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AYSHA L. PRATHER

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ABSTRACT

Systematics of the genus *Phylloicus* are reviewed. Illustrations, a generic diagnosis, and descriptions are provided for males and females. 61 nominal species are recognized, of which 26 are newly described: *P. adamsae* (Peru), *amazonas* (Brazil, Peru, Venezuela), *auratus* (Peru), *bertioga* (Brazil), *bicarinatus* (Peru), *bidigitatus* (Brazil), *blahniki* (Costa Rica), *cordatus* (Venezuela), *cressae* (Venezuela), *elektoros* (Brazil, Venezuela), *ephippium* (Ecuador), *flinti* (Peru), *holzenthali* (Venezuela), *llaviuco* (Ecuador), *munozi* (Costa Rica), *panamensis* (Panama), *paprockii* (Brazil), *passulatus* (Venezuela), *paucartambo* (Peru), *perija* (Venezuela), *pirapo* (Paraguay), *quadridigitatus* (Brazil), *quitacalzon* (Peru), *spinulacolis* (Venezuela), *trichothylax* (Ecuador), and *yolandae* (Brazil). *Phylloicus ornatus* (Banks) and *P. centralus* (Navás) are designated as junior synonyms of *P. aeneus*; *P. priapulus* Denning and Hogue is designated a junior synonym of *P. lituratus*; and *P. latus* (Navás) and *P. sagittosa* (Ross) are designated as junior synonyms of *P. nigripennis*. *Phylloicus crenatus* Navás, *P. medius* Müller and *P. tricalcaratus* (Ulmer) are considered *nomina dubia*. Lectotypes are designated for *P. bromeliarum*, *P. major*, and *P. spectabilis*. A neotype is designated for *P. abdominalis*.

Key words: Trichoptera, Calamoceratidae, *Phylloicus*, caddisfly, Neotropical, taxonomy, systematics

INTRODUCTION

The Calamoceratidae are a cosmopolitan family of 8 extant genera, 1 fossil genus, and over 100 described species (Morse 2001). Two endemic genera occur in the Neotropics, *Banyallarga* Navás, 1916 and *Phylloicus* Müller, 1880a. *Phylloicus*, with 28 described species, is the largest calamoceratid genus in the New World. Species are distributed throughout Latin America, including the Antilles, but are especially diverse in Brazil, Peru, and Venezuela. The ranges of two species, *P. aeneus* (Hagen) and *P. mexicanus* (Banks), include Texas and Arizona, respectively.

The adults of many *Phylloicus* species are active during the day, unlike many caddisflies, and are less frequently encountered at light traps. Adults of many species are brightly or dramatically colored, with bold patterns formed by white, gold, and orange setae, or by clear, sometimes iridescent membrane. These wing patterns are diagnostic; therefore, adults of *Phylloicus* should be collected in clean, dry cyanide jars, handled carefully to avoid rubbing off wing hairs, and mounted on pins. Specimens preserved in fluid quickly lose setae and pigmentation, and are thus more difficult to identify. Teneral adults are often collected; if possible, they should be allowed to complete tanning before being killed.

Phylloicus larvae are found in slow currents or in pools, and one species, *P. bromeliarum*, inhabits bromeliad tanks (Müller 1880a). Cases and larvae have been described by Ulmer (1955, *P. bromeliarum*), Flint (1968a, *P. monticolus*; 1968b, *P. farri*), Botosaneanu & Sykora (1973, *P. cubanus*), Botosaneanu & Flint (1982, *P. hansoni*, as *angustior*), Wiggins (1996a, *P. mexicanus*, as *aeneus*), and Bowles & Flint (1997, *P. aeneus*, as *ornatus*).

All known larvae of *Phylloicus* build distinctive flattened cases using several leaf pieces cut into ovals. They live in still, backwater pools of rivers and streams and may be abundant at a given locality.

The genus *Phylloicus* was erected by Müller (1880a), without establishing a type species, while Flint (1964) subsequently selected *P. major* Müller. Thirty-five nominal species exist in the literature, and 28 are currently recognized as valid species (Flint *et al.* 1999a). Of these 35 species, 17 were described before or soon after 1900, and most are known only from the original descriptions, which are inadequate for species discrimination. The 11 more recently described species are better known, but none of the species have been reviewed or described in a comparative manner. The absence of a recent taxonomic review of *Phylloicus* makes identification of specimens in hand and the recognition of new species very difficult. Flint (1964; 1966; 1967; 1974a; 1983) has identified and redescribed many type specimens, but there has been no comprehensive review of the genus. This paper provides the first assessment of the species-level taxonomy of *Phylloicus*, including the description of 26 new species.

Checklist of *Phylloicus* species

Phylloicus abdominalis (Ulmer, 1905b)
Phylloicus aculeatus (Blanchard, 1851)
    Phylloicus distans Navás, 1918
Phylloicus adamsae **new species**
Phylloicus aeneus (Hagen, 1861)
    Phylloicus ornatus (Banks, 1909) **new synonym**
    Phylloicus centralus (Navás, 1924) **new synonym**
Phylloicus amazonas **new species**
Phylloicus angustior Ulmer, 1905a
Phylloicus auratus **new species**
Phylloicus bertioga **new species**
Phylloicus bicarinatus **new species**
Phylloicus bidigitatus **new species**
Phylloicus blahniki **new species**
Phylloicus brevior Banks, 1915
Phylloicus bromeliarum Müller, 1880a
Phylloicus chalybeus (Hagen, 1861)
Phylloicus cordatus **new species**
Phylloicus crenatus Navás, 1916 **nomen dubium**
Phylloicus cressae **new species**
Phylloicus cubanus Banks, 1924
Phylloicus elegans Hogue and Denning, 1983

Phylloicus elektoros **new species**
Phylloicus ephippium **new species**
Phylloicus farri Flint, 1968b
Phylloicus fenestratus Flint, 1974b
Phylloicus flinti **new species**
Phylloicus hansoni Denning, 1983
Phylloicus holzenthali **new species**
Phylloicus iridescens Banks, 1941
Phylloicus lituratus Banks, 1920
    Phylloicus priapulus Denning and Hogue, 1983 **new synonym**
Phylloicus llaviuco **new species**
Phylloicus maculatus (Banks, 1901)
Phylloicus magnus Banks, 1913
Phylloicus major Müller, 1880a
Phylloicus assimilis (Ulmer 1905b)
Phylloicus medius Müller, 1880a **nomen dubium**
Phylloicus mexicanus (Banks, 1900)
Phylloicus monticolus Flint, 1968c
Phylloicus munozi **new species**
Phylloicus nigripennis (Banks, 1900)
    Phylloicus latus (Navás, 1924) **new synonym**
    Phylloicus sagittosa (Ross, 1951) **new synonym**
Phylloicus obliquus Navás, 1931
Phylloicus panamensis **new species**
Phylloicus paprockii **new species**
Phylloicus passulatus **new species**
Phylloicus paucartambo **new species**
Phylloicus perija **new species**
Phylloicus pirapo **new species**
Phylloicus plaumanni Flint, 1983
Phylloicus pulchrus Flint, 1964
Phylloicus quadridigitatus **new species**
Phylloicus quitacalzon **new species**
Phylloicus spectabilis Martynov, 1912
Phylloicus spinulacolis **new species**
Phylloicus superbus Banks, 1938
Phylloicus tricalcaratus (Ulmer, 1905b) **nomen dubium**
Phylloicus trichothylax **new species**
Phylloicus yolandae **new species**

MATERIALS AND METHODS

Species discrimination

Species were discriminated and described primarily on differences in the male genitalia, especially characteristics of tergum X. In most instances, distinctive characters could be identified to clearly discriminate among species. However, in some instances, character differences among species were subtle. Additionally, limited material, including species known only from the single type specimen, made it difficult to assess within-species variation. Collection and study of additional material may provide evidence that morphotypes described here represent variants of a single species. In the interests of describing the known morphological and geographic diversity, I have described each of the diagnosable morphotypes as a species.

Morphological terminology

For warts and sutures of the head and thorax, I use the terminology of Wiggins (1996b). The anterior setal warts of the head of *Phylloicus* are small, usually bearing only a few setae each. The central setal area of the head is never defined by distinct setae in *Phylloicus*; in some species, there may be a few fine setae. Calamoceratids do not have a visible cranial suture, but a posteromesal ridge (Fig. 2; Wiggins 1996b, fig. 17.140) is a synapomorphy of the family (Prather 2002).

Wing venation follows Betten (1934) and Mosely & Kimmins (1953). Figure 5 illustrates vein and cell designations. In all calamoceratid forewings, both the nygma and the thyridium are clearly visible. In the majority of *Phylloicus* species, the forewing pattern consists of two transverse bands of varying width, of white, ivory, or orange setae. The proximal band is usually longer, running most of the width of the wing, and is at approximately the middle of the wings length and it may include the thyridium. The distal band is located immediately distad of the chord, and is usually shorter than the proximal band, usually not extending posterad of the medial field (Fig. 117A), but covering the nygma. The nygma is also present in the hind wing. The absence of fork I of the hind wing is a synapomorphy for *Phylloicus* (Prather 2002). In many species, a basal brush (Fig. 5) is present on the hind wing, arising dorsally on the third axillary sclerite. This brush varies in length and between the sex in which it occurs; in females, only very short brushes are found.

Terminology for male and female genitalia largely follows that of Schmid (1998) and Nielsen (1957; 1980). Calamoceratids lack superior and intermediate appendages of tergum X, as well as parameres. In many species, there is a distinct lateral ridge anteriorly on segment IX, just ventral to the base of the preanal appendages, which is continuous with the pleural posterior margin (Fig. 25A). In most species, there are two fields of long setae in the pleural area of male segment IX. The number and length of these setae are species-specific. Using the base of the inferior appendage as a reference point, these are the dorsal

pleural setae and the ventral pleural setae (the latter are usually parallel with the inferior appendage base). The term phallotremal sclerites (Nielsen 1957) are internal sclerotized structures surrounding the ejaculatory duct, usually consisting of a dorsal, horseshoe-shaped or ovoid structure, and the sclerotized distal portion of the ejaculatory duct. In specimens with the endotheca fully everted, these sclerites are located in the most distal membranous lobes. Uniquely among calamoceratids, males *Phylloicus* often have proximal abdominal segments highly modified. Usually the modifications are to segment IV; in some species, segments III and V are also involved. The term corema (pleural coremata) refers to an eversible, sometimes multi-lobed and setose, membranous sac. The term is used for morphologically similar structures found on segments VII, VIII, or IX in arctiid moths (Torre-Bueno 1989), and more generally for eversible sacs in male Lepidoptera (Varley 1962; Birch 1979; Birch *et al.* 1990), which dispense reproductive chemicals (Weller *et al.* 1999); presumably, in *Phylloicus* these structures have a similar purpose. There may be both mesal and lateral coremata. The mesal structures arise from the dorsal intersegmental membrane and consist of one or two lobes; one or both of these may be covered with short setae. The lateral coremata vary from short, single-lobed to complex multi-lobed structures, of which the posterior lobe may extend several segment lengths when turgid. In addition to the coremata, there are often paired posterior projections of tergum IV and lateral sclerites which may project posteriorly one or two segment lengths beyond segment IV (Figs. 9F, 53F). The presence of complex coremata and modifications to tergum IV are often associated with long basal brushes of the hind wing and preanal appendages covered with dense, fine, very long setae, which may aid in the dispersal of the presumed pheromones.

Specimen preparation

To observe diagnostic structures of caddisflies, it is usually necessary to clear soft tissues from the terminalia. The standard method (Ross 1944) uses 10-12% KOH. Specimens were soaked overnight in KOH at room temperature, after which the specimens were flushed with distilled water, using a syringe to wash out the macerated tissues. Specimens were then placed in a solution of 10% glacial acetic acid 72% ethanol, to neutralize the KOH. They were then examined in a dish of glycerin or ethanol.

An alternative method (Cumming 1992) for clearing soft tissues using hot 85% lactic acid was applied. This method worked well for everting the phallic endotheca and preserves cuticular pigmentation better than does KOH. Specimens were placed in test tubes with a few milliliters of lactic acid; the test tubes were placed in a beaker bath of glycerin, and then slowly heated to110-125° C, for 10-30 minutes, until the soft tissues were macerated. Upon cooling, the specimen was then transferred directly to a dish of glycerin, where any remaining soft tissues were teased out with a probe before examination. To evert coremata on male abdomens, the proximal abdomen was flushed with distilled water or ethanol using a syringe.

After examination, the cleared abdomen was preserved in a minute genitalia vial containing glycerin and pinned under the specimen, or if stored in ethanol, returned to the original vial.

To reveal details of wing venation, special preparations of a fore- and hind wing from each species were made. After removal from the body, the wings were placed in a dish of ethanol. Using a pair of soft fine artists brushes, the setae were brushed off the wings. Denuded wings were rinsed in a second dish of ethanol, and then soaked briefly in absolute ethanol to completely dehydrate them. The wings were then arranged on one coverslip, covered with a second, and then placed inside a folded lab wipe. A weight was applied on top of this, to keep the preparation flat while the ethanol evaporated. When dry, tiny dabs of Gelva resin (Solutia Inc.) were applied around the edges of the coverslips to keep them together and a tab of label paper was glued on with Gelva, to provide a place for pinning the wing preparation back on the original specimen.

Material examined

All specimens examined were individually labeled with unique alphanumeric identification numbers and specimen data were entered into a Biota database (Colwell 1996). Type depositories and lists of material examined are given with each species discussion. A detailed list of material examined, including individual specimen code numbers, is maintained at the University of Minnesota Insect Collection website (http://www.entomology.umn.edu/museum/databases). Material is deposited, as indicated, in the following institutions:

AMNH	American Museum of Natural History, New York, New York, USA
ASL	Academy of Sciences, St. Petersburg, Russia
BMNH	The Natural History Museum, London, England
CAS	California Academy of Sciences, San Francisco, California, USA
CMNH	Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA
CNC	Canadian National Collection (Agriculture), Ottawa, Ontario, Canada
DEI	Deutsches Entomologisches Institut, Eberswalde, Germany
EMUS	Utah State University, Logan, Utah, USA
FSCA	Florida State Collection of Arthropods, Gainesville, Florida, USA
IBUNAM	Instituto de Biología, Universidad Nacional Autonoma de México, México City, México
INBIO	Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica
INPA	Instituto Nacional de Pesquisas da Amazonia, Manaus, Brazil
IZAM	Instituto de Zoología Agrícola, Maracay, Venezuela
LACM	Los Angeles County Museum of Natural History, Los Angeles, California, USA
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA

MHNJP	Museo de Historia Natural “Javier Prado”, Lima, Peru
MNHNP	Muséum National d'Histoire Naturelle, Paris, France
MZB	Museo de Zoologia, Barcelona, Spain
MZUSP	Museu de Zooologia, Universidade de São Paulo, São Paulo, Brazil
NMNH	National Museum of Natural History, Washington, DC, USA
NMW	Naturhistorisches Museum, Vienna, Austria
NRS	Naturhistoriska Riksmuseet, Stockholm, Sweden
PAN	Polish Academy of Sciences, Warsaw, Poland
RNH	Rijksmuseum van Natuurlijke Historie (Naturalis), Leiden, Netherlands
UMSP	University of Minnesota Insect Collection, Saint Paul, Minnesota, USA
WSU	Washington State University, Pullman, Washington, USA
ZMHU	Zoologisches Museum, Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
ZSZMH	Zoolgische Staatinstitut und Zoologisches Museum, Hamburg, Germany

Fritz Müller described three species of *Phylloicus* from larvae or cases, and did not designate type specimens or depositories in his original descriptions. However, the Museum of Comparative Zoology at Harvard University has series of adult specimens (on long-term loan to Oliver Flint, Smithsonian Institution), labeled as types in Müllers handwriting, of two of these species, *P. bromeliarum*, and *P. major*. I have designated lectotypes from these series in the interest of taxonomic stability.

Data collection and management

The Delta system (Dallwitz 1980; Dallwitz *et al.* 1993 onwards) facilitated the collection of taxonomic character data, the generation of consistently formatted descriptions, and key-building. Data were coded into Delta format via the Delta Editor v. 1.04 (Dallwitz 1980; Dallwitz *et al.* 1999 onwards).

Illustrations

Numbering. To facilitate comparison between species, I have standardized lettering of views. Not all views are included for each species; this accounts for nonconsecutive lettering of figures for some species. Letters used for figures are:

Male: A—lateral view; B—dorsal view; C—ventral view; D—phallus, lateral view; E— phallus, ventral view; F—segment IV, dorsal view. **Female:** A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view. **Wings:** A—forewing; B—hind wing.

The phallus of each species is illustrated. However, not all illustrations capture complete detail for a particular species. The membranous endotheca may or may not evert from within the phallobase during specimen preparation. For each species, the phallus illustrated is that of the specimen that most fully revealed full detail, but in many cases

none of the available specimens had the phallus fully everted. Thus, superficial comparison of illustrations would erroneously suggest differences between species.

Likewise, descriptions, especially of color features, were limited by the condition of material available to me for examination. Preservation in fluid does not preserve color, so if I was not able to examine pinned specimens in good condition, I could not describe details of body color or wing pattern. Considerable fading of colors occurs even in pinned specimens; thus, my descriptions may fail to capture the color of very fresh specimens.

Illustrations of genitalia were generally prepared from the type specimen, if it was in adequate condition for that purpose. Some figures were prepared from additional specimens, especially if the phallus of the type was not fully everted. The specimen from which each figure was prepared is noted in the figure caption. Initially, pencil sketches were made on tracing paper mounted on a grid, corresponding to another grid in the microscope eyepiece. The pencil sketch was then scanned into Adobe Photoshop (v. 6.0, Adobe Systems, Inc.). The digital image was "placed" into an Adobe Illustrator (v. 9.01, Adobe Systems, Inc.) document, to serve as a template, and then traced to create a vector graphic. A graphics tablet and pen (Intuos™, Wacom Technology Co.) facilitated careful tracing of the original image.

Illustrations are drawn to different scales, so that homologous structures of each species appear approximately the same size. Male proximal abdominal structures (view **F** in figures) are shown at a greater reduction than other views. Unless otherwise noted, all other views in a given figure are drawn to the same scale. A forewing length is given for each species to indicate relative size.

Wing venation diagrams were prepared in a similar fashion, except that the template from which the vector graphic was prepared was a digital photograph (taken with an Olympus model C3030 digital camera) of cover-slip-mounted wings.

Julie Martinez prepared color illustrations from pencil sketches made using a drawing tube mounted on a dissecting microscope.

SYSTEMATICS

Genus *Phylloicus* Müller

Phylloicus Müller, 1880a:113, 131 [Type species: *Phylloicus major* Müller 1880a, subsequent selection of Flint 1964, not Fischer 1965]. —Müller 1880b:80-82 [adults, cases]. —Müller 1888:275 [larva]. —Ulmer 1905a:77, 1907:120 [adults]. —Lestage 1925: 42 [checklist, key]. —Betten 1934:236 [adults]. —Roldán Pérez 1988:146 [larva]. —Wiggins 1996:224 [larva]. —Flint *et al.* 1999a:16 [checklist].

Homoeoplectron Ulmer, 1905b:33 [Type species: *Homoeoplectron assimile* Ulmer 1905b, subsequent selection of Fischer 1965]. —Ulmer 1905a:77 [to synonymy].

Notiomyia Banks, 1905:18 [Type species: *Heteroplectron mexicanum* Banks 1900, original designation]. —Flint 1967:17 [to synonymy].

Murielia Hogue and Denning, 1983 (in Denning *et al.* 1983:187) [Type species: *Phylloicus farri* Flint 1968b, original designation]. —Flint *et al.* 1999b:73 [to synonymy].

Generic description, adult. Forewing length 7.0-18.5 mm.

Antennae usually twice wing length or longer (in some very large species relative antennal length may be reduced); scape shorter than head length, but shape somewhat variable. Maxillary palps 5-segmented in both sexes; first, second, third and fifth segments 4-5 times longer than wide; fourth segment short, length no more than twice width. Labial palps 3-segmented. Head with anterior, anteromesal, posterior and posterolateral setal warts; central setal area bare or marked by patches of fine setae only; anterior setal warts small, with few stout setae; anteromesal setal warts prominent and single or paired. Posteromesal ridge present at posterodorsal margin of head (Fig. 2). Mesoscutum without distinct setal warts, with setae arranged in two anterior-posterior sublateral lines, each line one to several setae wide; in some species additional setae scattered between these lines. Anterior margin of mesoscutellum straight; without warts or prominent setae (Fig. 3). Tibial spur formula 2,4,4/2,4,3/2,4,2; metathoracic leg of males often with posterior fringe of long setae. Forewing color (membrane and setae) variable, overall color ranging from golden brown to black, with, in some species, patterns formed by white, orange, or yellow hairs and lighter pigmentation of membrane or by bare patches (Figs. 105-118). Forewing venation typical for family: forks I-V present, discoidal and medial cells closed; R_1 recurrent onto R_2 or free to wing margin; Cu_2 and A_1 free to wing margin (Figs. 4-8). Hind wing with forks II, III, and V present, discoidal and medial cells open (Fig. 5).

Male. Posterior margin of tergum IV may be modified into sclerotized lateral or mesolateral processes; coremata may be present as membranous erectile evaginations of pleural or tergal intersegmental membrane. Anterior margin of tergal sclerites may be notched. In most species, pointed mesal process present on anterior margin of sternum VII. Sternum VIII may be modified, with notched or emarginate posterior process of posterior margin enclosing anterior portion of sternum IX. Tergum IX approximately equal in length to sternum IX; posterior margin of tergum variously modified by projections or processes. Sternum IX narrower mesally than laterally, internal ridges may be present mesally or mesolaterally; patch of stout setae present at posterolateral margin of pleural region. Preanal appendages of varying length and shape, bearing most setae on apical two-thirds. Tergum X may be fused to tergum IX or distinctly separated, often with digitate process arising basomesally, approximately equal in length to inferior appendages, posterior margin of X variously modified; lateral portions folded mesally to varying degree. Inferior appendages 2-segmented, not highly modified; coxopodite covered with stout setae, particularly on lateral and ventral surfaces; harpago cylindrical or tapered apically, bearing short, pointed, peglike setae on mesal and apicoventral surfaces; some short fine setae may be present basally on harpago; base of inferior appendages occupies 1/2 to 2/3 length of sternum IX. Phallobase a simple curved tube, curvature consistent throughout genus, except in *P. fenestratus*; with phallotremal sclerites of varying size and shape, at apex when endotheca everted; endotheca may consist of multiple membranous lobes with species-specific arrangement.

Female. Anterior margin of tergal sclerites may be notched. In most species, pointed mesal process present on anterior margin of sternum VII. Sternum VIII more darkly sclerotized than anterior segments, anterior margin may be notched or with an anterior-posterior mesal ridge; posterior margin bearing many stout setae, mesal margin entire or cleft to base of segment; lateral margins indistinct beyond lateral apodemes extending from anterior margin. Tergum IX with anterior margin entire or notched posteriorly; mesally without clear junction with tergum X. Sternum IX with striated regions anterior and lateral to vaginal opening; between these regions there may be an invaginated sclerotized "pocket" or patch of lightly sclerotized cuticle. Tergum X bearing paired posterolateral appendages, varying in shape, length and degree of distinctness from tergite; these appendages bearing many stout setae apically; posteromesal portion of tergite membranous or semisclerotized; small, sclerotized digitate posterolateral processes may be present, although the completeness of their production varies from specimen to specimen and may not be bilaterally symmetrical within a specimen. Sternum X lateral and posterior to anal opening membranous except for bases of dorsal appendages; a few short fine setae may be present in this membranous area. Vaginal apparatus consisting of anterior and posterior sclerites; duct leading to spermatheca arises from within sclerotized pocket on ventral surface of anterior sclerite; duct leading to bursa copulatrix arises from anterior margin; posterior sclerite tapered posteriorly, connected to anterior sclerite by ventral mound of membranous tissue; posterior end of spermatheca may be sclerotized, forming a cone or ball.

Remarks

Although I have not done a phylogenetic analysis of *Phylloicus*, I have identified groups of species recognized by certain diagnostic characters, some of which are possible synapomorphies. These groups are not meant to be mistaken for monophyletic clades; my intent is only to simplify identification. The largest group (*P. abdominalis*, *adamsae*, *angustior*, *auratus*, *bicarinatus*, *brevior*, *cressae*, *elegans*, *elektoros*, *ephippium*, *flinti*, *hansoni*, *holzenthali*, *lituratus*, *llaviuco*, *maculatus*, *major*, *monticolus*, *passulatus*, *paucartambo*, *perija*, *pirapo*, *quitacalzon*, and *spectabilis*) are distinguished by the secondary withdrawal of sternum IX within sternum VIII, although in some cases (*P. spectabilis*, for example), sternum VIII lacks the posterior projection and the modification is detectable only as a tiny anterior projection of sternum IX. A group of six species of predominantly Antillean distribution have a tibial spur formula of 2,4,2, a long digitate basodorsal process of male tergum X, characteristic enlarged phallotremal sclerites; four of these species (*P. cubanus*, *iridescens*, *pulchrus*, and *superbus*) have bright orange forewing bands (Figs. 108, 111, 114, 115); *P. chalybeus* lacks forewing ornamentation, and *P. amazonas* has white bands. A group of generally Mesoamerican (with northern range limits in Arizona and Texas) species consists of *P. aeneus*, *nigripennis*, *mexicanus* and *panamensis*, which fold the forewings characteristically (as in Fig. 118) and have nearly identical male terminalia.

Phylloicus abdominalis (Ulmer)
Figs. 4, 5, 9, 10, 117

Phylloicus abdominalis (Ulmer, 1905b:34) [Original type locality: "Are-as," probably in Santa Catarina, Brazil; type destroyed; male; in *Homoeoplectron*]. —Ulmer 1913: 398 [distribution].

NEOTYPE: **BRAZIL, Santa Catarina,** Itajai, Müller, male, (MCZ; UMSP000067339)
The type of *P. abdominalis*, stated by Ulmer to be deposited at Halle, was, according to the curator there, destroyed during or shortly after World War II. Ulmer's description and illustration refer to a specimen from "Are-as." This name is likely a variant spelling of "Areis," which is a common place-name in Brazil. The specimen likely came to Ulmer from Müller, who collected in the state of Santa Catarina. The only other reference to this species is in Ulmer's 1913 paper, where he mentions a male specimen in his collection from the province of Misiones, Argentina. I was not able to find this specimen in any of the European collections that received Ulmer's personal collection; I have not seen anything from Argentina that is conspecific with *P. abdominalis*, and the specimen from Misiones is likely to have been *P. pirapo*, new species. Ulmer's illustration of *P. abdominalis* is very poor, but does show modifications to abdominal tergum IV that include posterior processes and mesal coremata. His description clearly describes these structures. The description is sufficient to eliminate most known forms of *Phylloicus*, but several species still fit his description. The only specimen from Santa Catarina that fits this description was found among the paralectotypes of *P. major*, which lacks any abdominal modifications or coremata. The specimen with the abdominal structures also differs from the lectotype and the other male paralectotype of *P. major* in having a white spot on the forewing, marking the nygma. In addition to this male specimen, among the *P. major* paralectotypes are two females and a specimen lacking its abdomen, all with the white spot on the forewing. The specimen missing its abdomen is labeled "*Phylloicus abdominalis* Ulmer" in what appears to be Ulmer's own handwriting. As *P. abdominalis* cannot be discriminated on the basis of Ulmer's description alone, to ensure taxonomic stability I am designating a neotype here.

Phylloicus abdominalis is distinguished by the following characteristics: a small patch of white setae on the forewing marks the location of the nygma; the mesal coremata are bifurcate, the more mesal lobe long and bare except for a small patch of setae basally, the lateral lobe short and setose; the lateral coremata are three-lobed, the dorsal-most lobe with spicules, anterior lobe short, and the posterior lobe long and cylindrical; the lateral sclerite of tergum IV is a simple, straight flattened process (Fig. 9F).

Adult. Forewing length 10.9-13.7 mm, n = 26.

Head golden brown, setal warts pale. Maxillary palps golden brown, covered with dark brown setae. Antennae twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown; ventrolateral thorax golden. Femora golden; tibiae dark brown; foretarsi white proximally, dark distally; mesotarsi white proximally, dark distally; metatarsi dark brown.

Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band white, extending from anterior to posterior wing margin; distal band white, beginning at anterior wing margin, at least 1/2 width of wing; with two basal stripes, golden; with small white spot marking nygma (Fig. 117). Hind wing basal brush present in male.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with paired posterior processes and paired lateral sclerites, mesal coremata and lateral coremata; posterior process short, rounded; lateral sclerite narrowed apically; lateral coremata with basal globose lobes and long tubular posterior lobe; mesal coremata bilobed, mesal lobe setose basally, lateral lobe covered with setae. Tergum V without sclerotized modifications (Fig. 9F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched, notch deep and round or narrow and parallel-sided (Fig. 9A, C). Tergum IX without mesal ridge; posterior margin with round narrow mesal projection (Fig. 9B); lateral ridge absent; dorsal pleural setae approximately 6, ventral pleural setae absent (Fig. 9A). Preanal appendage at least 11/2 times length of tergum X, widest apically, setae filamentous, longer than appendage (Fig. 9A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes of varying length and often asymmetrical, or absent; apex, in lateral view, rounded, in dorsal view, notched, notch shallow (Fig. 9A, B). Harpago short, rounded; peglike setae many, apical (Fig. 9A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes tapered apically; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 9D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch, or posterior margin entire; sternum VIII (Fig. 10C). Tergum IX without mesal ridge (Fig. 10B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 10A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes length approximately equal diameter (Fig. 10B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 10A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite ovoid; posterior end of spermatheca a sclerotized cone (Fig. 10A).

Material examined. **BRAZIL: Minas Gerais:** Ibitipoca, Sitio of Anestis Papadopolous, 21°43'14”S, 43°54'33"W, 1200 m, 23.x.2000, Paprocki — 1 female (UMSP); **Parana:** Rio Mãe Catira, 10 km N Porto de Cima, 25°21'49”S, 48°52'28"W, 200 m, 8-9.xii.1997, Holzenthal & Huisman — 1 male (UMSP); trib. to Rio Mãe Catira, 10.5 km. N Porto de Cima, 25°21'47”S, 48°52'35"W, 200 m, 10.xii.1997, Holzenthal & Huisman — 2 males (UMSP); **Rio de Janeiro:** Gua., Parque de Cidade, 11.viii.1964, Mather — 2 males

(NMNH); km 54, 26 km E of Nova Friburgo, 410 m, 19.iv.1977, C & O Flint — 1 male (NMNH); 25.iv.1977, C & O Flint — 1 male (NMNH); Nova Friburgo, 800 m, 22.i.1993, Becker — 1 female (NMNH); **Santa Catarina:** Müller — 1 female (BMNH); Itajaí, 26°53'00”S, 48°39'00"W, Müller — neotype male, 2 females, 1 adult (MCZ); **Sao Paulo:** Estacion Biological Paranapiacaba, 17.i.1964, Froehlich — 2 males (NMNH); Parque Estadual de Campos do Jordão, Rio Galharada, 22°41'40”S, 45°27'47"W, 1530 m, 4-5.iii.1996, Holzenthal & Guahyba — 1 female (UMSP).

Distribution. Argentina (but see discussion above), Brazil.

Phylloicus aculeatus (Blanchard)
Figs. 11, 12

Phylloicus aculeatus (Blanchard, 1851:138) [Type locality: Chile; MNHNP; female; in *Macronema*]. —Flint 1974a:84 [female lectotype, not Hydropsychidae, but *Phylloicus*]; 1990:119 [distribution].

Phylloicus distans Navás, 1918:226 [Type locality: Chile, Marga-Marga, Los Perales; MZB; male]. —Flint 1974a:84 [to synonymy].

Phylloicus aculeatus is easily recognized. It is the only calamoceratid known from the Chilean subregion. The long, paired digitate processes of tergum X (Fig. 11A, B) are plainly visible even in uncleared specimens. The inferior appendages appear one-segmented, with the harpago large, not distinct from the coxopodite, and with numerous peg-like setae on the mesoventral surface.

Adult. Forewing length 10.3-12.5 mm, n = 147.

Head dark brown. Maxillary palps dark brown. Antenna twice forewing length; chestnut brown. Dorsal pterothorax dark brown; ventrolateral thorax golden brown. Legs golden brown. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula — 2,4,4. Forewing flat; chestnut brown; without colored markings.

Male. Preterminalic abdominal terga without anteromesal notches. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII without anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX without mesal ridge; posterior margin with irregular mesal projection; dorsomesal lobe covered with fine ridged sculpturing (Fig. 11B); lateral ridge absent; dorsal pleural setae approximately 15, ventral pleural setae absent (Fig. 11A); sternum IX without mesolateral ridges; sternum IX (Fig. 11C). Preanal appendage less than 2/3 length of tergum X, widest near base, setae long, but not filamentous or longer than appendage (Fig. 11A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes long, length at least twice diameter; apex, in lateral view, with ventral projection, in dorsal view, notched, notch deep and triangular; with small setose mesal lobe at mid-length; with longitudinal row of short setae sublaterally; lateral margins extending over bases of paired, truncate apical processes (Fig. 11A, B). Harpago large,

nearly equal to coxopodite and with base indistinct from coxopodite; peglike setae many, mesoventral (Fig. 11A, C). Phallic endotheca with paired apicolateral lobes and paired basolateral lobes, basolateral lobes large and round, apicolateral lobes large and rounded; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 11D, E).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII without anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 12C). Tergum IX without mesal ridge (Fig. 12B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, without distinct area of thin cuticle or invagination (Fig. 12A). Tergum X appendage shorter than mesal lobe, base marked by faint suture line, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes long, at least twice diameter, or absent (Fig. 12B). Sternum X without setae in membrane (Fig. 12A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections rounded; posterior sclerite ovoid; posterior end of spermatheca membranous (Fig. 12A).

Material examined. **ARGENTINA: Neuquen**: 13 km E Quila Quina, 27.i.1974, Flint — 2 males (NMNH); 3 km S Va. La Angostura, 4.ii.1974, Flint — 1 male (NMNH); 3 km W Estación Forestal Pucara, 30.i.1974, Flint — 1 male,1 female (NMNH); — 1 male (UMSP); Estación Forestal Pucara, Canal, 28-29.i.1974, Flint — 1 male, 1 female (NMNH); — 1 male (UMSP); **Río Negro**: El Bolson, 27.ii.1961, Kovacs — 1 male, 1 female (NMNH); **CHILE**: 16.xi.1933, Stuardo — 1 female (DEI); Calbuco, Faz — 1 male (DEI); 1843, Gay — *P. aculeatus* lectotype female (MNHNP); Comudes, 17.i.1902, Schönemann — 5 males, 3 adults (ZMHU); 28.i.1902, Schönemann — 1 adult (ZMHU); 16.ii.1902, Schönemann — 1 male (ZMHU); Manguehue, 28.xii.1932, Stuardo — 1 male (DEI); **Aisén**: Puerto Puyuguapi, 44°21'03”S, 72°34'27"W, 5.ii.1940, Schwabe — 1 male (DEI); **Araucania**: near Los Gringos Camp, 1300 m, 29.i.-5.ii.1979, D & M Davis; Akerbergs — 2 males, 2 females (NMNH); 6-11.i.1982, Davis — 2 males, 2 females (NMNH); 5-9.i.1989, Peña G. — 1 male (NMNH); **Bío-Bío**: Caledonia, E Mulchén, 700-900 m, 6-15.ii.1981, Peña G. — 1 male (NMNH); Contulmo (El Peral), 15.i.1967 — 1 female (NMNH); Contulmo, 1.viii.1904, Schönemann — 1 adult (ZMHU); Ralco/Trafa-Trafa, 400 m, 19-22.xi.1994, Peña G. — 1 female (NMNH); Río Duqueco, Río Duqueco, Hacienda San Lorenzo, E Los Angeles, 1000 m, 20-23.i.1991, Peña G. — 2 males (NMNH); Arauco, Butamalal, 23-31.i.1954, Peña G. — 1 female (DEI); Caramavida, 25-31.xii.1953, Peña G. — 2 males (DEI); Ñuble Province, Alto Tregualemu, ca. 20 km SE Chovellen, 500 m, 26-27.i.1979, D & M Davis; Akerbergs — 2 females (UMSP); Ñuble, Recinto, 36°48'00”S, 71°44'00"W — 2 males, 1 female (BMNH); 30.xi.1951, Peña G. — 1 male (CNC); **Cauquenes**: Tregualemu, 35°56'00”S, 72°43'00"W, 11-12.xii.1993, C & O Flint — 1 female (UMSP); **De los Lagos**: brook in Fdo. Walper, 16.ii.1958, Illies — 3 males (NMNH); Pte. La Caldera, 42°40'00”S, 74°00'00"W, 26.xii.1993, C & O Flint — 2 males (NMNH); Rincon de Piedra, ca. 23 km SE Valdivia, 200 m, 23.ii.1979, D & M Davis;

Akerbergs — 2 males, 1 female (NMNH); Chiloé, 13-15.i.1981, Marin — 13 males, 1 female (NMNH); — 1 female (UMSP); 1 km E Lago Tepuhueco ca. 40 air km SW Castro, 100 m, 23-25.xii.1981, Davis — 1 male (NMNH); Ahoni Alto, 42°47'00”S, 72°35'00"W, 24.xii.1993, C & O Flint — 2 males (NMNH); Ahoni, 30 km SE Chonchi, xi.1988, Peña G. — 4 females (NMNH); i.-ii.1989, Peña G. — 2 males, 1 female (UMSP); Aucar, 6.i.1952, Peña G. — 5 males (CNC); Puntra, ca. 30 air km S. Ancud, 50 m, 21-22.xii.1981, Davis — 1 male (NMNH); Terao, W end, 42°42'00”S, 73°40'00"W, 23-27.xii.1993, C & O Flint — 1 male (NMNH); Llanquihue, Casa Pangue, 4-10.xii.1926, Edwards, F & M — 2 males (BMNH); Peulla, 41°06'00”S, 72°02'00"W, 12-13.xii.1926, Edwards, F & M — 1 male (BMNH); Osorno, brook at L. Puyhue, 17.xii.1957, Illies — 1 male (NMNH); Maicolpué, 40°34'00”S, 73°44'00"W, 21.xii.1993, C & O Flint — 2 males (NMNH); Pucatrihue, 26-31.i.1980, Peña G. — 1 male (UMSP); — 7 adults (NMNH); 1-12.ii.1980, Peña G. — 5 males, 5 females (NMNH); 12-26.ii.1985, Peña G. — 2 adults (NMNH); P. N. Puyehue, Ag. Calientes to 3 km W Osorno, 600 m, 12-20.xii.1981, Davis — 1 male (NMNH); Valdivia, Enco, 26.ii.1955, Peña G. — 1 male (DEI); Pellaifa, mtn. brook, 12.ii.1958, Illies — 1 male (NMNH); **Del Maule**: Forel Carrizalillo, 250 m, 30.i.-5.ii.1981, Peña G. — 1 male (NMNH); Las Tablas, E Curico, ii.1985, Peña G. — 4 adults (NMNH); Curico, Coigual, 13.i.1955, Peña G. — 1 male (DEI); Linares, Emb. Bullileo, 36°18'00”S, 71°25'00"W, 11-12.i.1994, C & O Flint — 1 male (NMNH); **Región Metropolitana**: Santiago, El Manzano, 9.ii.1952, Peña G. — 1 female (CNC); **Santiago**: San Juan de Pirque, 33°38'00”S, 70°30'00"W, 11.xi.1927 — 1 male, 1 female (MZB); **Valdivia**: Las Trancas, W La Union, 23-29.i.1995, Peña G. — 1 male (NMNH); **Valparaiso**: Cuesta El Melon, 14-16.xi.1985, Peña G. — 5 males, 5 females (NMNH); Quillota, Los Perales, Estero Marga-Marga, 33°01'14”S, 71°33'41"W,.iii.1925 — 2 males (MZB); i.1927 — 1 male (MZB); ii.1927 — 1 male (MZB); VIII **Región del Bío-Bío**: small trib. to Río Queuco, 5 km E Ralco, 37°51'36”S, 71°36'14"W, 500 m, 16.i.2000, Holzenthal & Muñoz — 2 males (UMSP).

Distribution. Argentina, Chile.

Phylloicus adamsae, new species
Figs. 13, 14

Phylloicus "n. sp. 3" Flint, 1996:425

This species can be recognized by the uniform golden color of the forewings. *Phylloicus adamsae* is distinguished by the very short and wide (often nearly circular) preanal appendages (Fig. 13A, B).

Adult. Forewing length 9-11 mm, n = 18.

Head golden brown. Maxillary palps golden brown, covered with dark brown setae. Antennae twice forewing length; chestnut brown. Prothorax golden brown; dorsal

pterothorax golden brown; ventrolateral thorax pale tan. Legs pale tan. Metathoracic leg of male with posterior fringe of long setae, setae pale. Tibial spur formula 2,4,4. Forewing flat; golden brown; without colored markings; distal fringe slightly darkened. Hind wing basal brush absent.

Male. Preterminalic abdominal terga without anteromesal notches. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched (Fig. 13A, C). Tergum IX without mesal ridge; posterior margin with round narrow mesal projection; thinly sclerotized mesally (Fig. 13B); lateral ridge absent; dorsal pleural setae approximately 10, ventral pleural setae approximately 6 (Fig. 13A). Preanal appendage less than 2/3 length of tergum X, as long as wide, rounded apically, setae long, but not filamentous or longer than appendage (Fig. 13A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, rounded, in dorsal view, notched, notch shallow and triangular (Fig. 13A, B). Harpago short, rounded; peglike setae few, apical (Fig. 13A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes tapered apically; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 13D, E).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 14C). Tergum IX without mesal ridge (Fig. 14B). Sternum IX anterior lobes darkly sclerotized and striate, posterior lobes smooth, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 14A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 14B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 14A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized sphere with wide anterior ridge (Fig. 14A).

Holotype male: PERU: Madre de Dios: Manu Biosphere Res., Pakitza Bio. Sta., 01-13-19-99, 11°56'00”S, 71°18'00"W, 350 m, 1.x.1987, Pogue (MHNJP)**.**

Paratypes: PERU: Loreto: Iquitos, 15.v. 1 male (MCZ); **Madre de Dios:** Toma del Agua, Amazonia Lodge, 12°52'13”S, 71°22'34"W, 415 m, 29.vi.1993, Blahnik & Pescador — 1 female (NMNH); Manu Biosphere Res., Pakitza Bio. Sta., 11°56'00”S, 71°18'00"W, 350 m, 30.ix.1987, Pogue — 1 female (MHNJP); — 1 male (NMNH); 01-13-19-99, 11°56'00”S, 71°18'00"W, 350 m, 1.x.1987, Pogue — 1 female, 2 males (NMNH); trail 2, marker 18, 11°56'00”S, 71°18'00"W, 250 m, 12-23.ix.1989, Adams et al. — 1 female, 1 male (MHNJP); — 1 female, 2 males (NMNH); trail 2, marker 20, 11°56'00”S, 71°18'00"W, 250 m, 17-20.ix.1989, Adams 3 males (NMNH); — 1 female, 1 male (UMSP).

Distribution. Peru.

Etymology. I am pleased to name this species for its collector, Nancy E. Adams, in recognition of her contributions to Neotropical caddisfly research and her assistance during my visits to the Smithsonian Institution.

Phylloicus aeneus (Hagen)
Figs. 1, 6, 15, 16, 118

Phylloicus aeneus (Hagen, 1861:285) [Type locality: Mexico [Veracruz]; MCZ; female; in *Macronema*]; 1864:804 [to *Anisocentropus*]. —Ulmer 1905a:79 [to *Phylloicus*, redescription of male now in *P. nigripennis*]. Ross 1952:34 [male]. —Flint 1967:17 [illustration of male now in *P. nigripennis*]. —Denning *et al.* 1983:182 [redescription, illustration is probably of *P. mexicanus*]. —Bowles & Flint 1997:58 [variation].

Phylloicus ornatus (Banks, 1909:342) [Type locality: United States, Texas, Brownwood; MCZ; female; in *Notiomyia*]. —Flint 1967:17 [to *Phylloicus*]. —Holzenthal 1988:72 [distribution]. —Bowles & Flint 1997:53 [redescription, male, female, larva, pupa]. **NEW SYNONYM**.

Phylloicus centralus (Navás, 1924:82) [Type locality: Costa Rica; MNHNP; male; in *Macronema*]. —Holzenthal 1988:72 [to *Phylloicus*]. **NEW SYNONYM**.

The identity of *P. aeneus* has been the subject of some confusion, largely due to the holotype being a female in very poor condition. Several authors have redescribed this species based on specimens mistakenly associated with the type female, and thus judged *P. nigripennis*, *mexicanus*, *latus*, and *sagittosa* to be conspecific with *P. aeneus*. Based on the evidence discussed below, *mexicanus* and *nigripennis* are valid species — with *latus* and *sagittosa* junior synonyms of the latter — and *ornatus* and *centralus* are synonyms of *aeneus*.

Hagen (1861) described *Macronema aeneum* from a female specimen labeled "Sallé, V.C." [for Veracruz, Mexico, handwritten on a single green label]. Ross (1952) identified this type specimen in a paper on lectotypes of Hagen species in the Museum of Comparative Zoology. He did not refer to the specimen as a lectotype in the paper. A yellow label in Ross's hand on the specimen names it lectotype, but there is nowhere in Hagen's original description or Ross's 1952 paper (except by implication in the paper's title) any indication that it was selected from among the type series. This specimen is badly damaged; the abdomen, which has been cleared and placed in a microvial of glycerin, is in many pieces; only a portion of one forewing remains, and even this is faded, so that it is not possible to determine what color pattern it might once have exhibited, although the epithet "*aeneum*" translates as "coppery." The holotype female of *M. aeneum* bears a tuft of dark stout setae at each posterolateral margin of tergite VIII.

The female holotype of *Notiomyia ornata* was collected in central Texas. It is in good condition and the wing pattern is clearly discernable. The pattern is very distinctive, and the species can be easily discriminated on the basis of wing pattern alone. The wings can be described as copper-colored. The tufts of setae on tergite VIII observed in *P. aeneus* are

present also on the female holotype of *N. ornata*. I have seen these setal tufts only on females of *P. aeneus*, *ornatus*, *mexicanus*, and *panamensis*, new species. Specimens of *P. mexicanus* have other distinguishing characters that rule out conspecificity; of the remaining two species, only *P. ornatus* is known to be from Mexico. The terminalia of the type specimens of *P. aeneus* and *ornatus* are indistinguishable. Only one form of *Phylloicus* is found in Texas, and thus there is no doubt of the association of male and female. The males bear short coremata on abdominal segment IV, with very short, broad projections of the posterolateral tergal margin.

The male holotype of *M. centrale* has terminalia and modifications of abdominal segment IV identical with those observed in *P. ornatus* males. The wing pattern is faded, but what remains is consistent with the distinctive pattern of *P. ornatus.*

Ulmer redescribed *P. aeneus* based on several specimens from Morelos; these specimens appear to be conspecific with the type of *P. nigripennis*. Flint (1967) compared the female types of *aeneus* and *nigripennis* and concluded that they were conspecific; he illustrated a male labeled "Mexico, Sallé," stating that it was probably part of the original type series. I have examined this and another specimen labeled "Mexico, Sallé," and labeled by Flint in 1965, as *Phylloicus aeneus* male. The collection labels on these specimens are printed (possibly cut from a journal article) with "Mexico" on the upper label, and "Sallé" on the second label; these labels do not resemble those on the type of *aeneus* except in the collector's name. These specimens are males of *P. nigripennis*; the wings are dark and without pattern, no coremata are present on the abdomen, and they exhibit other characteristics consistent only with that species.

The redescription of *P. aeneus* by Denning *et al.* (1983) includes a mention of the abdominal coremata. Their illustrations were prepared from specimens collected in Sonora, which may have been either *P. aeneus* or *mexicanus*; if the specimens depicted in the illustration had abdominal coremata, they must have been *P. aeneus*.

Given this evidence, the logical conclusion is that *P. aeneus*, *centralus*, and *ornatus* are conspecific.

Pinned specimens of *P. aeneus* are easily identified by the distinctive pattern of dark patches near the base of the forewing. As well, in *P. aeneus* and *mexicanus*, *nigripennis*, and *panamensis*, there is an oblique fold of the forewing's apical third, toward the midline (Fig. 118). The male genitalia of *P. aeneus* are most similar to those of *P. mexicanus*, *nigripennis*, and *panamensis*. *Phylloicus aeneus* may be distinguished from these three species by the presence of short, single-lobed coremata, covered by a short posterior tergal process, on abdominal segment IV.

Adult. Forewing length 9.6-12.3 mm, n = 201.

Head orange-brown. Maxillary palps black. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax orange-brown, lateral margins black; ventrolateral thorax golden brown. Femora golden brown; foretibiae pale tan; mesotibiae white proximally, dark dis-

tally; metatibiae white proximally, dark distally; tarsi black. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,3. Forewing apical third folded obliquely toward midline; chestnut brown; with two transverse bands; proximal band golden, not reaching either wing margin, 1/2 width of wing or less; distal band golden, extending from anterior to posterior wing margins, zig-zagging, with golden oval surrounding nygma; with single basal stripe, golden; with large dark patch anterobasally and golden semicircle posterobasally (Figs. 105, 118). Hind wing basal brush present in female, orange.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with expanded lateral flanges, lateral coremata; lateral coremata with basal globose lobes. Tergum V without sclerotized modifications (Fig. 15F). Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with mesal ridge extending 2/3 length of segment; posterior margin smoothly rounded; posteromesal surface covered with fine pilosity (Fig. 15B); lateral ridge absent; dorsal pleural setae approximately 15, ventral pleural setae approximately 5 (Fig. 15A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 15C). Preanal appendage approximately length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 15A, B). Tergum X sagittate basally; basodorsal process short and bifid; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch square; with 2 longitudinal rows of short setae mesally; with paired shallow processes on lateral surfaces (Fig. 15A, B). Harpago long, curving mesally and tapering apically; peglike setae few, apical (Fig. 15A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite narrow, width less than height (Fig. 15D, E).

Female. Abdominal terga I-III black. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII with dense posterolateral brush of setae (Fig. 16B); sternum VIII cleft posteromesally, cleft not reaching anterior ridge; sternum VIII (Fig. 16C). Tergum IX with mesal ridge extending length of segment (Fig. 16B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with deep sublateral invaginations (Fig. 16A). Tergum X appendage longer than mesal lobe, base indistinct, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 16B). Sternum X without setae in membrane (Fig. 16A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections rounded; posterior sclerite ovoid; posterior end of spermatheca a sclerotized ovoid (Fig. 16A).

Material examined. **BELIZE: Caya:** Rió Frio, mouth of Rió Frio Cave, San Ignacio, 18.vi.1975, Resh — 2 males, 1 female (UMSP); **COSTA RICA:** 1920, Serre — *P. centralus* holotype male (MNHNP); **Alajuela:** 20 km S Upala, 1-20.xi.1990, Parker — 1 female (EMUS); Río Toro, 3.0 km (road) SW Bajos del Toro, 10°12'14”N, 84°18'58"W, 1530 m, 3-4.ix.1990, Holzenthal, Blahnik, & Huisman — 1 male, 2 females (NMNH);

Reserva Forestal San Ramón, Río San Lorencito & tribs., 10°12'58”N, 84°36'25"W, 980 m, 1-4.x.1986, I & A Chacón — 1 male (UMSP); 30.iii.-1.iv.1987, Holzenthal, Hamilton, & Heyn — 1 male (UMSP); 1-4.v.1990, Holzenthal & Blahnik — 1 female (UMSP); 28-30.vii.1990, Holzenthal, Blahnik, & Muñoz — 1 female (UMSP); 6-10.ii.1991, Holzenthal, Muñoz, & Huisman — 2 males, 1 female (UMSP); **Cartago:** Reserva Tapantí, Quebrada Palmitos & falls, ca. 9 km (road) NW tunnel, 09°43'12”N, 83°46'48"W, 1400 m, 24-25.iii.1991, Holzenthal, Muñoz, & Huisman — 1 male (UMSP); Río Grande de Orosí, 09°41'10”N, 83°45'22"W, 1650 m, 23.i.1985, Janzen & Hallwachs — 1 male (NMNH); **Guanacaste:** Cerro El Hache, W side, 310 m, 31.v.1986, Janzen & Hallwachs — 1 male, 1 female (UMSP); Finca Montezuma, 3 km SE R. Naranjo, 17.xi.1991, Parker — 1 female (EMUS); 20-31.i.1992, Parker — 1 female (EMUS); v.1992, Parker — 1 female (EMUS); 16-31.v.1993, Parker — 1 female (EMUS); Maritza, confluence with Río Tempisquito, 10°57'25”N, 85°29'42"W, 580 m, 31-19.v.1994 — 1 male & pupal exuviae, 1 female (UMSP); 14.ii.-1.v.1994 — 2 males & pupal exuviae, 2 females (UMSP); Maritza, Rio Orosi, 10°59'28”N, 85°25'42"W, 675 m, 31.i.-27.v.1994 — 2 males & pupal exuviae, 1 female (UMSP); Quebrada Garcia, Quebrada Garcia, 10.6 km ENE Quebrada Grande, 10°51'43”N, 85°25'41"W, 470 m, 8.iii.1986, Holzenthal & Fasth — 1 female (UMSP); Río Los Ahogados, Río Los Ahogados, 11.3 km ENE Quebrada Grande, 10°51'54”N, 85°25'23"W, 470 m, 7.iii.1986, Holzenthal & Fasth — 1 male (UMSP); Parque Nacional Guanacaste, Estacion Maritza, Río Tempisquito, 10°57'29”N, 85°29'49"E, 550 m, 29.i.1992, Sweeney — 1 male (NMNH); Río Orosí, Estación Pitilla, 10°59'28”N, 85°25'41"W, 700 m, 22-25.v.1990, Holzenthal & Blahnik — 1 female (UMSP); Río San Josecito, 10°55'19”N, 85°28'12"W, 960 m, 3-4.iv.1987, Holzenthal, Hamilton, & Heyn — 1 male (INBIO); Río Tempisquito, Maritza, 10°57'29”N, 85°29'49"W, 550 m, 19-20.vii.1987, Holzenthal, Morse, & Clausen — 1 female (UMSP); Parque Nacional Rincón de la Vieja, Río Negro, 10°45'54”N, 85°18'47"W, 810 m, 3.iii.1986, Holzenthal & Fasth — 1 male, 3 females (UMSP); **Límon:** Limon, 16 km W Guapiles, 400 m, ii.-iii.1989, Hanson — 1 male (UMSP); Reserva Biológica Barbilla, trib. to Río Dantas, 13 (km) S Pacuarito, 09°59'42”N, 83°28'37"W, 0 m, 1.ii.1992, Holzenthal, Muñoz, & Kjer — 1 male, 1 female (UMSP); **Puntarenas:** Río Bellavista trib., Las Alturas, road to quarry, 08°57'07”N, 82°50'53"W, 1480 m, 19.iii.1991, Holzenthal, Muñoz, & Huisman — 1 female (UMSP); Río Bellavista, ca. 1.5 km NW Las Alturas, 08°57'04”N, 82°50'46"W, 1400 m, 15-17.vi.1986, Holzenthal, Heyn, & Armitage — 1 male (UMSP); 8-9.iv.1987, Holzenthal, Hamilton, & Heyn — 2 males, 2 females (INBIO); — 9 males, 9 females (UMSP); 2-3.viii.1987, Holzenthal, Morse, & Clausen — 2 males, 1 female (UMSP); 10-11.viii.1990, Holzenthal, Blahnik, & Muñoz — 1 male, 1 female (UMSP); 16-17.iii.1991, Holzenthal, Muñoz, & Huisman — 7 males (UMSP); Río Cotón, in Las Alturas, 08°56'17”N, 82°49'34"W, 1360 m, 12.viii.1990, Holzenthal, Blahnik, & Muñoz — 2 females (UMSP); 18.iii.1991, Holzenthal, Muñoz, & Huisman — 1 male (INBIO); Río Guineal, ca 1 km (air) E Finca Helechales, 09°04'34”N, 83°05'31"W, 840 m, 22.ii.1986,

Holzenthal, Morse, & Fasth — 4 males, 2 females (UMSP); 4.viii.1987, Holzenthal, Morse, & Clausen — 1 male (UMSP); Río Singrí, ca 2 km (air) S Finca Helechales, 09°03'25”N, 83°04'55"W, 720 m, 21.ii.1986, Holzenthal, Morse, & Fasth — 1 male, 1 female (UMSP); San Vito, 2 km S., Finca Las Cruces, 08°42'00”N, 83°00'00"W, 4000 m, 20.xi.1988, Solis — 1 male (INBIO); Jardín Botanico R & C Wilson, unnamed trib., Sendro del Agua, 08°48'00”N, 82°57'36"W, 1180 m, 8.viii.1990, Holzenthal, Blahnik, & Muñoz — 1 female (UMSP); Zona Protectora Las Tablas, Río Cotón, Sitio Cotón, 08°56'28”N, 82°47'13"W, 1460 m, 15.iv.1989, Holzenthal & Blahnik — 11 males, 10 females (UMSP); **San José:** Motel Prado, San Isidro del General — 1 male (UMSP); Pedregoso, 640 m, 21.ii., Rounds — 1 male (MCZ); Río Parrita Chiquito, rt. 12, 6.5 km SW jct. rt. 2, 09°42'11”N, 83°58'12"W, 1990 m, 10.iv.1987, Holzenthal, Hamilton, & Heyn — 1 male (INBIO); **GUATEMALA:** Las Mercedes, 914 m, 1879-1881, Champion — 1 male, 1 female (BMNH); Panima, Vera Paz, 1879-1881, Champion — 1 female (BMNH); **Chiquimula:** Padre Miguel, 19.viii.1965, Flint & Ortiz — 2 females (NMNH); **El Progreso:** Est. de la Virgen, 11-12.viii.1965, Flint & Ortiz — 1 male, 2 females (NMNH); **Jutiapa:** San Jerónimo, 1879-1881, Champion — 2 males, 3 females (BMNH); **Suchitepequez:** Cuyotenango, 10-20.vi.1966, Flint & Ortiz — 1 male (NMNH); **MEXICO:** 3048 m, 1871, Bilimek — 1 male (NMW); **Chiapas:** 2.9 km S of Jitotol, 11.viii.1967, Flint — 2 males (NMNH); 58 km S Palenque, 17.v.1981, C & O Flint — 1 male (NMNH); Dolores, Rt. 190, km 1190, 7.viii.1965, Flint & Ortiz — 1 male (NMNH); Soconusco, 27 Jul, Purpus — 1 female (ZMHU); **Chihuahua:** Arroyo Toro, Toro Basin, 1720 m, 23.vi.1987, Kondratieff & Baumann — 1 male (NMNH); Riito, Hwy 16, 10 mi E of Yepachic, 28.vi.1987, Kondratieff & Baumann — 1 male (NMNH); **Durango:** 10 mi. W El Salto, 10.vi.1964, McAlpine — 1 female (NMNH); **Jalisco:** 11.2 mi. E Cuititian, 4 mi. E Durazno, 1128 m, 29-30 .viii.1987, Bloomfield — 1 female (NMNH); 2.3 mi. E Durazno, 1158 m, 6-8.vi.1989, Bloomfield — 1 male (NMNH); **Mórelos:** Cuernavaca, Banks — 1 female (MCZ); **Nayarit:** 0.6 mi. E Riitos, road to San Andreas, 9-11.iii.1987, Bloomfield — 1 male (NMNH); **Nuevo Leon:** Municipio de Santiago, Stream at La Nogalera above Cola de Caballo, 27.v.1991, Contreras & Harris — 1 male, 2 females (UMSP); **Oaxaca:** 8 km S Valle Nacional, 25.v.1981, C & O Flint — 1 male, 1 female (NMNH); **San Luis Potosí:** Huichihuayan, Rt. 85, km 399, 7.viii.1966, Flint — 1 male, 1 female (NMNH); **Sancti Spíritus:** Sótano de Tlamaya, 26.xi.1964, Raines & Bell — 2 males (NMNH); **Sinaloa:** Portrerillos, 15 mi. W El Palmito, 1524 m, 8.vii.1964, McAlpine — 1 female (CNC); 20.vii.1964, Mason — 1 female (CNC); **Sonora:** small stream near Yecora, 20.viii.1986, Kondratieff — 1 female (NMNH); **Tamaulipas:** Rio verge. 25 km SW Ciudad Victoria, 14-16.iii.1982, Gillaspy — 1 male (NMNH); **Veracruz:** Hagen — *P. aeneus* holotype female (MCZ); 1.6 mi. N Coscomatepec, 22.vii.1966, Flint & Ortiz — 1 male, 1 female (NMNH); Cordoba, 4-23.viii.Aug 1965, Lau — 1 female (NMNH); 10-20.viii.1966, Lau — 1 male (NMNH); 1.ix.1966, Lau — 1 male (NMNH); nr. Huatusco, 25-26.vii.1965, Flint & Ortiz — 1 male (NMNH); Río Tacolapan, 25-

26.vii.1966, Flint & Ortiz — 1 male, 1 female (NMNH); Las Tuxtlas Biological Station, Las Tuxtlas area, nr. Balzapote, 31 km NE of Catemaco, 3-15.v.1981, C & O Flint — 1 male, 3 females (NMNH); **NICARAGUA: Estelí:** Area Protegida Miraflor, Quebrada Grande, 13°13'20”N, 86°15'33"W, 1200 m, 19.vii.2000, Chamorro & Lacayo — 1 female (UMSP); **Jinotega:** Peñas Blancas, 13°17'00”N, 85°33'00"W, 1300 m, 25.vii.1997, Maes & Hernández — 5 males (NMNH); **PANAMA: Chiriqui:** Boquete, 6.vi.1940, Fairchild — 1 female (MCZ); Bugaba, 244-457 m, 21.x.1881-11.iii.1883, Champion — 1 male (BMNH); Fortuna Dam Site nr. Hornitos, 08°55'00”N, 82°16'00"W, 1050 m, 24.xi.-20.xii.1976, Wolda — 6 males (NMNH); 12-18.x.1977, Wolda — 1 male, 1 female (UMSP); 9-6.xii.1977, Wolda — 1 male, 2 females (NMNH); 16-29.xi.1977, Wolda — 2 males, 1 female (NMNH); 30-6.xii.1977, Wolda — 3 males (NMNH); **UNITED STATES: Texas:** Brownwood, Banks — *P. ornatus* holotype female (MCZ); Fort Davis, Davis Mountains, 1524 m, vii-viii.1928, Poling — 1 female (CAS); Brewster County, Windows Creek, 5-10.iv.1993, Gelhaus — 1 female (NMNH); Jeff Davis County, Barrilla Draw, 4 mi. E Ft. Davis, 11-12.iv.1993, C & O Flint — 1 male (NMNH); Kerr County, Kerrville, 1.iv.1959, Wigmore — 1 female (CNC).

Distribution. Belize, Costa Rica, Guatemala, Mexico, Nicaragua, Panama, USA (Texas).

Phylloicus amazonas, new species
Figs. 17, 18, 106

The male genitalia of *P. amazonas* are most similar to those of *P. chalybeus*, but these two species differ in the distinctive wing pattern of *P. amazonas.* The wing pattern (Fig. 106) is similar to *P. paprockii* (Fig. 112), but differs in the black border of the large white patch.

Adult. Forewing length 8.2-9 mm, n = 9.

Head golden brown. Maxillary palps golden brown, covered with dark brown setae. Antenna twice forewing length; golden brown. Dorsal pterothorax golden brown; ventrolateral thorax golden brown. Legs golden brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,2. Forewing flat; dark brown; with single transverse band; distal band white, not reaching either wing margin, 1/2 width of wing or less, oval, bordered with black; with single basal stripe, golden; sparse patches of white or ivory setae in basal cells; large dark patch and sparse white setae at location of proximal band (Fig. 106). Hind wing basal brush present in female.

Male. Preterminalic abdominal terga without anteromesal notches. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX without mesal ridge; posterior margin smoothly rounded (Fig. 17B); lateral ridge absent; dorsal pleural setae approximately 4, ventral pleural setae approximately 2 (Fig. 17A); sternum IX without mesolateral ridges; sternum

IX (Fig. 17C). Preanal appendage approximately length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 17A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes long, length at least twice diameter; apex, in lateral view, rounded, in dorsal view, notched, notch round; apicodorsal and dorsolateral margins bearing single row of short fine setae (Fig. 17A, B). Harpago long, curving mesally and tapering apically; peglike setae absent (Fig. 17A, C). Phallic endotheca with single long apical lobe and paired basolateral lobes, basolateral lobes multilobed; phallotremal sclerites very large, longest dimension twice diameter of phallobase; dorsal sclerite two-armed, in lateral view U-shaped (Fig. 17D, E).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 18C). Tergum IX without mesal ridge (Fig. 18B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with deep sublateral invaginations (Fig. 18A). Tergum X appendage shorter than mesal lobe, base indistinct, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 18B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 18A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections acute; posterior sclerite ovoid; posterior end of spermatheca a sclerotized ovoid (Fig. 18A).

Holotype male: VENEZUELA: Amazonas: Cerro de la Neblina, Basecamp, 00°51'N 66°10'W, 140 m, 10-20.ii.1985, Spangler, Faitoute, & Steiner (NMNH)**.**

Paratypes: BRAZIL: Amazonas: Manaus, Ponta Negra, 19.xi.1976, Penny — 1 male (INPA); Res. Ducke, 26 km E Manaus, 29.x.1976 — 1 female (INPA); **GUYANA:** Nouveau Chantier, May, Le Moult — 1 male (MCZ); Warniabo Cr., Dubulay Ranch, 05°39'48”N, 57°53'24"E, 10-11.iv.1994, Flint — 2 females (NMNH); 14-19.iv.1995, Flint — 1 male (NMNH); **PERU: Loreto:** Callicebus Research Station, Mishana, Río Nanay, 25 km SW Iquitos, 120 m, 10-17.i. 1980, Heppner — 1 female, 1 male (NMNH).

Distribution. Brazil, Guyana, Peru, Venezuela.

Etymology. This species is named for the Brazilian and Venezuelan states of Amazonas, where it was collected.

Phylloicus angustior Ulmer
Figs. 19, 20

Phylloicus angustior Ulmer, 1905a:78 [Type locality: Brazil, Rio Gr. do Sul [sic]; NMW; male]. — Flint 1966:11 [lectotype male]. —Botosaneanu & Alkins-Koo 1993:38 [distribution].

I was unable to locate a specimen with Flint’s lectotype label; it is not possible to determine if the specimens from Vienna I examined are those examined by Flint; the label data are the same. *Phylloicus angustior* is distinguished by the acute apex of tergum X (in lateral view; Fig. 19A) and the unpatterned forewings.

Adult. Forewing length 12.1-14.4 mm, n = 105.

Head dark brown, with dorsomesal crest of chestnut brown setae. Maxillary palps chestnut brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax dark brown; ventrolateral thorax golden. Femora golden; tibiae dark brown; foretarsi dark brown; mesotarsi pale tan; metatarsi dark brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown; with golden bands and dark patches; with single basal stripe, golden; darker setae surrounding thyridial spot, extending to posterior margin; two short dark bands in anterodistal portion of wing; with small golden spot marking thyridium. Hind wing basal brush absent.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII without anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched, notch deep and round or narrow and parallel-sided (Fig. 19A, C). Tergum IX deeply notched anteriorly, margins of notch ridged; posterior margin with acute mesal projection (Fig. 19B); lateral ridge absent; dorsal pleural setae approximately 10, ventral pleural setae absent (Fig. 19A). Preanal appendage longer than tergum X, but less than 11/2 times length, widest apically, setae filamentous, longer than appendage (Fig. 19A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes of varying length and often asymmetrical; apex, in lateral view, acute, in dorsal view, notched, notch round; with row of short setae on lateral surfaces and apicodorsally (Fig. 19A, B). Harpago rounded; peglike setae many, apical (Fig. 19A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 19D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII without anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch; sternum VIII (Fig. 20C). Tergum IX with very short mesal ridge (Fig. 20B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, punctate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 20A). Tergum X appendage length equal to mesal lobe, base indistinct, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes length approximately equal diameter and often asymmetrical (Fig. 20B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 20A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized expanded tube (Fig. 20A).

Material examined. **ARGENTINA: Misiones:** 10.xi.1909, Jørgensen — 1 male (MCZ); 20.xii.1909, Jørgensen — 1 female (MCZ); 6 km E El Dorado, 22.xi.1973, Flint — 1 female (NMNH); Ao. Coati, 15 km E San Jose, 18-19.xi.1973, Flint — 2 males (NMNH); Ao. Piray Mini W, Dos Hermanas, 23.xi.1973, Flint — 2 males (NMNH); Ao. Saura, 9 km N, L.N. Alem, 20.xi.1973, Flint — 3 males (NMNH); San Pedro, Arroyo

Piray-Guazú, 22.xi.1973, Flint — 2 males (NMNH); **BRAZIL: Goiás:** Goiás, 7.vii.1984, Becker — 1 male (UMSP); **Minas Gerais:** Aldeia de Cachoeira das Pedras, 20°06'49”S, 44°01'25"W, 925 m, 28-29.ix.2000, Paprocki & Braga — 3 males, 3 females (MZUSP); — 1 male, 1 female (NMNH); — 16 males, 10 females (UMSP); 9.x. Paprocki & Isaac — 5 males, 7 females (UMSP); Cachoeira do Abacaxi, Vale do Tropeiro, 20°12'16”S, 43°38'10"W, 1120 m, 30.ix.2000 — 1 male (UMSP); Ibitipoca, Sitio of Anestis Papadopolous, 21°43'14”S, 43°54'33"W, 1200 m, 23.x.2000, Paprocki — 1 female (UMSP); Rio das Velhas, upstream from São Bartolomeu, 20°18'39”S, 43°33'57"W, 18.ix.1998, Paprocki & Amarante — 8 males (UMSP); Rio Mainarte, bridge on Cibrão road, 20°27'15”S, 43°24'06"W, 700 m, 19.ix.1998, Paprocki & Amarante — 3 females (UMSP); trib. of Rio Parauninha, Serra do Breu, Faz. do Zé da Mata, 19°07'55”S, 43°37'24"W, 15.ii.1999, Paprocki & Braga — 3 males, 4 females (UMSP); Estação Ecológica de Tripuí, Córrego Botafogo, 20°22'54”S, 43°33'37"W, 1100 m, 16.xii.1998, Paprocki & Amarante — 1 female (UMSP); 23.i.1999, Amarante — 1 male (UMSP); Estação Ecológica do Tripuí, Córrego Tripuí, 20°23'22”S, 43°32'32"W, 1070 m, 21.ii.1999 — 1 female (UMSP); Serra do Cipó, Capão da Mata, 19°19'21”S, 43°32'15"W, 1170 m, 10.iii.1996, Holzenthal, Rochetti, & Oliveira — 2 females (UMSP); km 126, 15.xii.1973, Froehlich — 2 males (NMNH); **Parana:** Rio Cascata, Graciosa, road to Morretes, 25°20'13”S, 48°53'58"W, 750 m, 10.i.1998, Holzenthal, Melo, & Almeida — 1 male (UMSP); **Rio Grande do Sul:** Staudinger & Bang-Haas — 1 male (DEI); Stieglmayr — 1 male, lectotype male (NMW); Pelotas, 20.iv.1958, Biezanko — 1 male (BMNH); **Santa Catarina:** Seara (Nova Teutônia), 27°11'00”S, 52°23'00"W, 300-500 m, 11.x.1936, Plaumann — 1 male (BMNH); 7.ix.1937, Plaumann — 1 male (BMNH); 1.x.1964, Plaumann — 1 male (NMNH); Urubici, Morro da Igreja, Cachoeira Veu da Noiva, 28°04'36”S, 49°31'05"W, 1300 m, 5.iii.1998, Holzenthal, Froehlich, & Paprocki — 1 male (UMSP); **PARAGUAY: Itapua:** Pirapo, 28-31.xii.1971, Peña G. — 5 males (NMNH); **Paraguari:** Parque Nacional Ybycui, Arroyo Mina, 5.x.1984, Bonace — 1 male (NMNH); **URUGUAY: Cerro Largo:** Arroyo Quebrache, 1.iii.1959, Carbonell — 3 males (NMNH).

Distribution. Argentina, Brazil, Paraguay, Uruguay.

Phylloicus auratus, new species
Figs. 21, 22

Phylloicus "n. sp. 4" Flint, 1996:425

This species is similar in color to *P. adamsae*, but differs in the length of the preanal appendages and phallic morphology (Fig. 21). The male abdomen is most similar to those of *P. brevior* and *elektoros*, however, in *P. auratus*, tergum III is uniquely modified, with an acute anterolateral projection (Fig. 21F), and there is a single tapered dorsal lobe of the phallic endotheca (Fig. 21D, E).

Adult. Forewing length 10-11.6 mm, n = 6.

Head golden brown, dark anteriorly, setae on warts golden. Maxillary palps dark brown, covered with golden setae. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown, with golden setae; ventrolateral thorax chestnut brown. Legs chestnut brown. Metathoracic leg of male with posterior fringe of long setae, setae light brown. Tibial spur formula 2,4,4. Forewing flat; dark brown; covered with golden setae. Hind wing basal brush present in male.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum III with acute, apically setose lateral projection. Tergum IV with expanded lateral flanges, lateral coremata; lateral coremata accordion-pleated expansion of dorsal-pleural membrane. Tergum V without sclerotized modifications (Fig. 21F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process absent (Fig. 21A, C). Tergum IX without mesal ridge; posterior margin smoothly rounded; anterior margin indistinct, thinly sclerotized anteromesally (Fig. 21B); lateral ridge present; dorsal pleural setae approximately 20, ventral pleural setae absent (Fig. 21A). Preanal appendage less than 2/3 length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 21A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes short, length less than or equal to diameter; apex, in lateral view, rounded, in dorsal view, entire; with shallow dorsal projection at mid-length (Fig. 21A, B). Harpago slightly tapered; peglike setae few, apical (Fig. 21A, C). Phallic endotheca with single long apical lobe and paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 21D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with wide posteromesal notch; sternum VIII (Fig. 22C). Tergum IX without mesal ridge; notched anteriorly (Fig. 22B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 22A). Tergum X appendage shorter than mesal lobe, base marked by faint suture line, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes length approximately equal diameter (Fig. 22B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 22A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections rounded; posterior sclerite triangular; posterior end of spermatheca membranous (Fig. 22A).

Holotype male: PERU: Madre de Dios: Manu Biosphere Res., Pakitza Bio. Sta., Aquajal, 11°56'00”S, 71°18'00"W, 250 m, 12.ix.1988, Pogue (MHNJP)**.**

Paratypes: BRAZIL: Amazonas: Ega, 03°22'00”S, 64°42'00"W — 1 male (BMNH); **PERU: Madre de Dios:** Manu Biosphere Res., Pakitza Bio. Sta., trail 2, marker 18,

11°56'00”S, 71°18'00"W, 250 m, 12-23.ix.1989, Adams et al. — 1 female (NMNH); Río Tambopata Res., 30 air km SW Pto. Maldonado, 290 m, 6-10.xi.1979, Heppner — 1 female (MHNJP); 21-25.xi.1979, Heppner — 1 female (UMSP); 26-30.xi.1979, Heppner — 1 male (NMNH).

Distribution. Brazil, Peru.

Etymology. *Auratus*, from the Latin, meaning “golden,” refers to the golden color of the forewings.

Phylloicus bertioga, new species
Figs. 23, 24

This species can be recognized by the single ivory band on the forewing and the short preanal appendages of the male. Neither of the male specimens had the phallic endotheca fully everted, so I am unable to describe the membranous lobes.

Adult. Forewing length 7.7-8.8 mm, n = 3.

Head dark brown, with dorsomesal crest of black setae. Maxillary palps chestnut brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax dark brown, lateral margins black; ventrolateral thorax golden brown. Femora golden brown; foretibiae dark brown; mesotibiae dark brown; metatibiae dark brown; tarsi dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,4. Forewing flat; dark brown; with single transverse band; distal band ivory, not reaching either wing margin, 1/2 width of wing or less. Hind wing basal brush absent.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII without anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with short mesal ridge extending from anterior notch; posterior margin not distinct from base of tergum X (Fig. 23B); lateral ridge absent; dorsal pleural setae approximately 3, ventral pleural setae absent (Fig. 23A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 23C). Preanal appendage less than 2/3 length of tergum X, as long as wide, rounded apically, setae long, but not filamentous or longer than appendage (Fig. 23A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes short, length less than or equal to diameter; apex, in lateral view, truncate, in dorsal view, notched, notch round (Fig. 23A, B). Harpago long, curving mesally and tapering apically; peglike setae tiny, mesal (Fig. 23A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 23D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII without anteromesal process. Tergum VIII with sparser posterolateral brush of setae (Fig. 24B); sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 24C). Tergum IX

with mesal ridge extending 1/3 length of segment (Fig. 24B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with irregular, semimembranous pockets lateral to vaginal opening (Fig. 24A). Tergum X appendage length equal to mesal lobe, base marked by faint suture line, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 24B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 24A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections absent; posterior sclerite ovoid; posterior end of spermatheca a tiny sclerotized sphere (Fig. 24A).

Holotype male: BRAZIL: São Paulo: Bertioga, 23°51'00”S, 46°09'00"W, 5 m, 7-9.x.1996, Becker (MZUSP)**.**

Paratypes: BRAZIL: São Paulo: Bertioga, 23°51'00”S, 46°09'00"W, 5 m, 7-9.x.1996, Becker — 1 female, 1 male (NMNH).

