Neotropical Diptera

***Neotropical Diptera* 18: 1-321** (April 15, 2009)
ISSN 1982-7121
www.neotropicaldiptera.org

Depto. de Biologia - FFCLRP
Universidade de São Paulo
Ribeirão Preto, SP, Brazil

Manual of Neotropical Diptera. Asilidae[1]

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Adult asilids, as is well-known, prey upon other insects and spiders. Bristowe (1925: 483-484) published about a *Plesiomma* capturing a spider: “One day [...] I had just finished watching a long-bodied Sphegid wasp, *Sphex* (sub-gen. *Isodontia*) *costipennis* Spin. (*chrysobapta* Sm. and *petiolata* Sm.) depositing a Locustid grasshopper in a hollow bamboo, when I saw, as I thought, another specimen flying close to me. I got my net ready, and then I saw the insect fly without any undue haste at an Epeirid spider, *Epeira grayi* Bl., which was sitting in the middle of its web. I seized the spider, which immediately collapsed without showing any resistance, and calmly sat in the center of the web with its proboscis buried in the spider’s abdomen. As I watched I saw a male spider, which, according to custom, had been sitting on the outskirts of the web, come quietly climbing down to see what was happening. He stopped an inch or two away and then, as though realizing his own danger, he turned round and crept quietly away. Before I left this locality (which was between Rio and Petropolis) I say another of these wasp-like Asilid flies, *Plesiomma fuliginosa* Wied. male, as they turned out to be, attack another spider of the same species in very much the same way, thus showing that this interesting reversal of the usual role of the spider and the fly was no accidental occurrence. The invitation ‘Come into my parlour said the spider to the fly’ has in this case been made once too often”). Lists of preys of South American species have been published, e. g., by Carrera (1954, 1947), Carrera & d’Andretta (1952), Carrera & Vulcano (1961), Bueno (1986) (*Porasilus barbiellinii* Curran, 1934 preys), Bueno & Berti Filho (1987) (*Porasilus barbiellinii* Curran, 1934), Knutson (1971) (*Saropogon gayi* (Macquaret, 1838) preying upon *Trachysphyrus nigricornis* (Brullé), an Ichneumonidae), and Coronado Blanco & Ruiz Cancino (1999: 81) (*Atomosia macquarti* Bellardi, 1861 preying upon *Unaspis citri* (Comstock, 1883), a Diaspididae Hemiptera). Some species are a threat to apiculture, such as *Mallophora ruficauda* (Wiedemann, 1828) in Argentina (Bambara, 1983. Castelo, 2001a-b, 2002a-b. Castelo & Capurro, 2001) and for that reason several papers published about its biology (Castelo, 2004a.

[1] This project was supported by FAPESP grants # 2003/10.274-9 and 2007/50878-1.

Castelo & Capurro, 2000; Castelo & Corley, 2004a, 2004b; Castelo & Lazzari, 2004. Castelo, Ney-Nifle, Corley & Bernstein, 2006; Copello, 1922, 1927, 1942; Crouzel, 1965; De Santis, 1989; De Santis & Cornejo, 1990; Marcangeli, 1998; Naveiro, 1975; Rabinovich & Corley, 1997; Rabinovich, Quiroga & Castelo, 1997; Remedi de Gavotto, 1964); also *Eicherax ricnotes* Engel is accused of attacking bees in the same country (Rinaldi, Pailhé & Popolizio, 1971). By their turn, asilids may be preyed by some Sphecidae wasps (Fontenelle & Martins, 2002).

Only a few papers were devoted to the biology and ecology of Neotropical representatives of this family. A comprehensive paper on asilid courtship behavior, with a review of courtship and mating was published by Lavigne (2003); other works, mostly dealing with North and Central American species, are due to Alcock, 1974 (*Mallophora*); Bueno, 1986, 1987 (*Porasilus*); Bueno & Berti Filho, 1987 (*Porasilus*); Clements & Benneett, 1969 (*Mallophora*); Cockerell, 1894; Dennis & Gowen, 1978 (*Diogmites*); Dennis, Lavigne & Bullington, 1986 (*Efferia*); Dozier, 1920; Fattig, 1933 (*Mallophora*); Fisher & Hespendeide, 1982 (*Glaphyropyga*), 1992; LaPierre, 2000 (*Holcocephala*); Lavigne, 1977 (*Eccritosia*), 1979 (*Efferia*); Lavigne & Bullington, 1999 (*Heteropogon*); Lavigne & Dennis, 1979 (*Proctacanthus*), 1980 (*Proctacanthella*), 1985 (*Efferia*); Lavigne, Nelson & Schreiber, 1994 (*Proctacanthus*); Lindner, 1929; Linsley, 1960; Linsley & Cazier, 1963; Llano, 1959; Morgan & Shelly, 1988; Morgan, Shelly & Kinsey, 1985; O'Neill, 1992, 1995; O'Neill & Kemp, 1992; Osterberger, 1930; Ruiz Pereira, 1925; Scarbrough & Sraver, 1979 (*Atomosia*); Shelly, 1984a (*Atractia*), 1984b, 1985a, 1985b, 1068a, 1986b, 1987; Shelly & Pearson, 1980, 1983 (*Proctacanthella*); Shelly & Weinberger, 1981 (*Mallophora*)

Brower, Brower & Westcott (1960) published a classical paper on mimicry of *Mallophora*; and Tomasovic (2001) called attention to a most interesting mimetic complex involving a species of *Pseudorus.*

The immature stages are very poorly known. Knutson (1976) provided a key to subfamilies, based on larvae and pupae. The chorionic microstructure of the eggs of a few species has been investigated by Castillo, Jerez & Artigas (1994). The following list registers the existing records of the immature stages and/or the hosts of Neotropical species:

Subfamily Asilinae

Eccritosia rubriventris (Macquart, 1850) – Artigas, 1970.
Mallophora atra Macquart, 1834 – Dennis, Barnes & Knutson, 2008: 234 (pupal case).
Mallophora bomboides - Dennis, Barnes & Knutson, 2008.
Mallophora fautrix - Dennis, Barnes & Knutson, 2008.
Mallophora leschenaulti - Dennis, Barnes & Knutson, 2008.
Mallophora media Clements & Bennett, 1969 - Clements & Bennett, 1969: 455 (pupa; host: *Barybas insulanus* Moser, 1919 (Coleoptera, Scarabaeidae)); Dennis, Barnes & Knutson, 2008.
Mallophora orcina - Dennis, Barnes & Knutson, 2008.
Mallophora ruficauda (Wiedemann, 1828) – Copello, 1927, 1942; Dennis & Knutson, 1988: 658, figs. 4A-C (pupa in ventral, lateral and dorsal views; host: Scarabaeidae larva (Coleoptera)); Dennis, Barnes & Knutson, 2008.
Mallophora sp. – Knutson, 1972: 167, fig. 1 (larva of *Phyllophaga sp.* (Coleoptera, Scarabaeidae) parasitized by larva of *Mallophora sp.*)
Mallophora sylveirii Macquart, 1838 - Dennis & Knutson, 1988: 856, figs. 3A-C (pupa in dorsal, lateral and ventral views; host: *Dyscinetus rugifrons* (Burmeister, 1847) (Coleoptera, Scarabaeridae, Dynastinae)); Dennis, Barnes & Knutson, 2008.
Megaphorus guildianus (Williston, 1885) - Dennis & Lavigne, 1976 (pupa).
Proctacanthus micans Schiner, 1867 - Dennis & Lavigne, 1976 (pupa).
Triola interrupta (Macquart, 1834) – Malloch, 1917; Davis, 1919; Osterberger, 1930 (host: *Eutheola rugiceps* (Le Conte, 1856) (Coleptera, Scarabaeridae); Dennis & Knutson, 1988: 854, figs. 2A-C (pupa in ventral, lateral and dorsal views).
Triorla striola (Fabricius, 1805) - Dennis & Knutson, 1988: 854, figs. 2A-C (pupa in ventral, lateral and dorsal views).

