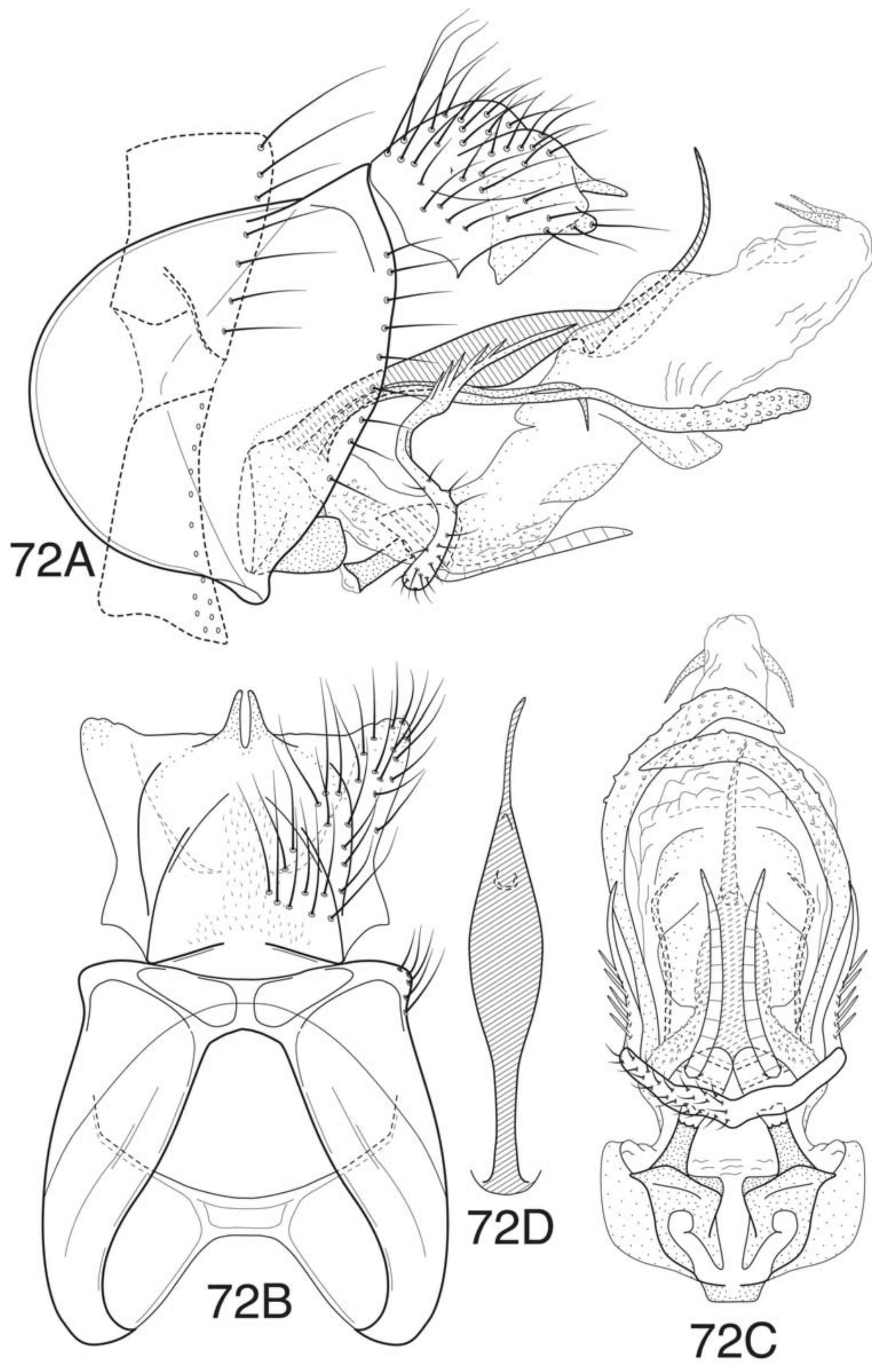


Figure 72. *Mortoniella* (*Mortoniella*) *spinulata* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal.

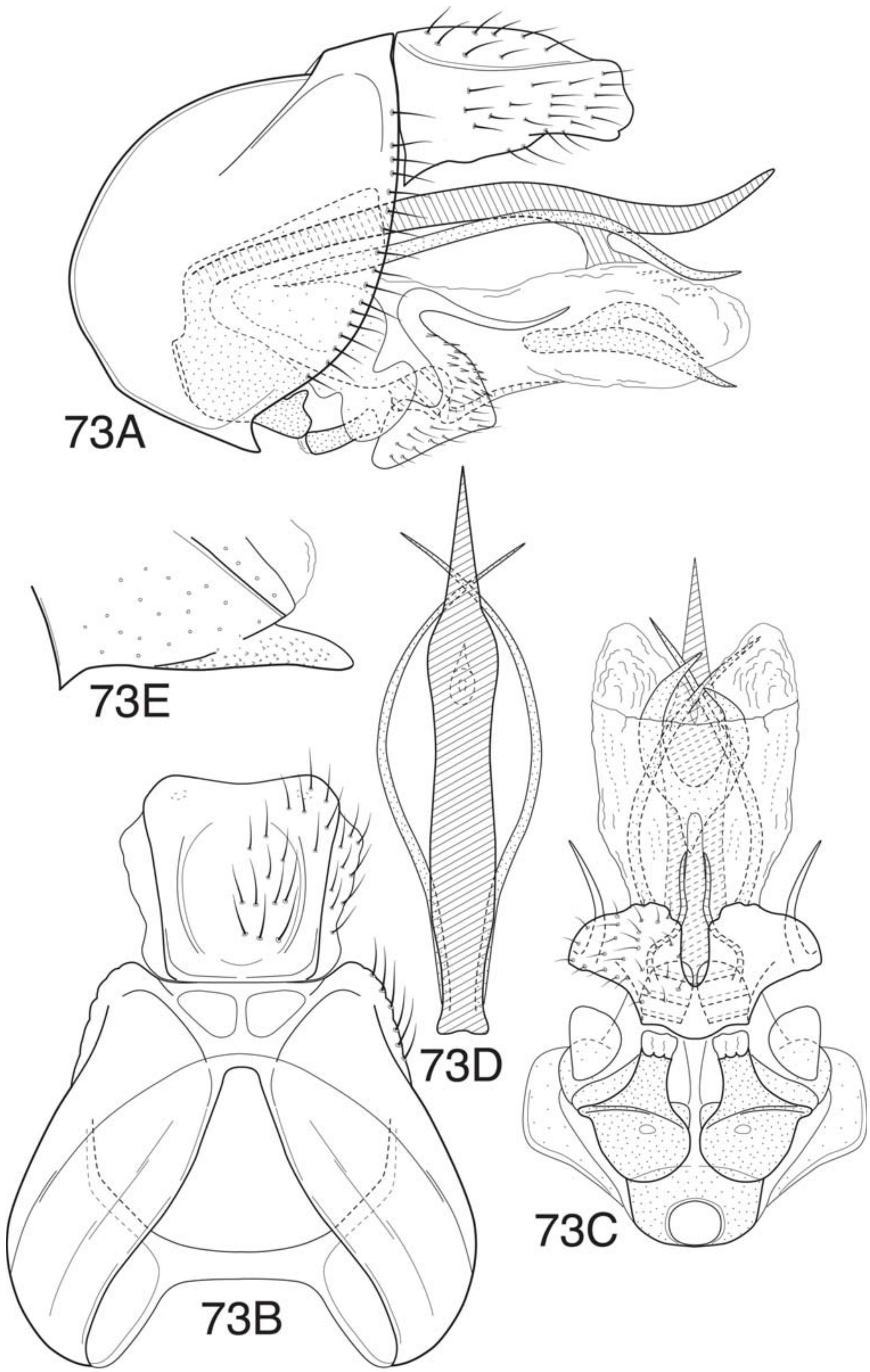


Figure 73. *Mortoniella* (*Mortoniella*) *esrossi*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and paramere appendages, dorsal; **E**—ventral process of segment VI, lateral.

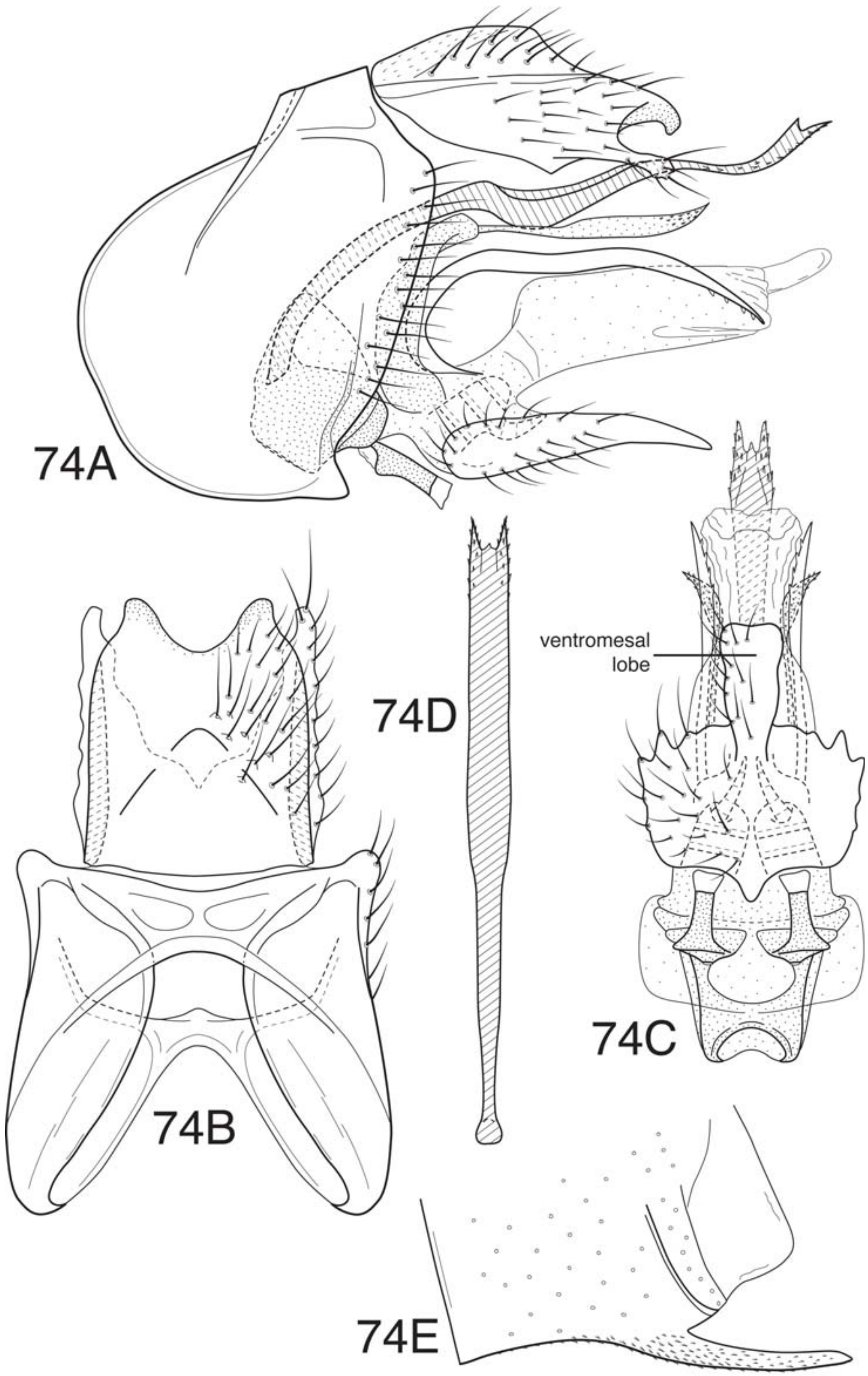


Figure 74. *Mortoniella* (*Mortoniella*) *proakantha*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

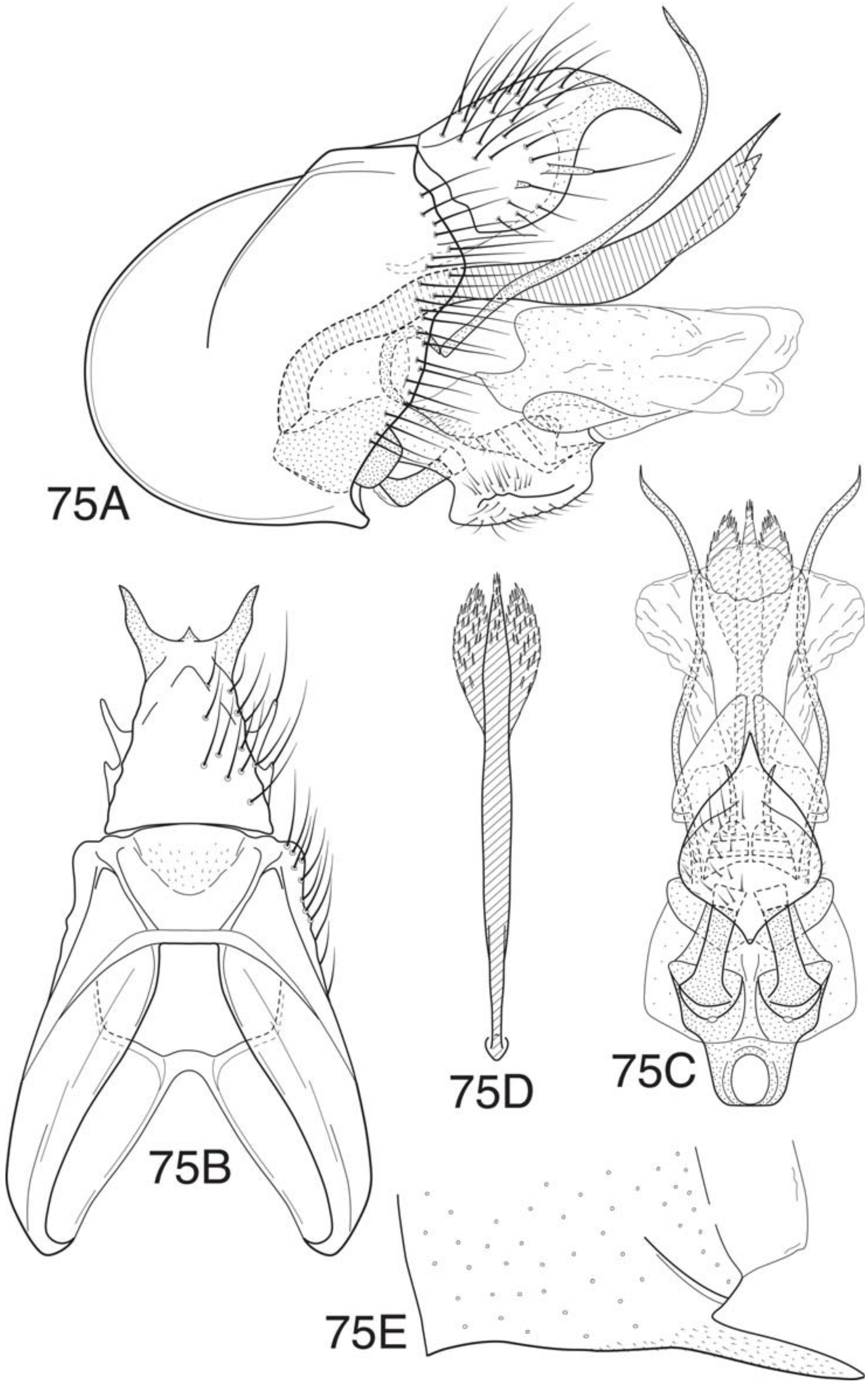


Figure 75. *Mortoniella* (*Mortoniella*) *acutiterga*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

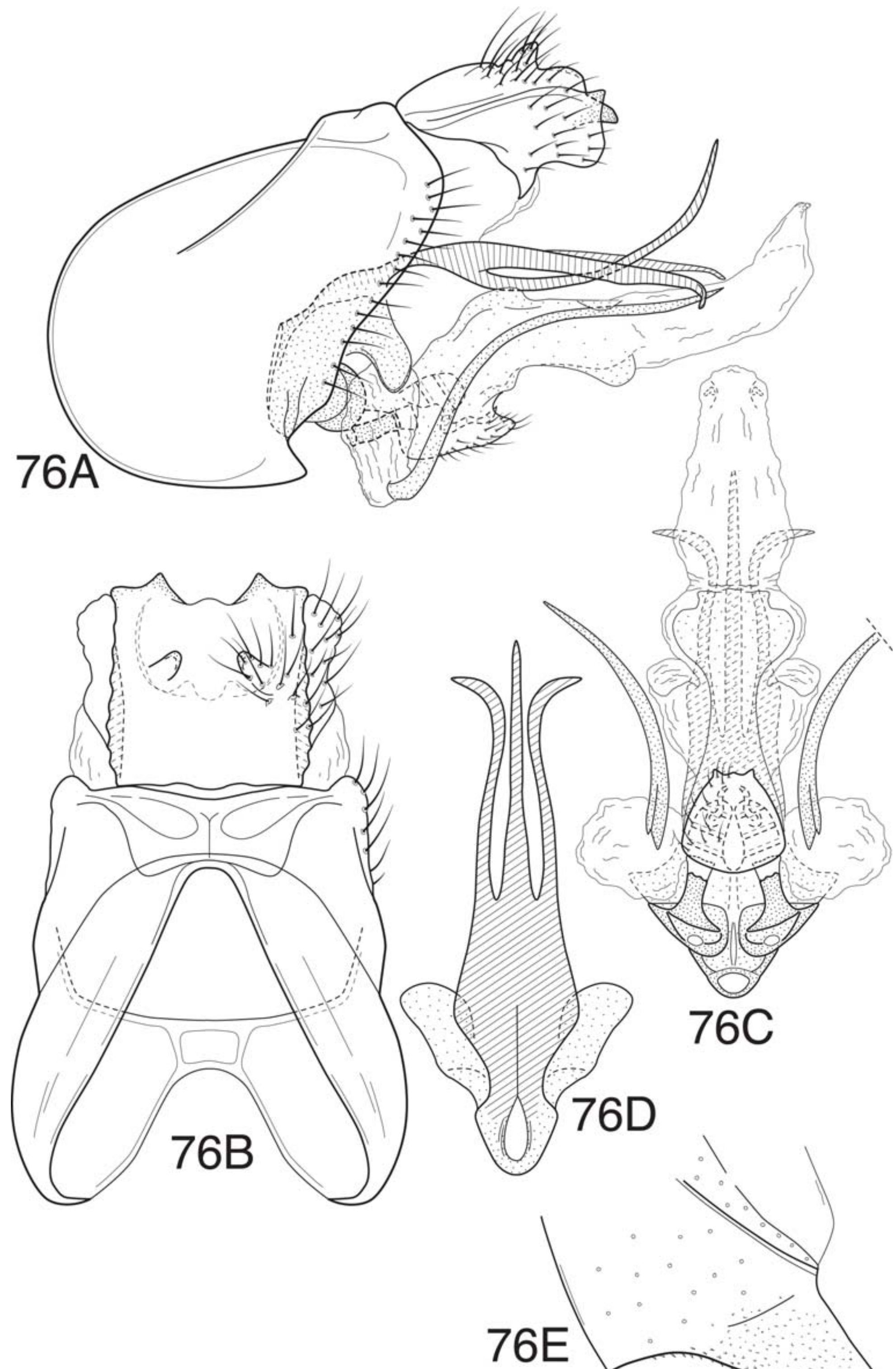


Figure 76. *Mortoniella* (*Mortoniella*) *tridens*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and phallobase, dorsal; **E**—ventral process of segment VI, lateral.