Distribution. Brazil.

Etymology. Named for Bertioga, the type locality in São Paulo state.

Phylloicus bicarinatus, new species
Figs. 25, 26, 107

This species can be distinguished by the double keel or carinae of tergum X (Fig. 25B). The forewing pattern is similar to that of *P. elegans* and *lituratus* and *maculatus*, but in *P. bicarinatus* the setae forming the pattern are bright white, forming a crescent-shaped proximal band, in contrast to the ivory-yellow setae and the V-shaped proximal band of the other three species.

Adult. Forewing length 9-9.9 mm, n = 28.

Head chestnut brown. Maxillary palps dark brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae dark brown; mesotibiae dark brown; metatibiae dark brown; foretarsi chestnut brown; mesotarsi dark brown; metatarsi dark brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; black; with two transverse bands; proximal band white, extending from anterior to posterior wing margin; distal band white, beginning at anterior wing margin, at least 1/2 width of wing, widest and densest anteriorly; with single basal stripe, white (Fig. 107). Hind wing basal brush present in male, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched, notch deep and round (Fig. 25A, C). Tergum IX without mesal ridge; posterior margin smoothly rounded; thinly sclerotized anteromesally (Fig. 25B); lateral ridge present; dorsal pleural setae approximately 8, ventral pleural

setae absent (Fig. 25A). Preanal appendage less than 2/3 length of tergum X, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 25A, B). Tergum X without basal lobes; basodorsal process short and bifid; basolateral processes short, length less than or equal to diameter; apex, in lateral view, rounded, in dorsal view, notched, notch shallow; with paired mesal carinae (Fig. 25A, B). Harpago slightly tapered; peglike setae few, apical (Fig. 25A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes tapered apically; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 25D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII posterior margin entire; sternum VIII (Fig. 26C). Tergum IX with very short mesal ridge (Fig. 26B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 26A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes long, at least twice diameter and often asymmetrical (Fig. 26B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 26A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite ovoid (Fig. 26A).

Holotype male: PERU: Madre de Dios: Manu Biosphere Res., Pakitza Bio. Sta., Quebrada Trompetero, trail 2, marker 15, 11°56'39”S, 71°16'59"W, 350 m, 3.vii.1993, Blahnik & Pescador (MHNJP)**.**

Paratypes: BOLIVIA: La Paz: Río Alto Beni, Palos Blancos, 600 m, 11-15.i.1976, Peña G. — 1 male (NMNH); **Santa Cruz:** Sara, 450 m, Steinbach — 1 male (CMNH); **PERU: Cuzco:** Quincemil, xi.1962, Peña G. — 1 male (CNC) ; — 2 males (NMNH); **Madre de Dios:** Toma del Agua, Amazonia Lodge, 12°52'13”S, 71°22'34"W, 415 m, 29.vi.1993, Blahnik & Pescador — 1 male (NMNH); — 1 male (UMSP); Manu Biosphere Res., Pakitza Bio. Sta., 11°56'00”S, 71°18'00"W, 350 m, 30.ix.1987, Pogue — 1 male (NMNH); 01-13-03-99, 11°56'00”S, 71°18'00"W, 350 m, 2.x.1987, Pogue — 1 male (NMNH); Aquajal, 11°56'00”S, 71°18'00"W, 250 m, 12.ix.1988, Pogue — 2 males (NMNH); trail 1, marker 14 (1st stream), 11°56'00”S, 71°18'00"W, 250 m, 19-23.ix.1989, Adams et al. — 1 male (NMNH); trail 1, marker 4 (near tents), 11°56'00”S, 71°18'00"W, 250 m, 8-22.ix.1989, Adams et al. — 1 female, 3 males (NMNH); — 1 male (MHNJP); — 1 male (UMSP); trail 2, marker 18, 11°56'00”S, 71°18'00"W, 250 m, 12-23.ix.1989, Adams et al. — 1 male (MHNJP); — 5 males (NMNH); Quebrada Paujil-Picoflor, trail 1, marker 13, 11°56'39”S, 71°16'59"W, 350 m, 2.vii.1993, Blahnik & Pescador — 1 female (NMNH); 4-6.vii.1993, Blahnik & Pescador — 1 female (MHNJP); — 1 female (NMNH); Quebrada Trompetero, trail 2, marker 15, 11°56'39”S, 71°16'59"W, 350 m, 3.vii.1993, Blahnik & Pescador — 1 male (MHNJP); — 1 female, 2 males (NMNH); — 2 females (UMSP).

Distribution. Bolivia, Peru.

Etymology. *Bicarinatus*, from the Latin *bi-*, "two" and *carinatus*, "keeled," referring to the double keel of tergum X.

Phylloicus bidigitatus, new species
Fig. 27

This species has long, paired, digitate posteroventral processes of tergum X (Fig. 27A, B), which are distinctive. *Phylloicus bidigitatus* is only known from one badly rubbed specimen from Rio de Janeiro state. This specimen may in fact be conspecific with *P. obliquus*, of which I was able to identify only a single male specimen from Santa Catarina. Thus, I was not able to assess variation within the species. The shape of tergum X (Fig. 27A, B) is different enough between the two specimens to suggest they are different species, but only additional specimens can resolve this question.

Adult. Forewing length 10.1 mm, n = 1.

Head chestnut brown. Maxillary palps golden brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Legs golden brown. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with single transverse band; distal band ivory, beginning at anterior wing margin, at least 1/2 width of wing, narrow, less than 10 setae wide. Hind wing basal brush present in male, golden brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with mesal ridge extending 2/3 length of segment; posterior margin smoothly rounded (Fig. 27B); lateral ridge present; dorsal pleural setae approximately 10, ventral pleural setae absent (Fig. 27A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 27C). Preanal appendage shorter than tergum X, but greater than 2/3 length, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 27A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, rounded, in dorsal view, notched, notch deep and round; covered with short setae dorsally, with paired digitate posterior processes (Fig. 27A, B). Harpago sharply tapered; peglike setae few, apical (Fig. 27A, C). Phallic endotheca with paired apicolateral lobes, apicolateral lobes large and with digitate apical lobe; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 27D, E).

Female. Unknown.

Holotype male: **BRAZIL**: **Rio de Janeiro**: Itatiaia, 16-26.x.1927, Zerny (NMW).

Distribution. Brazil.

Etymology. *Bidigitatus*, from the Latin *bi-*, "two" and *digitatus*, "having fingers," referring to the paired digitate processes of tergum X.

Phylloicus blahniki, new species
Figs. 28, 29

Phylloicus blahniki is distinguished by the modifications of abdominal segments III and IV of the male. Tergite III is flanged anterolaterally; tergite IV bears a truncate posterior process and the lateral sclerite is short and rounded apically. Only lateral coremata are present, and they consist of four lobes, three of them short and rounded, the posterior lobe slightly elongate (Fig. 28F). The few specimens on which this description is based were all teneral or rubbed, so the description of the wing pattern is incomplete. None of the male specimens had the phallic endotheca fully everted, so I am unable to describe the membranous lobes.

Adult. Forewing length 11.7 mm, n = 8.

Head golden brown. Maxillary palps golden brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown, anterolateral margins dark brown; ventrolateral thorax golden brown. Femora golden brown; tibiae golden brown; tarsi dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with longitudinal stripes; stripes pale tan. Hind wing basal brush present in male and female.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum III with anterolateral flanges and short posterolateral projections. Tergum IV with paired posterior processes and paired lateral sclerites, lateral coremata; posterior process truncate; lateral sclerite narrowed apically; lateral coremata with basal globose lobes. Tergum V without sclerotized modifications (Fig. 28F). Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX without mesal ridge; posterior margin smoothly rounded; thinly sclerotized anteromesally (Fig. 28B); lateral ridge present; dorsal pleural setae absent, ventral pleural setae approximately 10 (Fig. 28A); sternum IX with faint mesolateral ridges; sternum IX (Fig. 28C). Preanal appendage longer than tergum X, but less than 11/2 times length, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 28A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch triangular; base of tergum X setose; tapered apically (Fig. 28A, B). Harpago slightly tapered; peglike setae few, apical (Fig. 28A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 28D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 29C). Tergum IX without mesal ridge (Fig. 29B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 29A). Tergum X appendage longer than mesal lobe, base indistinct, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes long, at least twice diameter and often asymmetrical (Fig. 29B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 29A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections acute; posterior sclerite triangular (Fig. 29A).

Holotype male: COSTA RICA: Puntarenas: Parque Nacional Corcovado, unnamed stream, Piedra el Arco, 08°34'55”N, 83°42'32"W, 20 m, 10.iv.1989, Holzenthal & Blahnik (UMSP)**.**

Paratypes: COSTA RICA: Puntarenas: Quebrada Pita, ca. 3 km (air) W Golfito, 08°38'31”N, 83°11'35"W, 15 m, 15.ii.1986, Holzenthal, Morse, & Fasth — 1 male (UMSP); Corcovado National Park, Osa Peninsula, 15-22.iii.1979, Janzen — 2 males (INBIO); Parque Nacional Corcovado, Rio Camaronal, 08°28'55”N, 83°35'20"E, 30 m, 13.iv.1989, Holzenthal & Blahnik — 1 female, 2 males (UMSP); **PANAMA: Panama:** Canal Zone, Barro Colorado Island, Snyder-Molino trail, marker 3, 28.ix.-4.x.1988, Wolda — 1 male (NMNH).

Distribution. Costa Rica, Panama.

Etymology. This species is named for Roger J. Blahnik, who collected the type specimen.

Phylloicus brevior Banks
Figs. 30, 31

Phylloicus brevior Banks, 1915:632 [Type locality: Guyana, Bartica; MCZ; male]. —Flint 1967:18 [male]; 1974b:139 [male, distribution].

This species is most similar to *P. auratus* and *elektoros*. The forewings of *P. brevior* are much darker than those of either of the first two species. The broad posterolateral flange of tergum IV and single-lobed coremata (Fig. 30F), and the shape of tergum X (Fig. 30A, B) are also distinctive in *P. brevior.* The phallus is very similar in all three species, except that where the first two species have a single long posterodorsal process, in *P. brevior* there are instead very short paired processes (Fig. 30D, E).

Adult. Forewing length 9.4-10.4 mm, n = 52.

Head golden brown, setae on warts golden. Maxillary palps golden brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal

surface of each flagellomere. Dorsal pterothorax golden brown, anterolateral margins darker; ventrolateral thorax golden brown. Femora golden brown; foretibiae golden brown; mesotibiae golden brown; metatibiae dark brown; tarsi dark brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with longitudinal stripes; with two basal stripes, golden. Hind wing basal brush present in male, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with expanded lateral flanges, lateral coremata; lateral coremata single-lobed and originating from pleural membrane of tergum IV, slightly tapered apically; when flaccid, apex folded under posterolateral flange of tergum IV. Tergum V without sclerotized modifications (Fig. 30F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process absent and posterior of segment semimembranous (Fig. 30A, C). Tergum IX without mesal ridge; posterior margin smoothly rounded; thinly sclerotized anteromesally (Fig. 30B); lateral ridge present; dorsal pleural setae approximately 20, ventral pleural setae approximately 10 (Fig. 30A). Preanal appendage less than 2/3 length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 30A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, entire or notched, notch shallow; with short dorsal projection at mid-length (Fig. 30A, B). Harpago slightly tapered; peglike setae few, apical (Fig. 30A, C). Phallic endotheca with paired apicolateral lobes and paired basolateral lobes, basolateral lobes large and round, apicolateral lobes small and tubercular; phallotremal sclerites small, longest dimension 1/2 diameter of phallobase; dorsal sclerite rectangular, width greater than height (Fig. 30D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 31C). Tergum IX without mesal ridge (Fig. 31B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, punctate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 31A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 31B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 31A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite emarginate anteriorly, posterolateral projections rounded; posterior sclerite ovoid; posterior end of spermatheca membranous (Fig. 31A).

Material examined. **BRAZIL: Parana:** 164 km W Altamira, 9.xi.1974, Reinert — 1 female (NMNH); 10.xi.1974, Reinert — 1 male (NMNH); 12.xi.1974, Reinert — 1 female (NMNH); 4-5 mi. W Jatobal, 22.x.1974, Reinert — 1 female (NMNH); 24.x.1974, Reinert — 1 female (NMNH); 28.x.1974, Reinert — 1 female (NMNH); Rio Xingu, camp ca. 60 km S Altamira, 03°39'00”S, 52°22'00"W, 2.x.1986, Spangler & Flint — 2 males (NMNH);

1st jungle stream trail 1, 03°39'00”S, 52°22'00"W, 2-8.x.1986, Spangler & Flint — 10 males, 12 females (NMNH); — 1 male, 1 female (UMSP); Igarape Jabuti, 03°39'00”S, 52°22'00"W, 8-16.x.1986, Spangler & Flint — 1 male, 4 females (NMNH); **Rondonia:** Cacaulândia, 140 m, 1.xi.1994, Becker — 1 male (NMNH); creek 8 km S of Cacaulandia, 21.xi.1991, Petr — 6 males, 7 females (NMNH); **GUYANA:** Bartica, Dec, Parish — holotype male (MCZ); **SURINAME: Sipaliwini:** Kabelebo River, Avanavero Vallen, 7.iv.1971, Geijskes — 1 male (NMNH); 10.iv.1971, Geijskes — 1 male (RNH).

Distribution. Brazil, Guyana, Suriname.

Phylloicus bromeliarum Müller
Figs. 32, 33

Phylloicus bromeliarum Müller, 1880a:131 [Type locality: Brazil, Santa Catharina [sic]; no type nor type depository designated; case]. —Ulmer 1906:56 [female]; 1913:398 [male, distribution]; 1955:418 [larva].

Lectotype: **BRAZIL, Santa Catarina,** Blumenau, 26°56'0”S, 49°3'0"W, Müller, male (MCZ; UMSP000067618).

A type series of one male and one female, labeled by Müller as *Phylloicus bromeliarum*, was deposited in the Museum of Comparative Zoology. These specimens are from Blumenau, Santa Catarina. The male retains only a hind wing; the female retains all four wings, and a pattern is clearly visible. This pattern was described by Ulmer (1906): two narrow white, transverse crescents on a dark brown wing. The other five specimens are a series of two males and one female from São Paulo state ψall in an excellent state of preservationψ which, although the male genitalia are identical with the type male, all have uniformly dark brown wings; a female from Misiones, Argentina, badly rubbed, so that if it had a pattern, it is no longer visible; and a female specimen labeled “Brazil,” on which the wing pattern described by Ulmer is clear. Given the dearth of material, I cannot assess whether the patterned and unpatterned forms are different species; as the genitalia are indistinguishable, I am treating them all as *P. bromeliarum*.

The wing pattern of *P. bromeliarum* is similar to that of *P. fenestratus*; however, in the latter, the white bands are longer and a long patch of white is present in cell Cu_2, which is lacking in *P. bromeliarum*. The male of *P. bromeliarum* is very different from other species of *Phylloicus*, as the dorsum of tergum X is very high, nearly even with the dorsum of tergum IX for most of its length (Fig. 32A). In addition, the harpago is very long and large, and is distinctive of this species.

Adult. Forewing length 7.4-8.9 mm, n = 7.

Head black, except for small setal warts. Maxillary palps black. Antenna twice forewing length; dark brown. Dorsal pterothorax black; ventrolateral thorax dark brown. Femora dark brown; tibiae dark brown; tarsi white, or ivory. Metathoracic leg of male and female

with posterior fringe of long setae. Tibial spur formula 2,4,2. Forewing flat; dark brown; with two transverse bands; proximal band white, reaching posterior wing margin, at least 1/2 width of wing; distal band white, not reaching either wing margin, 1/2 width of wing or less. Hind wing basal brush absent.

Male. Preterminalic abdominal terga without anteromesal notches. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with mesal ridge extending full length of segment; posterior margin slightly concave, sublaterally produced into small acute processes; very short mesally (Fig. 32B); lateral ridge absent; dorsal pleural setae approximately 10, ventral pleural setae absent (Fig. 32A); sternum IX with paired mesolateral ridges joined posteriorly; sternum IX (Fig. 32C). Preanal appendage less than 2/3 length of tergum X, widest near base, setae long, but not filamentous or longer than appendage (Fig. 32A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, cleft; with short setae apicodorsally (Fig. 32A, B). Harpago large, rounded; peglike setae tiny, mesal (Fig. 32A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 32D, E).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 33C). Tergum IX without mesal ridge (Fig. 33B). Sternum IX anterior lobes darkly sclerotized and striate, posterior lobes smooth, without distinct area of thin cuticle or invagination (Fig. 33A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 33B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 33A). Vaginal apparatus anterior sclerite elongate; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite triangular (Fig. 33A).

Material examined. **ARGENTINA: Misiones:** 1.x.1910, Jørgensen — 1 female (ZSZMH); **BRAZIL:** Saunders — 1 female (BMNH); **Santa Catarina:** Blumenau, 26°56'00”S, 49°03'00"W, Müller — lectotype male, 1 female paralectotype (MCZ); **São Paulo:** Bertioga, 23°51'00”S, 46°09'00"W, 5 m, 7-9.x.1996, Becker — 2 males, 1 female (NMNH).

Distribution. Argentina, Brazil.

Phylloicus chalybeus (Hagen)
Figs. 34, 35

Phylloicus chalybeus (Hagen, 1861:285) [Type locality: Cuba; MCZ; male; in *Macronema*]. Ross

1952:34 [lectotype male]. —Flint 1967:18 [male]. —Botosaneanu 1980:115 [male, restriction of type locality]; 1994:468 [larva].

The genitalia of *P. chalybeus* are similar to those of the other Antillean species, *P. iridescens*, *cubanus*, *pulchrus*, and *superbus* and the Amazonian species *P. amazonas*; however, the forewings of *P. chalybeus* are nearly uniform golden brown, lacking the broad colored bands.

Adult. Forewing length 9.1-11.4 mm, n = 45.

Head golden brown. Maxillary palps dark brown, covered with dark brown setae. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae golden brown; mesotibiae golden brown; metatibiae dark brown; tarsi golden brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,2. Forewing flat; golden brown; without colored markings; basal cells clear. Hind wing basal brush absent.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX deeply notched anteriorly, margins of notch ridged; posterior margin not distinct from base of tergum X (Fig. 34B); lateral ridge present; dorsal pleural setae approximately 10, ventral pleural setae absent (Fig. 34A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 34C). Preanal appendage shorter than tergum X, but greater than 2/3 length, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 34A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, notched, notch triangular (Fig. 34A, B). Harpago rounded; peg-like setae many, mesoventral (Fig. 34A, C). Phallic endotheca with single long apical lobe and paired basolateral lobes, basolateral lobes multilobed; phallotremal sclerites very large, longest dimension twice diameter of phallobase; dorsal sclerite two-armed, in lateral view U-shaped (Fig. 34D, E).

Female. Abdominal terga III-IV much darker laterally. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 35C). Tergum IX with mesal ridge extending length of segment (Fig. 35B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with shallow pockets lateral to vaginal opening (Fig. 35A). Tergum X appendage shorter than mesal lobe, base distinct, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 35B). Sternum X with numerous fine short setae on membrane lateral to anal opening (Fig. 35A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections acute; posterior sclerite ovoid; posterior end of spermatheca a sclerotized sphere with wide anterior ridge (Fig. 35A).

Material examined. **CUBA:** 31.12.1864, Tocy? — holotype male, 2 male paralectotypes (MCZ); 1877, Loew — 1 male, 1 female (MCZ); 1898, Tocy? — 1 male paralectotype (MCZ); Aguayo — 1 female (NMNH); Rancho Mundito, S Rangel, 1.vi.1950, de Zayas — 1 male (NMNH); Oriente, Yunque de Baracoa, 305-549 m, 13.vii.1936, Darlington — 2 females (MCZ); **Holguin:** Aguas Claras, 20°57'40”N, 76°16'12"W, 1.v.1955, Layas — 1 male, 1 female (NMNH); **Isla de la Juventud:** Santa Fé: Arroyo La Talega, 22.iv.1973, Botosaneanu — 10 males — 8 females (UMSP); **Las Tunas:** Oriente: Cupeyal, Yateras, vi.1974, Garcia — 1 male (NMNH); **Pinar del Río:** San Vicente, Viñales, v.1963 — 1 male, 1 female (NMNH); **Sancti Spíritus:** Buenos Aires, Trinidad Mountains, 762-1067 m, 8-14.v.1936, Darlington — 4 males, 6 females (MCZ); 17-23.vi.1939, Parsons — 1 female (MCZ); **Santiago de Cuba:** Oriente, Hongolosongo, 7.vii.1936, Darlington — 1 male, 1 female (MCZ).

Distribution. Cuba.

Phylloicus cordatus, new species
Figs. 36, 37

This species is distinguished by the wing pattern, a distinctive pattern of orange and dark brown. In dorsal view, the brown patches on the posteromesal area are heart-shaped, and thus the name of this species. The abdominal coremata are short, broad, and single-lobed (Fig. 36F). The female specimen is teneral, so I was only able to measure wing length for the single male. The preanal appendages of this specimen are broken, but appear to be similar to those of *P. elegans* and *hansoni*, being covered with long fine setae and becoming slightly wider apically (as in Figs. 45B, 55B).

Adult. Forewing length 8.4 mm, n = 2.

Head golden brown. Maxillary palps golden brown, covered with golden and dark brown setae. Antenna twice forewing length; each flagellomere golden proximally and dark brown distally, appearing striped. Dorsal pterothorax golden brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae golden brown; mesotibiae dark brown; metatibiae chestnut brown; foretarsi golden brown; mesotarsi chestnut brown; metatarsi chestnut brown. Metathoracic leg of male with posterior fringe of long setae, setae chestnut brown. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with two transverse bands; proximal band orange, reaching posterior wing margin, at least 1/2 width of wing, wide, at least 1/6 wing length, 5-sided, most proximal corner in cell M_1, distal side runs from R_1 to A_1; distal band orange, beginning at anterior wing margin, at least 1/2 width of wing, with patch of brown setae in center of orange, each band with narrow border of dark brown setae.

Male. Preterminalic abdominal terga without anteromesal notches. Corematic structures present. Tergum IV with expanded lateral flanges, lateral coremata; lateral coremata

accordion-pleated expansion of dorsal-pleural membrane. Tergum V without sclerotized modifications (Fig. 36F). Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX without mesal ridge; posterior margin smoothly rounded; anterior ridge broken mesally (Fig. 36B); lateral ridge present; dorsal pleural setae continuous with ventral pleural setae, dense (Fig. 36A); sternum IX with faint mesolateral ridges; sternum IX (Fig. 36C). Preanal appendage widest apically, setae filamentous, longer than appendage (Fig. 36A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch deep and round (Fig. 36A, B). Harpago slightly tapered; peglike setae absent (Fig. 36A, C). Phallic endotheca with paired apicolateral lobes and paired basolateral lobes, basolateral lobes multilobed, apicolateral lobes rounded and with digitate apical lobe; phallotremal sclerites very large, longest dimension twice diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 36D, E).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 37C). Tergum IX without mesal ridge, patch of several setae mesally (Fig. 37B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle laterally (Fig. 37A). Tergum X appendage longer than mesal lobe, base distinct, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 37B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 37A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections rounded; posterior sclerite triangular (Fig. 37A).

Holotype male: VENEZUELA: Amazonas: Cerro de la Neblina, Camp IV, 00°58'00”N, 65°57'00"W, 760 m, 15-18.iii.1984, Flint (NMNH)**.**

Paratype: VENEZUELA: Amazonas: Cerro de la Neblina, Camp IV, 00°58'00”N, 65°57'00"W, 760 m, 15-18.iii.1984, Flint — 1 female (NMNH).

Distribution. Venezuela

Etymology. *Cordatus*, from the Latin, meaning “heart-shaped,” refers to the heart shape apparent when the folded wings are viewed dorsally.

Phylloicus crenatus (Navás)

Banyallarga crenatus Navás, 1916:79 [Type locality: Colombia, Muzo; collection Apollinaris, now lost?; male; in *Banyallarga*]. —Flint 1983:77 [to *Phylloicus*]. **NOMEN DUBIUM**

No material is known for this species. The type is probably lost — no types are known to be extant from the Apollinaris collection (Flint *et al.* 1999a). The only clues to the identity of this species are Navás’s description and inadequate illustration of wings and male terminalia. If Navás correctly identified this species as a calamoceratid, the illustration is ade-

quate to assign this species to *Phylloicus*, as the first fork is absent from the hind wing. The illustration of the male terminalia is so generalized that no discrimination is possible.

Distribution. Colombia.

Phylloicus cressae, new species
Figs. 38, 39

Phylloicus cressae is most similar to *P. abdominalis*, *perija*, and *pirapo*. It differs in the morphology of the proximal abdomen, having short lateral sclerites and only a lateral pair of coremata, and in the wing pattern: in *P. cressae* the second distal band of pale setae is absent, and a small patch of tan setae is present at the base of Cu_1.

Adult. Forewing length 11.1-14.9 mm, n = 68.

Head chestnut brown, with dorsomesal crest of chestnut brown setae. Maxillary palps chestnut brown, covered with golden setae. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Legs golden brown. Metathoracic leg of male with posterior fringe of long setae, setae golden brown. Tibial spur formula 2,4,4. Forewing flat; dark brown; with single transverse band; proximal band tan, reaching posterior wing margin, at least 1/2 width of wing; with two basal stripes, tan; small patch of tan setae at proximal end of wing coupling hairs; with small golden spot marking nygma. Hind wing basal brush present in male and female, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with paired posterior processes and paired lateral sclerites, lateral coremata; posterior process truncate; lateral sclerite narrowed apically; lateral coremata with basal globose lobes and long tubular posterior lobe. Tergum V apodemes heavily ridged, with patch of stiff setae posteriorly (Fig. 38F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process short and notched, notch narrow and parallel-sided (Fig. 38A, C). Tergum IX deeply notched anteriorly, margins of notch ridged; posterior margin with irregular mesal projection; thinly sclerotized anteromesally (Fig. 38B); lateral ridge present; dorsal pleural setae approximately 5, ventral pleural setae approximately 5 (Fig. 38A). Preanal appendage at least 11/2 times length of tergum X, widest apically, setae filamentous, longer than appendage (Fig. 38A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes long, length at least twice diameter; apex, in lateral view, truncate, in dorsal view, entire or notched, notch shallow (Fig. 38A, B). Harpago rounded; peglike setae many, apical (Fig. 38A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 38D, E).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch, or posterior margin entire; sternum VIII (Fig. 39C). Tergum IX with very short mesal ridge (Fig. 39B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 39A). Tergum X appendage shorter than mesal lobe, base indistinct, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes very short, length less than diameter (Fig. 39B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 39A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite ovoid; posterior end of spermatheca a sclerotized expanded tube (Fig. 39A).

Type material. **Holotype male: VENEZUELA: Lara:** Parque Nacional Dinira, Quebrada Las Pinetas, 09°46'19”N, 70°01'45"W, 1889 m, 22.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa (UMSP)**.**

Paratypes: BOLIVIA: La Paz: Coroico, 2200 m, 23-24.xi.1984, Peña G. — 1 male (NMNH); Yungas Range, Circuata to Cajuata, 3-5.xii.1984, Peña G. — 1 female, 1 male (NMNH); **ECUADOR: Napo:** Río Jondachi, 30 km N Tena, 950 m, 10.ix.1990, Flint — 1 female, 1 male (NMNH); **Pichincha:** Río Umachaca, For. Sta. Maquipucuna, ca. 5 km E Nanegal, 00°07'30”N, 78°37'00"W, 1250 m, 4-5.ix.1990, Flint — 2 males (NMNH); **VENEZUELA: Aragua:** 1 km E Estacion Biologica Rancho Grande, 10°21'07”N, 67°40'48"W, 1100 m, 27.i.1994, Holzenthal, Cressa, & Rincón — 4 males (IZAM); — 3 females, 11 males (UMSP); Rancho Grande, 1100 m, 24-31.x.1966, Duckworth — 1 male (NMNH); Río El Limon, fish hatchery, Maracay, 10°14'49”N, 67°35'45"W, 22-23.x.1974, Weibezahn — 1 female, 1 male (NMNH); 18-19.xii.1974, Weibezahn — 2 females, 2 males (NMNH); 12-13.ii.1975, Weibezahn — 1 female, 1 male (NMNH); Parque Nacional Henri Pittier, Quebrada Guamitas on road to Rancho Grande, 13-14.ix.1979, Savage — 1 female, 1 male (NMNH); Río La Trilla, 22.5 km N of Rancho Grande on road, 17-19.ix.1979, Savage — 1 male (NMNH); **Guarico:** P. N. Guatopo, Queb. Guatopo, 0.5 km N Est. La Colina, 10°00'50”N, 66°21'47"W, 600 m, 22.i.1994, Holzenthal, Cressa, & Rincón — 2 males (IZAM); — 4 males (UMSP); **Lara:** Parque Nacional Dinira, Quebrada Las Pinetas, 09°46'19”N, 70°01'45"W, 1889 m, 22.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa — 2 females, 2 males (IZAM); — 1 female, 1 male (NMNH); — 4 females, 4 males (UMSP); Parque Nacional Yacambú, 13 km SE Sanare, 1560 m, 4-7.iii.1978, Heppner — 3 females, 3 males (NMNH); **Mérida:** La Pedregosa, 21.ii.1976, C & O Flint — 2 males (NMNH); **Miranda:** P. N. Guatopo, Queb. Macanilla @ La Macanilla, 10°06'47”N, 66°30'58"W, 550 m, 23.i.1994, Holzenthal, Cressa, & Rincón — 1 male (UMSP).

Distribution. Bolivia, Ecuador, Venezuela.

Etymology. I am pleased to name this species for its collector, Dr. Claudia Cressa.

Phylloicus cubanus Banks
Figs. 40-42, 108

Phylloicus cubanus Banks, 1924:445 [Type locality: Cuba; MCZ; male]. —Flint 1967:18 [male]. —Botosaneanu & Sykora 1973:399 [male, larva, pupa]. —Botosaneanu 1994:468 [larva].

This species is most similar to *P. iridescens*, *pulchrus*, and *superbus*, all of which have a similar pattern of orange bands across brown wings. *Phylloicus cubanus* and *P. superbus* are very similar (see discussion under *P. superbus*), with an apically expanded harpago (Fig. 41A, C), but *P. cubanus* is the smaller of the two species.

Adult. Forewing length 7.7-9.9 mm, n = 28.

Head golden brown. Maxillary palps dark brown, covered with dark brown setae. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown; ventrolateral thorax golden. Femora golden; foretibiae golden; mesotibiae golden; metatibiae dark brown; tarsi golden. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,2. Forewing flat; dark brown; with two transverse bands; proximal band orange, reaching posterior wing margin, at least 1/2 width of wing, wide, at least 1/6 wing length; distal band orange, extending from anterior to posterior wing margins, wide, at least 1/6 wing length (Fig. 108). Hind wing basal brush absent.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX deeply notched anteriorly, margins of notch ridged; posterior margin continuous with basodorsal process of tergum X (Fig. 41B); lateral ridge absent; dorsal pleural setae approximately 15, ventral pleural setae absent (Fig. 41A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 41C). Preanal appendage less than 2/3 length of tergum X, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 41A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch shallow; with paired short longitudinal ridges at mid-length (Fig. 41A, B). Harpago rounded; peglike setae many, apical (Fig. 41A, C). Phallic endotheca with paired apicolateral lobes and paired basolateral lobes, basolateral lobes tapered apically, apicolateral lobes large and rounded; phallotremal sclerites very large, longest dimension twice diameter of phallobase; dorsal sclerite two-armed, in lateral view U-shaped (Fig. 41D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 42C). Tergum IX with mesal ridge extending length of segment (Fig. 42B). Sternum IX anterior lobes smooth and indistinct, posterior lobes striate, with shallow pockets anterolateral to vaginal opening (Fig. 42A). Tergum X appendage length equal to mesal lobe, base distinct, apex rounded; mesal lobe

lightly sclerotized; digitate lateral processes absent (Fig. 42B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 42A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections acute; posterior sclerite ovoid; posterior end of spermatheca a sclerotized ring (Fig. 42A).

Material examined. **CUBA:** 1864, Gundlach — holotype male (MCZ); **Holguin:** Pin. Mayari, 640 m, 1.vii.1990, Becker — 2 males, 3 females (NMNH); **Oriente:** Coast below Pico Turquino, 26.vi.1936, Darlington — 1 male (MCZ); Gran Piedra Range, 2000-3000 f m, 30-31.v.1936, Darlington — 3 males (MCZ), 1 female (MCZ); La Gran Piedra, 1.vi.1963 — 2 females (UMSP); Loma del Gato, Cobre Range, 3-7.vii.1936, Darlington — 6 males, 4 females (MCZ); Mountains N of Imias, 3000-4000 f m, 25-28.vii.1936, Darlington — 2 females (MCZ); **Sancti Spíritus:** Buenos Aires, L. Villas, 1.vi.1953, Zayas — 1 male (NMNH); Buenos Aires, Trinidad Mountains, 762-1067 m, 17-23.vi.1939, Parsons — 1 female (MCZ); **Santiago de Cuba:** Pico Turquino, S side, 3000-5000 f m, 1.vi.1936, Darlington — 4 males (MCZ).

Distribution. Cuba.

Phylloicus elegans Hogue and Denning
Figs. 43, 44, 109

Phylloicus elegans Hogue and Denning, 1983 in Denning *et al.* 1983:184 [Type locality: Panama, Canal Zone, Barro Colorado Island; WSU; male]. —Flint 1991:98 [male, distribution].

The wing pattern of *P. elegans* (Fig. 109) is identical to that of *P. lituratus*. However, the male abdomen of *P. elegans* is very distinctive: tergum IV has distinctively shaped posteriorly projecting lateral sclerites and multilobed lateral coremata (Fig. 43F). The females of the two species are indistinguishable, and as several series from different localities contain males of both *P. elegans* and *P. lituratus*, all determinations of females are tentative. Hybrids may occur; this is discussed under *P. lituratus*.

Adult. Forewing length 10.4-12.1 mm, n = 106.

Head chestnut brown. Maxillary palps dark brown. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden. Femora golden; foretibiae dark brown; mesotibiae dark brown; metatibiae dark brown; foretarsi dark brown; mesotarsi white proximally, dark distally; metatarsi dark brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band ivory, reaching posterior wing margin, at least 1/2 width of wing, an inverted V-shape; distal band ivory, beginning at anterior wing margin, at least 1/2 width of wing; with two basal stripes, ivory (Fig. 109). Hind wing basal brush present in male and female; male brush light brown; female brush dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with paired posterior processes and paired lateral sclerites, lateral coremata; posterior process truncate; lateral sclerite spatulate, directed laterally; lateral coremata with basal globose lobes. Tergum V without sclerotized modifications (Fig. 43F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched, notch deep and round (Fig. 43A, C). Tergum IX with mesal ridge extending full length of segment; posterior margin with round narrow mesal projection (Fig. 43B); lateral ridge present; dorsal pleural setae approximately 4, ventral pleural setae approximately 2 (Fig. 43A). Preanal appendage at least 11/2 times length of tergum X, widest apically, setae filamentous, longer than appendage (Fig. 43A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes short, length less than or equal to diameter; apex, in lateral view, truncate, in dorsal view, entire or notched, notch shallow; with paired dorsolateral ridges (Fig. 43A, B). Harpago rounded; peglike setae many, apical (Fig. 43A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 43D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch, or posterior margin entire; sternum VIII (Fig. 44C). Tergum IX without mesal ridge (Fig. 44B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 44A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 44B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 44A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized cone (Fig. 44A).

Material examined. **COLOMBIA: Antioquia:** Quebrada Honda, 12 km SW Fredonia, 1450 m, 22.ii.1983, Flint — 3 males, 1 female (NMNH); Quebrada La Jimenez, Mun. Sopetran, trap C, 780 m, 22.v.1983, Matthias — 1 male (NMNH); **COSTA RICA: Alajuela:** 20 km S Upala, 15.vii.1990, Parker — 2 males (EMUS); 6.i.1991, Parker — 1 male (EMUS); 30.v.1991, Parker — 1 male (EMUS); 1-15.vii.1991, Parker — 1 male (EMUS); 1-10.viii.1991, Parker — 1 male (EMUS); 21-31.viii.1991, Parker — 1 male, 1 female (EMUS); unnamed river, Cerro Campana ca. 6 km (air) NW Dos Rios, 10°54'00”N, 85°24'00"W, 640 m, 22-23.vii.1987, Holzenthal, Morse, & Clausen — 1 male (UMSP); **Guanacaste:** Maritza, Quebrada Marilin, 10°57'04”N, 85°29'24"W, 600 m, 12.i.1992, Sweeney, MacLeod, & Villalobos — 3 males (NMNH); 9.xi.1992, de la Rosa — 1 male (UMSP); Río Los Ahogados, Río Los Ahogados, 11.3 km ENE Quebrada Grande, 10°51'54”N, 85°25'23"W, 470 m, 7.iii.1986, Holzenthal & Fasth — 1 male (UMSP); Parque Nacional Guanacaste, Río Orosí, Estación Pitilla, 10°59'28”N, 85°25'41"W, 700 m,

22-25.v.1990, Holzenthal & Blahnik — 1 male (UMSP); **Límon:** Río Uatsi, ca. 8 km (air) W Bribri, 09°37'12”N, 82°54'00"W, 60 m, 25.v.1987, Holzenthal, Hamilton, & Heyn — 1 male (UMSP); **Puntarenas:** Río Singrí, ca 2 km (air) S Finca Helechales, 09°03'25”N, 83°04'55"W, 720 m, 21.ii.1986, Holzenthal, Morse, & Fasth — 1 male (UMSP); **San José:** Escazu, 11-18.iv.1988, Parker — 2 males (EMUS); 15.iv.1988, Parker — 2 males (EMUS); 15-21.v.1988, Parker — 1 male, 1 female (EMUS); Reserva Biológica Carara, Río Carara, Carara, 09°46'41”N, 84°31'52"W, 200 m, 14.iii.1991, Holzenthal, Muñoz, & Huisman — 1 male (UMSP); Río del Sur, 1.5 km (rd) S Carara, 09°46'08”N, 84°31'52"W, 160 m, 13.iii.1991, Holzenthal, Muñoz, & Huisman — 1 male (UMSP); **ECUADOR: Pichincha:** Río Palenque Biological Station, Río Palenque, Santo Domingo (47 km), 229 m, 29.vii.1976, Cohen — 1 male (NMNH); **NICARAGUA: Chontales:** Rt. 7, km 206 E of Villa Somosa, 29.vii.1967, Flint & Ortiz — 1 male (NMNH); **Jinotega:** Cerro Mazú, 14°33'00”N, 85°07'00"W, 220 m, 7-10.ix.1997, Maes & Hernández — 2 males, 1 female (UMSP); **Zelaya:** Cerro Saslaya, 13°44'00”N, 85°01'00"W, 700 m, 1.iv.1996, Maes & Hernández — 1 male, 1 female (NMNH); **PANAMA: Darien:** Río Tacarcuna, 579 m, 11.vii.1963, Fairchild — 1 male (MCZ); **Panama:** Canal Zone, Barro Colorado Island, 28-30.iv.1964, S & W Duckworth — 1 male (NMNH); 10-17.v.1964, S & W Duckworth — 1 male (NMNH); 21.ii.1967, Akre — 12 male, 21 female paratypes (CAS); 22-24.ii.1967, Akre — holotype male (WSU); 12.iii.1967, Akre — allotype female (WSU); 18.iii.1967, Akre — 10 male, 14 female paratypes (CAS); 24-25.ii.1969, Akre — 8 male, 9 female paratypes (CAS); 12.iii.1969, Akre — 1 male, 2 female paratypes (CAS); 8.v.1977, Silberglied & Aiello — 1 male (NMNH); 25.vi.1978, Silberglied & Aiello — 1 male (NMNH); Snyder-Molino trail, marker 3, 28.ix.1988-3.i.1989, Wolda 7 males (NMNH); 13.xii.1989-13.ii.1990, Wolda — 6 males (UMSP); 12.xii.1990-5.ii.1991, Wolda — 5 males (NMNH); Windowpane trap-4A, 31.i.-5.ii.1986, Wolda — 1 male (NMNH).

Distribution. Colombia, Costa Rica, Ecuador, Nicaragua, Panama.

Phylloicus elektoros, new species
Figs. 45, 46

The forewings of *P. elektoros* are a golden ochre color, with stripes of pale tan setae between the wing veins. This species is most similar to *P. auratus* and *brevior*; *P. elektoros* differs from the first two in wing coloring, the lack of coremata or tergal modifications, and in the long digitate dorsal process of the phallic endotheca. Tergum X is entire, posteriorly (Fig. 45B)

Adult. Forewing length 9.6-10.5 mm, n = 32.

Head golden, darker anteriorly, setae on warts golden. Maxillary palps golden, covered with dark brown setae. Antenna twice forewing length; anterior surface chestnut brown, posterior surface golden, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown, lateral margins darker; vent-

rolateral thorax golden. Femora golden; foretibiae golden; mesotibiae chestnut brown; metatibiae chestnut brown; foretarsi golden; mesotarsi chestnut brown; metatarsi chestnut brown. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula 2,4,4. Forewing flat; golden ochre; with longitudinal stripes; stripes pale tan. Hind wing basal brush present in male.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process absent and posterior margin irregular (Fig. 45A, C). Tergum IX without mesal ridge; posterior margin smoothly rounded; thinly sclerotized anteromesally, anterior ridge obsolete mesally (Fig. 45B); lateral ridge present; dorsal pleural setae approximately 10, ventral pleural setae approximately 5 (Fig. 45A). Preanal appendage less than 2/3 length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 45A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, entire; covered with short setae dorsally (Fig. 45A, B). Harpago slightly tapered; peglike setae few, apical (Fig. 45A, C). Phallic endotheca with single long apical lobe and paired basolateral lobes, basolateral lobes multilobed; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite rectangular, width greater than height (Fig. 45D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch, or posterior margin entire; sternum VIII (Fig. 46C). Tergum IX without mesal ridge (Fig. 46B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle laterally (Fig. 46A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 46B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 46A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized cone (Fig. 46A).

Holotype male: VENEZUELA: Amazonas: Cerro de la Neblina, Basecamp, in rainforest, 00°51'N 66°10'W, 140 m, 19.ii.1985, Spangler, Faitoute, & Steiner (NMNH)**.**

Paratypes: BRAZIL: Amazonas: 60 km N Manaus, 22.xi.1976, Penny — 1 female (INPA); Am. 010, km 246, 20 km W Itacoatiara, 12-15.vii.1979, Arias et al. — 1 female (NMNH); Res. Ducke, 26 km E Manaus, 1.x.1976, Penny — 1 female (INPA); 30.ix.1986, Luis — 1 female (NMNH); **PERU: Loreto:** Callicebus Research Station, Mishana, Río Nanay, 25 km SW Iquitos, 120 m, 10-17.i.1980, Heppner — 1 male (NMNH); **Madre de Dios:** Río Tambopata Res., 30 km (air) SW Pto. Maldonado, 12°50'00”S, 69°17'00"W, 290 m, 2.iii.1984, Erwin et al. — 1 male (NMNH); **VENEZUELA: Amazonas:** San Carlos de

Río Negro, 6-12.xii.1984, Brown — 2 males (NMNH); 13-17.xii.1984, Brown — 1 female (NMNH); Cerro de la Neblina, Agua Blanca, 00°49'00”N, 66°08'00"W, 160 m, 20-21.iii.1984, Flint & Louton — 2 females, 2 males (NMNH); Basecamp, 00°51'N 66°10'W, 140 m, 4-12.ii.1984, Davis & McCabe 1 male (IZAM); — 1 female, 2 males (NMNH); 13-20.ii.1984, Davis & McCabe — 1 female (IZAM); — 1 female, 1 male (NMNH); — 1 female (UMSP); 1-10.iii.1984, Davis & McCabe — 1 female, 2 males (NMNH); 10.ii.1985, Steiner — 1 female (NMNH); 21-28.ii.1985, Spangler, Faitoute, & Steiner — 1 male (IZAM); — 1 male (NMNH); — 1 male (UMSP); in rainforest, 00°51'N 66°10'W, 140 m, 20.ii.1985, Spangler, Faitoute, & Steiner — 1 male (NMNH); nr. Río Baria, 00°51'N 66°10'W, 140 m, 17.ii.1985, Cocroft & Steiner — 1 female (NMNH); small stream in rainforest, 00°51'N 66°10'W, 140 m, 8.ii.1985, Steiner — 1 male (NMNH); — 1 male (UMSP); 9.ii.1985, Steiner — 1 male (NMNH).

Distribution. Brazil, Peru, Venezuela.

Etymology. “*Elektoros*,” from the Greek, meaning “the beaming sun,” referring to the sunburst-like pattern of the forewings.

Phylloicus ephippium, new species
Figs. 47, 48

Phylloicus ephippium is distinguished by the wing pattern, which in dorsal view appears to have a saddle of dark brown across the middle of the wing, and segments IV and V of the male, which are highly modified (Fig. 47F), with a long, projecting lateral sclerite of tergum IV. Only mesal coremata are present; these are bifurcate and setose.

Adult. Forewing length 12.1 mm, n = 6.

Head golden brown, with dorsomesal crest of black setae. Maxillary palps dark brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax dark brown; ventrolateral thorax pale tan. Legs pale tan. Metathoracic leg of male with posterior fringe of long setae, setae pale. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with two transverse bands; proximal band golden, reaching posterior wing margin, at least 1/2 width of wing, an inverted V-shape; distal band tan, not reaching either wing margin, 1/2 width of wing or less; with two basal stripes, golden; "V" of proximal band encloses “S,addle” of dark brown setae on posterior margin; proximal half of cell Cu_2 clear. Hind wing basal brush present in male, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with paired lateral sclerites, mesal coremata; lateral sclerite contorted, setose apically; mesal coremata bilobed, mesal lobe setose, capable of inflation to 1/2 length segment V, lateral lobe very long, fully extended reaching to end of abdomen, covered with setae. Tergum V with pair of semi-elliptical ridges on posteromesal corners (Fig.

47F). Sternum VII without anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process truncate (Fig. 47A, C). Tergum IX without mesal ridge; posterior margin with round narrow mesal projection; with anterior ridge broken mesally; posterior margin with smooth rounded mesal projection (Fig. 47B); lateral ridge present; dorsal pleural setae approximately 8, ventral pleural setae approximately 5 (Fig. 47A). Preanal appendage approximately length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 47A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, rounded, in dorsal view, notched, notch triangular (Fig. 47A, B). Harpago rounded; peglike setae few, apical (Fig. 47A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 47D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII without anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch; sternum VIII (Fig. 48C). Tergum IX with very short mesal ridge (Fig. 48B). Sternum IX anterior lobes darkly sclerotized and striate, posterior lobes smooth, without distinct area of thin cuticle or invagination (Fig. 48A). Tergum X appendage shorter than mesal lobe, base marked by faint suture line, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes length approximately equal diameter (Fig. 48B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 48A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections acute; posterior sclerite triangular; posterior end of spermatheca a sclerotized expanded tube (Fig. 48A).

Holotype male: ECUADOR: Tungurahua: 13 km E Baños, 1550 m, 15.ix.1990, Flint (NMNH)**.**

Paratypes: ECUADOR: Tungurahua: 13 km E Baños, 1550 m, 15.ix.1990, Flint — 1 female, 3 males (NMNH); 1 male (UMSP).

Distribution. Ecuador.

Etymology. *Ephippium*, from the Latin, meaning "Saddle," referring to saddle pattern of the forewings.

Phylloicus farri Flint
Figs. 49-50

Phylloicus farri Flint, 1968b:56 [Type locality: Jamaica, St. Andrew, Hope River near Newcastle at mile post 16.5; NMNH; male; female, larva, pupa, case]. —Denning *et al.* 1983:188 [type species of *Murielia*]. —Flint *et al.* 1999b:73 [returned to *Phylloicus*].

Phylloicus farri is easily recognized by the very long (at least twice length of genital cap-

sule, narrow preanal appendages (Fig. 49A, B). The modifications of male tergum IV are also distinctive (Fig. 49F).

Adult. Forewing length 7.7-11.3 mm, n = 14.

Head golden brown. Maxillary palps golden brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown; ventrolateral thorax golden. Legs golden. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,4. Forewing flat; golden brown; with single transverse band; proximal band tan, reaching posterior wing margin, at least 1/2 width of wing; proximal half of basal cells clear. Hind wing basal brush present in male, pale.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with expanded lateral flanges, mesal coremata and lateral coremata; lateral coremata with basal globose lobes and long tubular posterior lobe; mesal coremata single-lobed, single-lobed, originating broadly from membrane of tergum IV-V. Tergum V without sclerotized modifications (Fig. 49F). Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX without mesal ridge; posterior margin not distinct from base of tergum X; notched anteromesally (Fig. 49B); lateral ridge absent; dorsal pleural setae approximately 6, ventral pleural setae absent (Fig. 49A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 49C). Preanal appendage at least 11/2 times length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 49A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch triangular; with short setae basodorsally (Fig. 49A, B). Harpago slightly tapered; peglike setae tiny, mesal (Fig. 49A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 49D, E).

Female. Abdominal terga I-III dark brown laterally. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 50C). Tergum IX without mesal ridge (Fig. 50B). Sternum IX anterior lobes smooth and indistinct, posterior lobes striate, with shallow pockets anterolateral to vaginal opening (Fig. 50A). Tergum X appendage longer than mesal lobe, base indistinct, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 50B). Sternum X with semisclerotized plates marking anal opening (Fig. 50A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections acute; posterior sclerite triangular; posterior end of spermatheca a sclerotized ring (Fig. 50A).

Material examined. **JAMAICA: Saint Andrew Parish:** Hardwar Gap Dicks Pond Tr., 16.vii.1963, Flint & Farr — 2 female paratypes (NMNH); Newcastle, stream at milepost 16.5, 30.vii.1962, Farr & Flint — holotype male, 1 female paratype (NMNH); 18.vii.1963,

Flint & Farr — 1 female paratype (CNC); small stream, 1-1/8 mi. SW crossing Dick's Pond Trail, Hardwar Gap., 22.ix.1963, Peters & Farr — 1 male, 1 female paratypes (NMNH); 26.ix.1963, Peters & Farr — 1 male paratype (NMNH); Yallahs River, Chestervale, 17.vii.1963, Flint & Farr — 1 female paratype (NMNH); **Saint Ann Parish:** between Lake & Runaway Bay Cave, 6.xii.1975, D & M Davis — 2 males (UMSP); Mt. Diablo, 13.iii.1966, S & W Duckworth — 1 male, 2 female paratypes (UMSP).

Distribution. Jamaica.

Phylloicus fenestratus Flint
Figs. 51, 52

Phylloicus fenestratus Flint, 1974b:139 [Type locality: Surinam, Nickerie River, Stondansi; RNH; male]; 1996:425 [distribution].

Phylloicus fenestratus is distinguished by the forewing pattern, which consists of a chestnut brown wing with narrow proximal and distal bands of white, a patch of white in the proximal half of cell Cu_2, and cells R_1, R, thyridial and 1^{st} M cells clear proximally. The male abdomen is distinguished by the absence of — coremata or tergal modifications, and tergum X is fusiform (Fig. 51A, B). The phallus is sharply curved basally, although the curvature varies in degree (Fig. 51D).

Adult. Forewing length 7.3-9.2 mm, n = 53.

Head chestnut brown, with dorsomesal crest of chestnut brown setae. Maxillary palps dark brown. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae golden brown; mesotibiae dark brown; metatibiae dark brown; foretarsi golden brown; mesotarsi white; metatarsi dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with two transverse bands; proximal band white, reaching posterior wing margin, at least 1/2 width of wing, narrow, less than 10 setae wide; distal band white, beginning at anterior wing margin, at least 1/2 width of wing, narrow, less than 10 setae wide; with single basal stripe, white; proximal half of basal cells clear. Hind wing basal brush present in male and female, dark brown; female brush short.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with mesal ridge extending full length of segment; posterior margin notched (Fig. 51B); lateral ridge present; dorsal pleural setae approximately 15, ventral pleural setae approximately 2 (Fig. 51A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 51C). Preanal appendage shorter than tergum X, but

greater than 2/3 length, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 51A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, acute, in dorsal view, entire; covered with short setae basodorsally (Fig. 51A, B). Harpago slightly tapered; peg-like setae tiny, mesal (Fig. 51A, C). Phallic endotheca with paired apicolateral lobes and paired basolateral lobes, basolateral lobes digitate, apicolateral lobes rounded and setose; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 51D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 52C). Tergum IX without mesal ridge (Fig. 52B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with deep sublateral invaginations (Fig. 52A). Tergum X appendage longer than mesal lobe, base distinct, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 52B). Sternum X with single pair of fine setae in membrane lateral to anal opening (Fig. 52A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized cone (Fig. 52A).

Material examined. **BRAZIL: Amazonas:** Am. 010, km 246, 20 km W Itacoatiara, 12-15.vii.1979, Arias et al. — 1 male (NMNH); Hyutanahã, Rio Purus, 1.xii.1921, Klages — 1 male (CMNH); Manaus, 2.vii.1976, Serrano — 1 female (NMNH); Tefe, 26.xii., Parish — 1 male (MCZ); Manaus, Est. Aleixo, 18.v.1976, DeLome — 1 female (INPA); Itacoatiara, km 244, 19.i.1977, Penny — 1 male (INPA); Res. Ducke, 26 km E Manaus, 30.ix.1986, Luis — 3 males, 9 females (INPA); **Paraíba:** Olivedos, 9.ix., Parish — 1 adult (MCZ); **Parana:** Rio Xingu, camp ca. 60 km S Altamira, 1st jungle stream trail 1, 03°39'00”S, 52°22'00"W, 2-8.x.1986, Spangler & Flint — 3 males (NMNH); **Rondonia:** Cacaulândia, 140 m, 1.xi.1994, Becker — 1 male (NMNH); **Roraima:** Serra Pacaraima, 27.viii.1987, Rafael, Aquino, Vidal, & Binda — 4 males, 1 female (INPA); **ECUADOR: Napo:** Puerto Montufar, 27.iv.1976, Cohen — 1 female (NMNH); 28.iv.1976, Cohen — 3 males (NMNH); **Pastaza:** Cononaco, 29.v.1976, Cohen — 3 males (NMNH); — 1 male (UMSP); **GUYANA:** Warniabo Cr., Dubulay Ranch, 05°39'48”N, 57°53'24"E, 14-19.iv.1995, Flint — 1 male (NMNH); Bartica District, Kartabo, 10.iii.1924 — 1 female (AMNH); **PERU: Loreto:** Iquitos, 6.ii., Parish — 1 female (MCZ); Yurimaguas — 1 male (BMNH); 1.iv., Parish — 1 male (MCZ); **Madre de Dios:** Río Tambopata Res., 30 km (air) SW Pto. Maldonado, 12°50'00”S, 69°17'00"W, 290 m — 1 female (NMNH); Manu Biosphere Res., Pakitza Bio. Sta., 11°56'00”S, 71°18'00"W, 350 m, 4.x.1987, Pogue — 1 male (UMSP); trail 1, marker 8, 11°56'00”S, 71°18'00"W, 250 m, 11-13.ix.1989, Adams — 1 male (NMNH); trail 2, marker 18, 11°56'00”S, 71°18'00"W, 250 m, 12-23.ix.1989, Adams et al. — 1 male (NMNH); Quebrada Paujil-Picoflor, 11°56'39”S, 71°16'59"W, 350 m, 5.vii.1993, Blahnik & Pescador — 1 male (NMNH); **SURINAME: Sipaliwini:** Nicke-

rie River, Blanche Marie, 12.ii.1971, Geijskes — 1 male paratype (NMNH); Nickerie River, Stondansi, 31.i.1971, Geijskes — holotype male (RNH); **VENEZUELA: Amazonas:** Cerro de la Neblina, Basecamp, 00°51'N 66°10'W, 140 m, 4-12.ii.1984, Davis & McCabe — 1 male (NMNH); 23-29.ii.1984, Davis & McCabe — 1 female (NMNH); 21-28.ii.1985, Spangler, Faitoute, & Steiner — 1 female (NMNH); 23.ii.1985, Spangler, Faitoute, & Steiner — 1 male (NMNH); Camp V, 00°49'00”N, 66°00'00"W, 1250 m, 23-24.iii.1984, Flint — 1 male (NMNH).

Distribution. Brazil, Ecuador, Guyana, Peru, Suriname, Venezuela.

Phylloicus flinti, new species
Figs. 53, 54, 110

Phylloicus "n. sp. 2" Flint, 1996:425

The wing pattern of *P. flinti* is very distinctive, with four longitudinal bands of pale tan setae on a dark brown wing (Fig. 110). In the male, abdominal segments III and IV are highly modified (Fig. 53F). Although the male abdomen is similar to that of *P. paucartambo*, *P. flinti* lacks mesal coremata.

Adult. Forewing length 10.1-10.7 mm, n = 84.

Head dark brown, golden brown posteriorly. Maxillary palps dark brown, covered with golden setae. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae dark brown; mesotibiae dark brown; metatibiae dark brown; tarsi dark brown. Mesotibial spurs pale. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula 2,4,4. Forewing flat; dark brown; with longitudinal stripes; stripes pale tan; with single basal stripe, white (Fig. 110). Hind wing basal brush present in male, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum III with small pleural sclerites and posterolaterally acute lateral sclerites. Tergum IV with paired posterior processes and paired lateral sclerites, lateral coremata; posterior process truncate; lateral sclerite spatulate, directed laterally; lateral coremata with basal globose lobes and long tubular posterior lobe. Tergum V without sclerotized modifications (Fig. 53F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX (Fig. 53A, C). Tergum IX deeply notched anteriorly, margins of notch ridged; posterior margin obtuse; thinly sclerotized anteromesally (Fig. 53B); lateral ridge absent; dorsal pleural setae approximately 5, ventral pleural setae approximately 5 (Fig. 53A). Preanal appendage shorter than tergum X, but greater than 2/3 length, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 53A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, notched, notch

shallow; with paired basomesal ridges bearing approximately 3 stout setae (Fig. 53B) (Fig. 53A, B). Harpago rounded; peglike setae few, apical (Fig. 53A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite narrow, width less than height (Fig. 53D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally, cleft not reaching anterior ridge; sternum VIII (Fig. 54C). Tergum IX without mesal ridge (Fig. 54B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle laterally (Fig. 54A). Tergum X appendage shorter than mesal lobe, base indistinct, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 54B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 54A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections rounded; posterior sclerite ovoid; posterior end of spermatheca a sclerotized cone (Fig. 54A).

Holotype male: PERU: Madre de Dios: Manu Biosphere Res., Pakitza Bio. Sta., trail 1, 1st stream, 11°56'00”S, 71°18'00"W, 250 m, 9-14.ix.1988, Flint & Adams (MHNJP)**.**

Paratypes: BRAZIL: Rondonia: 62 km S Ariquernes linea C-20, 7 km E B-65, Fazenda Rancho Grande, 10°32'00”S, 62°48'00"W, 14-22.iii.1991, Kondratieff & Welch — 2 females (NMNH); Ahrenholz Trail, off B-65, 3 km N linea C-20, 21.iii.1991, Kondratieff & Welch — 1 male (NMNH); linea C-2.5 off B-65, 12.5 km S Cacaulandia, 17.iii.1991, Kondratieff & Welch — 1 female (MZUSP); **PERU: Cuzco:** Quincemil, x.1962, Peña G. — 1 female (CNC); **Madre de Dios:** Manu Biosphere Res., Pakitza Bio. Sta., 11°56'00”S, 71°18'00"W, 250 m, 9-23.ix.1988, Flint & Adams — 2 males (NMNH); 01-13-03-99, 11°56'00”S, 71°18'00"W, 350 m, 2.x.1987, Pogue — 1 male (NMNH); Aquajal, 11°56'00”S, 71°18'00"W, 250 m, 12.ix.1988, Pogue — 1 female (NMNH); Gelhaus#445, 11°56'00”S, 71°18'00"W, 250 m, 19.ix.1989, Gelhaus — 1 female (NMNH); kitchen stream, 11°56'00”S, 71°18'00"W, 250 m, 12-18.ix.1989, Adams — 2 females, 4 males (NMNH); — 1 male (MHNJP); trail 1, 1st stream, 11°56'00”S, 71°18'00"W, 250 m, 9-14.ix.1988, Flint & Adams — 1 female, 1 male (NMNH); 11.ix.1988, Flint & Adams — 1 male (NMNH); trail 1, marker 14 (1st stream), 11°56'00”S, 71°18'00"W, 250 m, 19-23.ix.1989, Adams et al. — 1 female (MHNJP); — 1 male (NMNH); — 1 female (UMSP); trail 1, marker 8, 11°56'00”S, 71°18'00"W, 250 m, 11-13.ix.1989, Adams — 2 males (NMNH); trail 2, 1st stream, 11°56'00”S, 71°18'00"W, 250 m, 14-23.ix.1988, Flint & Adams — 1 female, 1 male (MHNJP); — 5 females, 26 males (NMNH); — 1 female, 1 male (UMSP); 17-20.ix.1988, Flint & Adams — 1 male (NMNH); Trail 2, marker 15 (1st stream), 11°56'00”S, 71°18'00"W, 250 m, 18.ix.1989, Adams — 1 female (NMNH); trail 2, marker 18, 11°56'00”S, 71°18'00"W, 250 m, 12-23.ix.1989, Adams et al. — 1 female, 4 males (NMNH); — 1 male (UMSP); Quebrada Paujil-Picoflor, trail 1, marker 13,

11°56'39”S, 71°16'59"W, 350 m, 2.vii.1993, Blahnik & Pescador — 1 male (NMNH); 4-6.vii.1993, Blahnik & Pescador — 4 females, 2 males (NMNH); 1 male (MHNJP); Quebrada Trompetero, trail 2, marker 15, 11°56'39”S, 71°16'59"W, 350 m, 3.vii.1993, Blahnik & Pescador — 3 males (NMNH); 6.vii.1993, Blahnik & Pescador — 1 female, 1 male (UMSP).

Distribution. Brazil, Peru

Etymology. Named for Dr. Oliver S. Flint, collector of the type specimen, in recognition of his enormous contributions to Neotropical caddisfly systematics, and in particular for his invaluable assistance and encouragement throughout this project.

Phylloicus hansoni Denning
Figs. 55-56

Phylloicus hansoni Denning,1983 in Denning *et al.* 1983:184 [Type locality: Trinidad, Simla Research Station; CAS; male]. —Botosaneanu & Flint 1982:24 [larva, as *P. angustior*]. — Botosaneanu & Alkins-Koo 1993:38 [as synonym of *P. angustior*].

Phylloicus hansoni is similar to *P. quitacalzon*, but is distinguished by the bi-lobed mesal coremata — (Fig. 55F).

Adult. Forewing length 9-11.1 mm, n = 178.

Head dark brown. Maxillary palps dark brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere, basal segments with pale setae posteriorly. Dorsal pterothorax dark brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae golden brown; mesotibiae golden brown; metatibiae dark brown; tarsi dark brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band ivory; distal band ivory, beginning at anterior wing margin, at least 1/2 width of wing; with single basal stripe, ivory. Hind wing basal brush present in male, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with expanded lateral flanges, mesal coremata and lateral coremata; lateral coremata with basal globose lobes and long tubular posterior lobe; mesal coremata bilobed, mesal lobe wider at base and tapered apically, lateral lobe digitate. Tergum V without sclerotized modifications (Fig. 55F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched, notch deep and round (Fig. 55A, C). Tergum IX deeply notched anteriorly, margins of notch ridged; posterior margin with round narrow mesal projection; thinly sclerotized anteromesally (Fig. 55B); lateral ridge absent; dorsal pleural setae approximately 5, ventral pleural setae approximately 10 (Fig. 55A). Preanal appendage at least 11/2 times length of tergum X, widest apically, setae filamentous, longer than appendage (Fig. 55A,

B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes long, length at least twice diameter; apex, in lateral view, truncate, in dorsal view, entire or notched, notch shallow; with paired rounded apicolateral projections (Fig. 55A, B). Harpago short, rounded; peglike setae few, apical (Fig. 55A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 55D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII posterior margin entire; sternum VIII (Fig. 56C). Tergum IX without mesal ridge (Fig. 56B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 56A). Tergum X appendage shorter than mesal lobe, base marked by faint suture line, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 56B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 56A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections absent; posterior sclerite triangular (Fig. 56A).

Material examined. **TRINIDAD:** Arima R., Verdant Vale, 10°41'00”N, 61°18'00"W, 170 m, 19.vi.1993, Adams & Mathis — 1 male, 1 female (NMNH); Mount St. Benedict stream, 10°39'00”N, 61°24'00"W, 250 m, 20-25.vi.1993, Flint & Adams — 1 female (NMNH); Simla Research Station, 2-15.vi.1981, Hanson & Clemons — holotype male (CAS); Simla, Arima Valley, 6-12.ii.1966, S & W Duckworth — 2 females (NMNH); **Saint George:** Blue Basin River, 10°44'00”N, 61°32'00"W, 100 m, 21.vi.1993, Adams & Mathis — 3 males (NMNH); Blue Basin Waterfall, 10°44'00”N, 61°32'00"W, 120 m, Botosaneanu — 2 females (NMNH); 17.iv.1991, Botosaneanu & Sakal — 2 males (NMNH); 21.vi.1993, Flint — 4 males, 3 females (NMNH); Maracas Falls, 10°44'00”N, 61°24'00"W, 270 m, 18.vi.1993, Flint — 1 female (NMNH); Tacarigua R., Caura Rec. area, 10°43'00”N, 61°17'00"W, 22.vi.1993, Flint & Adams — 5 males (NMNH); **VENEZUELA: Aragua:** El Limon, near Maracay, Quebrada Los Capuchinos, 550 m, 9.ix.1979, Savage — 1 female, 1 male (NMNH); Río El Limon, fish hatchery, Maracay, 10°14'49”N, 67°35'45"W, 5-6.xi.1974, Weibezahn — 5 males (UMSP); 19-20.xi.1974, Weibezahn — 2 males, 2 females (NMNH); 4-5.xii.1974, Weibezahn — 3 males, 4 females (NMNH); — 3-4.i.1975, Weibezahn — 1 male, 1 female (NMNH); 30.i.1975, Weibezahn — 1 male, 2 females (NMNH); 11-12.iii.1975, Weibezahn — 10 males (NMNH); 23.iv.1975, Weibezahn — 2 males, 1 female (NMNH); 7.v.1975, Weibezahn — 1 male, 1 female (NMNH); 19-20.v.1975, Weibezahn — 1 male, 1 female (NMNH); 3-4.vi.1975, Weibezahn — 1 female (NMNH); 12.viii.1975, Weibezahn — 1 female (NMNH); 25-26.ix.1975, Weibezahn — 1 male (NMNH); 3-6.ii.1976, C & O Flint — 1 male, 1 female (NMNH); **Falcón:** Quebrada El Charo at cataratas, 10°46'46”N, 69°12'10"W, 425 m, 12.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa — 4 males, 2 females (UMSP); Río Mitare near San Luís, 11°07'56”N, 69°39'11"W, 589 m, 7.vi.2001, Holzenthal, Blahnik,

Paprocki, & Cressa — 3 males (IZAM); Río Ricoa near Dos Bocas, 11°17'19”N, 69°26'04"W, 157 m, 8.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa — 1 male (UMSP); P. N. Cueva de la Quebrada del Toro, 10°49'35”N, 69°07'59"W, 530 m, 11.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa — 11 males, 3 females (UMSP); P. N. Sierra de San Luís, Cataratas del Río Hueque, 11°10'42”N, 69°33'44"W, 583 m, 6.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa — 3 males, female (IZAM); — 10 males, 3 females (UMSP); **Lara:** Yacambú, 1200 m, 10.v.1981, Townes — 2 males, 3 females (NMNH); Parque Nacional Terepaima, Quebrada San Antonio, 09°51'45”N, 69°13'06"W, 631 m, 17.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa — 3 males, 3 females (UMSP); Río Auro near Sabana Alta, 09°44'44”N, 69°16'37"W, 480 m, 16.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa — 2 males (IZAM); — 5 males, 2 females (UMSP); **Mérida:** 6 km N Mérida, 1524 m, 9.ii.1978, Heppner — 2 females, 3 males (NMNH); **Miranda:** P. N. Guatopo, Agua Blanca, 7.ii.1976, C & O Flint — 1 male, 1 female (NMNH); **Sucre:** Qbd. Zapateral, 1.5 km SE Las Piedras de Cocollar, 10°09'45”N, 63°47'35"W, 810 m, 9.iv.1995, Holzenthal & Flint — 2 males, 2 females (IZAM); — 4 males, 10 females (UMSP); Rio Cocollar, 1.5 km SE Las Piedras de Cocollar, 10°09'37”N, 63°47'36"W, 810 m, 7-8.iv.1995, Holzenthal & Flint — 1 male, 2 females (IZAM); — 6 males, 9 females (UMSP); Rio el Pozo, Peninsula de Paria Puerto Viejo, 10°43'04”N, 62°28'34"W, 20 m, 4.iii.1995, Holzenthal, Flint, & Cressa — 1 male (UMSP); **Zulia:** Distrito Baralt, Río Paují betwen San Juan & San An, 9-11.x.1979, Savage — 1 male (NMNH).

Distribution. Venezuela, Trinidad.

Phylloicus holzenthali, new species
Figs. 57, 58

Phylloicus holzenthali is distinguished by the wing pattern, large size, and morphology of the abdominal coremata (Fig. 57F). The forewing of *P. holzenthali* is distinctive in having a white or ivory spot on the proximal posterior margin, in the anal lobe. This spot bears no setae ψ the color comes from the membrane itself. It is large enough to be easily visible in pinned specimens. This is one of the largest species of *Phylloicus*; only *P. llaviuco*, *mexicanus*, *maculatus*, and *magnus* are larger or in the same size class. The type series are from Yacambú National Park in Lara state. I have examined a few specimens from Mérida and Barinas; these males have only tiny coremata or none at all, but otherwise are indistinguishable. As within each series there is variation, I am inclined to believe that these are hybrid specimens. Possibly the specimens with no coremata are the sister species to *P. holzenthali*, as appears to be the case with *P. elegans* and *lituratus*, and the intermediates are hybrids. However, I do not believe that I have been able to examine enough material to describe these as a distinct species. Further collections from these areas should resolve this question.

Adult. Forewing length 14.1-15.6 mm, n = 35.

Head chestnut brown, with dorsomesal crest of chestnut brown setae. Maxillary palps chestnut brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Legs golden brown. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band dark brown; distal band dark brown; white or ivory patch in anal lobe, not setiferous, but membrane thick and without dark pigment. Hind wing basal brush present in male.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with paired posterior processes, lateral coremata; posterior process truncate; lateral coremata with basal globose lobes and long tubular posterior lobe. Tergum V without sclerotized modifications (Fig. 57F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process broad, irregular (Fig. 57A, C). Tergum IX deeply notched anteriorly, margins of notch ridged; posterior margin smoothly rounded (Fig. 57B); lateral ridge absent; dorsal pleural setae approximately 15, ventral pleural setae approximately 6 (Fig. 57A). Preanal appendage approximately length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 57A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, acute, in dorsal view, entire (Fig. 57A, B). Harpago slightly tapered; peglike setae many, mesoventral (Fig. 57A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes multilobed; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 57D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 58C). Tergum IX without mesal ridge (Fig. 58B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with irregular, semimembranous pockets lateral to vaginal opening (Fig. 58A). Tergum X appendage length equal to mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 58B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 58A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized sphere (Fig. 58A).

Holotype male: VENEZUELA: Tachira: Quebrada La Honda, 10 km E La Grita, 08°08'49”N, 71°56'02"W, 2300 m, 23.iv.1995, Holzenthal, Cressa, & Gutic (UMSP)**.**

Paratypes: COLOMBIA: Cundinamarca: Bogotá, 2600 m, 1.ix.1936, Bequaert — 1 male (MCZ); **VENEZUELA: Barinas:** Parque Nacional Sierra Nevada, Rio Sinigüis at Tres Quebradas, 08°31'26”N, 70°53'46"W, 1900 m, 35508, Holzenthal — 3 males

(IZAM); **Lara:** Parque Nacional Yacambú, 13 km SE Sanare, 1560 m, 6-11.viii.1981, Heppner — 1 male (NMNH); 28-31.viii.1981, Heppner — 1 female, 1 male (NMNH); **Mérida:** Asentamient Monterrey, 2400 m, 15-16.ii.1983, Demarmels & Rodriguez — 1 male (IZAM); Río Albarregas, ca. 1 km NW Univ. de los Andes, 08°38'02”N, 71°09'29"W, 1980 m, 24.iv.1995, Holzenthal, Gutic, & Segnini — 1 male (UMSP); Parque Nacional Sierra Nevada, Mucuy Fish Hatchery, 7 km E Tabay, Queb. La Mucuy, 2012 m, 10-13.ii.1978, Heppner — 4 females, 2 males (NMNH); 18.i.1994, Holzenthal, Cressa, & Rincón — 2 males (UMSP); 26.iv.1995, Holzenthal, Gutic, & Segnini — 1 male (UMSP); **Tachira:** Queb. Mesa del Palmar, 5 km S El Cobre, 07°59'51”N, 72°03'48"W, 2370 m, 18-20.iv.1995, Holzenthal, Cressa, & Gutic — 2 females, 1 male (NMNH); Quebrada La Honda, 10 km E La Grita, 08°08'49”N, 71°56'02"W, 2300 m, 23.iv.1995, Holzenthal, Cressa, & Gutic — 2 females, 10 males (UMSP); Quebrada Los Mirtos, 8 km s El Colbre, 07°58'36”N, 72°04'31"W, 2400 m, 22.iv.1995, Holzenthal, Cressa, & Gutic — 1 female (IZAM); — 1 female (UMSP).

Distribution. Colombia, Venezuela.

Etymology. I am very pleased to name this species for its collector, Dr. Ralph Holzenthal, who, as my Ph.D. advisor, gave me the opportunity to study this fascinating group, and who has provided tremendous support and encouragement in the completion of this project.

Phylloicus iridescens Banks

Figs. 59, 60, 111

Phylloicus iridescens Banks, 1941:397 [Type locality: Dominican Republic, Constanza to V. Nuevo; MCZ; male]. —Flint 1967:18 [lectotype male].

This species is most similar to *P. cubanus*, *pulchrus*, and *superbus*. In *P. iridescens* the orange bands of the forewing are narrower (Fig. 111) than in the other three species, and the male genitalia are distinguished by a tapering harpago.

Adult. Forewing length 8.1-9.5 mm, n = 12.

Head dark brown. Maxillary palps dark brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax dark brown; ventrolateral thorax chestnut brown. Femora golden; foretibiae dark brown; mesotibiae dark brown; metatibiae dark brown; foretarsi dark brown; mesotarsi white; metatarsi dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,2. Forewing flat; dark brown; with two transverse bands; proximal band orange, reaching posterior wing margin, at least 1/2 width of wing; distal band orange, beginning at anterior wing margin, at least 1/2 width of wing; basal cells without setae, membrane iridescent (Fig. 111). Hind wing basal brush absent.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with mesal ridge extending full length of segment; posterior margin continuous with basodorsal process of tergum X (Fig. 59B); lateral ridge present; dorsal pleural setae approximately 15, ventral pleural setae absent (Fig. 59A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 59C). Preanal appendage less than 2/3 length of tergum X, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 59A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes absent; apex, in lateral view, rounded, in dorsal view, notched, notch shallow (Fig. 59A, B). Harpago rounded; peglike setae few, apical (Fig. 59A, C). Phallic endotheca with paired apicolateral lobes, apicolateral lobes rounded and with digitate apical lobe; phallotremal sclerites very large, longest dimension twice diameter of phallobase; dorsal sclerite two-armed, in lateral view U-shaped (Fig. 59D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 60C). Tergum IX with mesal ridge extending 1/3 length of segment (Fig. 60B). Sternum IX anterior lobes smooth and indistinct, posterior lobes striate, without distinct area of thin cuticle or invagination (Fig. 60A). Tergum X appendage longer than mesal lobe, base distinct, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 60B). Sternum X without setae in membrane (Fig. 60A). Vaginal apparatus posterior sclerite elongate; anterior sclerite rounded anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized cone (Fig. 60A).

Material examined. **DOMINICAN REPUBLIC:** 20 km S Constanza, 3-7.vi.1969, Flint & Gomez — 3 males, 2 females (NMNH); Constanza to V. Nuevo, 3000 - 7000 f m, 1.viii.1938, Darlington — lectotype male, 1 male, 1 female paralectotypes (MCZ); Loma Rucilla & mts., 5000-8000 f m, 1.vi.1938, Darlington — 1 male paralectotype (MCZ); Valle Nuevo SE Constanza, 2134 m, 1.viii.1938, Darlington — 2 females (MCZ); **Dajabon:** 13 km S Loma de Cabrera, 400 m, 20-22.v.1973, D & M Davis — 3 males, 2 females (NMNH).

Distribution. Dominican Republic.

Phylloicus lituratus Banks
Figs. 61, 62

Phylloicus lituratus Banks, 1920:350 [Type locality: Colombia, Mariquito; MCZ; male]. —Flint 1967:19 [male]. —Denning *et al.* 1983:182 [redescription].
Phylloicus "species 1" Flint, 1991:98.
Phylloicus priapulus Denning and Hogue, 1983 in Denning *et al.* 1983:187 [Type locality: Costa

Rica, Puntarenas Province, 1.8 miles west of Rincón, Osa Peninsula; LACM; male]. **NEW SYNONYM**.