Subfamily Dasypogoninae

Diogmites vulgaris Carrera, 1947 - Dennis & Knutson, 1988: 853, fig. 1 (pupa in ventral, lateral and dorsal views; host: *Dyscinetus rugifrons* (Burmeister, 1847) (Coleoptera, Scarabaeridae, Dynastinae)).
Pseudorus distendens (Wiedemann, 1828) - Knutson, 1976: 509 (*Doryclus*; pupal case; host: Cerambycidae larva (Coleoptera)); Notario, Michela, Fiorentino & Castresana, 2000: 17 ("emergieron de trozas en las que sólo se encontraron *B*[*rasilianus*] *lacordairei* [(Gahan, 1892)], *B*[*rasilianus*] *murinus* [(Gahan, 1892)] [Coleoptera, Cerambycidae] y *C*[*hrysobotris*] *holoclalcea*? [Burmeister, 1872] [Coleoptera, Buprestidae]").

Subfamily Laphriinae

Andrenosoma xanthocnemum (Wiedemann, 1828) - Notario, Michela, Fiorentino & Castresana, 2000: 17 ("emergieron de trozas en las que sólo se encontraron *B*[*rasilianus*] *lacordairei* [(Gahan, 1892)], *B*[*rasilianus*] *murinus* [(Gahan, 1892)] [Coleoptera, Cerambycidae] y *C*[*hrysobotris*] *holoclalcea*? [Burmeister, 1872] [Coleoptera, Buprestidae]").

Subfamily Leptogastrinae

Leptopteromyia gracilis Williston, 1907 - Carrera, 1947b: 91, figs. 1-7, 94 (puparium).

Subfamily Stenopogoninae

Prolepsis lucifer (Wiedemann, 1828) - Soria & Mello, 1998: 285, figs. 14-20 (biol., larva, pupa) and Soria, Mello & Oliveira, 2004: 323 (larvae preying upon nymphs of *Eurhizococcus brasiliensis* (Hempel, 1922) (Hemiptera, Margarodidae)).

The pupal stage of Asilidae has been recorded as lasting from 1 to 2 weeks (Skidmore, 1960) to about 7 weeks (Melin, 1923). According to Dennis & Knutson (1988: 860), "The biological notes from the South American Parasite Laboratory [cf. Parker, Berry & Silveira Guido, 1953] show that the pupal stage of *M*[*allophora*] *ruficauda* lasts 2-4 wk. Accurate records were not kept for *D*[*iogmites*] *vulgaris* and *M*[*allophora*] *sylveirii*, but their pupal stage apparently lasts 9-10 wk."

List of genera per subfamily

ASILINAE

Albibarbefferia Artigas & Papavero, 1997
Amblyonychus Hermann, 1921
Anarmostus Loew, 1860
Apotinocerus Hull, 1962
Atractocoma Artigas, 1970
Carinefferia Artigas & Papavero, 1997
Carreraomyia Cole, 1969
Cerozodus Bigot, 1857
Chilesus Bromley, 1932
Cnodalomyia Hull, 1962
Cratolestes Hull, 1962
Cratopoda Hull, 1962
Ctenodontina Enderlein, 1914
Diplosynapsis Enderlein, 1914
Eccritosia Schiner, 1866
Efferia Coquillett, 1893
Eicherax Bigot, 1857
Eichoichemus Bigot, 1857
Epipamponeurus Becker, 1919
Eraxasilus Carrera, 1959
Glaphyropyga Schiner, 1866
Lecania Macquart, 1838
Leinendera Carrera, 1945
Leptoharpacticus Lynch Arribálzaga, 1880
Lestophonax Hull, 1962
Lochmorhyncvhus Engel, 1930
Lochyrus Artigas, 1970
Lycomya Bigot, 1857
Machimus Loew, 1849
Mallophora Macquart, 1838
Martintella Artigas, 1996
Megalometopon Artigas & Papavero, 1995
Megaphorus Bigot, 1857
Menexenus Artigas, 1970
Myaptex Hull, 1962
Myaptexaria Artigas & Papavero, 1995
Neoitamus Osten Sacken, 1878
Neotes Artigas & Papavero, 1995
Nerax Hull, 1962
Nomomyia Artigas, 1970
Ommatius Wiedemann, 1821
Philonicus Loew, 1849
Polacantha Martin, 1975
Porasilus Curran, 1934
Proctacanthella Bromley, 1934
Proctacanthus Macquart, 1838
Proctophoroides Artigas & Papavero, 1995
Prolatiforceps Martin, 1975
Promachus Loew, 1848
Pteralbis Ayala, 1981
Regasilus Curran, 1931
Rhadinosoma Artigas, 1970
Scarbroughia Papavero, 2008
Stenasilus Carrera, 1960
Stizolestes Hull, 1962
Taurhynchus Artigas & Papavero, 1995
Threnia Schiner, 1868
Triorla Parks, 1968
Tsacasia Artigas & Papavero, 1995
Wilcoxius Martin, 1975
Wygodasilus Artigas & Papavero, 1995
Wyliea Martin, 1975
Zoticus Artigas, 1970

DASYPOGONINAE

Aczelia Carrera, 1955
Alvarenga Carrera, 1960
Amorimius Papavero, 2008
Annamyia Pritchard, 1941
Aphamartania Schiner, 1866
Apolastauroides Artigas & Papavero, 1988
Araucopogon Artigas & Papavero, 1988
Aspidopyga Carrera, 1949
Austenmyia Carrera, 1955
Blepharepium Rondani, 1848
Caenarolia Thomson, 1869
Cleptomyia Carrera, 1949
Cophura Osten Sacken, 1887
Cyrtophrys Loew, 1851
Deromyia Philippi, 1865
Diogmites Loew, 1866
Hodophylax James, 1933
Lastaurina Curran, 1935
Lastaurus Loew, 1851
Megapoda Macquart, 1834
Neoderomyia Artigas, 1971
Neodiogmites Carrera, 1949
Nicocles Jaennicke, 1867
Parataracticus Cole, 1924
Phonicocleptes Lynch Arribálzaga, 1881
Pronomopsis Hermann, 1912
Pseudorus Walker, 1851
Saropogon Loew, 1847
Senobasis Macquart, 1838
Taracticus Loew, 1872
Theromyia Williston, 1891
Tocantinia Carrera, 1955

LAPHRIINAE

Andrenosoma Rondani, 1856
Aphestia Schiner, 1866
Aphractia Artigas, Papavero & Serra, 1991
Atomosia Macquart, 1838
Atomosiella Wilcox, 1937
Atoniomyia Hermann, 1912
Atractia Macquart, 1838
Bathropsis Hermann, 1912
Cerotainia Schiner, 1868
Cerotainiops Curran, 1930
Cryptomerinx Enderlein, 1914
Cyphomyiactia Artigas, Papavero & Serra, 1991
Dasyllis Loew, 1851
Dasythrix Loew, 1851
Dissmeryngodes Hermann, 1912
Eumecosoma Schiner, 1866
Hodites Hull, 1962
Hybozelodes Hermann, 1912
Ichneumolaphria Carrera, 1951
Joartigasia Martínez & Martinez, 1974
Lampria Macquart, 1838
Lamprozona Loew, 1851
Lycosimyia Hull, 1958
Neophoneus Williston, 1889
Oidardis Hermann, 1912
Phellopteron Hull, 1962
Pilica Curran, 1931
Pogonosoma Rondani, 1856
Rhatimomyia Lynch Arribálzaga, 1882
Rhopalogaster Macquart, 1834
Smeryngolaphria Hermann, 1912
Strombocodia Hermann, 1912