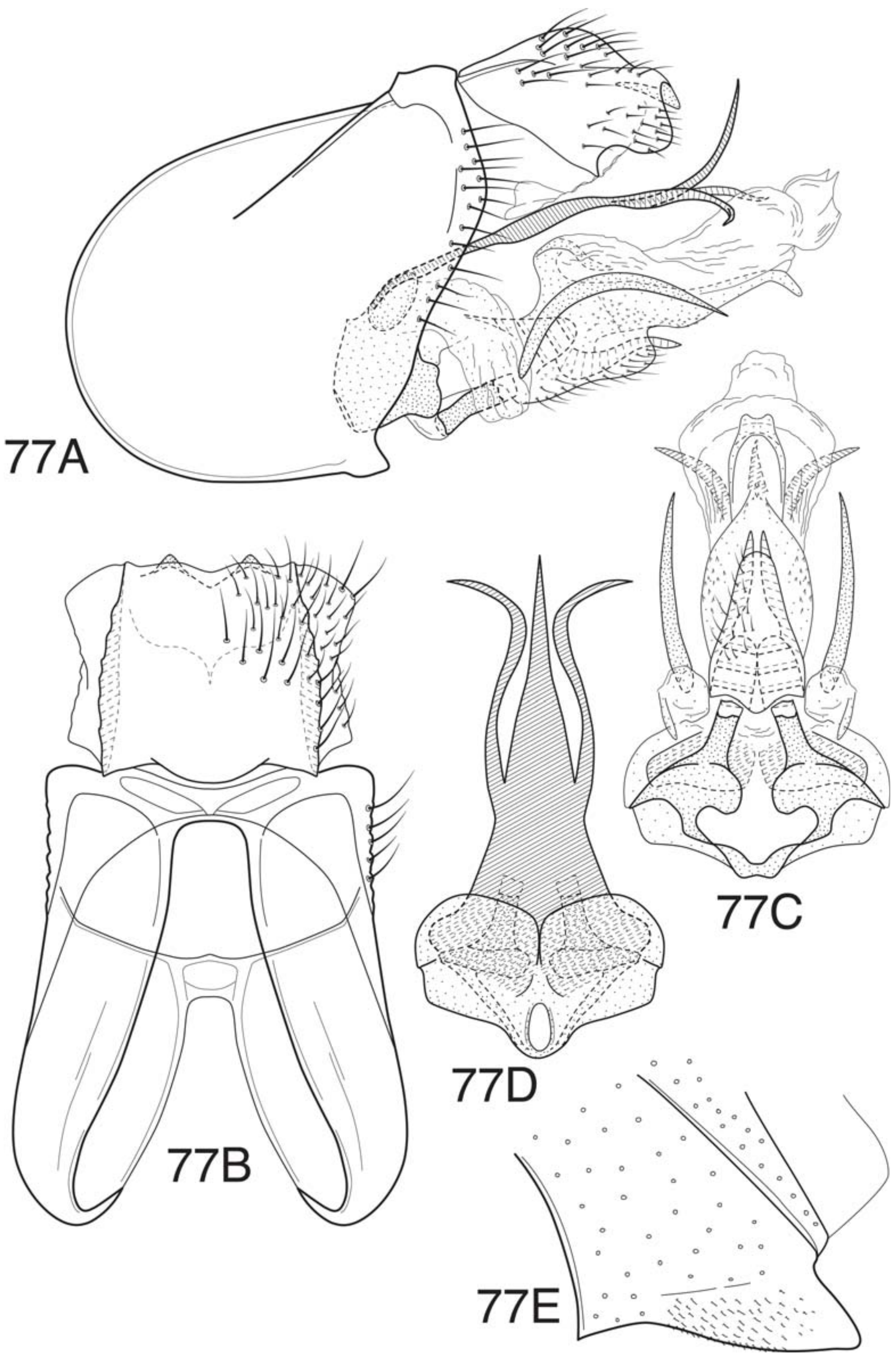


Figure 77. *Mortoniella* (*Mortoniella*) *triramosa*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and phallobase, dorsal; **E**—ventral process of segment VI, lateral.

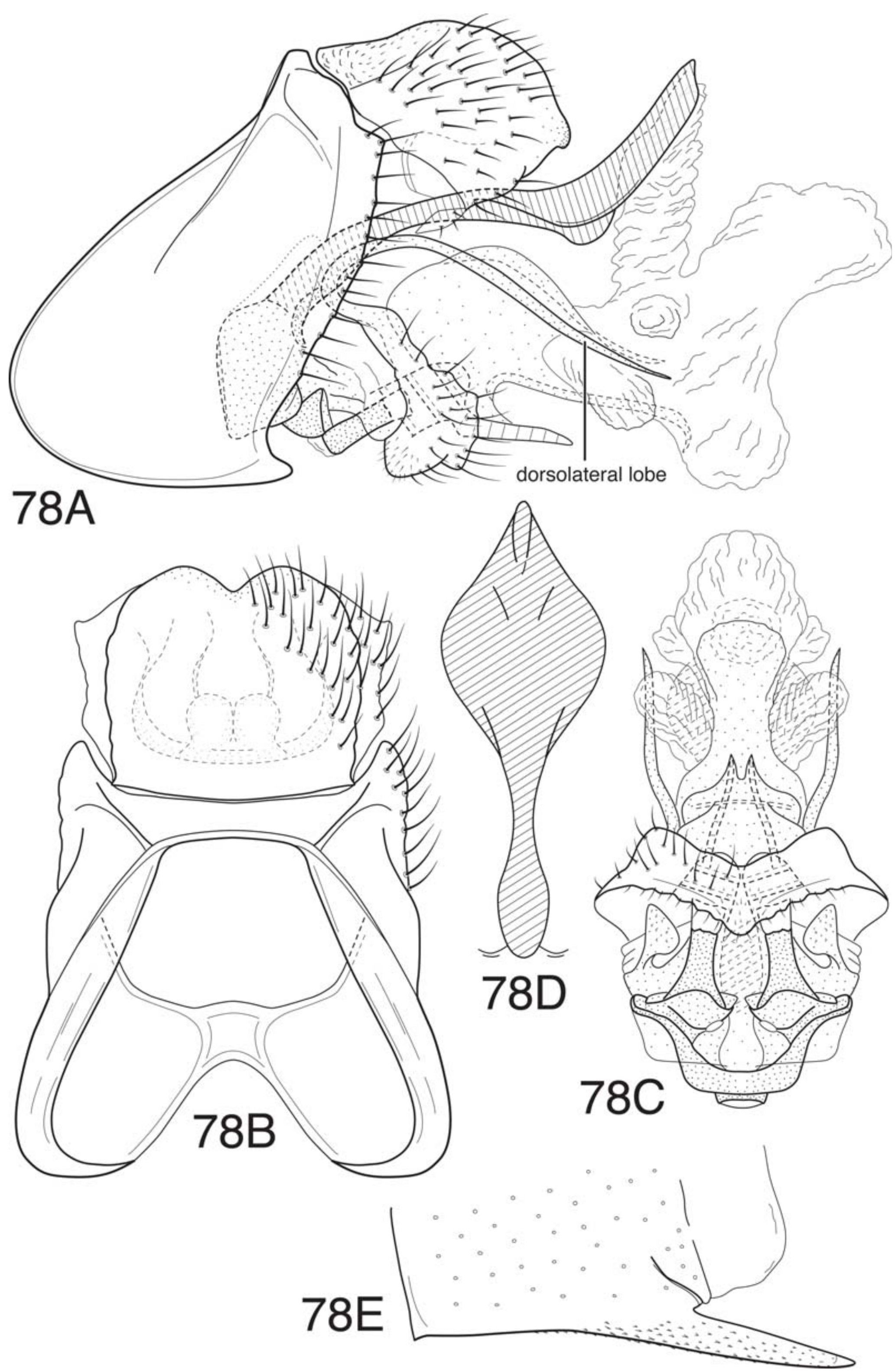


Figure 78. *Mortoniella* (*Mortoniella*) *unilineata* Sykora, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

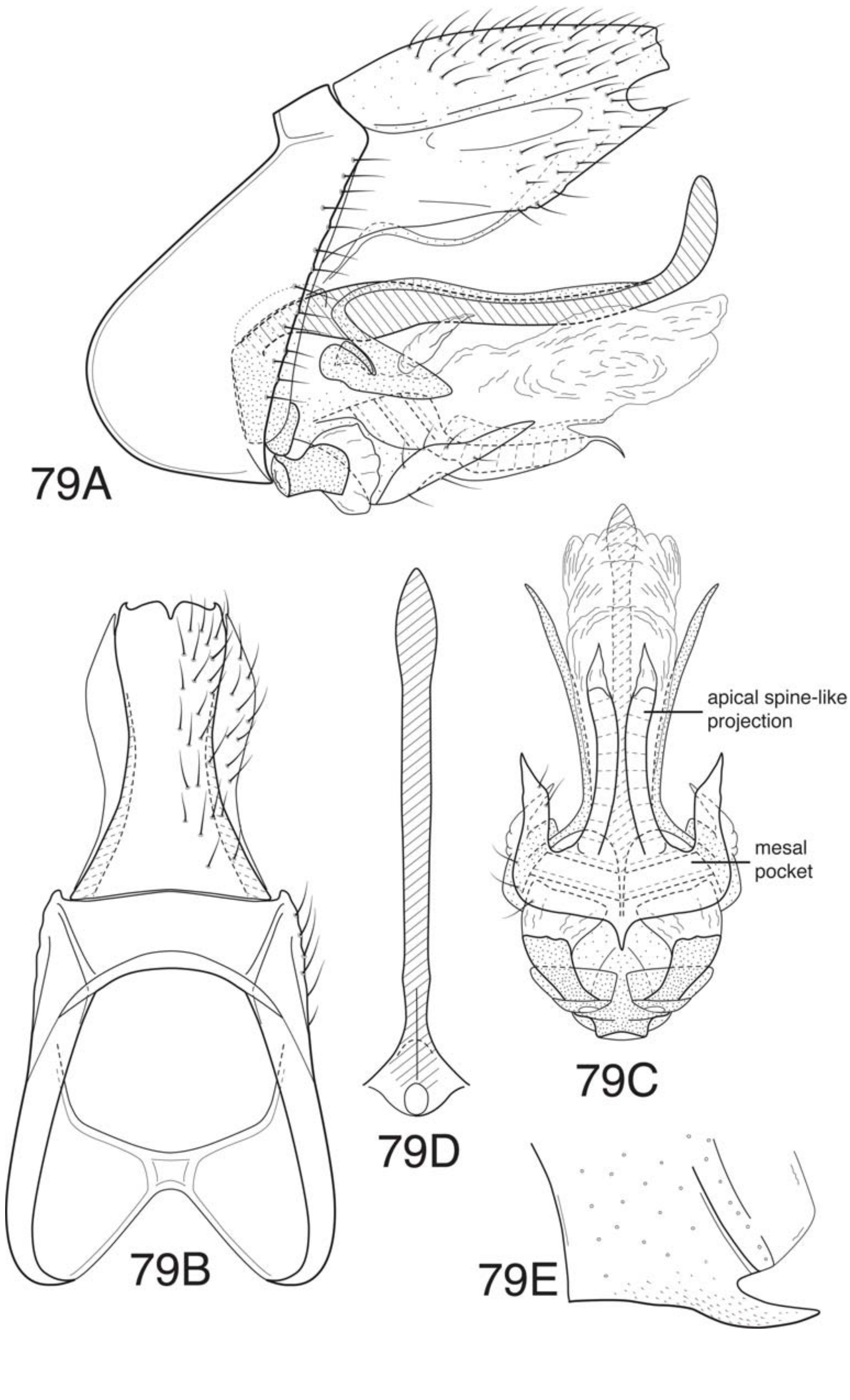


Figure 79. *Mortoniella* (*Nanotrichia*) *aequalis* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

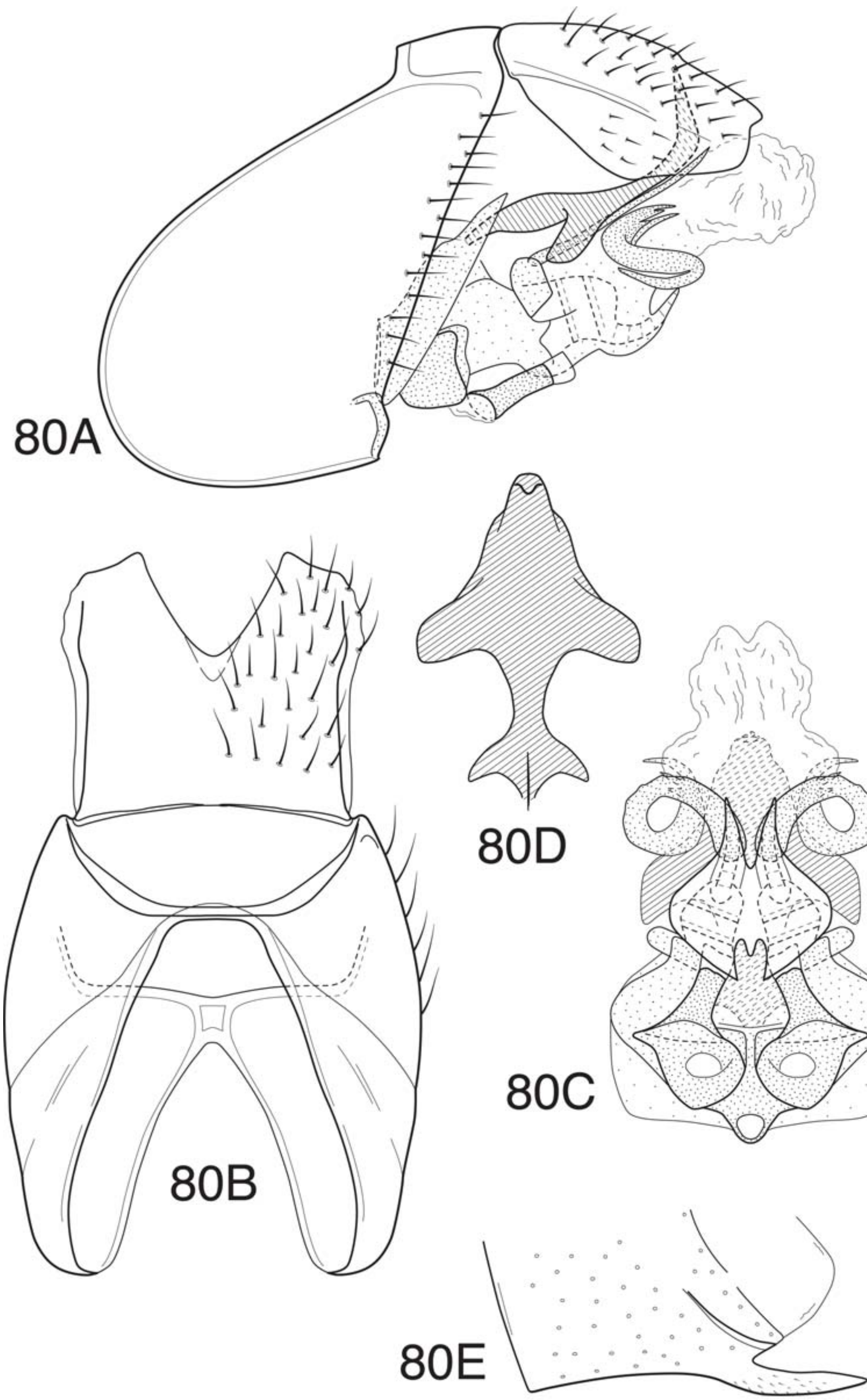


Figure 80. *Mortoniella* (*Nanotrichia*) *aries* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

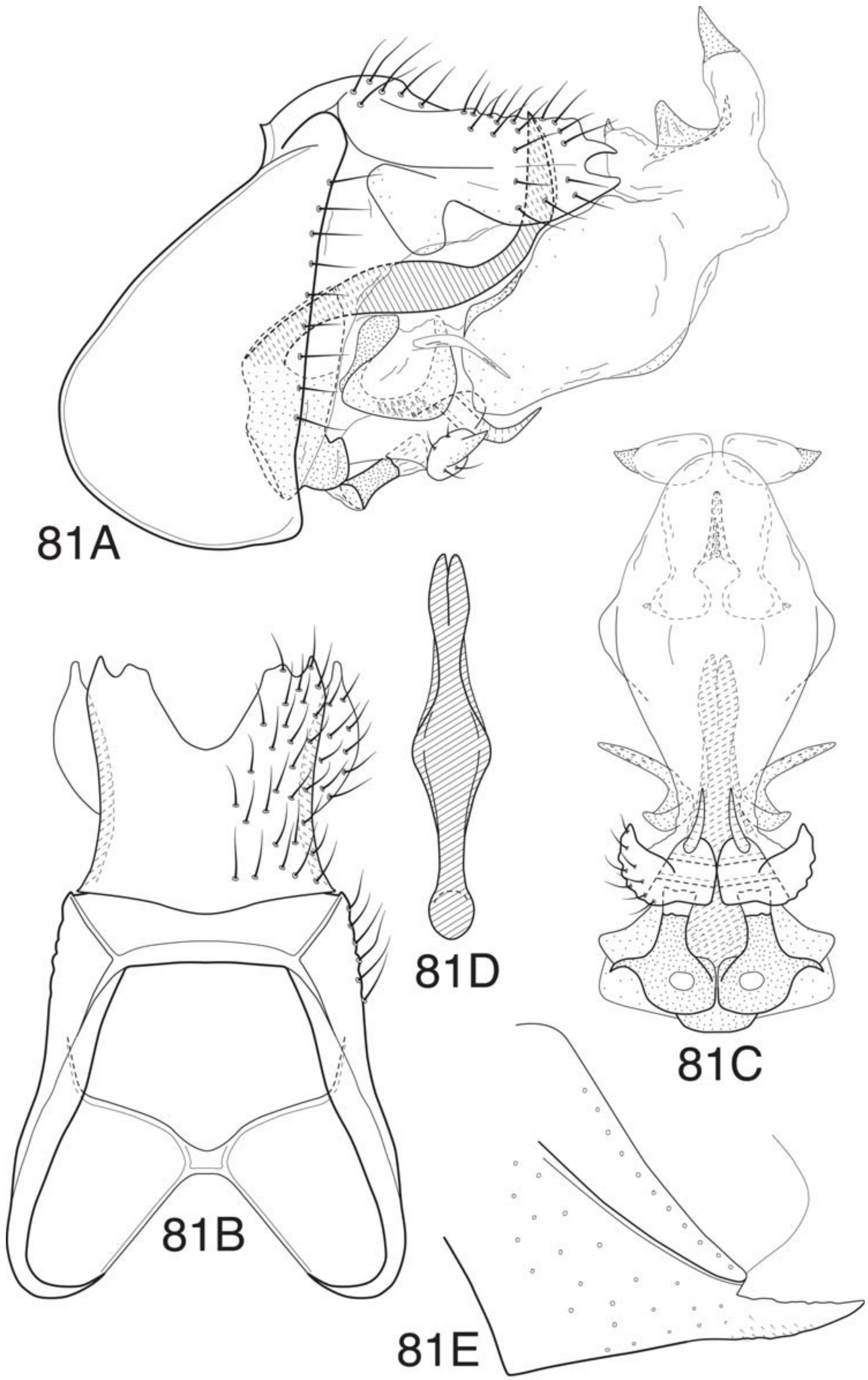


Figure 81. *Mortoniella* (*Nanotrichia*) *collegarum* (Rueda Martín and Gibon), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