This species exhibits a range of minor variation across its distribution and within populations. This variation may indicate the presence of more than one species, but although I have examined many specimens from a broad geographic area, I am unable to find consistent linkage of variation among characters and therefore am treating this as a single species. The types of *P. lituratus* and *priapulus* represent the extremes of morphology for tergum X and its processes, but intermediate morphologies are easily found within series. For this reason, I am synonymizing these two species. *Phylloicus lituratus* is distinguished by the wing pattern (as in Fig. 109), the lack of abdominal coremata, and preanal appendages longer than tergum X (Fig. 61A, B).

A few specimens appear to be hybrids, probably with *P. elegans*. The wing pattern is identical to both *P. elegans* and *lituratus*; male terminalia are consistent with other *P. lituratus* specimens, but there is a tiny eversible membranous lobe in the IVth abdominal pleuron. The elaborate modifications of the *P. elegans* IVth abdominal segment are absent, however. Within a given series of specimens, the presence of this lobe is inconsistent, and for this reason I believe these specimens may represent a spatial or temporal hybrid zone. As discussed under *P. elegans*, the females of *P. elegans* and *P. lituratus* are indistinguishable, and therefore all determinations are tentative.

Adult. Forewing length 10.4-12.1 mm, n = 95.

Head chestnut brown. Maxillary palps dark brown. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden. Femora golden; foretibiae dark brown; mesotibiae dark brown; metatibiae dark brown; foretarsi dark brown; mesotarsi white proximally, dark distally; metatarsi dark brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band ivory, reaching posterior wing margin, at least 1/2 width of wing, an inverted V-shape; distal band ivory, beginning at anterior wing margin, at least 1/2 width of wing; with two basal stripes, ivory. Hind wing basal brush present in male, light brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched, notch deep and round (Fig. 61A, C). Tergum IX without mesal ridge; posterior margin with round narrow mesal projection (Fig. 61B); lateral ridge absent; dorsal pleural setae approximately 3, ventral pleural setae absent (Fig. 61A). Preanal appendage longer than tergum X, but less than 11/2 times length, widest apically, setae long, but not filamentous or longer than appendage (Fig. 61A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes of varying length and often asymmetrical; apex, in lateral view, truncate, in dorsal view, entire or

notched, notch shallow and round (Fig. 61A, B). Harpago rounded; peglike setae many, apical (Fig. 61A, C). Phallic endotheca with paired apicolateral lobes, apicolateral lobes large and rounded; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 61D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch, or posterior margin entire; sternum VIII (Fig. 62C). Tergum IX without mesal ridge (Fig. 62B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 62A). Tergum X appendage shorter than mesal lobe, base marked by faint suture line, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes length approximately equal diameter and often asymmetrical (Fig. 62B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 62A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized ovoid (Fig. 62A).

Material examined. **COLOMBIA:** Santa Marta, 19 xii., Williamson — 1 male (MCZ); **Antioquia:** Mun. El Retiro, Quebrada La Cebolla, trap A, 2150 m, 21.v.1983, Matthias — 1 male (NMNH); **Boyacá:** Muzo, 900 m, 1936, Bequaert — 1 female (MCZ); **Tolima:** Mariquita, 5.ii., Williamson — *P. lituratus* holotype male (MCZ); **COSTA RICA: Alajuela:** 20 km S Upala, 8-10.v.1990, Parker — 1 male (EMUS); 1.vii.1990, Parker — 1 male (EMUS); 7.ii.1991, Parker — 1 male (EMUS); 11-20.viii.1991, Parker — 2 males (EMUS); 1-10.ix.1991, Parker — 1 male, 1 female (EMUS); Río Pizote, ca. 5 km (air) S Brasilia, 10°58'19”N, 85°20'42"W, 390 m, 9.iii.1986, Holzenthal & Fasth — 1 male (UMSP); 12.iii.1986, Holzenthal & Fasth — 6 males, 1 female (UMSP); unnamed river, Cerro Campana ca. 6 km (air) NW Dos Rios, 10°54'00”N, 85°24'00"W, 640 m, 22-23.vii.1987, Holzenthal, Morse, & Clausen — 3 males, 1 female (UMSP); Reserva Forestal San Ramón, Río San Lorencito & tribs., 10°12'58”N, 84°36'25"W, 980 m, 1-4.v.1990, Holzenthal & Blahnik — 1 female (UMSP); 6-10.iii.1991, Holzenthal, Muñoz, & Huisman — 2 males (UMSP); **Guanacaste:** Finca Montezuma, 3 km SE R. Naranjo, 1-5.vi.1992, Parker — 1 male (EMUS); 3.vi.1992, Parker — 1 male (EMUS); Río Liberia, Liberia, 11.i.1910, Calvert — 1 female (MCZ); Río Los Ahogados, Río Los Ahogados, 11.3 km ENE Quebrada Grande, 10°51'54”N, 85°25'23"W, 470 m, 7.iii.1986, Holzenthal & Fasth — 2 males, 3 females (UMSP); Parque Nacional Guanacaste, Quebrada Alcornoque, El Hacha, 11°00'32”N, 85°34'37"W, 250 m, 26.vii.1987, Holzenthal, Morse, & Clausen — 1 male, 1 female (UMSP); Quebrada Pedregal, El Hacha, 10°58'59”N, 85°32'20"W, 300 m, 5.ii.1988, Strand — 1 male, 1 female (UMSP); Parque Nacional Rincón de la Vieja, Río Negro, 10°45'54”N, 85°18'47"W, 810 m, 3.iii.1986, Holzenthal & Fasth — 1 male (UMSP); **Límon:** Limon, 16 km W Guapiles, 400 m, 1.ii.-1.iii.1989, Hanson — 1 male (UMSP); Parque Nacional Braulio Carrillo, Quebrada González,

10°09'36”N, 83°56'20"W, 480 m, 12-14.v.1990, Holzenthal & Blahnik — 1 male (INBIO); — 1 male, 1 female (NMNH); 1 male (UMSP); **Puntarenas:** 1.8 mi. W Rincón, 1.ii.1971, Donahue & Hogue — *P. priapulus* holotype male (LACM); Corcovado National Park, Osa Peninsula, 5-9.v.1978, Janzen — 1 male (INBIO); Parque Nacional Corcovado, unnamed stream, Piedra el Arco, 08°34'55”N, 83°42'32"W, 20 m, 10.iv.1989, Holzenthal & Blahnik — 1 male (INBIO); **ECUADOR: Napo:** Puerto Orellana, Río Tiputini, 38°02'00”N, 76°08'54"W, 12-26.viii.1999, Mathis — 4 males, 2 females (NMNH); **Pastaza:** Tzapino, 01°19'00”S, 77°28'00"W, 1200 m, 25.v.1976, Figueroa — 1 male (NMNH); **Pichincha:** Río Palenque Biological Station, Río Palenque, Santo Domingo (47 km), 229 m, 29.vii.1976, Cohen — 6 males (NMNH); **NICARAGUA: Río San Juan:** Refugio Bartola, 1.5 km N. of station, Río Bartola, 10°58'00”N, 84°21'00"W, 40 m, 8.viii.2000, Chamorro & Dobbins — 1 male (UMSP); **Zelaya:** Río Las Latas, 14°04'00”N, 88°33'00"W, 220 m, 2.vi.1998, Maes & Hernández — 4 males (UMSP); **PANAMA: Chiriquí:** 08°55'00”N, 82°16'00"W, 1050 m, Staudinger — 1 male (ZMHU); **Coclé:** Taboga, Taboga Island, 1.ii.1912, Busck — 1 male (NMNH); **Colón:** Canal Zone, Navy Res., Río Agua Salud, 30.iii.1965, S & W Duckworth — 1 male (NMNH); **Darién:** Río Tuir at Río Pucuro, 16-17.ii.1985, Louton — 1 male, 1 female (NMNH); **Panama:** Canal Zone, Barro Colorado Island, 8.ii.1967, Akre — 4 males (CAS); 12.iii.1967, Irwin — 5 males, 1 female (UMSP); 24-25.ii.1969, Akre — 3 males (CAS); 31.iii.1979, Silberglied & Aiello — 1 male (NMNH); Snyder-Molino trail, marker 3, 23-29.xii.1987, Wolda — 1 male (NMNH); 23-29.xi.1988, Wolda — 1 male (NMNH); 24-31.v.1989, Wolda — 1 male (NMNH); 13.xii.1989-13.ii 1990, Wolda — 1 male (UMSP); **San Blas:** Río Carti Grande, 2 km W Nusagandi, 5.iii.1985, Flint & Louton — 1 male (NMNH); **VENEZUELA: Zulia:** Perijá El Tucuco, Mission El Tucuco, Río del Pelaya, 2-1/2 km from church, 28-30.ix.1979, Savage — 1 male, 3 females (NMNH); Parque Nacional Perijá, Río Negro in Toromo, 10°03'04”N, 72°42'43"W, 360 m, 15.i.1994, Holzenthal, Cressa, & Rincón — 1 male (UMSP).

Distribution. Colombia, Costa Rica, Nicaragua, Panama, Venezuela,

Phylloicus llaviuco, new species
Fig. 63

This species is known only from a single male, with broken antennae and wings badly rubbed. Thus, wing ornamentation and antennal length are incompletely known. The phallic endotheca is not fully everted, so I am unable to describe the membranous lobes. This species is similar in size and wing coloration to *P. magnus*; however, the male genitalia are distinctly different. *Phylloicus llaviuco* is distinguished by the long digitate basodorsal process of tergum X, and the absence of abdominal coremata.

Adult. Forewing length 16.2 mm, n = 1.

Head chestnut brown, with dorsomesal crest of dark brown setae. Maxillary palps

golden brown, covered with dark brown setae. Antenna dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Legs golden brown. Metathoracic leg of male with posterior fringe of long setae, setae pale. Tibial spur formula 2,4,4. Forewing flat; dark brown; with color patches; with golden setae at chord, in patch distal to crossvein Cu, and marking vein A_3; with small golden spots marking nygma and thyridium. Hind wing basal brush present in male, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII without anteromesal process. Sternum VIII enclosing base of elongate sternum IX, or similar to anterior sterna, sternum IX not elongate; posteromesal process absent and posterior of segment semimembranous (Fig. 63A, C). Tergum IX with mesal ridge extending full length of segment; posterior margin with round narrow mesal projection (Fig. 63B); lateral ridge present; dorsal pleural setae absent, ventral pleural setae approximately 15 (Fig. 63A); sternum IX (Fig. 63C). Preanal appendage shorter than tergum X, but greater than 2/3 length, widest near base, setae long, but not filamentous or longer than appendage (Fig. 63A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, entire (Fig. 63A, B). Harpago rounded; peglike setae few, apical (Fig. 63A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 63D, E).

Female. Unknown.

Holotype male: ECUADOR: Azuay: Río Llaviuco, 16 km W Quenca, 3010 m, 18.ix.1990, Flint (NMNH).

Distribution. Ecuador.

Etymology. Named for the Río Llaviuco, where this species was collected.

Phylloicus maculatus (Banks)
Figs. 64, 65

Phylloicus maculatus (Banks, 1901:369) [Type locality: Mexico, Veracruz, Presidio; MCZ; female; in *Heteroplectron*]. —Flint 1967:19 [female, to *Phylloicus*]. —Holzenthal 1988:72 [distribution].

Phylloicus maculatus is distinguished by its large size, wing pattern, and by having short, single-lobed lateral coremata, without modifications of tergite IV (Fig. 64F). The wing pattern of this species is identical to that of *P. elegans* and *lituratus*. The female genitalia are indistinguishable from those of the latter two species.

Adult. Forewing length 13.415.4 mm, n = 31.

Head dark brown, setal warts very dark. Maxillary palps dark brown, covered with golden brown setae on basal three segments. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax dark brown, mesoscutellum golden brown; ventrolateral thorax golden. Femora golden; tibiae golden; tarsi dark brown. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band ivory, reaching posterior wing margin, at least 1/2 width of wing, an inverted V-shape; distal band ivory, beginning at anterior wing margin, at least 1/2 width of wing; with two basal stripes, ivory. Hind wing basal brush present in male and female; female brush short.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with expanded lateral flanges, lateral coremata; lateral coremata single-lobed and short, cylindrical. Tergum V without sclerotized modifications (Fig. 64F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched (Fig. 64A, C). Tergum IX with paired mesal ridges extending 1/2 length of segment; posterior margin with round narrow mesal projection (Fig. 64B); lateral ridge absent; dorsal pleural setae approximately 5, ventral pleural setae approximately 8 (Fig. 64A). Preanal appendage longer than tergum X, but less than 11/2 times length, widest apically, setae filamentous, longer than appendage (Fig. 64A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes long, length at least twice diameter; apex, in lateral view, rounded, in dorsal view, entire (Fig. 64A, B). Harpago rounded; peglike setae many, apical (Fig. 64A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes tapered apically; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 64D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch, or posterior margin entire; sternum VIII (Fig. 65C). Tergum IX without mesal ridge (Fig. 65B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 65A). Tergum X appendage shorter than mesal lobe, base marked by faint suture line, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes length approximately equal diameter (Fig. 65B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 65A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized ovoid (Fig. 65A).

Material examined. **GUATEMALA: Izabal:** Cayuga, 15°32'00”N, 88°42'00"W, 1.ii.1915, Schaus — 1 female (NMNH); **MEXICO: Veracruz:** Presidio, 19°05'00”N, 96°58'00"W, 1.vi. holotype female (MCZ); Municipio Tilapan, Arroyo Quetzalan. Los Manantiales km 5 Rta. Orizaba-Zongolica, 18°47'28”N, 97°06'05"W, 1160 m, 17.iii.2000,

Bueno, Barba, & Rojas — 1 female (UMSP); 13.vii.2001, Bueno & Barba — 12 males, 10 females (IBUNAM); — 3 males, 3 females (UMSP).

Distribution. Guatemala, Mexico

Phylloicus magnus Banks
Figs. 66, 67

Phylloicus magnus Banks, 1913:236 [Type locality: Colombia, Monte Socorro; MCZ; male]. — Flint 1967:19 [male].

As suggested by its name, *P. magnus* is probably the largest species of *Phylloicus*. It is also distinguished by the long coxopodite, the notched apex of tergum X, and the short preanal appendage. The female specimen described here is circumstantially associated. Like the holotype of *P. magnus*, it is very large. The only Colombian species large enough to be conspecific with this female is *P. magnus*. The description of the adult is based on this female specimen, which is much less rubbed than the male.

Adult. Forewing length 16.2-18.5 mm, n = 2.

Head chestnut brown, with dorsomesal crest of dark brown setae. Maxillary palps dark brown, covered with dark brown setae. Antenna of male twice forewing length; female antenna 11/2 times forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Legs golden brown. Metathoracic leg of male with posterior fringe of long setae, setae pale. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with golden bands and dark patches; with single basal stripe, golden; with irregular gold and dark brown patches posterad of Cu_1; with small golden spots marking nygma and thyridium. Hind wing basal brush absent.

Male. Preterminalic abdominal terga without anteromesal notches. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII without anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with paired mesal ridges extending 1/2 length of segment; posterior margin smoothly rounded (Fig. 66B); lateral ridge present; dorsal pleural setae approximately 5, ventral pleural setae absent (Fig. 66A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 66C). Preanal appendage less than 2/3 length of tergum X, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 66A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, notched, notch triangular; with paired short basomesal processes, each bearing single spine-like seta (Fig. 66A, B). Harpago rounded; peglike setae few, apical (Fig. 66A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 66D, E).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII without anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch; sternum VIII (Fig. 67C). Tergum IX without mesal ridge (Fig. 67B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, punctate, with shallow pockets anterolateral to vaginal opening (Fig. 67A). Tergum X appendage shorter than mesal lobe, base marked by faint suture line, apex rounded; mesal lobe with single mesal seta; digitate lateral processes absent (Fig. 67B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 67A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections rounded; posterior sclerite triangular; posterior end of spermatheca a sclerotized sphere (Fig. 67A).

Material examined. **COLOMBIA:** Monte Socorro, 3600 m, Fassl — holotype male (MCZ); **Caldas:** 5 km W Termales de Ruiz, 3200 m, 27-29.ii.1984, C & O Flint — 1 female (NMNH).

Distribution. Colombia.

Phylloicus major Müller
Figs. 68, 69

Phylloicus major Müller, 1880a:113, 131 [Type locality: Brazil, Santa Catarina; no type nor type depository designated; case]. —Ulmer 1905a:77, 78 [as synonym of *assimilis*]. —Flint 1964:65 [type species of genus]; 1966:11 [discussion].

Phylloicus assimilis (Ulmer, 1905b:36) [Type locality: Brazil, Santa Catarina; PAN; male; in *Homoeoplectron*]. —Flint 1966:11 [male, lectotype, to synonymy].

The type material of *Phylloicus major* is a mixed series, as discussed above under *P. abdominalis*. The types of neither *P. major* nor *P. assimilis* are in good condition, but a wing pattern similar to that of *P. abdominalis* is visible, although, in addition to the differences in the male abdominal morphology, in *P. major* the white spot marking the nygma is absent. These type specimens are the only material with an evident wing pattern. An ethanol-preserved male from Rio de Janeiro and two teneral males from São Paulo appear to have the wing pattern, but it is obviously difficult to be sure. I also examined specimens from Paraguay and Nova Teutonia, which have male genitalia identical to those of the type material, but are larger and, although the wings are badly rubbed, do not appear to have any pattern on the forewings. I am treating these as specimens of *P. major*, but additional collections from those localities should clarify their status. The description is based on the type material of *P. major* and *assimilis*.

Phylloicus major is distinguished by a wing pattern similar to that illustrated for *P. abdominalis* (Fig. 1), but lacking the white spot on the nygma, by unmodified proximal abdominal segments, and by a very short harpago (Fig. 68C).

Adult. Forewing length 9.5-11 mm, n = 22.

Head chestnut brown. Maxillary palps dark brown. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae dark brown; mesotibiae dark brown; metatibiae dark brown; foretarsi dark brown; mesotarsi chestnut brown; metatarsi dark brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band white, extending from anterior to posterior wing margin; distal band white, beginning at anterior wing margin, at least 1/2 width of wing; with two basal stripes, golden. Hind wing basal brush present in male and female; male brush dark brown; female brush short and pale.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched, notch deep and round or narrow and parallel-sided (Fig. 68A, C). Tergum IX deeply notched anteriorly, margins of notch ridged; posterior margin with round narrow mesal projection (Fig. 68B); lateral ridge present; dorsal pleural setae approximately 6, ventral pleural setae absent (Fig. 68A). Preanal appendage longer than tergum X, but less than 11/2 times length, of uniform diameter throughout length, setae filamentous, longer than appendage (Fig. 68A, B). Tergum X without basal lobes; basodorsal process broad and setose; basolateral processes long, length at least twice diameter; apex, in lateral view, rounded, in dorsal view, notched, notch square; lateral margin bearing short fine setae (Fig. 68A, B). Harpago short, rounded; peglike setae many, apical (Fig. 68A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 68D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch; sternum VIII (Fig. 69C). Tergum IX without mesal ridge (Fig. 69B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 69A). Tergum X appendage shorter than mesal lobe, base indistinct, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes very short, length less than diameter (Fig. 69B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 69A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized sphere (Fig. 69A).

Material examined. Pucha Blanca, Apr, Smith — 1 female (MCZ); **BRAZIL: Rio de Janeiro:** Angra dos Reis, Fazenda Japuhyba, 23°00'00”N, 44°18'00"W, 15-31.vii.1945, L T F — 1 male (NMNH); **Santa Catarina:** Lüderwaldt — *P. assimilis* lectotype male, 1

female paralectotype (PAN); Itajaí, 26°53'00”S, 48°39'00"W, iv.1879, Müller — *P. major* lectotype male, 1 male, 1 female, 1 adult paralectotype (MCZ); Joinville, 26°18'00”S, 48°50'00"W, Schade — 1 male (NMNH); Seara (Nova Teutônia), 27°11'00”S, 52°23'00"W, 300-500 m, 11.x.1936, Plaumann — 1 male (BMNH); 20.viii.1937, Plaumann — 1 male (BMNH); 14.xii.1938, Plaumann — 1 female (BMNH); **Sao Paulo:** Serra do Japi, Córrego da Ermida and small dam, 23°14'S 46°56'W, 9-10.xii.1997, Froehlich — 2 males (UMSP); **PARAGUAY:** Mbovevo, 1.xi.1937, Schade — 3 males, 1 female, 2 adults (MCZ); **Itapua:** Pirapo, 28-31.xii.1971, Peña G. — 1 male (NMNH); 1.i.1972, Peña G. — 1 male (NMNH).

Distribution. Brazil, Paraguay.

Phylloicus medius Müller

Phylloicus medius Müller, 1880a:132 [Type locality: Brazil, Santa Catarina; no type nor type depository designated; sex not stated]. —Ulmer 1955:418 [literature, discussion]. **NOMEN DUBIUM**

Müller did not designate type material for this species, nor did he provide any illustration. His original reference to the species *P. medius* states only that it has a Tibial spur formula — of 2,4,4. I found no material identified as *P. medius*, and must consider this a nomen dubium.

Distribution. Brazil.

Phylloicus mexicanus (Banks)

Figs. 2, 3, 70, 71

Phylloicus mexicanus (Banks, 1900:257) [Type locality: Mexico, Morelos, Cuernavaca; MCZ; male (Bank’s description implies type is female, but specimen with type label is a male); in *Heteroplectron*]. —Flint 1967:17 [as synonym of *aeneus*]. —Wiggins 1996:224 [larva, as *aeneus*].

The type of *H. mexicana* is a male from Cuernavaca, Mexico. The terminalia are very similar to those of *P. aeneus* and *P. nigripennis* males. No abdominal coremata are present, and thus it is not conspecific with *P. aeneus*. The wings are very dark and uniformly colored. The head and thorax are black, except for an orange diamond dorsally on the head. The specimen is very large (forewing length 12.4 mm, compared to 5.9 mm for the *P. nigripennis* male). Other specimens of this form are from Arizona and the Sonoran Desert regions of Mexico. They are consistently much larger than specimens of *P. nigripennis*, and have the black wings and thorax, and the orange diamond on the head, of the type specimen. The abdomens of these specimens are orange. Because of its very different size

and body coloration, I am recognizing *P. mexicanus* and removing it from synonymy.

Adult. Forewing length 12.4-16.2 mm, n = 122.

Head black, except for orange diamond dorsomesally (Fig. 2, 3). Maxillary palps black. Antenna of male twice forewing length; female antenna 11/2 times forewing length; black, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Prothorax orange; dorsal pterothorax black; ventrolateral thorax dark brown. Legs dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,3. Forewing apical third folded obliquely toward midline; dark brown, or black; without colored markings. Hind wing basal brush present in female, short and light brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII without anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with short mesal ridge extending from anterior notch; posterior margin with irregular mesal projection (Fig. 70B); lateral ridge absent; dorsal pleural setae approximately 6, ventral pleural setae approximately 3 (Fig. 70A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 70C). Preanal appendage approximately length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 70A, B). Tergum X sagittate basally; basodorsal process short and digitate; basolateral processes of varying length and often asymmetrical; apex, in lateral view, acute, in dorsal view, notched, notch deep and round (Fig. 70A, B). Harpago slightly tapered; peglike setae few, apical (Fig. 70A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite two-armed, in lateral view U-shaped (Fig. 70D, E).

Female. Abdominal tergum I black. Preterminal abdominal terga with anteromesal notch. Sternum VII without anteromesal process. Tergum VIII with dense posterolateral brush of setae (Figure 71B); sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 71C). Tergum IX without mesal ridge (Fig. 71B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle laterally (Fig. 71A). Tergum X appendage longer than mesal lobe, base marked by faint suture line, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes length approximately equal diameter (Fig. 71B). Sternum X without setae in membrane (Fig. 71A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections acute; posterior sclerite ovoid; posterior end of spermatheca a sclerotized cone (Fig. 71A).

Material examined. **MEXICO:** 3048 m, 1871, Bilimek — 1 adult (NMW); **Chihuahua:** Arroyo Banderas at forks, 25.vi.1987, Baumann, Sargent, Kondratieff, & Wells — 3 males, 4 females (NMNH); Arroyo de los Salmon, 23.vi.1987, Baumann — 1 female (NMNH); Arroyo Pajarito, Hwy. 16, 28.vi.1987, Kondratieff & Baumann — 1 male (NMNH); Arroyo Toro, Toro Basin, 1720 m, 23.vi.1987, Kondratieff & Baumann — 1

male (NMNH); 24.vi.1987, Baumann, Sargent, Kondratieff, & Wells — 1 male, 1 female (NMNH); headwater spring, 1720 m, 23.vi.1987, Kondratieff & Baumann — 2 females (NMNH); Fork of Arroyo Banderas, near junction Rio Chuhuichupa, 25.vi.1987, Kondratieff & Baumann — 8 females (NMNH); Riito, Hwy 16, 10 mi E of Yepachic, 28.vi.1987, Kondratieff & Baumann — 9 males, 1 female (UMSP); small stream, cascada de Basaseachic, 28.vi.1987, Kondratieff & Baumann — 1 male, 1 female (NMNH); spring at Rancho Salmon, 23.vi.1987, Baumann, Sargent, Kondratieff, & Wells — 1 female (NMNH); **Durango:** 10 mi. W El Salto, 10.vi.1964, McAlpine — 1 female (CNC); 14 mi. SW El Salto, 2438 m, 26.vi.1964, Mason — 1 female (CNC); 30.vi.1964, Mason — 1 female (CNC); **Mórelos:** Cuernavaca, Banks — holotype male (MCZ); **Sonora:** small stream near Yecora, 20.viii.1986, Kondratieff — 1 female (NMNH); 25.viii.1986, Kondratieff — 1 male (NMNH); **UNITED STATES: Arizona:** 1 male, 2 females (CAS); 12 mi. S Sonoita, Hidden Springs Canyon, 23.vii.1966, Sternitzky — 1 female (CNC); Palmerlee, vii. — 1 female (MCZ); Apache County, East Fork Black River, Three Forks Crossing, F. R. 249, 33°51'18”N, 109°18'53"W, 2530 m, 18.vi.1999, Houghton — 14 males, 2 females (UMSP); Cochise County, Chiricahua Mountains, Cave Creek Canyon, 16.vi.1958, MacNeill — 4 females (CAS); Chiricahua Mountains, Cave Creek, 16.vi.1958, MacNeill — 3 males (CAS); Chiricahua Mountains, Rucker Canyon, 8.vi.1968, Menke & Flint — 2 adults (NMNH); Huachuca Mountains — 1 male (MCZ); 24-30.vi. — 1 male (CAS); Huachuca Mountains, Ash Canyon, 26.viii.1966, Sternitzky — 2 males (CNC); Huachuca Mountains, Ramsey Canyon, 15 mi. S Sierra Vista, 1829 m, 7.viii.1967, Sternitzky — 1 female (CNC); 9.viii.1967, Sternitzky — 1 male (CNC); 2.x.1967, Sternitzky — 2 males, 2 females (CNC); Huachuca Mountains, Sierra Vista, 15.viii.-1.ix.1965, Sternitzky — 2 males, 1 female (CNC); 1-20.x.1965, Sternitzky — 3 males, 1 female (CNC); Southwestern Res. Sta., 5 mi W Portal, 1646 m, 7.ix.1965, Roth — 1 male, 2 females (CAS); 6.ix.1966, Arnaud — 1 male (CAS); 15.ix.1966, Arnaud — 1 male, 4 females (CAS); 17.ix.1966, Arnaud — 1 male (CAS); 21.ix.1966, Arnaud — 1 male (CAS); 23.ix.1966, Arnaud — 1 female (CAS); 3.x.1966, Arnaud — 1 male (CAS); SW Res. Sta., 31°57'00”N, 109°50'00"W, 11.vii.1963, Spangler — 2 adults (NMNH); Upper Cave Creek, 1829-2286 m, 14.vi.1984, Roth — 1 male (CAS); Cochise, Chiricahua Mountains, Southwestern Research Station, 31°52'57”N, 109°12'12"W, 1646 m, 28.x.1963, Roth — 1 male (CAS); Coconino, Oak Creek Canyon, 1829 m, vii., Snow — 1 male, 1 female (MCZ); 11.vii.1939, L & M Milne — 3 males (MCZ); 19.vi.1949, Denning — 2 males, 2 females (CAS); Oak Creek Canyon, Todd's Lodge, 12.vi.1941, Grace & Sperry — 1 male (MCZ); 17.vi.1941, Grace & Sperry — 1 male (MCZ); Pima County, Redington, 32°25'39”N, 110°29'33"W, 2880 m — 1 female (MCZ); Pima/Santa Cruz Counties, Santa Rita Mts., Madera Canyon, 12-13.vi.1968, Menke & Flint — 2 adults (NMNH); Santa Cruz/Pima Counties, Rillito, Santa Rita Mountains, 12.vi.1933, Beamer — 1 female (CAS); White Mt. Res., E of McNary, 8.vii.1940, Gertsch & Hook — 1 male (UMSP).

Distribution. Mexico, USA (Arizona).

Phylloicus monticolus Flint
Figs. 72, 73

Phylloicus monticolus Flint, 1968a:74 [Type locality: Dominica, 1.6 miles west of Pont Casse; NMNH; male; female, larva, pupa, case]. —Botosaneanu 1994:51 [distribution].

This species is most similar to *P. lituratus*. It is distinguished by the short preanal appendages, the shape of tergum X, and the wing pattern. Flint (1968a, describing very fresh specimens) gives the color as "blue black marked with orange…forewings with two pale pinkish bands."

Adult. Forewing length 8.6-11 mm, n = 13.

Head chestnut brown. Maxillary palps chestnut brown. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Prothorax golden brown; dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae golden brown; mesotibiae dark brown; metatibiae dark brown; foretarsi golden brown; mesotarsi white; metatarsi dark brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with two transverse bands; proximal band pinkish white, not reaching either wing margin, 1/2 width of wing or less; distal band pinkish-white, not reaching either wing margin, 1/2 width of wing or less; with two basal stripes, ivory. Hind wing basal brush present in male, short and light brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched, notch deep and round (Fig. 72A, C). Tergum IX deeply notched anteriorly, margins of notch ridged; posterior margin smoothly rounded (Fig. 72B); lateral ridge absent; dorsal pleural setae approximately 3, ventral pleural setae absent (Fig. 72A). Preanal appendage approximately length of tergum X, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 72A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, notched, notch shallow (Fig. 72A, B). Harpago short, rounded; peglike setae many, apical (Fig. 72A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 72D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII without anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 73C). Tergum IX with very short mesal ridge (Fig. 73B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 73A). Tergum X

appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 73B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 73A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized ring (Fig. 73A).

Material examined. **DOMINICA:** 0.5 mi. S of Pont Casse, 11.iv.1964, Flint — 1 female paratype (NMNH); 1.6 mi. W of Pont Casse, 24.iv.1964, Flint — 1 male paratype (CNC); 28.iv.1964, Flint — 1 female paratype (CNC); 2.v.1964, Flint — 1 female paratype (NMNH); 6.v.1964, Flint — 1 female paratype (NMNH); 7.v.1964, Flint — 1 female paratype (NMNH); 9.v.1964, Flint — holotype male (NMNH); — 1 male paratype (CNC); 17.v.1964, Flint — 1 male paratype (NMNH); 1/2 mi. W of Pont Casse, 22-24.vii.1963, Flint — 2 male, 1 female paratypes (NMNH); Pont Casse, 12-14.x.1964, Spangler — 1 male paratype (NMNH).

Distribution. Dominica, Guadeloupe.

Phylloicus munozi, new species
Figs. 74, 75

Phylloicus "species 2" Flint, 1991:99.

Phylloicus munozi is similar to *P. blahniki*, but is distinguished by the unmodified tergum III, the absence of posterior processes of tergum IV and a complex lateral sclerite (Fig. 74F), and the long digitate basodorsal process of tergum X (Fig. 74A, B).

Adult. Forewing length 9.7-10.5 mm, n = 17.

Head golden brown. Maxillary palps dark brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown; ventrolateral thorax pale tan. Legs pale tan. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band pale orange-yellow, reaching posterior wing margin, at least 1/2 width of wing, narrow, less than 10 setae wide; distal band pale orange-yellow, not reaching either wing margin, 1/2 width of wing or less, narrow, less than 10 setae wide; with two basal stripes, ivory; cell Cu and base of cell Cu_2 clear. Hind wing basal brush present in male.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with paired lateral sclerites, mesal coremata and lateral coremata; lateral sclerite spatulate, directed laterally and with acute basomesal process; lateral coremata with basal globose lobes and long tubular posterior lobe; mesal coremata single-lobed, setose, capable of inflation beyond terminalia. Tergum V without sclerotized modifications (Fig. 74F). Sternum VII with short, acute anteromesal process. Sternum VIII similar to

anterior sterna, sternum IX not elongate. Tergum IX without mesal ridge; posterior margin continuous with basodorsal process of tergum X (Fig. 74B); lateral ridge present; dorsal pleural setae approximately 2, ventral pleural setae absent (Fig. 74A); sternum IX without mesolateral ridges; sternum IX (Fig. 74C). Preanal appendage approximately length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 74A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, entire (Fig. 74A, B). Harpago slightly tapered; peglike setae many, apical (Fig. 74A, C). Phallic endotheca with paired apicolateral lobes and paired basolateral lobes, basolateral lobes tapered apically, apicolateral lobes large and rounded; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 74D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII posterior margin entire; sternum VIII (Fig. 75C). Tergum IX without mesal ridge (Fig. 75B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 75A). Tergum X appendage shorter than mesal lobe, base marked by faint suture line, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 75B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 75A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections absent; posterior sclerite triangular (Fig. 75A).

Holotype male: COSTA RICA: Cartago: Reserva Tapantí, Quebrada Palmitos & falls, ca. 9 km (road) NW tunnel, 09°43'12”N, 83°46'48"W, 1400 m, 1-2.viii.1990, Holzenthal, Blahnik, & Muñoz (UMSP)**.**

Paratypes: COLOMBIA: Antioquia: Mun. Envigado, Quebrada La Ayura, 1750 m, 2.xii.1983, Matthias — 1 female (NMNH); site B, 1750 m, 9.xii.1983, Matthias — 2 females (NMNH); trap B, 1750 m, 20.iv.1983, Matthias — 1 male (NMNH); 23.viii.1983, Matthias — 2 males (NMNH); **COSTA RICA: Límon:** Limon, 16 km W Guapiles, 400 m, Ii.-Mar 1989, Hanson — 1 male (UMSP); **Puntarenas:** Río Bellavista trib., Las Alturas, road to quarry, 08°57'07”N, 82°50'53"W, 1480 m, 19.iii.1991, Holzenthal, Muñoz, & Huisman — 1 male (INBIO); — 1 male (UMSP); Río Jaba, rock quarry, 1.4 km (air) W Las Cruces, 08°47'24”N, 82°58'12"W, 1150 m, 9.viii.1990, Holzenthal, Blahnik, & Muñoz — 1 male (UMSP); 15.iii.1991, Holzenthal, Muñoz, & Huisman — 2 males (UMSP); Jardín Botanico R & C Wilson, unnamed trib., Sendro del Agua, 08°48'00”N, 82°57'36"W, 1180 m, 8.viii.1990, Holzenthal, Blahnik, & Muñoz — 2 males (UMSP); **San José:** Reserva Biológica Carara, Río del Sur, 1.5 km (rd) S Carara, 09°46'08”N, 84°31'52"W, 160 m, 13.iii.1991, Holzenthal, Muñoz, & Huisman — 1 female (UMSP); **PANAMA: Chiriqui:** Fortuna Dam Site nr. Hornitos, 08°55'00”N, 82°16'00"W, 1050 m, 4.i.-7.iii.1978, Wolda — 1 male (NMNH).

Distribution. Colombia, Costa Rica, Panama.

Etymology. This species is named for Fernando Muñoz-Quesada, who collected the type specimen.

Phylloicus nigripennis (Banks)
Figs. 76, 77

Phylloicus nigripennis (Banks, 1900:256) [Type locality: Mexico, Puebla, Santa Maria; MCZ; female; in *Heteroplectron*]. —Flint 1967:17 [illustration of male, as synonym of *aeneus*].
latus (Navás, 1924:83) [Type locality: Costa Rica; MNHNP; male; as *Macronema latum*]. —Holzenthal 1988:53, 71 [as synonym of *aeneus*]. **NEW SYNONYM**
sagittosa (Ross, 1951:72) [Type locality: Mexico, Lower California, Todos Santos; CAS; male; in *Notiomyia*]. —Flint 1967:17 [as synonym of *aeneus*]. **NEW SYNONYM**

Although Banks described *Heteroplectron nigripennis* from a female type, a male apparently from the same series, collected in Puebla, Mexico, exists. Both these specimens are in good condition, and have very dark, uniformly colored wings. Tergum VIII of the female type is bare of setal tufts. Although the male terminalia of *P. aeneus* and *P. nigripennis* are very similar, coremata are not present in *P. nigripennis.* As in *P. aeneus*, the apical third of the *P. nigripennis* forewing folds obliquely toward the midline (as in Fig. 2). The head and thorax of these specimens is orange and the abdomen is black. In males of *P. nigripennis* abdominal tergites II and III have a distinctive papillate surface, which is absent in the other species. Based on these differences, I am resurrecting *nigripennis* from synonymy with *aeneus.*

The holotypes of *Macronema latum* and *Notiomyia sagittosa* are males, the former from Costa Rica; the latter from Baja California. The wings of both are quite faded, but in size, body coloration, and abdominal morphology, they are consistent with the males of *P. nigripennis*. I have examined many additional specimens from Costa Rica and am confident that those populations are conspecific with *P. nigripennis* populations in central/eastern Mexico. However, the only specimens from Baja I have been able to examine are the type and paratypes of *Notiomyia sagittosa*, all of which are badly faded. Because color cannot be accurately assessed, and because of the seemingly disjunct distribution, I am less confident that these are conspecific with *P. nigripennis.* Nonetheless, in the specimens available to me, there are no characters other than distribution with which to discriminate a Baja species.

The male illustrated is a specimen from the MCZ, with collection labels identical to those on the female type of *P. nigripennis*.

Adult. Forewing length 8.2-10 mm, n = 66.

Head orange. Maxillary palps dark brown or black. Antenna twice forewing length; black, with narrow patches of pale sensilla on anteromesal surface of each flagellomere, with longer setae proximally. Prothorax orange; dorsal pterothorax orange; ventrolateral

thorax dark brown, or black. Legs dark brown, or black. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,3. Forewing apical third folded obliquely toward midline; dark brown, or black; without colored markings. Hind wing basal brush present in male.

Male. Preterminalic abdominal terga with anteromesal notch. Terga II and III with papillate sculpturing of surface. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX without mesal ridge; posterior margin with irregular mesal projection; dorsal surface covered with fine pilosity (Fig. 76B); lateral ridge absent; dorsal pleural setae approximately 10, ventral pleural setae approximately 5 (Fig. 76A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 76C). Preanal appendage shorter than tergum X, but greater than 2/3 length, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 76A, B). Tergum X sagittate basally; basodorsal process broad and setose; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch triangular; with paired setose lateral processes (Fig. 76A, B). Harpago slightly tapered; peglike setae few, apical (Fig. 76A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes digitate; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 76D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 77C). Tergum IX with very short mesal ridge (Fig. 77B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with deep sublateral invaginations (Fig. 77A). Tergum X appendage longer than mesal lobe, base marked by faint suture line, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 77B). Sternum X without setae in membrane (Fig. 77A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections acute; posterior sclerite ovoid; posterior end of spermatheca a sclerotized sphere with posteroventral notch (Fig. 77A).

Material examined. **COSTA RICA:** 1920, Serre — *P. latus* holotype male (MNHNP); **Cartago:** Paraiso, 1.xi.1965, Krauss — 2 males (NMNH); Río Aquiares, Turrialba, 20.vi.1967, Flint & Ortiz — 2 males (UMSP); Reserva Tapantí, Río Grande de Orosí, 09°41'10”N, 83°45'22"W, 1650 m, 23-25.vi.1967, Flint & Ortiz — 2 males (NMNH); **Límon:** Río General, Pacuare, 1.vii.1967, Flint & Ortiz — 2 males (NMNH); **San José:** Paso Ancho de San Sebastian, 25.x.1936, Ballou — 2 males (NMNH); Pedregoso, 640 m, 21.ii., Rounds — 1 male (MCZ); San José, Alfaro — 2 males (MCZ); **GUATEMALA: Jutiapa:** San Jerónimo, 1879-1881, Champion — 4 males (BMNH); **HONDURAS:** Minas de Oro, Comayagua, 2.vi., Edwards — 1 female (MCZ); Tegucigalpa, 28.vii.1918, Dyer — 1 male (MCZ); **MEXICO:** 3048 m, Sallé — 1 male (CNC); — 1 male (NRS); Deppe — 2 males, 1 female (ZMHU); 1871, Bilimek — 4 males (NMW); **Baja California**

Sur: Todos Santos, 10.xi.1941, Ross & Bohart — *P. sagittossa* holotype male, 2 male paratypes (CAS); **Chiapas:** Teopisca, 9.vii.1966, Flint & Ortiz — 2 males (NMNH); **Jalisco:** Guadalajara, 22.vii.1903, Banks — 1 male (MCZ); **Michoacán:** Presa Couitzio, Morelia, 30.v.1963, Pacheco — 1 male, 2 females (UMSP); San Lorenzo, Rt. 15, km 206, 14-15.vii.1966, Flint & Ortiz — 2 males ,1 female (NMNH); **Mórelos:** Balnearia Las Estacas, 28.iv.1963, Pacheco — 1 male, 1 female (NMNH); Cuernavaca, 1871, Bilimek — 1 male (NMW); nr. Xochitepec, Rt. 95, km 91, 1.viii.1965, Flint — 1 male (CNC); — 1 male, 3 females (NMNH); **Puebla:** 1911, Gineste — 1 female (MNHNP); Santa Maria, Banks — 1 male, *P. nigripennis* holotype female (MCZ); **Sonora:** Nogales, Arroyo Canaveral, 15.vii.1955, Malkin — 1 male (CAS); **Veracruz:** Dos Rios, Rt. 140, km 347, 1.viii.1966, Flint & Ortiz — 2 males (CNC); — 2 males (NMNH); nr. El Encero, Rt. 140, km 347, 22.vii.1965, Flint & Ortiz — 5 males, 1 female (NMNH); — 1 male, 1 female (UMSP); **NICARAGUA: Matagalpa:** Selva Negra, 2.v.1993, Novelo & Maes — 1 male (NMNH).

Distribution. Costa Rica, Guatemala, Honduras, Mexico, Nicaragua.

Phylloicus obliquus Navás
Figs. 78, 79

Phylloicus obliquus Navás, 1931:458 [Type locality: Brazil, Minas Gerais; DEI, female].

Phylloicus obliquus is very similar to *P. bidigitatus* and *plaumanni* (see discussion under *bidigitatus*), but differs in the wing pattern and the shape of male tergum X (Fig. 78A, B).
Adult. Forewing length 8.9-9.7 mm, n = 4.

Head golden brown, with dorsomesal crest of black setae. Maxillary palps golden, covered with dark brown setae. Antenna twice forewing length; chestnut brown. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae golden brown; mesotibiae dark brown; metatibiae dark brown; foretarsi golden brown; mesotarsi golden brown; metatarsi dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band white, reaching posterior wing margin, at least 1/2 width of wing; distal band white, not reaching either wing margin, 1/2 width of wing or less; with single basal stripe, ivory. Hind wing basal brush absent.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with short mesal ridge extending from anterior notch; posterior margin not distinct from base of tergum X (Fig. 78B); lateral ridge present; dorsal pleural setae approximately 10, ventral pleural setae absent (Fig. 78A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 78C). Preanal appendage shorter than ter-

gum X, but greater than 2/3 length, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 78A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, rounded, in dorsal view, notched, notch deep and round; dorsal surface covered with short setae (Fig. 78A, B). Harpago sharply tapered; peglike setae few, apical (Fig. 78A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 78D).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 79C). Tergum IX without mesal ridge (Fig. 79B). Sternum IX anterior lobes smooth and indistinct, posterior lobes striate, without distinct area of thin cuticle or invagination (Fig. 79A). Tergum X appendage longer than mesal lobe, base indistinct, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes length approximately equal diameter and often asymmetrical (Fig. 79B). Sternum X without setae in membrane (Fig. 79A). Vaginal apparatus posterior sclerite elongate; anterior sclerite tapered anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a tiny sclerotized sphere (Fig. 79A).

Material examined. **BRAZIL: Minas Gerais:** 1.v.1924, Le Moult — holotype female (DEI); **Rio de Janeiro:** Parque Nac. Tijuca, Jacarepaguá, Floresta da Tijuca, Represa dos Ciganos, 400 m, 7.iv.1977, C & O Flint — 1 female (NMNH); **Santa Catarina:** Parque Ecológica Spitzkopf, confl. Rio Ouro & Rio Caeté, 27°00'21”S, 49°06'42"W, 140 m, 3.iii.1998, Holzenthal, Froehlich, & Paprocki — 1 female (UMSP); Rio Caeté above 1st falls, 27°00'21”S, 49°06'42"W, 170 m, 4.iii.1998, Holzenthal, Froehlich, & Paprocki — 1 male, 1 female (UMSP).

Distribution. Brazil.

Phylloicus panamensis, new species
Figs. 80, 81

Phylloicus panamensis is very similar to *P. aeneus*, *nigripennis*, and *mexicanus*. Like *P. aeneus* and *mexicanus*¸ the females of *P. panamensis* have a brush of setae laterally on tergum VIII. However, these specimens lack the coremata of *P. aeneus*, the orange diamond on the head distinguishing *P. mexicanus*, or the papillate terga II and III of *P. nigripennis* males. All the specimens I examined were preserved in ethanol, so details of wing color pattern or body coloring are unavailable.

Adult. Forewing length 12-13.5 mm, n = 41.

Head golden brown. Maxillary palps golden brown. Antenna twice forewing length; golden brown. Prothorax golden brown; dorsal pterothorax golden brown; ventrolateral thorax golden brown. Legs golden brown. Tibial spur formula 2,4,3. Forewing apical third folded obliquely toward midline; golden brown; without colored markings. Hind wing

basal brush present in female.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with short mesal ridge extending from anterior notch; posterior margin irregular (Fig. 80B); lateral ridge present; dorsal pleural setae approximately 8, ventral pleural setae approximately 5 (Fig. 80A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 80C). Preanal appendage approximately length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 80A, B). Tergum X sagittate basally; basodorsal process absent; basolateral processes absent; apex, in lateral view, rounded, in dorsal view, notched, notch triangular; dorsal surface setose; with anterodorsal lateral processes (Fig. 80A, B). Harpago long, curving mesally and tapering apically; peglike setae few, apical (Fig. 80A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round and with digitate apical lobe; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite two-armed, in lateral view U-shaped (Fig. 80D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII with dense posterolateral brush of setae; Fig. 81B; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 81C). Tergum IX with mesal ridge extending 1/3 length of segment (Fig. 81B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, punctate, with shallow pockets lateral to vaginal opening (Fig. 81A). Tergum X appendage longer than mesal lobe, base marked by faint suture line, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 81B). Sternum X without setae in membrane (Fig. 81A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections acute; posterior sclerite ovoid; posterior end of spermatheca a sclerotized sphere (Fig. 81A).

Holotype male: PANAMA: Chiriqui: Guadalupe Arriba, 08°52'26”N, 82°33'13''W,.iv.1984, Wolda (NMNH)**.**

Paratypes: COSTA RICA: Puntarenas: Río Bellavista, ca. 1.5 km NW Las Alturas, 08°57'04”N, 82°50'46''W, 1400 m, 8-9.iv.1987, Holzenthal, Hamilton, & Heyn — 1 male (UMSP); **PANAMA: Chiriqui:** Guadalupe Arriba, 08°52'26”N, 82°33'13''W,.iv.1984, Wolda — 4 females, 2 males (NMNH);v.1984, Wolda — 3 females, 9 males (UMSP); 8-14.viii.1984, Wolda — 1 female, 1 male (UMSP);.v.1985, Wolda — 1 female, 2 males (UMSP); 14 Aug-10.ix.1985, Wolda — 3 males (NMNH); 25 Sep-15.x.1985, Wolda — 2 females, 2 males (NMNH).

Distribution. Costa Rica, Panama.

Etymology. Named for the country in which the types were collected.

Phylloicus paprockii, new species
Figs. 82, 83, 112

This species is similar to *P. amazonas*, *fenestratus*, and *obliquus*. *Phylloicus paprockii* is distinguished by forewing color and pattern (Fig. 112), the deep rounded notch of tergum X (Fig. 82B), the shape of the harpago, which is sharply tapered (Fig. 82A, B), and the morphology of the phallic endotheca and phallotremal sclerites (Fig. 82D, E).

Adult. Forewing length 10.1-11.4 mm, n = 3.

Head chestnut brown. Maxillary palps dark brown, covered with golden setae. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown, lateral margins dark; ventrolateral thorax golden. Femora golden; foretibiae golden; mesotibiae golden; metatibiae dark brown; foretarsi golden; mesotarsi golden; metatarsi dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band ivory, reaching posterior wing margin, at least 1/2 width of wing; distal band ivory, not reaching either wing margin, 1/2 width of wing or less, oval; with single basal stripe, white; basal cells clear (Fig. 112). Hind wing basal brush present in female.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with short mesal ridge extending from anterior notch; posterior margin smoothly rounded (Fig. 82B); lateral ridge absent; dorsal pleural setae approximately 10, ventral pleural setae approximately 8 (Fig. 82A); sternum IX without mesolateral ridges; sternum IX (Fig. 82C). Preanal appendage approximately length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 82A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch deep and round; with short, rounded setose basolateral paired projections (Fig. 82A, B). Harpago long, curving mesally and tapering apically; peglike setae many, mesoventral (Fig. 82A, C). Phallic endotheca with single long apical lobe and paired basolateral lobes, basolateral lobes large and round and with digitate apical lobe; phallotremal sclerites very large, longest dimension twice diameter of phallobase; dorsal sclerite two-armed, in lateral view U-shaped (Fig. 82D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 83C). Tergum IX with very short mesal ridge (Fig. 83B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, punctate, with shallow pockets anterolateral to vaginal opening (Fig. 83A). Tergum X

appendage longer than mesal lobe, base marked by faint suture line, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 83B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 83A). Vaginal apparatus posterior sclerite elongate; anterior sclerite rounded anteriorly, posterolateral projections absent; posterior sclerite ovoid; posterior end of spermatheca a tiny sclerotized sphere (Fig. 83A).

Holotype male: BRAZIL: Minas Gerais: Aldeia de Cachoeira das Pedras, 20°06'49”S, 44°01'25"W, 925 m, 9.x.2000, Paprocki & Isaac (MZUSP)**.**

Paratypes: BRAZIL: Bahia: Camacá, 400-700 m, 21 Sep-30.ix.1991, Becker — 1 male (NMNH); **Minas Gerais:** Aldeia de Cachoeira das Pedras, 20°06'49”S, 44°01'25"W, 925 m, 9.x.2000, Paprocki & Isaac — 1 female (UMSP).

Distribution. Brazil.

Etymology. It is with great pleasure that I name this species for Henrique Paprocki, who collected the type specimen on his family’s land in Minas Gerais.

Phylloicus passulatus, new species
Figs. 84, 85

Phylloicus passulatus is easily distinguished by the morphology of abdominal segment IV. The long posterior processes of tergite IV, and the rugose, sclerotized lobe of the lateral corema are distinctive to this species. None of the male specimens had the phallic endotheca fully everted, so I am unable to describe the membranous lobes.

Adult. Forewing length 10.7 mm, n = 3.

Head dark brown, with golden setae. Maxillary palps dark brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Prothorax golden, with golden setae; dorsal pterothorax golden brown; ventrolateral thorax golden brown. Femora golden brown; tibiae dark brown; tarsi dark brown. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band ivory, not reaching either wing margin, 1/2 width of wing or less; distal band ivory, sparse; with two basal stripes, ivory. Hind wing basal brush present in male, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with paired posterior processes and paired lateral sclerites, mesal coremata and lateral coremata; posterior process truncate; lateral sclerite spatulate, directed laterally; lateral coremata with basal globose lobes and most dorsal lobe sclerotized; mesal coremata single-lobed, apparently not eversible, apically truncate. Tergum V without sclerotized modifications (Fig. 84F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process absent and posterior of segment semimembranous (Fig. 84A, C). Tergum IX with short mesal ridge extending from anterior notch; posterior margin obtuse (Fig. 84B); lateral ridge present;

dorsal pleural setae approximately 10, ventral pleural setae approximately 3 (Fig. 84A). Preanal appendage shorter than tergum X, but greater than 2/3 length, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 84A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch shallow (Fig. 84A, B). Harpago rounded; peglike setae tiny, mesal (Fig. 84A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 84D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch; sternum VIII (Fig. 85C). Tergum IX without mesal ridge (Fig. 85B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, punctate, with patch of lightly sclerotized cuticle laterally (Fig. 85A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 85B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 85A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections rounded; posterior sclerite ovoid (Fig. 85A).

Holotype male: VENEZUELA: Amazonas: Puerto Ayacucho (40 km S) El Tobogán, Caño Coromoto, 24.i.1989, Spangler, Faitoute, & Barr (NMNH)**.**

Paratypes: VENEZUELA: Amazonas: Puerto Ayacucho (40 km S) El Tobogán, Caño Coromoto, 24.i.1989, Spangler, Faitoute, & Barr — 1 female (NMNH); Cerro de la Neblina, Agua Blanca, 00°49'00”N, 66°08'00"W, 160 m, 20-21.iii.1984, Flint & Louton — 1 male (IZAM); — 1 male (NMNH).

Distribution. Venezuela

Etymology. *Passulatus*, from the Latin *passula*, “raisin,” and *latus* “carry or bear,” for the sclerotized lobe of the coremata, which resembles a raisin.

Phylloicus paucartambo, new species
Figs. 86, 87, 113

Phylloicus "n. sp. 1" Flint, 1996:424

Phylloicus paucartambo is most similar to *P. flinti*, from which it is easily distinguished by the very different wing patterns of the two species. The forewing of *P. paucartambo* has a distinctive pattern of orange on dark brown or black (Fig. 113). None of the male specimens had the phallic endotheca fully everted, so I am unable to describe the membranous lobes.

Adult. Forewing length 9.7-11.4 mm, n = 7.

Head black. Maxillary palps black. Antenna twice forewing length; black, with narrow

patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax black; ventrolateral thorax golden brown. Femora golden brown; tibiae black; tarsi black. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown, or black; with two transverse bands; proximal band orange, reaching posterior wing margin, at least 1/2 width of wing, an inverted V-shape; distal band orange, not reaching either wing margin, 1/2 width of wing or less; with two basal stripes, orange; with small orange spot marking nygma (Fig. 113).

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum III with acute anterolateral process and posterolaterally acute lateral sclerites. Tergum IV with paired posterior processes and paired lateral sclerites, mesal coremata and lateral coremata; posterior process short, rounded; lateral sclerite spatulate, directed laterally; lateral coremata with basal globose lobes and long tubular posterior lobe; mesal coremata bilobed and an invaginated setose pouch, pouch enclosing digitate membranous lobes. Tergum V without sclerotized modifications (Fig. 86F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process truncate and hollow (Fig. 86A, C). Tergum IX without mesal ridge; posterior margin smoothly rounded; anterior ridge obsolete mesally (Fig. 86B); lateral ridge present; dorsal pleural setae continuous with ventral pleural setae, dense (Fig. 86A). Preanal appendage approximately length of tergum X, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 86A, B). Tergum X without basal lobes; basodorsal process broad and setose; basolateral processes long, length at least twice diameter; apex, in lateral view, truncate, in dorsal view, entire or notched, notch round (Fig. 86A, B). Harpago rounded; peglike setae few, apical (Fig. 86A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 86D, E).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch, or posterior margin entire; sternum VIII (Fig. 87C). Tergum IX without mesal ridge (Fig. 87B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle laterally (Fig. 87A). Tergum X appendage shorter than mesal lobe, base distinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes long, at least twice diameter and often asymmetrical (Fig. 87B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 87A). Vaginal apparatus posterior sclerite elongate; anterior sclerite emarginate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca a sclerotized expanded tube (Fig. 87A).

Holotype male: PERU: Cuzco: Paucartambo to Pilcopata rd., Río San Pedro @ Puente San Pedro, 13°03'18”S, 71°32'47"W, 1445 m, 24.vi.1993, Blahnik & Pescador (MHNJP)**.**

Paratypes: ECUADOR: Napo: Reventador, 1750 m, 3-6.x.1977, Peña G. — 1 female

(NMNH); **PERU: Cuzco:** Paucartambo to Pilcopata rd., river at Puente Unión, 13°04'13”S, 71°34'00"W, 1670 m, 21-23.vi.1993, Blahnik & Pescador — 1 female (NMNH); Paucartambo, Pte. San Pedro, ca. 50 km NW Pilcopata km 152, 13°09'00”S, 71°26'00"W, 1430 m, 2-3.ix.1988, Flint & Adams — 1 female, 1 male (MHNJP); — 1 male (NMNH); 30-31.viii.1989, Adams — 1 male (NMNH); — 1 male (UMSP).

Distribution. Peru, Ecuador.

Etymology. Named for the type locality, the town of Paucartambo, Peru.

Phylloicus perija, new species
Figs. 88, 89

Phylloicus perija is most similar to *P. abdominalis* and *P. pirapo*. However, it differs in the contorted shape of the tergum IV lateral sclerite, and the setose posterior process of tergum V (Fig. 88F) and in the forewing pattern. The forewing lacks the white spot on the nygma, and the wing bands are golden rather than white or ivory.

Adult. Forewing length 10.1-12.8 mm, n = 24.

Head chestnut brown. Maxillary palps chestnut brown. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown; ventrolateral thorax golden brown. Legs golden brown. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with two transverse bands; proximal band golden, reaching posterior wing margin, at least 1/2 width of wing; distal band golden, beginning at anterior wing margin, at least 1/2 width of wing; with two basal stripes, golden; small patch of golden setae at proximal end of wing coupling hairs. Hind wing basal brush present in male and female.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum III with anterolateral flanges. Tergum IV with paired posterior processes and paired lateral sclerites, mesal coremata and lateral coremata; posterior process truncate; lateral sclerite contorted, setose apically; lateral coremata with basal globose lobes and long tubular posterior lobe; mesal coremata bilobed, without setae, capable of inflation greater than length of segment V. Tergum V emarginate posteriorly, with setose posterior processes (Fig. 88F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched (Fig. 88A, C). Tergum IX without mesal ridge; posterior margin obtuse; thinly sclerotized anteromesally, muriculate (Fig. 88B); lateral ridge absent; dorsal pleural setae approximately 8, ventral pleural setae absent (Fig. 88B). Preanal appendage longer than tergum X, but less than 11/2 times length, widest apically, setae filamentous, longer than appendage (Fig. 88A, B). Tergum X without basal lobes; basodorsal process short and digitate; basolateral processes absent; apex, in lateral view, rounded, in dorsal view, entire or notched, notch shallow (Fig. 88A, B). Harpago rounded; peglike setae few, apical (Fig. 88A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites

average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 88D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII posterior margin entire; sternum VIII (Fig. 89C). Tergum IX without mesal ridge (Fig. 89B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 89A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes length approximately equal diameter (Fig. 89B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 89A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections absent; posterior sclerite ovoid (Fig. 89A).

Holotype male: VENEZUELA: Zulia: Parque Nacional Perijá, Río Negro in Toromo, 10°03'04”N, 72°42'43"W, 360 m, 15.i.1994, Holzenthal, Cressa, & Rincón (UMSP)**.**

Paratypes: VENEZUELA: Zulia: Perijá El Tucuco, Mission El Tucuco, Río del Pelaya, 2-1/2 km from church, 26.iv.1981, Townes — 1 male (NMNH); Parque Nacional Perijá, Río Negro in Toromo, 10°03'04”N, 72°42'43"W, 360 m, 15.i.1994, Holzenthal, Cressa, & Rincón — 5 females (IZAM); — 1 female, 1 male (NMNH); — 11 females, 4 males (UMSP).

Distribution. Venezuela.

Etymology. Named for the type locality, Perijá National Park, Venezuela.

Phylloicus pirapo, new species

Figs. 90, 91

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Phylloicus pirapo is most similar to *P. abdominalis* and *P. perija*. *Phylloicus pirapo* lacks the white spot on the forewing nygma, but the lateral sclerite of abdominal tergum IV (Fig. 90F) is better developed and spatulate, resembling that of *P. spectabilis*.

Adult. Forewing length 8.7-10.2 mm, n = 19.

Head chestnut brown. Maxillary palps dark brown. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Femora golden brown; foretibiae golden brown; mesotibiae dark brown; metatibiae dark brown; foretarsi golden brown; mesotarsi white; metatarsi dark brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band white, reaching posterior wing margin, at least 1/2 width of wing, narrow, less than 10 setae wide; distal band white, not reaching either wing margin, 1/2 width of wing or less, narrow, less than 10 setae wide; with two basal stripes, golden. Hind wing basal brush present in male, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures

present. Tergum III with simple lateral sclerites. Tergum IV with paired posterior processes and paired lateral sclerites, mesal coremata and lateral coremata; posterior process truncate; lateral sclerite spatulate, directed laterally; lateral coremata with basal globose lobes and long tubular posterior lobe; mesal coremata single-lobed, setose basally. Tergum V without sclerotized modifications (Fig. 90F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched (Fig. 90A, C). Tergum IX with paired mesal ridges extending 1/2 length of segment; posterior margin smoothly rounded; thinly sclerotized anteromesally (Fig. 90B); lateral ridge absent; dorsal pleural setae approximately 5, ventral pleural setae approximately 5 (Fig. 90A, B). Preanal appendage longer than tergum X, but less than 11/2 times length, widest apically, setae filamentous, longer than appendage (Fig. 90A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes of varying length and often asymmetrical; apex, in lateral view, rounded, in dorsal view, notched, notch square; setose basodorsally; with short apicodorsal process visible in lateral view (Fig. 90A, B). Harpago rounded; peglike setae many, apical (Fig. 90A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round and with digitate apical lobe; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 90D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII posterior margin entire; sternum VIII (Fig. 91C). Tergum IX without mesal ridge (Fig. 91B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, punctate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 91A). Tergum X appendage shorter than mesal lobe, base indistinct, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes very short, length less than diameter (Fig. 91B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 91A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections absent; posterior sclerite ovoid; posterior end of spermatheca a sclerotized expanded tube (Fig. 91A).

Holotype male: **PARAGUAY: Itapua**: Pirapo, i.1972, Peña G. (NMNH).

Paratypes: ARGENTINA: Misiones: 6 km E El Dorado, 22.xi.1973, Flint — 2 males (NMNH); Ao. Coati, 15 km E San Jose, 18-19.xi.1973, Flint — 1 female (NMNH); **PARAGUAY:** Villarica, Apr, Schade — 1 male (MCZ); **Itapua:** Pirapo, 28-31.xii.1971, Peña G. — 5 males (NMNH); — 5 females, 3 males (UMSP); i.1972, Peña G. — 1 female (NMNH).

Distribution. Argentina, Paraguay.

Etymology. Named for the type locality, Pirapo, Itapua, Paraguay.

Phylloicus plaumanni Flint
Figs. 92, 93

Phylloicus plaumanni Flint, 1983:76 [Type locality: Brazil, Edo. Santa Catarina, Seara (27°09'S, 52°15'W); NMNH; male].

Phylloicus plaumanni is similar to *P. bidigitatus* and *obliquus*. The forewings of *P. plaumanni* are a uniform dark brown.

Adult. Forewing length 8.6-10.9 mm, n = 30.

Head dark brown or black. Maxillary palps dark brown. Antenna twice forewing length; chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax dark brown; ventrolateral thorax dark brown. Femora dark brown; tibiae dark brown; foretarsi dark brown; mesotarsi golden brown; metatarsi dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,4. Forewing flat; dark brown; without colored markings. Hind wing basal brush present in male.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with paired mesal ridges extending 1/2 length of segment; posterior margin not distinct from base of tergum X; thinly sclerotized anteromesally (Fig. 92B); lateral ridge present; dorsal pleural setae approximately 10, ventral pleural setae absent (Fig. 92A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 92C). Preanal appendage approximately length of tergum X, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 92A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch deep and round; setose dorsally (Fig. 92A, B). Harpago sharply tapered; peglike setae few, apical (Fig. 92A, C). Phallic endotheca with paired apicolateral lobes and paired basolateral lobes, basolateral lobes multilobed, apicolateral lobes small and rounded; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite narrow, width less than height (Fig. 92D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 93C). Tergum IX without mesal ridge; covered with short fine pilosity (Fig. 93B). Sternum IX anterior lobes smooth and indistinct, posterior lobes striate, with shallow pockets lateral to vaginal opening (Fig. 93A). Tergum X appendage longer than mesal lobe, base marked by faint suture line, apex triangular; mesal lobe lightly sclerotized; digitate lateral processes absent (Fig. 93B). Sternum X without setae in membrane (Fig. 93A). Vaginal apparatus posterior sclerite elongate; anterior sclerite tapered anteriorly, posterolateral projections rounded; posterior sclerite triangular; posterior end of spermatheca a sclerotized ovoid (Fig. 93A).

Material examined. **ARGENTINA: Misiones:** San Ignacio, Haute Parana, ii., Wagner — 1 male paratype (NMNH); Apr, Wagner — 1 male paratype (NMNH); **BRAZIL: Santa Catarina:** Seara (Nova Teutônia), 27°11'00”S, 52°23'00"W, 300-500 m, 31.v.1938, Plau-

mann — 1 male (BMNH); 10.ix.1939, Plaumann — 1 male paratype (MCZ); 25.iv.1963, Plaumann — holotype male, 3 male, 1 female paratypes (NMNH); 1.v.1963, Plaumann — 5 male, 1 female paratypes (UMSP); 1.xi.1963, Plaumann — 4 male, 4 female paratypes (NMNH); 6.x.1964, Plaumann — 3 male, 1 female paratypes (NMNH); — 1 male paratype (UMSP).

Distribution. Argentina, Brazil.

Phylloicus pulchrus Flint
Figs. 94, 95, 114

Phylloicus pulchrus Flint, 1964:65 [Type locality: Puerto Rico, Maricao Forest; NMNH; male].

Phylloicus pulchrus is most similar to the other Antillean species *P. cubanus*, *iridescens*, and *superbus*. In *P. pulchrus* the orange bands of the forewing are wider (Fig. 114) than in the other three species. The preanal appendage of *P. pulchrus* is shorter and the harpago is rounded apically (Fig. 94A, B, C).

Adult. Forewing length 7-7.9 mm, n = 38.

Head dark brown. Maxillary palps dark brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax pale tan. Legs pale tan. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,2. Forewing flat; dark brown; with two transverse bands; proximal band orange, extending from anterior to posterior wing margin, wide, at least 1/6 wing length; distal band orange, extending from anterior to posterior wing margins, wide, at least 1/6 wing length, with orange setae along distal wing margin (Fig. 114); basal cells alternating orange setae and iridescent membrane (Fig. 114). Hind wing basal brush absent.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with mesal ridge extending 2/3 length of segment; posterior margin smoothly rounded (Fig. 94B); lateral ridge absent; dorsal pleural setae approximately 7, ventral pleural setae absent (Fig. 94A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 94C). Preanal appendage shorter than tergum X, but greater than 2/3 length, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 94A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch shallow (Fig. 94A, B). Harpago large, rounded; peglike setae many, mesoventral (Fig. 94A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes tapered apically; phallotremal sclerites very large, longest dimension twice diameter of phallobase; dorsal sclerite two-armed, in lateral view U-shaped (Fig. 94D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 95C). Tergum IX with mesal ridge extending length of segment (as in Fig. 41B). Sternum IX anterior lobes smooth and indistinct, posterior lobes striate, with shallow pockets lateral to vaginal opening (Fig. 95A). Tergum X appendage shorter than mesal lobe, base distinct, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes absent (as in Fig. 41B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 95A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite truncate anteriorly, posterolateral projections acute; posterior sclerite ovoid; posterior end of spermatheca a sclerotized sphere with wide anterior ridge (Fig. 95A).

Material examined. **CUBA:** Oriente, Yunque de Baracoa, 305-549 m, 13.vii.1936, Darlington — 1 female (MCZ); **DOMINICAN REPUBLIC:** Río Baiguate, 1-2 km S Jarabacoa, 19°06'54”N, 70°37'00"W, 520 m, 8-9.v.1995, Flint — 1 male (NMNH); 19-21.v.1995, Flint — 1 male (UMSP); — 1 female (NMNH); **Baoruco:** San Rafael, 8.3 km S Baoruco, 18°01'54”N, 71°08'24"W, 30 m, 15.v.1995, Flint — 1 male (NMNH); **Barahona:** nr. Filipinas, Larimar Mine, 6-11.vii.1993, Woodruff — 1 male (FSCA); **Dajabon:** 13 km S Loma de Cabrera, 400 m, 20-22.v.1973, D & M Davis — 1 male, 1 female (NMNH); — 1 female (UMSP); **Independencia:** La Descubierta, 18°34'06”N, 71°43'48"W, 0 m, 25.iii.1999, Flint — 1 female (NMNH); **La Estrelleta:** Río Limpio, 4 km SE Rio Limpio, 760 m, 24-25.v.1973, D & M Davis — 1 male (NMNH); **Pedernales:** stream & falls, 19 km N Pedernales, 18°09'12”N, 71°44'48"W, 230 m, 19.iii.1999, Flint — 3 males (NMNH); **UNITED STATES: Puerto Rico:** Maricao Forest Res., 610 m, 9-13.ii.1961, Gurney — holotype male, 1 male paratype (NMNH); Maricao LT, 1.vii.1960, Maldonado — 1 male paratype (CNC); — 1 male, 1 female paratypes (NMNH); Mayagüez, 6-16.vii.1955, Ramos — allotype female (NMNH); Patillas, 590 m, 1.viii.1987, Becker — 2 males, 1 female (NMNH); — 1 female (UMSP); Quebrada Prieta, El Verde Field Station, 370 m, 6-10.ii.1990, Flint — 5 males (NMNH); — 1 male (UMSP); Quebrada Sonadora, El Verde, hanging bridge, 350 m, 18.ii.1989, Masteller — 1 female (NMNH); 20.ii.1989, Masteller — 1 male (NMNH); El Verde Field Station, Quebrada Prieta, 370 m, 5-31.iii.1990, Masteller — 1 male, 2 females (UMSP); 2-15.v.1990, Masteller — 1 adult (NMNH); 20.v.1991, Buzby & Masteller — 1 male (UMSP); Bisley stream #3, trib. to R. Mameyes, 31.vii.1992, Buzby & Masteller — 1 male (NMNH).

Distribution. Cuba, Dominican Republic, Puerto Rico.

Phylloicus quadridigitatus, new species
Fig. 96

This species is known only from a single male, with antennae and wings badly rubbed. Thus, any ornamentation of wings or antennae is unknown. The phallic endotheca is not fully everted, so I am unable to describe the membranous lobes. *Phylloicus quadridigita-*

tus is distinguished by the two pairs of digitate processes of tergum X, from which it takes its name.

Adult. Forewing length 7.3 mm, n = 1.

Head black, including setal warts. Maxillary palps black. Antenna twice forewing length; dark brown. Prothorax black; dorsal pterothorax black; ventrolateral thorax chestnut brown. Femora chestnut brown; tibiae golden brown; tarsi golden brown. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula 2,2,2. Forewing flat; dark brown; without colored markings. Hind wing basal brush present in male.

Male. Preterminalic abdominal terga without anteromesal notches. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII without anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with paired mesal ridges extending length of segment; posterior margin obtuse (Fig. 96B); lateral ridge absent; dorsal pleural setae approximately 10, ventral pleural setae absent (Fig. 96A); sternum IX without mesolateral ridges; sternum IX (Fig. 96C). Preanal appendage less than 2/3 length of tergum X, widest near base, setae long, but not filamentous or longer than appendage (Fig. 96A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes long, length at least twice diameter; apex, in lateral view, with long digitate posterodorsal projection and short ventral projection, in dorsal view, cleft; with paired spine-like mesal setae at mid-length; posteriorly with two pairs of digitate processes, dorsomesal processes twice length of ventrolateral processes (Fig. 96A, B). Harpago large, rounded; peglike setae many, apical (Fig. 96A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 96D, E).

Female. Unknown.

Holotype male: BRAZIL: São Paulo: Alto da Serra, 29-30.x.1927, Zerny (NMW).

Distribution. Brazil.

Phylloicus quitacalzon, new species
Figs. 97, 98

Phylloicus quitacalzon is very similar to *P. hansoni*. It is distinguished by single-lobed mesal coremata, and the short truncate posterior process of tergum IV (Fig. 97F).

Adult. Forewing length 10.7-12.2 mm, n = 26.

Head chestnut brown. Maxillary palps dark brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax golden brown. Legs golden brown. Metathoracic leg of male with posterior fringe of long setae, setae dark. Tibial spur formula 2,4,4. Forewing flat; dark brown; with two transverse bands; proximal band ivory, reaching posterior wing margin, at least 1/2 width of wing; distal band ivory, beginning at anterior wing margin, at least 1/2 width of wing; with two basal stripes,

golden; golden setae marking wing-coupling setae proximally. Hind wing basal brush present in male.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with paired posterior processes, mesal coremata and lateral coremata; posterior process short, rounded; lateral coremata with basal globose lobes and long tubular posterior lobe; mesal coremata single-lobed, without setae. Tergum V without sclerotized modifications (Fig. 97F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process notched, notch deep and round; with small sclerite in intersegmental membrane posterolateral to sternite (Fig. 97A, C). Tergum IX with paired mesal ridges extending 1/2 length of segment; posterior margin smoothly rounded (Fig. 97B); lateral ridge present; dorsal pleural setae approximately 8, ventral pleural setae absent (Fig. 97A). Preanal appendage longer than tergum X, but less than 11/2 times length, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 97A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes long, length at least twice diameter; apex, in lateral view, rounded, in dorsal view, notched, notch shallow (Fig. 97A, B). Harpago rounded; peglike setae many, apical (Fig. 97A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 97D, E).

Female. Preterminal abdominal terga with anteromesal notch. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII with shallow posteromesal notch, or posterior margin entire; sternum VIII (Fig. 98C). Tergum IX without mesal ridge; posterior margin marked mesally by small patch of thin cuticle (Fig. 98B). Sternum IX anterior and posterior lobes darkly sclerotized and striate, with patch of lightly sclerotized cuticle lateral to vaginal opening (Fig. 98A). Tergum X appendage shorter than mesal lobe, base indistinct, apex oblique; mesal lobe lightly sclerotized; digitate lateral processes marked only by slightly raised thin cuticle, or absent (Fig. 98B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 98A). Vaginal apparatus anterior and posterior sclerites equal in length; anterior sclerite rounded anteriorly, posterolateral projections absent; posterior sclerite ovoid; posterior end of spermatheca a sclerotized ovoid (Fig. 98A).

Holotype male: PERU: Madre de Dios: Toma del Agua, Amazonia Lodge, 12°52'13”S, 71°22'34"W, 415 m, 29.vi.1993, Blahnik & Pescador (MHNJP)**.**

Paratypes: PERU: Cuzco: Paucartambo to Pilcopata rd., Quebrada Quitacalzón at Puente Quitacalzón, 13°01'34”S, 71°29'58"W, 1050 m, 25-27.vi.1993, Blahnik & Pescador — 1 female, 1 male (MHNJP); — 2 females, 1 male (NMNH); — 1 female, 1 male (UMSP); Quincemil,.xi.1962, Peña G. — 1 female, 1 male (CNC); — 1 male (UMSP); Paucartambo, Paucartambo to Pilcopata rd., streamlet 50 m E Quinta Calzon, 1050 m, 26.vi.1993, Blahnik & Pescador — 1 male (MHNJP); — 2 males (NMNH); Quinta Calzon

ca. 30 km NW Pilcopata, km 164, streamlet, 50 km E Quinta Calzon, 13°09'00”S, 71°22'00"W, 1030 m, 2.ix.1989, Adams — 1 male (NMNH); **Huanuco:** Tingo Maria, 672 m, 25-31.i.1980, Heppner — 1 female (NMNH); 1-6.ii.1980, Heppner — 4 females, 5 males (NMNH), **Madre de Dios:** Toma del Agua, Amazonia Lodge, 12°52'13”S, 71°22'34"W, 415 m, 29.vi.1993, Blahnik & Pescador — 1 male (NMNH).

Distribution. Peru.

Etymology. Named for the type locality.

Phylloicus spectabilis Martynov
Fig. 99

Phylloicus spectabilis Martynov, 1912:9 [Type locality: Peru, Callanga; ASL; male].

This species is known only from the badly rubbed lectotype male and one paralectotype male, which is missing an abdomen. The modifications of the male abdomen are extremely elaborate in this species. It is similar to a number of other species, but is distinguished by the shape of the lateral sclerite of tergum IV, the arrangement and number of lobes of the coremata (Fig. 99F), and the shape of sternum VIII (Fig. 99C). The description of color features is based on the paralectotype.

Adult. Forewing length 11.6 mm, n = 2.