LAPHYSTIINAE

Apoxyria Schiner, 1866
Asicya Lynch Arribálzaga, 1880
Chrysotriclis Artigas, Papavero & Costa, 1995
Cochleariocera Artigas, Papavero & Costa, 1995
Cymbipyga Artigas, Papavero & Costa, 1995
Gymnotriclis Artigas, Papavero & Costa, 1995
Helolaphyctis Hermann, 1920
Hexameritia Speiser, 1920
Laphygmolestes Hull, 1962
Laphystia Loew, 1847
Macahyba Carrera, 1947
Martinomyia Özdikmen, 2006
Perasis Hermann, 1905
Protometer Artigas, Papavero & Costa, 1995
Psilocurus Loew, 1847
Triclioscelis Roeder, 1900

LEPTOGASTRINAE

Apachekolos Martin, 1957
Beameromyia Martin, 1957
Eurhabdus Aldrich, 1923
Leptogaster Meigen, 1803
Leptopteromyia Williston, 1907
Psilonyx Aldrich, 1923
Schildia Aldrich, 1923
Systologaster Papavero, 2008
Tipulogaster Cockerell, 1913

STENOPOGONINAE

Ablautus Loew, 1866
Acronyches Williston, 1908
Alyssomyia Hull, 1962
Araujoa Artigas & Papavero, 1991
Archilestris Loew, 1874
Archilestroides Artigas & Papavero, 1991
Aymarasilus Artigas, 1974
Bohartia Hull, 1958
Carebaricus Artigas & Papavero, 1991
Creolestes Hull, 1962
Cylicomera Lynch Arribálzaga, 1881
Cystoprosopa Hull, 1962
Dapsilochetus Hull, 1962
Dasycyrton Philippi, 1865
Dasypecus Philippi, 1865
Dicranus Loew, 1851
Enigmomorphus Hermann, 1912
Euthrixius Artigas, 1971
Grajahua Artigas & Papavero, 1991
Graptostylus Hull, 1962
Heteropogon Loew, 1847
Holopogon Loew, 1847
Itolia Wilcox, 1936
Ivettea Artigas & Papavero, 1991
Leptochelina Artigas, 1970
Lonquimayus Artigas & Papavero, 1991
Metapogon Coquillett, 1904
Microstylum Macquart, 1838
Nannodioctria Wilcox & Martin, 1942
Nothopogon Artigas & Papavero, 1991
Obelophorus Schiner, 1868
Ospriocerus Loew, 1866
Plesiomma Macquart, 1838
Pritchardia Stuardo Ortiz, 1946
Prolepsis Walker, 1851
Raulcortesia Artigas & Papavero, 1991
Scleropogon Loew, 1866
Scylaticina Artigas & Papavero, 1991
Scylaticodes Artigas & Papavero, 1991
Sintoria Hull, 1962
Stenopogon Loew, 1847
Taperigna Artigas & Papavero, 1991
Tillobroma Hull, 1962
Willistonina Back, 1909
Zabrotica Hull, 1958

STICHOPOGONINAE

Argyropogon Artigas & Papavero, 1990
Lissoteles Bezzi, 1910
Stichopogon Loew, 1847
Townsendia Williston, 1895

TRIGONOMIMINAE

Holcocephala Jaennicke, 1867
Meliponomima Artigas & Papavero, 1989
Orrhodops Hull, 1958
Seabramyia Carrera, 1960

1. Key to subfamilies

1. Abdominal tergite 1 five or more times as long as wide. Alula and pulvilli lacking. Abdominal sternite 1 extending about halfway back under tergite 2 .... LEPTOGASTRINAE [p. 239]
   Abdominal tergite 2 no more than four times as long as wide. Usually both alula and pulvilli present, but occasionally one of them may be absent. Abdominal sternite 1 confined beneath tergite 1 2

2 (1). Fore tibia with an apical "spur", i. e., one of the spines at the apex of the ventral side of the fore tibia differentiated, more or less enlarged and stouter than remaining spines, or if not noticeably larger, twisted and sigmoid. Prosternum dissociated by a membranous area from proepisternum (except in *Blepharepium* Rondani) .... DASYPOGONINAE [p. 109]
   Fore tibia without an apical "spur", i. e., all apical spines on fore tibia straight, or, if one is slightly curved, then it is not thickened or sigmoid. Prosternum either dissociated from proepisternum or fused to it 3

3 (2). Apex of R2 + 3 directed sharply forward, meeting C at an angle of about 90º, ending either at distal end of R1 (cell r1 closed) or a short distance from R1 along C (cell r1 open). Vein R_4 strongly sinuate and arched forward after separation from R_5. Cells m3 and cup always closed before wing margin. Prosternum fused to proepisternum. Male with only six abdominal tergites visible dorsally .... LAPHYSTIINAE [p. 196]
   Apex of R2 + 3 not directed sharply forward before ending in C or R1; R4 not unusually arched and sinuate; cells m3 and cup open to wing margin, or one of the two closed, or both closed. Prosternum dissociated from proepisternum or fused to it. Male with six to eight tergites visible dorsally 4

4 (3). R2+3 ending in C (except in *Enigmomorphus* Hermann) and neither a strong bristle present on the supero-posterior angle of anepisternum nor a row of bristles present on the katatergite 5
   R2+3 joining R1 proximal to end of R1, with cell r1 thus separated from wing margin. Either anepisternum with at least 1 strong bristle on its supero-posterior angle, or katatergite with a vertical row of bristles or bristly hairs 7

5 (4). Prosternum dissociated from proepisternum by a membranous area .... STENOPOGONINAE [p. 254]
   Prosternum fused to proepisternum, forming a precoxal bridge 6

6 (5). Frons narrowed at level of insertion of antennae and then suddenly and widely divergent toward apex, which is extremely shallow, i. e., eyes much more distant at vertex than at antennal level. Face without tentorial pits or grooves, flat above and prominent below or very gibbous. Posterodosal corner of metepimeron bare. Abdomen slender. Female terminalia with characteristic ventral keel and spines .... STICHOPOGONINAE [p. 305]
   Frons approximately of same width at level of antennal insertion and vertex, the latter excavated, i. e., eyes not noticeably more distant at vertex than at antennal level. Face with pronounced tentorial pits or grooves extending well above lower facial margin. Face in profile not produced beyond eye margin. Posterolateral corners of metepimeron with short hairs. Abdomen very short, usually ¾ or less width of wing. Female terminalia simple, tubular, without spines .... TRIGONOMIMINAE [p. 309]

6 (5). Supero-posterior angle of anepisternum, in front of wing insertion, with at least 1 strong, long bristle and katatergite never with vertical row of bristles. Prosternum fused to proepisternum. Palpus with 1 or 2 segments. Female terminalia without spines .... LAPHRIINAE [p. 153]
   Supero-posterior angle of anepisternum never with a strong long bristle; katatergite with a vertical row of bristles or bristle-like hairs (rarely reduced to only 1 bristle). Prosternum dissociated from proepisternum or fused to it. Palpus always one-segmented. Female terminalia with or without spines .... ASILINAE [p. 7]

2. Subfamily Asilinae [Figs. 1-509]

Key to the genera

The following genera were not included in the key below: (i) *Labromyia* Hull, 1962, which we were not able to recognize; (ii) *Epipamponeurus* Becker, 1919 (*Asilus*-group), because we had only one headless and badly preserved specimen in the collection of the Museu de Zoologia da Universidade de São Paulo; (iii) *Machimus* Loew, 1849; *Neomochtherus* Osten Sacken, 1878; *Philonicus* Loew, 1849; *Prolatiforceps* Martin, 1975, and *Stenasilus* Carrera, 1960 (*Asilus*-group), because their generic limits require a thorough revision; (iv) *Regasilus* Curran, 1931, because no specimen was available.