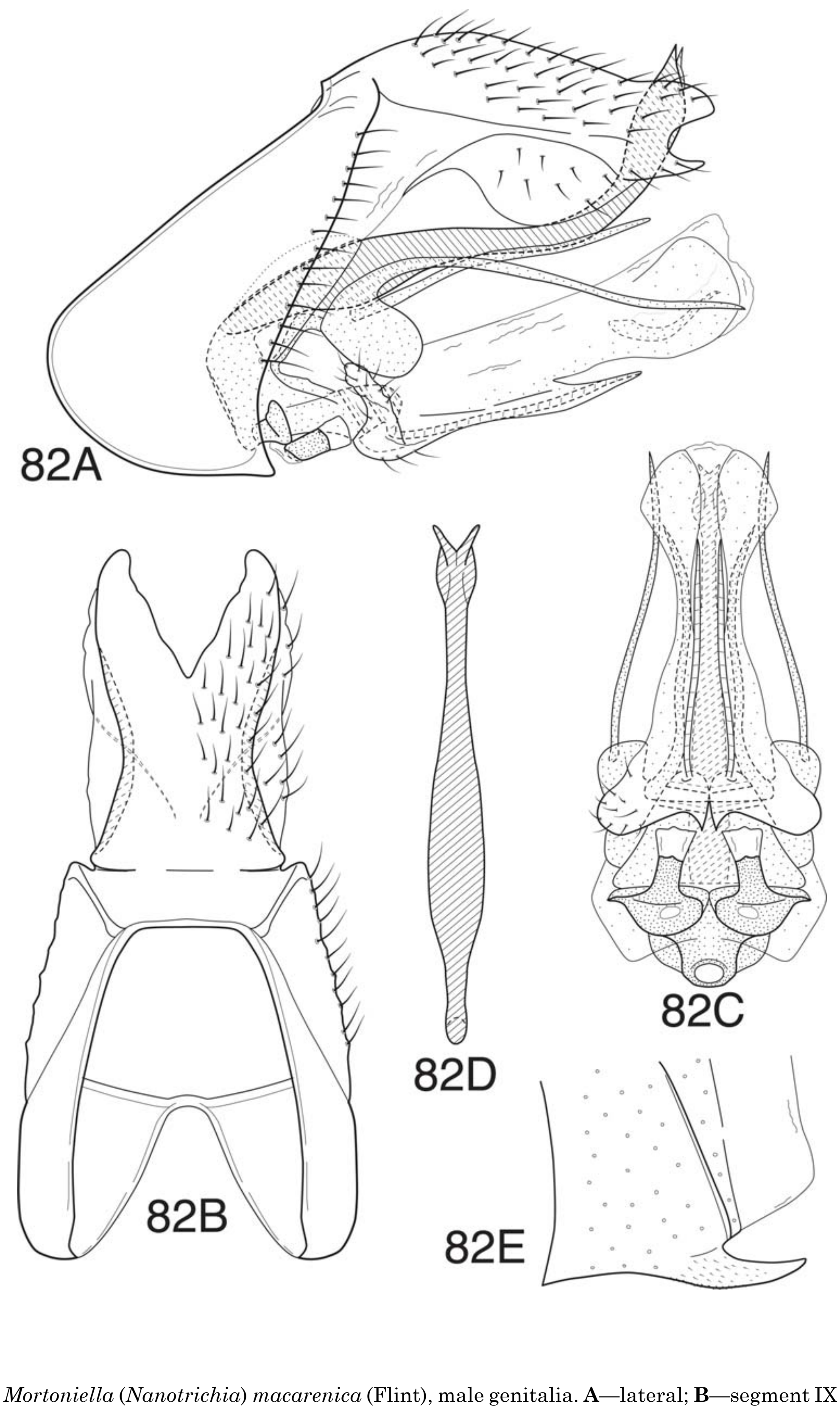


Figure 82. *Mortoniella* (*Nanotrichia*) *macarenica* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

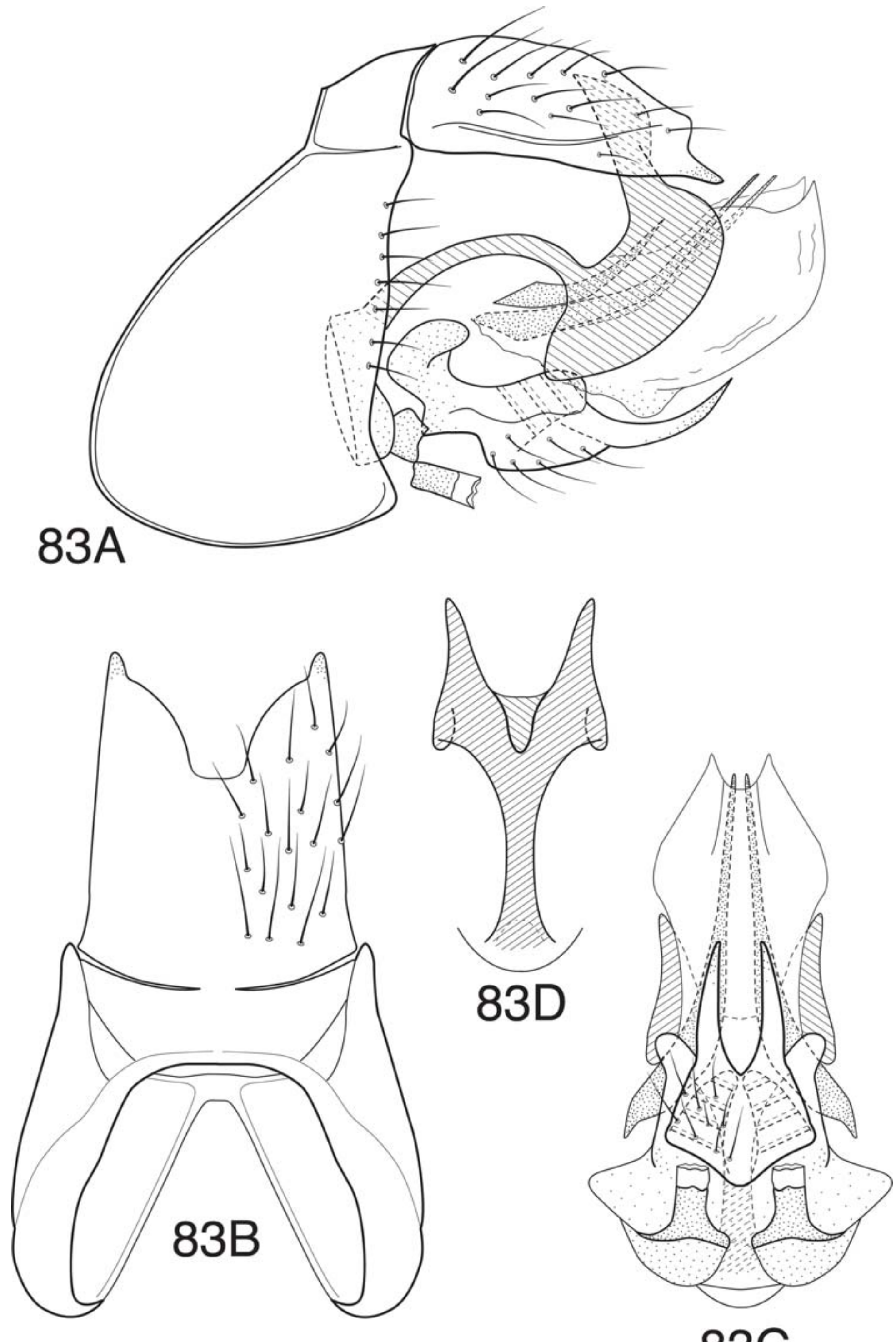


Figure 83. *Mortoniella* (*Nanotrichia*) *pacuara* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal.

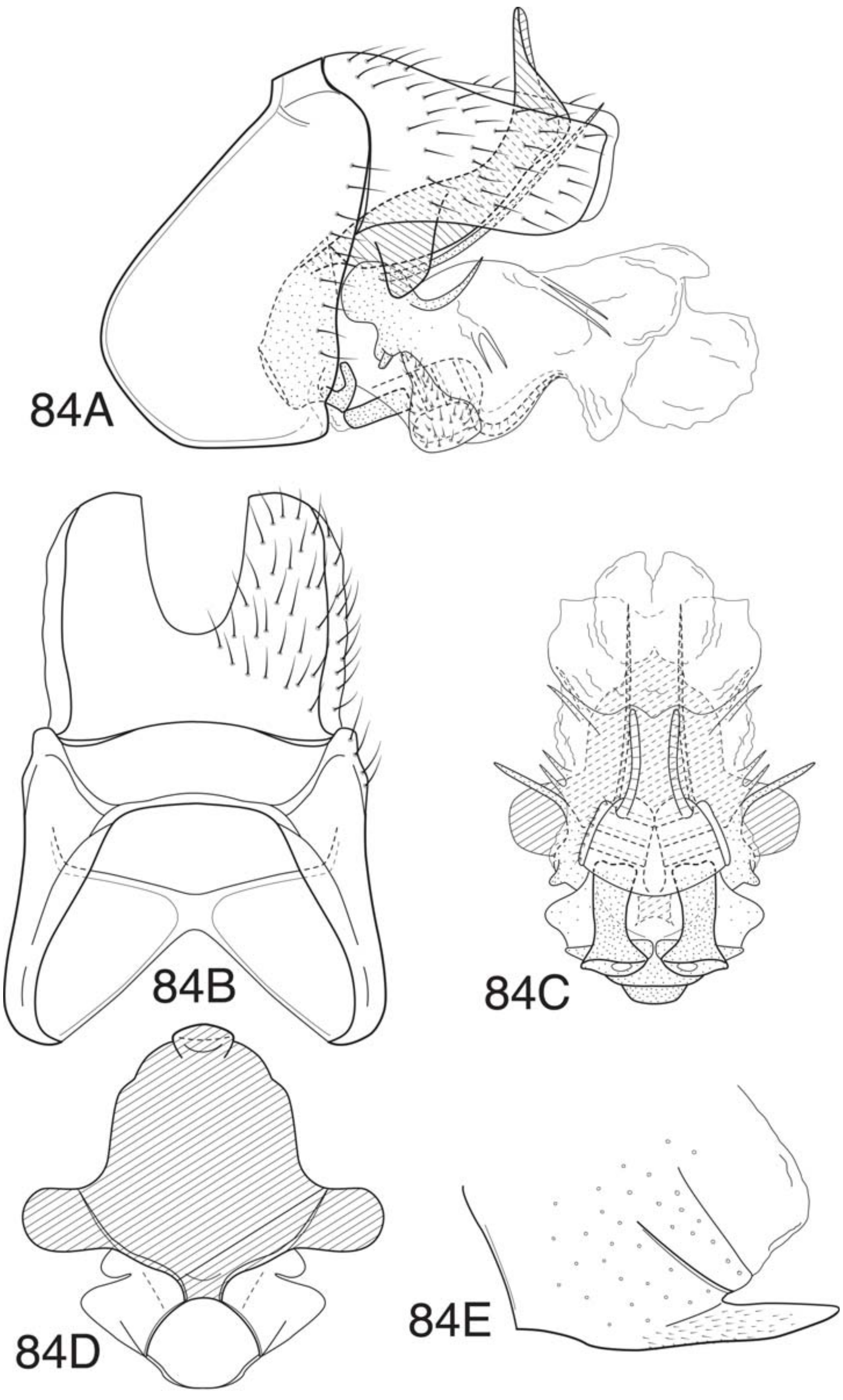


Figure 84. *Mortoniella* (*Nanotrichia*) *paucispina*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and phallobase, dorsal; **E**—ventral process of segment VI, lateral.

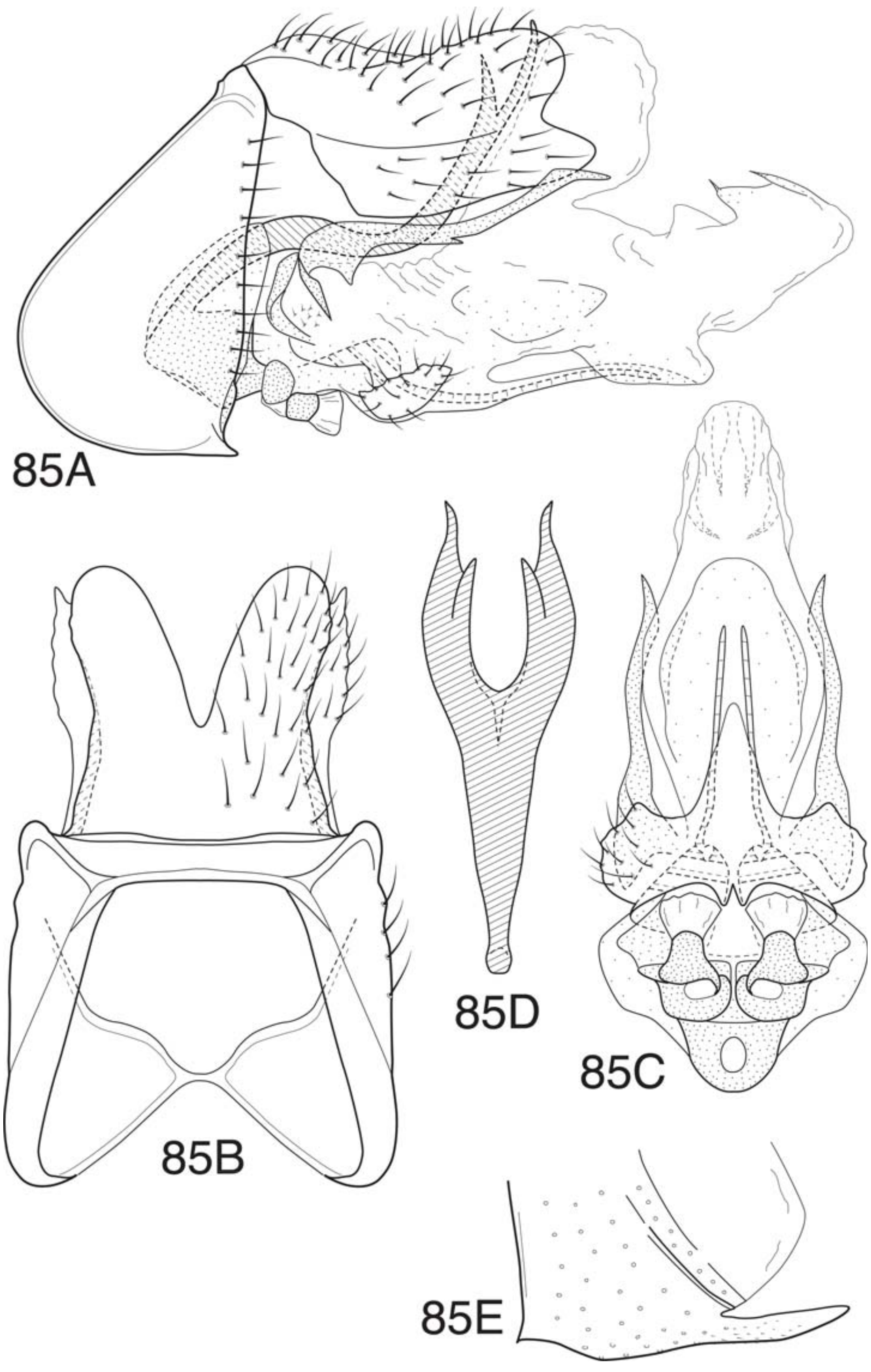


Figure 85. *Mortoniella* (*Nanotrichia*) *quadridactyla*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

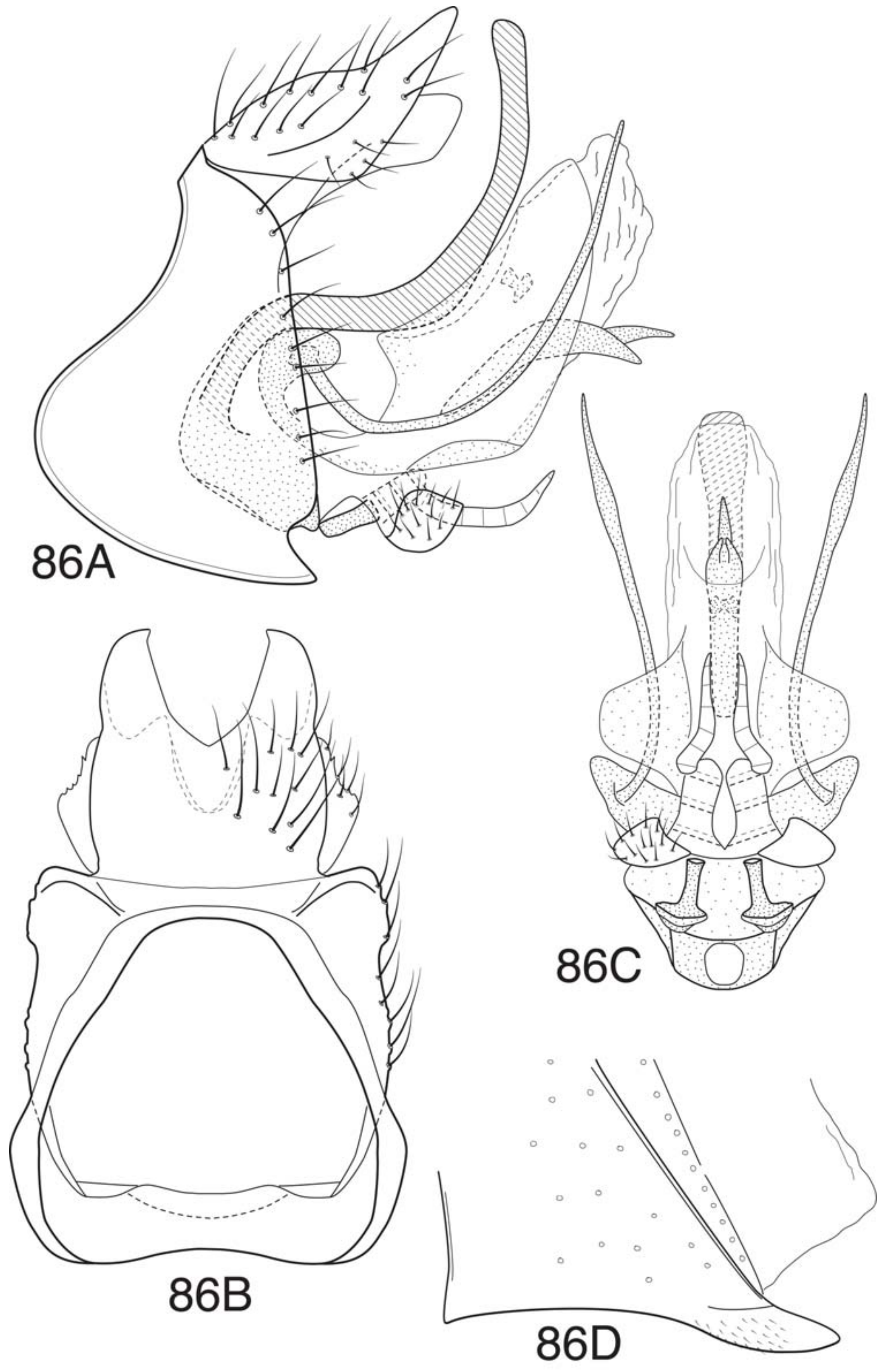


Figure 86. *Mortoniella* (*Nanotrichia*) *simplicis*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—ventral process of segment VI, lateral.