Head chestnut brown. Maxillary palps chestnut brown. Antenna chestnut brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax chestnut brown; ventrolateral thorax chestnut brown. Legs chestnut brown. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula 2,4,4. Forewing flat; chestnut brown; with two transverse bands; proximal band golden, reaching posterior wing margin, at least 1/2 width of wing; distal band golden, not reaching either wing margin, 1/2 width of wing or less; with two basal stripes, golden. Hind wing basal brush present in male, dark brown.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum III with sclerotized setose processes of posterior pleural membrane. Tergum IV with paired posterior processes and paired lateral sclerites, mesal coremata and lateral coremata; posterior process truncate; lateral sclerite spatulate, directed laterally; lateral coremata with basal globose lobes and long tubular posterior lobe; mesal coremata bilobed, setose, posterior lobe three times length of anterior lobe. Tergum V without sclerotized modifications (Fig. 99F). Sternum VII with short, acute anteromesal process. Sternum VIII enclosing base of elongate sternum IX; posteromesal process absent and posterior of segment semimembranous (Fig. 99C). Tergum IX with paired mesal ridges extending length of segment; posterior margin continuous with basodorsal process of tergum X (Fig. 99B); lateral ridge absent; dorsal pleural setae approximately 5, ventral pleural setae approximately 3 (Fig. 99A). Preanal appendage at least 11/2 times length of

tergum X, widest apically, setae filamentous, longer than appendage (Fig. 99A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, rounded, in dorsal view, entire (Fig. 99A, B). Harpago rounded; peglike setae many, apical (Fig. 99A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 99D, E).

Female. Unknown.

Material examined. **PERU: Cuzco:** Callanga, Staudinger & Bang-Haas — lectotype male, 1 male paralectotype (ASL).

Distribution. Peru.

Phylloicus spinulacolis, new species
Figs. 100, 101

This species is known only from two specimens, collected *in copula* as tenerals, and somewhat battered. Thus, details of coloration are unavailable. *Phylloicus spinulacolis* is small and black, and the male is remarkable for, and easily distinguished by, the prominent spine-like setae on the ventrolateral lobes of the phallic endotheca (Fig. 100D, E).

Adult. Forewing length 9 mm, n = 2.

Head black. Maxillary palps golden brown, covered with dark brown setae. Antenna twice forewing length; dark brown. Dorsal pterothorax black; ventrolateral thorax dark brown. Legs dark brown. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula 2,4,2. Forewing flat; dark brown, or black; without colored markings. Hind wing basal brush absent.

Male. Preterminalic abdominal terga without anteromesal notches. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX without mesal ridge; posterior margin smoothly rounded (Fig. 100A, B); lateral ridge present; dorsal pleural setae approximately 10, ventral pleural setae absent (Fig.100A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 100C). Preanal appendage less than 2/3 length of tergum X, widest near base, setae long, but not filamentous or longer than appendage (Fig. 100A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes of varying length and often asymmetrical; apex, in lateral view, rounded, in dorsal view, notched, notch deep and triangular; setose dorsally (Fig. 100A, B). Harpago large, rounded; peglike setae many, apical (Fig. 100A, C). Phallic endotheca with paired apicolateral lobes and paired basolateral lobes, basolateral lobes large and round and bearing spine-like setae, apicolateral lobes large and rounded; phallotremal sclerites average size, longest dimension less than

diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 100D, E).

Female. Preterminal abdominal terga without anteromesal notches. Sternum VII with short pointed anteromesal process. Tergum VIII without posterolateral brush; sternum VIII cleft posteromesally to anterior ridge; sternum VIII (Fig. 101C). Tergum IX with mesal ridge extending length of segment; posterior margin marked mesally by acute ridge (Fig. 101B). Sternum IX anterior lobes darkly sclerotized and striate, posterior lobes smooth, punctate, without distinct area of thin cuticle or invagination (Fig. 101A). Tergum X appendage length equal to mesal lobe, base distinct, apex rounded; mesal lobe lightly sclerotized; digitate lateral processes very short, length less than diameter and often asymmetrical (Fig. 101B). Sternum X with patches of short fine setae posterolaterally to anal opening (Fig. 101A). Vaginal apparatus anterior sclerite elongate; anterior sclerite emarginate anteriorly, posterolateral projections absent; posterior sclerite triangular; posterior end of spermatheca membranous (Fig. 101A).

Holotype male: VENEZUELA: Falcón: Río Ricoa near Dos Bocas, 11°17'19”N, 69°26'04"W, 157 m, 8.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa (UMSP)**.**

Paratype: VENEZUELA: Falcón: Río Ricoa near Dos Bocas, 11°17'19”N, 69°26'04"W, 157 m, 8.vi.2001, Holzenthal, Blahnik, Paprocki, & Cressa — 1 female (UMSP).

Distribution. Venezuela.

Etymology. *Spinulacolis*, from the Latin *spinula*, “S,mall spine” and *colis*, “penis,” for the small spines on the phallic endotheca.

Phylloicus superbus Banks

Figs. 102, 115

Phylloicus superbus Banks, 1938:298 [Type locality: Cuba, Oriente, Pico Turquino; MCZ; male]. —Flint 1967:19 [lectotype male].

Phylloicus superbus is not well known. Although the type series consists of many individuals, they are all from two localities on a single mountain and probably represent a single population. No females were collected with them. Except in size, they greatly resemble *P. cubanus*, of which the specimens I examined all were collected at lower elevation. Thus, *P. superbus* may represent only an extreme variant of *P. cubanus*. However, the collections I examined were inadequate for assessing the intraspecific variability of *P. cubanus*, and consequently inadequate for evaluating the status of *P. cubanus.*

Adult. Forewing length 10.8-12.3 mm, n = 19.

Head golden brown. Maxillary palps dark brown. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax golden brown; ventrolateral thorax golden. Femora golden; tibiae dark

brown; tarsi dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,2. Forewing flat; dark brown; with two transverse bands; proximal band orange, extending from anterior to posterior wing margin; distal band orange, beginning at anterior wing margin, at least 1/2 width of wing; basal cells without setae, membrane iridescent (Fig. 115). Hind wing basal brush absent.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VII with short, acute anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with mesal ridge extending 2/3 length of segment; posterior margin continuous with basodorsal process of tergum X (Fig. 102B); lateral ridge absent; dorsal pleural setae approximately 8, ventral pleural setae absent (Fig. 102A); sternum IX with paired mesolateral ridges; sternum IX (Fig. 102C). Preanal appendage shorter than tergum X, but greater than 2/3 length, of uniform diameter throughout length, setae long, but not filamentous or longer than appendage (Fig. 102A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, rounded, in dorsal view, notched, notch shallow (Fig. 102A, B). Harpago large, rounded; peglike setae many, apical (Fig. 102A, C). Phallic endotheca with paired basolateral lobes, basolateral lobes large and round; phallotremal sclerites very large, longest dimension twice diameter of phallobase; dorsal sclerite two-armed, in lateral view U-shaped (Fig. 102D, E).

Female. Unknown.

Material examined. **CUBA: Oriente:** Pico Turquino, N side, 4500-6000 f m, 18-20.vi.1936, Darlington — lectotype male, 8 male paralectotypes (MCZ); Pico Turquino, summit, 1829 m, 16-21.vi.1936, Darlington — 10 male paralectotypes (MCZ).

Distribution. Cuba.

Phylloicus tricalcaratus (Ulmer)

Phylloicus tricalcaratus (Ulmer, 1905b:37) [Type locality: Brazil; ZIUH; male; in *Homoeoplectron*]. **NOMEN DUBIUM**

According to the curator at the Zoologisches Institut der Universität at Halle, the type of *P. tricalcaratus* was probably destroyed during or shortly after World War II. I found one specimen identified by Ulmer as *P. tricalcaratus* in the Museum für Naturkunde of Humboldt-Universität, Berlin, but it consists only of a head, anterior thorax, and one forewing, and is quite inadequate for identifying the species. The illustration in the original description included only the wings, and the description itself is too general for species discrimination.

Material examined. **BRAZIL: Bahia:** Freyreiß — 1 adult (ZMHU).

Distribution. Brazil.

Phylloicus trichothylax, new species
Fig. 103

Phylloicus trichothylax is known only from a single teneral male, and thus details of coloration are difficult to identify and the forewings are too twisted for accurate measurement. It is distinguished by the abdominal coremata, which consist of a pair of invaginated membranous pouches containing long setae and a single, eversible, digitate membranous lobe (Fig. 103F), and by the long digitate basodorsal process of tergum X (Fig. 103A, B).

Adult. Head golden brown, with dorsomesal crest of golden brown setae. Maxillary palps dark brown. Antenna golden brown. Dorsal pterothorax golden brown; ventrolateral thorax golden brown. Legs golden brown. Metathoracic leg of male with posterior fringe of long setae. Tibial spur formula 2,4,4. Forewing flat. Hind wing basal brush present in male.

Male. Preterminalic abdominal terga with anteromesal notch. Corematic structures present. Tergum IV with expanded lateral flanges, mesal coremata; mesal coremata an invaginated setose pouch, enclosing small, digitate eversible lobe. Tergum V without sclerotized modifications (Fig. 103F). Sternum VII without anteromesal process. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX with paired mesal ridges extending length of segment; posterior margin smoothly rounded; thinly sclerotized anteromesally (Fig. 103B); lateral ridge present; dorsal pleural setae approximately 8, ventral pleural setae approximately 6 (Fig. 103A); sternum IX without mesolateral ridges; sternum IX (Fig. 103C). Preanal appendage shorter than tergum X, but greater than 2/3 length, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 103A, B). Tergum X without basal lobes; basodorsal process long and digitate; basolateral processes absent; apex, in lateral view, truncate, in dorsal view, entire (Fig. 103A, B). Harpago slightly tapered; peglike setae few, apical (Fig. 103A, C). Phallotremal sclerites average size, longest dimension less than diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 103D, E).

Female. Unknown.

Holotype male: ECUADOR: Cotopaxi: Latacunga, 13 km W, 1372 m, 1.vii.1975, Langley & Cohen (NMNH).

Distribution. Ecuador.

Etymology. *Trichothylax*, from the Greek *trichos*, "hair" and *thylax*, "pouch," for the setae-enclosing membranous pouch of tergum IV.

Phylloicus yolandae, new species
Figs. 104, 116

Phylloicus yolandae is one of the prettiest and most unusual species of *Phylloicus*. With its partially clear forewings and dramatic coloration (Fig. 116), this species resembles clear-winged moth species found in the region. The male genitalia are recognized by the cordate tergum X and the digitate preanal appendage.

Adult. Forewing length 8.1 mm, n = 1.

Head dark brown or black. Maxillary palps dark brown or black. Antenna twice forewing length; dark brown, with narrow patches of pale sensilla on anteromesal surface of each flagellomere. Dorsal pterothorax dark brown or black; ventrolateral thorax dark brown. Legs dark brown. Metathoracic leg of male without posterior fringe. Tibial spur formula 2,4,4. Forewing flat; dark brown, or black; with two transverse bands; proximal band ivory, reaching posterior wing margin, at least 1/2 width of wing, interrupted by clear patch (Fig. 116); distal band ivory, not reaching either wing margin, 1/2 width of wing or less; with single basal stripe, ivory; large clear patch in center of wing (Fig. 116).

Male. Preterminalic abdominal terga without anteromesal notches. Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes. Sternum VIII similar to anterior sterna, sternum IX not elongate. Tergum IX without mesal ridge; posterior margin notched (Fig. 104B); lateral ridge present; dorsal pleural setae approximately 8, ventral pleural setae approximately 2 (Fig. 104A); sternum IX without mesolateral ridges; sternum IX (Fig. 104C). Preanal appendage shorter than tergum X, but greater than 2/3 length, narrowly elliptic, setae long, but not filamentous or longer than appendage (Fig. 104A, B). Tergum X without basal lobes; basodorsal process absent; basolateral processes absent; apex, in lateral view, acute, in dorsal view, notched, notch deep and round; setose basodorsally; broad basally, constricted at mid-length (Fig. 104A, B). Harpago sharply tapered; peglike setae few, apical (Fig. 104A, C). Phallic endotheca with paired apicolateral lobes, apicolateral lobes large and rounded; phallotremal sclerites small, longest dimension 1/2 diameter of phallobase; dorsal sclerite ovoid, in dorsal view horseshoe-shaped (Fig. 104D, E).

Female. Unknown.

Holotype male: BRAZIL: Paraná: Municipio Corbélia, Rio Novo, headwaters, 24°53'53”S, 53°14'54"W, 700 m, 4-7.iv.1998, Holzenthal & Huisman (MZUSP).

Distribution. Brazil.

Etymology. I am very pleased to name this species for Jolanda Huisman, who collected it.

Key to males of *Phylloicus*

The following key is not completely dichotomous, and alternatives within a couplet/triplet/quadruplet are not always mutually exclusive. This “fuzziness” allows the user to identify the same species using different sets of characters. I provide this key for the convenience of readers who do not have ready access to the Internet. However, for ease of use and accu-

racy of identification, I recommend an interactive key, which includes the females of *Phylloicus* species and any taxonomic changes subsequent to publication of this paper, maintained at http://www.entomology.umn.edu/museum/projects/. Upon request, I can provide updated conventional or interactive keys on paper or CD-ROM.

1. Corematic structures present (terga III, IV, or V with sclerotized processes or eversible membranous sacs) 2
   Corematic structures absent, terga III-V unmodified, without membranous lobes or sclerotized processes 29
2(1). Sternum VIII enclosing base of elongate sternum IX (Fig. 9A, C) 3
   Sternum VIII similar to anterior sterna, sternum IX not elongate (Fig. 11A, C). 24
3(2). Preanal appendage less than 2/3 length tergum X (Figs. 11A, 13A, 21A, 27A, 34A). 4
   Preanal appendage subequal to tergum X (Figs. 15A, 17A) 5
   Preanal appendage at least 1-1/2 times length tergum X (Figs. 9A, 19A, 28A, 99A) 17
4(3). Phallotremal sclerites average size, longest dimension less than diameter of phallobase (Fig. 21D, E); tergum III with sclerotized modifications; tergum X apex, in lateral view, rounded (Fig. 21A); forewing covered with golden setae..... ..... ***Phylloicus auratus*** n. sp.
   Phallotremal sclerites small, longest dimension 1/2 diameter of phallobase (Fig. 30D, E); tergum III without sclerotized modifications; tergum X apex, in lateral view, truncate (Fig. 30A,); forewing marked with pattern of colored setae..... ..... ***Phylloicus brevior*** Banks
5(3). Tergum IV with expanded lateral flanges (Fig. 64F)..... ..... ***Phylloicus maculatus*** (Banks)
   Tergum IV with paired posterior processes (Figs. 9F, 28F) 6
   Tergum IV with paired lateral sclerites (Figs. 9F, 28F)..... 12
6(5). Tergum IV posterior process short, rounded (Fig. 9F) 7
   Tergum IV posterior process truncate (Fig. 28F) 8
7(6). Forewing without discrete spots marking nygma or thyridium; tergum III without sclerotized modifications; tergum IV lateral sclerites absent; tergum X digitate basodorsal process present (Fig. 97A, B)..... ***Phylloicus quitacalzon*** n. sp.
   Forewing with small spot marking nygma only (Fig. 113); tergum III with sclerotized modifications; tergum IV lateral sclerites present (Fig. 86F); tergum X digitate basodorsal process absent (Fig. 86A, B)..... ***Phylloicus paucartambo*** n. sp.
8(6). Preanal appendage narrower apically (Figs. 11A, B; 25A, B) or cylindrical (Fig. 21A, B); preanal appendage setae long, but shorter than appendage and not filamentous (Fig. 11A, B) 9
   Preanal appendage widest apically (Fig. 9A, B); preanal appendage setae filamen-

tous, longer than appendage (Fig. 9A, B) 11

9(8). Segment IX lateral ridge absent (Fig. 9A); mesal coremata absent; tergum IX with paired mesal ridges 10

Segment IX lateral ridge present (Fig. 84A); mesal coremata present (Fig. 84F); tergum IX with single mesal ridge (Fig. 84B) ..... ***Phylloicus passulatus*** n. sp.

10(9). Tergum III without sclerotized modifications; tergum IV lateral sclerites absent; tergum X digitate basodorsal process present (Fig. 57A, B); phallic endotheca basolateral lobes multilobed (Fig. 57D, E) ..... ***Phylloicus holzenthali*** n. sp.

Tergum III with sclerotized modifications; tergum IV lateral sclerites present (Fig. 53F); tergum X digitate basodorsal process absent (Fig. 53A, B); phallic endotheca basolateral lobes large and round (Fig. 53D, E) ..... ***Phylloicus flinti*** n. sp.

11(8). Tergum V without sclerotized modifications; tergum X digitate basodorsal process absent (Fig. 90A, B); tergum IX with paired mesal ridges (Fig. 90B); forewing proximal band white ..... ***Phylloicus pirapo*** n. sp.

Tergum V with sclerotized processes (Fig. 88F); tergum X digitate basodorsal process present (Fig. 88A, B); tergum IX without mesal ridges (Fig. 88B); forewing proximal band golden ..... ***Phylloicus perija*** n. sp.

12(5). Tergum IV lateral sclerite spatulate, directed laterally (Figs. 43F, 53F); tergum V without sclerotized modifications 13

Tergum IV lateral sclerite contorted, setose apically (Fig. 47F); tergum V with sclerotized processes (Fig. 88F) or heavy ridges (Figs. 38F, 47F) 16

13(12). Segment IX lateral ridge absent (Fig. 9A) 14

Segment IX lateral ridge present (Fig. 21A) 15

14(13). Preanal appendage cylindrical (Fig. 53A, B); mesal coremata absent (Fig. 53F); preanal appendage setae long, but shorter than appendage and not filamentous (Fig. 53A, B); tergum X apex, in lateral view, truncate (Fig. 53A) ..... ***Phylloicus flinti*** n. sp.

Preanal appendage widest apically (Fig. 90A, B); mesal coremata present; preanal appendage setae filamentous, longer than appendage (Fig. 90A, B); tergum X apex, in lateral view, rounded (Fig. 90A) ..... ***Phylloicus pirapo*** n. sp.

15(13). Forewing without discrete spots marking nygma or thyridium; tergum III without sclerotized modifications (Fig. 84F); sternum VIII without posteromesal process or posterior margin indistinct (Fig. 84C); tergum X digitate basodorsal process present (Fig. 84A, B) ..... ***Phylloicus passulatus*** n. sp.

Forewing with small spot marking nygma only (Fig. 113); tergum III with sclerotized modifications (Fig. 86F); sternum VIII with posteromesal process (Fig. 86C); tergum X digitate basodorsal process absent (Fig. 86A, B) ..... ***Phylloicus paucartambo*** n. sp.

16(12). Sternum VII without anteromesal process; segment IX lateral ridge present (Fig. 47A); preanal appendage narrower apically or cylindrical (Fig. 47A, B); tergum

III without sclerotized modifications ..... ***Phylloicus ephippium*** n. sp.
Sternum VII with short, acute anteromesal process (Fig. 40); segment IX lateral ridge absent (Fig. 88A); preanal appendage widest apically (Fig. 88A, B); tergum III with sclerotized modifications (Fig. 88F) ..... ***Phylloicus perija*** n. sp.

17(3). Tergum IV with expanded lateral flanges (Fig. 55F). ***Phylloicus hansoni*** Denning
Tergum IV with paired posterior processes (Figs. 9F, 28F) 18
Tergum IV with paired lateral sclerites (Figs. 9F, 28F) 21

18(17). Tergum IV posterior process short, rounded (Fig. 9F) .....
..... ***Phylloicus abdominalis*** (Ulmer)
Tergum IV posterior process truncate (Fig. 28F) 19

19(18). Segment IX lateral ridge absent (Fig. 99A); tergum III with sclerotized modifications; mesal coremata present (Fig. 99F); sternum VIII without posteromesal process or posterior margin indistinct (Fig. 99C) ..... ***Phylloicus spectabilis*** Martynov
Segment IX lateral ridge present (Fig. 21A); tergum III without sclerotized modifications; mesal coremata absent; sternum VIII with posteromesal process (Figs. 9C, 38C, 47C, 57C, 86C) 20

20(19). Forewing with two transverse bands, without discrete spots marking nygma or thyridium (Fig. 109); tergum V without sclerotized modifications; tergum IX with single mesal ridge (Fig. 43B) ..... ***Phylloicus elegans*** Hogue and Denning
Forewing with single transverse band (Fig. 106), with small spot marking nygma only; tergum V with heavy ridges (Fig. 38F); tergum IX with paired mesal ridges (Fig. 38B) ..... ***Phylloicus cressae*** n. sp.

21(17). Tergum IV lateral sclerite narrowed apically (Figs. 9F, 28F); forewing with small spot marking nygma only 22
Tergum IV lateral sclerite spatulate, directed laterally (Figs. 43F, 53F); forewing without discrete spots marking nygma or thyridium 23

22(21). Segment IX lateral ridge absent (Fig. 9A); mesal coremata present (Fig. 9F); tergum V without sclerotized modifications; phallic endotheca basolateral lobes tapered apically (Fig. 9D, E) ..... ***Phylloicus abdominalis*** (Ulmer)
Segment IX lateral ridge present (Fig. 38A); mesal coremata absent; tergum V with heavy ridges (Fig. 38F); phallic endotheca basolateral lobes large and round (Fig. 38D, E) ..... ***Phylloicus cressae*** n. sp.

23(21). Segment IX lateral ridge absent (Fig. 99A); tergum III with sclerotized modifications; mesal coremata present (Fig. 99F); sternum VIII without posteromesal process or posterior margin indistinct (Fig. 99C) ..... ***Phylloicus spectabilis*** artynov
Segment IX lateral ridge present (Fig. 43A); tergum III without sclerotized modifications; mesal coremata absent (Fig. 43F); sternum VIII with posteromesal process (Fig. 43C) ..... ***Phylloicus elegans*** Hogue and Denning

24(2). Tergum IV with expanded lateral flanges (Figs. 15F, 21F) 25
Tergum IV with paired posterior processes (Fig. 28F) .. ***Phylloicus blahniki*** n. sp.

Tergum IV with paired lateral sclerites (Figs. 9F, 28F) 28

25(24). Tibial spurs 2,4,3; forewing apical third folded obliquely toward midline (Fig. 118); tergum X sagittate basally (Fig. 15B); harpago sharply tapered (Fig. 15A, C) ..... ***Phylloicus aeneus*** (Hagen)

Tibial spurs 2,4,4; forewing flat (without oblique fold); tergum X without basal lobes (Figs. 9B, 11B); harpago rounded apically (Figs. 9A, C; 19A, C; 21A, C; 32A, C) 26

26(25). Phallotremal sclerites very large, longest dimension twice diameter of phallobase (Fig. 36D, E); preterminalic abdominal terga without anteromesal notches; preanal appendage widest apically (Fig. 36A, B); mesal coremata absent ..... ***Phylloicus cordatus*** n. sp.

Phallotremal sclerites average size, longest dimension less than diameter of phallobase (Fig. 9D, E); preterminalic abdominal terga with anteromesal notch; preanal appendage narrower apically (Figs. 11A, B; 25A, B) or cylindrical (Fig. 21A, B); mesal coremata present 27

27(26). Preanal appendage subequal to tergum X (Fig. 103A); sternum VII without anteromesal process; segment IX lateral ridge present (Fig. 103A); tergum X digitate basodorsal process present (Fig. 103A, B) ..... ***Phylloicus trichothylax*** n. sp.

Preanal appendage at least 1-1/2 times length tergum X (Fig. 49A); sternum VII with short, acute anteromesal process (Fig. 40); segment IX lateral ridge absent (Fig. 49A); tergum X digitate basodorsal process absent (Fig. 49A, B) ..... ***Phylloicus farri*** Flint

28(24). Tergum IV lateral sclerite narrowed apically (Fig. 28F) ..... ***Phylloicus blahniki*** n. sp.

Tergum IV lateral sclerite spatulate, directed laterally and with acute basomesal process (Fig. 74F) ..... ***Phylloicus munozi*** n. sp.

29(1). Tibial spurs 2,2,2 ..... ***Phylloicus quadridigitatus*** n. sp.

Tibial spurs 2,4,2 30

Tibial spurs 2,4,3 37

Tibial spurs 2,4,4 39

30(29). Phallotremal sclerites very large, longest dimension twice diameter of phallobase (Fig. 17D, E); dorsal sclerite of phallotremal sclerites two-armed, in lateral view U-shaped (Fig. 17D, E); tergum X digitate basodorsal process present 31

Phallotremal sclerites average size, longest dimension less than diameter of phallobase (Fig. 9D, E); dorsal sclerite of phallotremal sclerites ovoid, narrow, or rectangular, (Figs. 9D, E; 15D, E; 30D, E); tergum X digitate basodorsal process absent 36

31(30). Preanal appendage less than 2/3 length tergum X (Figs. 11A, 13A, 21A, 27A, 34A) 32

Preanal appendage subequal to tergum X (Figs. 15A, 17A) 33

32(31). Segment IX lateral ridge absent (Fig. 41A); tergum IX with paired mesal ridges; tergum X apex, in lateral view, acute (Fig. 41A)..... ***Phylloicus cubanus*** Banks
Segment IX lateral ridge present (Fig. 59A); tergum IX with single mesal ridge; tergum X apex, in lateral view, rounded (Fig. 59A).. ***Phylloicus iridescens*** Banks

33(31). Preterminalic abdominal terga without anteromesal notches; harpago sharply tapered (Fig. 17A, C); tergum X basolateral processes long, length at least twice diameter (Fig. 17B); sternum IX without mesolateral ridges (Fig. 17C) ..... ***Phylloicus amazonas*** n. sp.
Preterminalic abdominal terga with anteromesal notch; harpago rounded apically (Figs. 9A, C; 19A, C; 21A, C; 32A, C); tergum X basolateral processes absent (Fig. 13B); sternum IX with paired mesolateral ridges (Fig. 15C) 34

34(33). Forewing length up to 9 mm..... ***Phylloicus pulchrus*** Flint
Forewing length 9 to 16 mm..... 35

35(34). Segment IX lateral ridge absent (Fig. 102A); tergum IX with single mesal ridge; tergum X apex, in lateral view, rounded (Fig. 102A); forewing marked with pattern of colored setae (Fig. 115)..... ***Phylloicus superbus*** Banks
Segment IX lateral ridge present (Fig. 34A); tergum IX with paired mesal ridges (Fig. 34B); tergum X apex, in lateral view, truncate (Fig. 34A); forewing without colored markings ..... ***Phylloicus chalybeus*** (Hagen)

36(30). Segment IX lateral ridge absent (Fig. 32A); tergum IX with single mesal ridge; tergum X apex, in lateral view, truncate (Fig. 32A); forewing marked with pattern of colored setae..... ***Phylloicus bromeliarum*** Müller
Segment IX lateral ridge present (Fig. 100A); tergum IX without mesal ridges (Fig. 100B); tergum X apex, in lateral view, rounded (Fig. 100A); forewing without colored markings ..... ***Phylloicus spinulacolis*** n. sp.

37(29). Dorsal sclerite of phallotremal sclerites ovoid, narrow, or rectangular, (Fig. 76D, E); tergum IX without mesal ridges (Fig. 76B).... ***Phylloicus nigripennis*** (Banks)
Dorsal sclerite of phallotremal sclerites two-armed, in lateral view U-shaped (Fig. 17D, E); tergum IX with single mesal ridge..... 38

38(37). Sternum VII without anteromesal process; segment IX lateral ridge absent (Fig. 70A); tergum X digitate basodorsal process present (Fig. 70A, B); harpago rounded apically (Fig. 70A, C)..... ***Phylloicus mexicanus*** (Banks)
Sternum VII with short, acute anteromesal process (Fig. 40); segment IX lateral ridge present (Fig. 80A); tergum X digitate basodorsal process absent (Fig. 80A, B); harpago sharply tapered (Fig. 80A, C) ..... ***Phylloicus panamensis*** n. sp.

39(29). Sternum VIII enclosing base of elongate sternum IX (Fig. 9A, C)..... 40
Sternum VIII similar to anterior sterna, sternum IX not elongate (Fig. 11A, C)..... 47

40(39). Preanal appendage less than 2/3 length tergum X (Figs. 11A, 13A, 21A, 27A, 34A) 41

Preanal appendage subequal to tergum X (Figs. 15A, 17A) 43

41(40). Preterminalic abdominal terga without anteromesal notches; segment IX lateral ridge absent (Fig. 13A); preanal appendage as long as wide, rounded apically (Fig. 13A, B); forewing without colored markings..... ***Phylloicus adamsae*** n. sp.
Preterminalic abdominal terga with anteromesal notch; segment IX lateral ridge present (Fig. 21A); preanal appendage narrower apically (Figs. 11A, B; 25A, B) or cylindrical (Fig. 21A, B); forewing marked with pattern of colored setae..... 42

42(41). Sternum VIII with posteromesal process (Fig. 38C); tergum X apex, in lateral view, rounded (Fig. 38A); tergum X apex, in dorsal view, notched less than 1/2 segment length (Fig. 38B); forewing with two transverse bands (Fig. 107) ..... ***Phylloicus bicarinatus*** n. sp.
Sternum VIII without posteromesal process or posterior margin indistinct (Fig. 45C); tergum X apex, in lateral view, truncate (Fig. 45A); tergum X apex, in dorsal view, entire (Fig. 45B); forewing with longitudinal stripes ..... ***Phylloicus elektoros*** n. sp.

43(40). Forewing length up to 9 mm..... ***Phylloicus monticolus*** Flint
Forewing length 9 to 16 mm..... 44
Forewing length 16 mm or more ..... ***Phylloicus llaviuco*** n. sp.

44(43). Preanal appendage narrower apically (Figs. 11A, B; 25A, B) or cylindrical (Fig. 21A, B) 45
Preanal appendage widest apically (Fig. 9A, B)..... 46

45(44). Segment IX lateral ridge absent (Fig. 72A); preanal appendage setae long, but shorter than appendage and not filamentous (Fig. 72A, B); tergum X digitate basodorsal process present; tergum X apex, in lateral view, truncate (Fig. 72A) .... ***Phylloicus monticolus*** Flint
Segment IX lateral ridge present (Fig. 68A); preanal appendage setae filamentous, longer than appendage (Fig. 68A, B); tergum X digitate basodorsal process absent (Fig. 68A, B); tergum X apex, in lateral view, rounded (Fig. 68A) ..... ***Phylloicus major*** Müller

46(44). Sternum VII without anteromesal process; forewing with small spot marking thyridium only; tergum IX with paired mesal ridges (Fig. 19B); tergum X apex, in lateral view, acute (Fig. 19A)..... ***Phylloicus angustior*** Ulmer
Sternum VII with short, acute anteromesal process (Fig. 40); forewing without discrete spots marking nygma or thyridium (Fig. 109); tergum IX without mesal ridges (Fig. 61B); tergum X apex, in lateral view, truncate (Fig. 61A)..... ***Phylloicus lituratus*** Banks

47(39). Phallotremal sclerites very large, longest dimension twice diameter of phallobase (Fig. 82D, E)..... ***Phylloicus paprockii*** n. sp.
Phallotremal sclerites average size, longest dimension less than diameter of phallobase (Fig. 9D, E)..... 48

Phallotremal sclerites small, longest dimension 1/2 diameter of phallobase (Fig. 104D, E)..... ***Phylloicus yolandae*** n. sp.

48(47). Preanal appendage less than 2/3 length tergum X (Figs. 11A, 13A, 21A, 27A, 34A) 49

Preanal appendage subequal to tergum X (Figs. 15A, 17A) 50

49(48). Forewing length up to 9 mm; harpago sharply tapered (Fig. 23A, C); tergum IX with single mesal ridge (Fig. 23B); tergum X basolateral processes short, length less than or equal to diameter (Fig. 23B)..... ***Phylloicus bertioga*** n. sp.

Forewing length 9 to 16 mm; harpago large, nearly equal to coxopodite and with base indistinct from coxopodite (Fig. 11A, C); tergum IX without mesal ridges (Fig. 11B); tergum X basolateral processes long, length at least twice diameter (Fig. 11B)..... ***Phylloicus aculeatus*** (Blanchard)

Forewing length 16 mm or more; harpago rounded apically (Fig. 66A, C); tergum IX with paired mesal ridges (Fig. 66B); tergum X basolateral processes absent (Fig. 66B)..... ***Phylloicus magnus*** Banks

50(48). Forewing length up to 9 mm..... 51

Forewing length 9 to 16 mm..... 53

Forewing length 16 mm or more ..... ***Phylloicus llaviuco*** n. sp.

51(50). Harpago rounded apically (Fig. 51A, C); tergum X apex, in dorsal view, entire (Fig. 51B)..... ***Phylloicus fenestratus*** Flint

Harpago sharply tapered (Figs. 15A, C; 27A, C); tergum X apex, in dorsal view, notched less than 1/2 segment length; (Fig. 9B)..... 52

52(51). Tergum IX with single mesal ridge (Fig. 78B); tergum X apex, in lateral view, rounded (Fig. 78A); forewing marked with pattern of colored setae .... ***Phylloicus obliquus*** Navás

Tergum IX with paired mesal ridges (Fig. 92B); tergum X apex, in lateral view, acute (Fig. 92A); forewing without colored markings .... ***Phylloicus plaumanni*** Flint

53(50). Harpago rounded apically (Fig. 51A, C); tergum X apex, in dorsal view, entire (Fig. 51B)..... ***Phylloicus fenestratus*** Flint

Harpago sharply tapered (Figs. 15A, C; 27A, C); tergum X apex, in dorsal view, notched less than 1/2 segment length; (Fig. 9B)..... 54

54(53). Tergum IX with single mesal ridge; tergum X apex, in lateral view, rounded (Figs. 59A, 64A); forewing marked with pattern of colored setae 55

Tergum IX with paired mesal ridges (Fig. 92B); tergum X apex, in lateral view, acute (Fig. 92A); forewing without colored markings .... ***Phylloicus plaumanni*** Flint

55(54). Forewing with two transverse bands (Figs. 105, 107, 117)..... ..... ***Phylloicus obliquus*** Navás

Forewing with single transverse band (Fig. 106) ..... ***Phylloicus bidigitatus*** n. sp.

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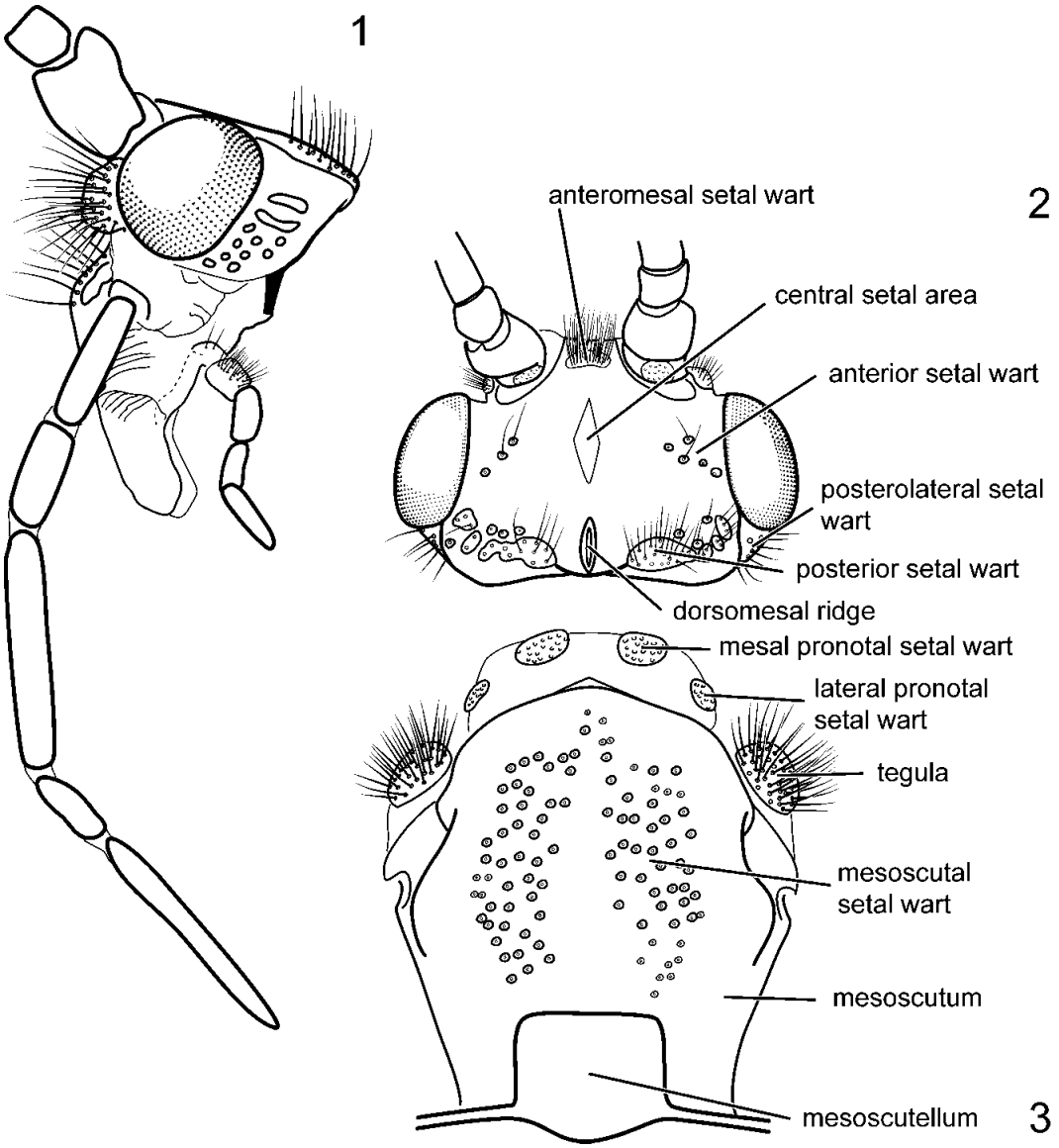
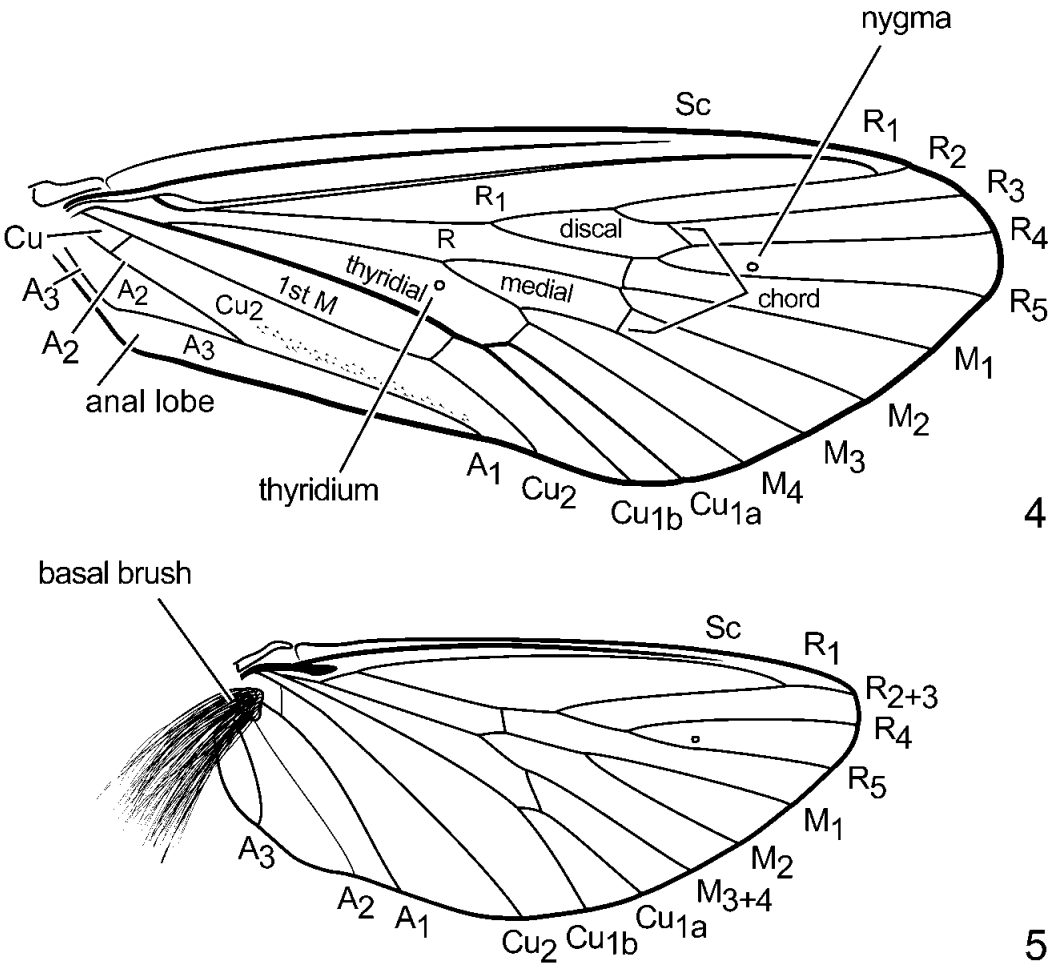
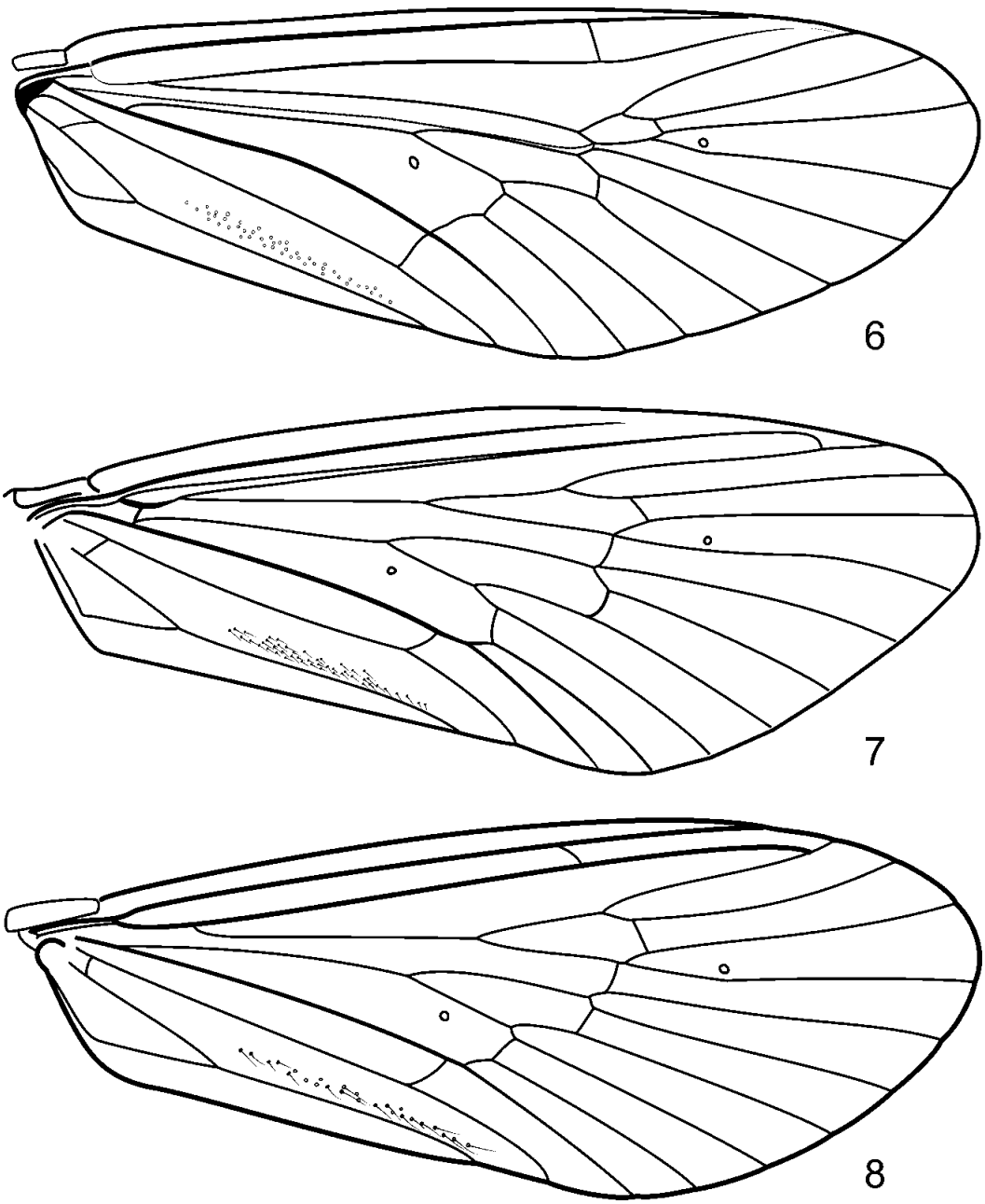


FIGURES 1-3. —**1**, *Phylloicus aeneus* (UMSP000034901). Head, lateral. —**2**, *Phylloicus mexicanus* (UMSP000041378). Head, dorsal; — **3,** *Phylloicus mexicanus* (UMSP000041378) Pro- and mesothorax, dorsal.



FIGURES 4-5. *Phylloicus adominalis* (UMSP000027441). Wings. —**4**, forewing; —**5**, hind wing.



FIGURES 6-8. —**6**, *Phylloicus aeneus* (UMSP000000137). Forewing. —**7**, *Phylloicus angustior* (UMSP000027443). Forewing. —**8**, *Phylloicus pulchrus* (UMSP000066748). Forewing.

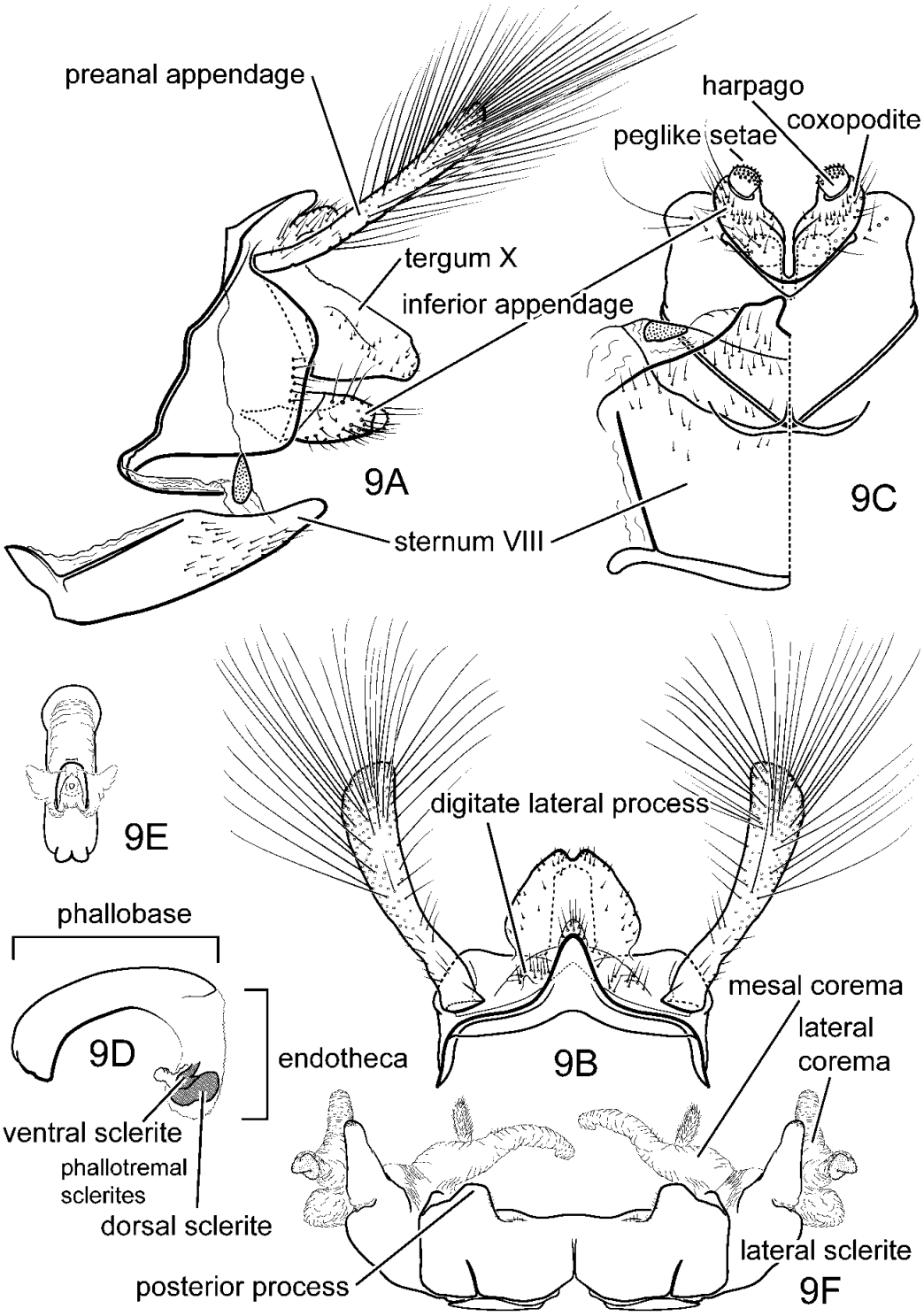


FIGURE 9. *Phylloicus adominalis*. Male (UMSP000067344): A—lateral view; B—dorsal view; C —sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, caudoventral view; F—segment IV, dorsal view.

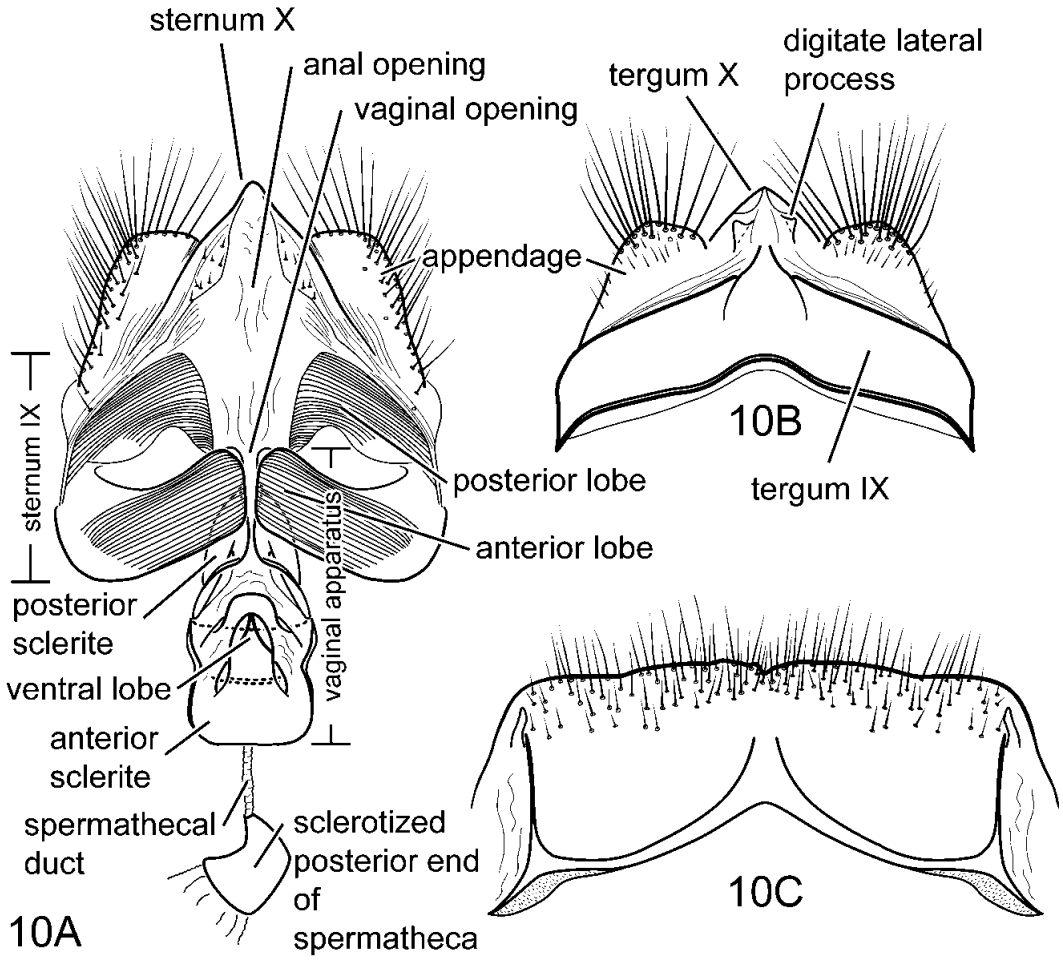


FIGURE 10. *Phylloicus adominalis*. Female (UMSP000000285): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

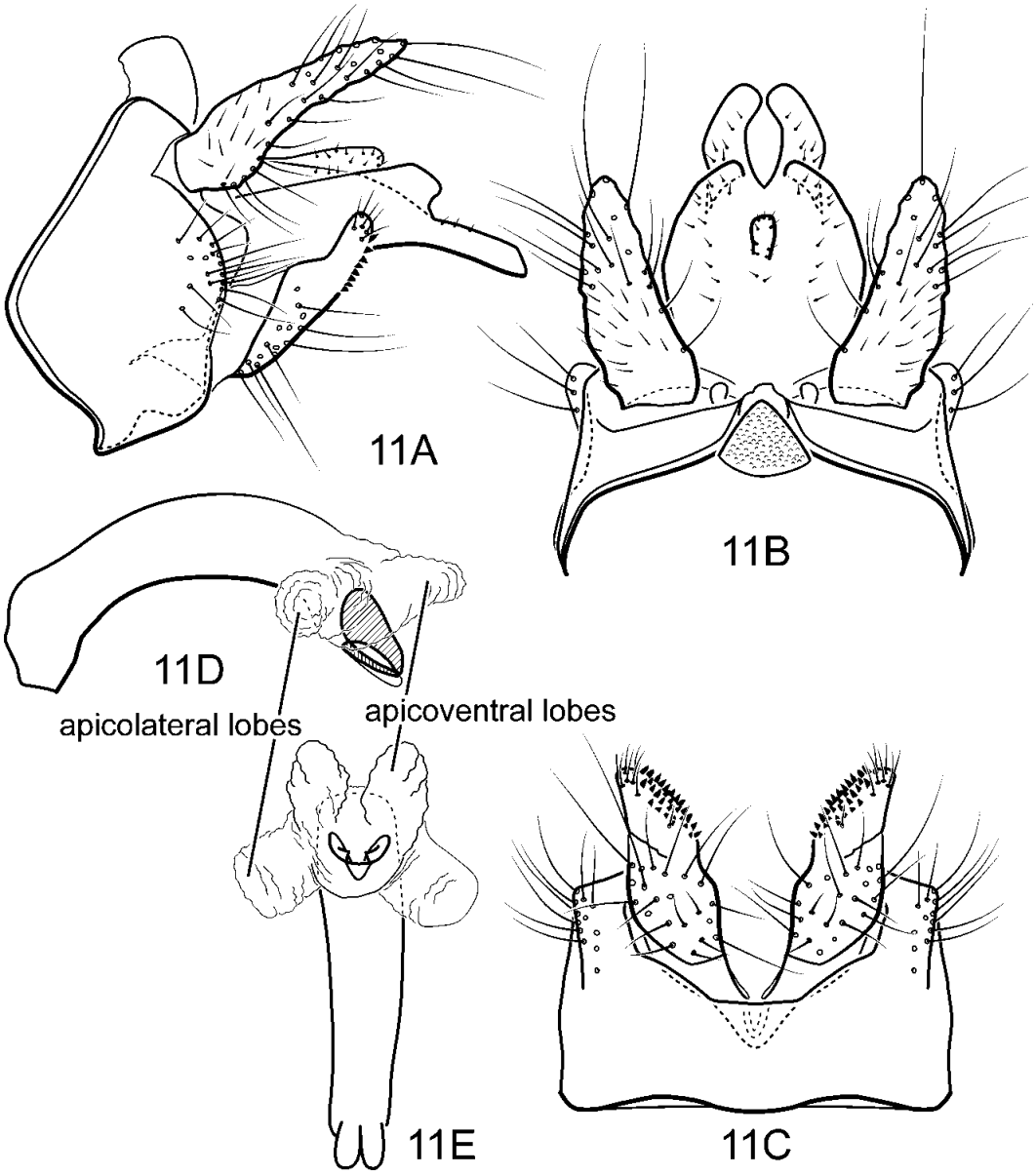


FIGURE 11. *Phylloicus aculeatus*. Male (UMSP000010175): A—lateral view; B—dorsal view; C—ventral view; D—phallus, lateral view; E—phallus, ventral view.

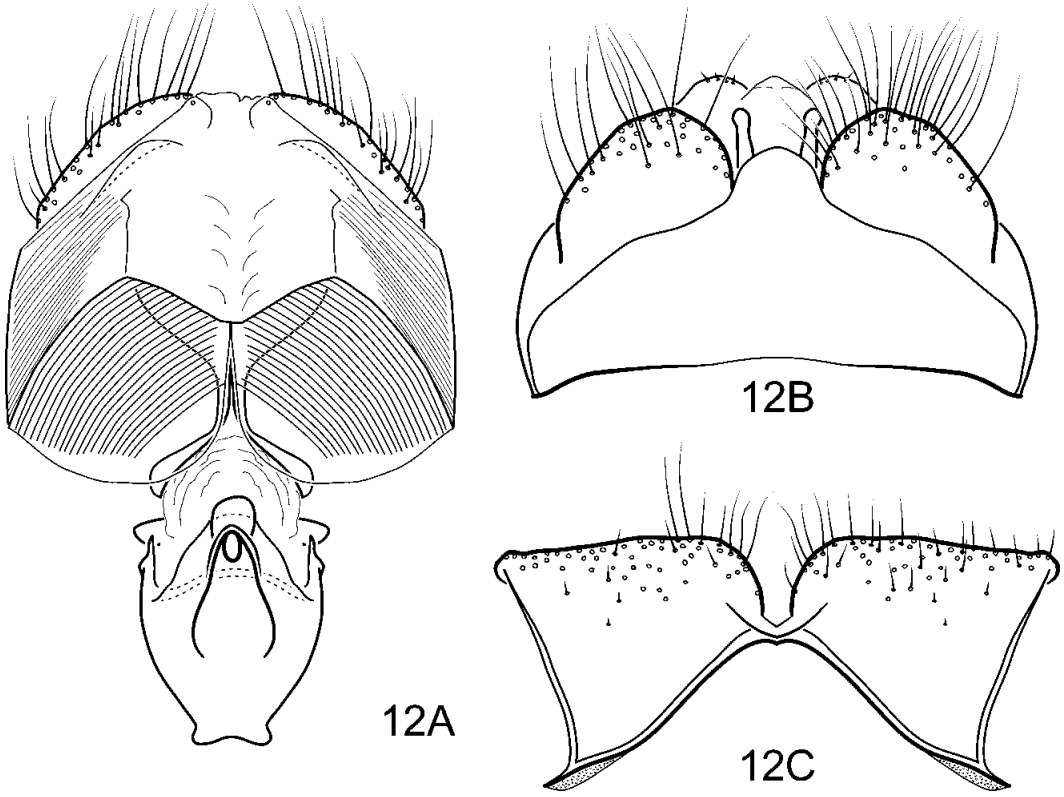


FIGURE 12. *Phylloicus aculeatus*. Female (UMSP000041398): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

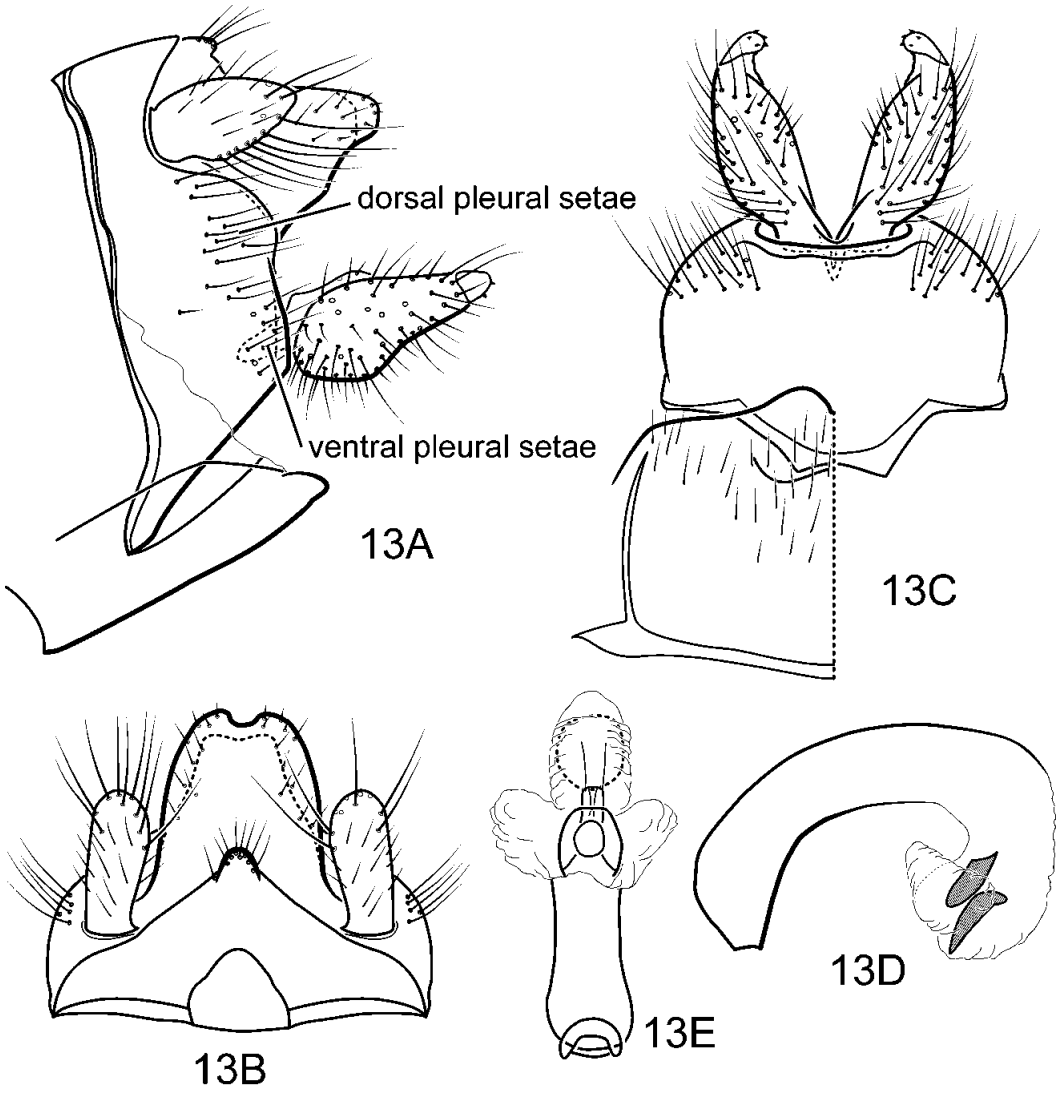


FIGURE 13. *Phylloicus adamsae*. Male (BIOLAT/TRIC000000096): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view.

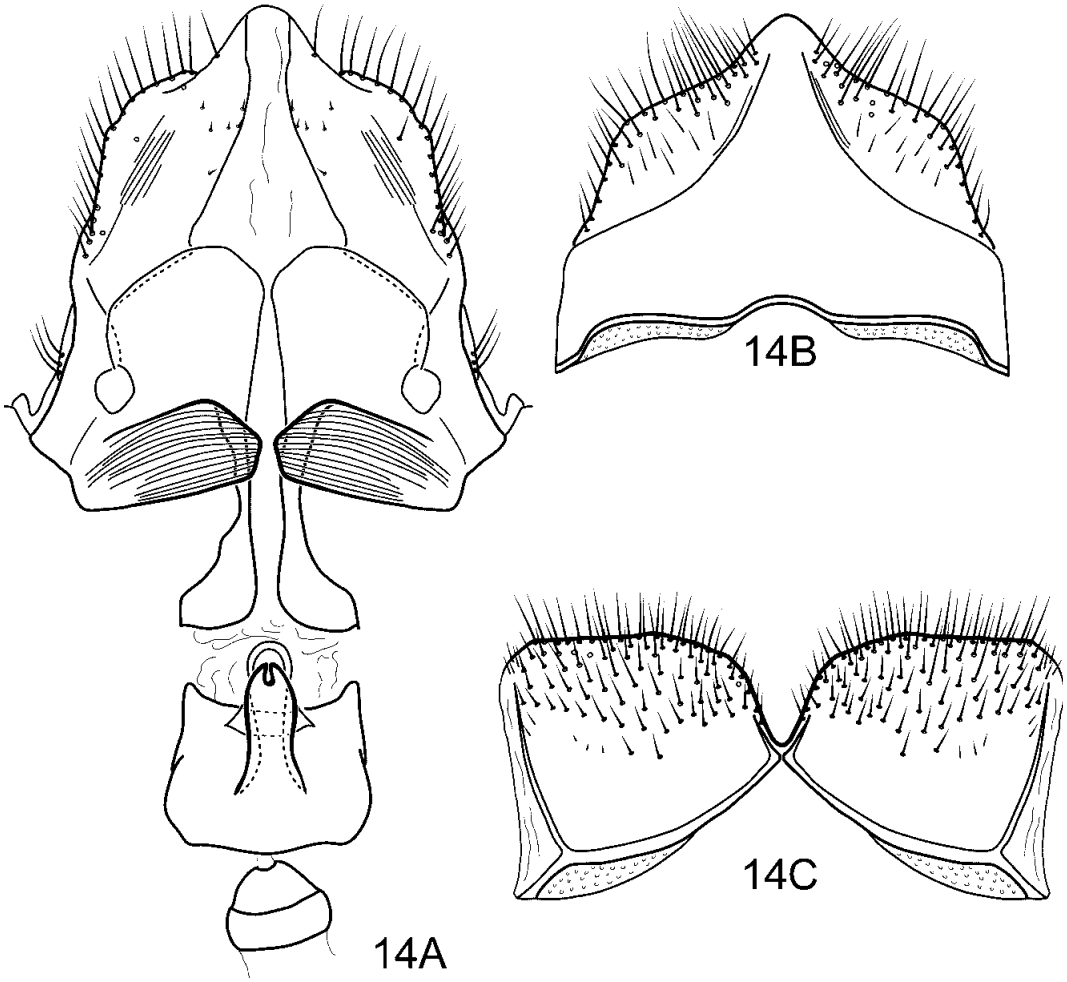


FIGURE 14. *Phylloicus adamsae*. Female (BIOLAT/TRIC000000095): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

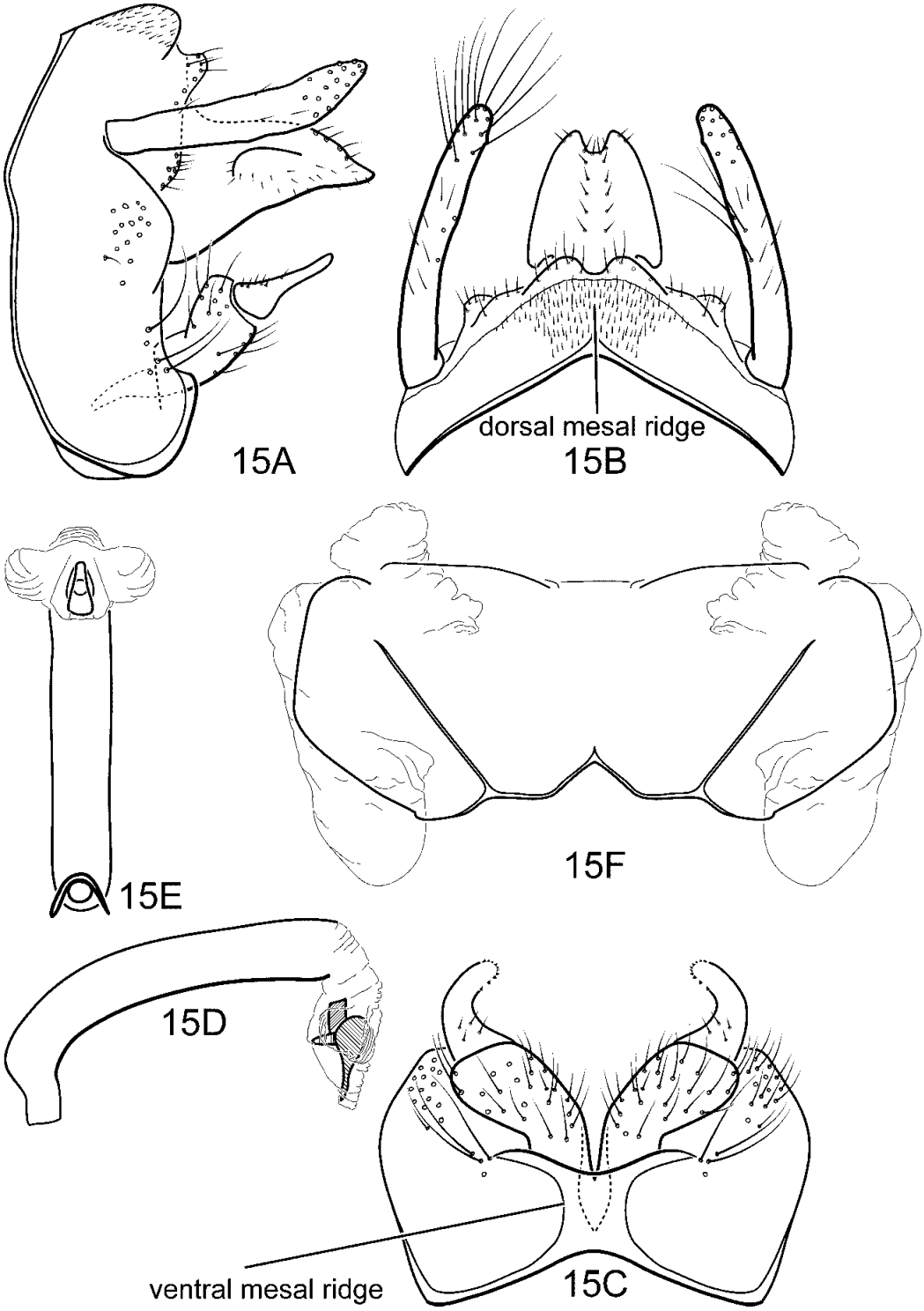


FIGURE 15. *Phylloicus aeneus*. Male (A-C, *P. centralus* holotype; D-F, UMSP000067471): A— lateral view; B—dorsal view; C—ventral view; D—phallus, lateral view; E—phallus, ventral view; F—segment IV, dorsal view.

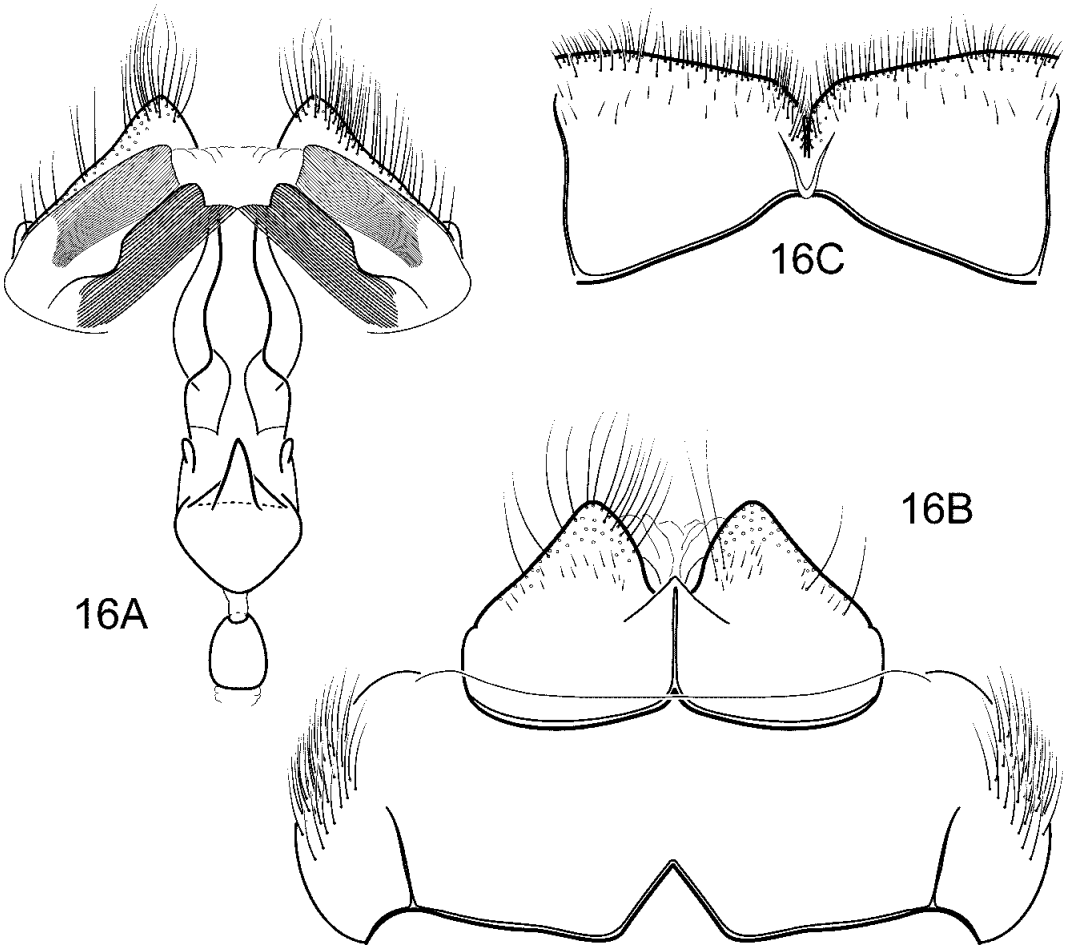


FIGURE 16. *Phylloicus aeneus*. Female (*P. ornatus* holotype): A—sterna IX, X and vaginal apparatus, ventral view; B—terga VIII-X, dorsal view; C—sternum VIII, ventral view.

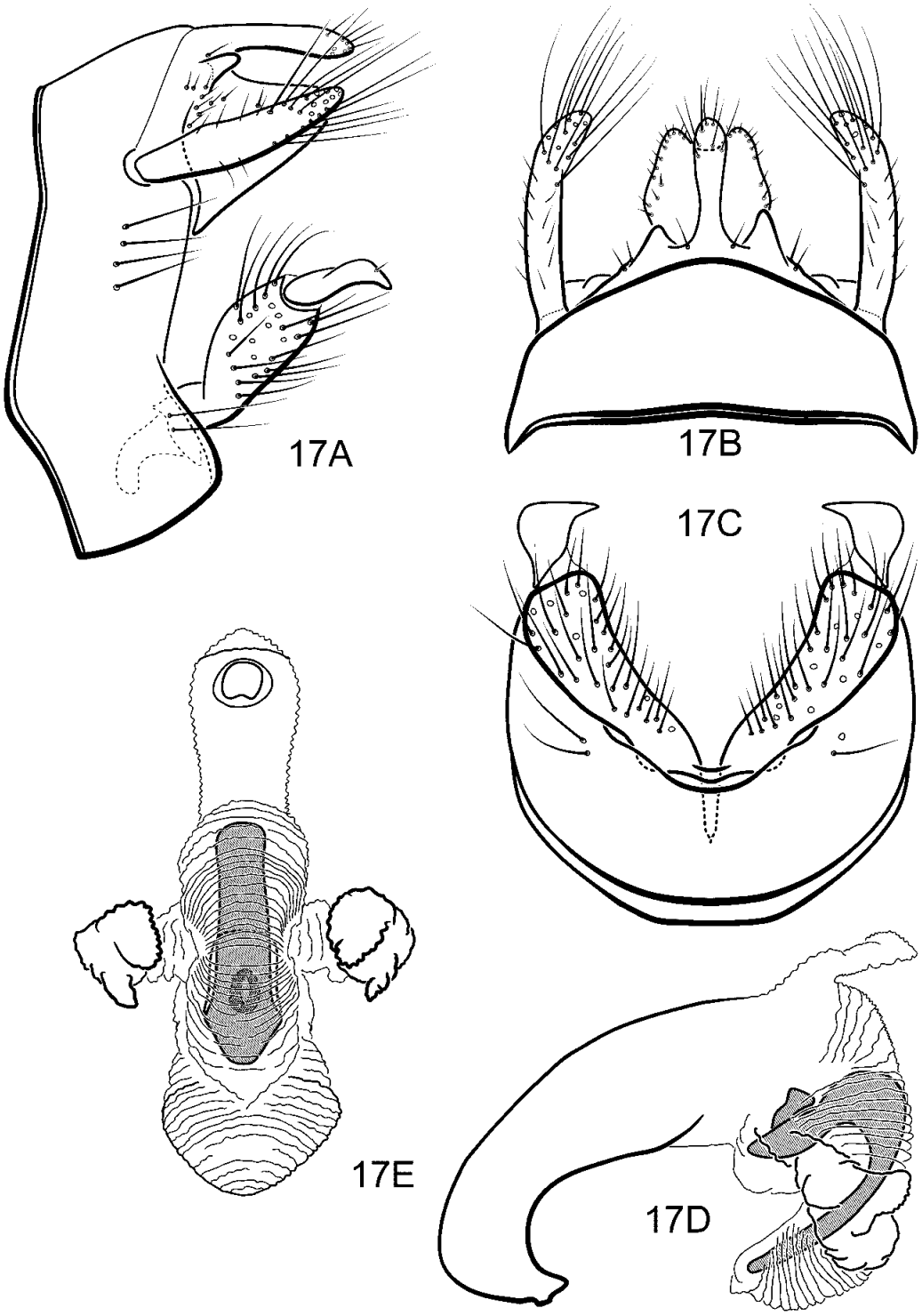


FIGURE 17. *Phylloicus amazonas*. Male (holotype): A—lateral view; B—dorsal view; C—ventral view; D—phallus, lateral view; E—phallus, caudoventral view.