1. Anatergite bare 2
Anatergite pilose 47

2 (1). Antennal style plumose. Postmetacoxal area heavily sclerotized, forming a complete bridge behind hind coxae (*Ommatius*-group) .... *Ommatius* Wiedemann, 1821
Antennal style bare. Postmetacoxal area membranous 3

3 (2). Costal section situated between tips of R5 and M1 two or more times longer than costal section situated between tips of R5 and R4, i. e., R5 ends at or above wing apex (Figs. 64, 71, 79-80, 120) 4
Costal section between tips of R5 and M1 subequal to or much shorter than costal section situated between tips of R5 and R4, i. e, R5 ends below wing apex (Figs. 182-187) 18

4 (3). Male hypandrium short and broad, not produced (Figs. 22, 24, 48-49), without an apical tuft of hairs. Aedeagus with 2 more or less long tubes arising from a common base (Figs. 22-26, 49-50, 52-53. Female tergite 10 with strong spines (“acanthophorites”) (Figs. 16-17, 29-30) (except in *Proctacanthus coquillettii* Hine and *Proctacanthus occidentalis* Hine (Fig. 45), both Nearctic, which have tergites 9 and 10 covered with numerous spinules). Only 2 spermathecae present, with globular or ovoid capsules (Figs. 24, 31, 55-56, 59) (*Proctacanthus*-group, part, except *Proctacanthella* Bromley) 5
Male hypandrium variable, but most often produced (Figs. 60, 73, 81, 112, 121, 126, 128, 135, 143-144, 150, 152, 158, 167-168), sometimes with a dense apical tuft of hairs (Figs. 126, 135, 143-144, 158). Aedeagus with 3 tubes (sometimes extremely short) (Figs. 62-63, 74-75, 84-85, 114-116, 123, 129, 137, 145, 159, 169). Female tergite 10 never with spines or spinules (Figs. 65-66, 68-69, 77-78, 109-110, 117-118, 130-131, 138-139, 146, 153-154, 160-163, 170)). Spermathecae with 3 capsules (Figs. 66-67, 70, 76, 111, 119, 132, 140, 147, 155, 171) 7

5 (4). Proboscis with two lateral wing-like expansions, in cross-section clearly T-shaped (Figs. 19, 27-28). Male terminalia as in Figs. 22-24. Aedeagus as in Figs. 25-26. Female terminalia as in Figs. 29-30. Spermathecae as in Fig. 31. (South America, except Chile .... *Taurhynchus* Artigas & Papavero, 1995
Proboscis thick, upturned (Figs. 32-33, 40), hemispherical in cross-section 6

6 (5). Mystax formed by very dense, long, oral hairs and short ones above, the mystax forming a tuft that hides the integument where bristles and hairs are implanted. Male terminalia as in Figs. 22-24. Female terminalia as in Figs. 15-17. Spermathecae as in Figs. 15, 18. Length, 24-28 mm. (Neotropical, including Chile; introduced in Australia) .... *Eccritosia* Schiner, 1866
Mystax usually with sparse, strong oral bristles and fine hairs above. Male terminalia as in Figs. 46-51. Female terminalia as in Figs. 45, 54-58. Spermathecae as in Figs. 52-53, 56. (Americas, except Chile) .... *Proctacanthus* Macquart, 1838

7 (4). Aedeagus most often characteristically curved, more or less crescent-shaped, formed by a very long common tube which opens at apex into 3 very short tubes, forming a “parrot beak” like structure (figs. 62-63, 74-75, 84-85, 115-116, 123. Male terminalia slender and elongate, forming an angle (up to 90^{o}) with the body axis (Figs. 60, 81, 112, 121). Female ovipositor strongly flattened laterally, blade-like, tergite 8 more or less elongate and slender (Figs. 65-66, 68-69, 77-78, 109-110, 117-118). Spermathecal complex with an extremely long and slender endosternite, whose arms are placed very closely together (Figs. 70, 76, 111, 119). Wing normally with a stump vein at the angle of R4 near its junction with R5 (Figs. 71, 80) (if stump vein absent, all the other preceding characters of the female or of the male present), or, in the case of *Efferia* Coquillett, with a complete extra vein

uniting R4 with R2+3 (i. e., three submarginal cells present) (*Efferia*-group) 8

Aedeagus with 3 clearly separated, more or less divergent tubes, which may be more or less long, but never extremely short as above, arising from a more or less long common tube (Figs. 129, 137, 145, 159, 169). Male terminalia on the same axis of the body (Figs. 126, 135, 143, 150, 158, 167). Female ovipositor generally conical; if laterally flattened, tergite 8 not very long, segment 8 of the abdomen never slender (Figs. 130-131, 138-139, 146, 153-154, 160-163, 170). Spermathecal complex with endosternite never extremely long and slender arms of endosternite normally only a little longer than their common base and more or less widely separated, never almost contiguous as above (Figs. 132, 140, 147, 155, 171). R4 near its junction with R5 never with a stump vein (*Lochmorhynchus*-group) 17

8 (7). Fork of R4 and R5 much or just before apex of discal cell (Fig. 64). R5 ends above wing apex (Fig. 64). Mesonotum anteriorly either with short hairs (or, if long, not btrstle-like), or with bristles or bristle-like hairs as long as or longer than scape and pedicel together. Male abdomen either grayish pollinose and frequently with long, parted hairs, or with tergites 2-5 blackish basally, without parted hairs and segments 6-7 white pollinose. Male terminalia as in Figs. 60-64. Ovipositor either rounded at tip, not split in dorsal view, or pointed and split at tip in dorsal view (Figs. 65-66). Spermathecae as in Figs. 66-67 (Nearctic) .... *Pogonioefferia* Artigas & Papavero, 1997

Fork of R4 and R5 opposite to or beyond apex of discal cell (Figs. 71, 80, 120). R5 ends at (Fig. 120) or above wing apex (Figs. 71, 80). Other combinations of characters 9

9 (8). Apical half of scutellum with many long, black bristles, disc with many long hairs, often similar to bristles. R5 ends above wing apex. Male terminalia not compressed, epandria with deep apical excision, no mane on gonopods (cf. Artigas, 1970: figs. 227, 234). Aedeagus with 3 tubes (cf. Artigas, 1970: figs. 228, 233; 1971: figs. 76, 78). Ovipositor conical, tergite 10 sometimes with minute spines (cf. Artigas, 1970: figs. 230, 231, 235). Spermathecae with 3 rounded capsules with very short basal common duct (cf. Artigas, 1971: figs. 75-77). Length, 15-20 mm. (Exclusively Chilean flies) .... *Cratolestes* Hull, 1962

Two to twelve marginal scutellar bristles, scutellum never as above. R5 ends at or above wing apex. Other combinations of characters. Not occurring in Chile 10

10 (9). Ocellar tubercle without bristles, only short hairs present. Male hypandrium produced. Female ovipositor conical (Figs. 68-69). Spermathecae as in Fig. 70. Length, 20-25 mm. (U. S. A. to Guatemala, Panama, and Surinam to Paraguay) .... *Triorla* Parks, 1968

Ocellar tubercles with bristles. Other combinations of characters 11

11 (10). Vein R4 ends in C, far from R1, i. e., first submarginal cell open (Fig. 120). R5 ends at or above wing apex 12

Vein R4 ends in R1, i. e., first submarginal cell closed and petiolate (Figs. 71, 80). R5 ends above wing apex (Figs. 71, 80). Anatergite bare or pilose. Male terminalia as in Figs. 72-75, 81-85. Female terminalia as in Figs. 77-78. Spermathecae as in Fig. 76. (Venezuela, Colombia, Peru) .... *Diplosynapsis* Enderlein, 1914 [see also couplet 49]

12 (11). R5 curves backwards at the tip and meets the Costa slightly below the apex of wing, i. e., costal section between tips of R5 and M1 shorter than costal section between tips of R1 and R5 (Fig. 120). Male terminalia as in Figs. 121-123 (Americas, but not in Chile) ....*Nerax* Hull, 1962