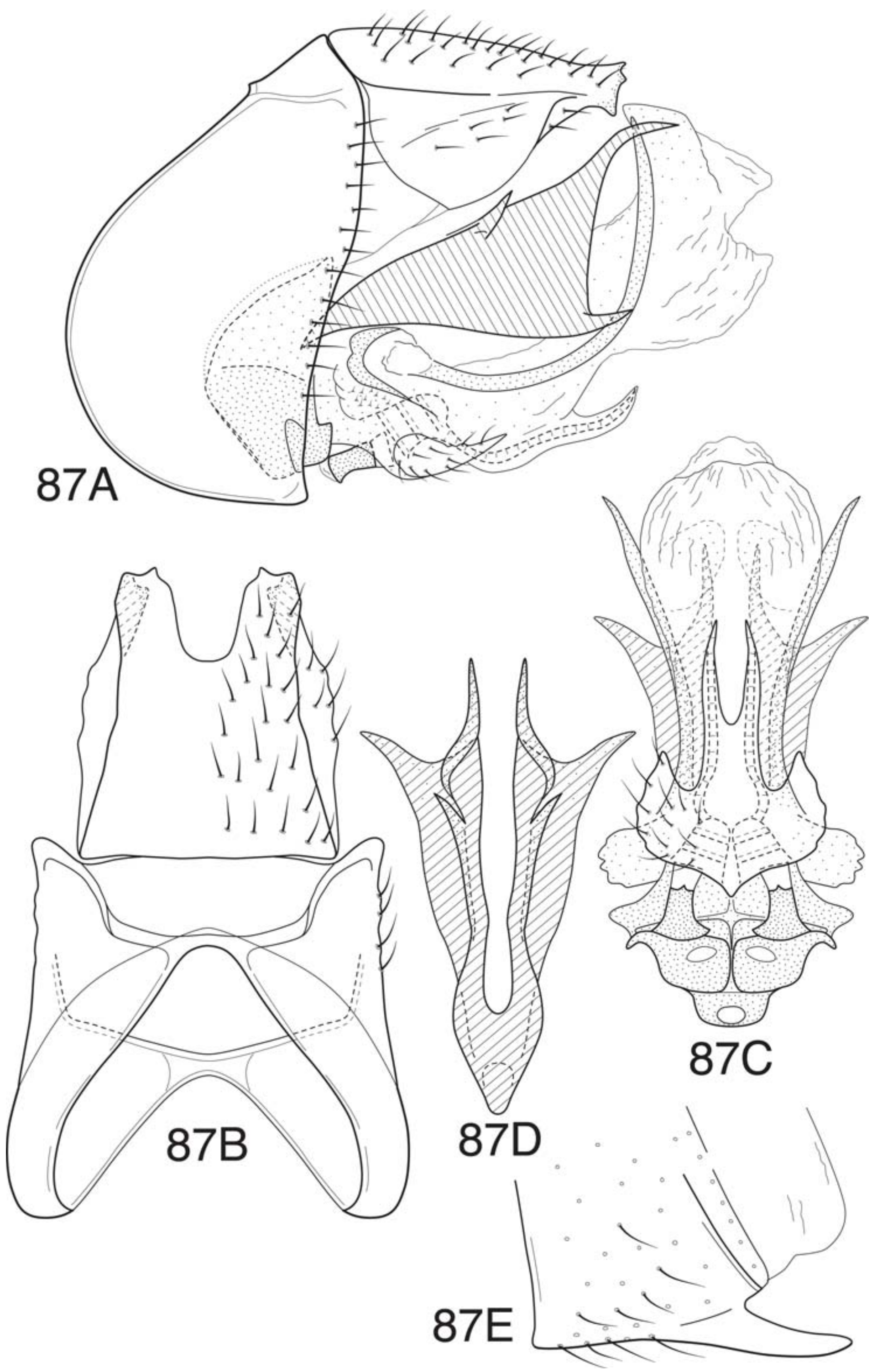


Figure 87. *Mortoniella* (*Nanotrichia*) *triangularis*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

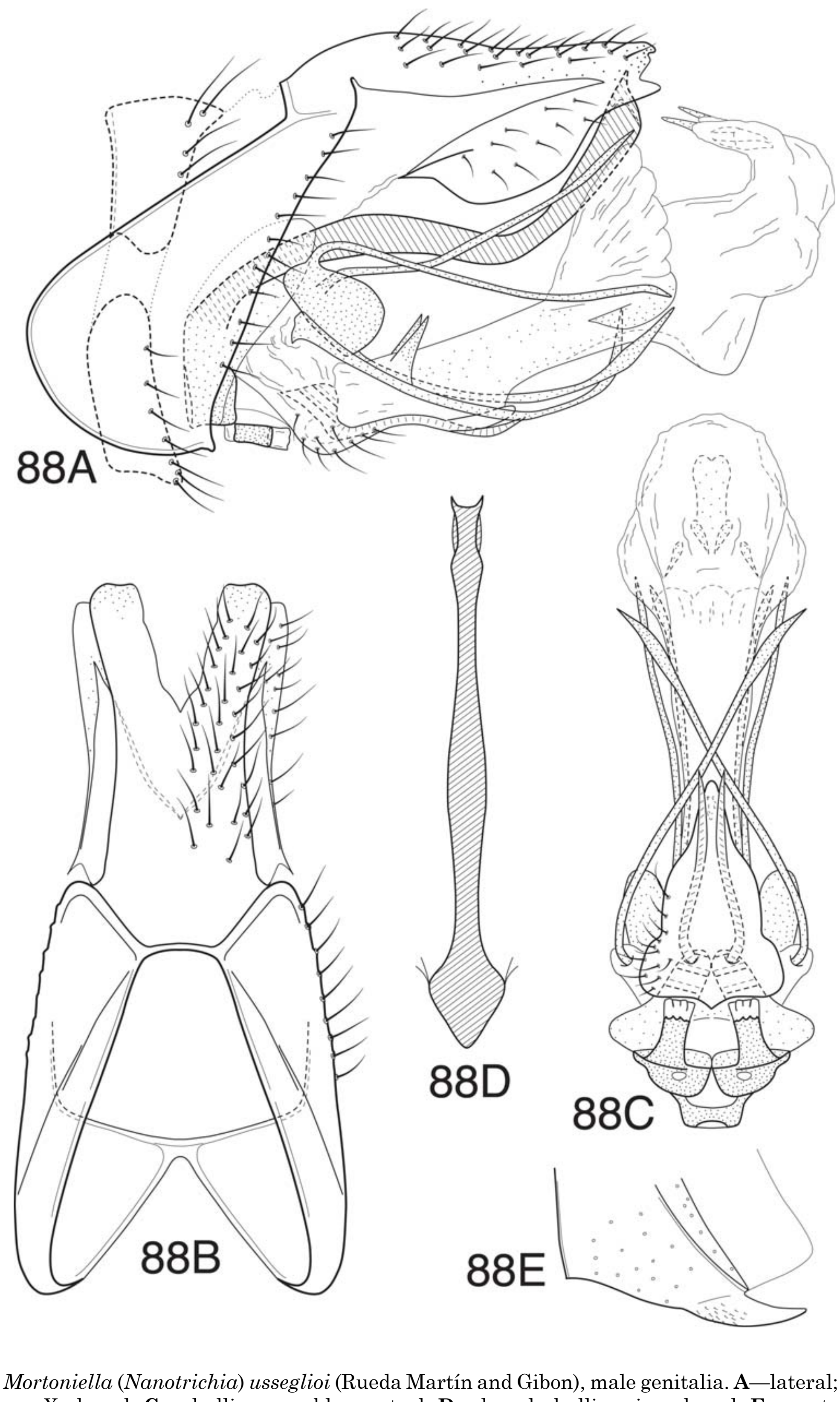


Figure 88. *Mortoniella* (*Nanotrichia*) *usseglioi* (Rueda Martín and Gibon), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

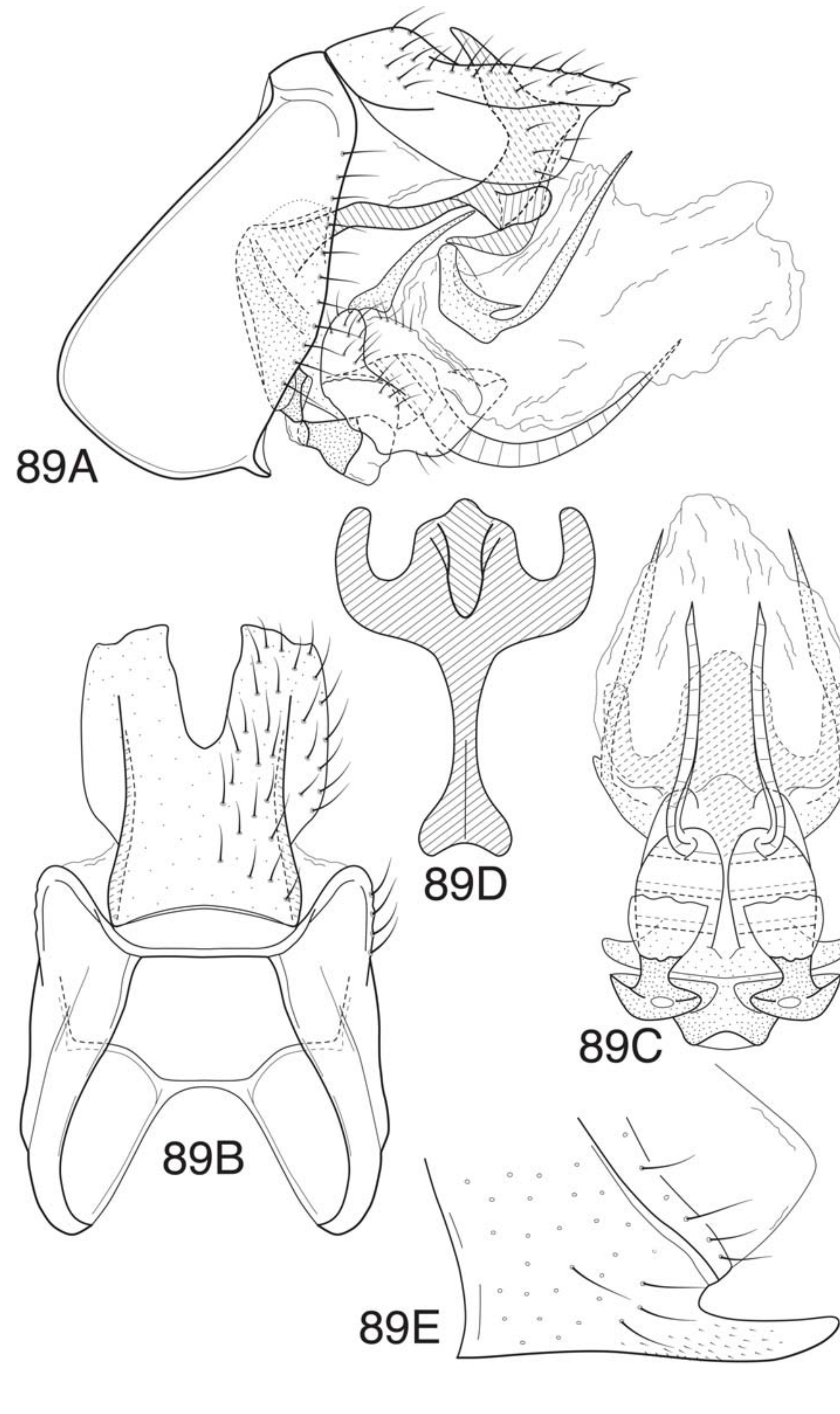


Figure 89. *Mortoniella* (*Nanotrichia*) *zamora*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

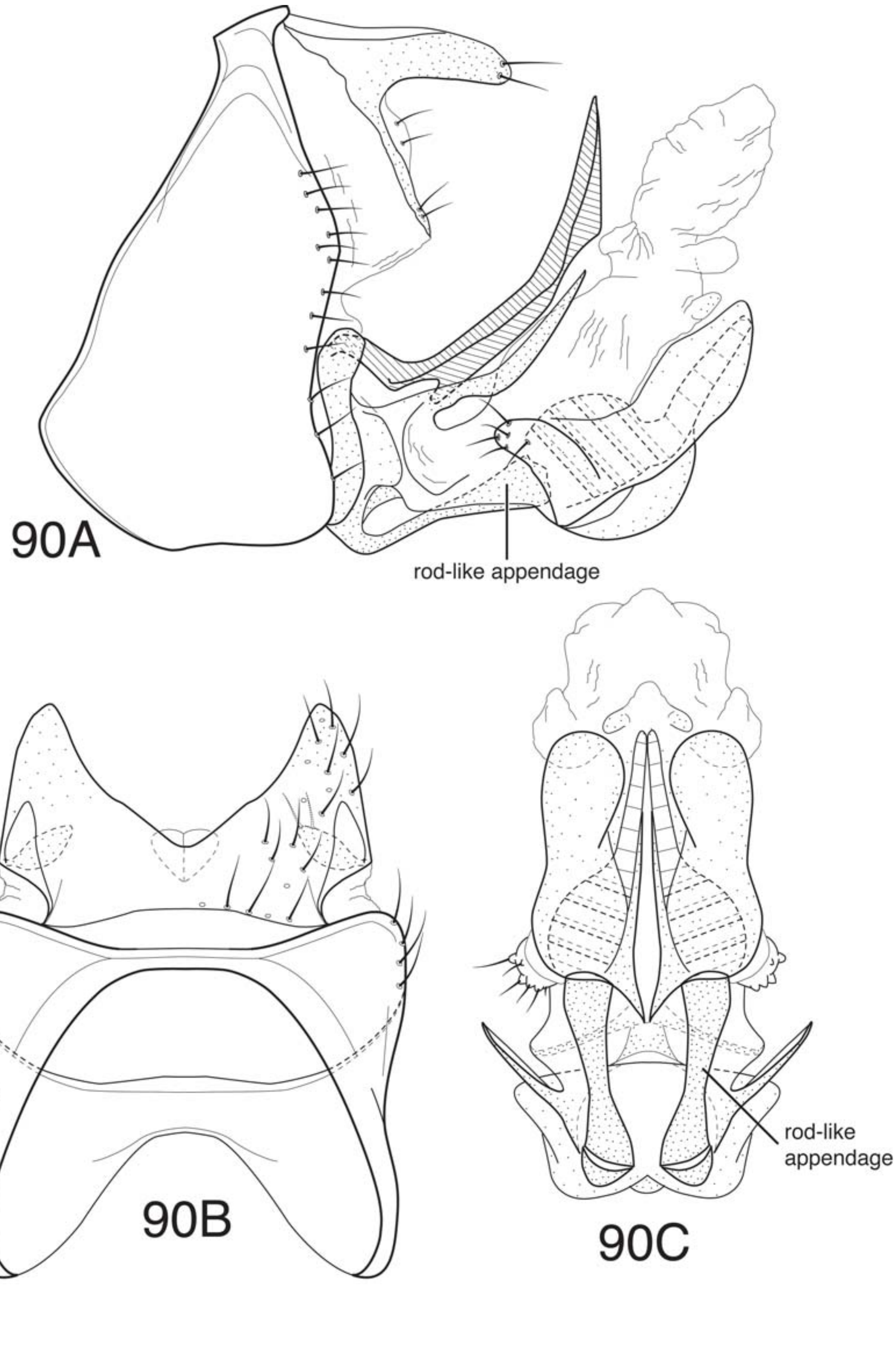


Figure 90. *Mortoniella* (*Nanotrichia*) *cognata*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral.

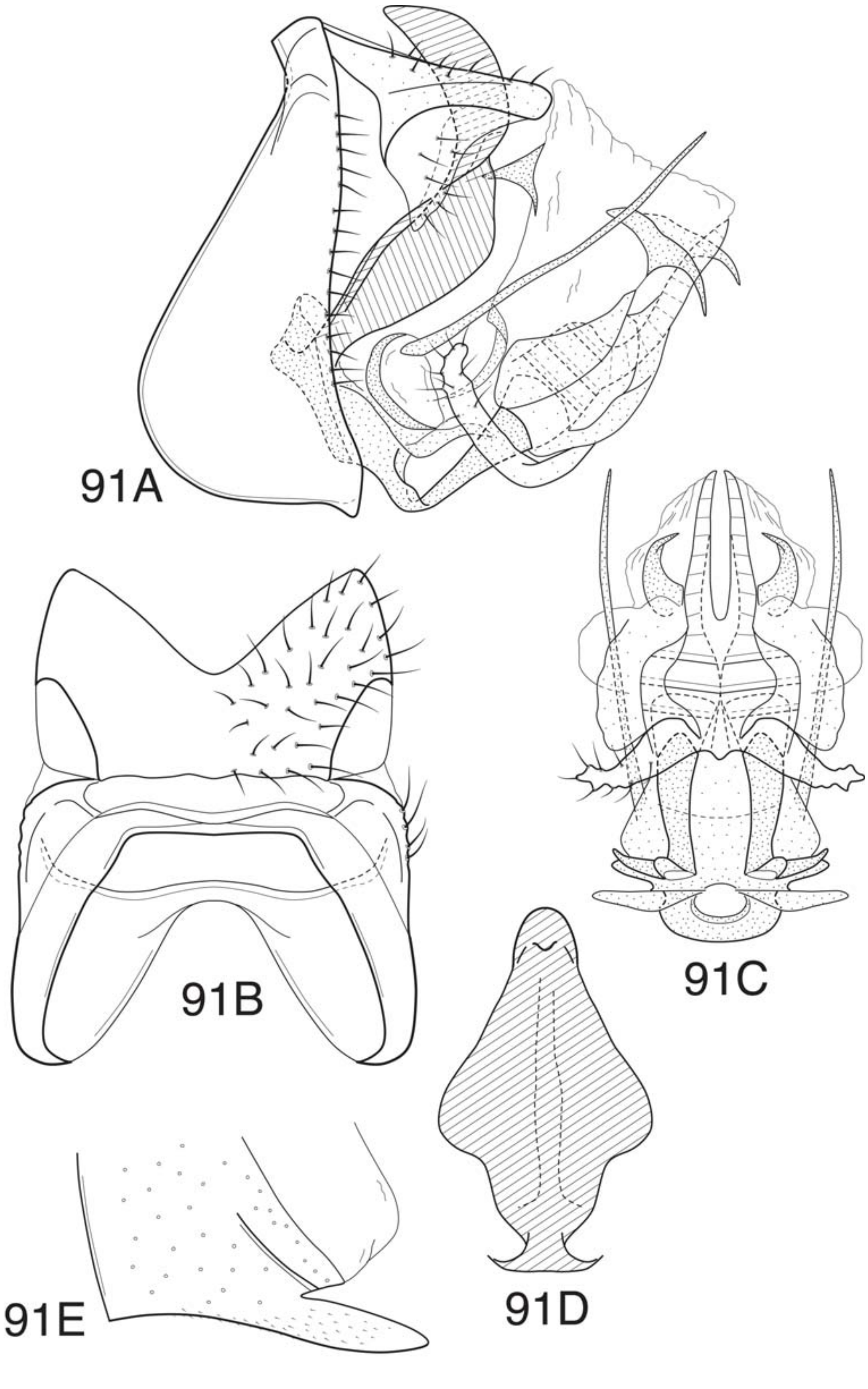


Figure 91. *Mortoniella* (*Nanotrichia*) *coheni*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

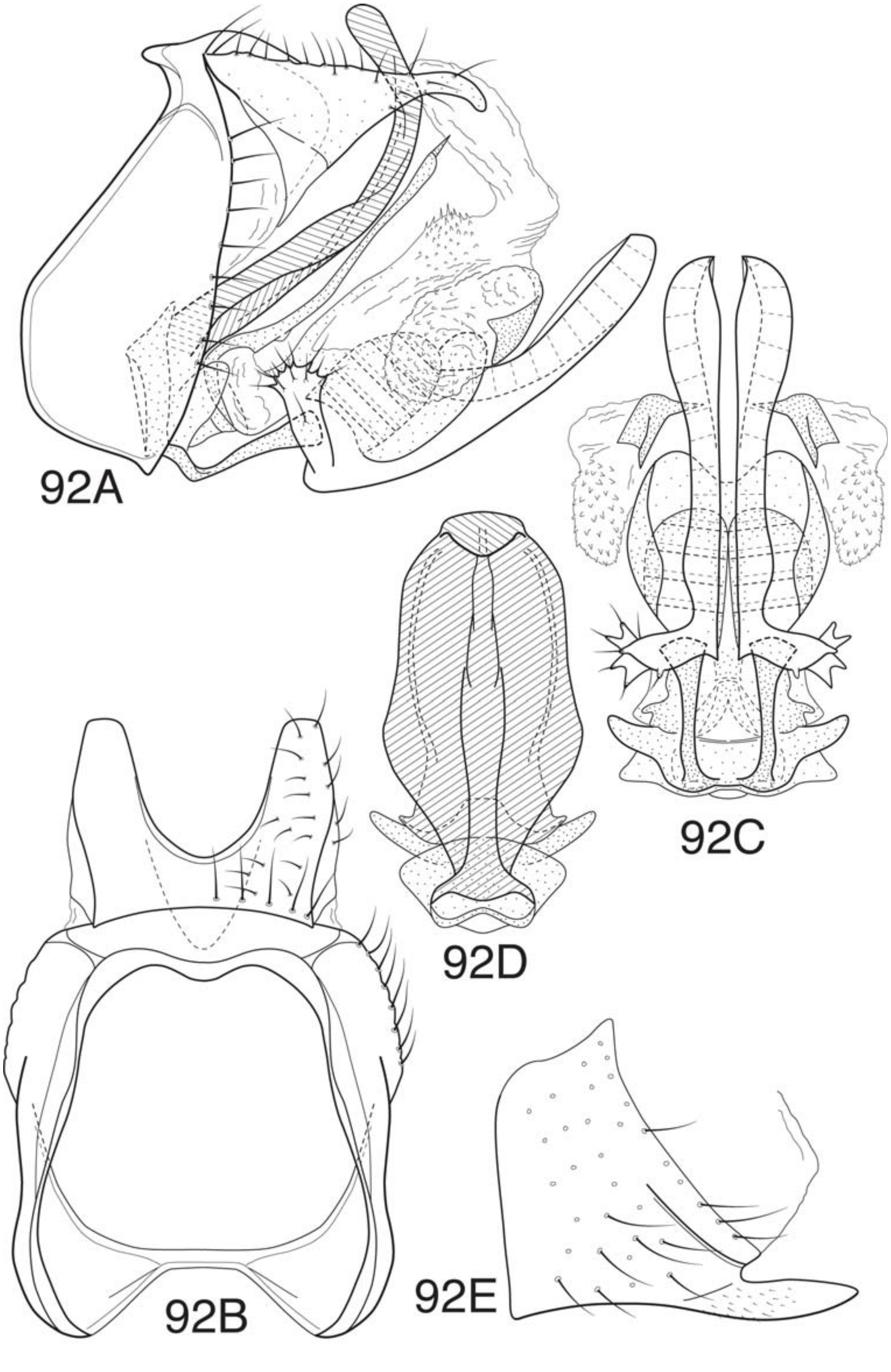


Figure 92. *Mortoniella* (*Nanotrichia*) *eduardoi* (Rueda Martín and Gibon), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and phallobase, dorsal; **E**—ventral process of segment VI, lateral.