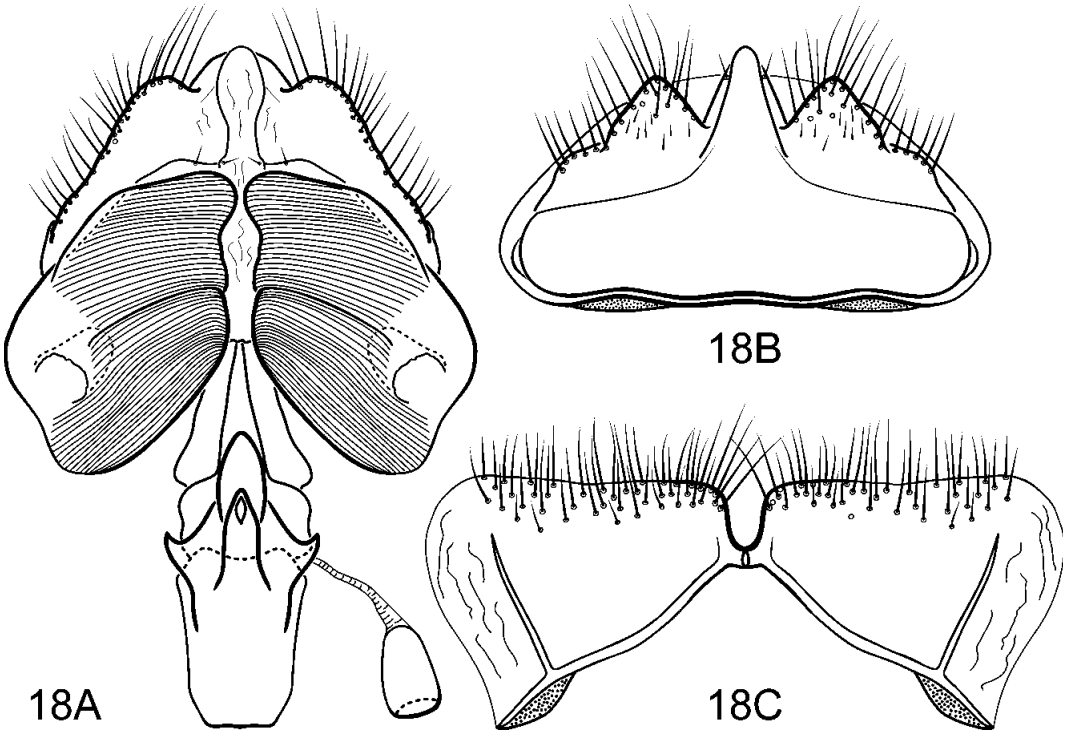


FIGURE 18. *Phylloicus amazonas*. Female (UMSP000068387): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

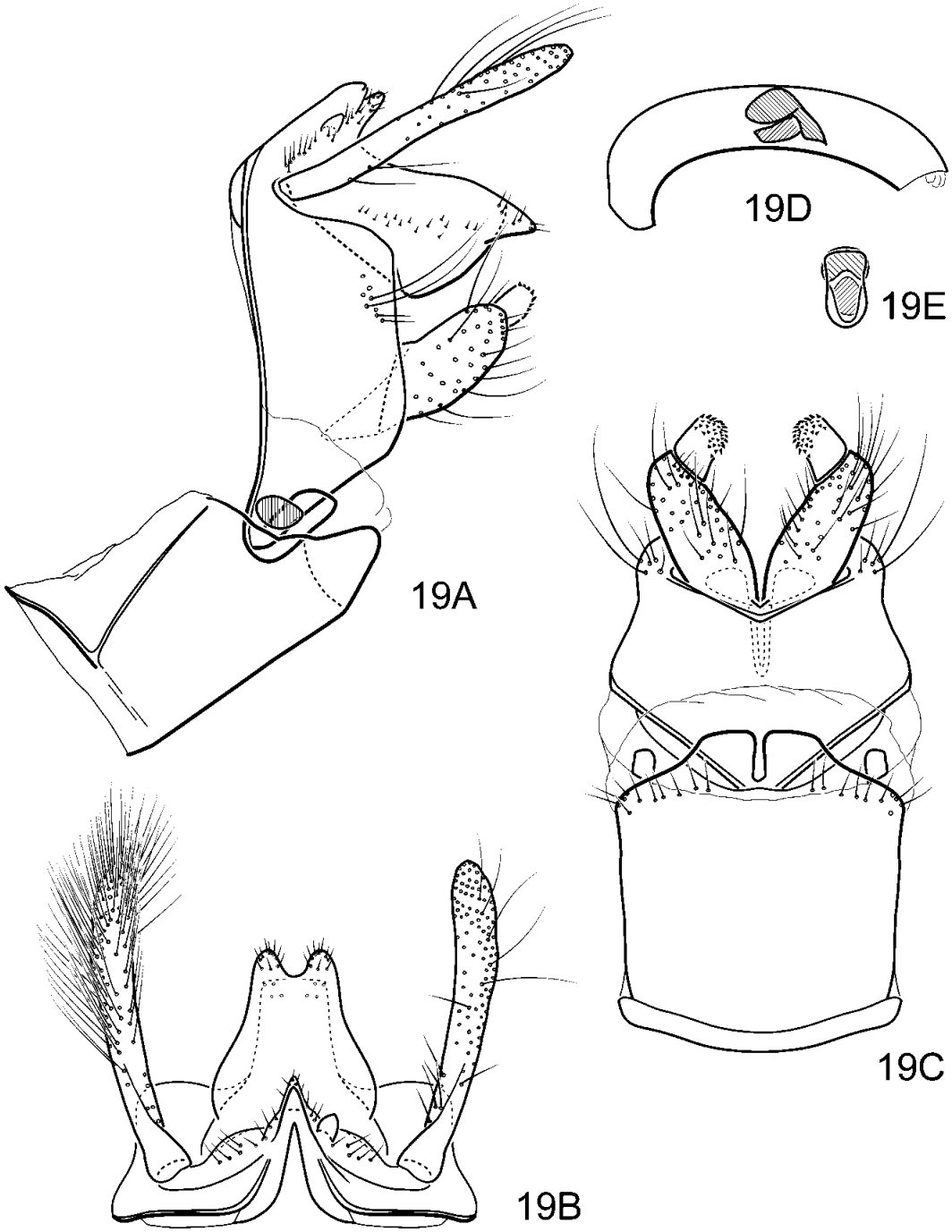


FIGURE 19. *Phylloicus angustior*. Male (holotype): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view.

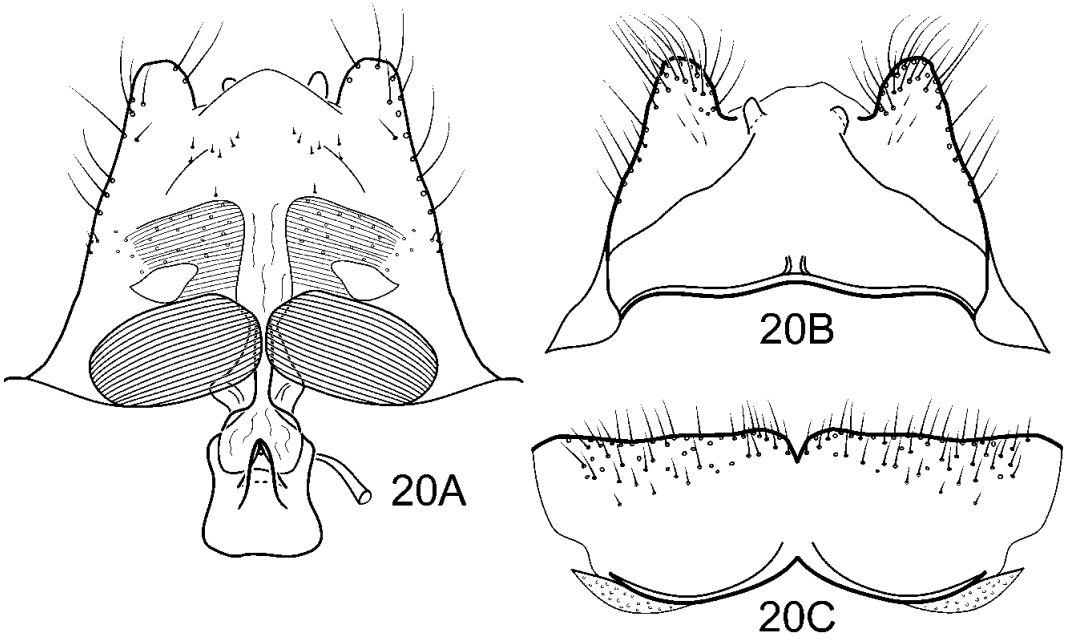


FIGURE 20. *Phylloicus angustior.* Female (UMSP000067554): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

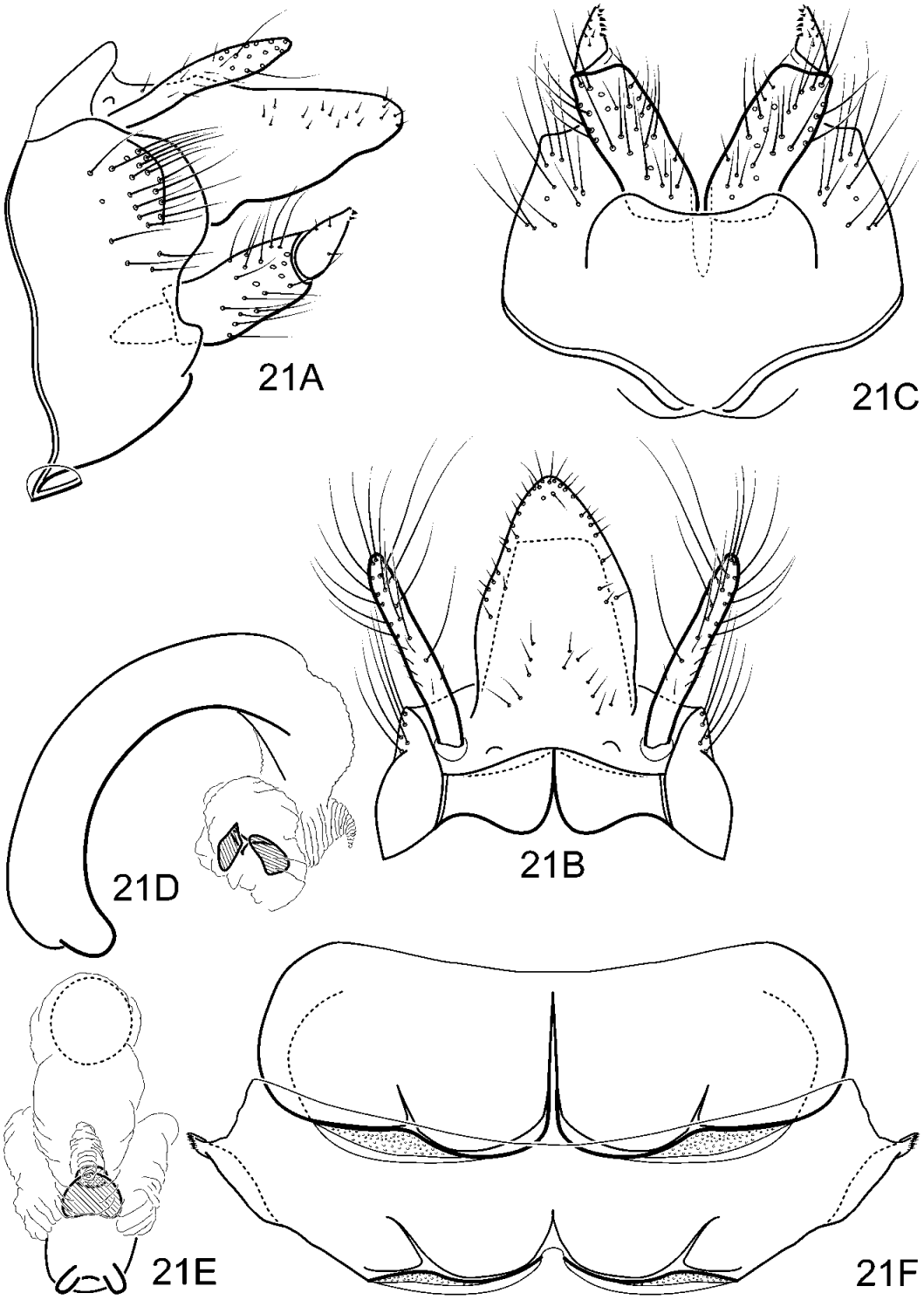


FIGURE 21. *Phylloicus auratus*. Male (UMSP000063321): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, caudoventral view; F—terga III and IV, dorsal view.

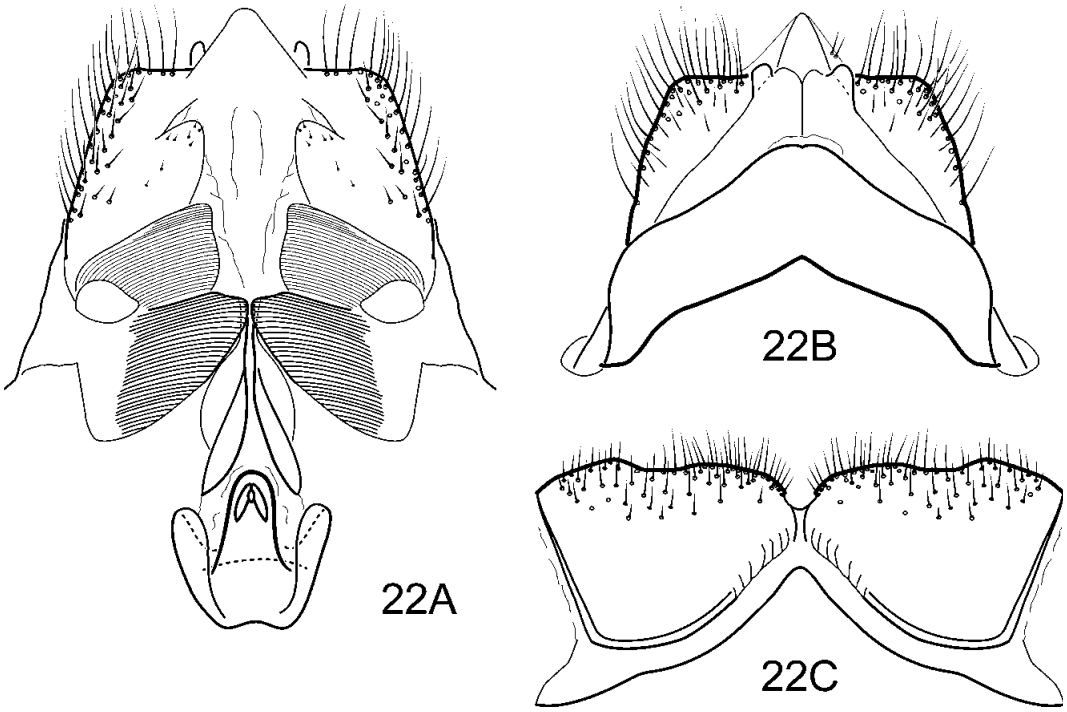


FIGURE 22. *Phylloicus auratus*. Female (UMSP000010146): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

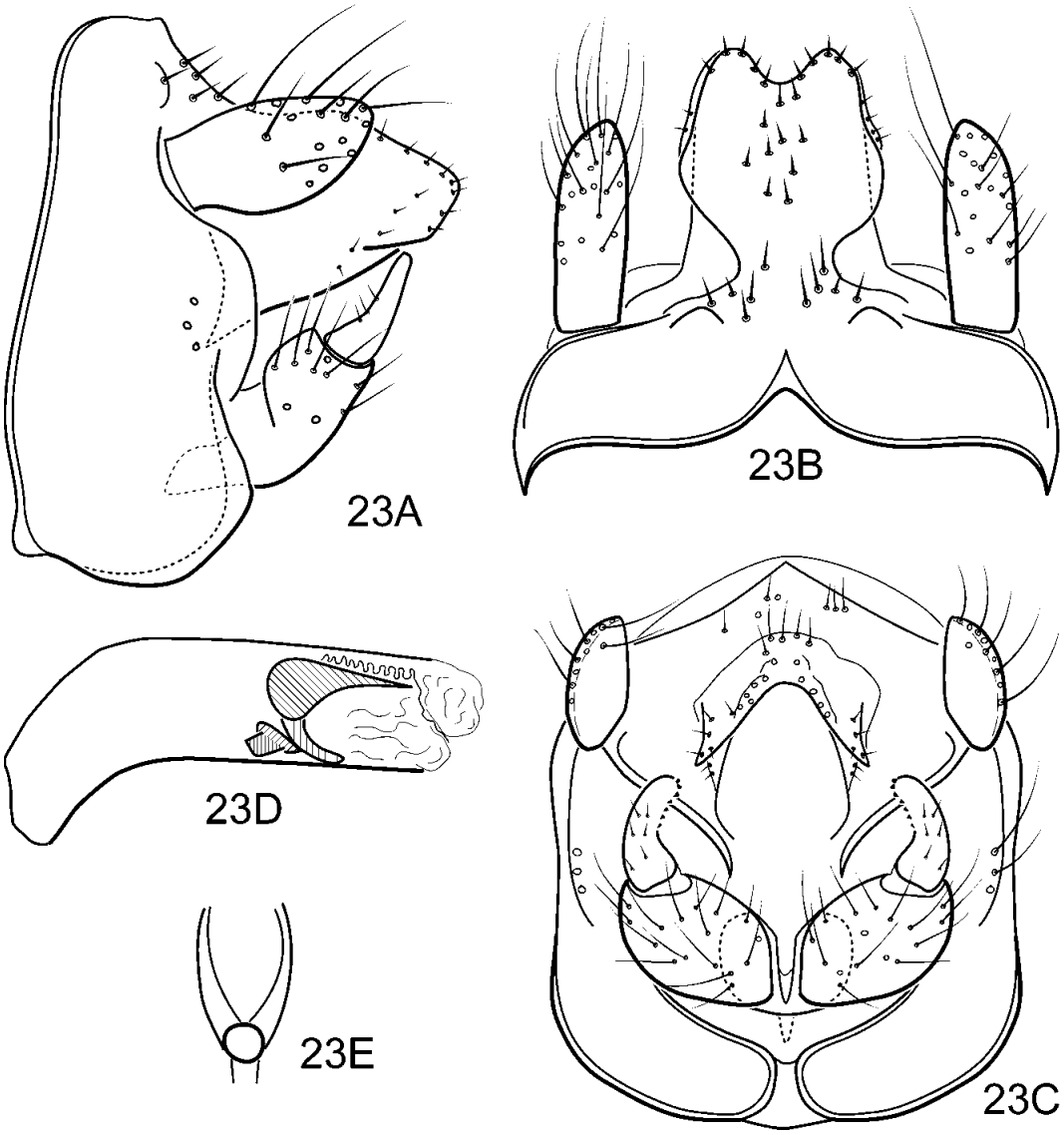


FIGURE 23. *Phylloicus bertioga*. Male (A-C, UMSP000048730; D-E, holotype): A—lateral view; B—dorsal view; C—caudal view; D—phallus, lateral view; E—phallotremal sclerites, ventral view.

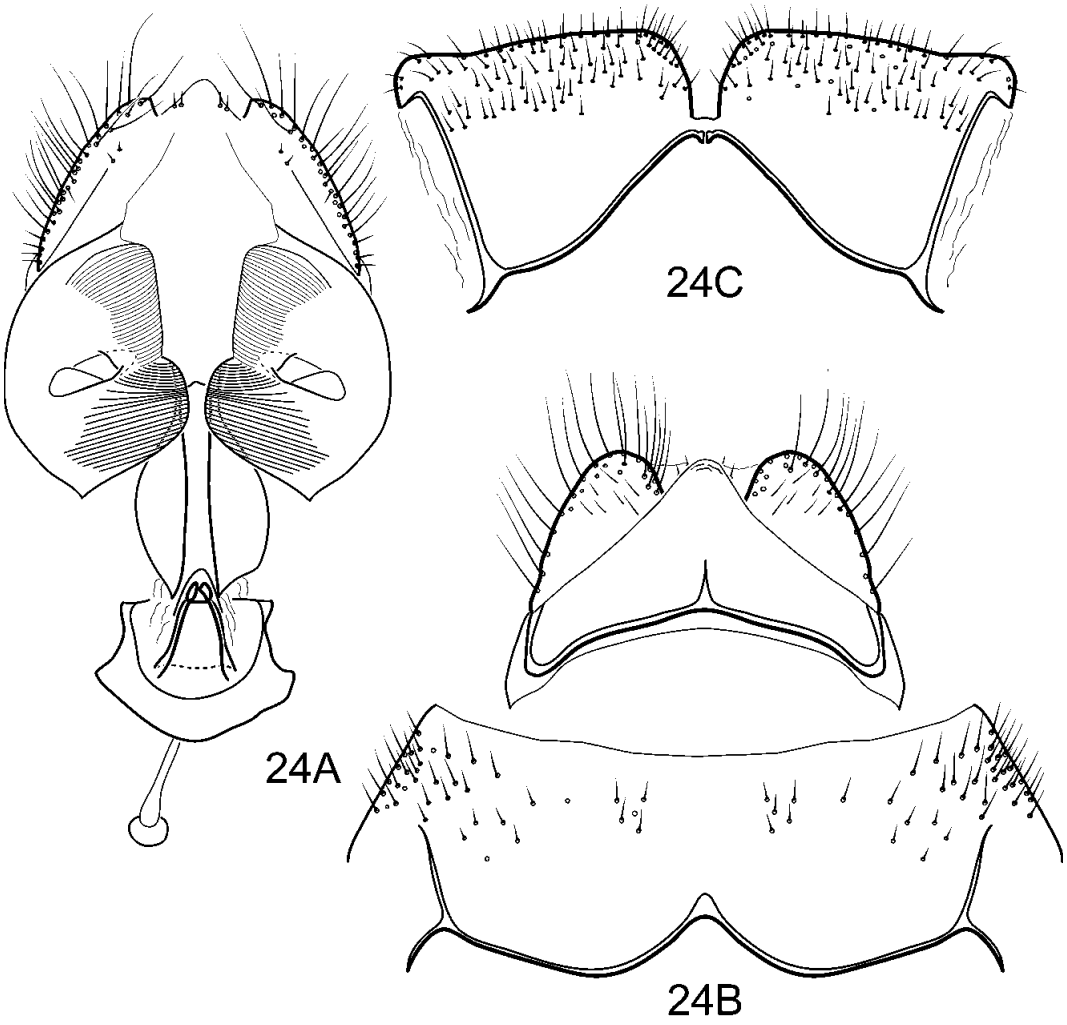


FIGURE 24. *Phylloicus bertioga*. Female (UMSP000048731): A—sterna IX, X and vaginal apparatus, ventral view; B—terga VIII-X, dorsal view; C—sternum VIII, ventral view.

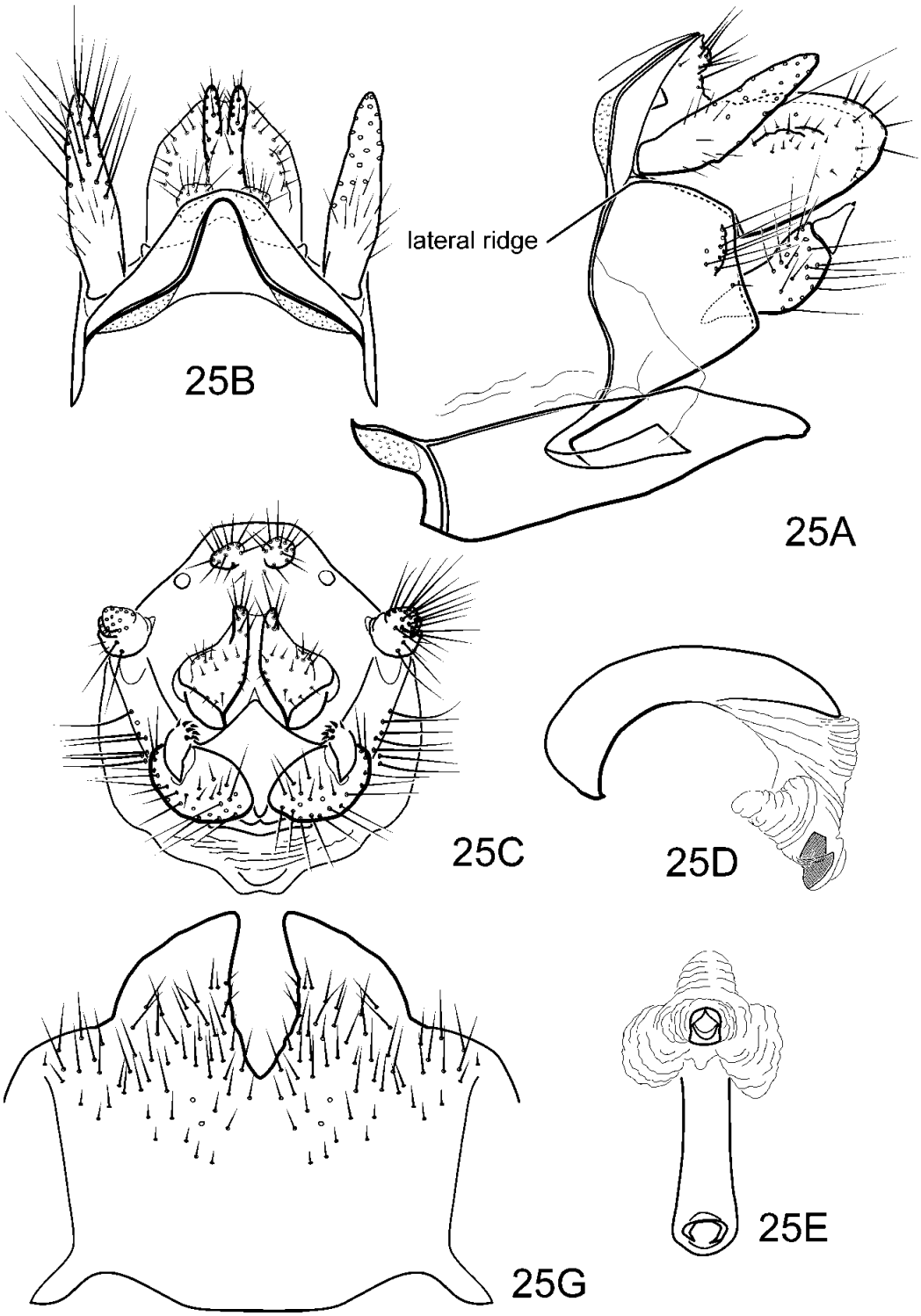


FIGURE 25. *Phylloicus bicarinatus*. Male (BIOLAT/TRIC000000057): A—lateral view; B—dorsal view; C—caudal view; D—phallus, lateral view; E—phallus, ventral view; G—sternum VIII, ventral view.

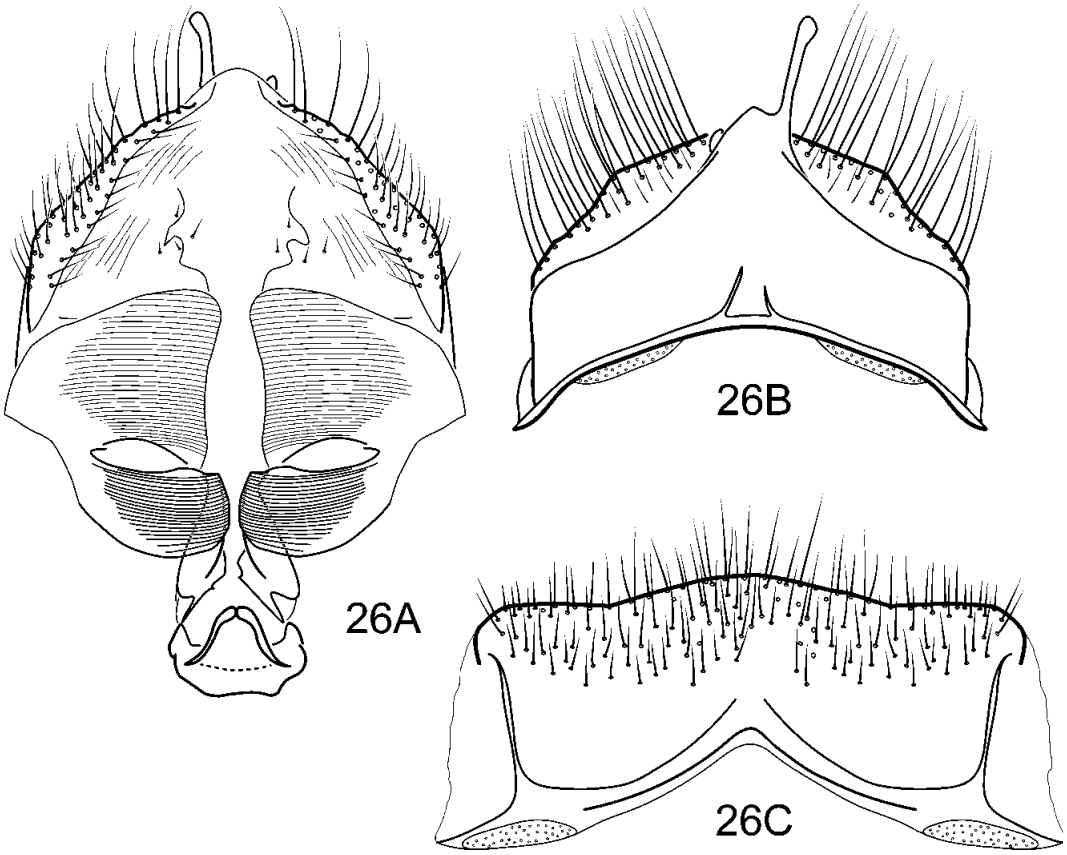


FIGURE 26. *Phylloicus bidigitatus*. Female (UMSP000067598): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

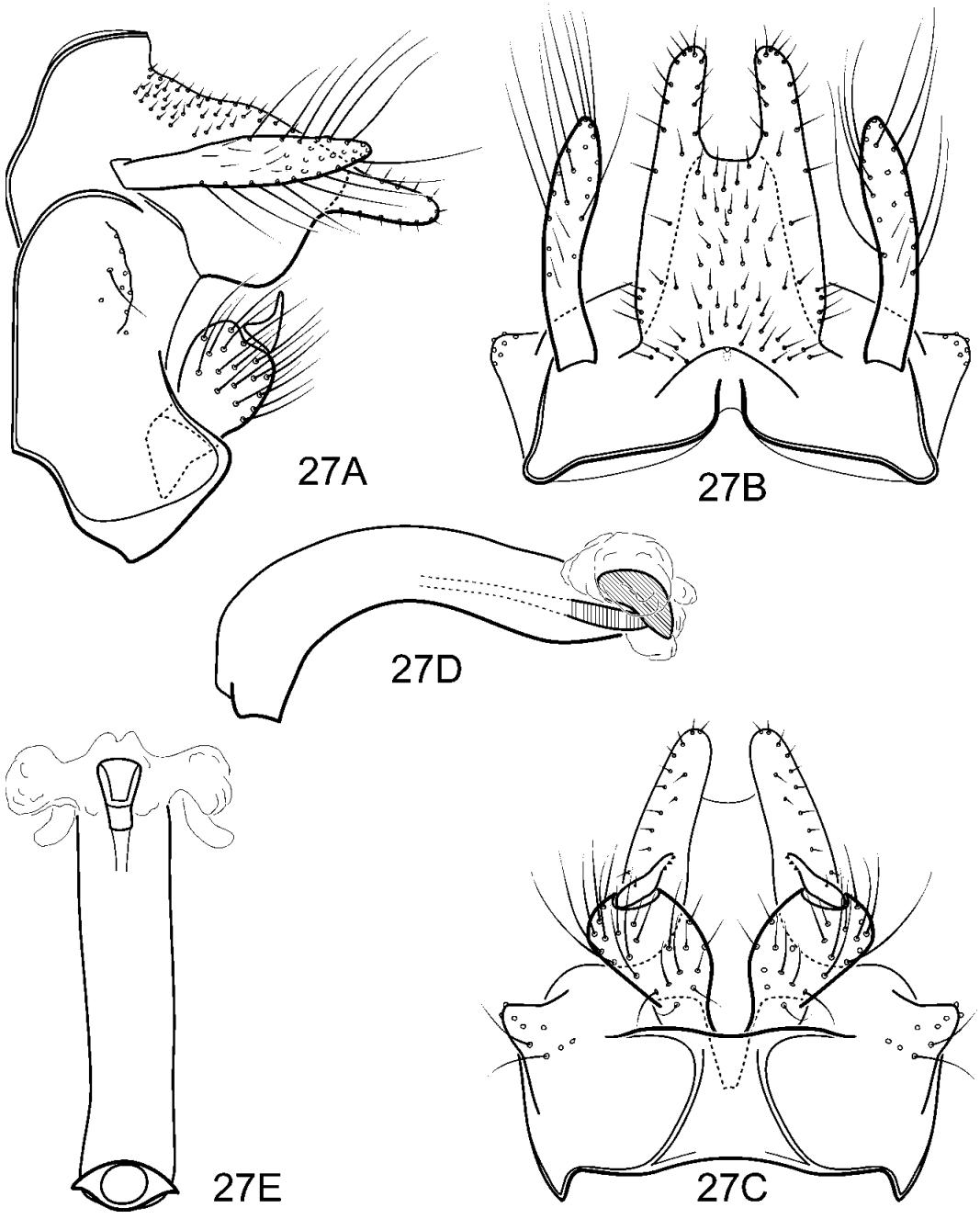


FIGURE 27. *Phylloicus bidigitatus*. Male (holotype): A—lateral view; B—dorsal view; C—caudoventral view; D—phallus, lateral view; E—phallus, ventral view.

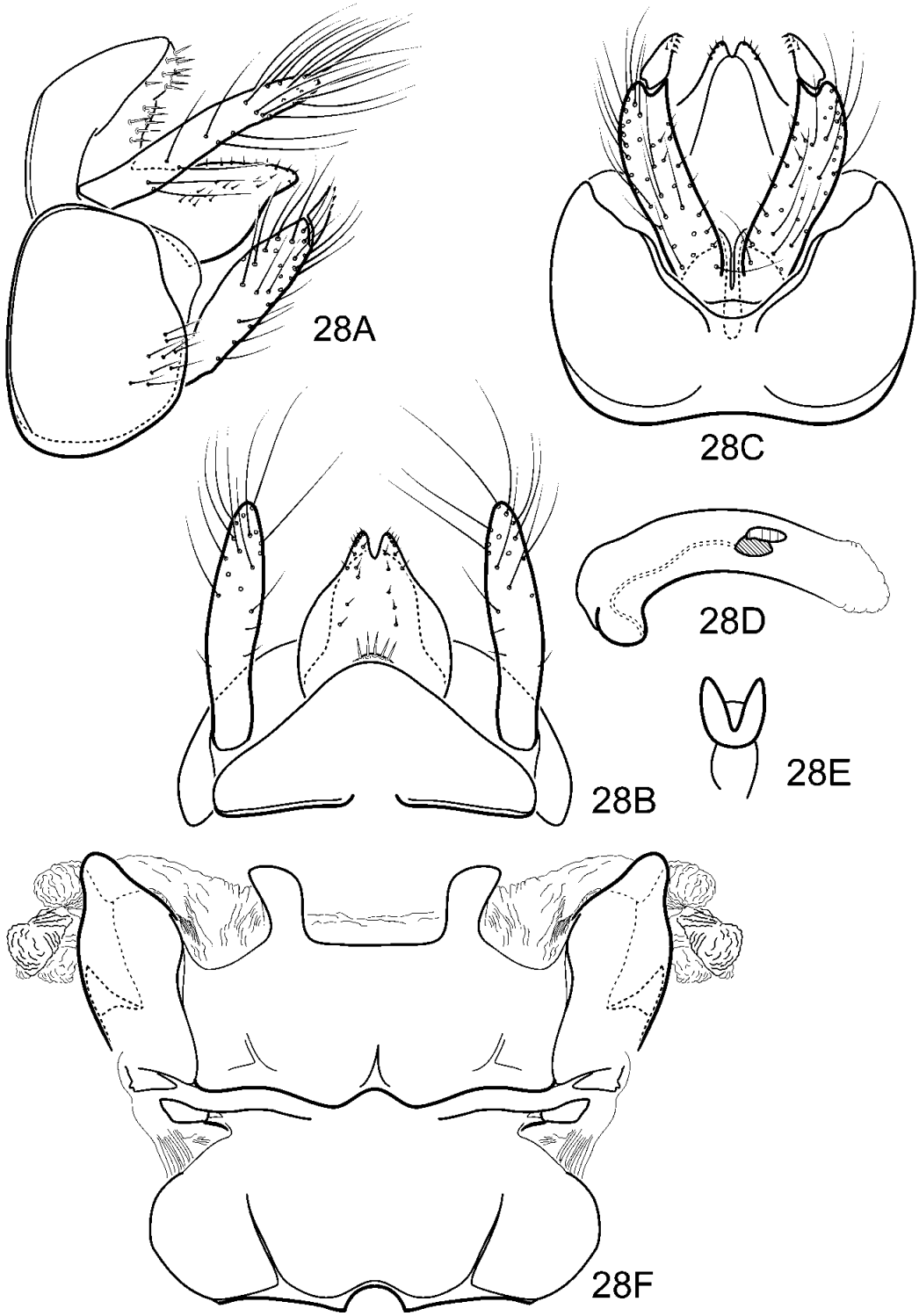


FIGURE 28. *Phylloicus blahniki.* Male (UMSP000048732): A—lateral view; B—dorsal view; C— ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view; F—terga III-IV, dorsal view.

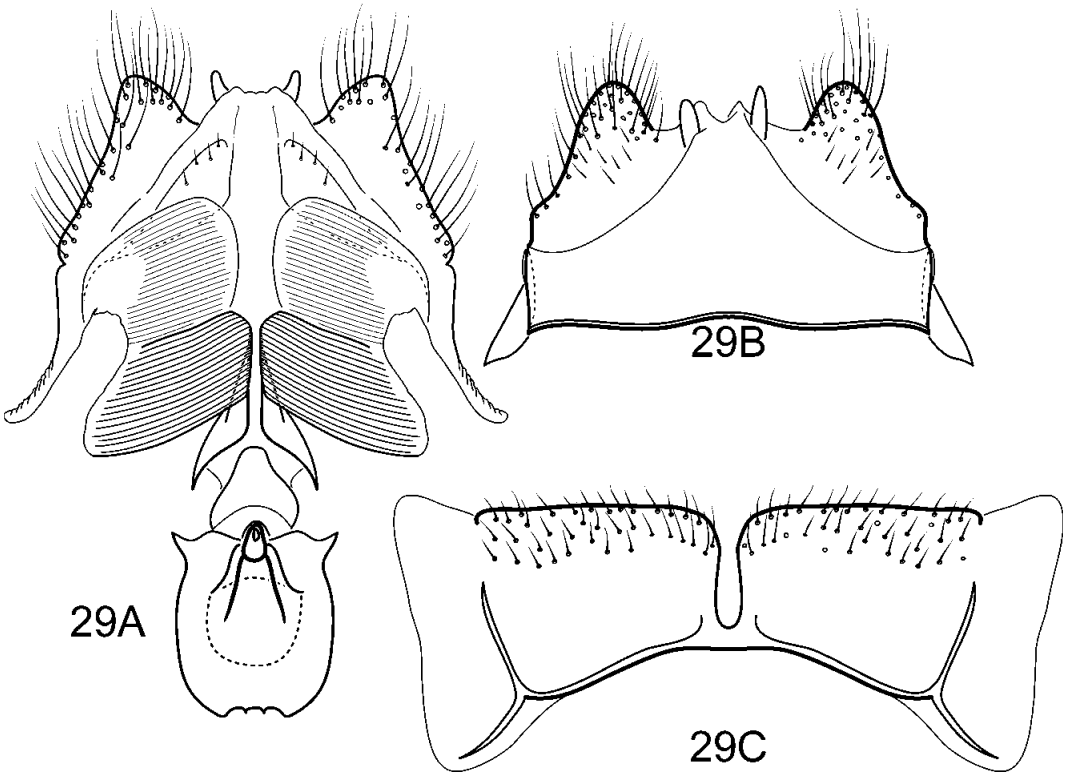


FIGURE 29. *Phylloicus blahniki*. Female (UMSP000067615): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

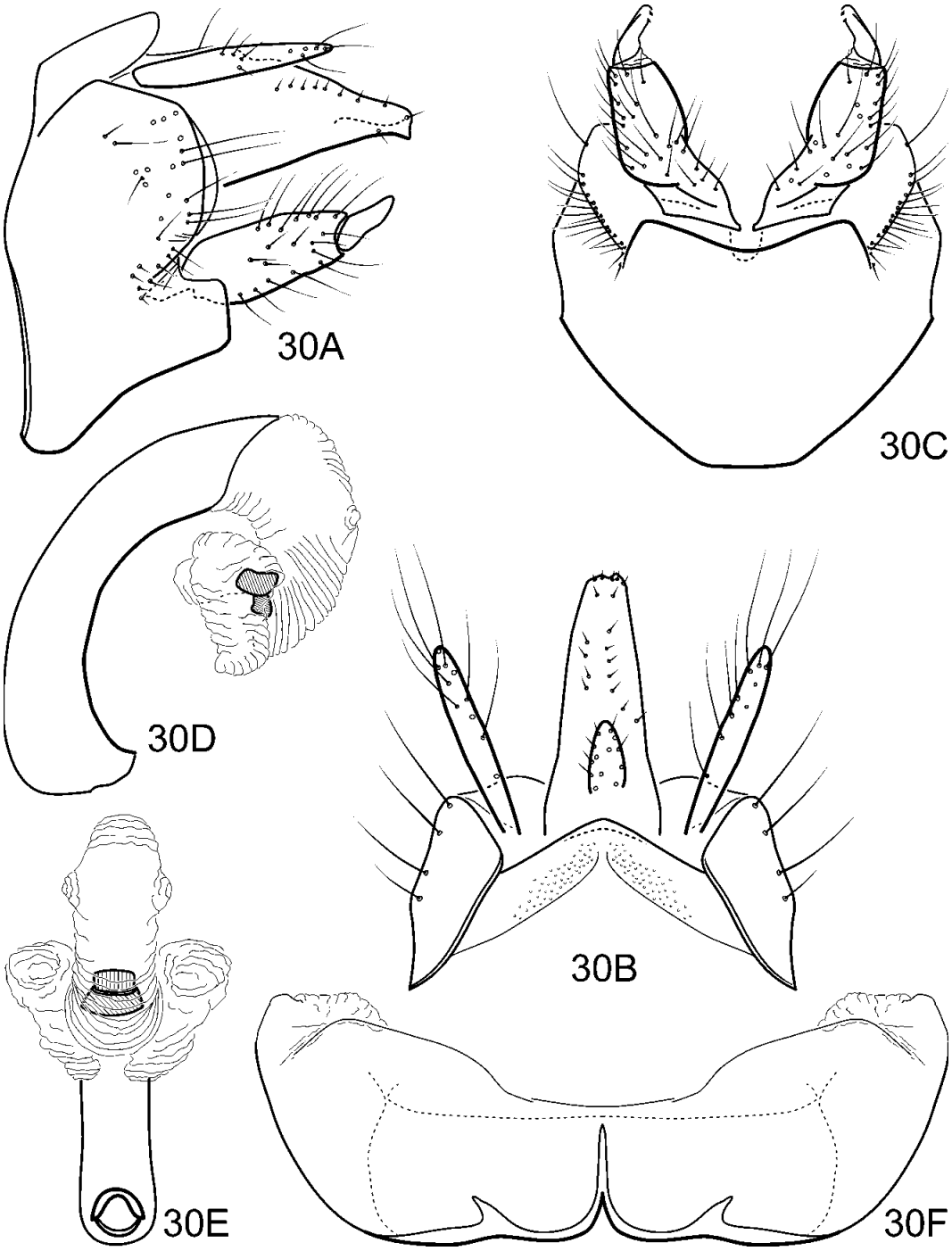


FIGURE 30. *Phylloicus brevior.* Male (A-C, holotype; D-F, UMSP000005700): A—lateral view; B—dorsal view; C—ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view; F—terga III-IV, dorsal view.

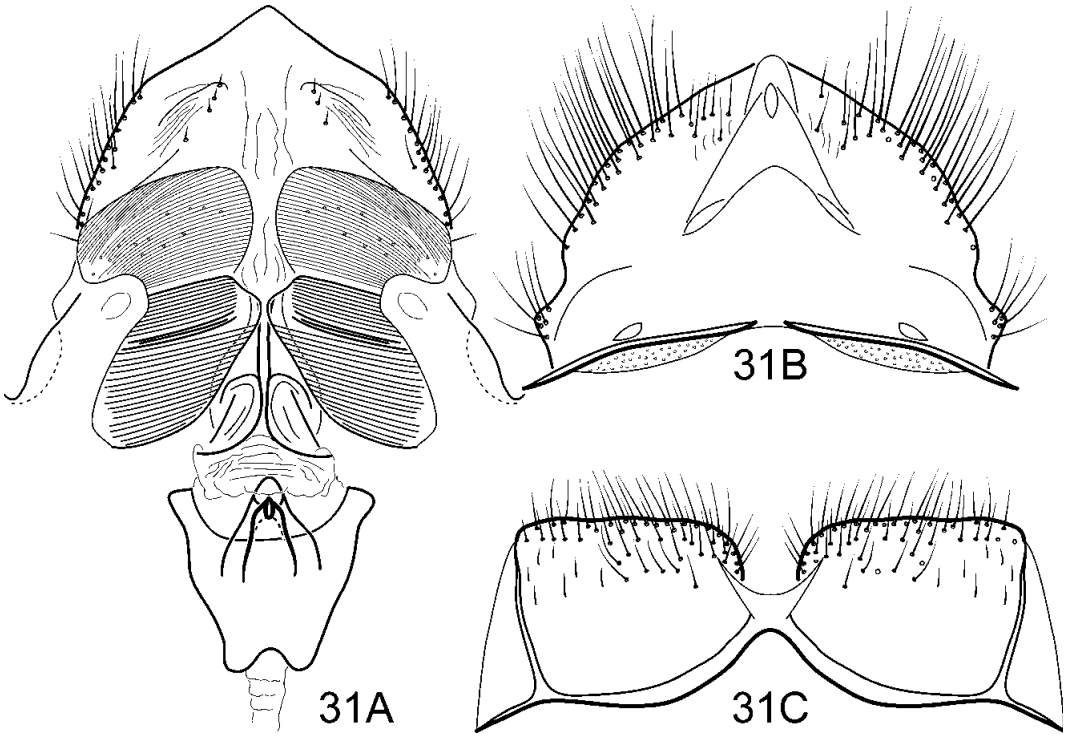


FIGURE 31. *Phylloicus brevior.* Female (UMSP000005715): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

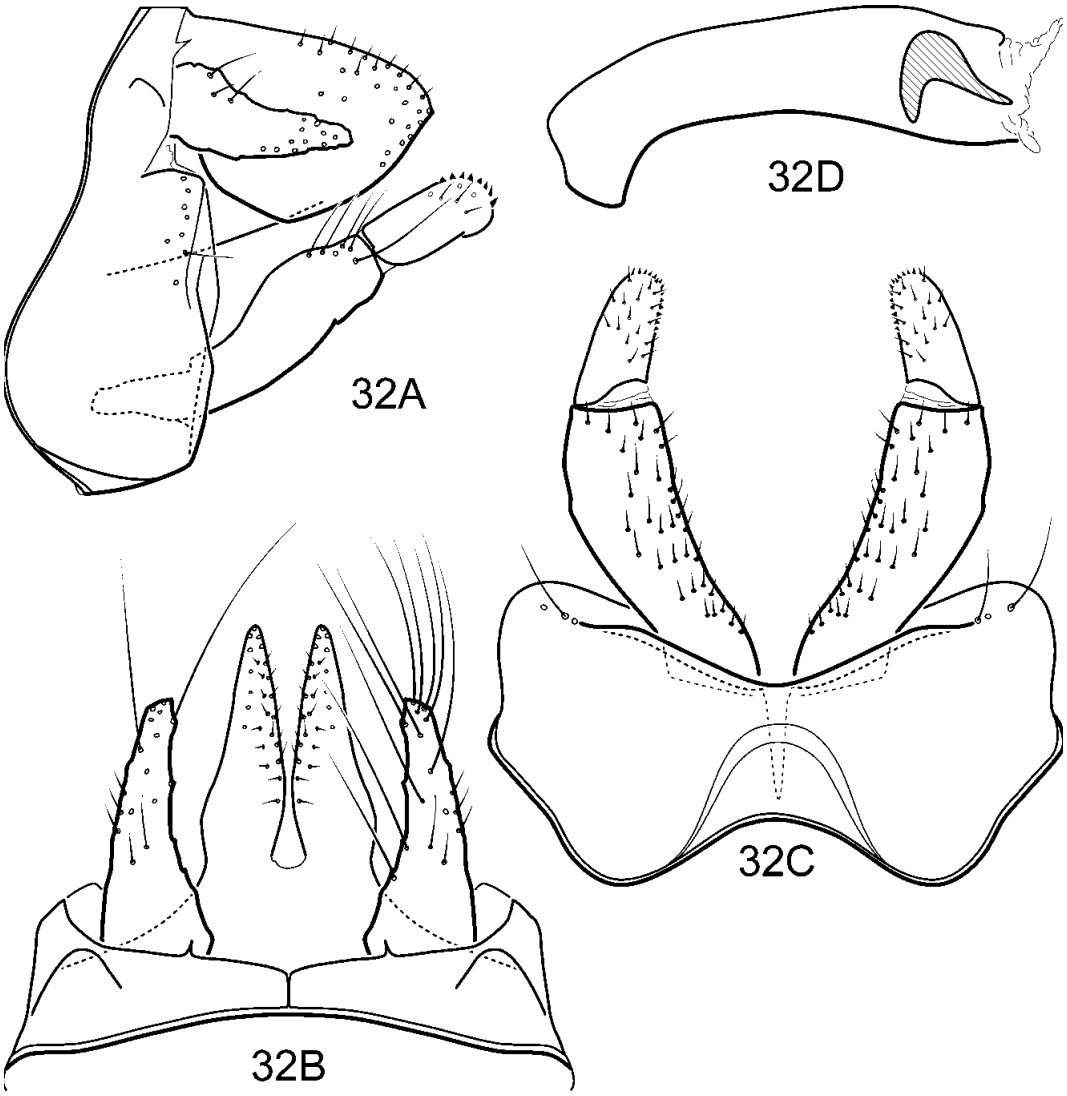


FIGURE 32. *Phylloicus bromeliarum*. Male (lectotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view.

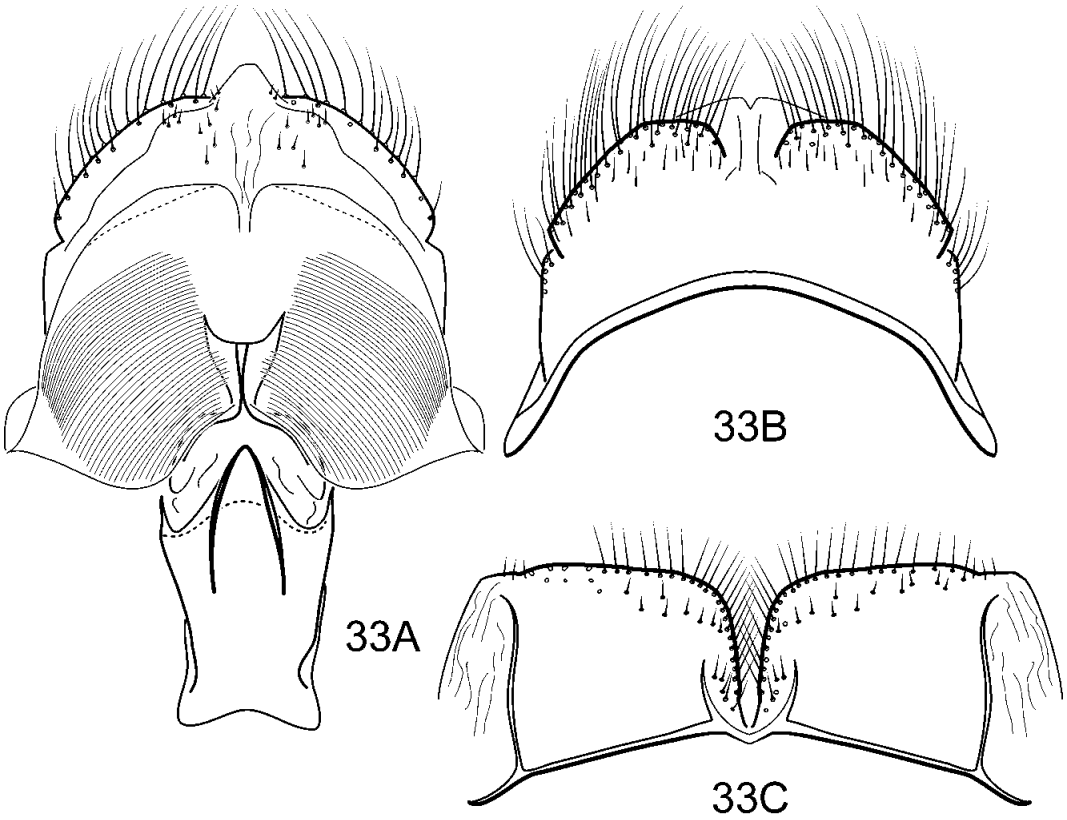


FIGURE 33. *Phylloicus bromeliarum*. Female (UMSP000067619): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

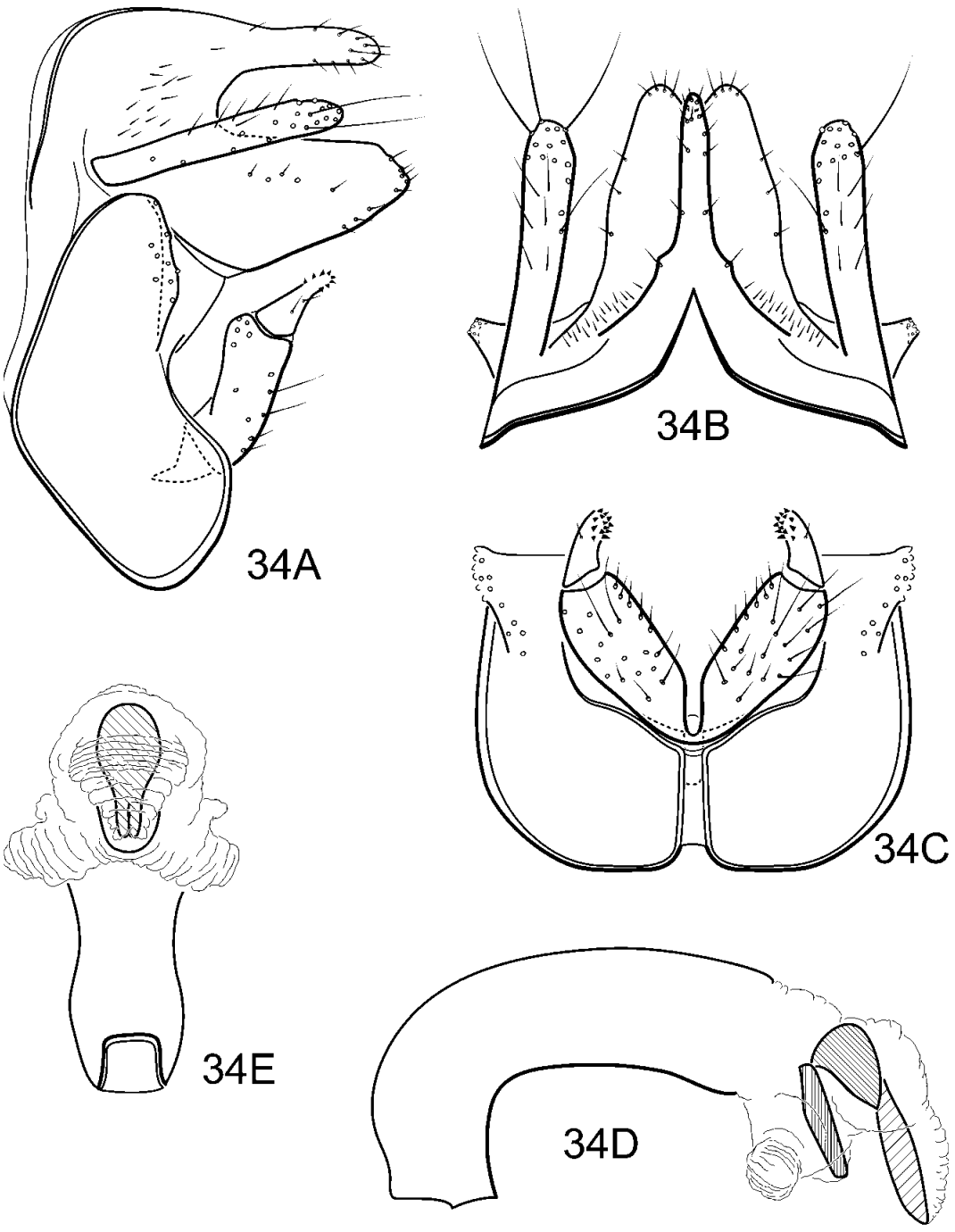


FIGURE 34. *Phylloicus chalybeus*. Male (lectotype): A—lateral view; B—dorsal view; C—ventral view; D—phallus, lateral view; E—phallus, ventral view.

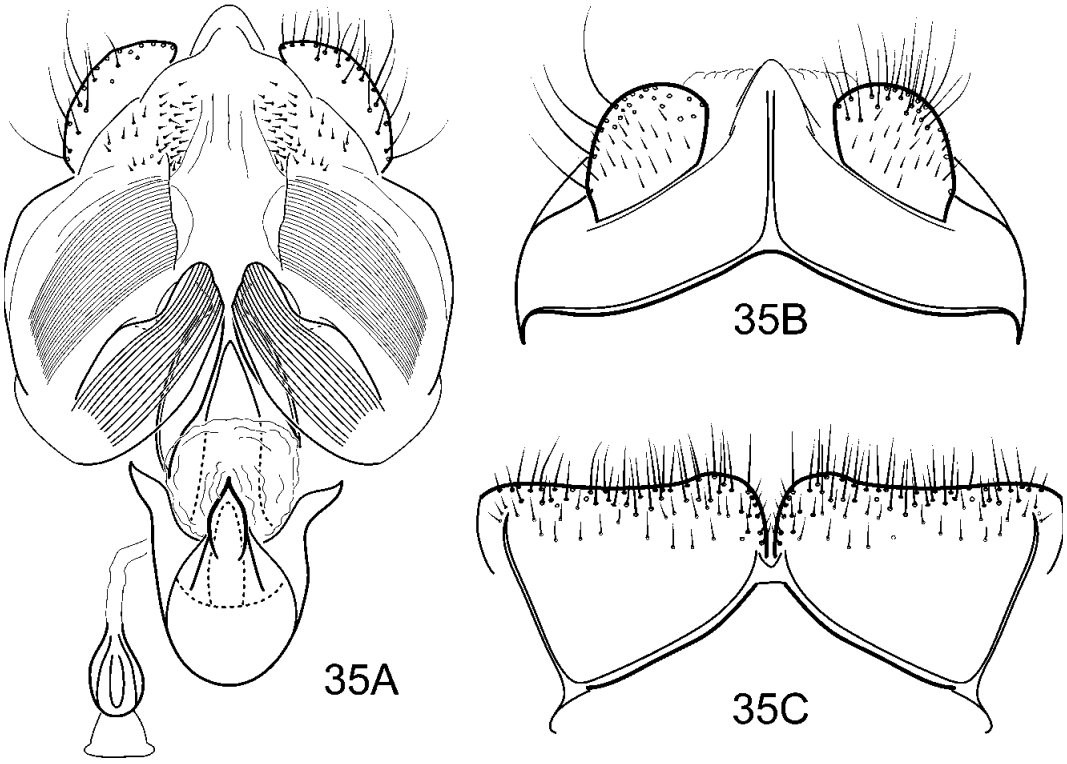


FIGURE 35. *Phylloicus chalybeus*. Female (CUBA: Santiago de las Vegas, 1.IX.48, J. Ferrás, E.E.A. de Cuba, No. 11536): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

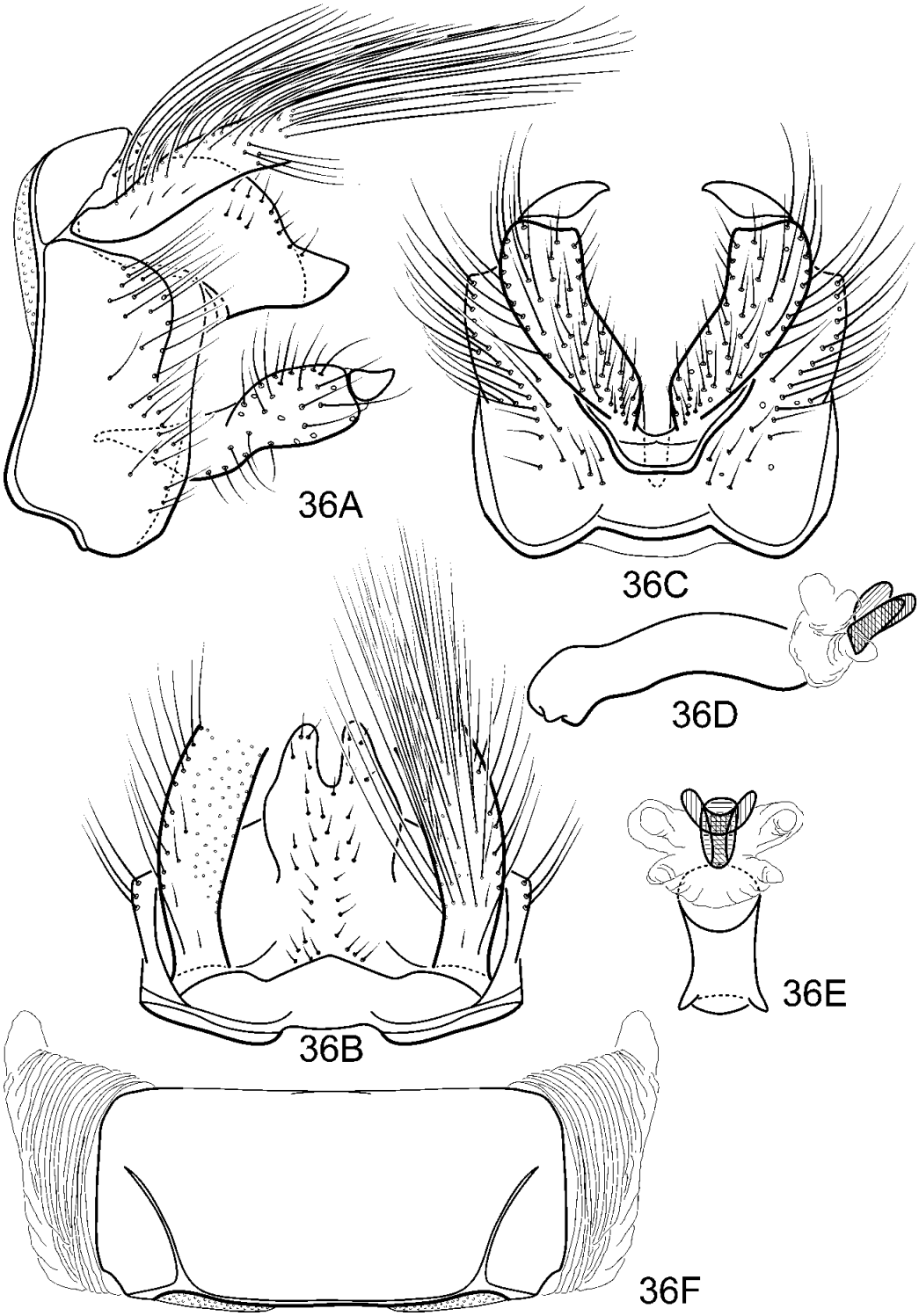


FIGURE 36. *Phylloicus cordatus*. Male (holotype): A—lateral view; B—dorsal view; C—sternum IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, caudoventral view; F—segment IV, dorsal view.

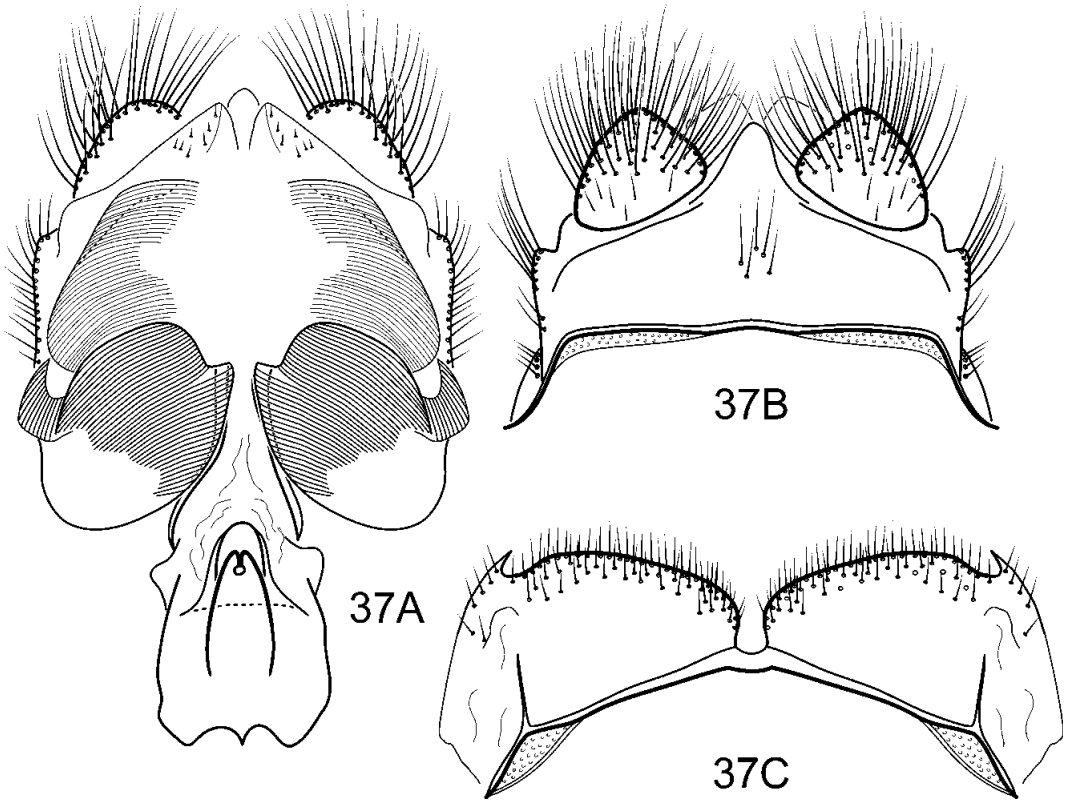


FIGURE 37. *Phylloicus cordatus*. Female (UMSP000067626): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

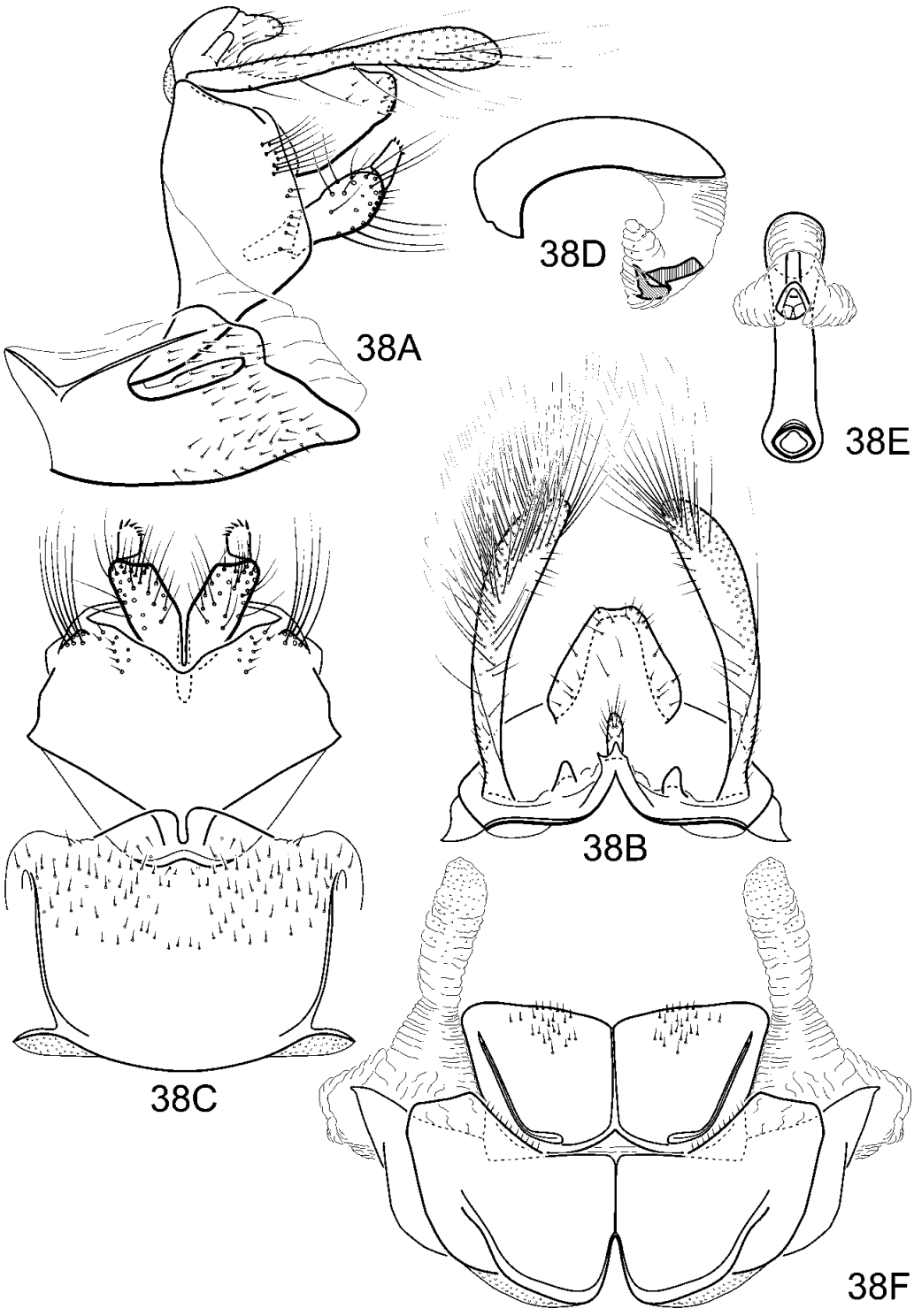


FIGURE 38. *Phylloicus cressae*. Male (UMSP000067653): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view; F—terga IV and V, dorsal view.

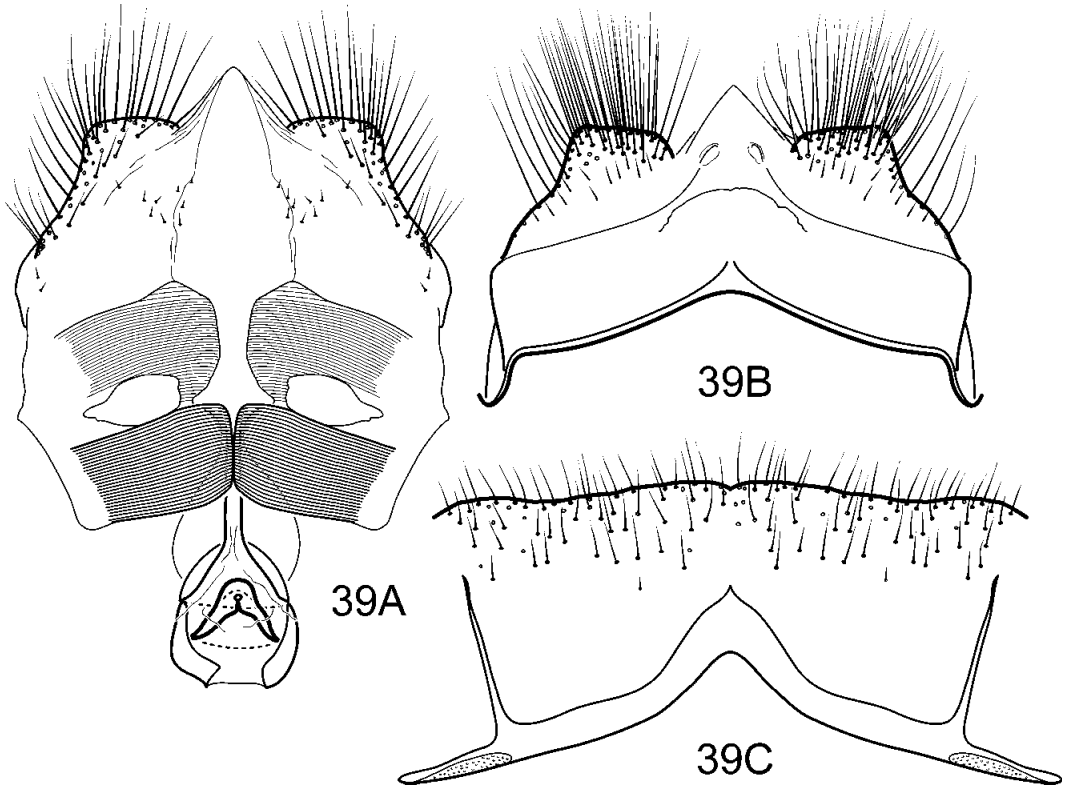


FIGURE 39. *Phylloicus cressae*. Female (UMSP000067660): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

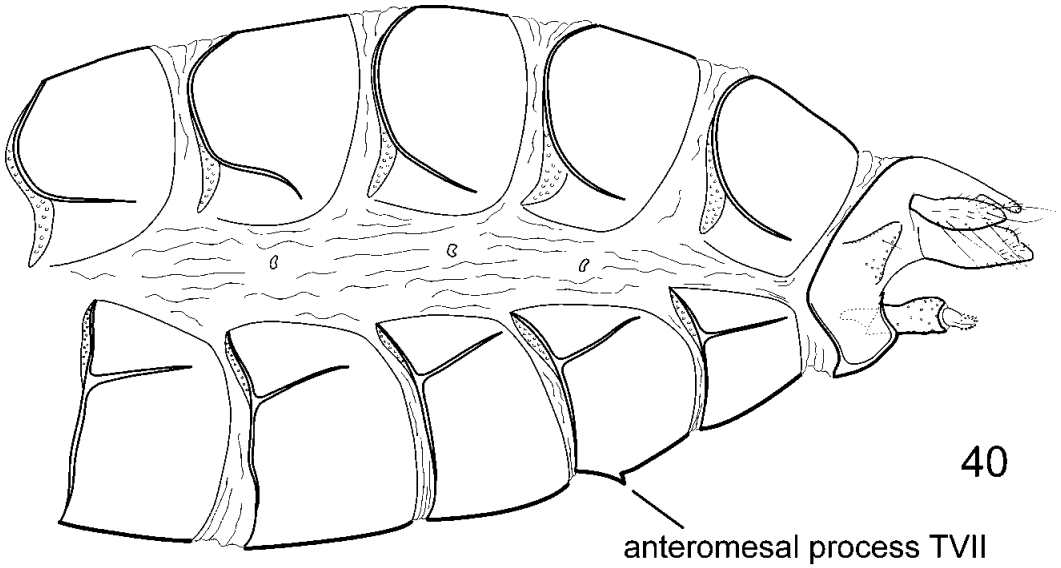


FIGURE 40. *Phylloicus cubanus.* Male (UMSP000009805): abdominal segments IV-X, lateral view.

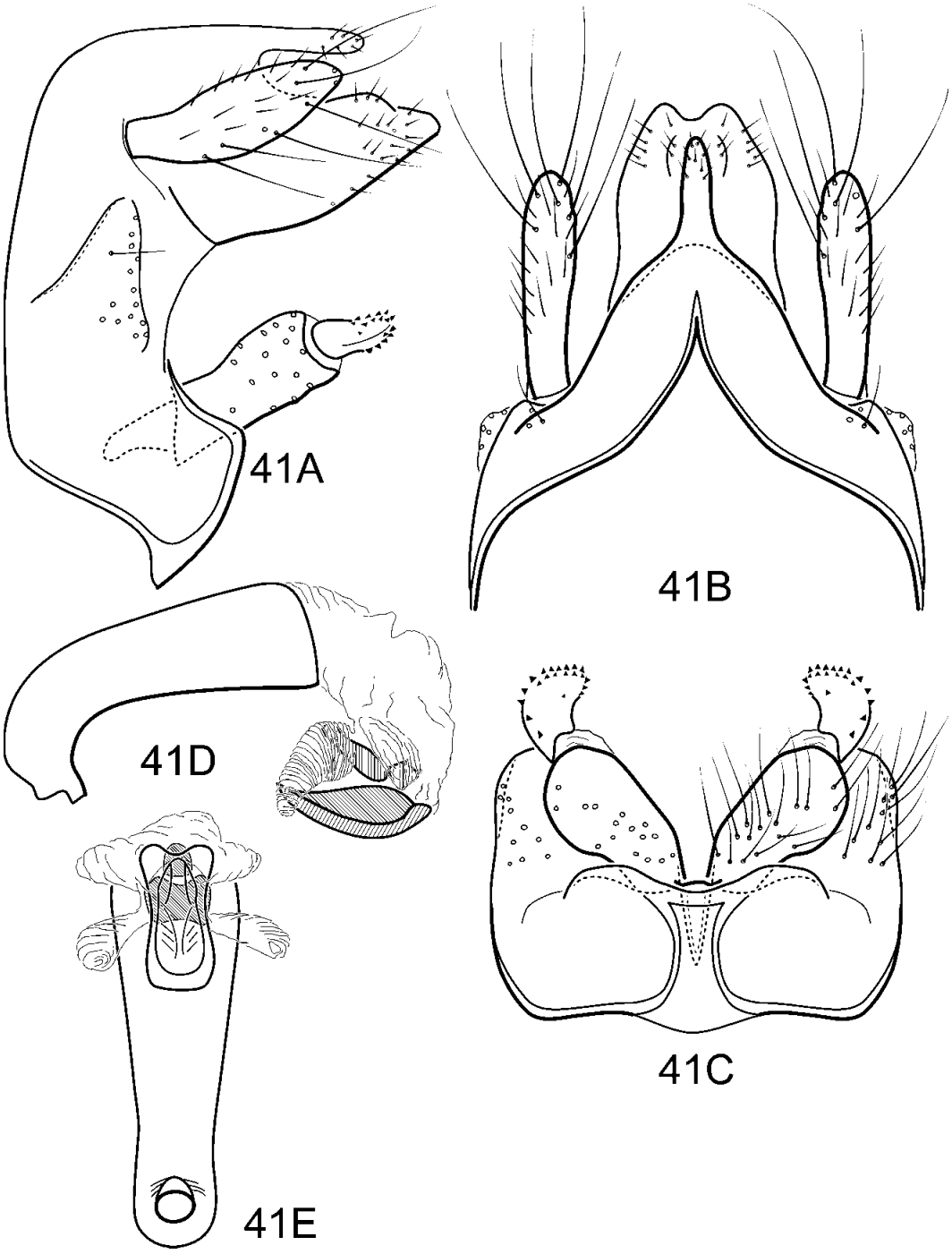


FIGURE 41. *Phylloicus cubanus*. Male (holotype; preanal appendage and phallus, UMSP000009799): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E phallus, ventral view.