R5 curved forward, meeting the Costa above the apex of wing, i. e., costal section between tips of R5 and M1 longer than costal section between tips of R1 and R5 13

13 (12). Wing with only 2 submarginal cells 14

Wing with 3 submarginal cells, i. e., an extra cross vein arises in R4 near its junction with R5, which united R4 with R2+3. Male terminalia as in Figs. 112-116. Female terminalia as in Figs. 117-118. Spermathecae as in Fig. 119 (Nearctic) .... *Efferia* Coquillett, 1893

14 (13). Mesonotum compressed laterally and the mid-dorsal line with a narrow crest of long hairs or bristles (Neactic) .... *Carinefferia* Artigas & Papavero, 1997

Mesonotum not compressed laterally, hairs anteriorly very short, but if long not covering the dorsocentral as well as the central row 15

15 (14). Mesonotum anteriorly with numerous erect hairs as long as scape and pedicel together. Scutellum usually with numerous marginal bristles. Tarsal bristles usually white (Nearctic) .... *Aridefferia* Artigas & Papavero, 1997

Mesonotum anteriorly with hairs shorter than scape and picel together. Scutellum usually with not more than 6 marginal bristles. Bristles of tarsi usually black 16

16 (15). Male abdomen ventrally with prominent tubercles on segments 4-6. Rather small, slender species (Nearctic) .... *Tuberculefferia* Artigas & Papavero, 1997
Male abdomen without ventral tubercles. Small to large species, the small species frequently with short stout bristles in the upper part of the mystax (Nearctic) .... *Albibarbefferia* Artigas & Papavero, 1997

17 (7). Antennal flagellum with 3 flagellomeres: the first longer than combined length of scape and pedicel, 6-8 times as long as wide; second very short, ring-like; third ¼ length of first (Fig. 124). Male epandria 2.5-3 times as long as wide, sternite 8 (hypandrium) produced, with long, dense, apical hairs (Figs. 126-128). Aedeagus as in Fig. 129. Ovipositor cylindrical, slightly longer than segments 6-7 (Figs. 130-131). Spermathecae as in Fig. 132. Length, 14-17 mm. (Argentina) .... *Apotinocerus* Hull, 1962
Antennal flagellum with 3 or 2 flagellomeres: the basal flagellomere no more than 4 times as long as wide and subequal in length to the combined scape and pedicel; apical flagellomere (third or second, depending on the case) subequal to basal flagellomere or shorter (Figs. 133, 141, 148, 156, 164). Male terminalia very variable – from situated on the same axis of the body to forming a 90º angle with the body axis (Figs. 235, 143, 150, 158, 167). Male epandria from relatively slender and elongate to more or less globose (Figs. 135-136, 143, 150-151, 158, 166-167). Male hypandrium extremely variable: from more or less conical and robust with a small bifid process at the apex to strongly flattened with two divergent apical processes to flattened and short, forming two widely separated triangular plates emerging from a common narrow basis and hypandrium normally bearing very dense, long hairs which conceal completely the interior of the terminalia (Figs. 135, 143-144, 150, 152, 158, 167-168). Aedeagus as in Figs. 137, 145, 159, sometimes with very complicated structures (Fig. 169). Ovipositor also extremely variable: from conical to strongly compressed laterally, short or very long (Figs. 138-139, 146, 153-154, 160-163, 170). Spermathecae as in Figs. 140, 147, 155, 171. Length, 15-32 mm. (Chile, Argentina) .... *Lochmorhynchus* Engel, 1930

18 (3). Scutellum without marginal bristles, its tumid surface only covered by relatively short, semi-erect pile. Male terminalia extremely variable. Ovipositor variable. Male aedeagus with 2 long and slender tubes (Figs. 178, 193, 205, 209, 215, 223, 231, 239-240, 251, 252-254). Only 2 spermathecae present (Figs. 181, 194, 197, 235) (*Lecania*-group) 19
Scutellum with at least 1 pair of well-developed marginal bristles (although marginals may be weak in a few cases). Other combinations of characters 21

19 (18). First antennal flagellomere about as broad as long, laterally flattened, especially at apex, apex broadly truncate, giving to the flagellomere an almost cordiform look; second flagellomere minute; third very long and slender, in males with a broad basal projection which is absent in females (Figs. 172-173). Male epandrium broad basally, apical 1/3 narrow, roughly parallel-sided; hypandrium with a tongue-like projection in the central 1/3 of its posterior border; gonopods elongate, falciform (Figs. 175-177). Ovipositor beginning with segment 8, longer than abdominal segments 6-7, conical at base, apical half laterally compressed and very broad; female sternite 8 flat, triangular, about twice as long as wide, with a group of bristles on the apical half; sternite 9 laterally compressed, widened, keel-like (Figs. 179-180). Spermathecae with semi-ovoid capsules, endosternite very long and slender, the arms placed close together (Fig. 181). Wing with fork of R4 and R5 situated at same level as end of discal cell (Fig. 182). R4 near its junction with R5 sometimes with a short stump vein. Length, 14-17 mm. (Brazil: Mato Grosso, São Paulo) .... *Cerozodus* Bigot, 1857
Antenna never as above (Figs. 188, 227). Other combinations of characters 20

20 (19). Male hind femur with a more or less developed swelling on the ventral surface of its apical ¾, bearing a group of spine-like bristles or sub-tuberculate spines; this swelling varies from very slight (normally only perceptible by the presence of the patch of spine-like bristles, as in Fig. 199), through a more rounded and perceptible process (Fig. 198) to an extremely developed tubercle bearing spines (cf. Lamas, 1973: 279, Fig. 7). Epandrium, in lateral view, broad on anterior part, apical 1/3 narrowed; hypandrium with extremely developed, broad and long, apical process (Figs. 190, 202). Female ovipositor extremely characteristic – sternite 8 almost round in dorsal view (Figs. 194-196). Spermathecae with large, semi-ovoid capsules; endosternite relatively short, its arms largely separated, but convergent at apex (Figs. 194, 197). Wing with fork of R4 and R5 situated beyond apex of discal cell (Fig. 182). Length, 13-15 mm. (Colombia, Peru) .... *Ctenodontina* Enderlein, 1914
Male hind femur without a swelling and without a patch of spines or spine-like bristles on the ventral surface of its apical ¾. Female ovipositor never as abobe, but conical at base, laterally compressed apically, sometimes including segment 7 (Figs. 232-234). Male terminalia extremely variable (Figs. 206-209, 210-216, 217-223, 224-231, 236-240, 241-246, 247-251, 252-254). Fork of R4 and R5 before (Fig. 184, 185), at same level as (Figs. 186) or beyond (Fig. 183, 187) apex of discal cell. Spermathecae as in Fig. 235. Length, 15-25 mm (Neotropical, but not

in Chile) ....*Lecania* Macquart, 1838, *sensu lato*

21 (18). Subalar sclerite with characteristic conical projection. Posterior basalare with at least some bristles and hairs, sometimes very dense. Wing with cell r 2 + 3 broad apically, and vein R4 with a complete extra vein near its junction with R5, uniting R4 with R2+3 (i. e., 3 submarginal cells present). Male terminalia small, in line with body axis or at a slight angle (Figs. 266, 277, 293, 303, 313). Aedeagus with 3 more or less long tubes (Figs. 260, 269, 278-279, 287, 296, 306-307, 316-317). Female ovipositor conical, weakly sclerotized, beginning with segment 6, 7 or 8; tergite 10 never with spines (Figs. 261-262, 271, 280-281, 288-289, 297-299, 308-309, 319-320). Generally very pilose flies. Three spermathecae present, with more or less sausage-like capsules (Figs. 263, 272, 282, 290, 300, 310, 321) (*Mallophora*-group) 22
Never with the above combination of characters 27