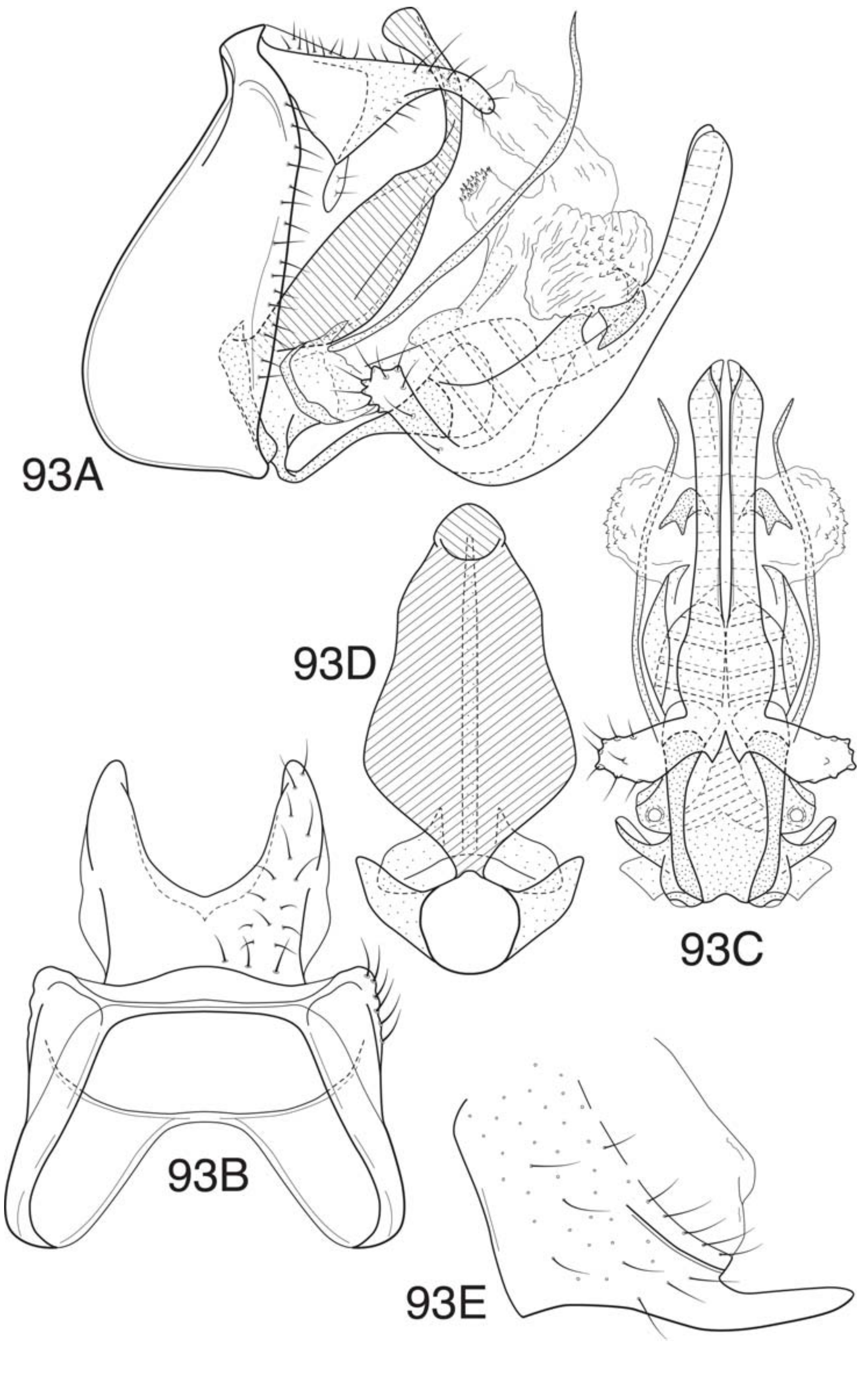


Figure 93. *Mortoniella* (*Nanotrichia*) *licina*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and phallobase, dorsal; **E**—ventral process of segment VI, lateral.

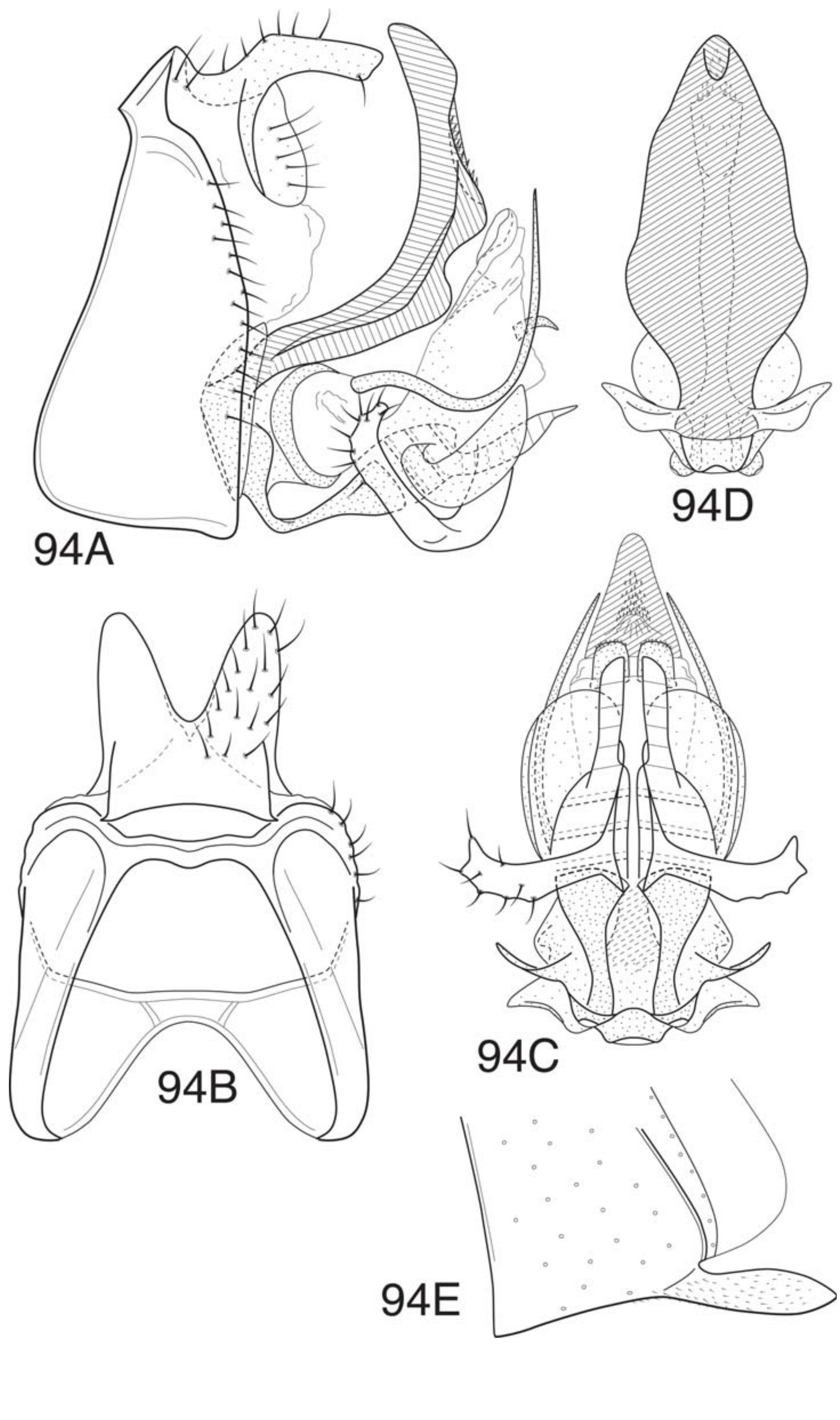


Figure 94. *Mortoniella* (*Nanotrichia*) *spangleri*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine and phallobase, dorsal; **E**—ventral process of segment VI, lateral.

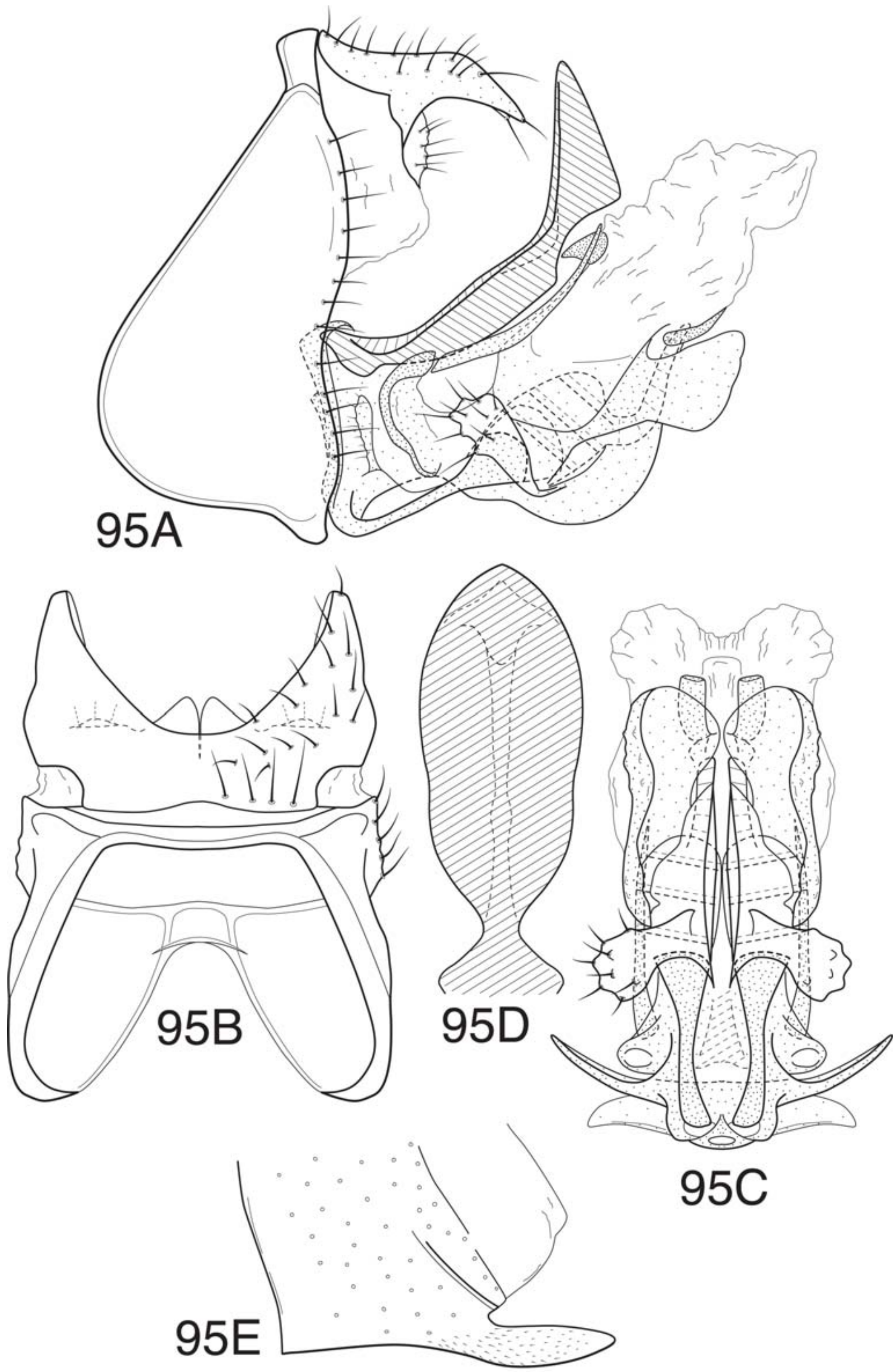


Figure 95. *Mortoniella* (*Nanotrichia*) *velasquezi* (Flint), male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral; **D**—dorsal phallic spine, dorsal; **E**—ventral process of segment VI, lateral.

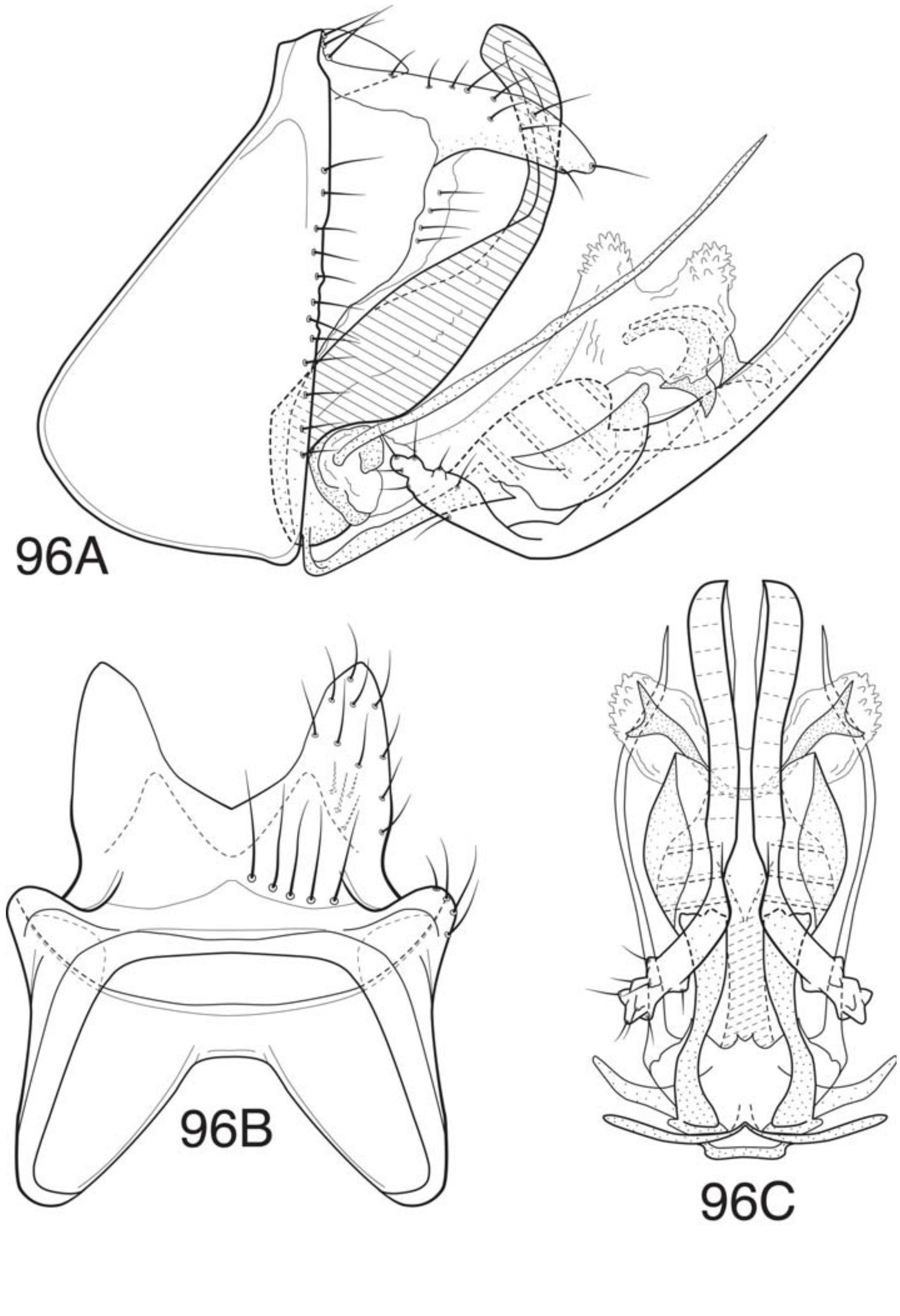
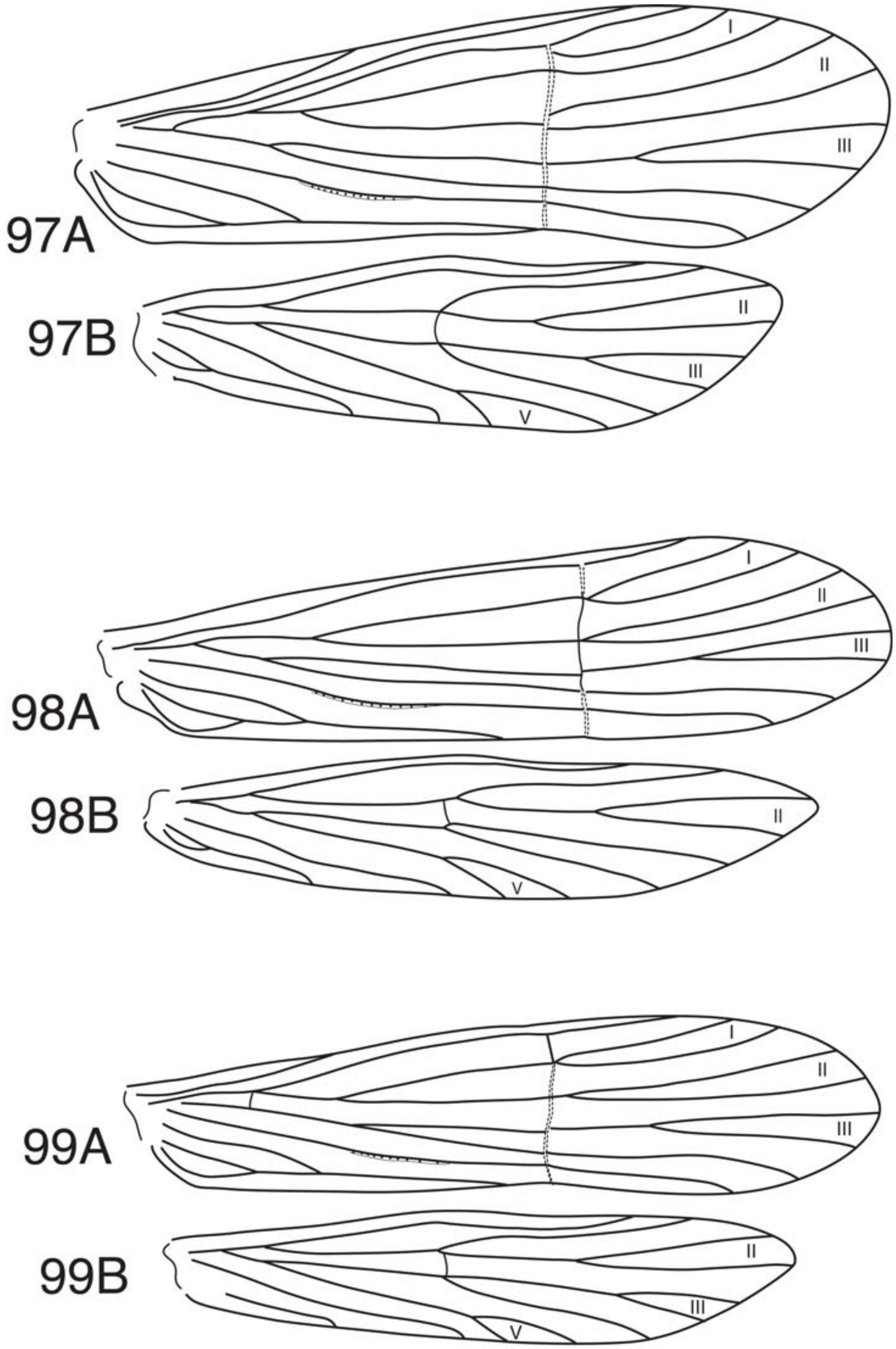
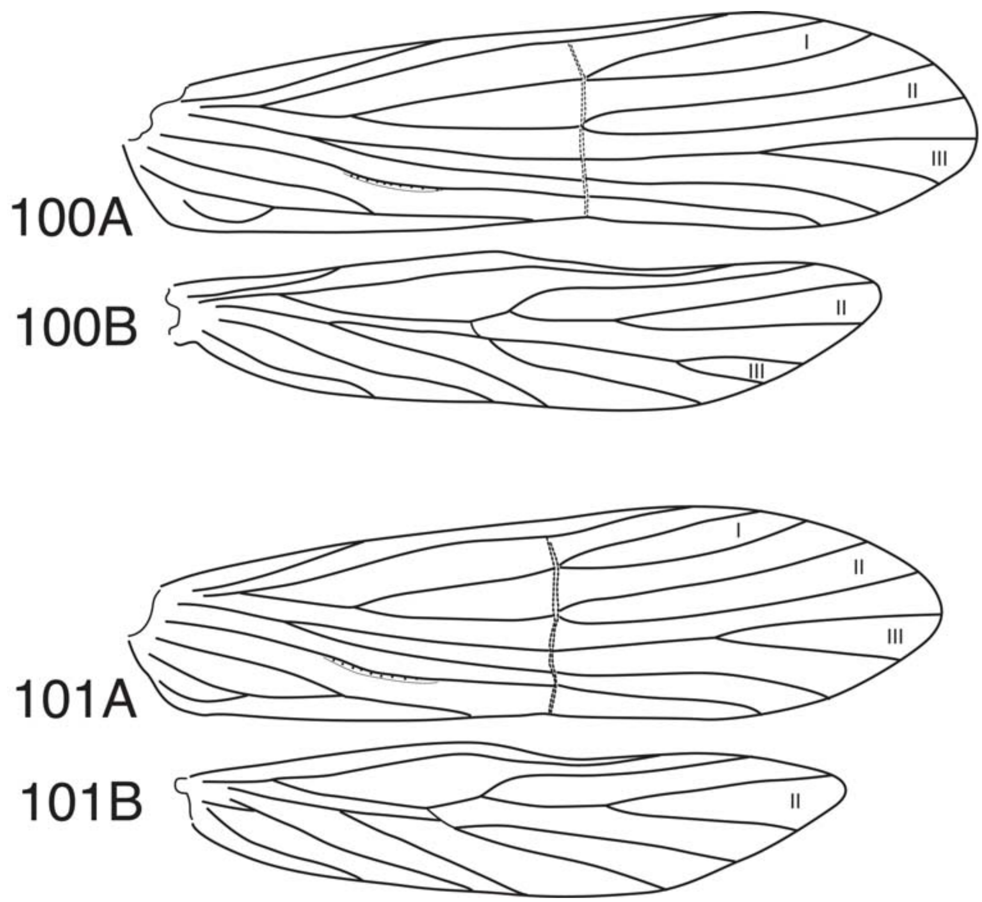