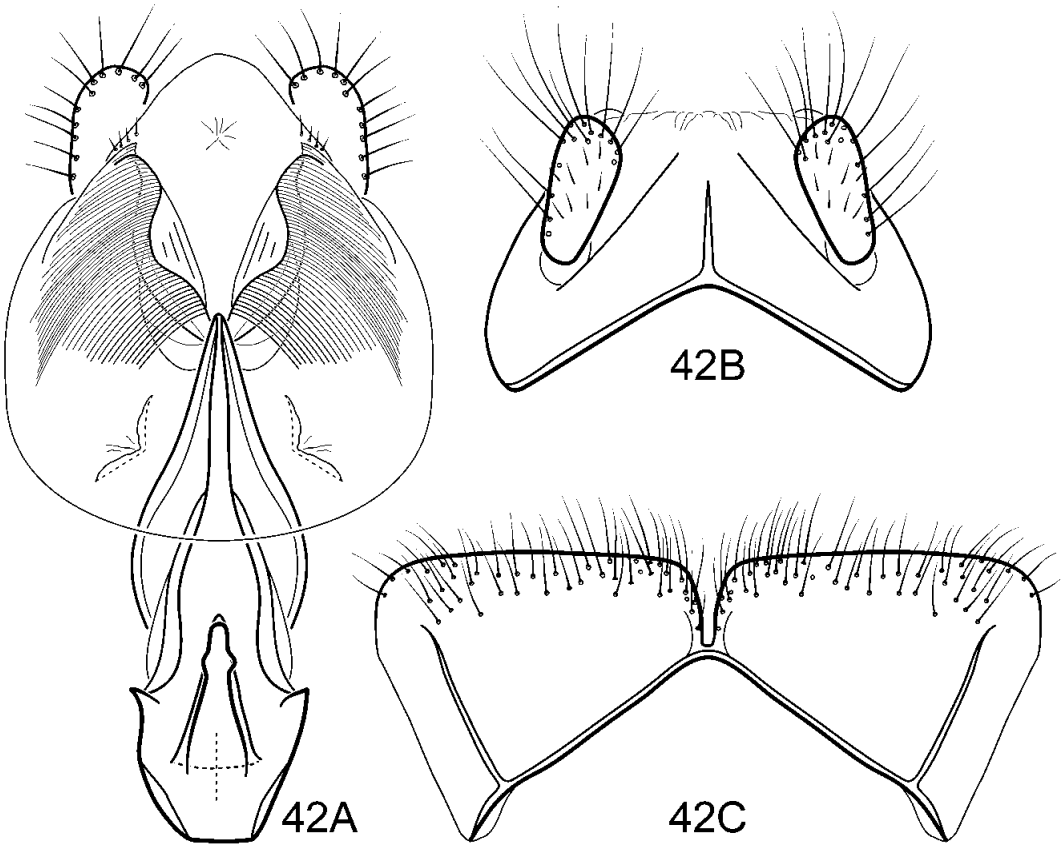


FIGURE 42. *Phylloicus cubanus*. Female (UMSP000009803): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

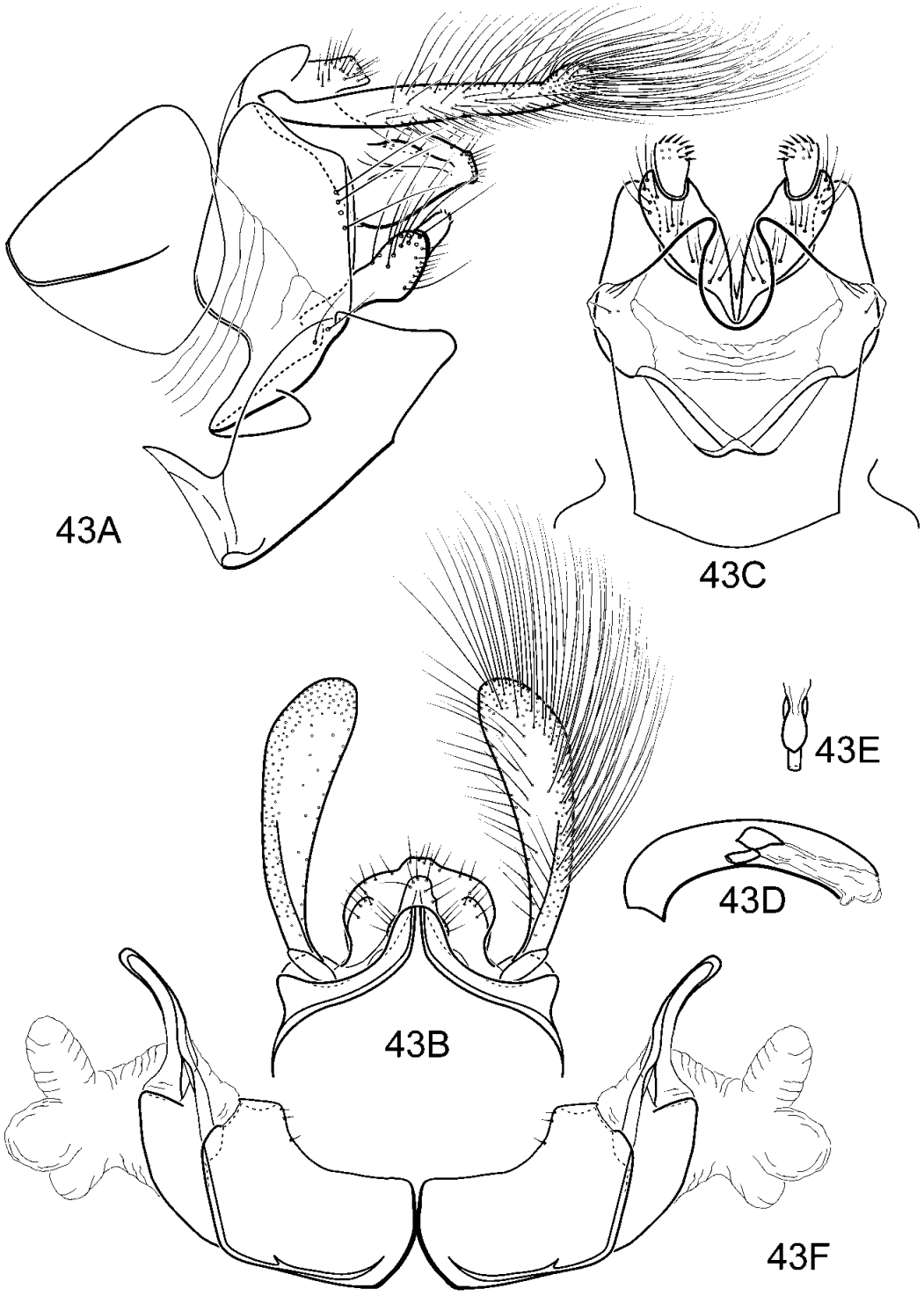


FIGURE 43. *Phylloicus elegans*. Male (holotype): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view; F—tergum IV, dorsal view.

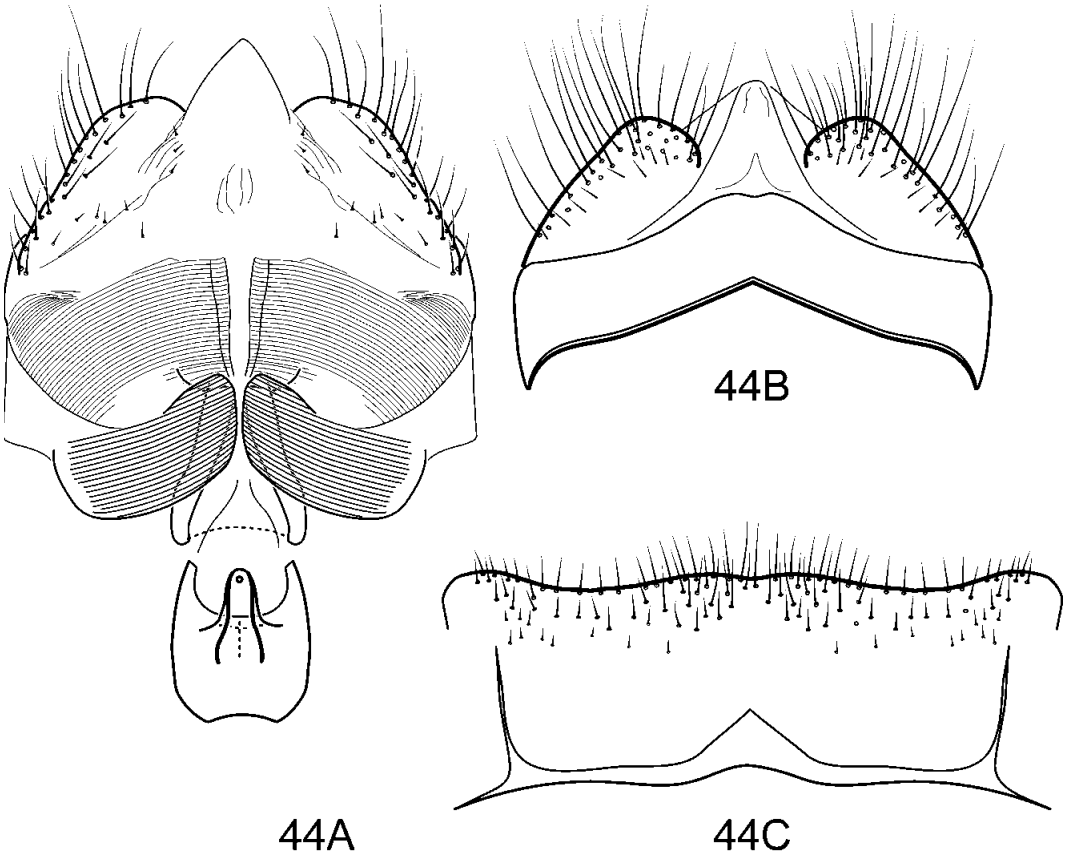


FIGURE 44. *Phylloicus elegans*. Female (UMSP000066071): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

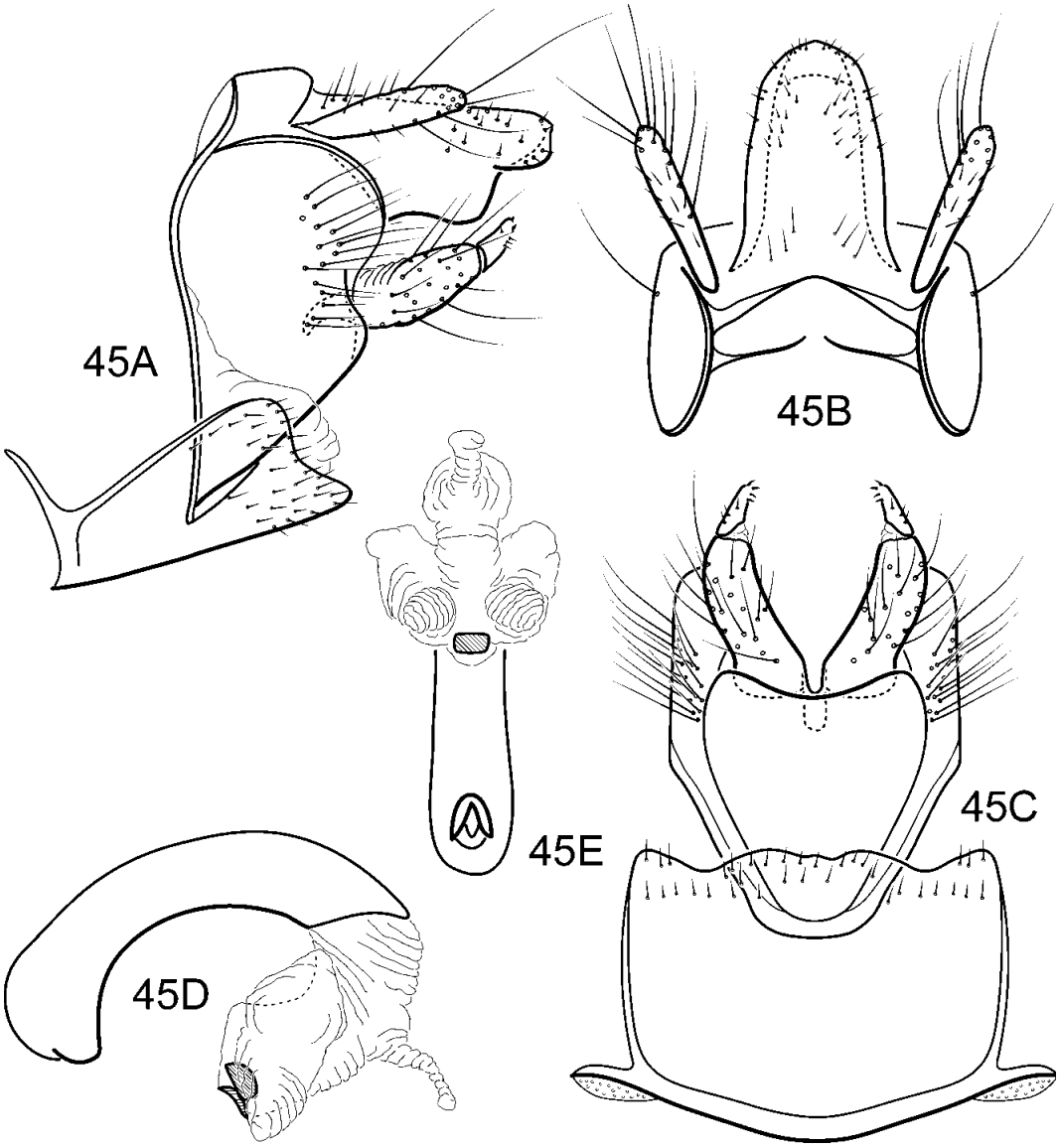


FIGURE 45. *Phylloicus elektoros.* Male (UMSP000067705): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view.

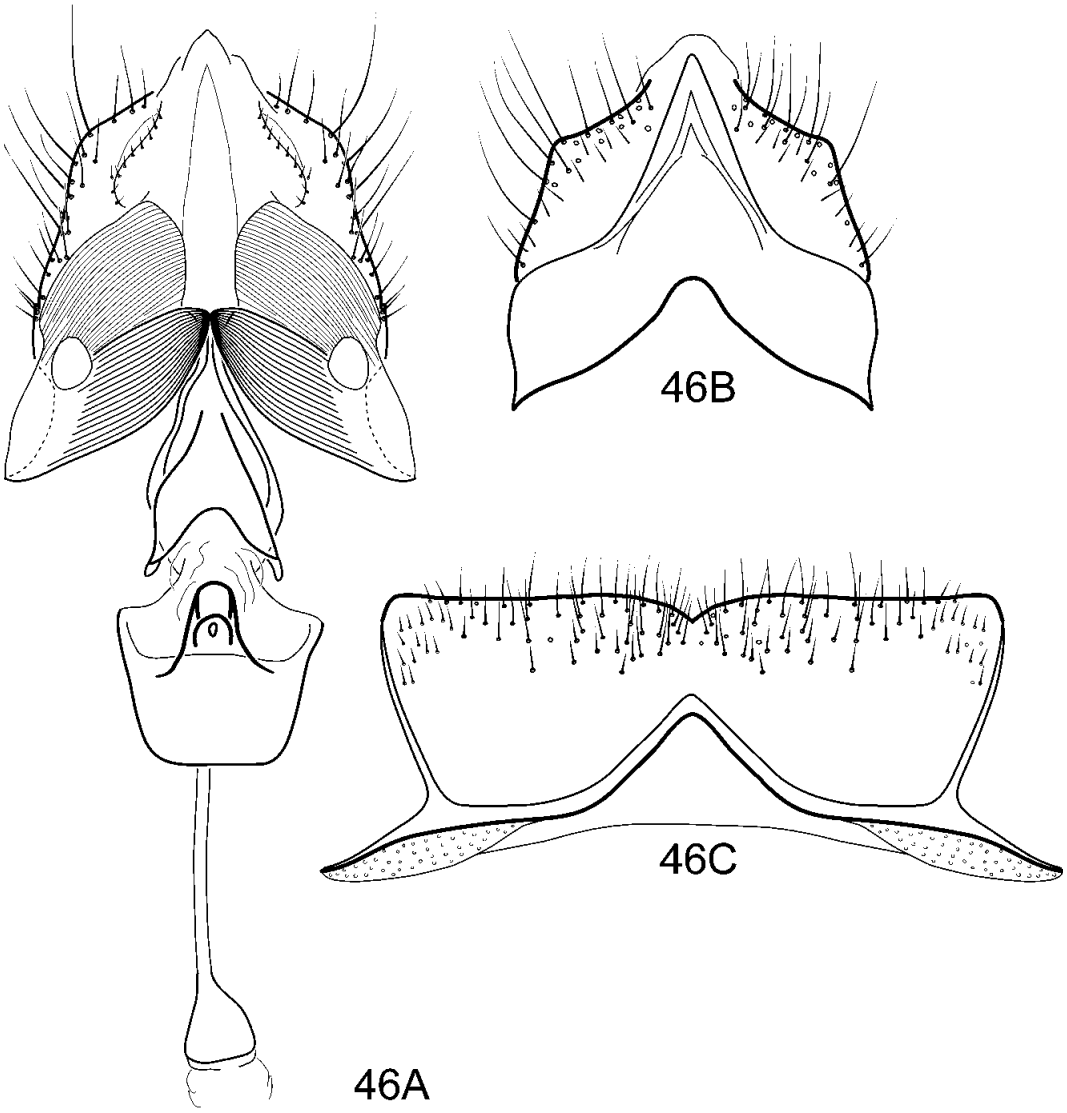


FIGURE 46. *Phylloicus elektoros*. Female (UMSP000067706): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

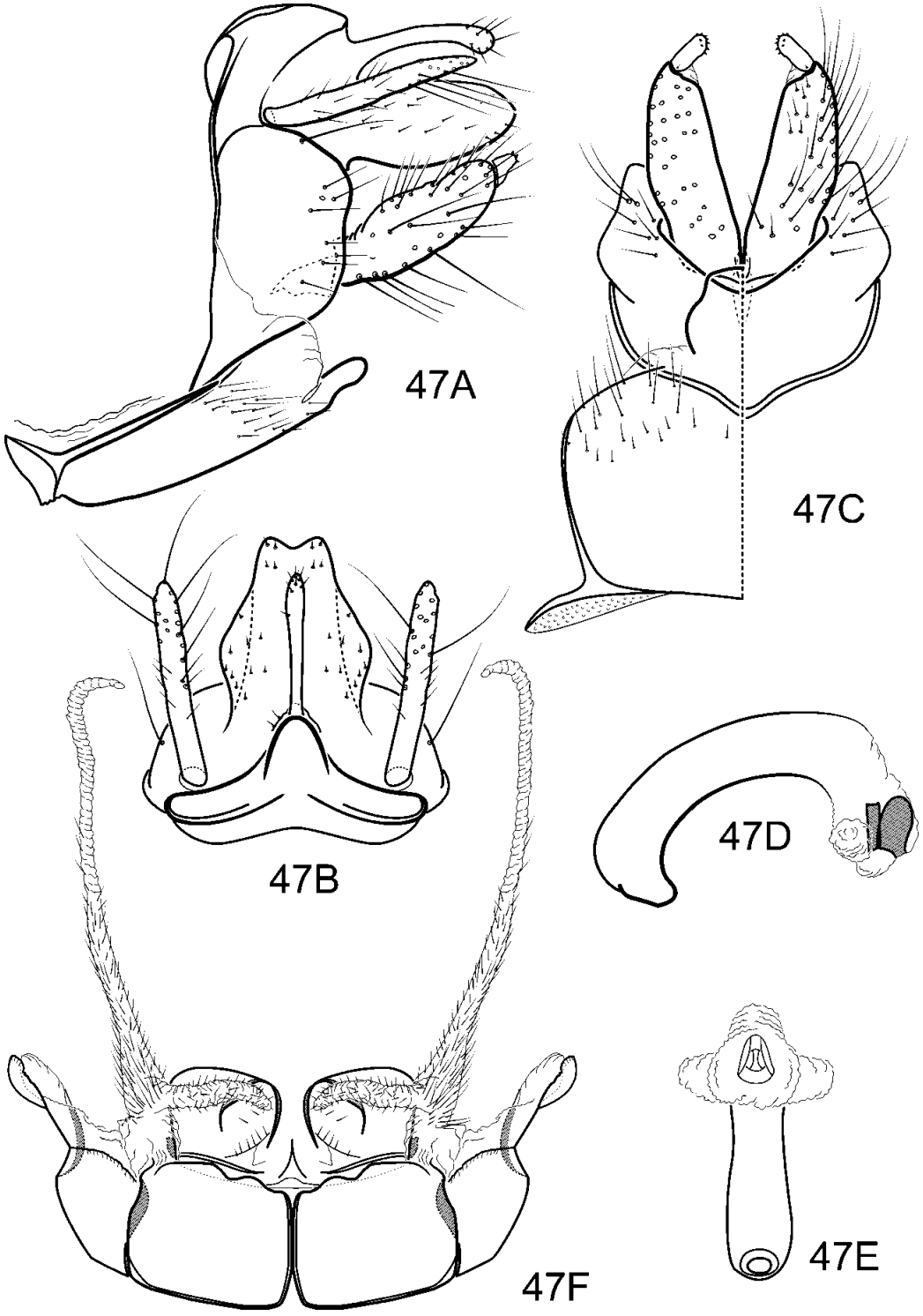


FIGURE 47. *Phylloicus ephippium*. Male (holotype): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, caudoventral view; F— terga IV and V, dorsal view.

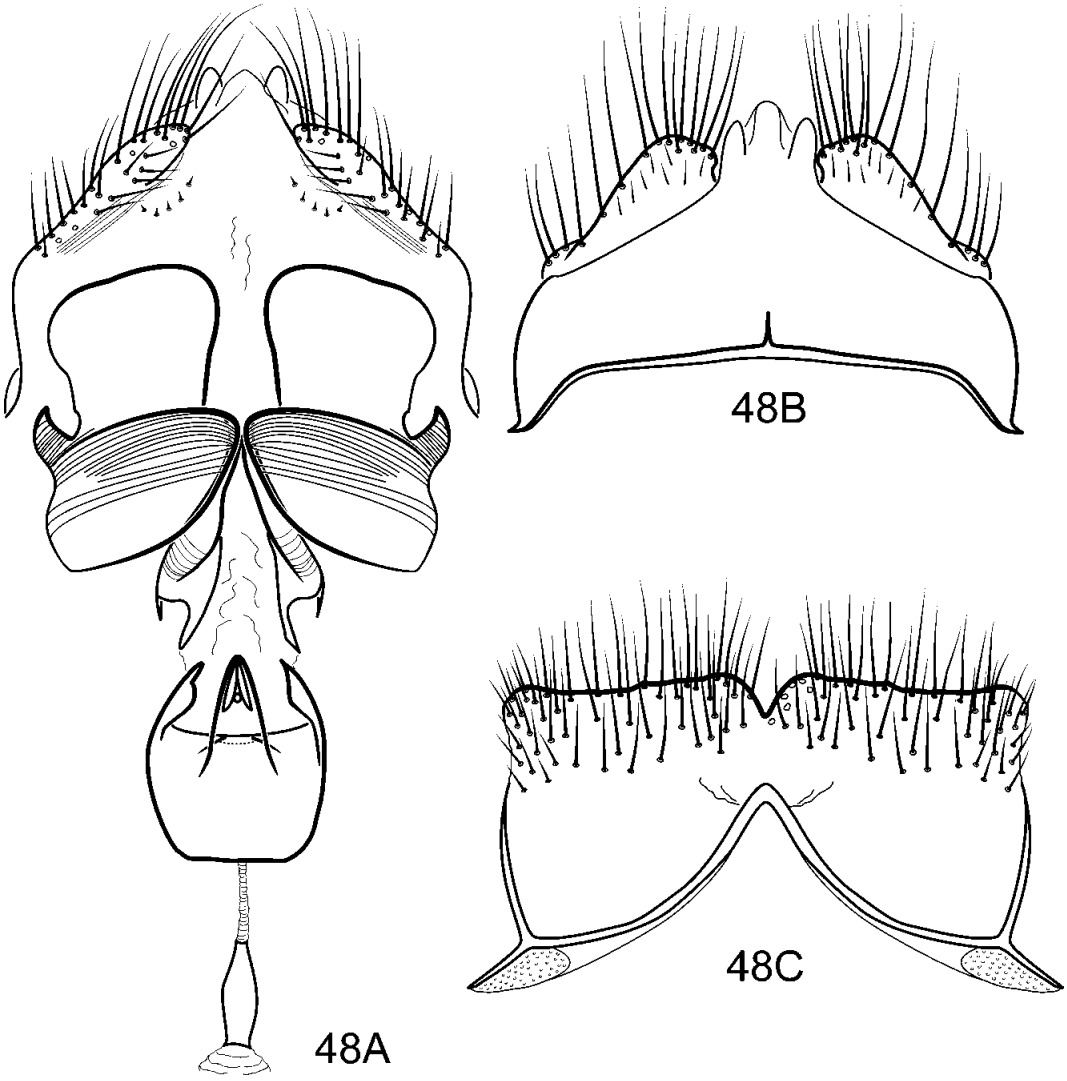


FIGURE 48. *Phylloicus ephippium*. Female (UMSP000010125): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

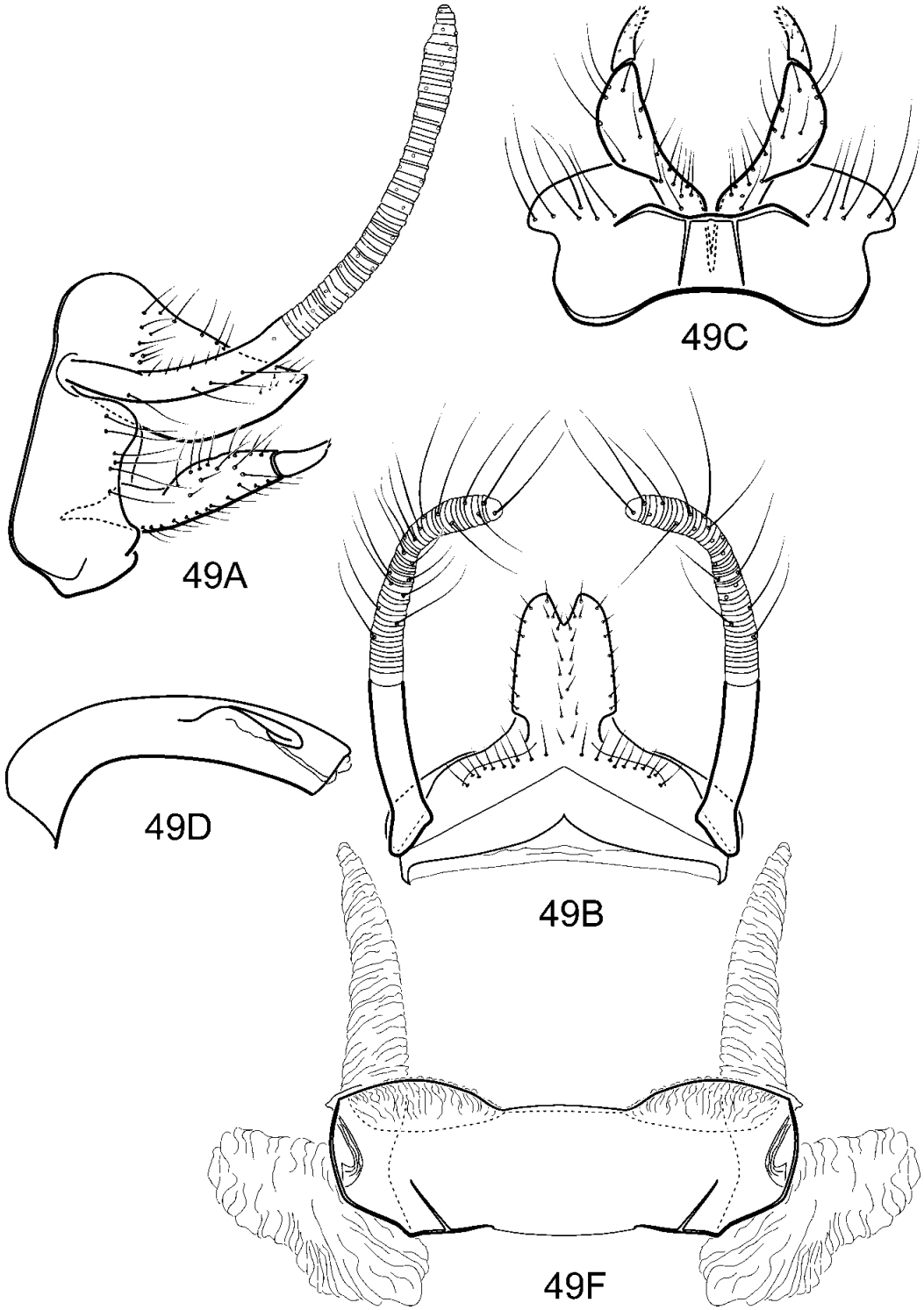


FIGURE 49. *Phylloicus farri*. Male (A-D, holotype; F, UMSP000227761): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view. F—tergum IV, dorsal view.

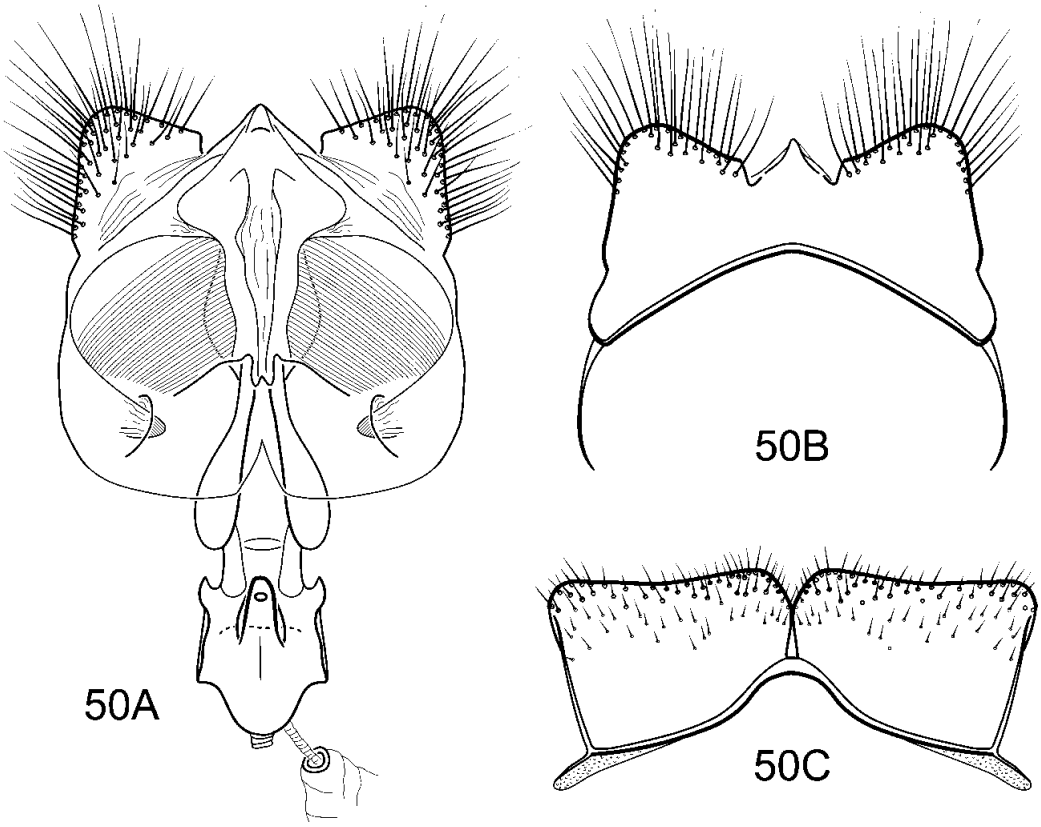


FIGURE 50. *Phylloicus farri*. Female (UMSP000227759): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

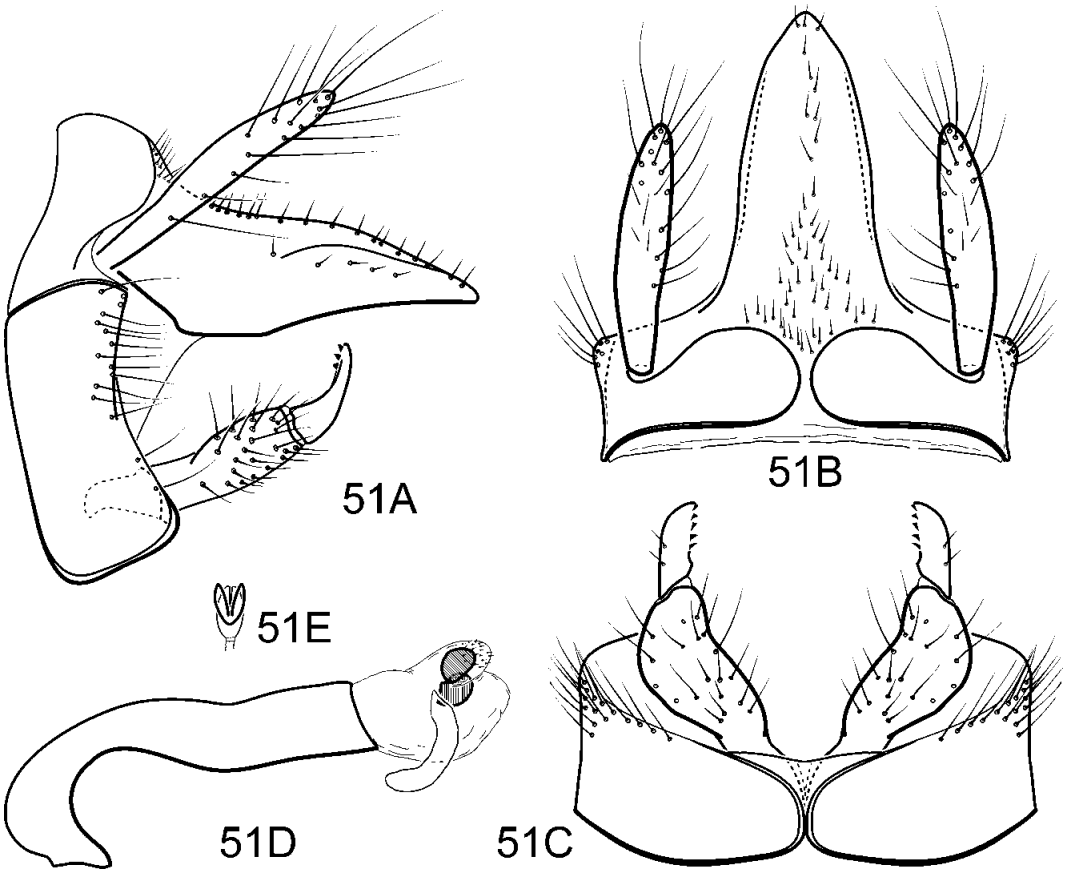


FIGURE 51. *Phylloicus fenestratus*. Male (holotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view. E—phallotremal sclerites, dorsal view.

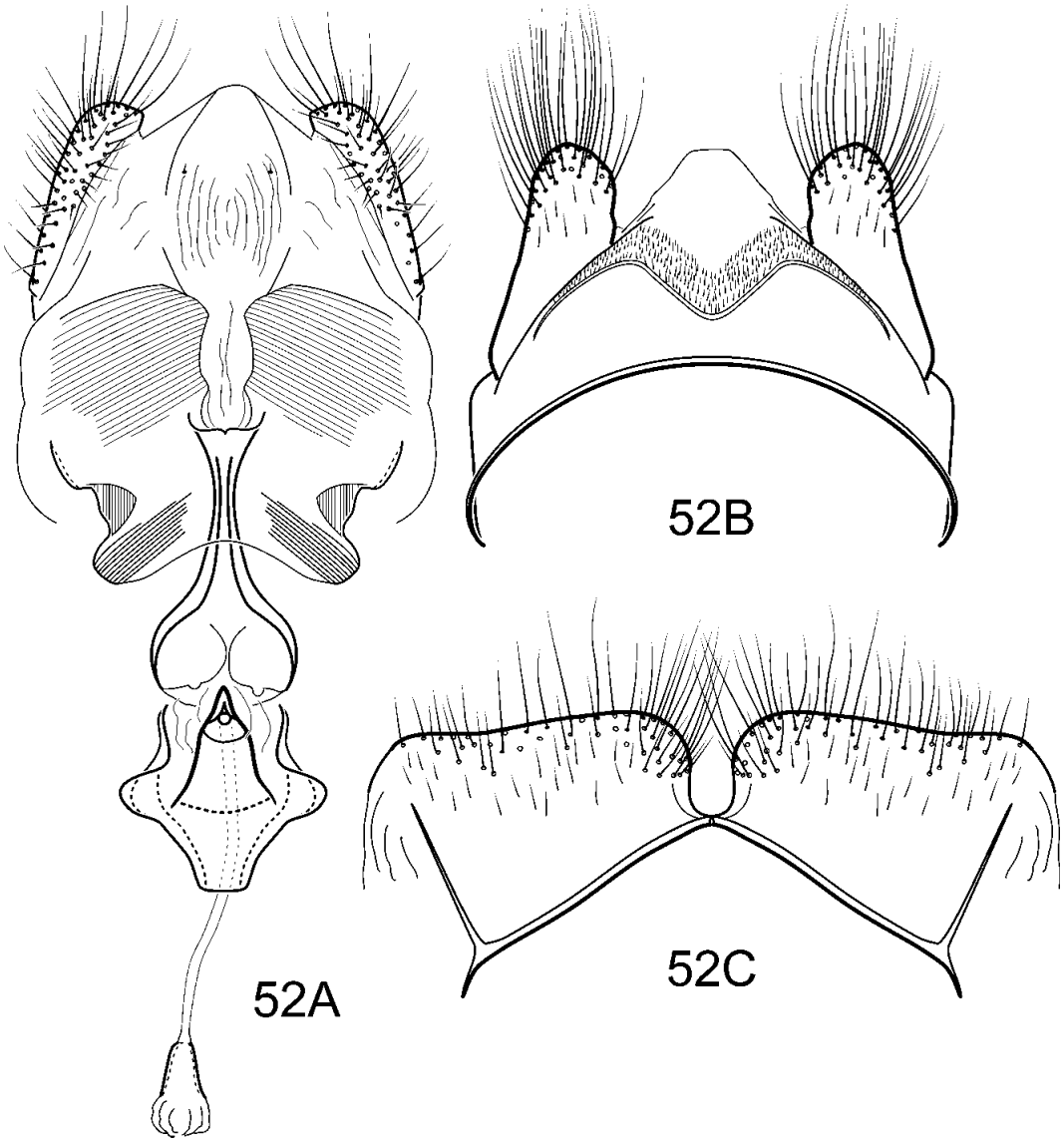


FIGURE 52. *Phylloicus fenestratus*. Female (UMSP000067850): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

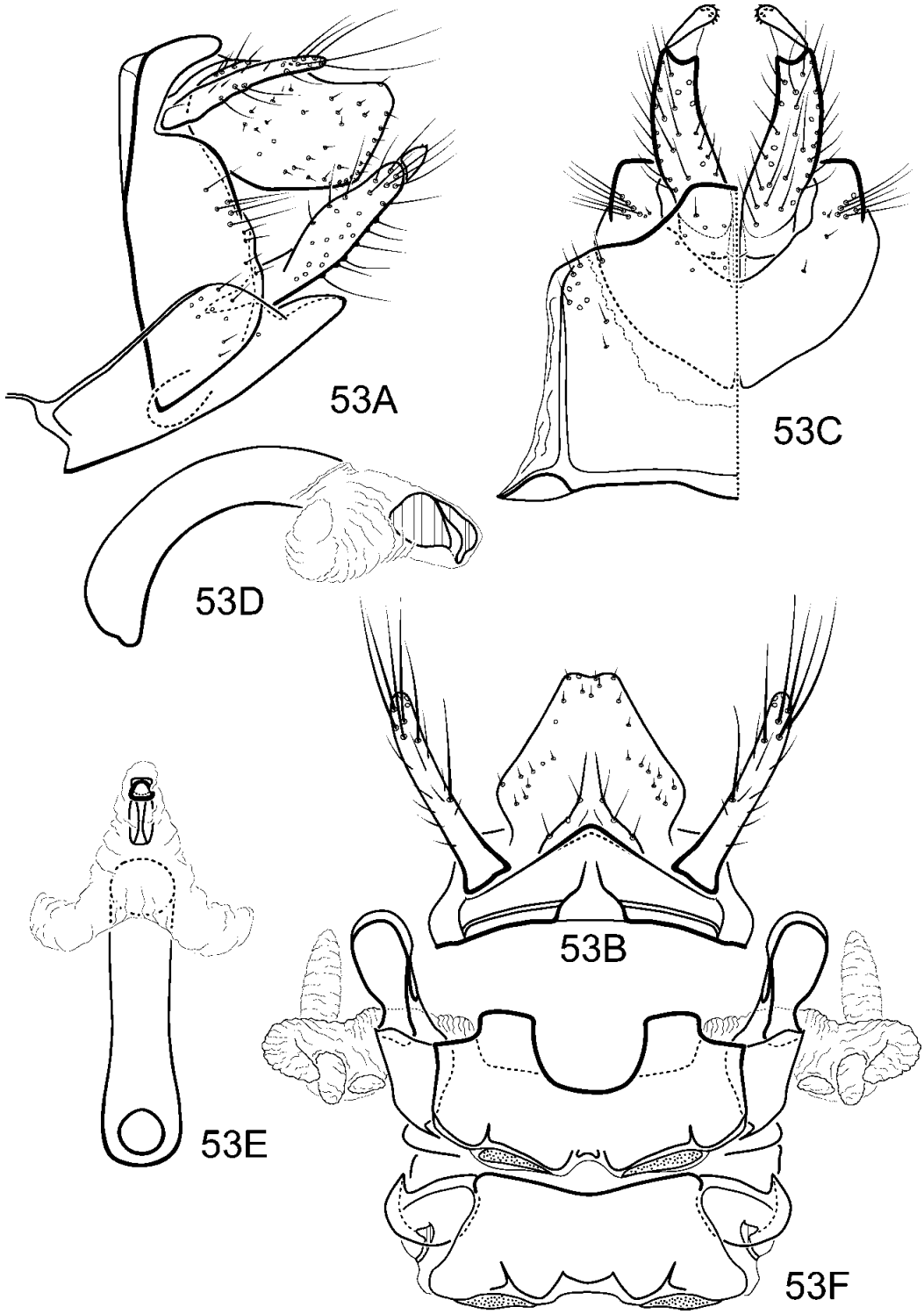


FIGURE 53. *Phylloicus flinti*. Male (UMSP000010115): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view; F— terga III and IV, dorsal view.

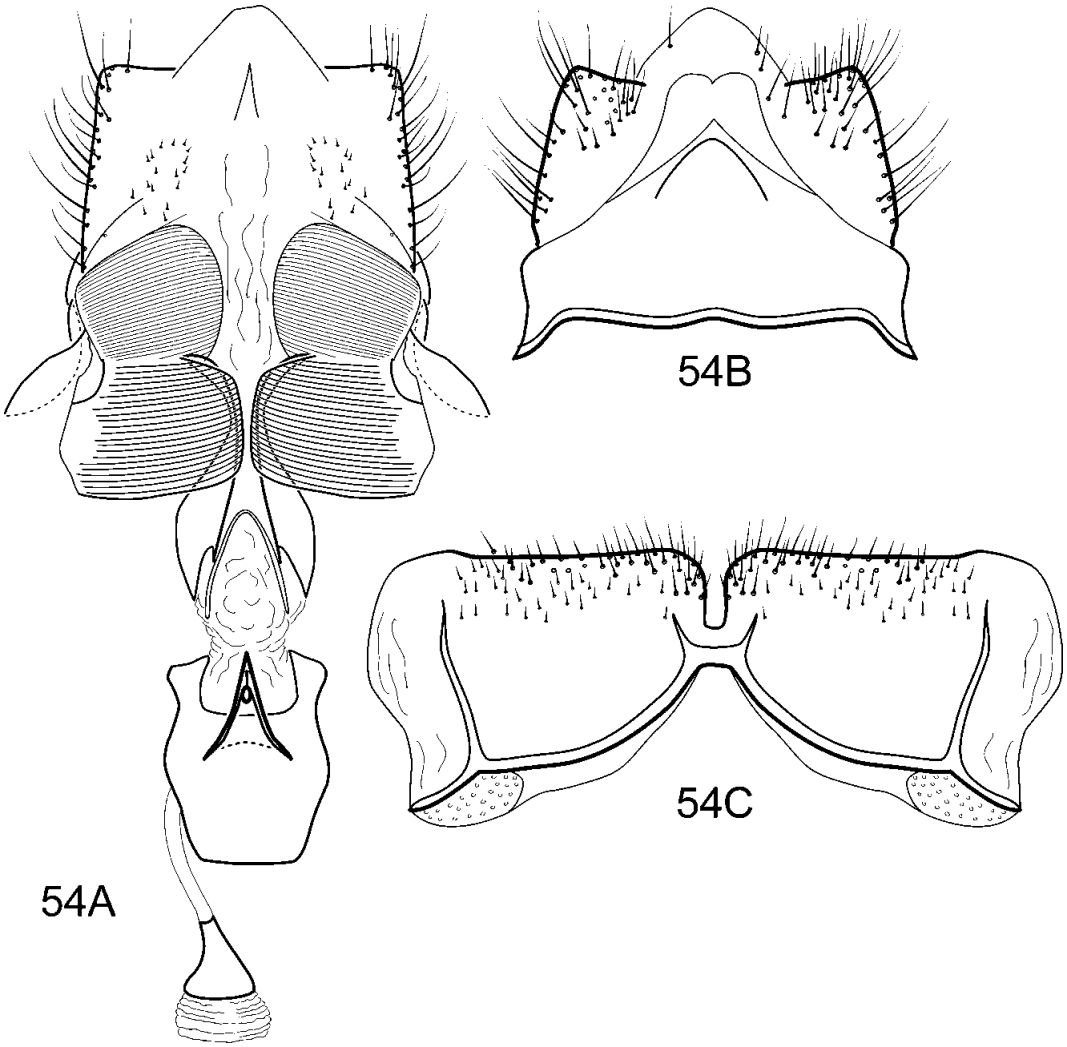


FIGURE 54. *Phylloicus flinti*. Female (UMSP000063413): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

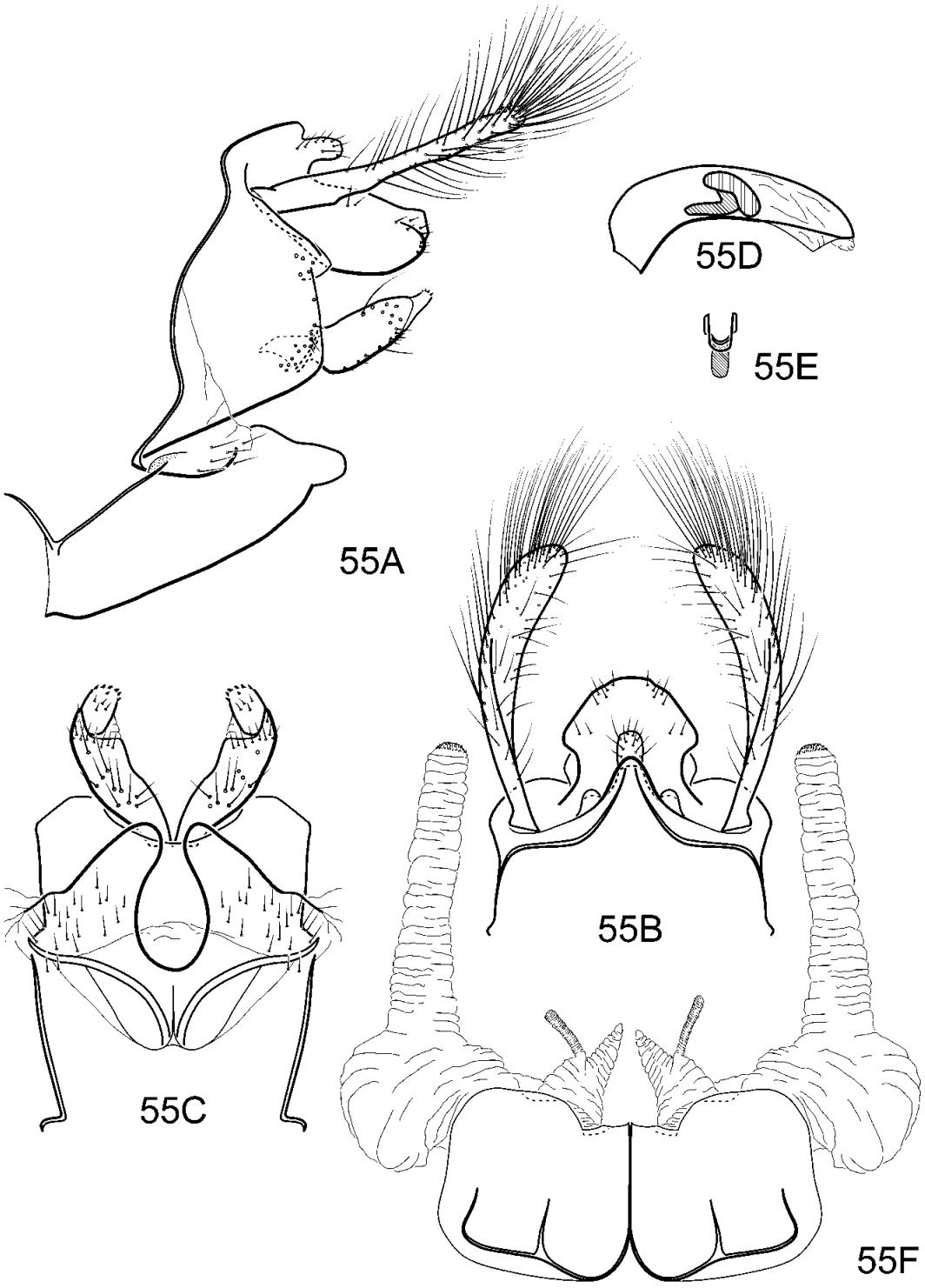


FIGURE 55. *Phylloicus hansoni*. Male (holotype): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view; F—tergum IV, dorsal view.

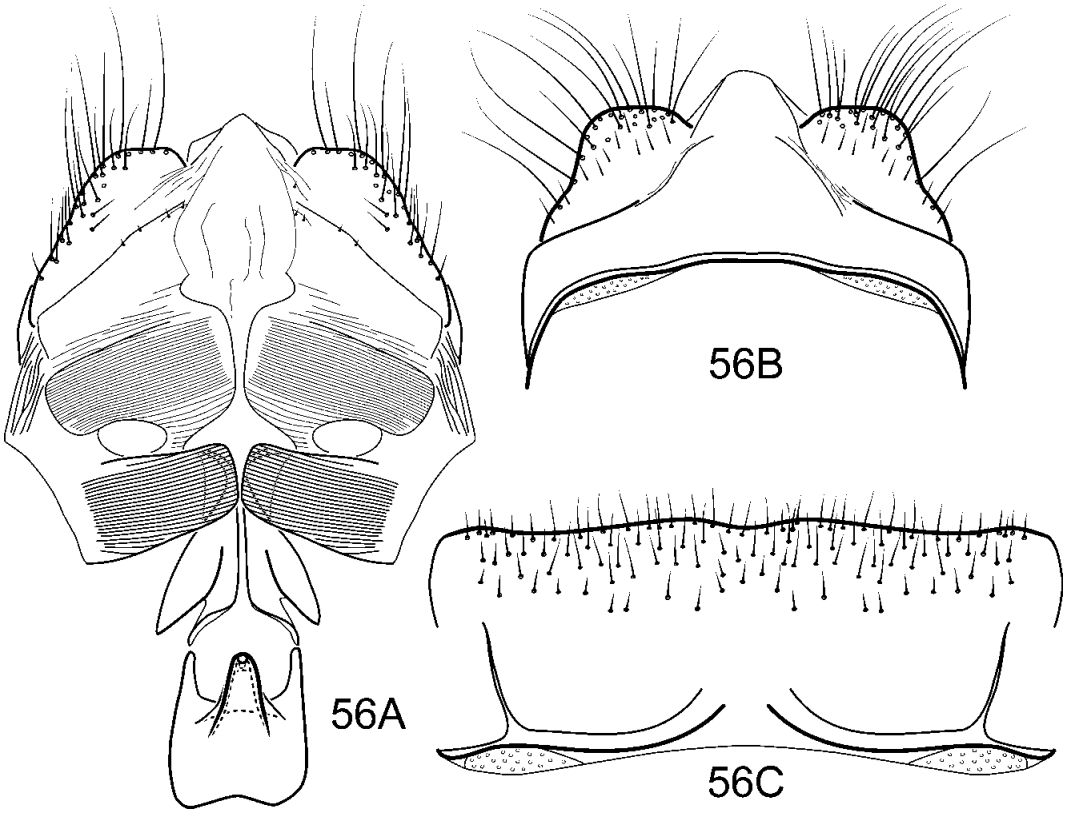


FIGURE 56. *Phylloicus hansoni*. Female (UMSP000022064): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

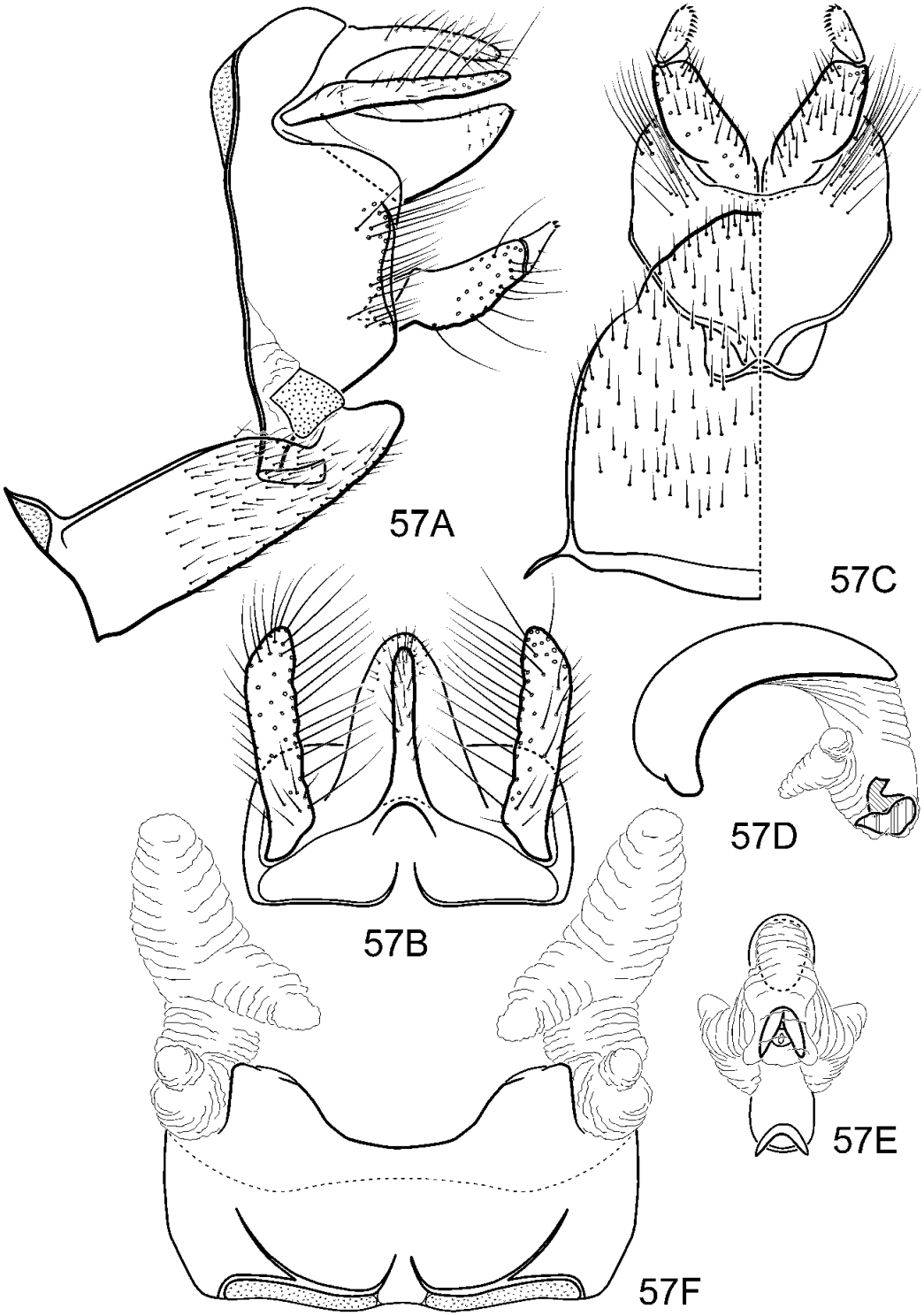


FIGURE 57. *Phylloicus holzenthali*. Male (UMSP000005680): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, caudoventral view; F—tergum IV, dorsal view.

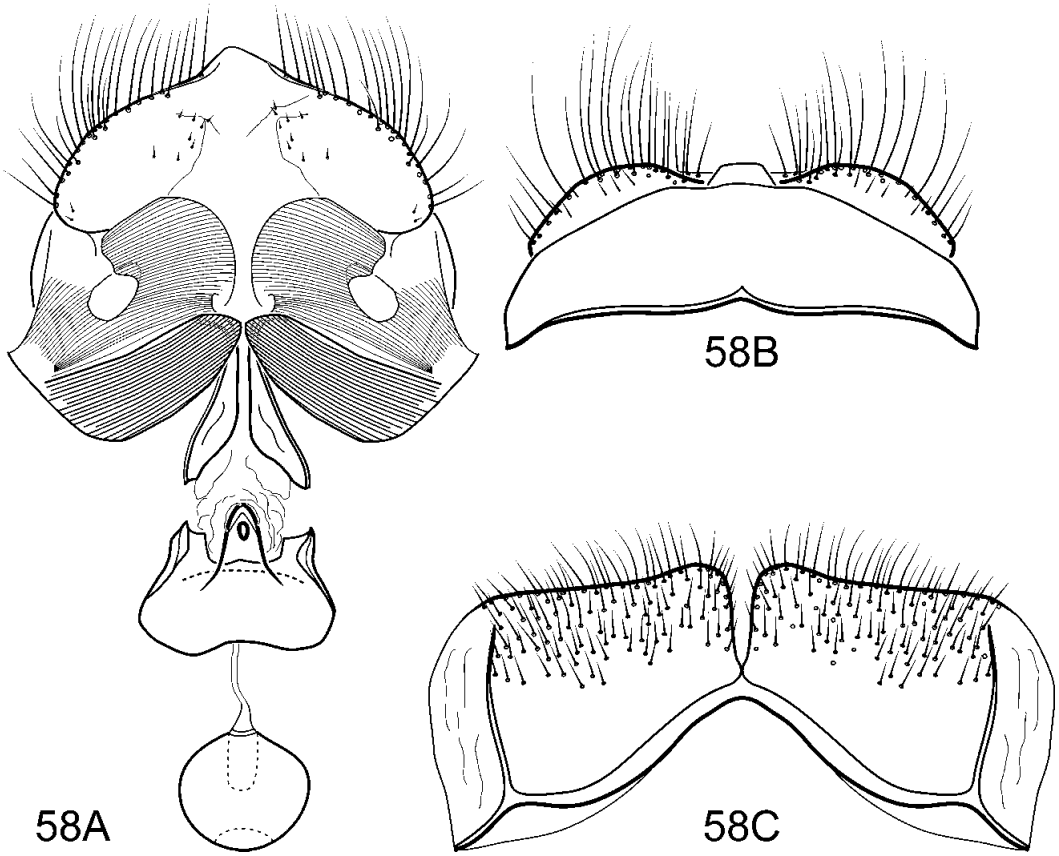


FIGURE 58. *Phylloicus holzenthali*. Female (UMSP000000267): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

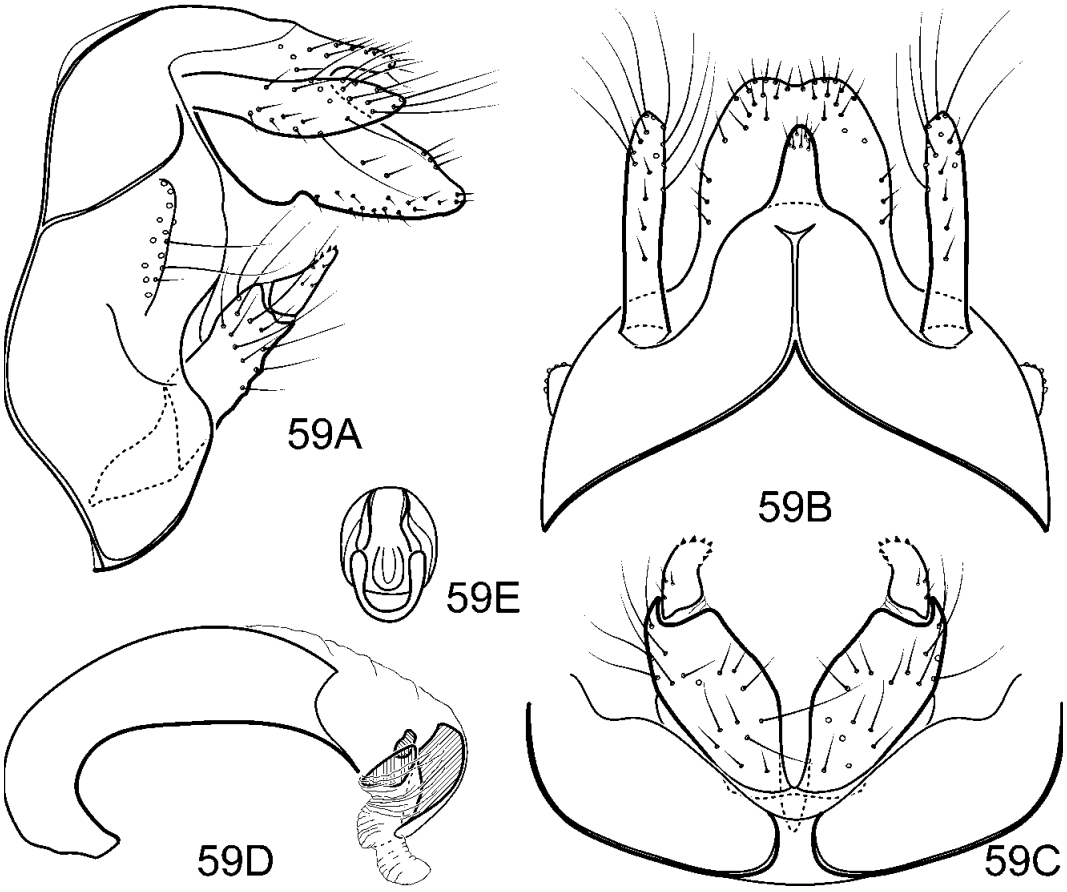


FIGURE 59. *Phylloicus iridescens*. Male (holotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view.

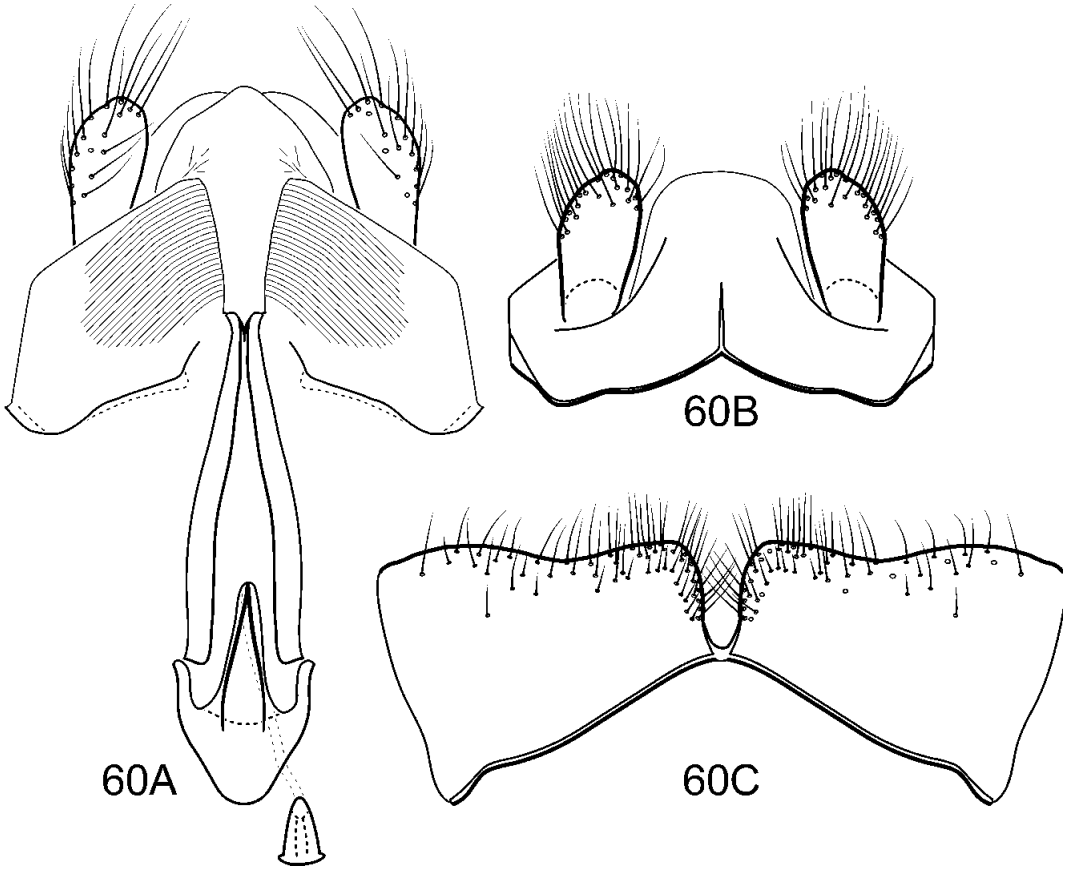


FIGURE 60. *Phylloicus iridescens*. Female (UMSP000009755): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

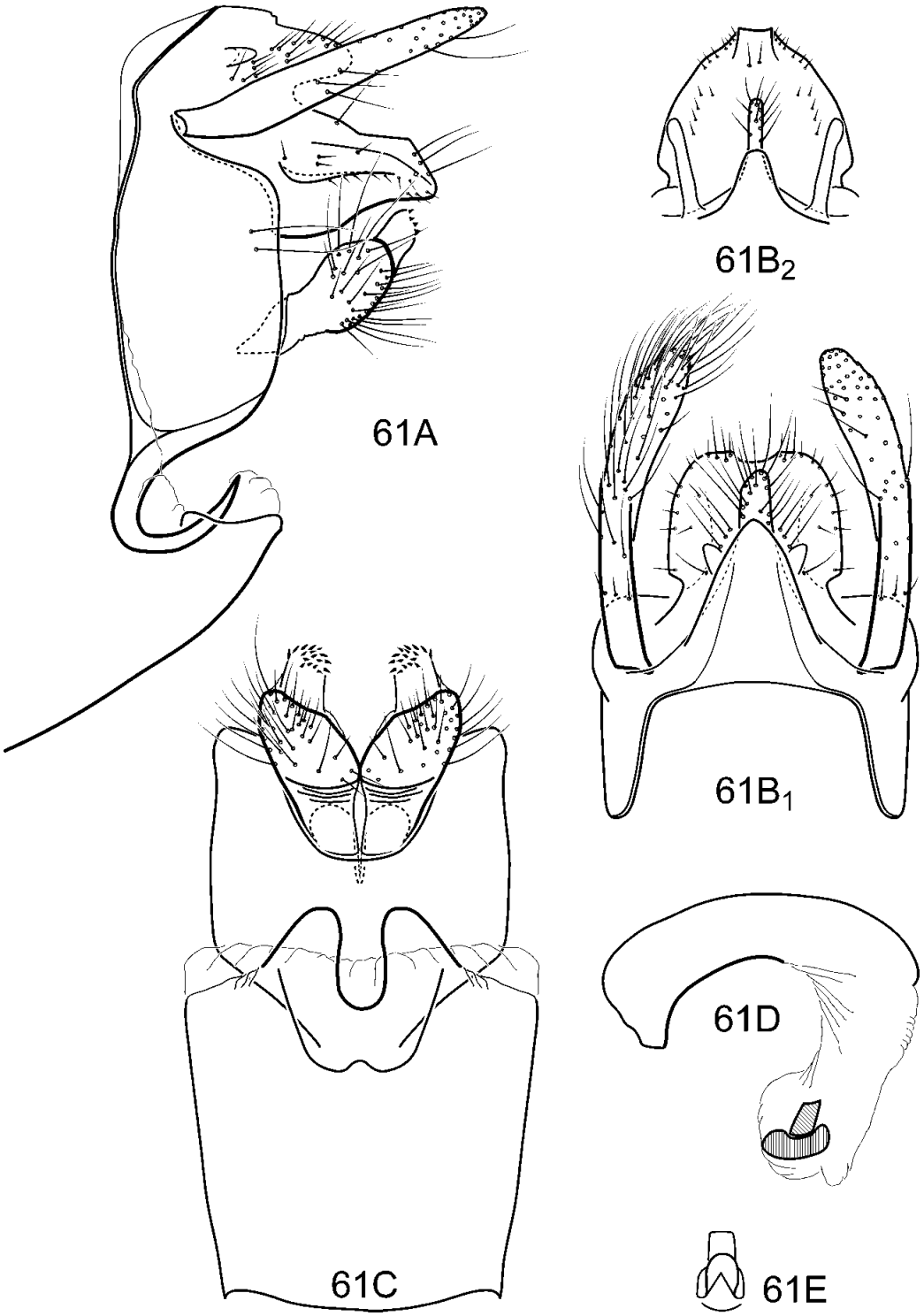


FIGURE 61. *Phylloicus lituratus*. Male (all views *P. lituratus* holotype, except B_2, *P. priapulus* holotype): A—lateral view; B_1—dorsal view; B_2—TIX-TX, dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view.

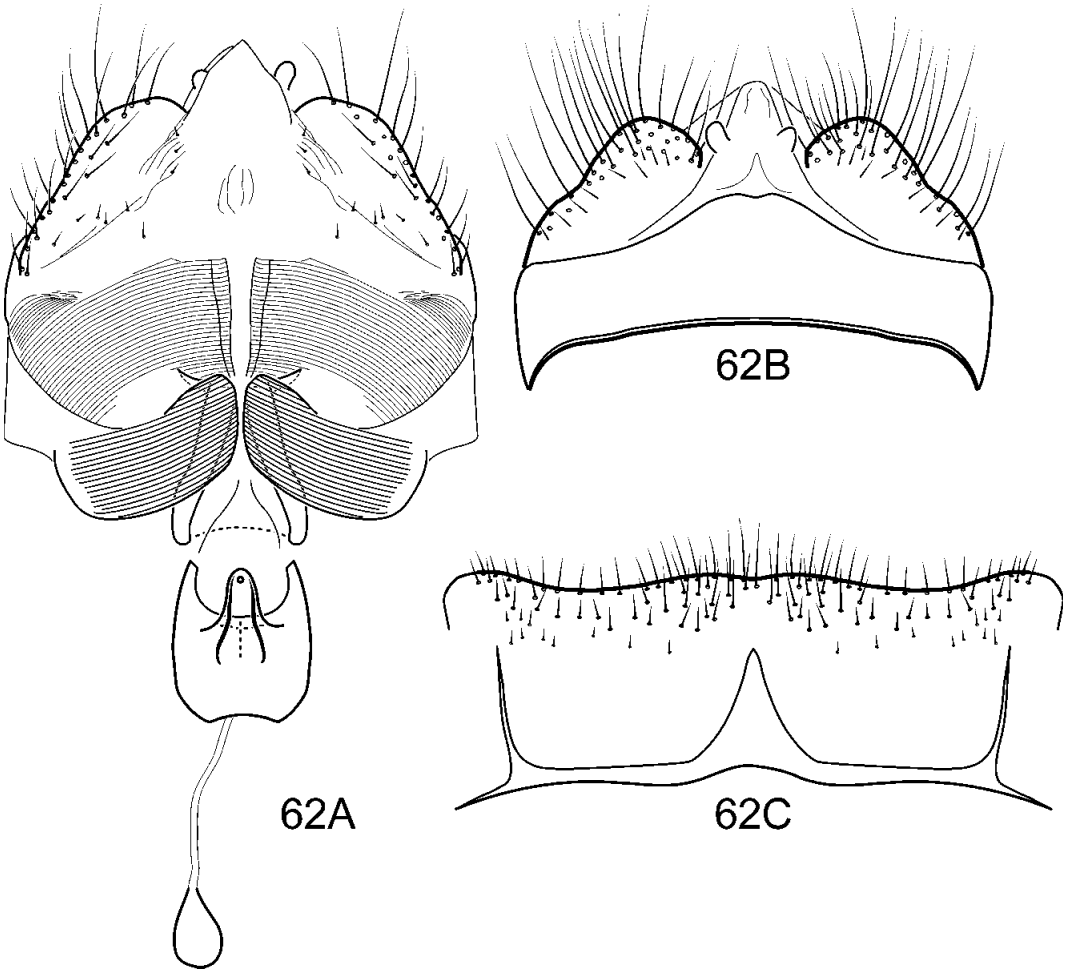


FIGURE 62. *Phylloicus lituratus*. Female (UMSP000018655): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

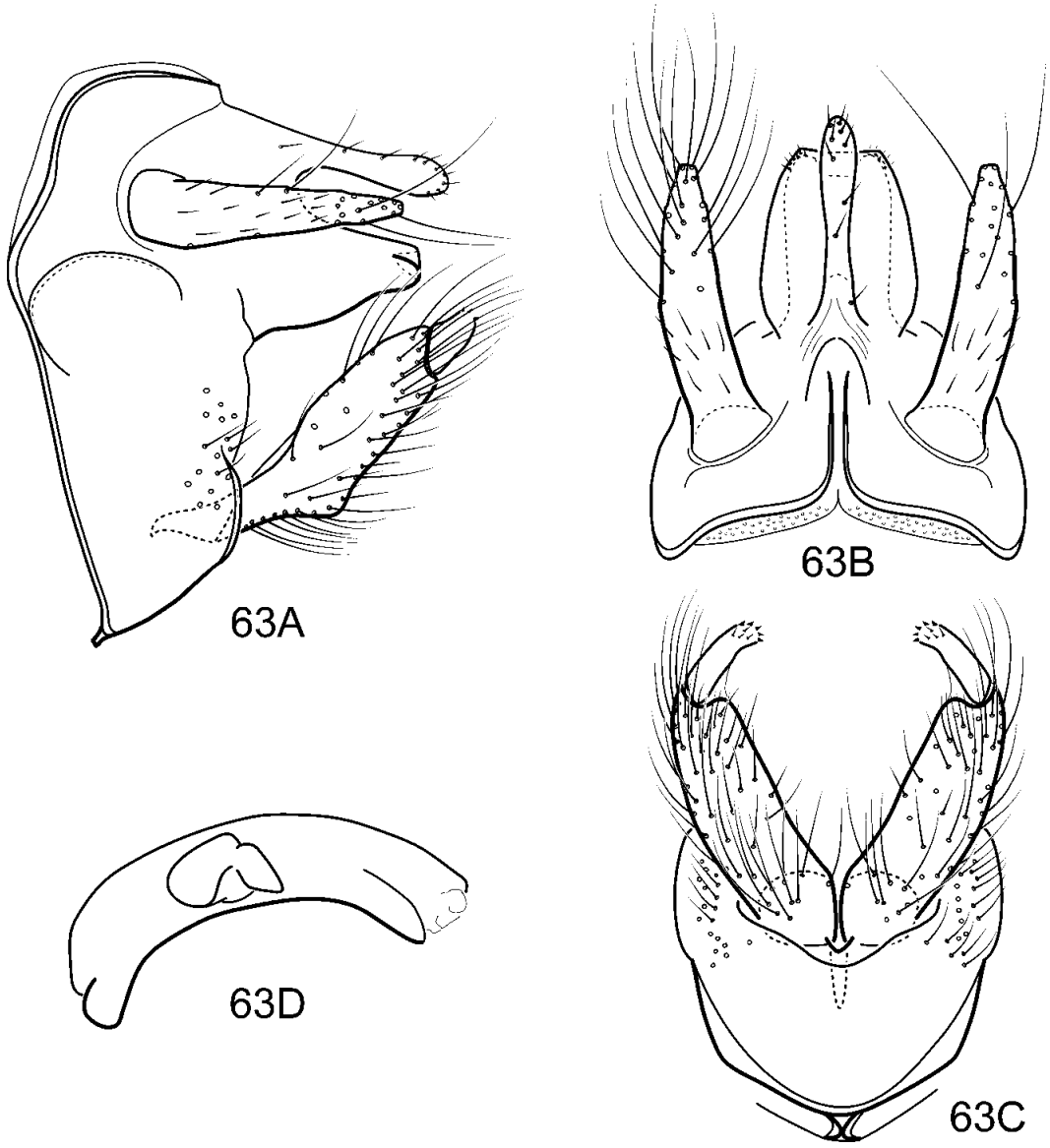


FIGURE 63. *Phylloicus llaviuco*. Male (holotype): A—lateral view; B—dorsal view; C—ventral view; D—phallus, lateral view.