22 (21). Claws acute. Facial gibbosity weak, usually confined to lower half of face; mystax extending up to antennal basis, bristles usually confined to oral margin. Male epandria (Figs. 257-259) short, slender, frequently with dense white hairs above. Aedeagus as in Fig. 6. Female ovipositor (Figs. 261-262) beginning with segment 6, 7 or 8. Three falciform spermathecae (Fig. 263), with long and thick common basal duct. Length, 15-40 mm. (Nearctic, extending down into Mexico and Central America) .... *Promachus* Loew, 1848
Claws obtuse. Other combinations of characters 23

23 (22). Face. 1/6 width of head. Frons between antennae and ocelli as long as wide. Male epandrium (Figs. 266-268, 275-277) 8 times as long as wide; aedeagus with 3 divergent, more or less long tubes (Figs. 269, 278-279, 287). Female ovipositor (Figs. 270-271) beginning with segment 8. Spermathecae as in Figs. 272 and 282 . Hind femora slightly swollen, hind tibiae straight. Length, 15-25 mm. (Neotropical, but not in Chile) ...... *Amblyonychus* Hermann, 1921
Face 1/5 width of head or more. Frons between antennae and ocelli wider than long. Male epandria variable. Female ovipositor beginning with segment 6. Hind femur and tibia variable 24

24 (23). Lower half of face swollen, long hairs of mystax confined to gibbosity; oral bristles present at times, short sparse hairs between antennae and gibbosity. Fore and middle femora swollen, hind femur slender, hind tibia bowed, with 1-4 strong bristles on anterior side. Male terminalia and aedeagus as in Figs. 285-287 (see also Artigas & Angulo, 1980). Female ovipositor and spermathecae as in Figs. 288-290. Length, 15-40 mm. (Neotropical, but not in Chile, extending into Nearctic) .... *Mallophora* Macquart, 1834
Face slightly and evenly convex. Other combinations of characters 25

25 (24). Hind femur slender and much longer than the swollen fore and middle femora. Mystax thin. Scutellum with sparse, erect hairs. Male terminalia (Figs. 293-295) short, with dense white hairs above. Aedeagus with 3 relatively short tubes (Fig. 296). Female ovipositor short and conical (Figs. 297-299). Spermathecae as in Fig. 300. Length, 9-14 mm. (Mexico: Guerrero, Morelos, Oaxaca) ....*Carreraomyia* Cole, 1968
All femora swollen, hind femur not much longer than fore and middle femora. Other combinations of characters..26

26 (25). The dense, erect scutellar hairs parted at the middle. Hind femur with dorsal anterior row of bristles. Tarsomeres 2-4 as long as wide. Face 1/3 width of head. Male epandria (Figs.303-305) about three times as long as wide. Aedeagus as in Figs. 306-307. Female ovipositor (Figs. 308-309) short. Spermathecae as in Fig. 310. Length, 12-16 mm. (U. S. A.: Arizona; Mexico: Sonora) .... *Promachella* Cole & Pritchard, 1964
Dense erect scutellar hairs unparted. Hind femur with only apical anterior dorsal bristles. Tarsomeres 2-4 about twice as wide as long. Face ¼ to nearly 1/3 width of head. Male epandria (Figs. 313-315) about twice as long as wide. Aedeagus as in Figs. 316-318. Female ovipositor short (Figs. 319-320). Spermarthecae with long and robust falciform capsules and very thick common basal duct (Fig. 321). Length, 9-16 mm. (U. S. A., Mexico) .... *Megaphorus* Bigot, 1857

27 (21). Wing with vein R4 with a complete extra vein near its junction with R5, uniting it to R2+3 (i. e., 3 submarginal cells present); if only 2 submarginal cells present, then R4, near it junction with R5, with a stump vein and claws obtuse. Aedeagus with 3 tubes (Figs. 325-326). Three spermathecal capsules present (as far as known) (Fig. 329). Male terminalia large, at a 30^{o} angle with body axis, gonopods with dense fringe of long hairs (Figs. 322-324). Female ovipositor laterally compressed, shining, strongly chitinized, as long as segments 6-7 or 5-7 (Figs. 327-328) (*Eichoichemus*-group) 28
Wing with only 2 submarginal cells and claws never obtuse. Other combinations of characters 30

28 (27). Only 2 submarginal cell in the wing, i. e., vein R4, near its junction with R5, only with a stump vein ending in cell r2+3. Claws obtuse (Bolivia) .... *Wygodasilus* Artigas & Papavero, 1995
Three submarginal cells present in the wing, i. e., vein R4 with a complete extra vein uniting it with vein R2+3. Claws acute or obtuse 29

29 (28). Claws obtuse. Male Costa not dilated. Male terminalia as in Figs. 322-324. Aedeagus as in Figs. 325-326. Female terminalia as in Figs. 327-328. Spermathecae as in Fig. 329 (South America, but not in Chile) .... *Eichoichemus* Bigot, 1857
Claws acute. Male Costa dilated. (Brazil: Mato Grosso, Minas Gerais, São Paulo) ... *Proctophoroides* Artigas & Papavero, 1995

30 (27). Male terminalia elongate, forming an angle of almost 90º with the body axis (Fig. 121). Aedeagus a very long, crescent-shaped tube with 3 very short tubes at apex (Fig. 123). Female ovipositor strongly flattened laterally, blade-like, tergite 8 elongate and slender. Spermathecal complex with an extremely long and slender endosternite, whose arms are placed very closely together (*Efferia*-group, part) .... *Nerax* Hull, 1962
Never with the above combination of characters 31

31 (30). Abdominal tergites 2-3 or more without lateromarginal bristles 32
Abdominal tergites 2-3 or more with lateromarginal bristles 34

32 (31). Scutellum with many discal and marginal bristles. Male terminalia small, variable, hypandrium quite large (Figs. 4, 6, 11, 13). Ovipositor shining, conical, with circlet of strong spines on tergite 10 (Figs. 8, 9) (*Proctacanthus*-group, part) .... *Proctacanthella* Bromley, 1934
Scutellum with marginal bristles only. Female ovipositor without apical spines (*Eicherax*-group) 33

33 (32). Anterior mesonotal bristles present. Male epandria slender, about 3 times as long as wide, apex entire (Figs. 332-334). Aedeagus as in Fig. 335. Female ovipositor compressed, subequal in length to abdominal segments 6-7, and apical prolongation of tergite 8 with spines on ventral surface (Figs. 336-338). Only 2 spermathecae present, arising from an elongated common basal duct (Fig. 339). Length, 16-24 mm. (South America, but not in Chile) .... *Eraxasilus* Carrera, 1959
Anterior mesonotal hairs very short, no anterior dorsocentral bristles. Male epandria broad, apical margin broadly excised (Figs. 342-344). Aedeagus as in Fig. 345. Female ovipositor conical, slightly shorter than abdominal segments 6-7, apical prolongation of tergite 8 without spines on ventral surface (Figs. 346-348). Three spermathecae present, arising from a short common basal duct (Fig. 349). Length, 15-20 mm. (Mexico to Argentina, but not in Chile) .... *Eicherax* Bigot, 1857

34 (31). Scutellum tumid, no sign of an impressed rim (*Myaptex*-group) 35
Scutellum with a clear impressed rim (*Glaphyropyga*-group) 41

35 (34). Face decidedly gibbous (Figs. 350, 371) 36
Face evenly rounded or at most produced at subcranial margin, but never decidedly gibbous (Figs. 381-382, 391-392, 4003-404, 415-416) 38