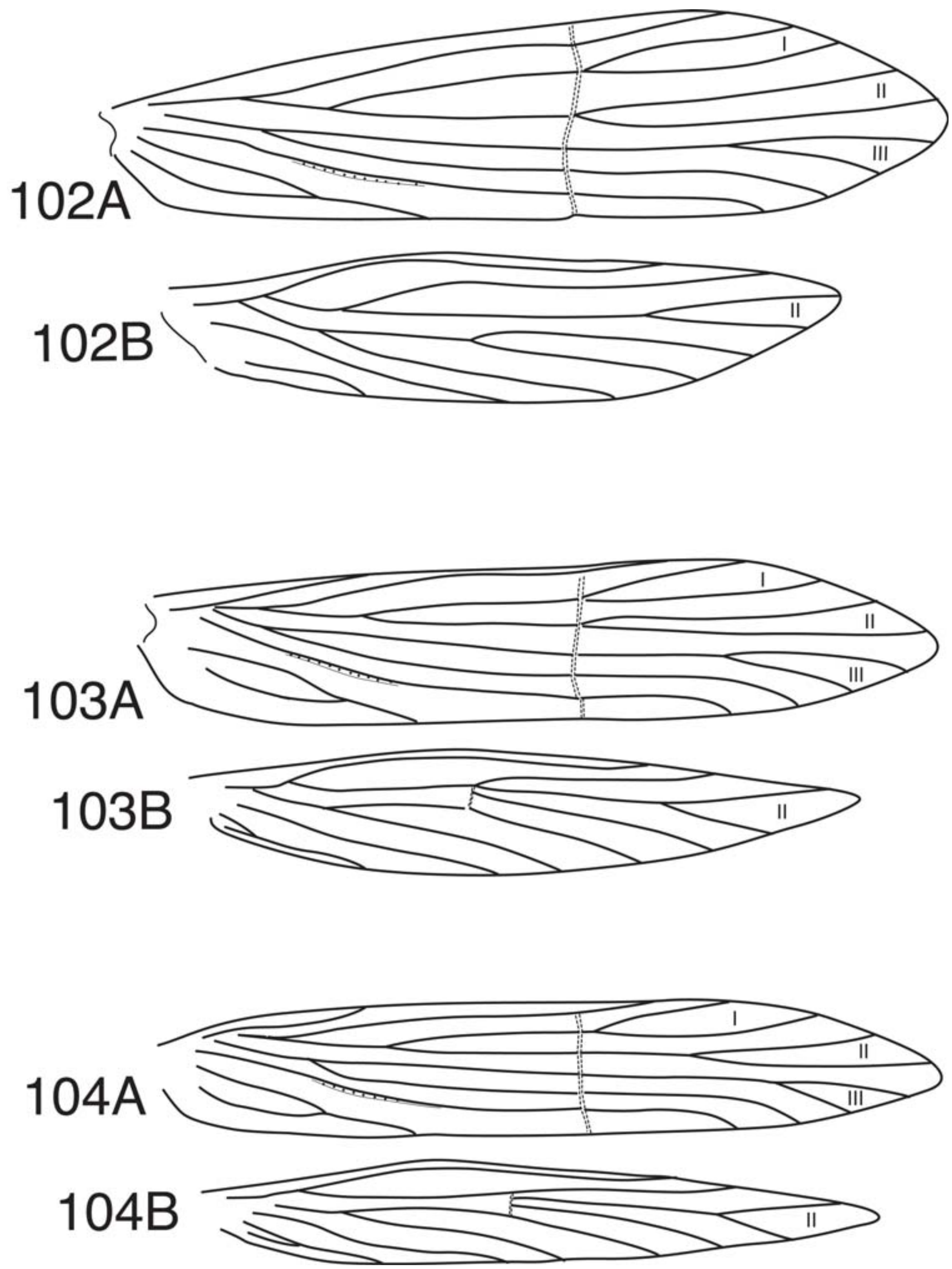
Figure 96. *Mortoniella* (*Nanotrichia*) *venezuelensis*, new species, male genitalia. **A**—lateral; **B**—segment IX and tergum X, dorsal; **C**—phallic ensemble, ventral.



Figures 97-99. *Mortoniella* (*M.*) species, wings. **97**—*Mortoniella roldani* Flint [bilineata group, bilineata subgroup]. **A**—forewing; **B**—hind wing. **98**—*Mortoniella tusci*, n. sp. [bilineata group, flinti subgroup]. **A**—forewing; **B**—hind wing. **99**—*Mortoniella cornuta* n. sp. [unplaced to species group]. **A**—forewing; **B**—hind wing.



Figures 100-101. *Mortoniella* (*M.*), leroda group species, wings. **100**—*Mortoniella limona* Flint [limona subgroup]. **A**—forewing; **B**—hind wing. **101**—*Mortoniella applanata*, n. sp. [unplaced to subgroup]. **A**—forewing; **B**—hind wing.



Figures 102-104. *Mortoniella* (*Nanotrichia*) species, wings. **102**—*Mortoniella eduardoi* (Rueda Martín and Gibon) [velasquezi group]. **A**—forewing; **B**—hind wing. **103**—*Mortoniella collegarum* (Rueda Martín and Gibon) [ormina group]. **A**—forewing; **B**—hind wing. **104**—*Mortoniella usseglioi* (Rueda Martín and Gibon) [ormina group]. **A**—forewing; **B**—hind wing.

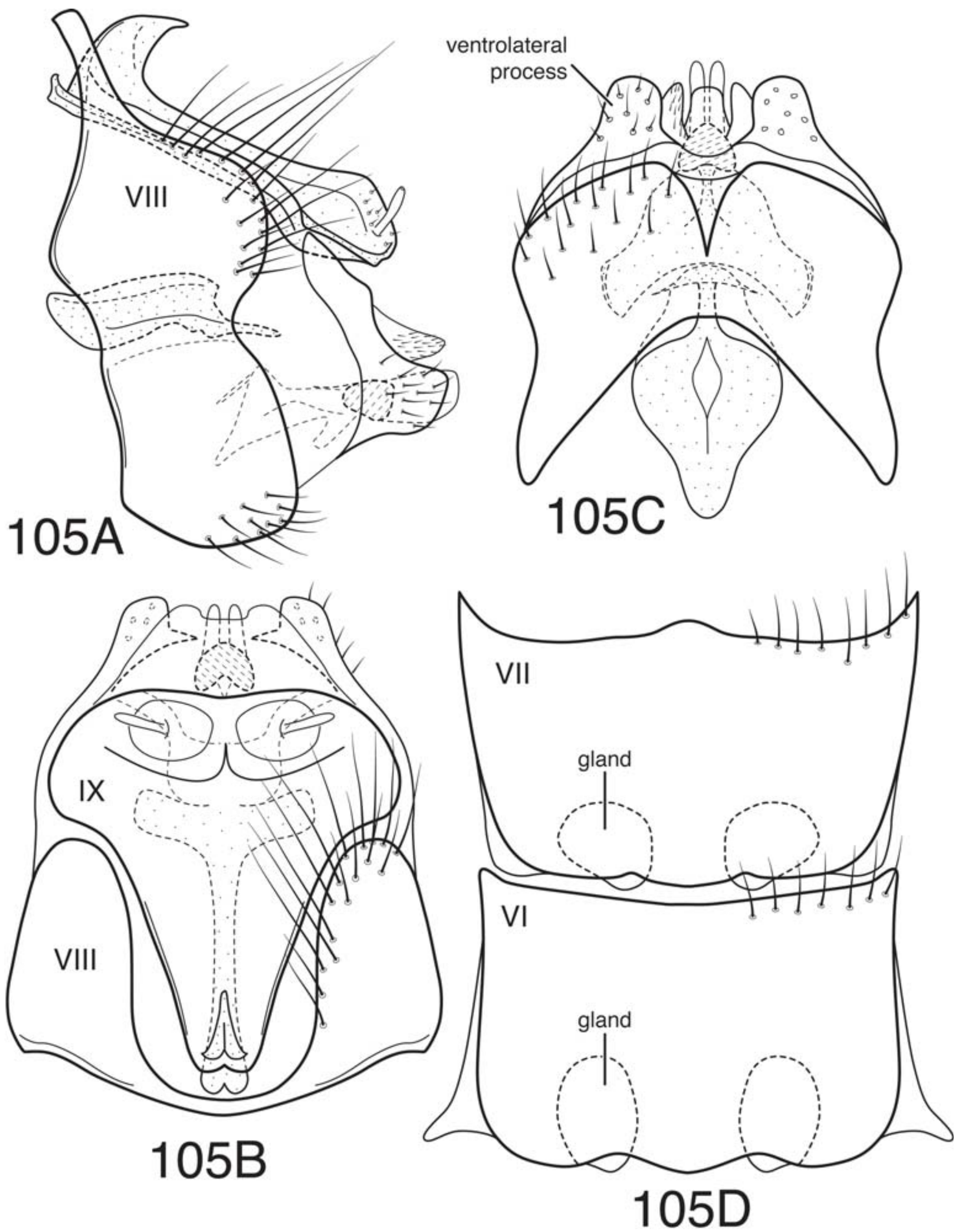
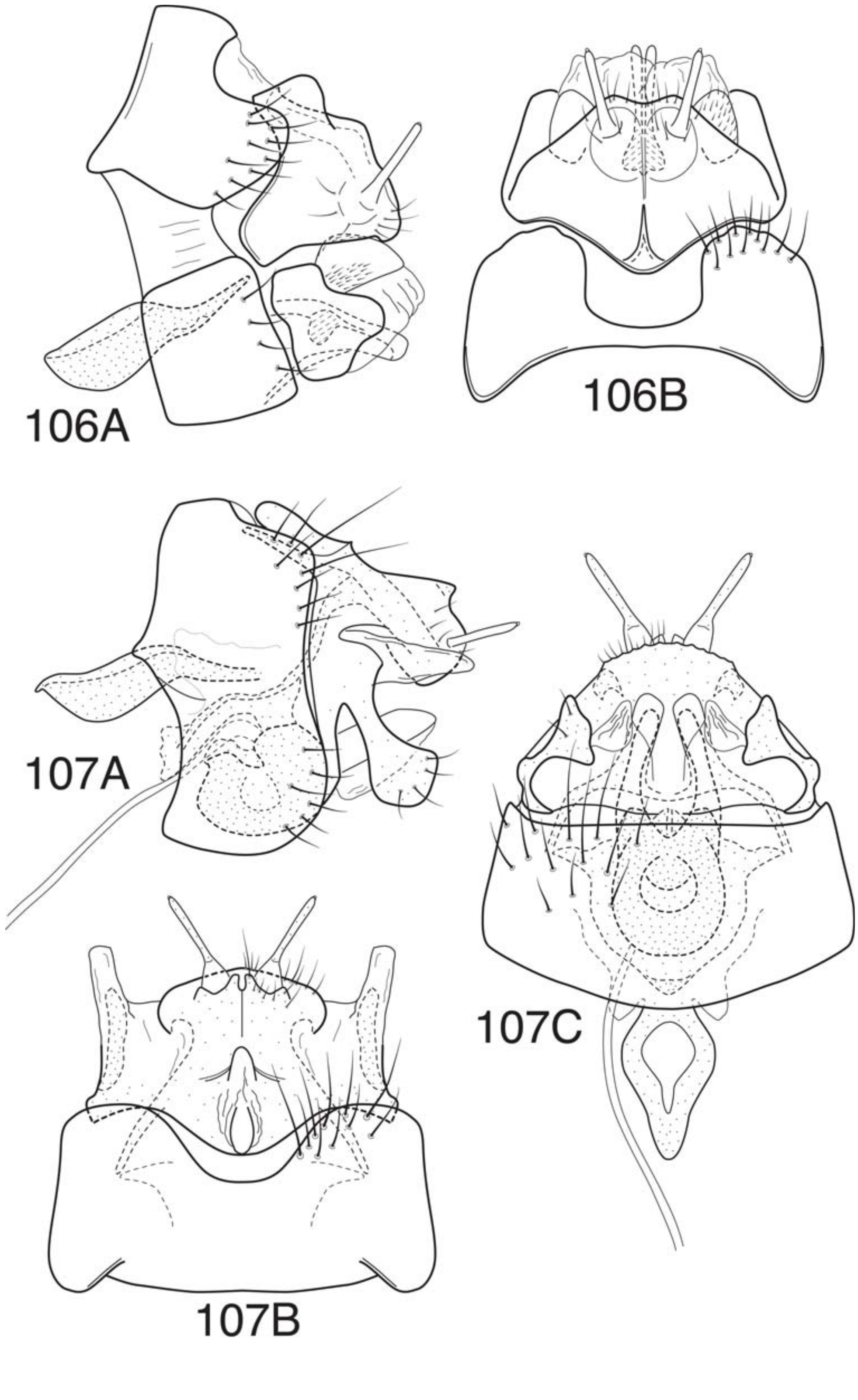
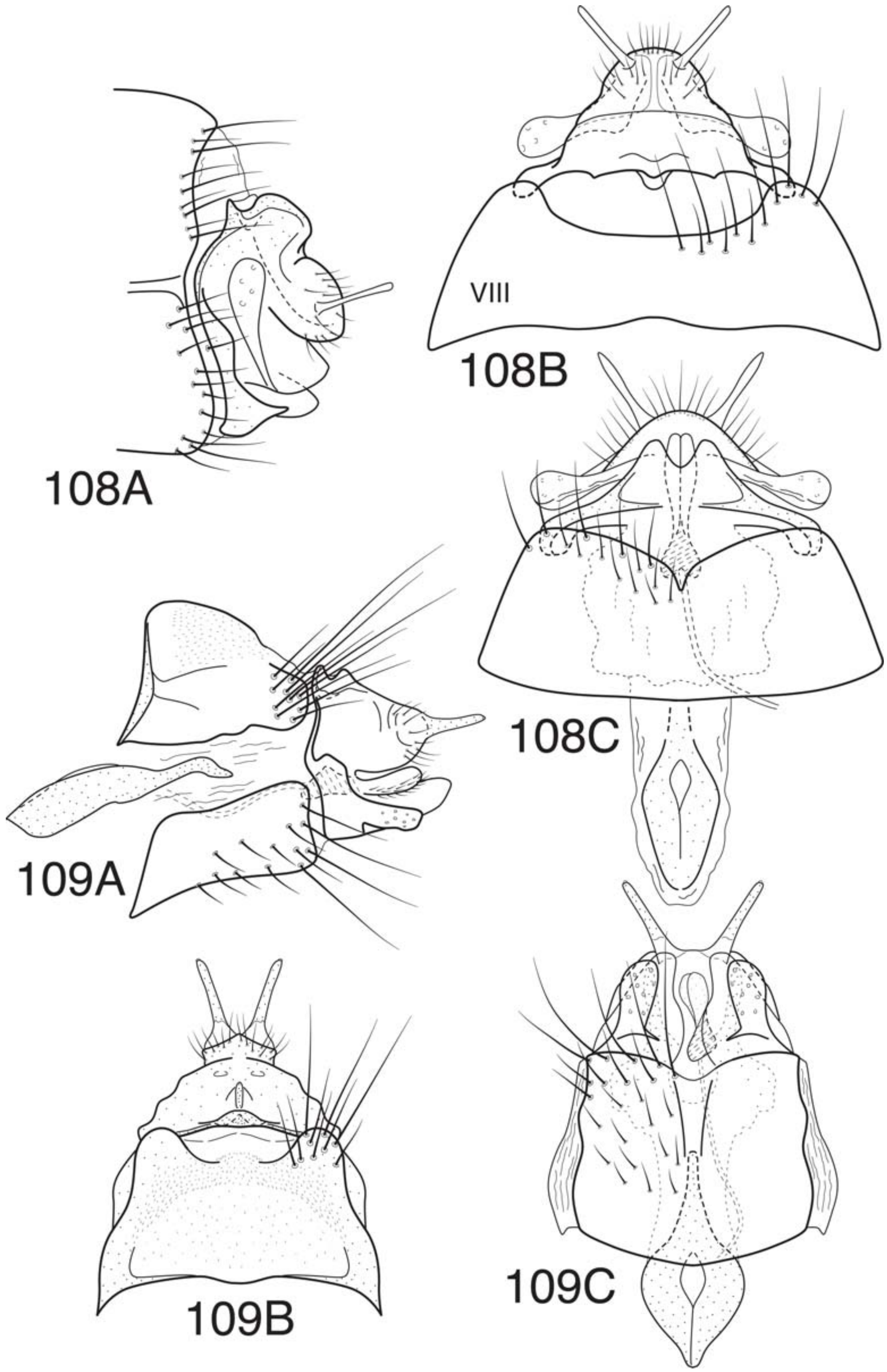