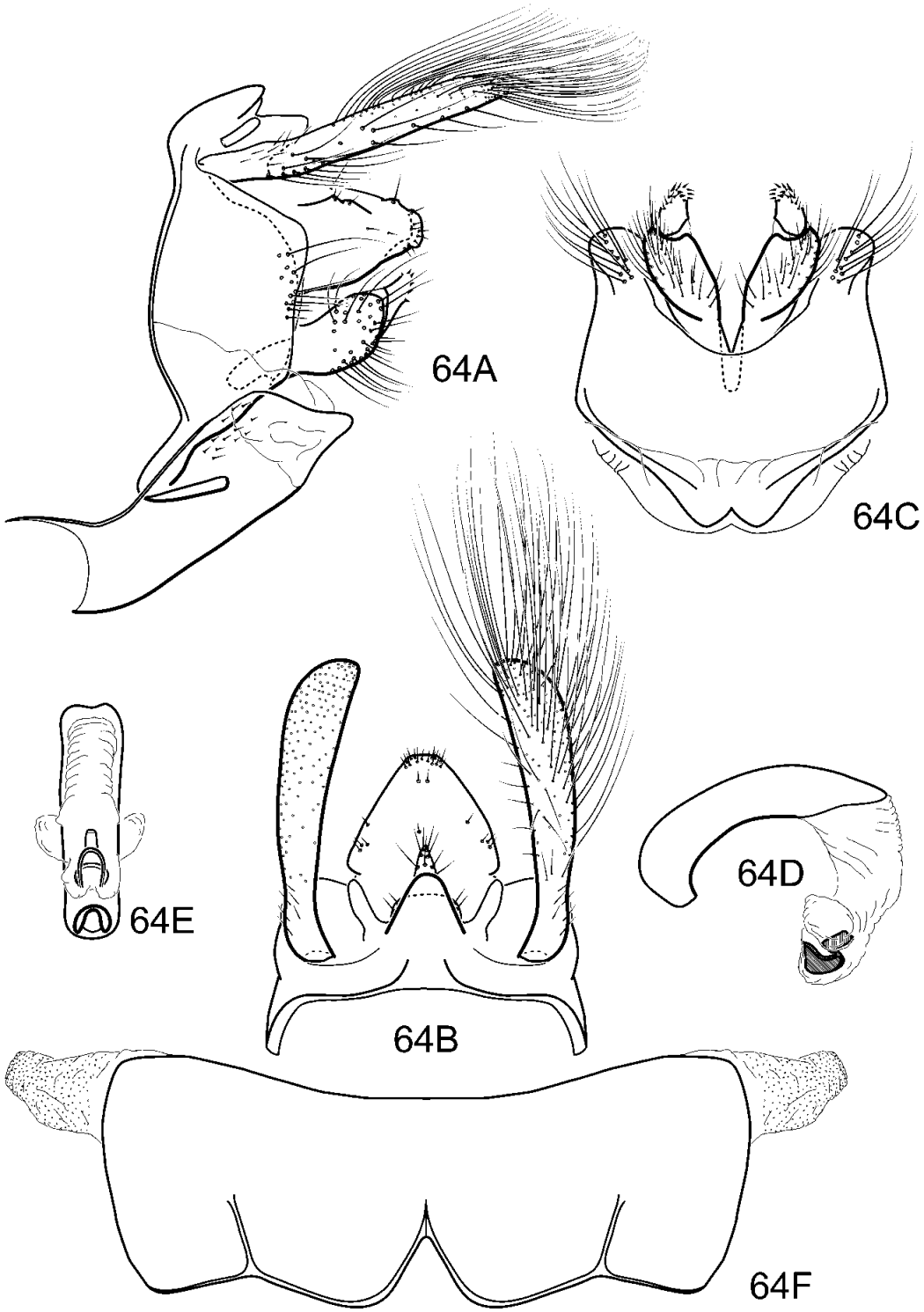


FIGURE 64. *Phylloicus maculatus*. Male (UMSP000067943): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view; F—tergum IV, dorsal view.

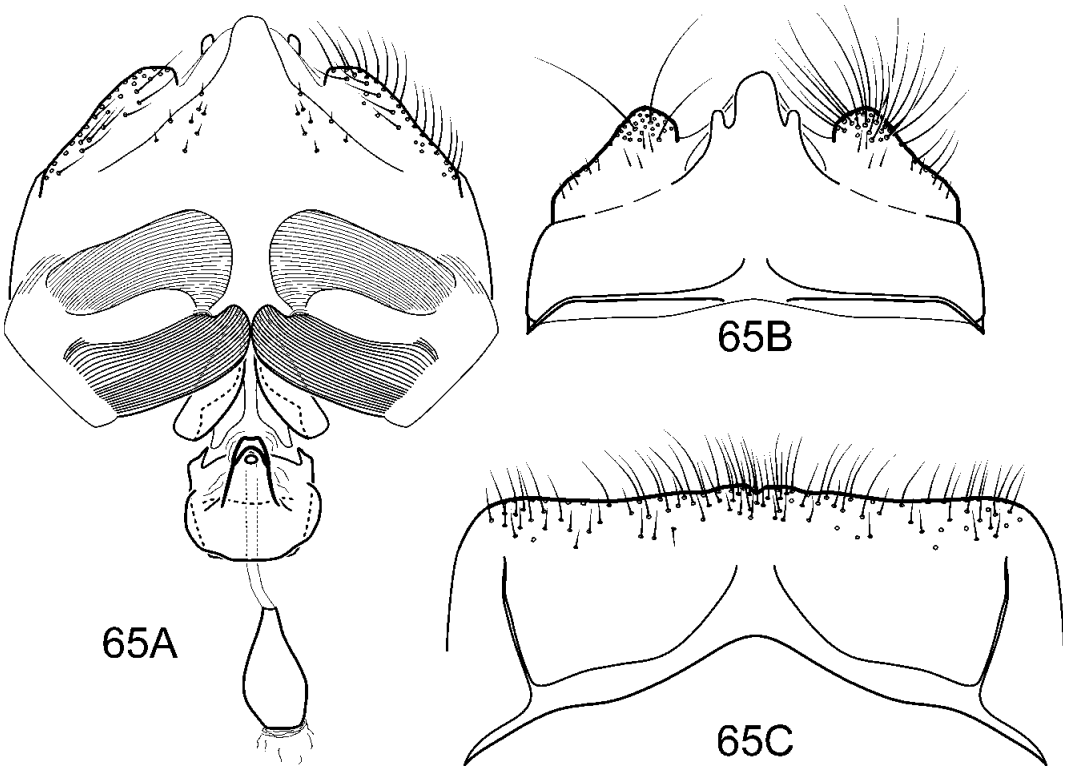


FIGURE 65. *Phylloicus maculatus*. Female (holotype): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

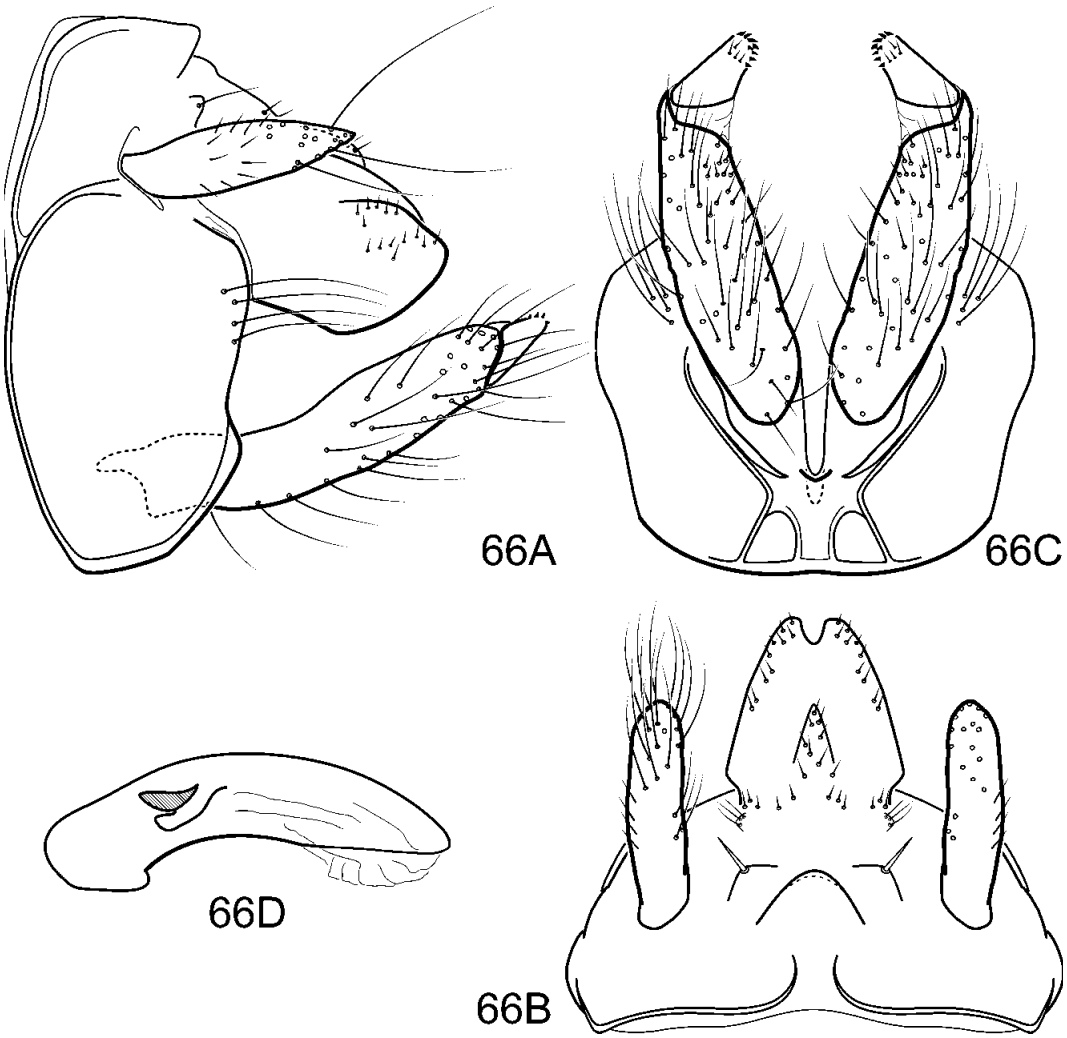


FIGURE 66. *Phylloicus magnus*. Male (holotype): A—lateral view; B—dorsal view; C—ventral view; D—phallus, lateral view.

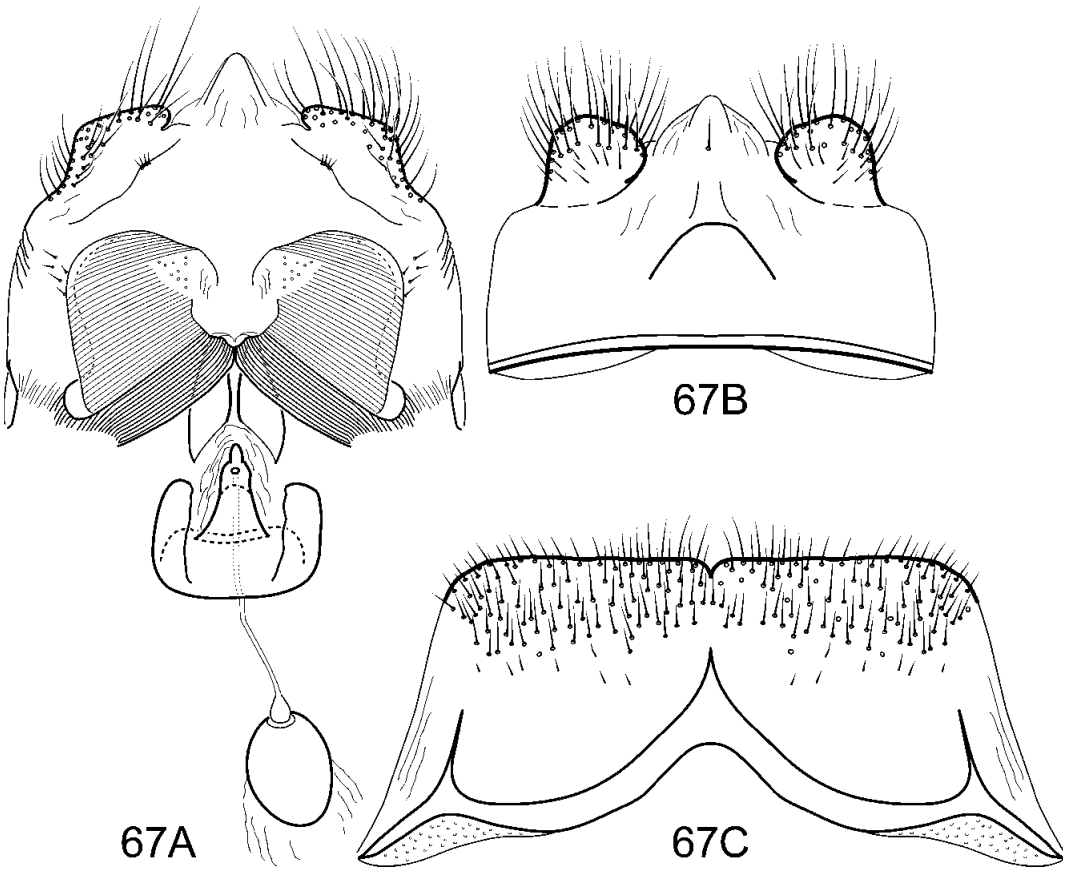


FIGURE 67. *Phylloicus magnus*. Female (UMSP000068008): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

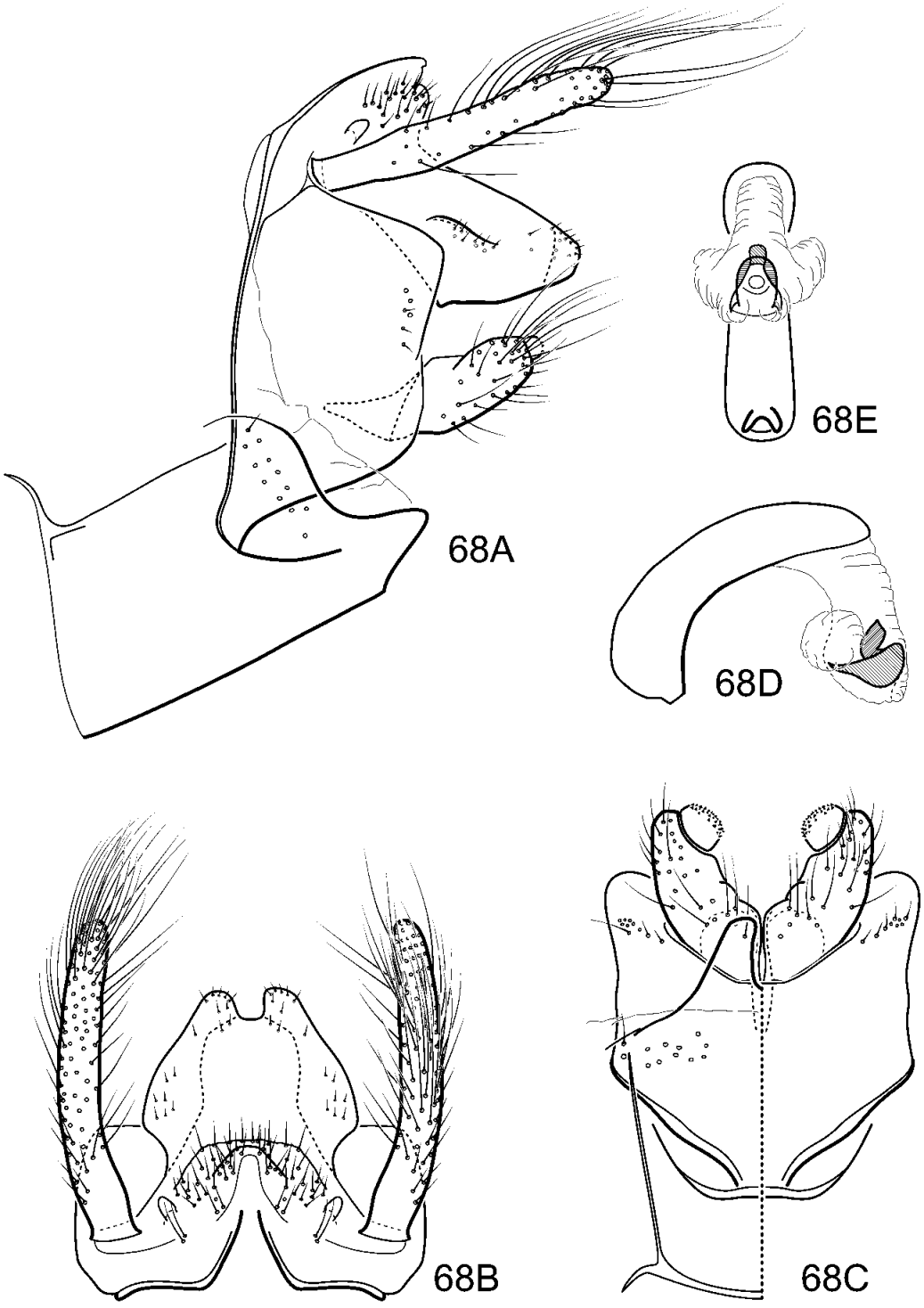


FIGURE 68. *Phylloicus major*. Male (A-C, holotype; D-E, UMSP000066753): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view.

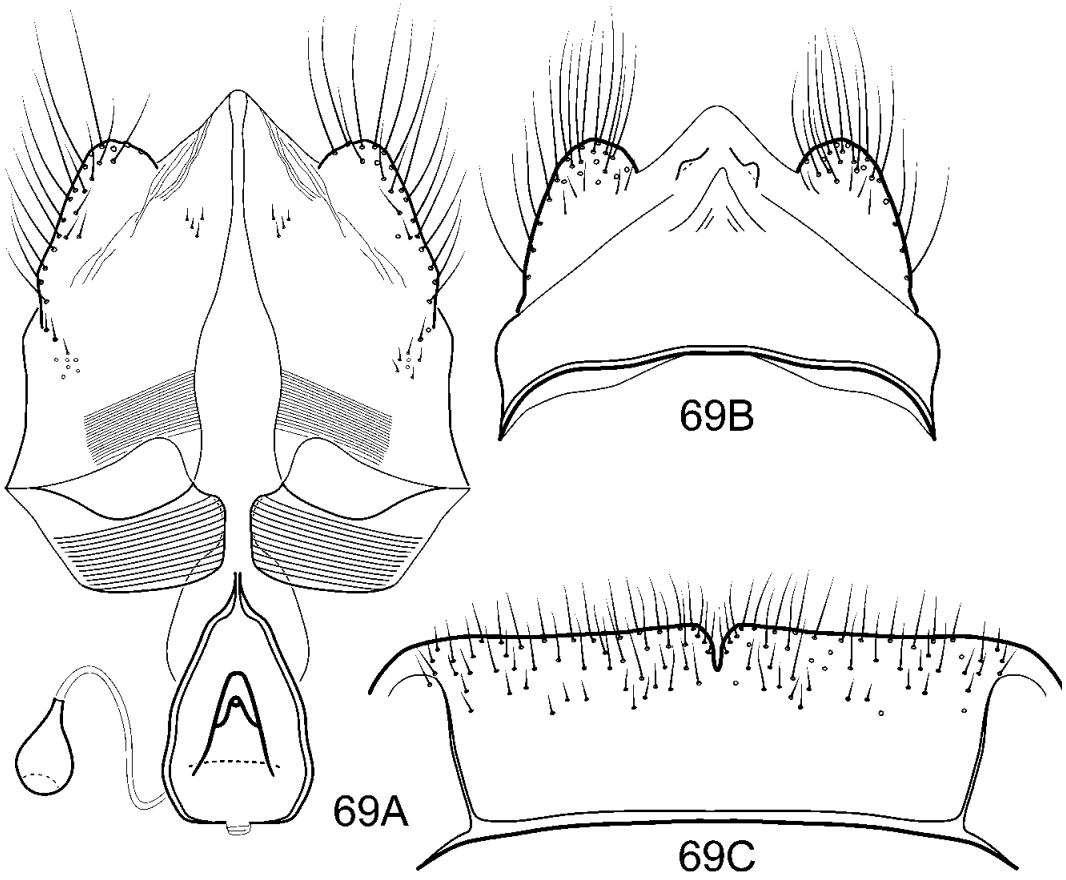


FIGURE 69. *Phylloicus major.* Female (MCZ111107): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

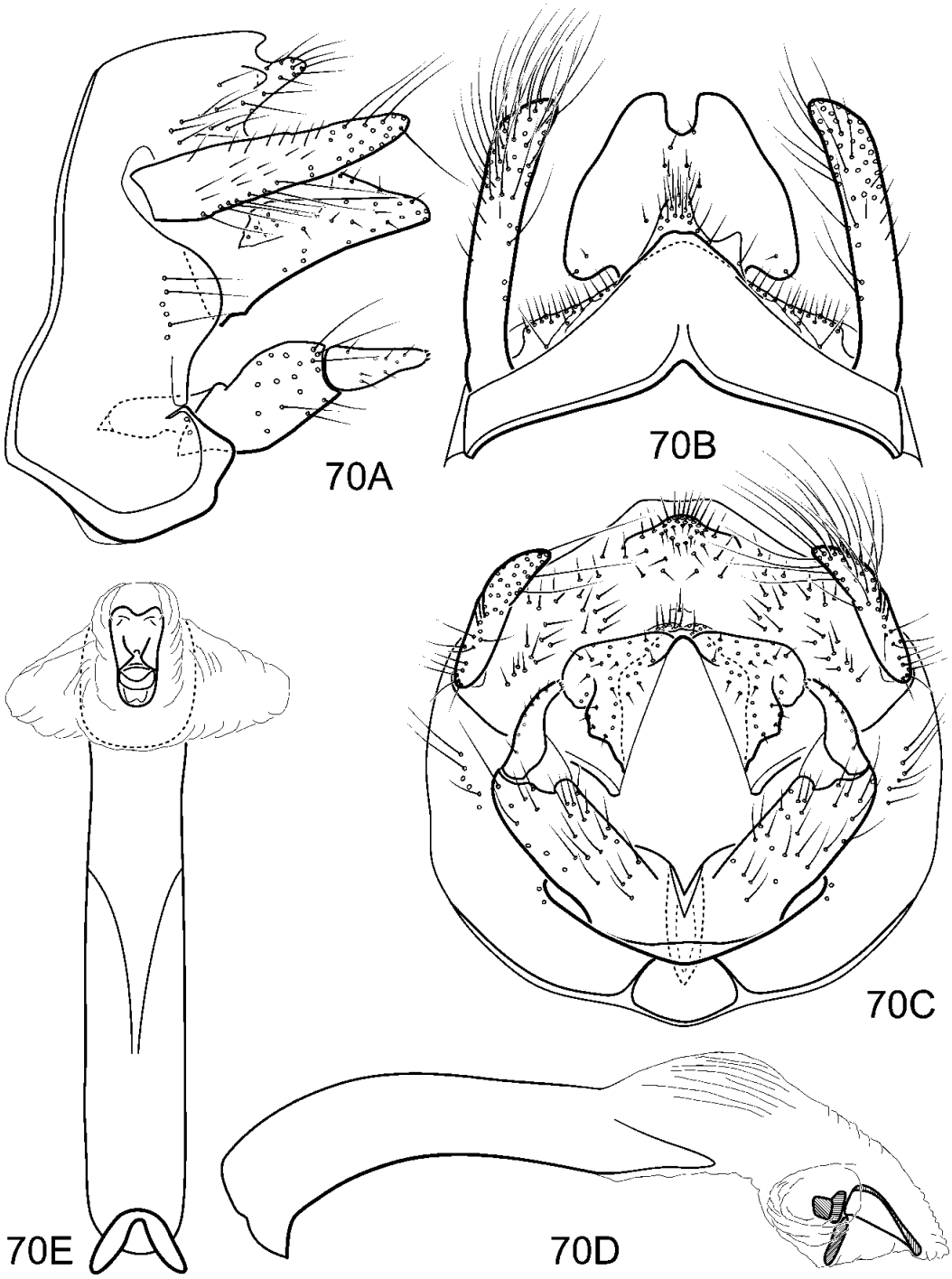


FIGURE 70. *Phylloicus mexicanus*. Male (A-C, holotype; D-E, UMSP000041376): A—lateral view; B—dorsal view; C—caudal view; D—phallus, lateral view; E—phallus, ventral view.

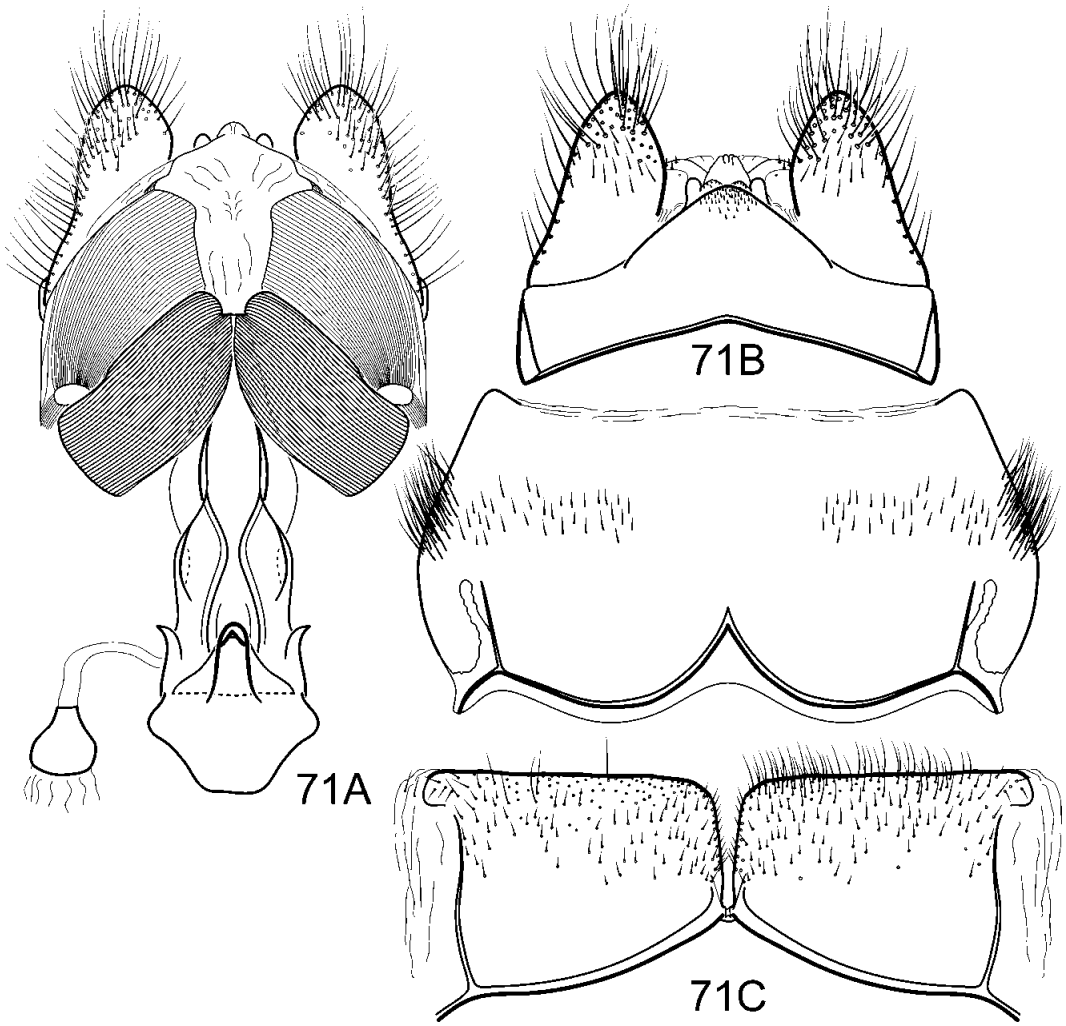


FIGURE 71. *Phylloicus mexicanus*. Female (UMSP000041374): A—sterna IX, X and vaginal apparatus, ventral view; B—terga VIII-X, dorsal view; C—sternum VIII, ventral view.

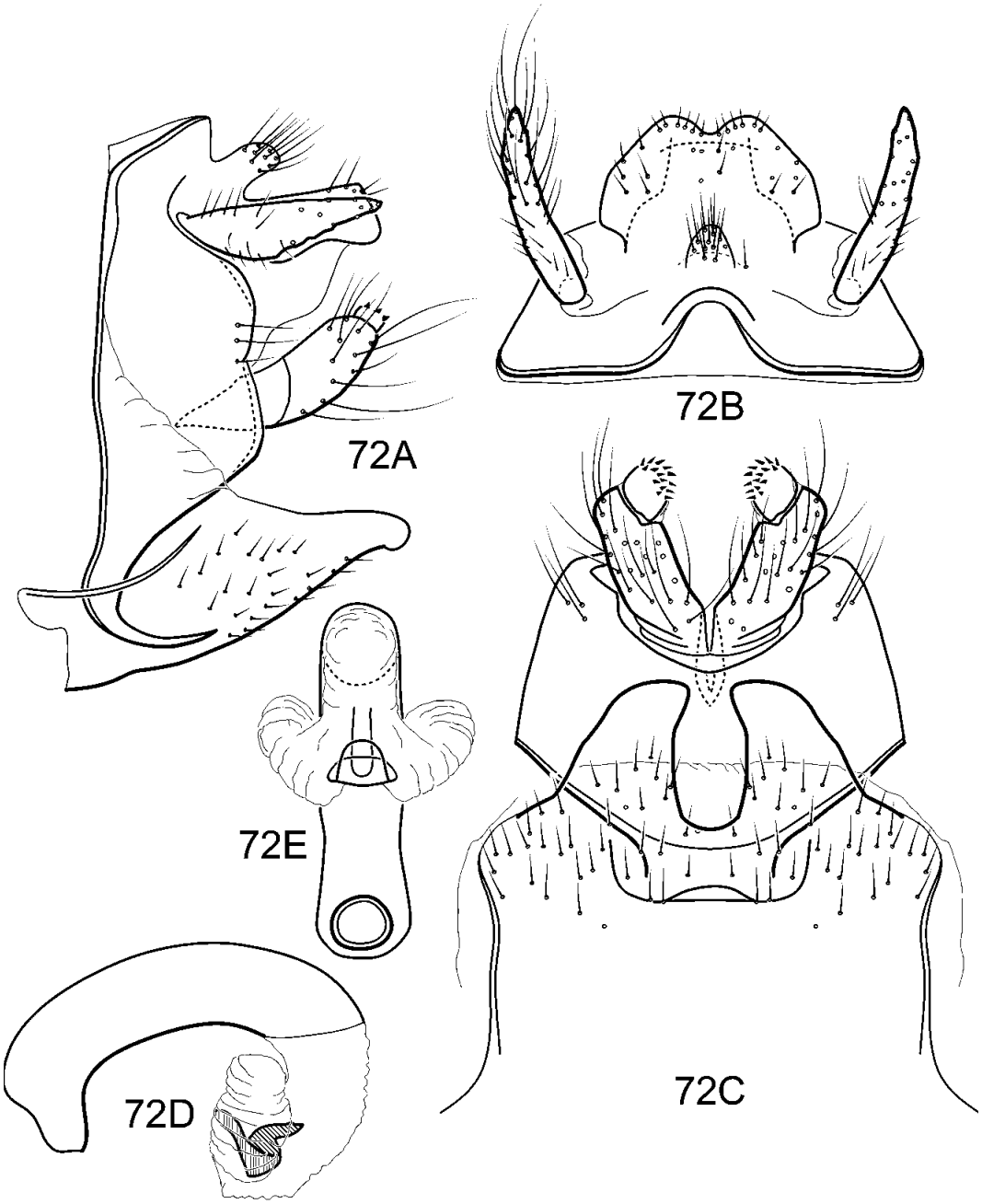


FIGURE 72. *Phylloicus monticolus*. Male (UMSP000027423): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view.

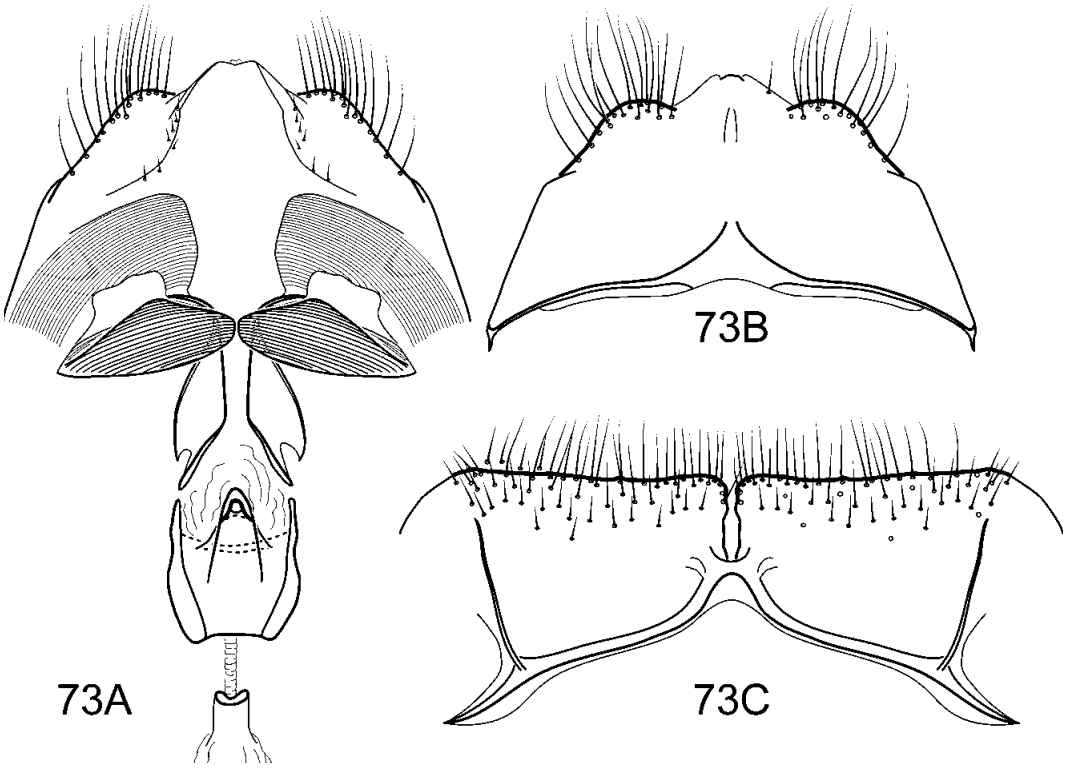


FIGURE 73. *Phylloicus monticolus*. Female (UMSP000027424): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

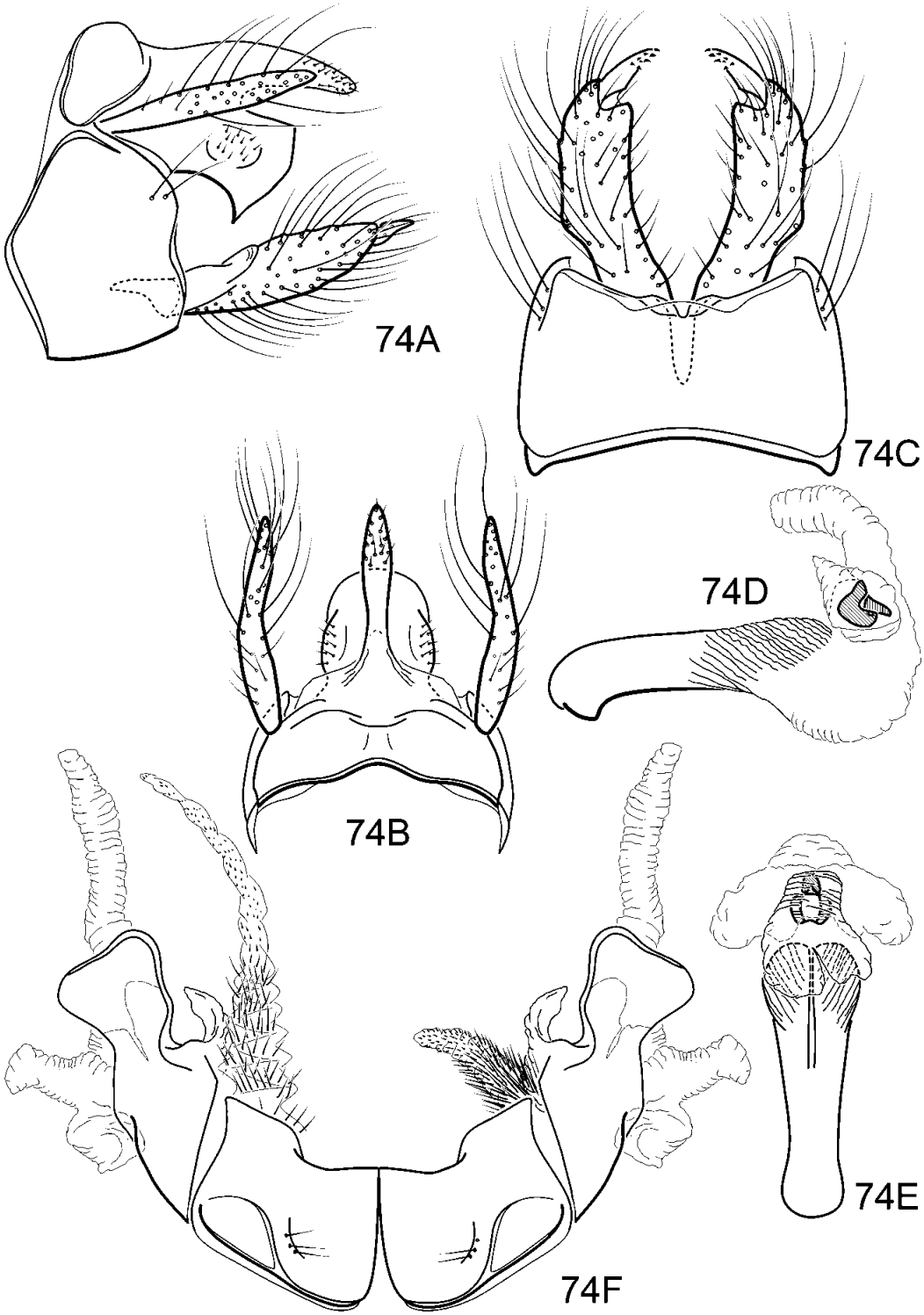


FIGURE 74. *Phylloicus munozi*. Male (UMSP000000250): A—lateral view; B—dorsal view; C— sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view; F—tergum IV, dorsal view.

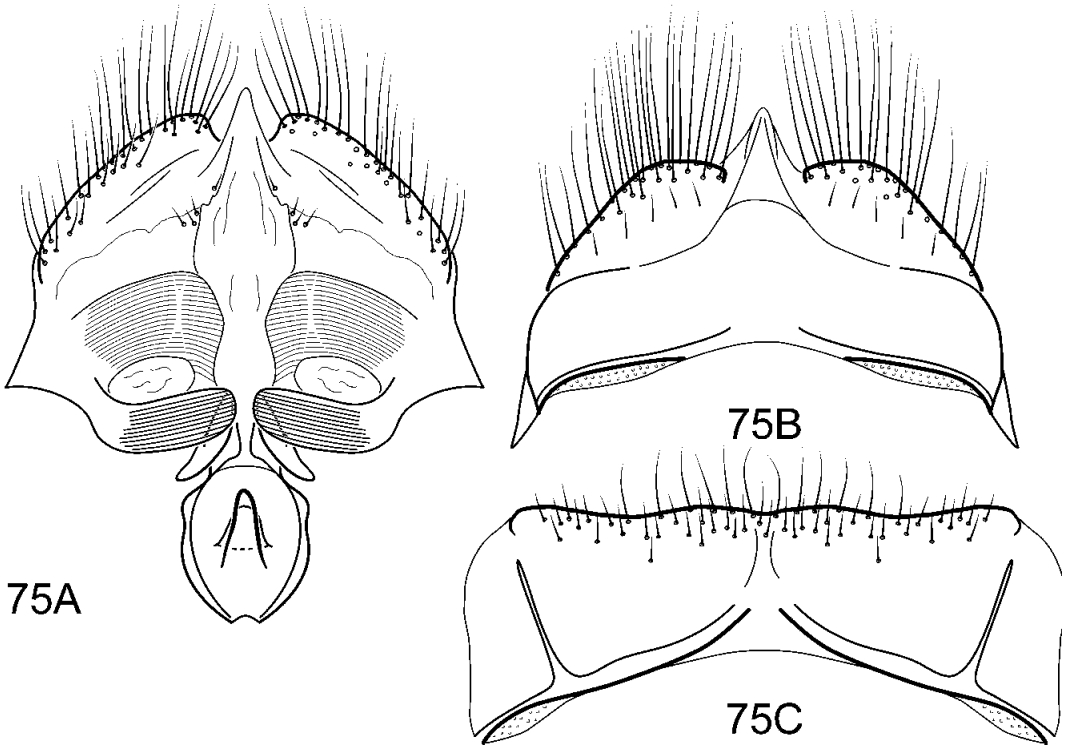


FIGURE 75. *Phylloicus munozi*. Female (UMSP000032413): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

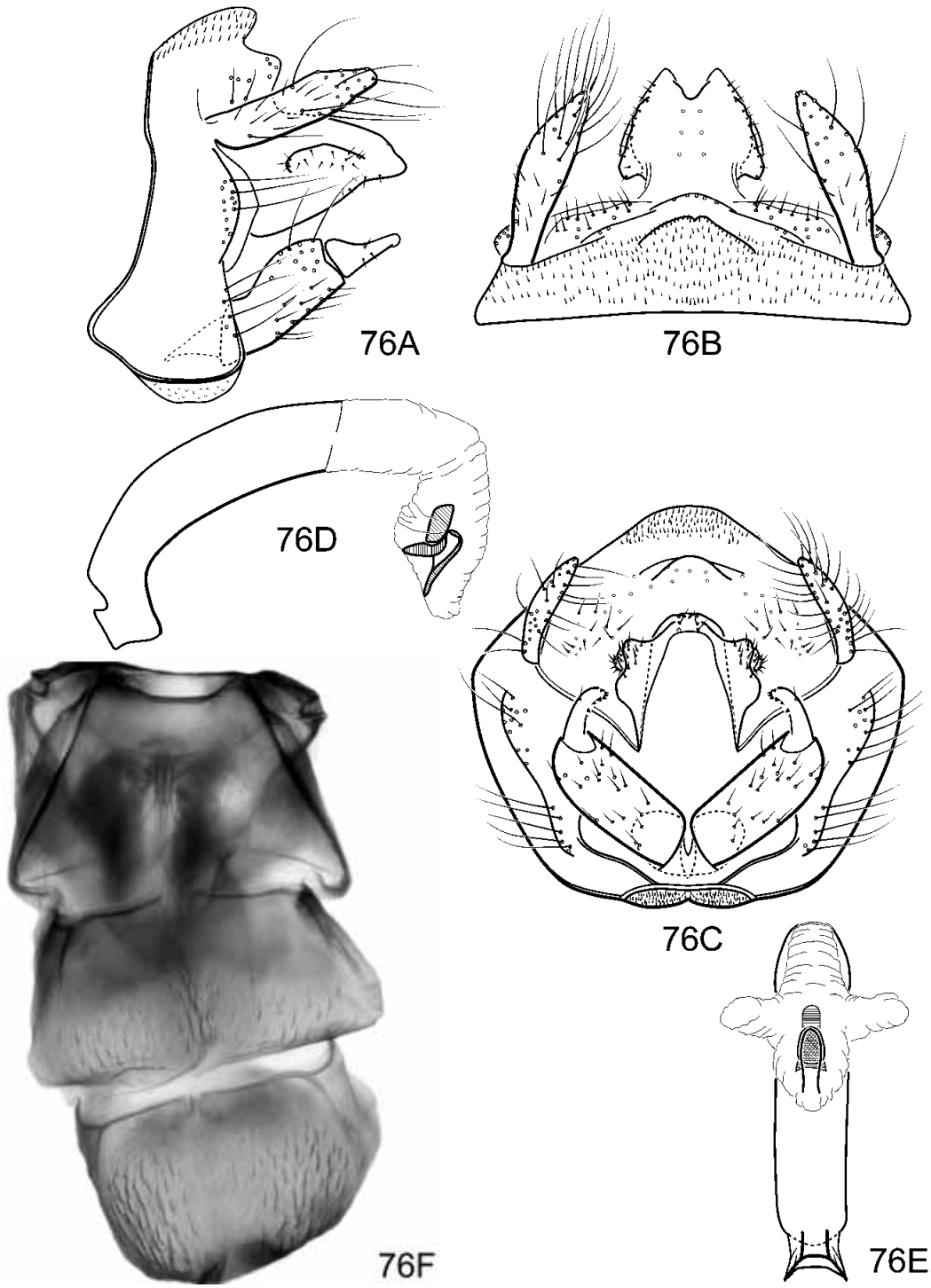


FIGURE 76. *Phylloicus nigripennis*. Male (A-C, UMSP000010239; D-E, UMSP000068233): A— lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view; F—terga I-III, dorsal view.

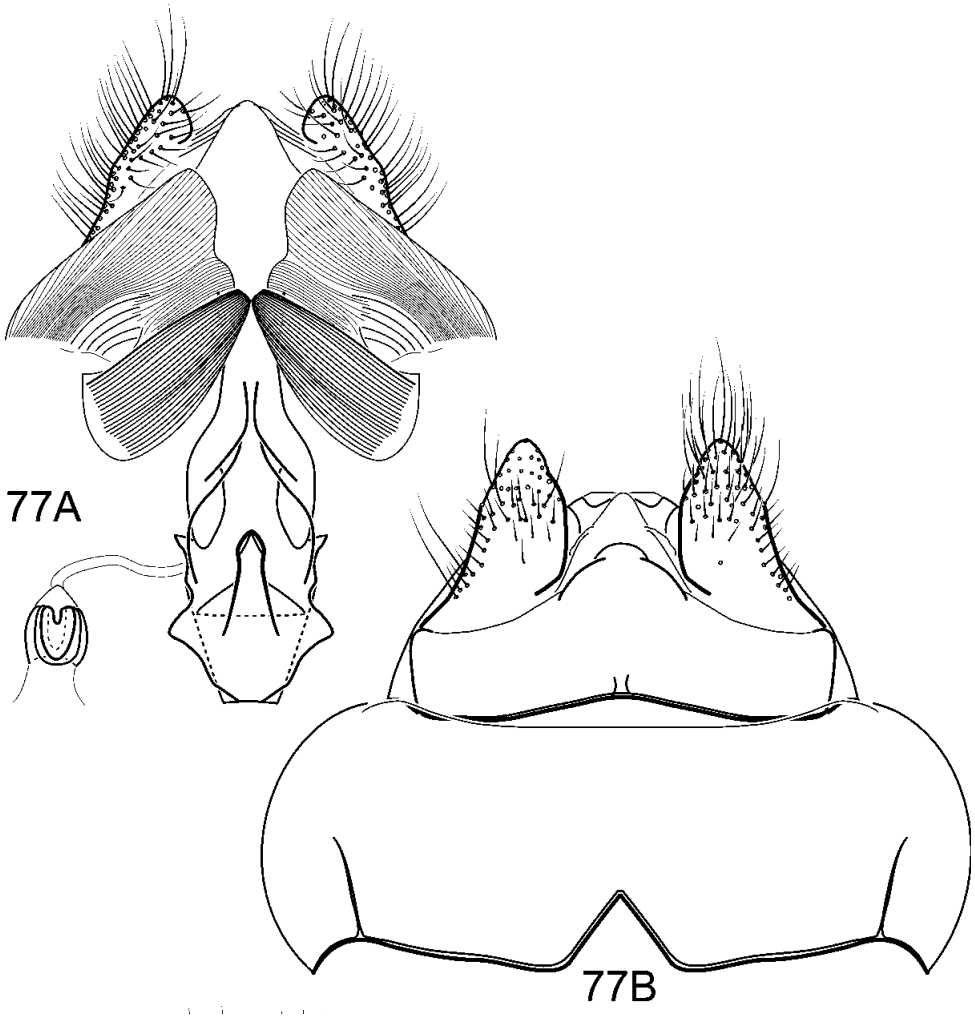


FIGURE 77. *Phylloicus nigripennis*. Female (holotype): A—sterna IX, X and vaginal apparatus, ventral view; B—terga VIII-X, dorsal view; C—sternum VIII, ventral view.

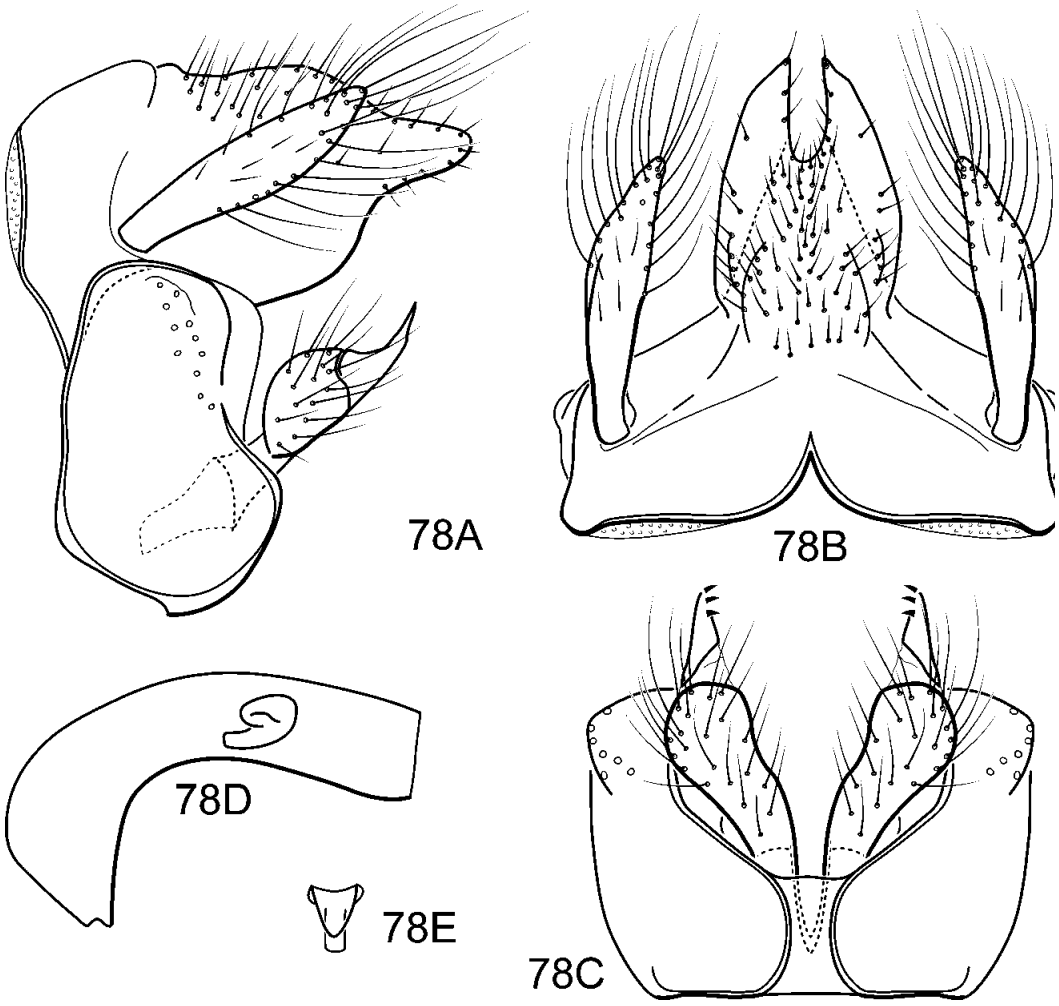


FIGURE 78. *Phylloicus obliquus*. Male (UMSP000068257): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view.

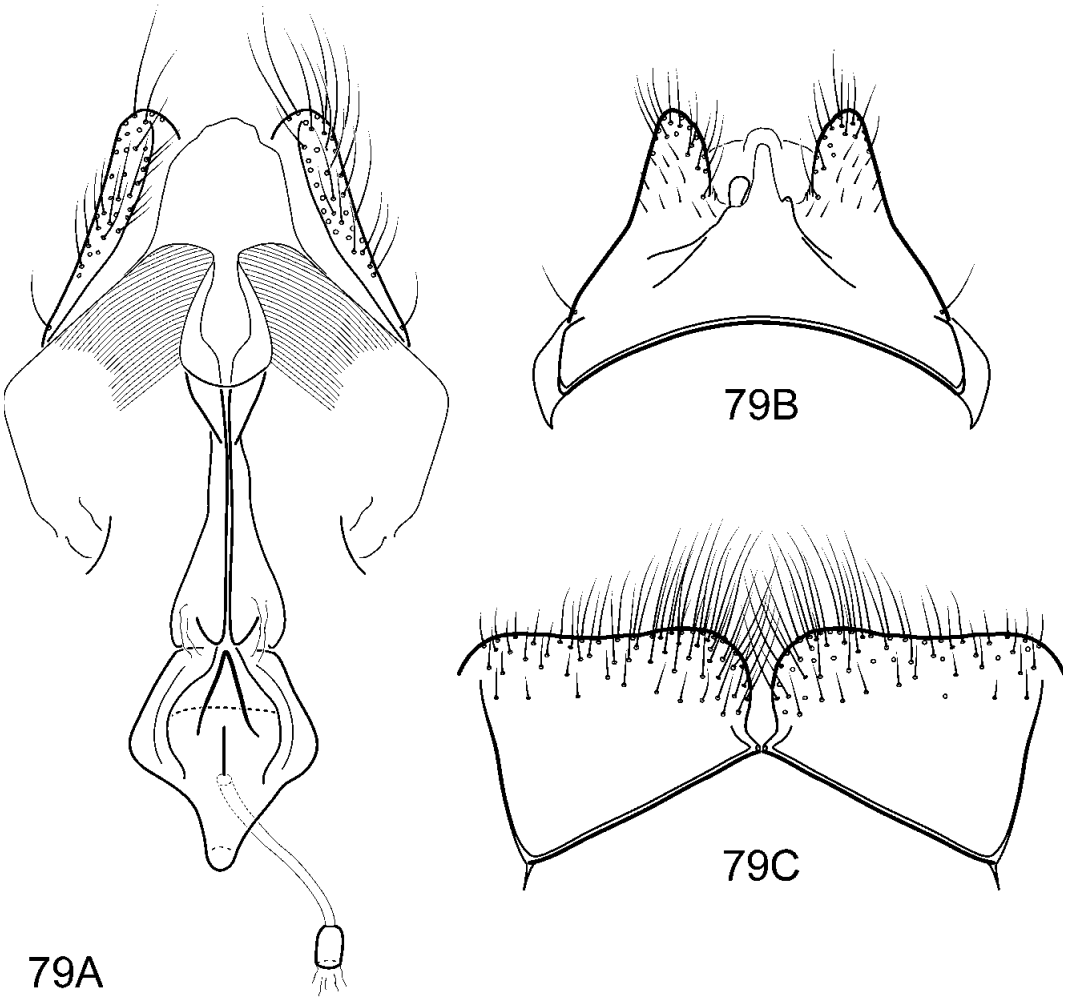


FIGURE 79. *Phylloicus obliquus*. Female (holotype): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

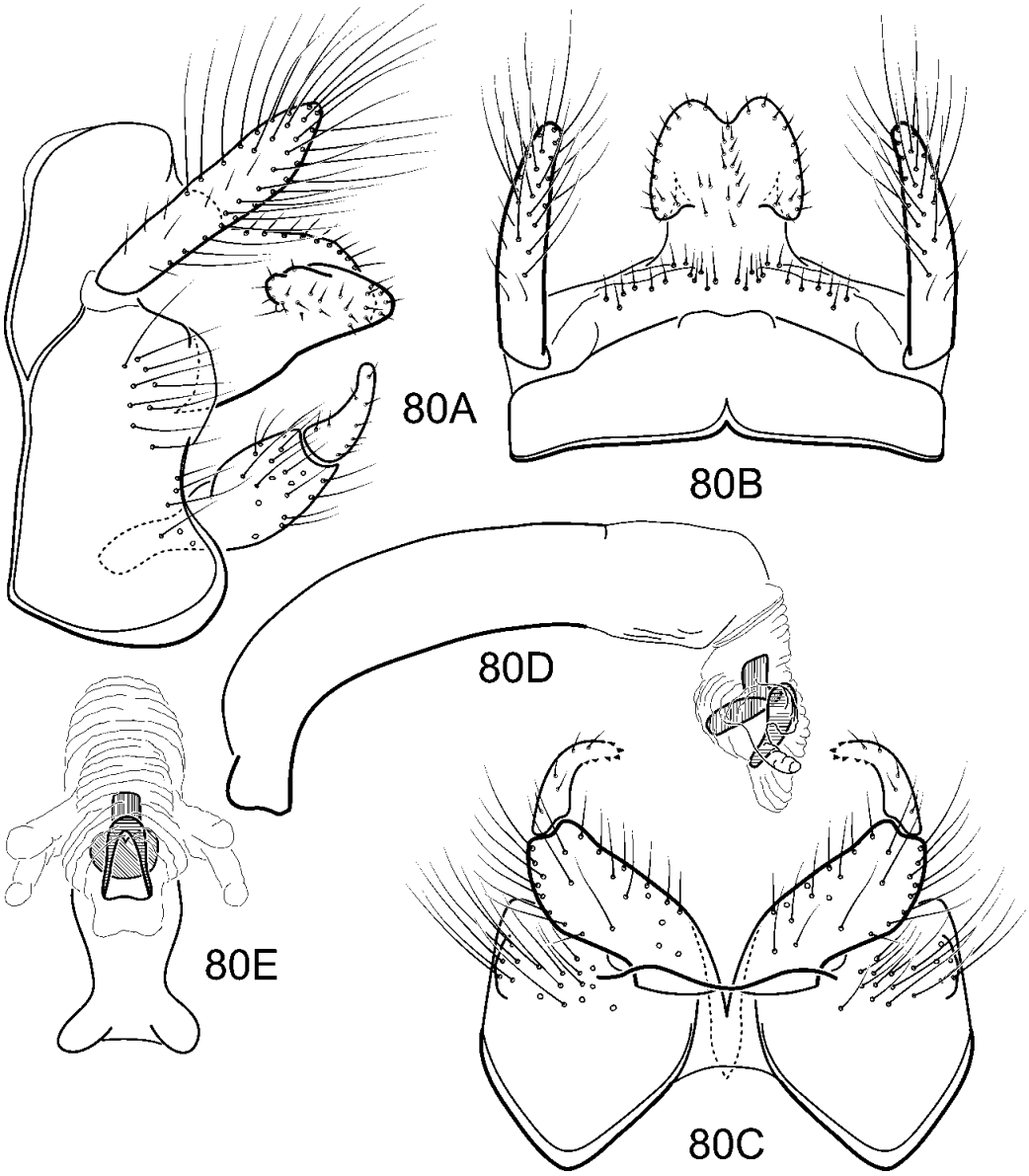


FIGURE 80. *Phylloicus panamensis.* Male (UMSP000018646): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, caudoventral view.

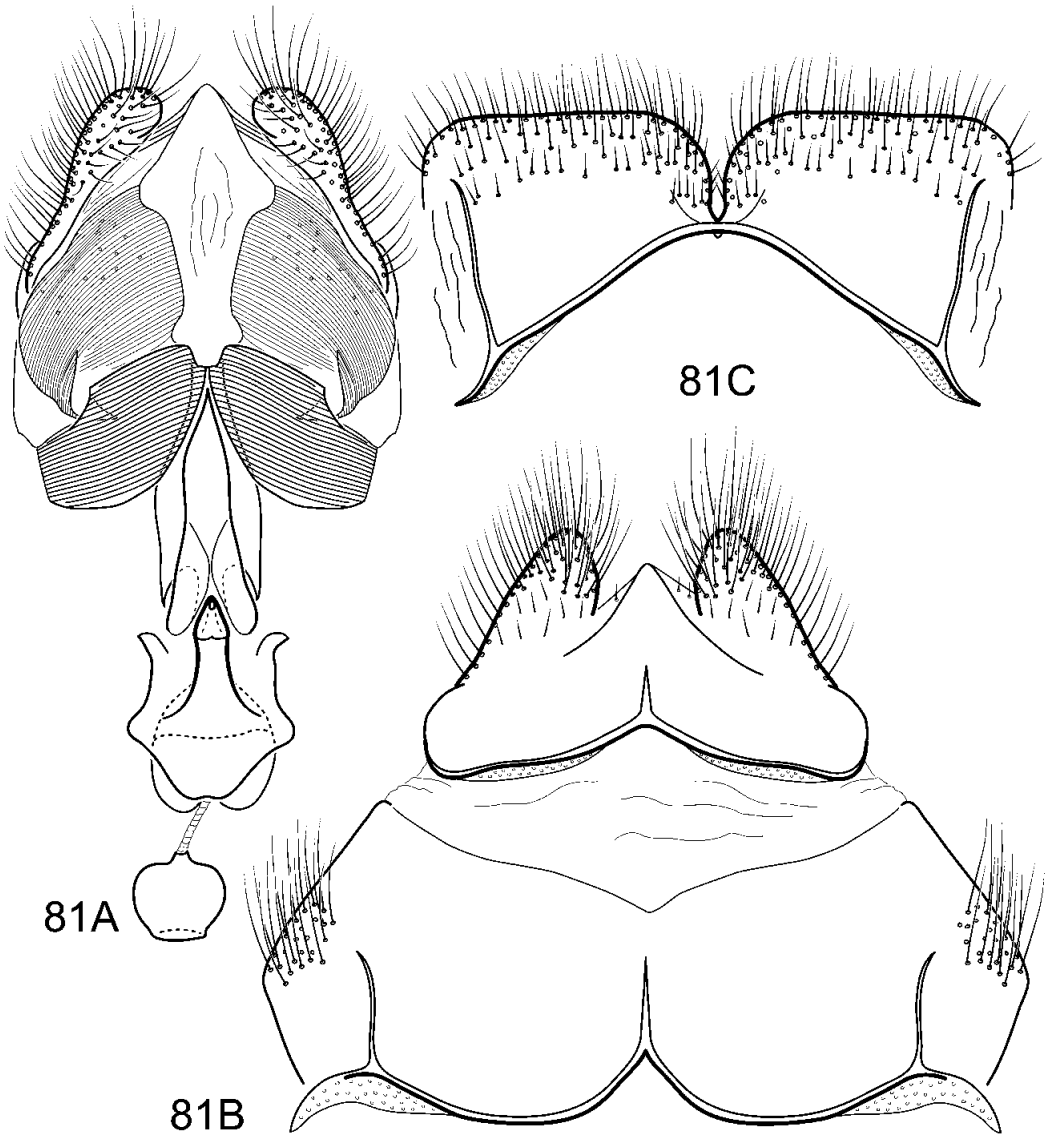


FIGURE 81. *Phylloicus panamensis*. Female (UMSP000041338): A—sterna IX, X and vaginal apparatus, ventral view; B—terga VIII-X, dorsal view; C—sternum VIII, ventral view.

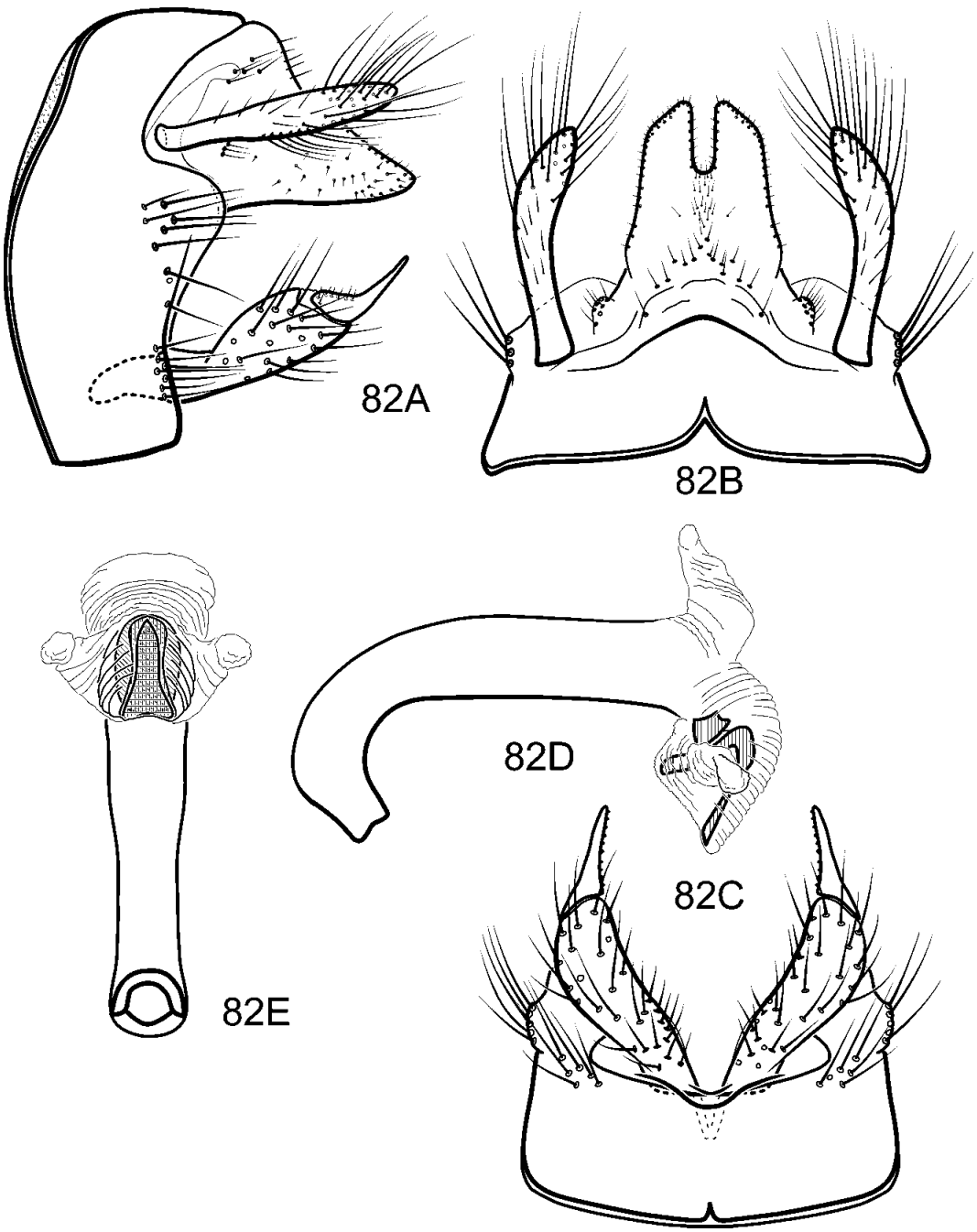


FIGURE 82. *Phylloicus paprockii*. Male (holotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view.

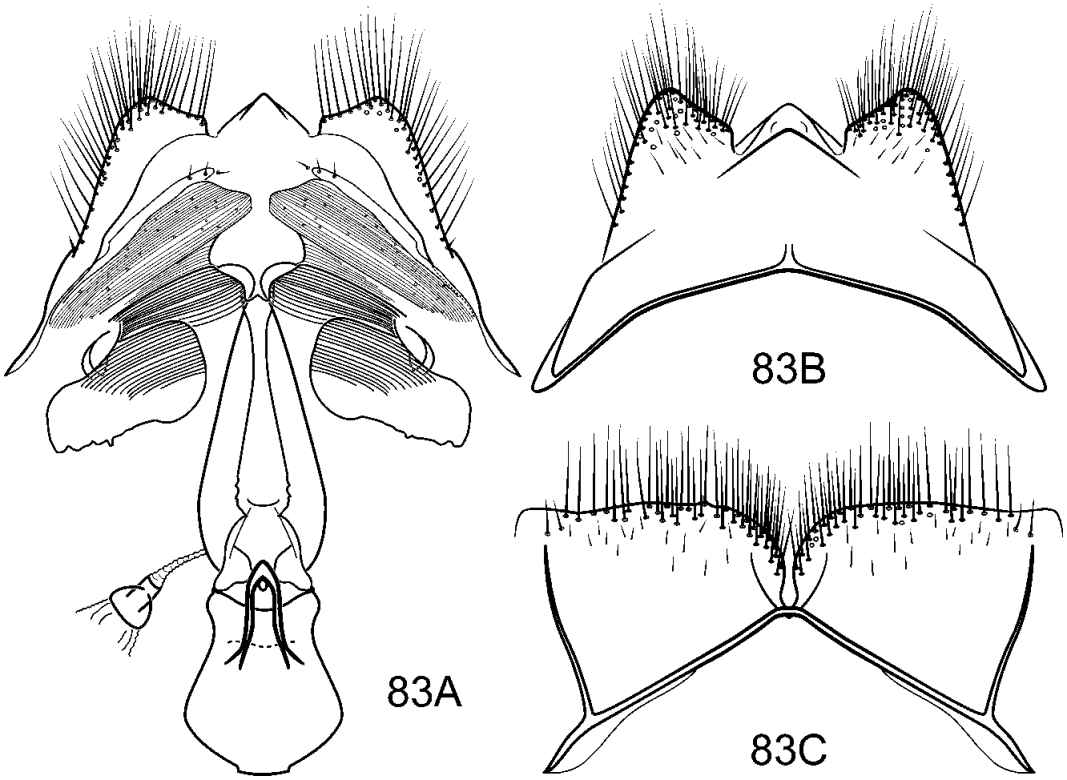


FIGURE 83. *Phylloicus paprockii*. Female (UMSP000068392): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

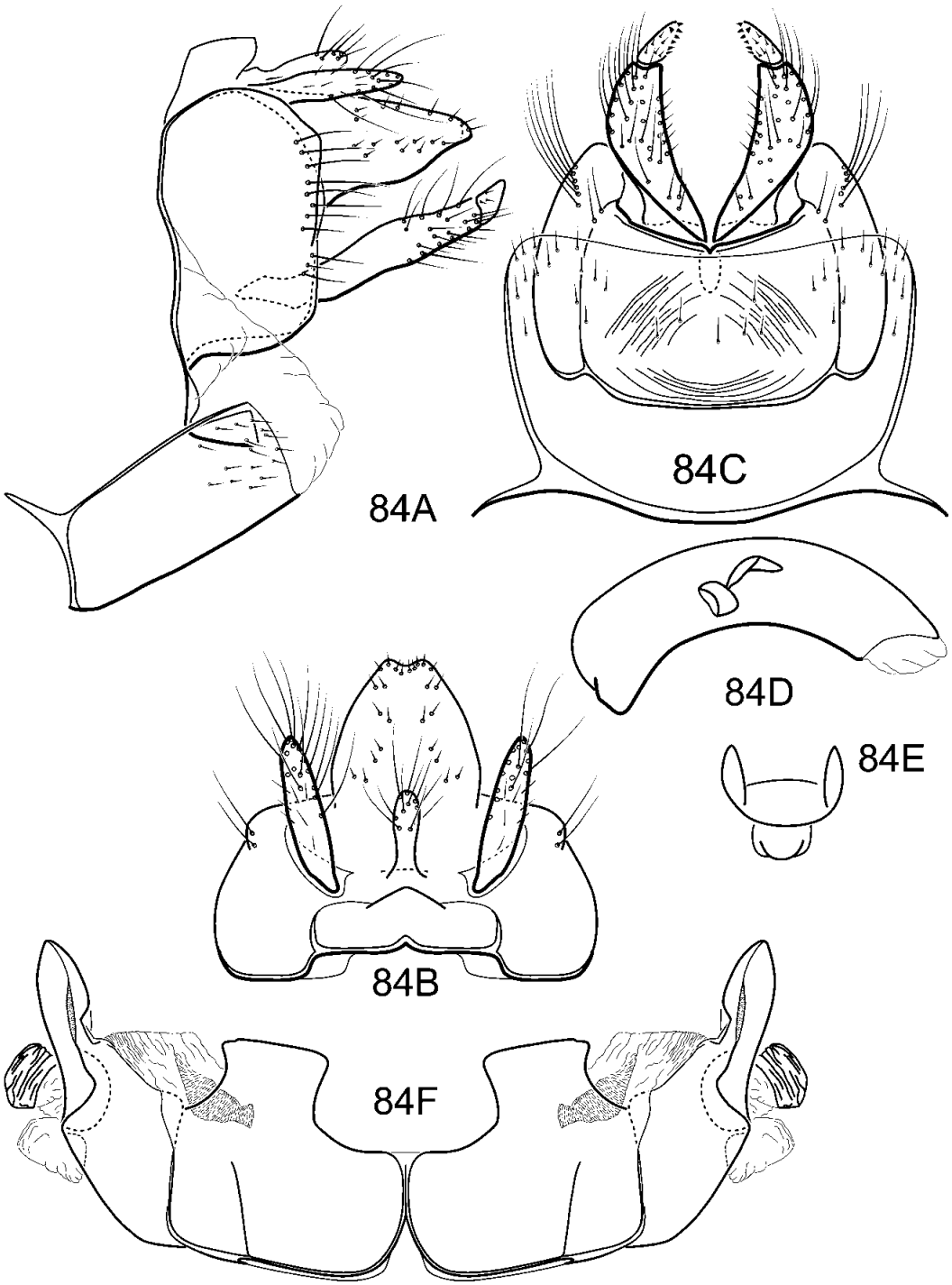


FIGURE 84. *Phylloicus passulatus*. Male (UMSP000068255): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view; F—tergum IV, dorsal view.