36 (35). Face at antennal level 4/5 width of an eye, slightly widened below (Figs. 350-351), entirely golden pollinose. Mystax with bristles over entire gibbosity, bristles reaching apex of proboscis (Fig. 350). Scape twice as long as pedicel; first flagellomere subequal to scape (Fig. 350). Mesonotum with only posterior dorsocentral bristles. Scutellum with 2 marginal bristles, disc with scanty, short pile. Wings shorter than abdomen. Femora robust. Male terminalia as in Figs. 354-356; epandrium with an apical incision. Aedeagus with 3 tubes (Fig. 357). Ovipositor as in Figs. 358-359. Spermathecae with 3 characteristic capsules (Fig. 360); endosternite extremely elongated, the two arms running closely together (Fig. 360). Length, 10-11 mm. (Mexico, Nicaragua, El Salvador) ... *Wilcoxius* Martín, 1975
Face at antennal level 3/5 width of an eye and widening below, at subcranial margin 1/5 times as wide as at antennal level (Figs. 370-371), white or whitish-grey pollinose. Mystax occupying entire gibba, with mixed white and black bristles, the black ones slightly surpassing tip of proboscis (Fig. 371). Scape, mesonotum, scutellum and femora, same as above. Male epandrium never with an apical incision (Figs. 373-375). Aedeagus with only 2 tubes (Fig. 376). Ovipositor as in Figs.377-379. Spermathecae with only 2 capsules (Figs. 380) (Chile) 37

37 (36). Scutellar disc only with scattered, long, fine pile; normally 4 black marginal bristles. Anterior dorsocentral bristles present. Male terminalia with characteristic, very inflated epandria, their apices curved in apically (Figs. 364-

365). Length, 8-13 mm .... *Myapex* Hull, 1962

Scutellar disc with two tufts of abundant, proclinated, long bristly hairs; from 2 to several marginal scutellar bristles (sometimes mixed black and white). Anterior dorsocentral bristles present (in *Myaptexaria vexillaris* (Artigas)) or absent (*Myaptexaria virilis* (Artigas)). Male epandria not inflated, their apices blunt and not curved in at apex (Figs. 373-375). Aedeagus as in Fig. 376. Female terminalia as in Figs. 377-379. Spermathecae as in Fig. 380. Length, 17-19 mm .... *Myaptexaria* Artigas & Papavero, 1995

38 (35). Body and legs with characteristic, abundant, white, squamiform hairs and setae, usually compressed against the integument (see Artigas, 1970: fig. 220). Face evenly rounded, the mystax with long bristles at the subcranial margin and shorter ones above (Figs. 381-382). Frons and face narrow (Fig. 382). Mesonotum with only posterior dorsocentrals. Scutellum with 6 marginal bristles, its disc with many proclinate bristles. Fork of R4+5 beyond end of discal cell (Fig. 383). Male terminalia on the same axis of the body; epandrium 1.5 times as long as wide, upper apical angle projected; hypandrium short (Figs. 385-387). Ovipositor laterally compressed, in lateral view very broad, "hunched", extremely characteristic (Figs. 388-389). Spermathecae with 3 ovoid capsules, endosternite very short (Fig. 390). Length, 11-13 mm. (Chile, Argentina) .... *Atractocoma* Artigas, 1970

Body and legs never with squamiform hairs or setae. Other combinations of characters 39

39 (38). Mystax with a few long bristles restricted to subcranial margin, reaching tip of proboscis, and very few scattered bristles, half the length of the former, above, up to the middle of the face (Fig. 392); face very slightly produced at oral margin, almost flat on the remainder (Fig. 391). Face at antennal level ¾ width of an eye; frons narrow (Fig. 391). Anterior dorsocentral bristles absent. Disc of scutellum with very scanty, short hairs; 2 marginal bristles. Male terminalia as in Figs. 395-397; epandrium without apical incision. Aedeagus apparently with only 1 tube (Fig. 398). Ovipositor conical (Figs. 399-401). Spermathecae characteristically with 3 elongated, coiled capsules (Fig. 402); the three spermathecae emerge from a relatively long and robust common duct; endosternite Y-shaped, short and robust, very characteritic (Fig. 402). Length, 11-13 mm. Very delicate, slender flies (Chile) .... *Rhadinosoma* Artigas, 1970

Mystax with abundant bristles occupying ¾ of face (Figs. 403-404, 415-416). Other combinations of characters ... 40

40 (39). Face and frons, as seen in frontal view, nearly parallel-sided (Fig. 403). Proximal half of central surface of fore and middle femora, all the tibiae and tarsi, and coxae (especially fore and middle ones) with very neat, white, long, strong bristles, in addition to more or less long, white, dense, appressed, short, bristle-like hairs. Male terminalia as in Figs. 407-409; epandrium long and slender. Aedeagus (Fig. 410) with 2 tubes. Hypandrium without apical tuft of hairs. Female terminalia as in Figs. 411-413. Spermathecae with only 2 ovoid capsules (Fig. 414). Length, 10-11 mm. (Mexico: Sonora) .... *Scarbroughia* Papavero, 2009

Face and frons, as seen in frontal view, roughly triangular-shaped, the face widening toward subcranial margin (Fig. 415). Legs not as above. Male terminalia as in Figs. 419-421; hypandrium with a dense tuft of long apical hairs; epandrium broad. Aedeagus with 3 tubes (Fig. 422). [Females not available for dissection]. Length, 10 mm. (Mexico: Guerrero, Morelos) .... *Martintella* Artigas, 1996

41 (34). Face extremely narrow, 1/10 to 1/12 width of face (Fig. 424), gibba restricted to its lower 1/3 (Figs. 423-424). Antenna characteristically with a very long and slender basal flagellomere, subequal in length to 1.5-2 times to the combined length of scape and pedicel; stylus (3d flagellomere) of variable length – from very short, shorter than pedicel, to very long and slender (Figs. 426-428). Mesonotum with anterior dorsocentral bristles present. Legs slender, male hind basal tarsomere very long, as long as tarsomeres 2-5 or 2-4. Male terminalia as in Figs. 8-10; epandrium 4 times as long as wide, slightly curved in at apex. Ovipositor shining, conical, subequal to abdominal segment 7 (Figs. 434-435). Three spermathecae present, originating from short common duct, with oblong capsules (Fig. 436). Length, 12-20 mm. (Central and South Americas, but not in Chile) .... *Glaphyropyga* Schiner, 1866

Face broader, ¼ to 1/7 width of head. Antennae never as above. Male hind basal tarsomere never as above. Other combinations of characters 42

42 (41). First abdominal tergite, as seen from above, with a median, longitudinal depression, and sometimes with the posterior border, at is central portion, appearing as if it were interrupted (see Artigas, 1970: 345) 43

First abdominal tergite never as above 44

43 (42). Medium-sized flies (body length, 12 mm; wing length, 8 mm). Face narrow in frontal view (1/7 width of head) (Fig. 438). Proboscis only slightly surpassing apex of proboscis (Fig. 437). Mystax occupying entire gibbosity (Figs. 437-438). Mesonotum with very long, fine, bristles and hairs, the latter, on the anterior slope, almost as

long as the combined length of scape and pedicel. Scutellum with long, fine hairs on disc and at least 6 marginal scutellar bristles present. Male terminalia as in Figs. 441-443; epandrium much broadened apically, bearing spinules on its internal margin, its tip bent inwardly. Aedeagus as in Fig. 444. Ovipositor short, slightly laterally flattened (Figs. 445-447). Spermathecae as in Fig. 448 ; endosternite elongate; a long common duct; 3 elongate, slender capsules present. (Chile) .... *Neotes* Artigas & Papavero, 1995

Large and more robust flies (body length, 24.5 mm; wing length, 19.5 mm). Face at antennae level about ¼ head's width (Fig. 450). Frons extremely narrow, the eyes convergent above; the face gradually widening toward oral margin; the ensemble frons-face, in frontal view (Fig. 450) therefore appearing roughly triangular-shaped. Mystax with a few bristles restricted to subcranial margin. Proboscis extending much beyond apex of gibbosity (Fig. 450). Mesonotum with very short, decumbent, almost spinule-like hairs, slightly longer on the posterior slope. Scutellum with similar hairs on disc; only 2 marginal scutellar bristles present. Male terminalia as in Figs. 453-455; epandrium long and slender, not curved in at apex, without spines, without apical incision. Ovipositor short and very broad, laterally flattened (Figs. 456-457). [Female not available for dissection]. (Argentina) .... *Tsacasia* Artigas & Papavero, 1995