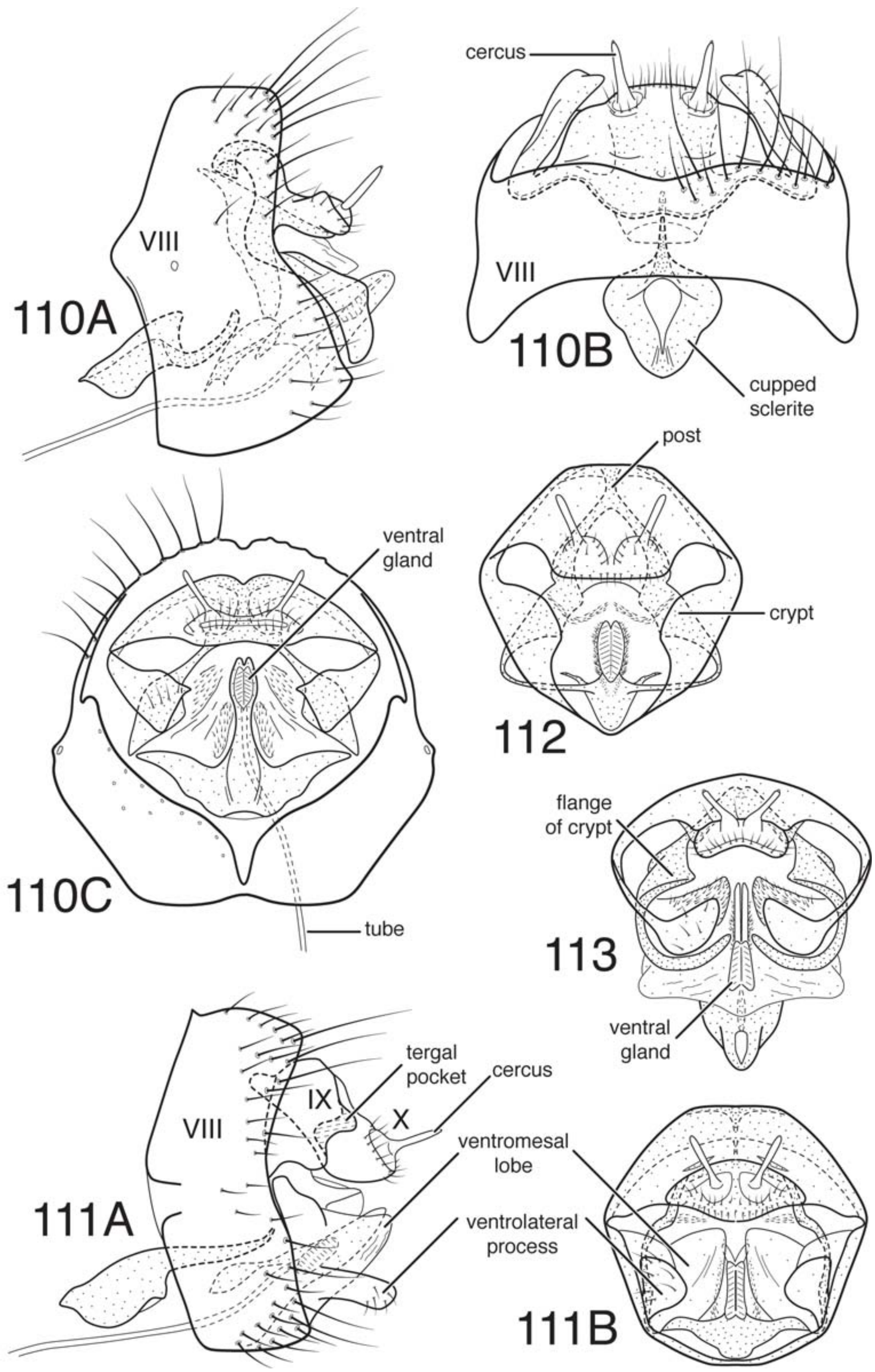
Figure 105. *Mortoniella* (*M.*) *bilineata* Ulmer, female genitalia. **A**—lateral; **B**—dorsal; **C**—ventral; **D**—glands of terga VI and VII.



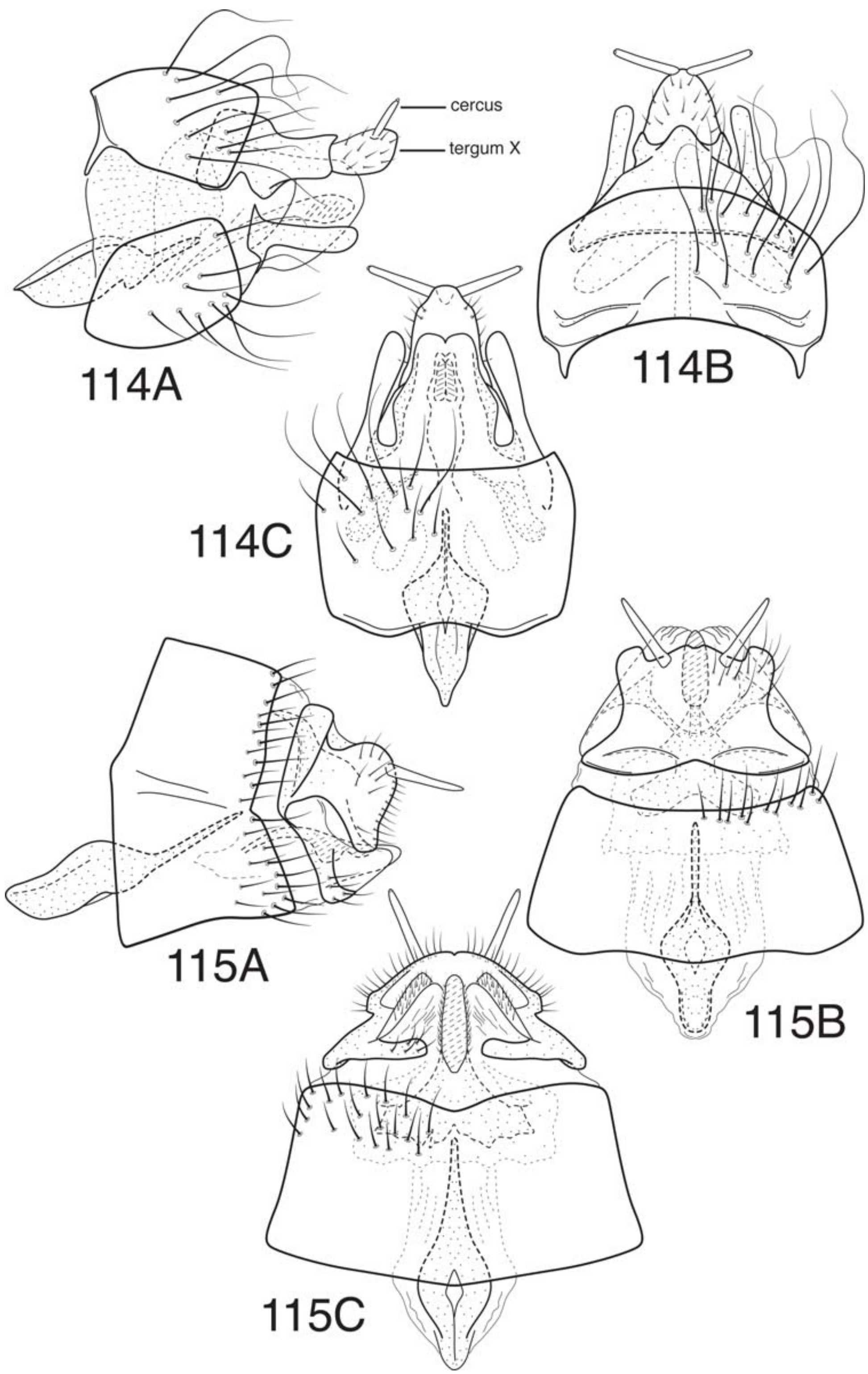
Figures 106-107. *Mortoniella* (*M.*), bilineata group, female genitalia.**106**—*Mortoniella angulata* Flint. **A**—lateral; **B**—dorsal. **107**—*Mortoniella tusci*, n. sp. **A**—lateral; **B**—dorsal; **C**—ventral.



Figures 108-109. *Mortoniella* (*M.*), bilineata group species, female genitalia. **108**—*Mortoniella catherinae*, n. sp. **A**—lateral; **B**—dorsal; **C**—ventral. **109**—*Mortoniella hodgesi* Flint. **A**—lateral; **B**—dorsal; **C**—ventral.



Figures 110-113. *Mortoniella* (*M.*), leroda group species, female genitalia. **110**—*Mortoniella atenuata* (Flint). **A**—lateral; **B**—dorsal; **C**—ventral. **111**—*Mortoniella flexuosa*, n. sp. **A**—lateral; **B**—caudal. **112**—*Mortoniella brevis*, n. sp., caudal. **113**—*Mortoniella biramosa*, n. sp., caudal.



Figures 114-115. *Mortoniella* (*M.*), species, unplaced to species group, female genitalia. **114**—*Mortoniella proakantha*, n. sp. **A**—lateral; **B**—dorsal; **C**—ventral. **115**—*Mortoniella unilineata* Sykora. **A**—lateral; **B**—dorsal; **C**—ventral.

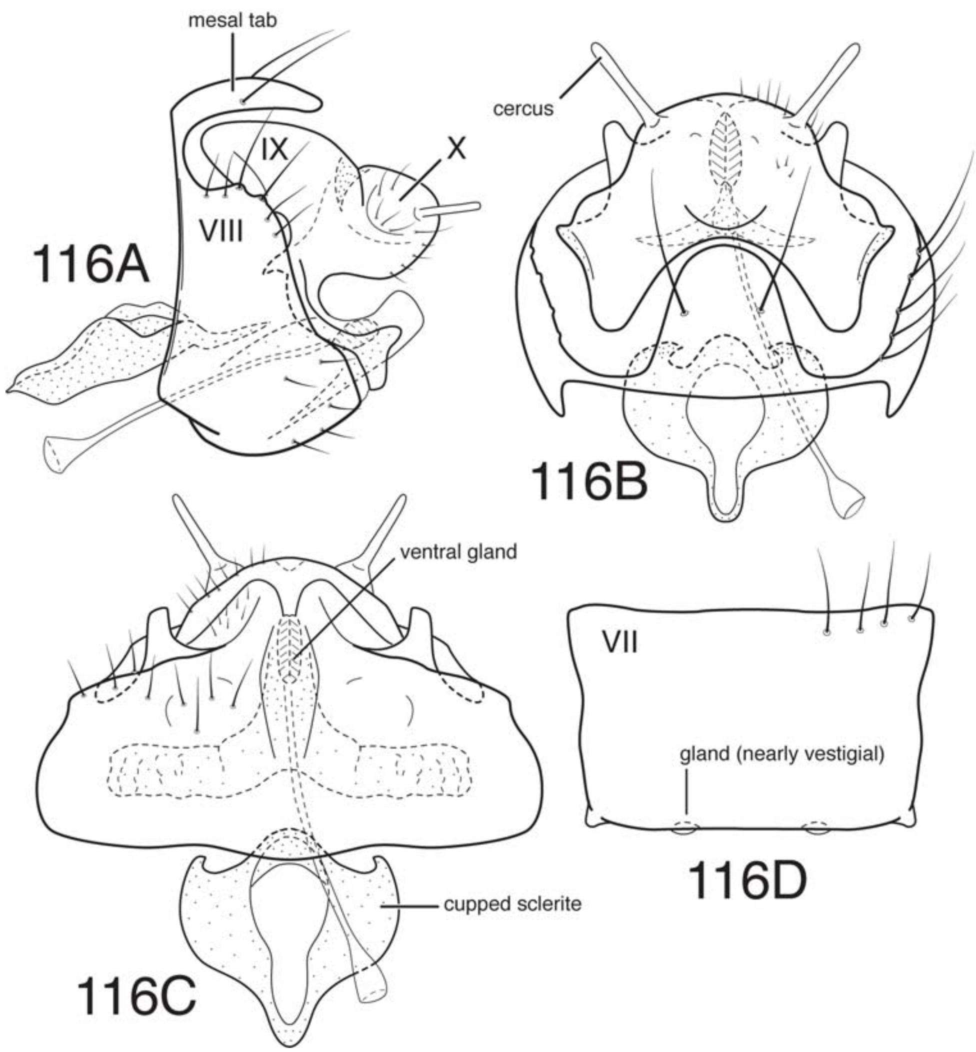
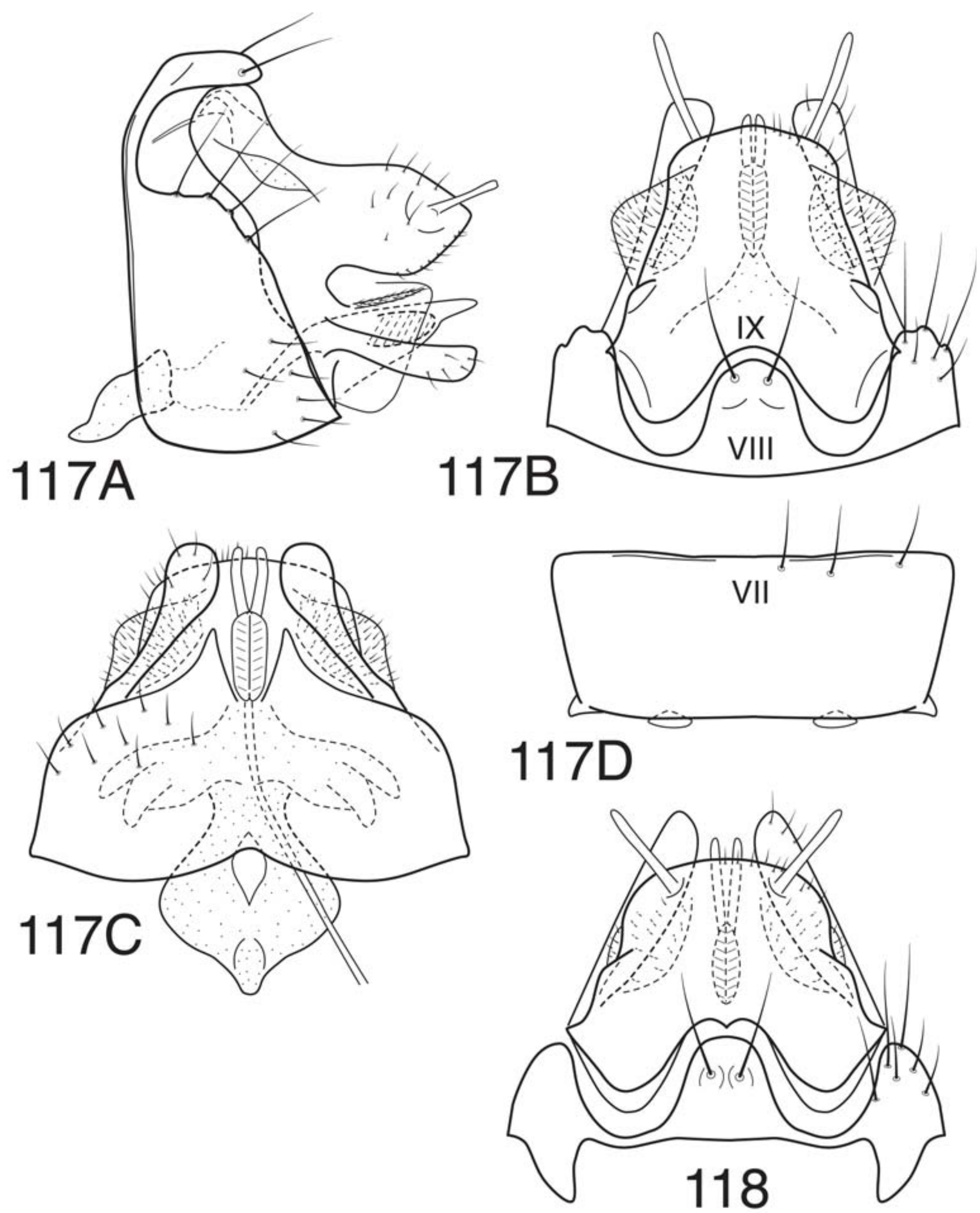
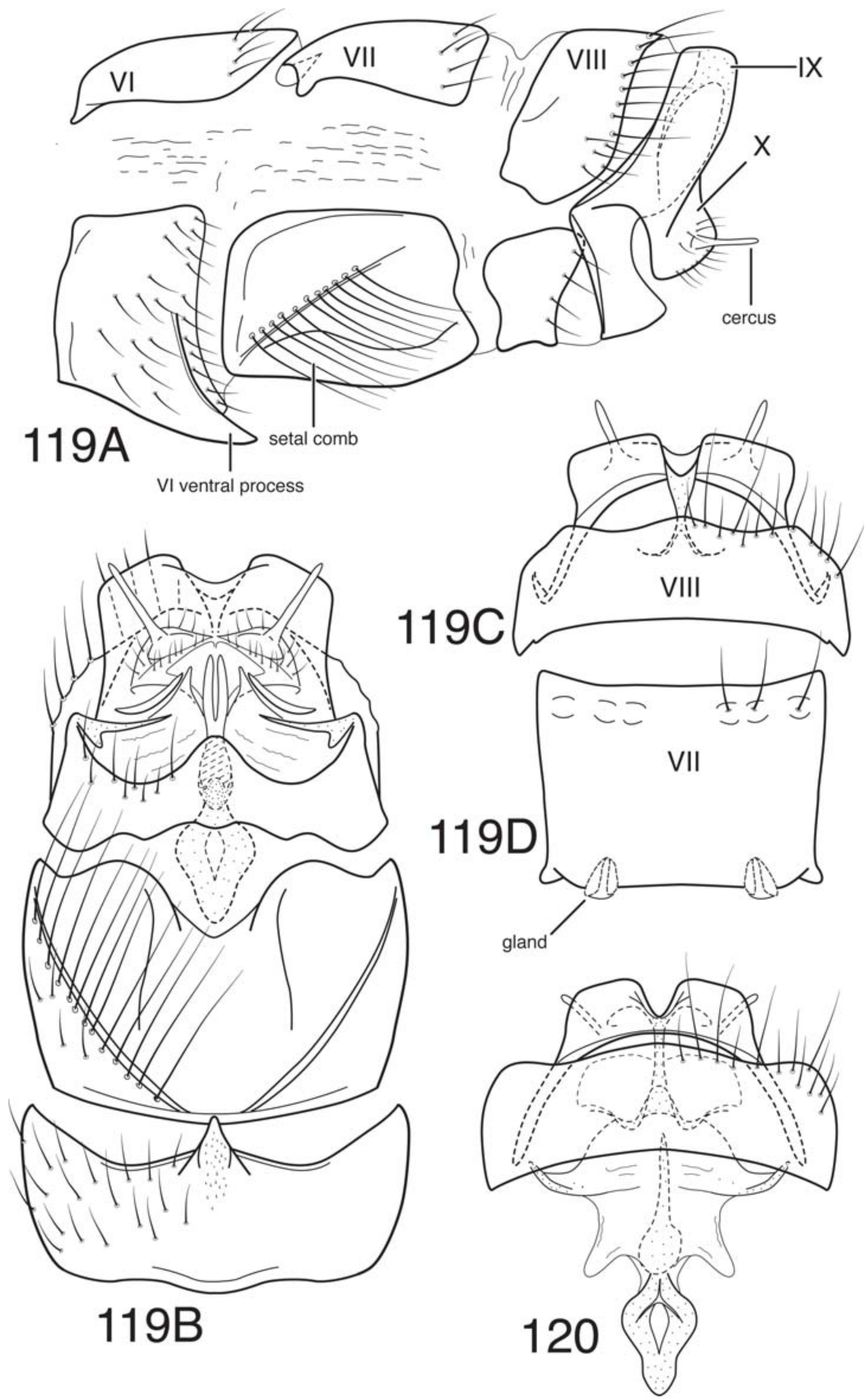


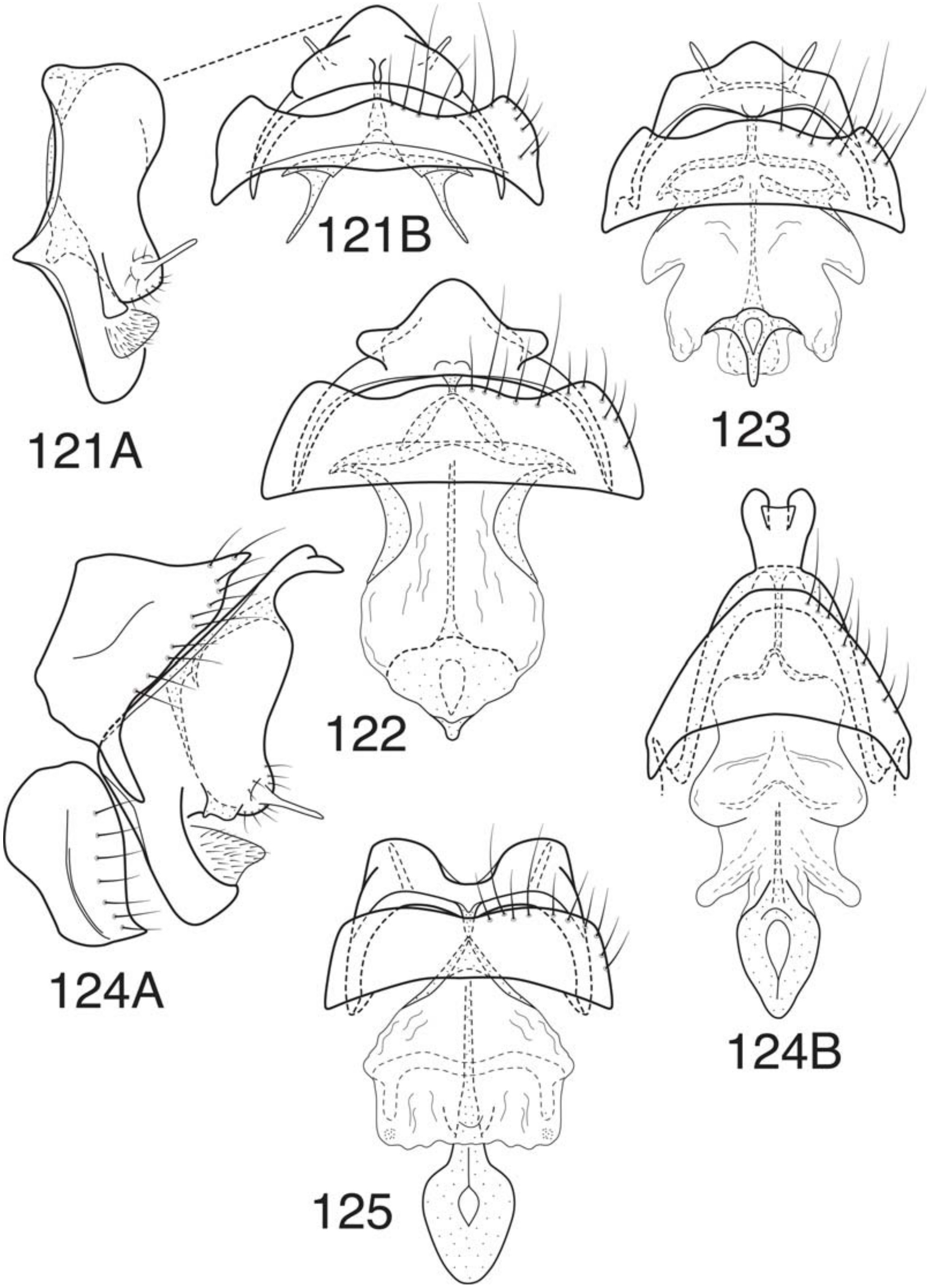
Figure 116. *Mortoniella* (*Nanotrichia*) *collegarum* (Rueda Martín and Gibon) [ormina group], female genitalia. **A**—lateral; **B**—dorsal; **C**—ventral; **D**—glands of tergum VII.