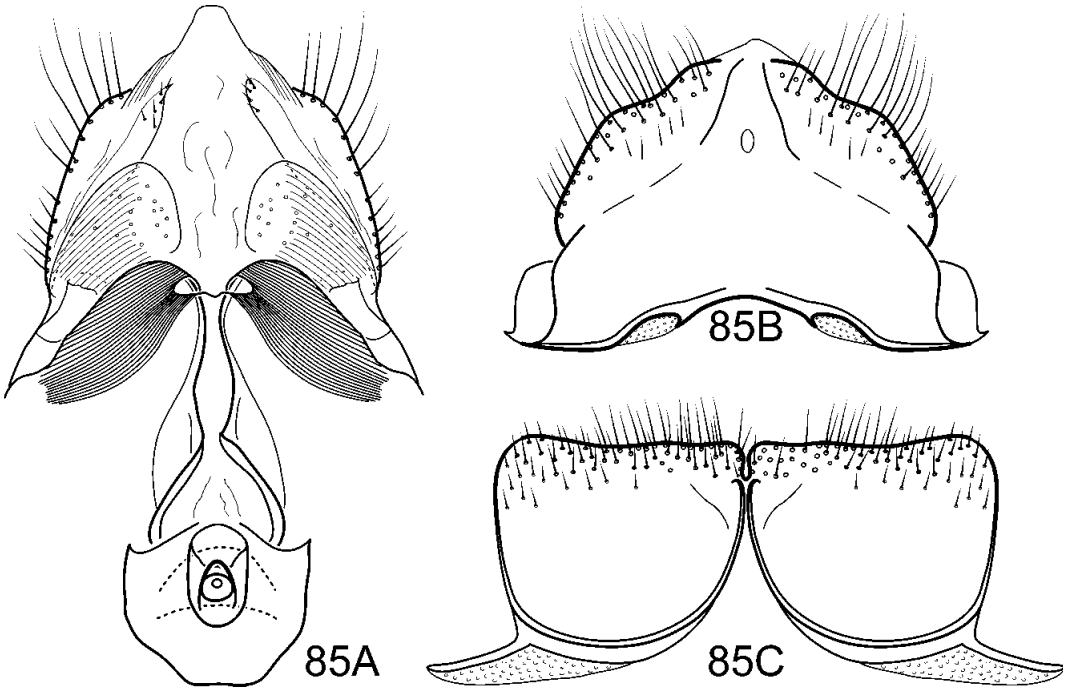


FIGURE 85. *Phylloicus passulatus*. Female (UMSP000068252): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

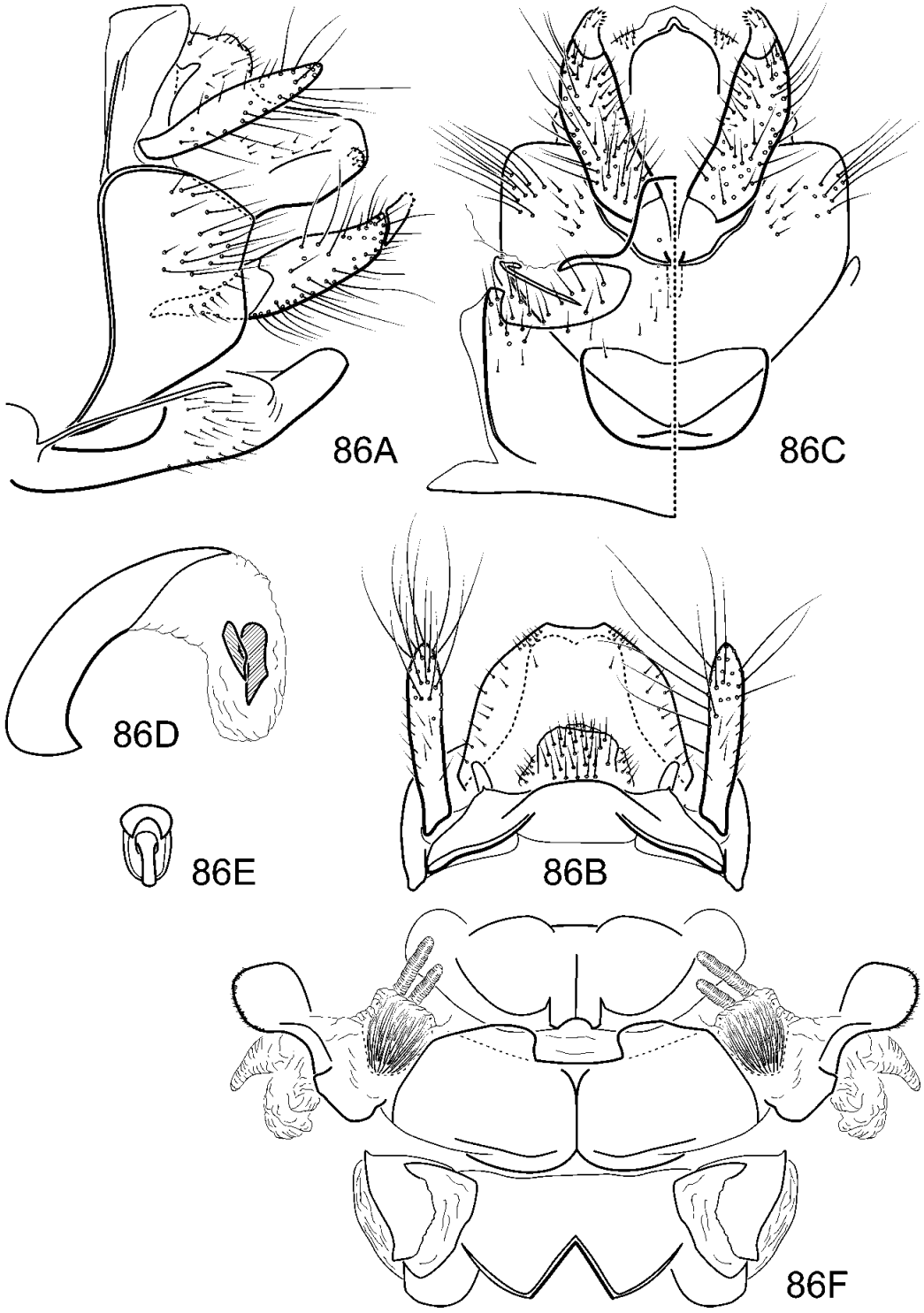


FIGURE 86. *Phylloicus paucartambo.* Male (A-C, holotype; D-E, UMSP000010037): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view; F—terga III-V, dorsal view.

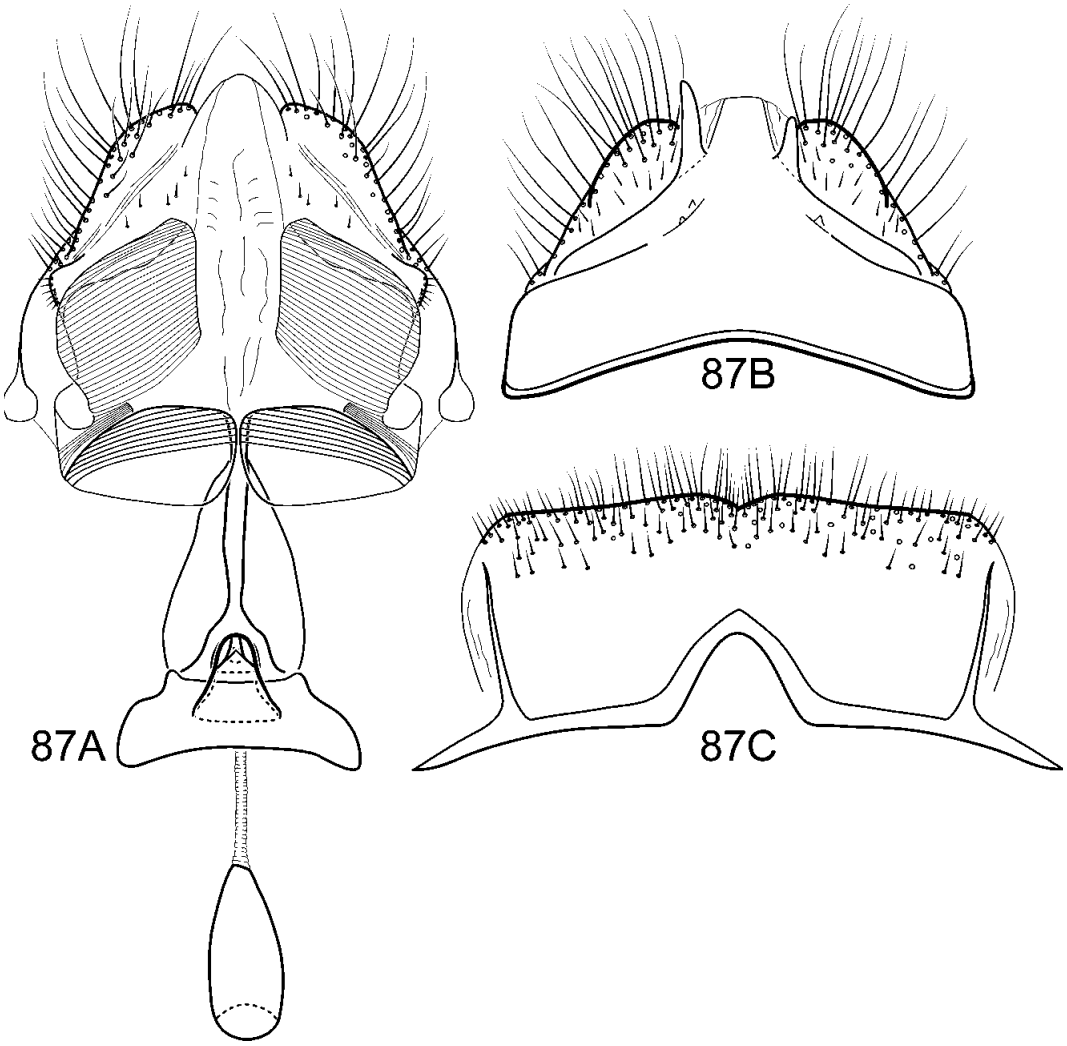


FIGURE 87. *Phylloicus paucartambo*. Female (UMSP000010032): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

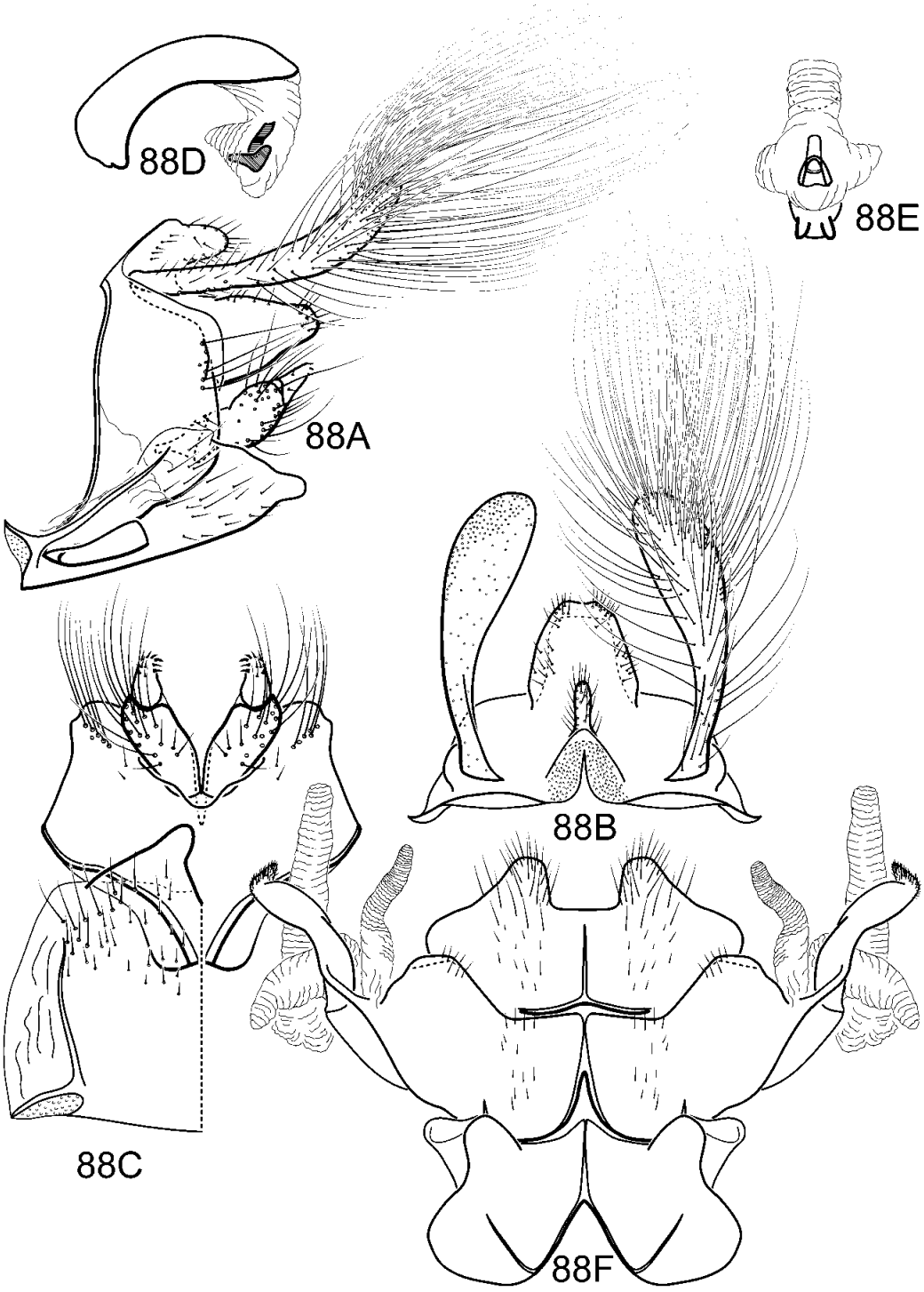


FIGURE 88. *Phylloicus perija*. Male (UMSP000000178): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, caudoventral view; F—terga III-V, dorsal view.

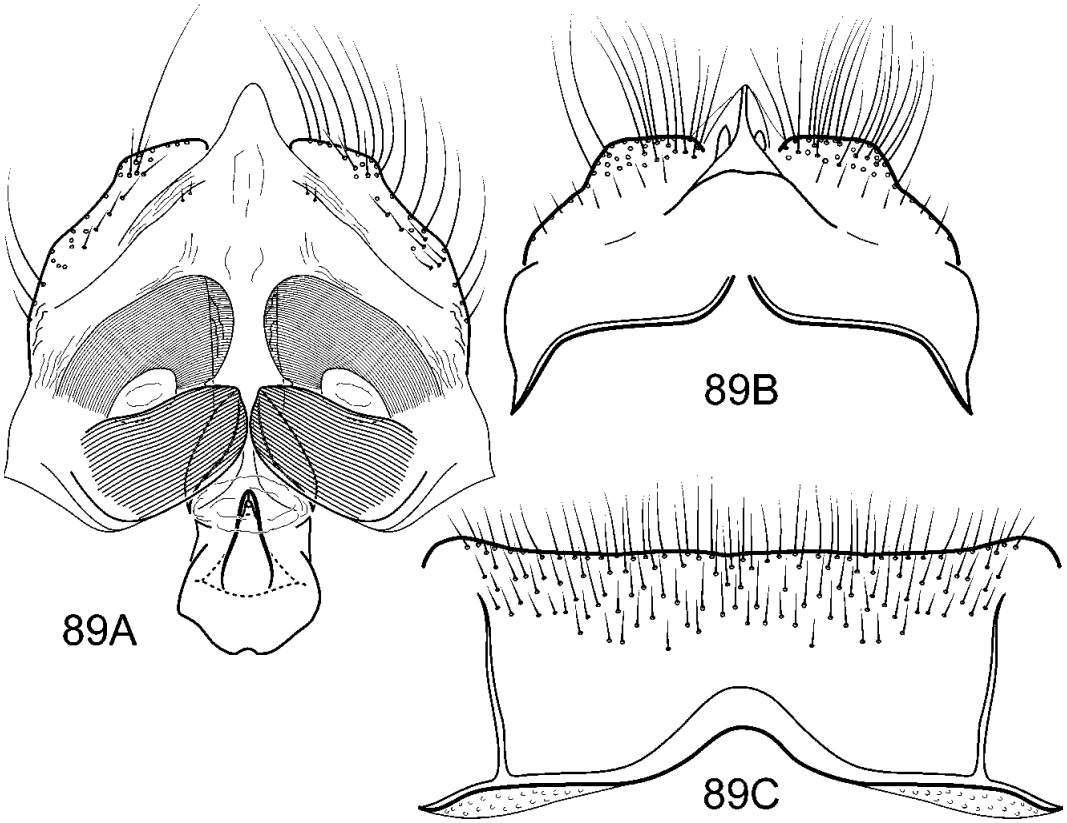


FIGURE 89. *Phylloicus perija*. Female (UMSP000217073): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

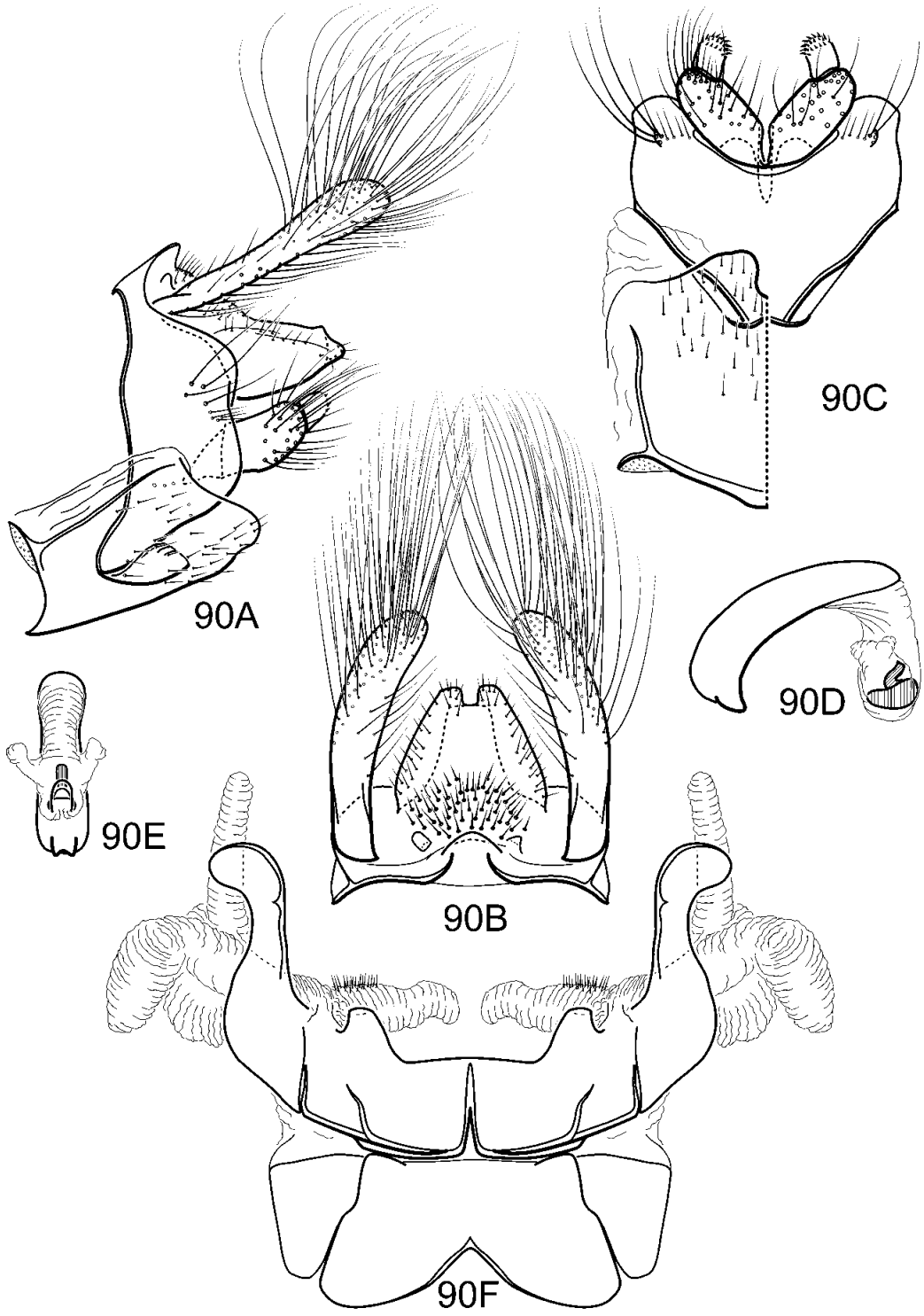


FIGURE 90. *Phylloicus pirapo*. Male (A-C, UMSP000010159; D-E, UMSP000010154; F, UMSP000010152): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, caudoventral view; F—terga III-V, dorsal view.

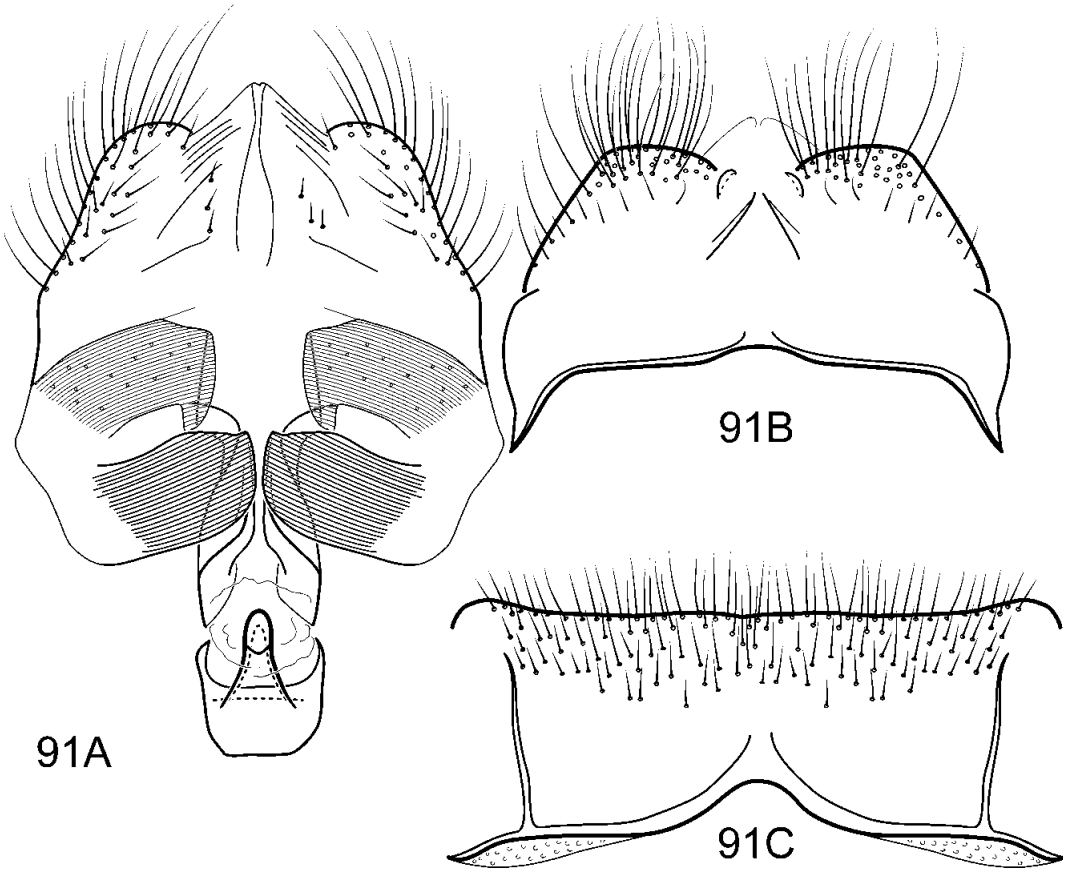


FIGURE 91. *Phylloicus pirapo*. Female (UMSP000217076): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

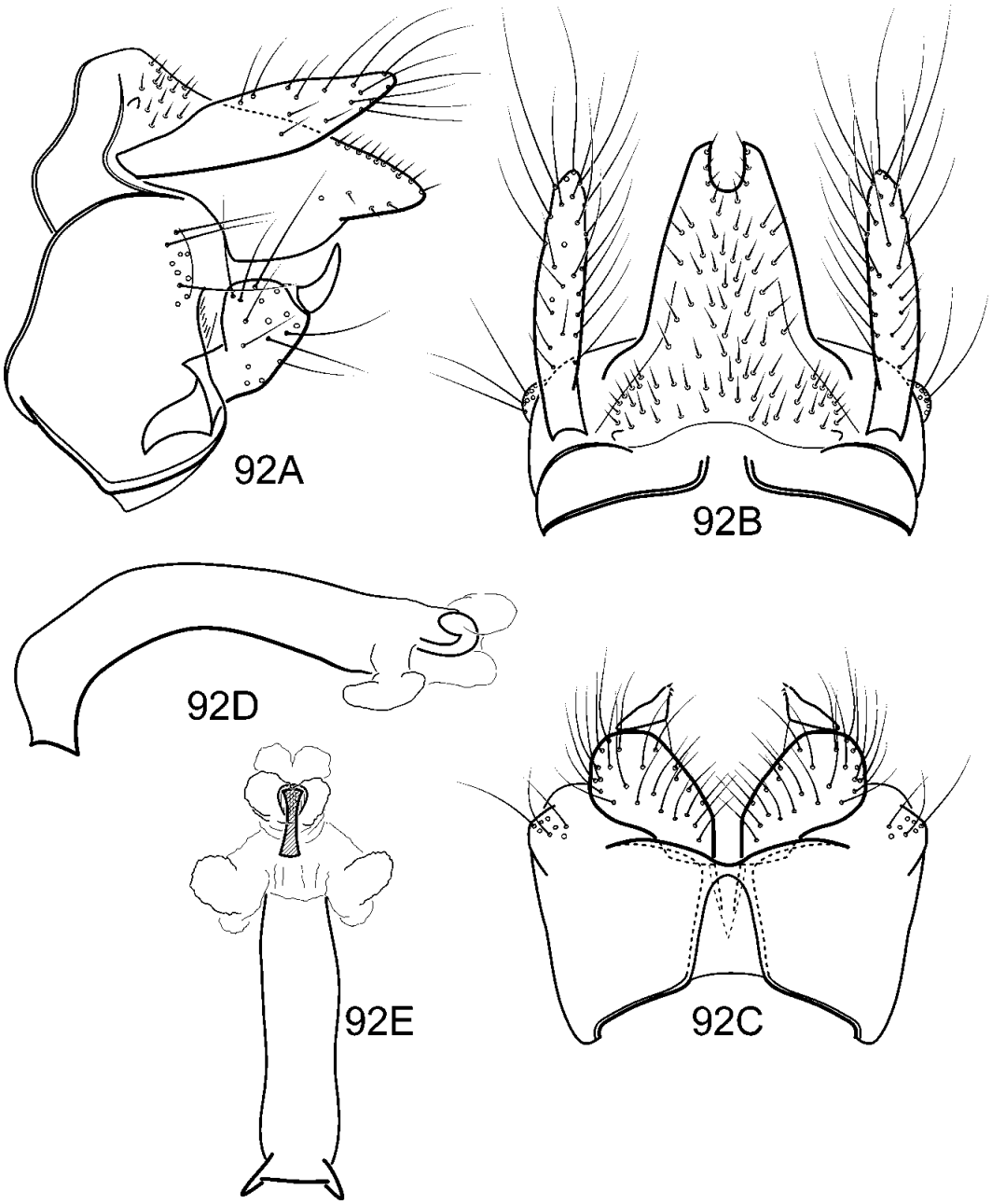


FIGURE 92. *Phylloicus plaumanni*. Male (holotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view.

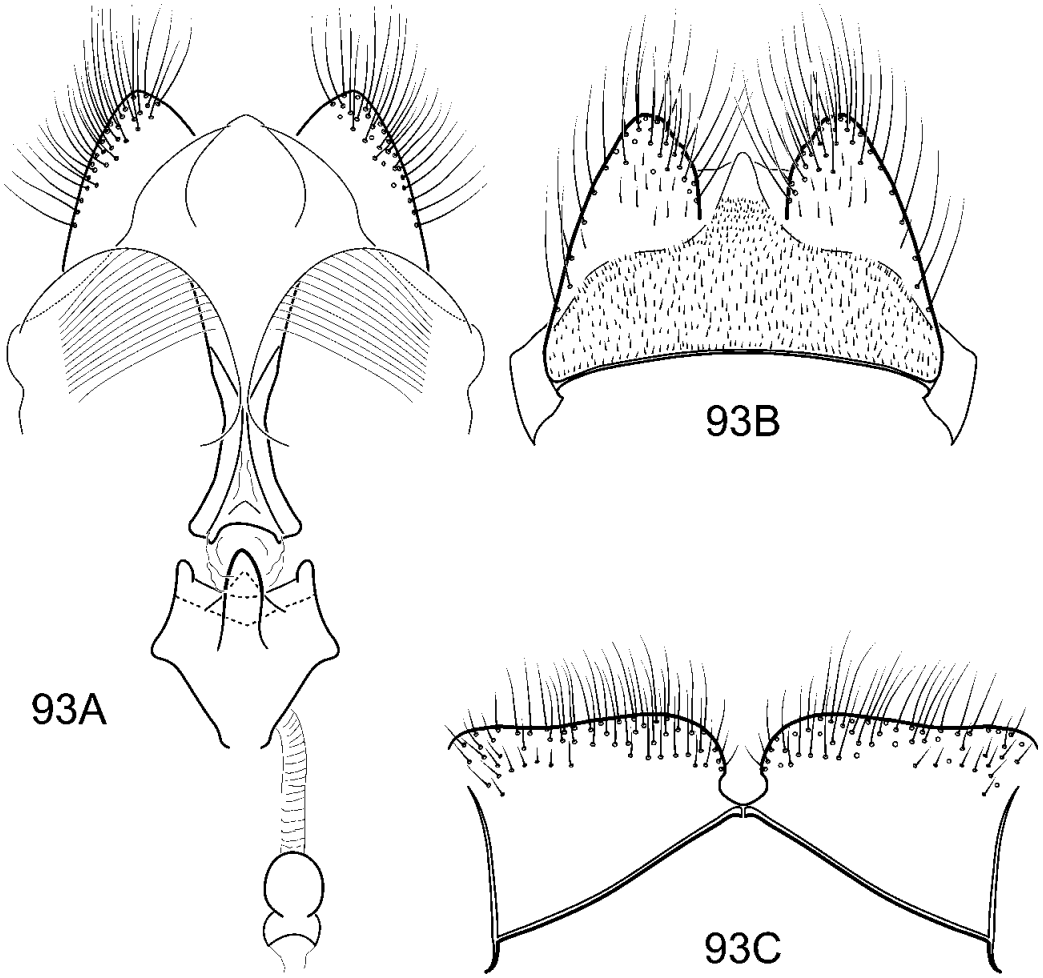


FIGURE 93. *Phylloicus plaumanni*. Female (UMSP000068270): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

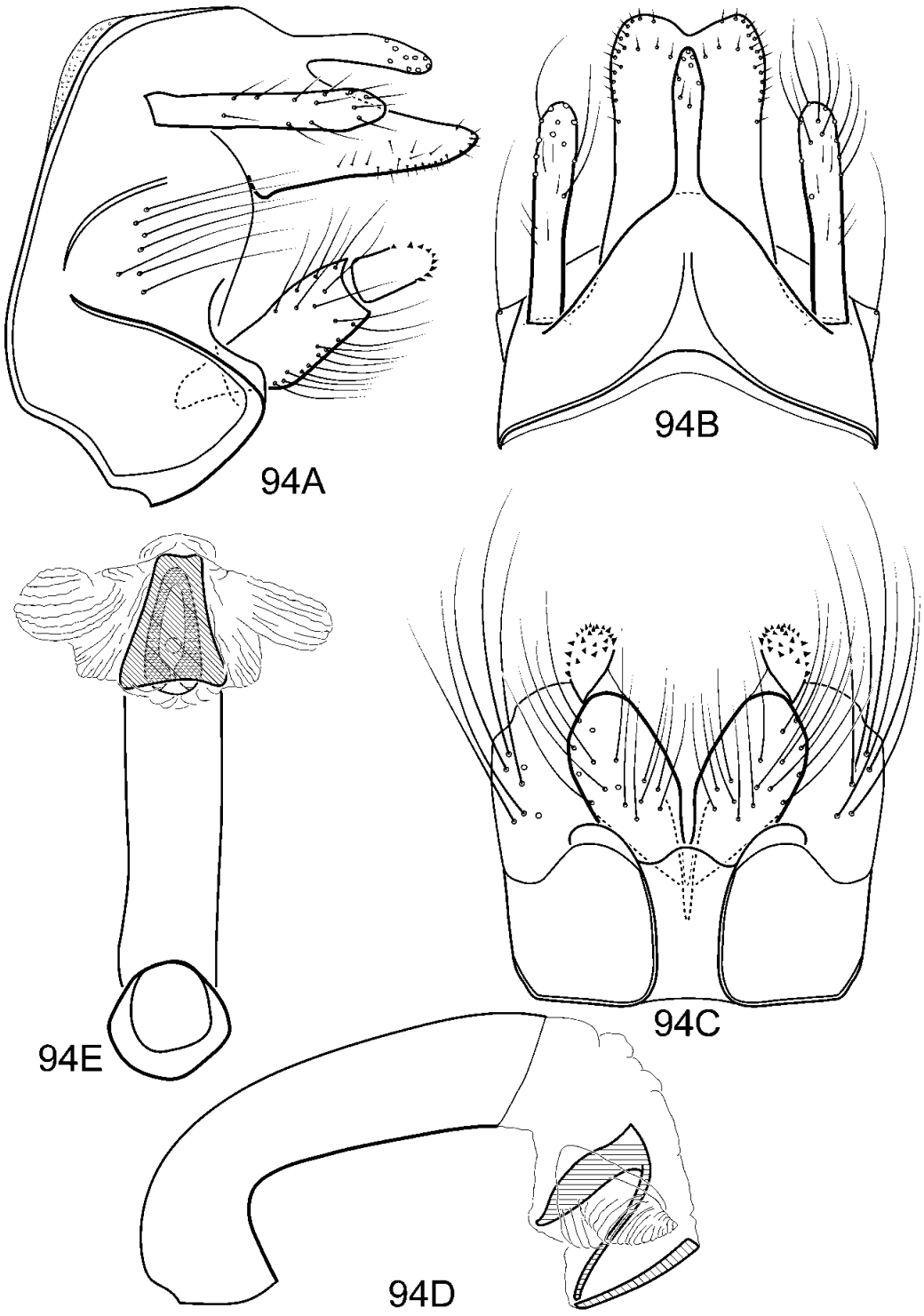


FIGURE 94. *Phylloicus pulchrus*. Male (holotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view;.

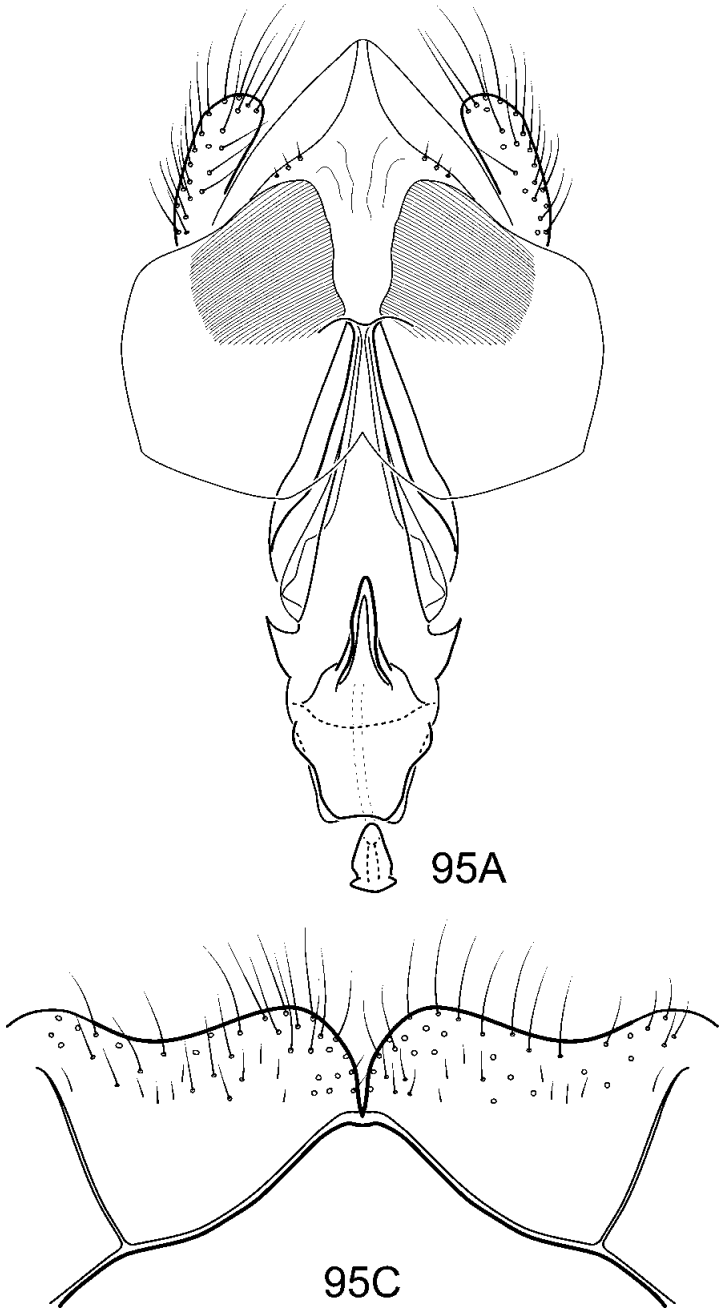


FIGURE 95. *Phylloicus pulchrus*. Female (UMSP000009760): A—sterna IX, X and vaginal apparatus, ventral view; C—sternum VIII, ventral view.

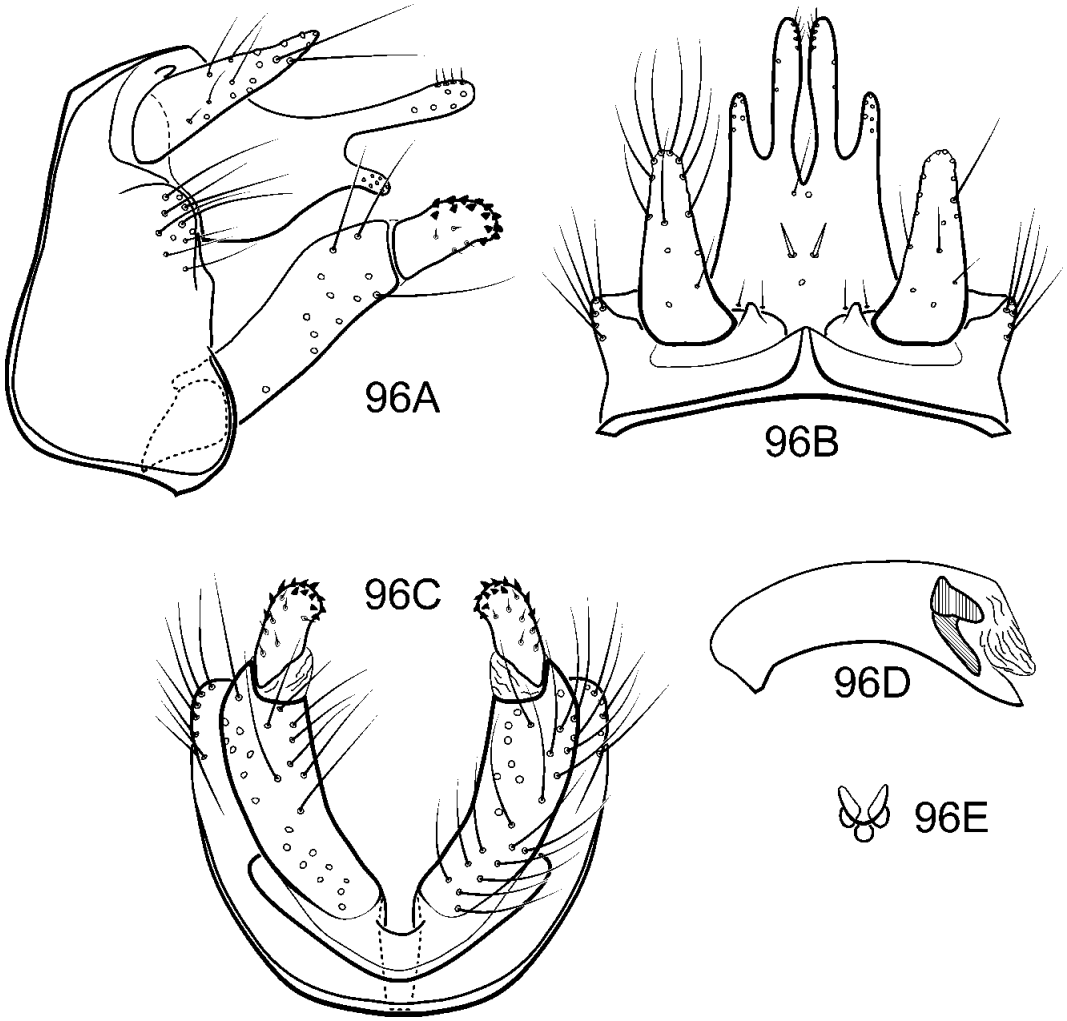


FIGURE 96. *Phylloicus quadridigitatus*. Male (holotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallotremal sclerites, dorsal view.

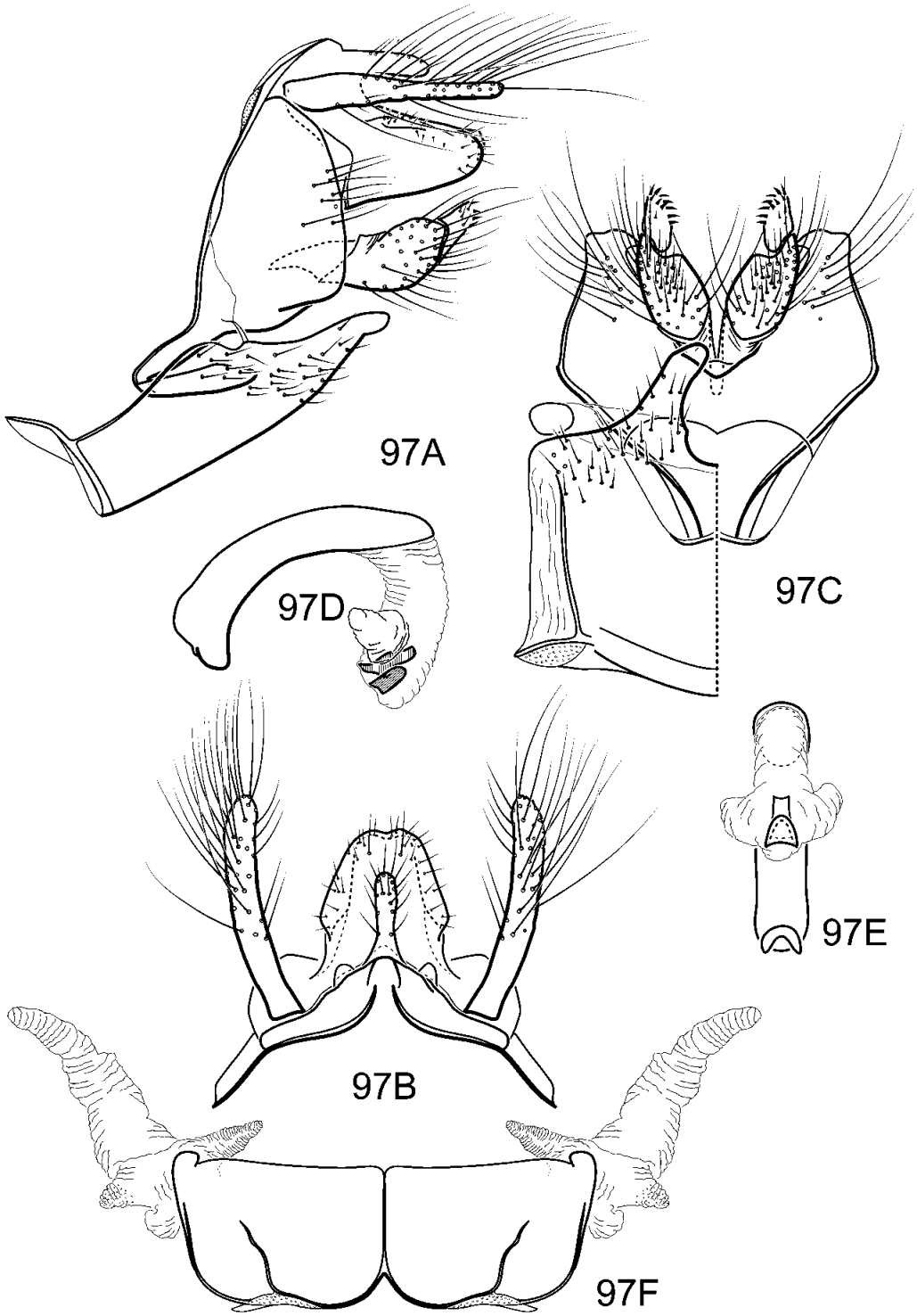


FIGURE 97. *Phylloicus quitacalzon*. Male (A-C, UMSP000068290; D-E, UMSP000063340; F, holotype): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view; F tergum IV, dorsal view.

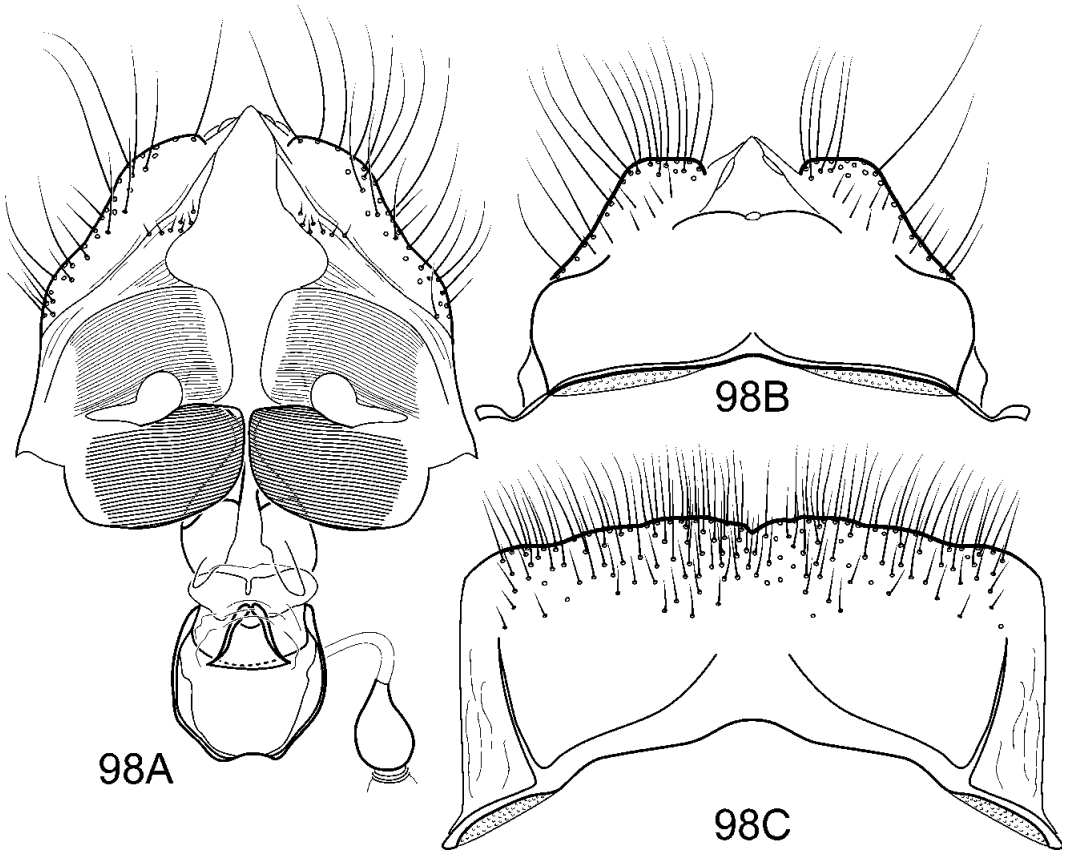


FIGURE 98. *Phylloicus quitacalzon*. Female (UMSP000063342): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

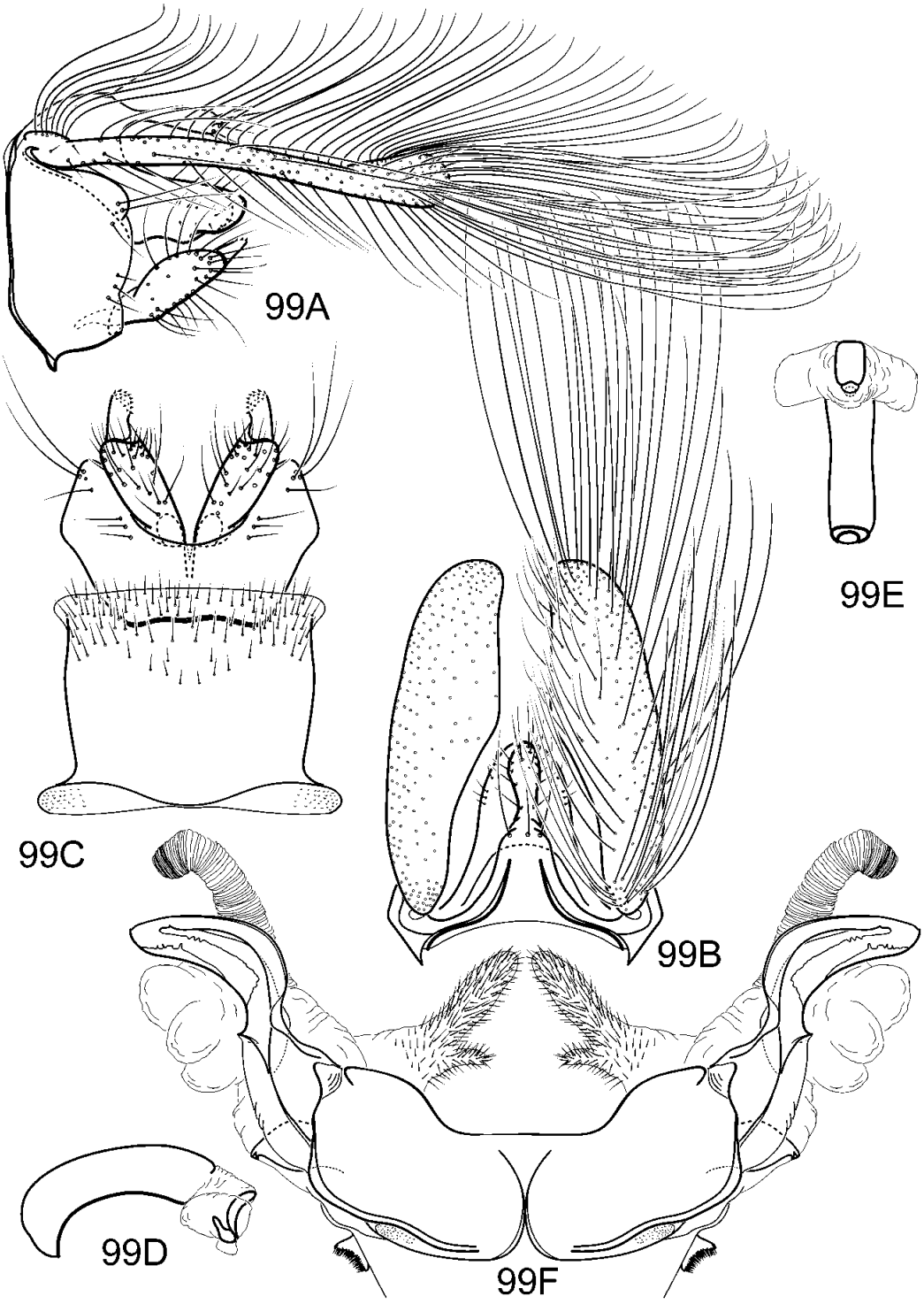


FIGURE 99. *Phylloicus spectabilis*. Male (holotype): A—lateral view; B—dorsal view; C—sterna VIII, IX, and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view; F—tergum IV, dorsal view.

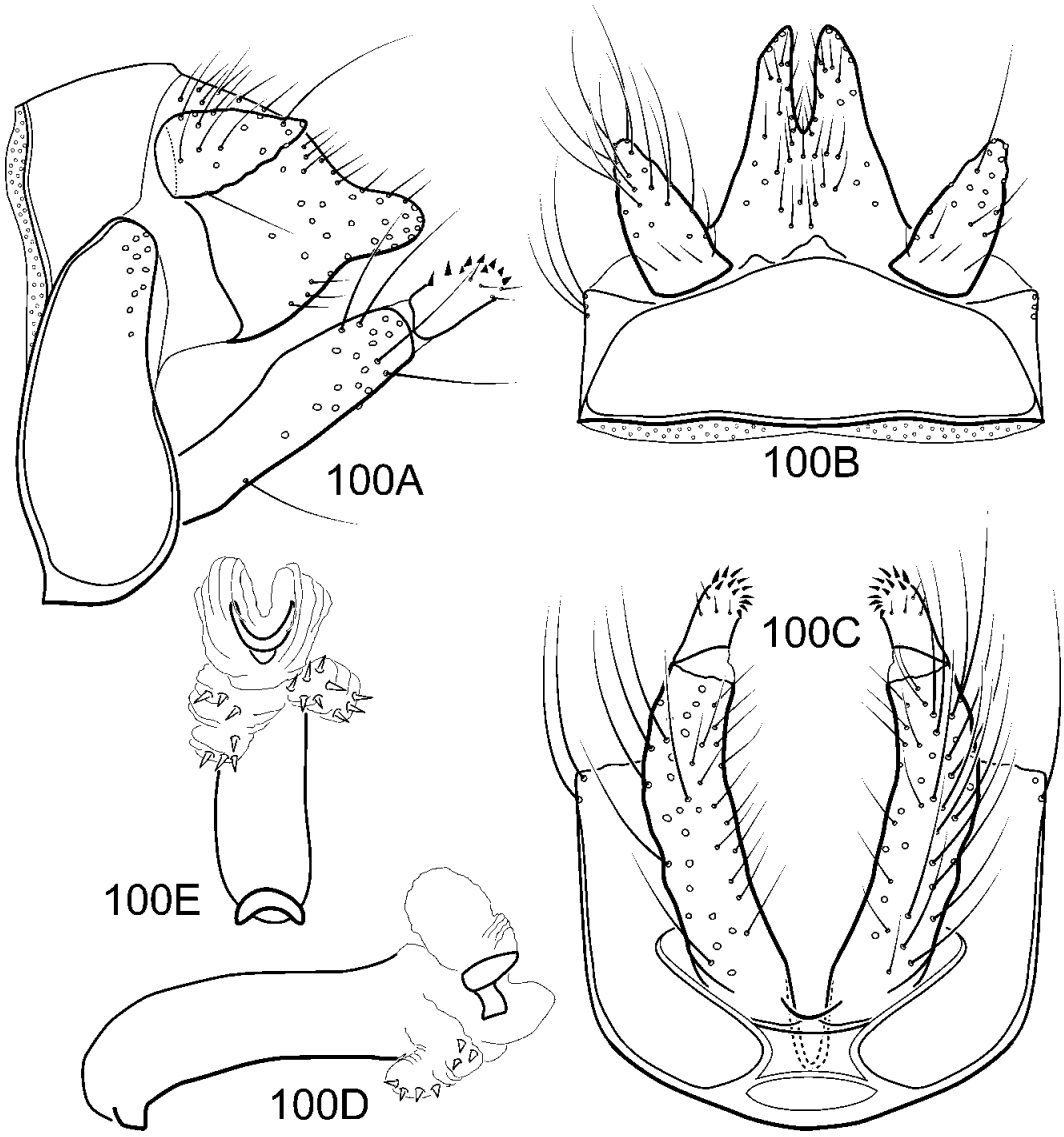


FIGURE 100. *Phylloicus spinulacolis*. Male (holotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view.

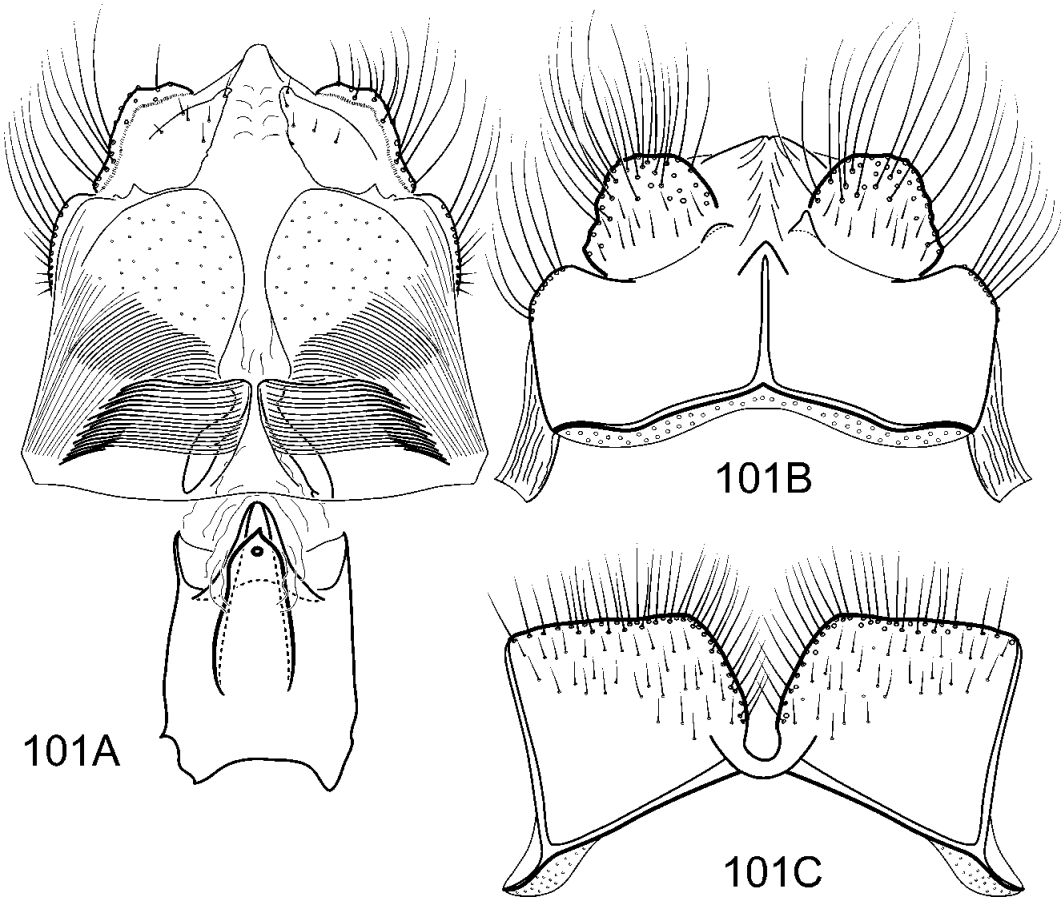


FIGURE 101. *Phylloicus spinulacolis*. Female (UMSP000063358): A—sterna IX, X and vaginal apparatus, ventral view; B—terga IX and X, dorsal view; C—sternum VIII, ventral view.

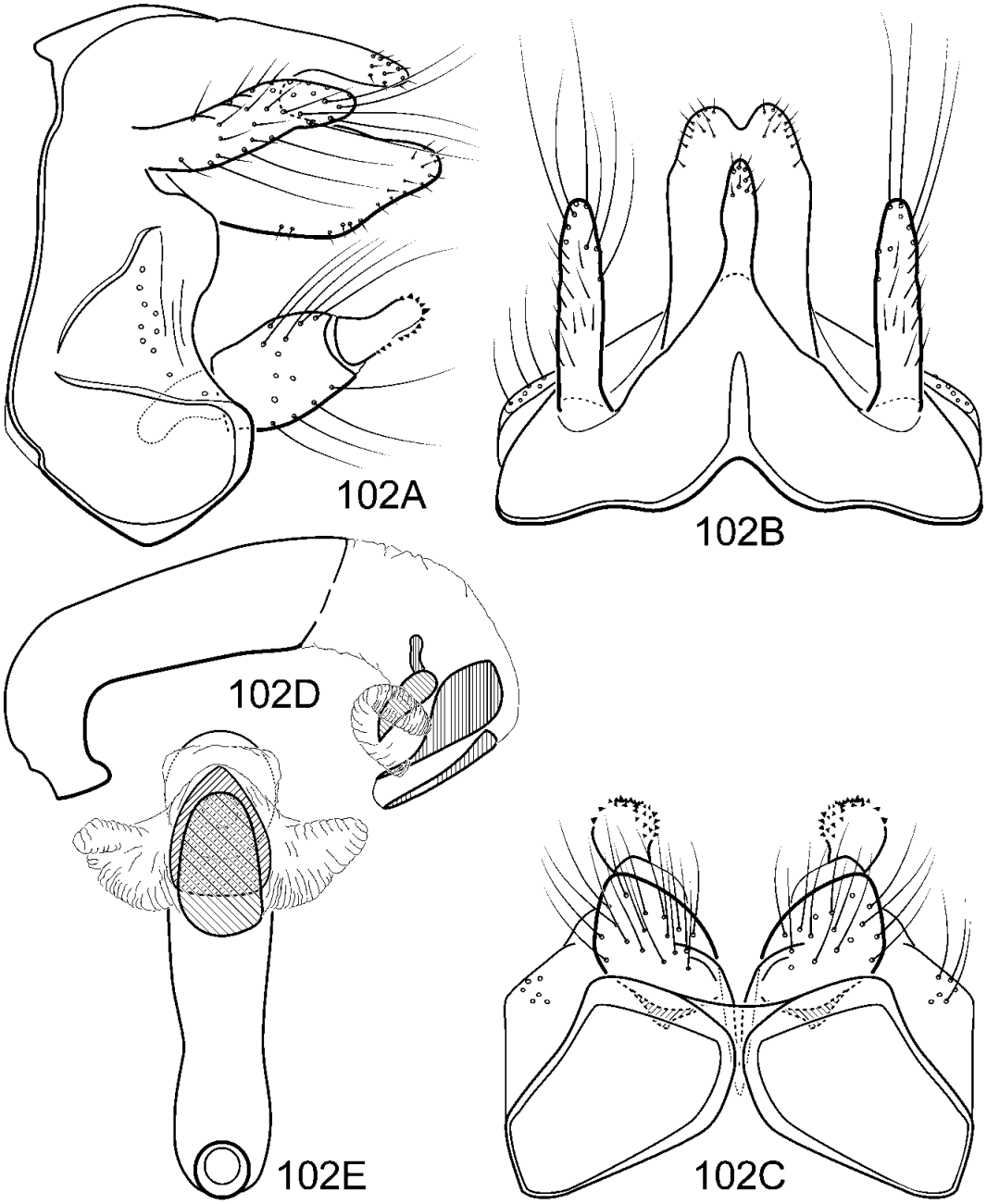


FIGURE 102. *Phylloicus superbus*. Male (lectotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, ventral view.

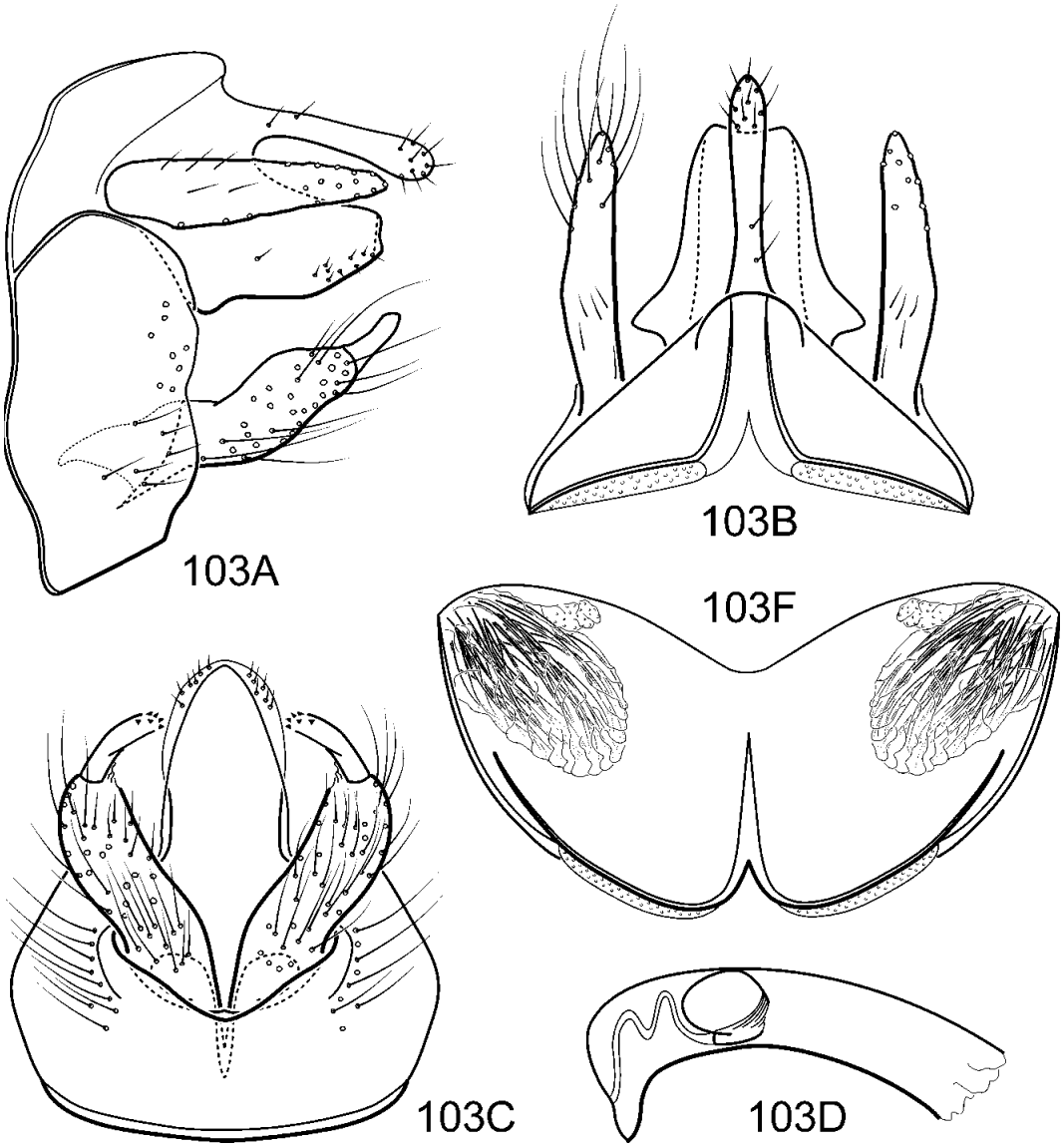


FIGURE 103. *Phylloicus trichothylax*. Male (holotype): A—lateral view; B—dorsal view; C—ventral view; D—phallus, lateral view; F—tergum IV, dorsal view.

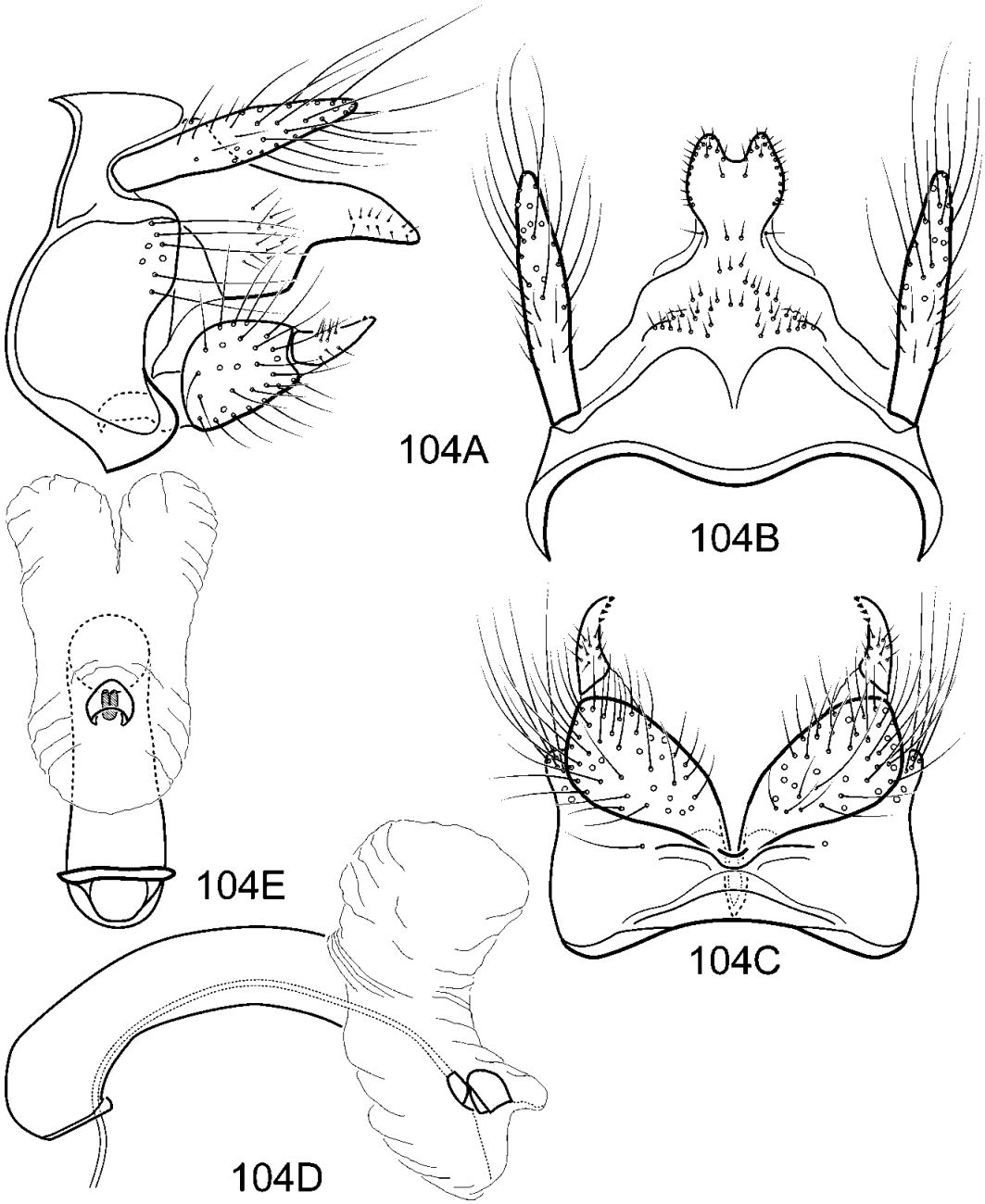
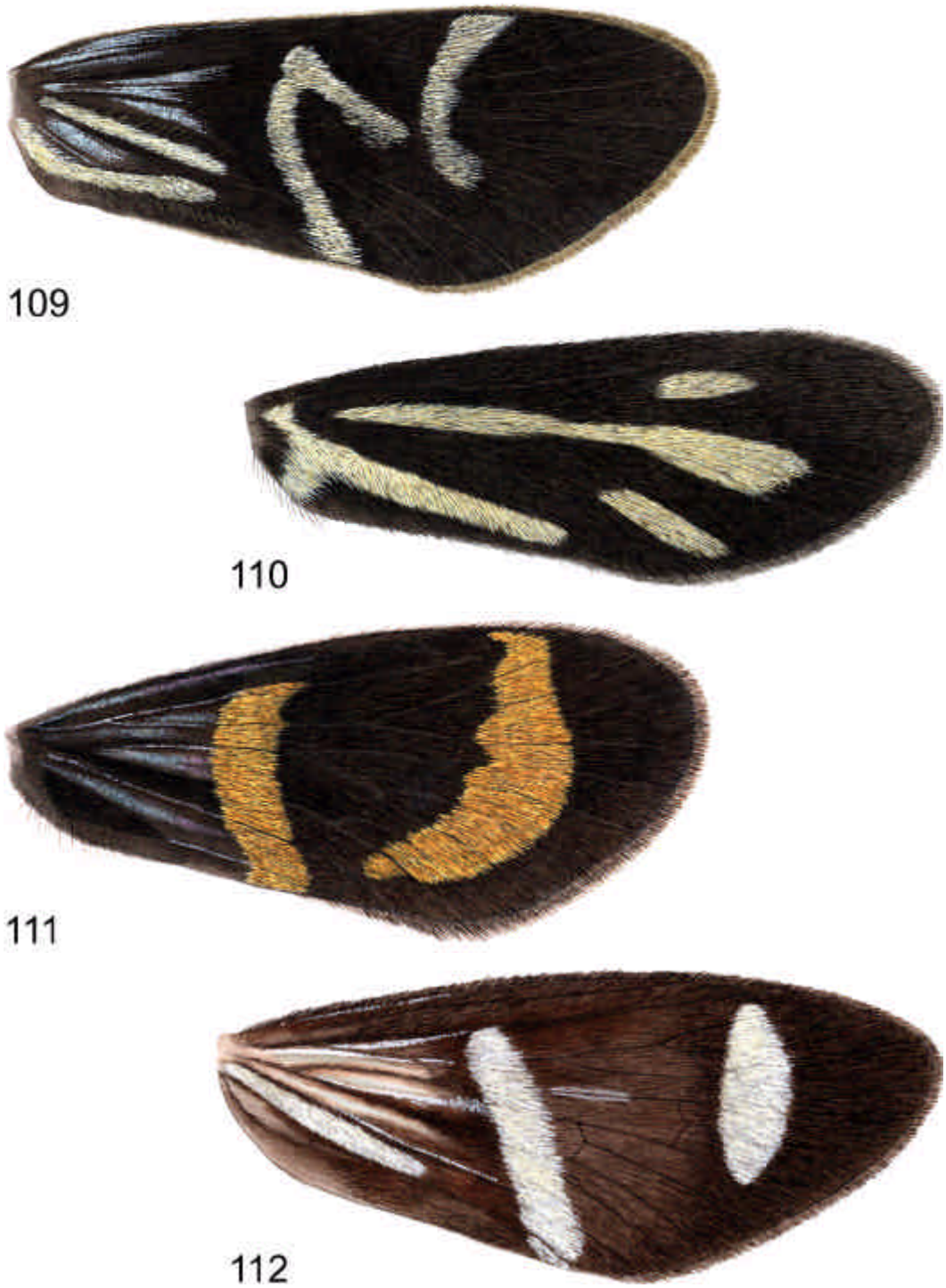


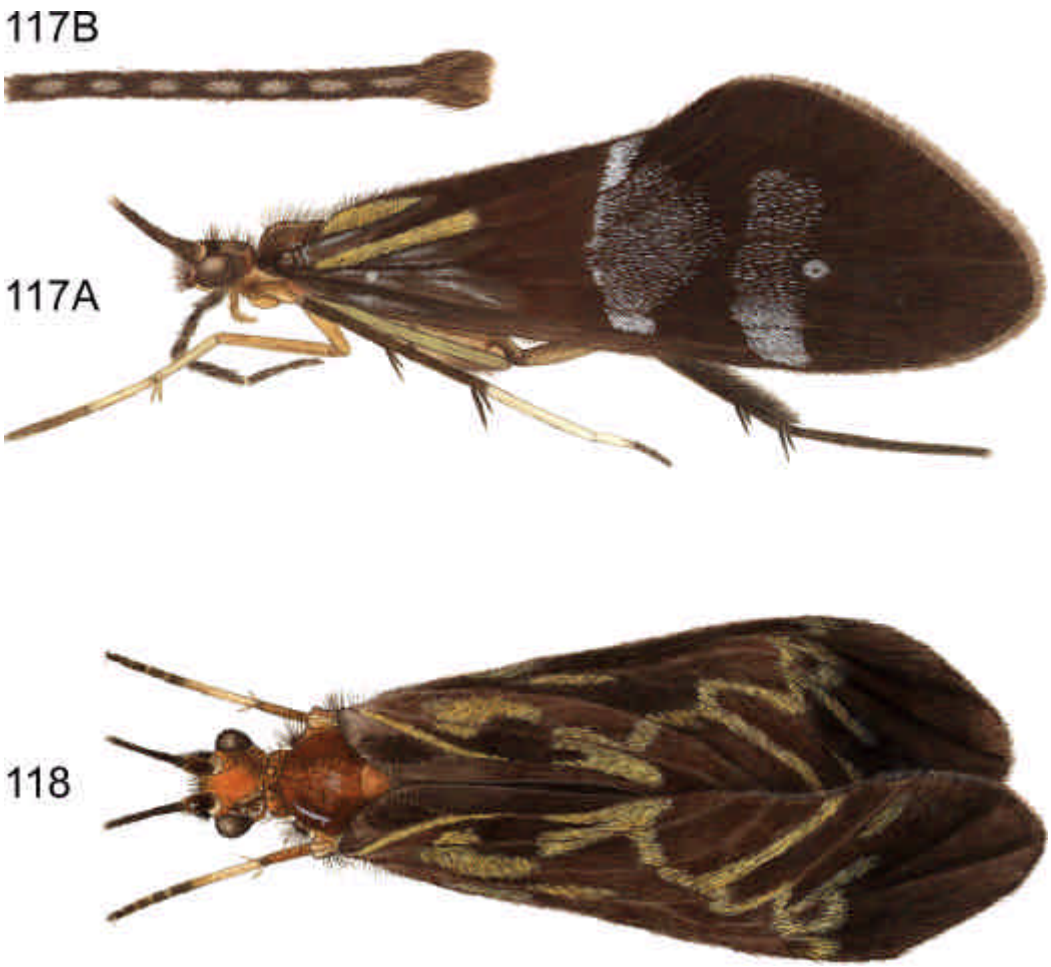
FIGURE 104. *Phylloicus yolandae*. Male (holotype): A—lateral view; B—dorsal view; C—sternum IX and inferior appendages, ventral view; D—phallus, lateral view; E—phallus, caudoventral view.

FIGURES 105-108. —**105.** *Phylloicus aeneus* (composite of UMSP000068398, UMSP000068399, UMSP000068400). Forewing. —**106.** *Phylloicus amazonas* (composite of UMSP000005724-5, UMSP000068383-9). Forewing. —**107.** *Phylloicus bicarinatus* (composite of UMSP000068393 and UMSP000068394). Forewing. — **108.** *Phylloicus cubanus* (composite of UMSP000009806 and UMSP000009807). Forewing.



FIGURES 109-112. —**109.** *Phylloicus elegans* (composite of UMSP000000172 and UMSP000022365). Forewing. —**110.** *Phylloicus flinti* (UMSP000010104). Forewing. —**111.** *Phylloicus iridescens* (composite of UMSP000009750 and UMSP000009751). Forewing. —**112.** *Phylloicus paprockii* (composite of UMSP000068390-2). Forewing.

FIGURES 113-116. —**113.** *Phylloicus paucartambo* (composite of UMSP000010031-8). Forewing. —**114.** *Phylloicus pulchrus* (composite of UMSP000009766 and UMSP000068395). Forewing. —**115.** *Phylloicus superbus* (UMSP000009816 and UMSP000009824). Forewing. —**116.** *Phylloicus yolandae* (holotype). Forewing.



FIGURES 117-118. —**117.** *Phylloicus abdominalis* (UMSP000000285). A—male habitus, lateral; B—antenna, scape and basal flagellomeres, anterior view. —**118.** *Phylloicus aeneus* (composite of UMSP000068398, UMSP000068399, UMSP000068400). Habitus, dorsal.

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Aysha Prather, Ph.D. is a Postdoctoral Fellow at the Royal Ontario Museum in Toronto, Ontario, Canada. She completed her doctoral degree at the University of Minnesota in 2002, under the supervision of Dr. Ralph Holzenthal. Her research is in systematics and morphology of caddisflies, with an emphasis on Neotropical groups. Dr. Prather and her colleagues in Neotropical caddisfly studies maintain a website about their research at:

http://www.entomology.umn.edu/museum/projects/