Figures 117-118. *Mortoniella* (*Nanotrichia*), ormina group species, female genitalia. **117**—*Mortoniella usseglioi* (Rueda Martín and Gibon). **A**—lateral; **B**—dorsal; **C**—female; **D**—glands of tergum VII. **118**—*Mortoniella macarenica* (Flint), dorsal.



Figures 119-120. *Mortoniella* (*Nanotrichia*), velasquezi group species, female genitalia. **119**—*Mortoniella velasquezi* (Flint). **A**—lateral; **B**—ventral; **C**—dorsal; **D**—glands of tergum VII. **120**—*Mortoniella cognata*, n. sp., dorsal.



Figures 121-125. *Mortoniella* (*Nanotrichia*), velasquezi group species, female genitalia.**121**—*Mortoniella eduardoi* (Rueda Martín and Gibon): **A**—lateral; **B**—dorsal. **122**—*Mortoniella licina*, n. sp., dorsal. **123**—*Mortoniella venezuelensis*, n. sp., dorsal. **124**—*Mortoniella spangleri*, n. sp. A—lateral; B—dorsal. **125**—*Mortoniella coheni*, n. sp., dorsal.

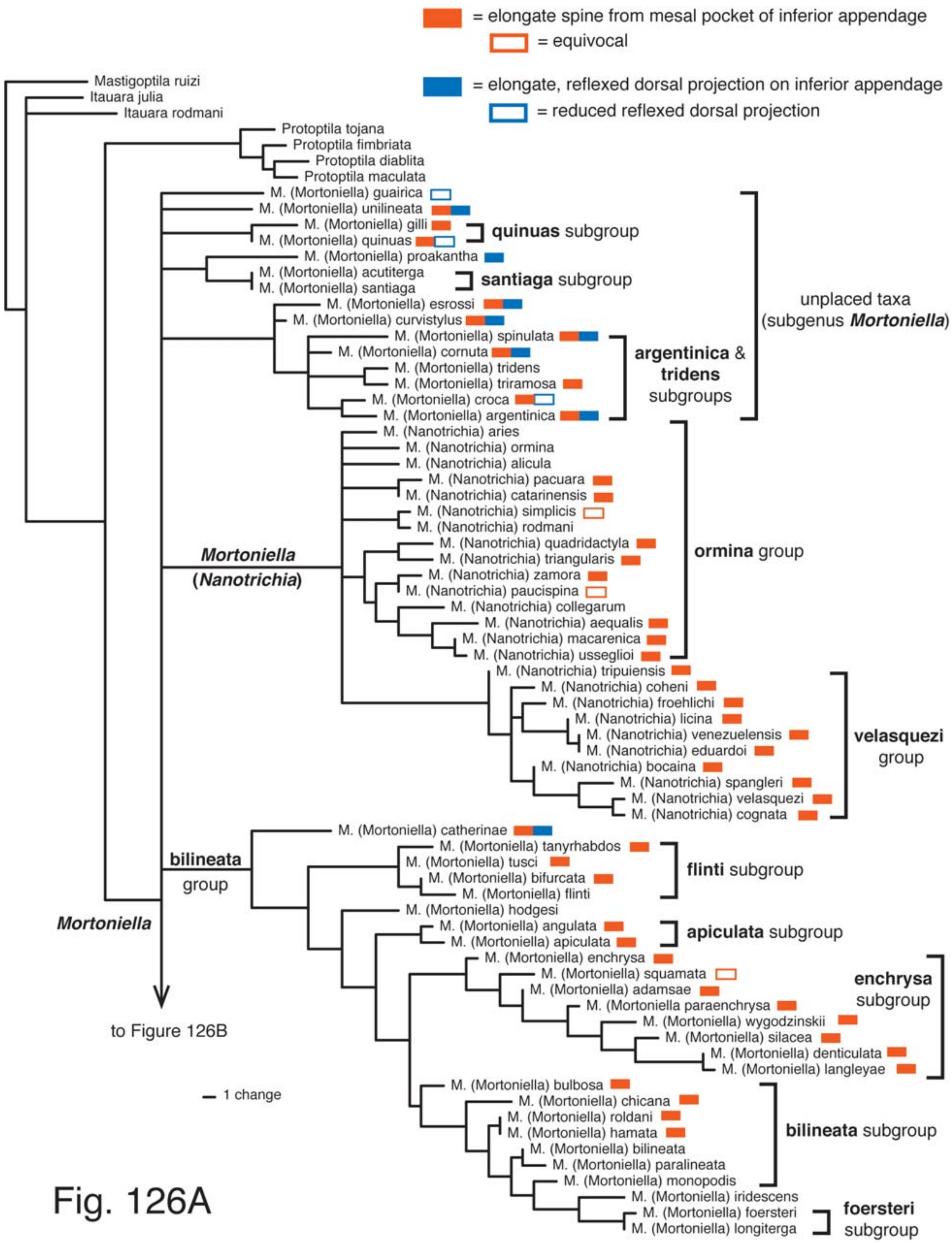


Figure 126. Parsimony phylogeny. Part A (above). Part B continues on the next page.

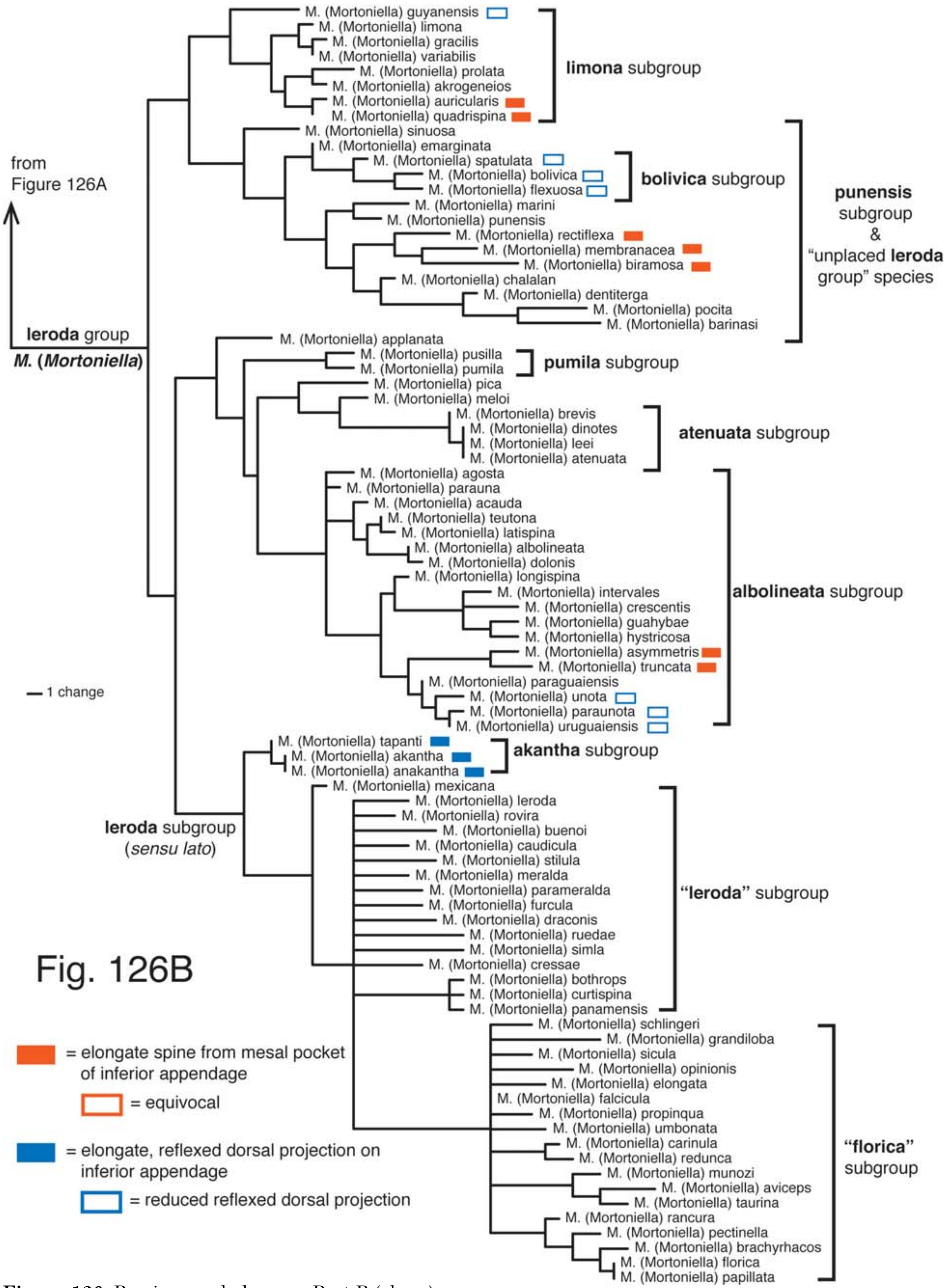


Figure 126. Parsimony phylogeny. Part B (above).

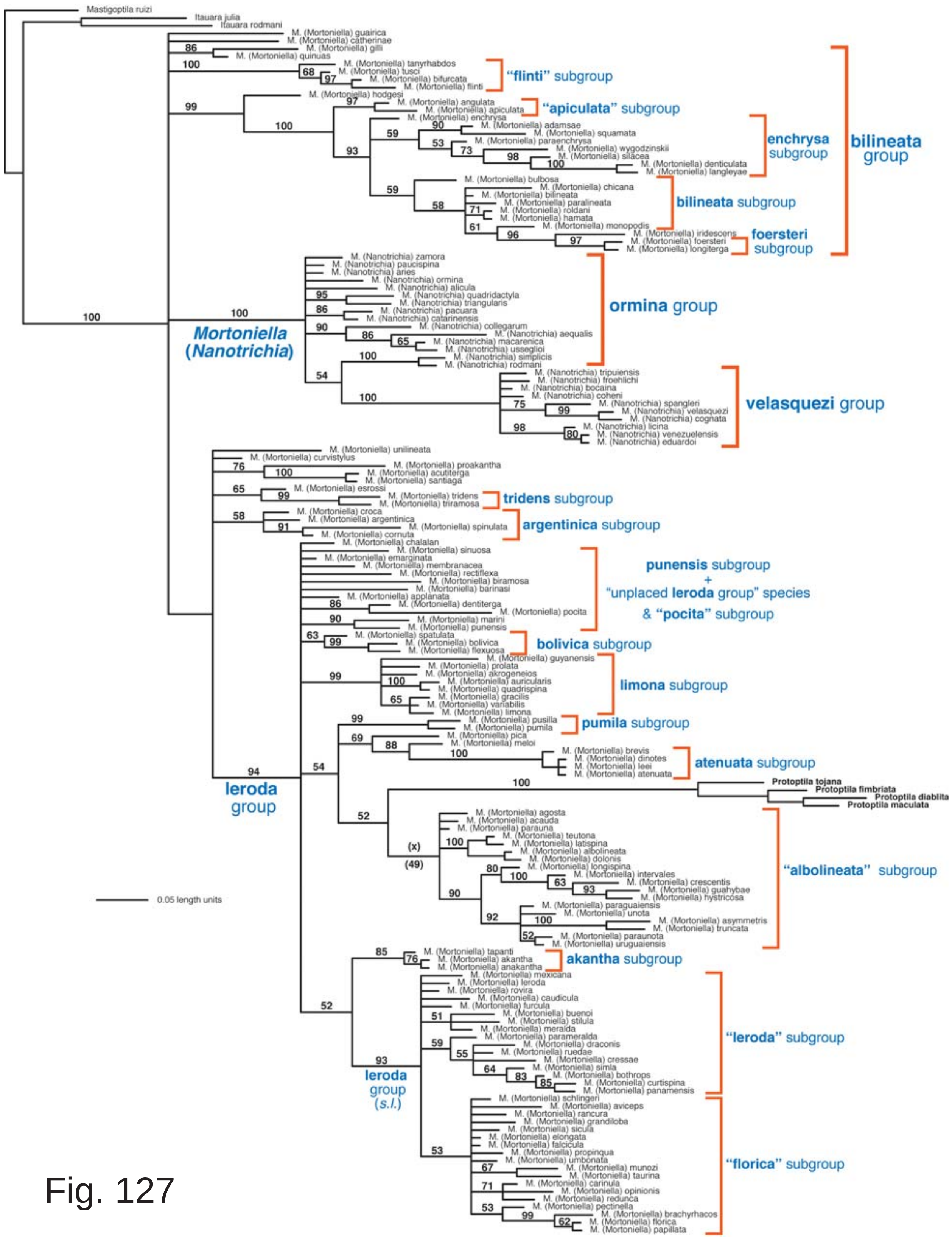
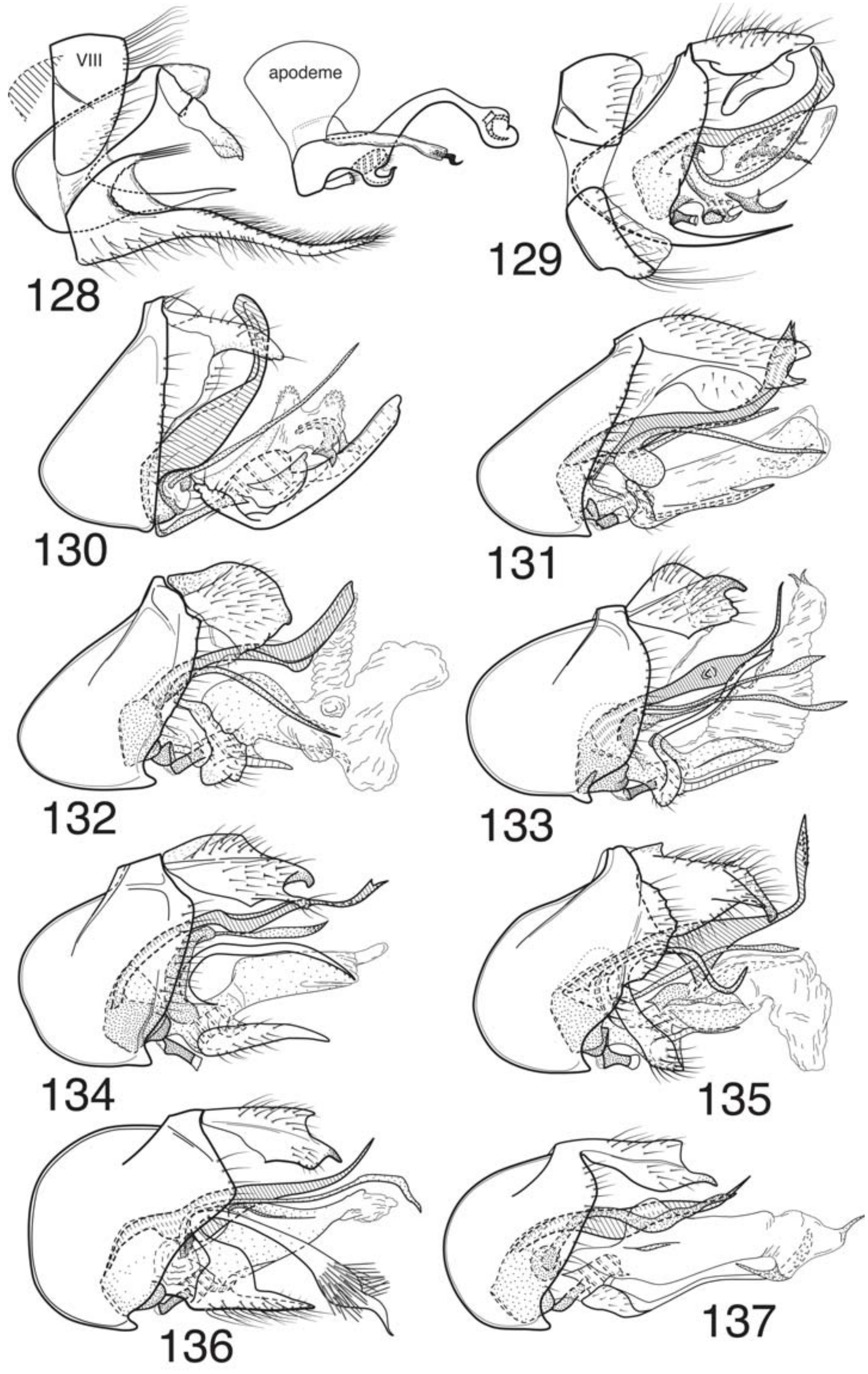


Figure 127. Bayesian phylogeny



Figures 128-137. Character evolution in *Protoptila/Mortoniella* male genitalia, lateral. **128**—*Protoptila trichoglossa* Blahnik and Holzenthal. **129**—*Mortoniella* (*Nanotrichia*) *rodmani* Blahnik and Holzenthal (ormina grp.). **130**—*M.* (*Nanotrichia*) *venezuelensis* n. sp. (velasquezi grp.) **131**—*M.* (*Nanotrichia*) *macarenica* Flint (ormina grp.). **132**—*M.* (*Mortoniella*) *unilineata* Sykora (unplaced to species grp.). **133**—*M.* (*Mortoniella*) *cornuta* n. sp. (unplaced to species grp.). **134**—*M.* (*Mortoniella*) *proakantha* n. sp. (unplaced to species grp.). **135**—*M.* (*Mortoniella*) *catherinae* n. sp. (bilineata grp.). **136**—*M.* (*Mortoniella*) *akantha* Blahnik and Holzenthal (leroda grp.). **137**—*M.* (*Mortoniella*) *simla* Flint (leroda grp.).