44 (42). Lateral margins of abdominal tergites 1-4 either with many long, fine hairs, or many coarse, bristly pile, in addition to 1-5 slender and long bristles, more or less compressed against the integument Upper occipital hairs dense, strongly proclinate (at almost a 90º angle). No strongly differentiated bristles mixed with those hairs on upper occiput behind uppermost part of eye. Anterior slopes of mesonotum with long and fine hairs, almost as long as scape, becoming longer and denser on posterior slope. Wing with fork of R4+5 decidedly angulate (Fig. 460), sometimes with a stump vein. Male terminalia as in Figs. 462-464; epandrium very narrow at base, then suddenly broadened, apex more slender, acuminate in dorsal view. Aedeagus as in Figs. 465-466. Ovipositor oblong-shaped (Figs. 467-469). Spermathecae as in Fig. 470; long endosternite, a long coomon tube, 3 capsules with ver characteristic 'shape. Length, 12-18.5 mm. (Chile) .... *Megalometopon* Artigas & Papavero, 1995

Lateral margins of abdominal tergites 1-4 never as above 45

45(44). Collar without bristles. R4 angulate at base, sat its juntion with R5, and with a stump vein (Fig. 473). Male with dilated femora, and costal border of wing expanded (see Artigas, 1970: fig. 361). Male terminalia as in Figs. 475-477; epandrium roughly oblongate, with short apical incision. Aedeagus as in Fig. 478. Ovipositor conical, short (Figs. 479-481). Spermathecae with 3 coiled capsules, very characteristic (Fig. 482). Length, 14.5-24.5 mm (Chile) ...*Nomomyia* Artigas, 1970

Collar with bristles. R4 never with a stump vein (Fig. 486, 500). Other combinations of characters 46

46(45) Face decidedly gibbous on its lower ¾ (Fig. 483). Femora robust, especially hind pair. Legs with many extremely conspicuous, long, white bristles, especially on the hind femur, in its anterior, posterior and ventral surfaces, in addition to more or less long, fine, appressed white hairs. Scutellum with 4-5 pairs of marginals, disc with semierect, long, fine hairs. Male terminalia as in Figs. 488-490; epandrium elongate, with a deep apical incision forming two characteristic apical processes; hypandrium with a dense apical tuft of flattened hairs. Aedeagus as in Fig. 491. Ovipositor very broadly conical (Figs. 492-495). Spermathecae with 3 long and slender, coiled capsules (Fig. 496). Length, 10-14.5 mm. (Chile, Argentina) .... *Zoticus* Artigas, 1970

Face without a decided gibba, both gently swollen on its lower half (Fig. 497). Hind femur only 1.5 times as thick as its tibia. Legs never as above. Scutellum normally with 2 marginal bristles; disc with scanty, short, fine pile. Male terminalia as in Figs. 501-503; epandrium extremely slender at base, then greatly expanded, with an extremely short apical incision; hypandrium never with apical tuft of hairs. Aedeagus as in Fig. 504. Ovipositor conical (Figs. 505-508). Spermathecae with 3 capsules of characteristic shape, very similar to those of *Megalometopon* (Figs. 509 and 470, respectively). Length, 11-12 mm. (Argentina, Uruguay) .... *Leptoharpacticus* Lynch Arribálzaga, 1880

47(1). Scutellum without an impressed rim. Costal section situated between tips of R5 and M1, two or more times longer than costal section situated between tips of R5 and R4, i. e., R5 ends at or above wing apex (Figs. 71, 79, 80, 91, 95, 98, 101, 106). Male terminalia elongate, at an angle (up to 90º) with body axis (Figs. 81, 86, 99, 102, 107). Aedeagus a very long, more or less crescent-shaped tube ending into 3 small tubes at the apex (Figs. 74-75, 84-85, 89-90, 97, 100, 104, 108). Female ovipositor strongly flattened laterally, tergite 8 elongate and slender (Figs. 77-78, 92-93, 104-105). Spermathecal complex with an extremely long and slender endosternite whose arms are placed close together (Figs. 76, 94) (*Efferia*-group, part) 48

Scutellum with an impressed rim. Costal section situated between tips of R5 and M1 subequal to or much shorter than costal section situated between tips of R5 and R4, i. e., R5 ends below wing apex. Male and female terminalia and female spermathecae of several shapes (*Asilus*-group (Asilini *sensu stricto*)) 49

48(47). Vein R4 ends in R1, i. e., first submarginal cell closed and petiolate (Fig. 71). Male terminalia as in Figs. 72-75, 81-

85. Female terminalia as in Figs. 77-78. Spermathecae as in Fig. 76. (Colombia, Venezuela, Peru, Brazil: Pará) .... *Diplosynapsis* Enderlein, 1914 [see also couplet 11]
Vein R4 ends in C, far from R1, i. e., first submarginal cell open (Figs. 91, 95, 98, 101, 106). Male terminalia as in Figs. 86-90, 96-97, 99-100, 102-103, 107-108. Female terminalia as in Figs. 92-93, 104-105). Spermathecae as in Fig. 94 (Colombia, Peru, Brazil, Uruguay) .... *Porasilus* Curran, 1934

49 (47). Abdominal tergites 2-5 without stout marginal bristles 50
Abdominal tergites 2-6 with stout bristles on postero-lateral margins 52

50 (49). Tarsal segment 5 with a pair of very stout apical bristles extending over basal half of claws; large flies, more than 25 mm long (U. S. A. (Arizona), Mexico, Guatemala) .... *Wyliea* Martin, 1975
Tarsal segment 5 without such bristles 51

51 (50). Face strongly gibbous; third antennal segment with dorsal hairs, not longer than ½ of the first segment; body densely pillose with mixed black and yellow hairs; integument of legs and abdomen metallic black; wings with weak violaceous reflections (Ecuador) ... . *Lestophonax* Hull, 1962
Upper half of face plane with eye. Third antennal segment with exceptionally long, dorsal, bristly hairs, as long or longer than first segment; body not densely pillose, almost bare; integument of legs and abdomen metallic blue; wings with strong violaceous reflections (Guyana, Peru, Brazil (Pará), Bolivia) ... *Anarmostus* Loew, 1860

52 (50). Face weakly gibbous on lower half or less, with dorsal margin of gibbosity sloping very gradually to facial plane, or evenly rounded from oral margin to almost base of antennae 5
Face moderately to strongly gibbous on more than lower half, with dorsal margin of gibbosity arising abruptly from facial place 53

53 (52). Integument largely yellow, yellowish red or light brown 54
Integument black 56

54 (53). Scutelars absent; femora slender and with weak bristles (Brazil: Rio de Janeiro, São Paulo) ... *Leinendera* Carrera, 1945
Scutelars present; femora strong or robust 55

55 (54) Large flies, more than 25 mm; wing hyaline, weakly infuscated on apical 1/3 and around the posterior cells; first flagelomere elongated, seven times as long as the second and third together; third flagelomere two times longer than the second (Chile) .... *Lycomyia* Bigot, 1857
Smaller flies, less than 25mm; wing hyaline, without infuscated areas; first flagelomere elongated, as long as the third; third flagelomere eleven times longer than the second (U. S. A., Mexico) .... *Polacantha* Martin, 1975

56 (54). Scutellum with only fine, short, delicate setae, bristles absent (Brazil: Rio de Janeiro to Santa Catarina) .... *Cnodalomyia* Hull, 1962
Scutellar margin with one or more pairs of well developed bristles 57

57 (56). Face evenly rounded from oral margin to almost base of antennae (Venezuela) .... *Pteralbis* Ayala, 1981
Face only slightly produced at oral margin or face gibbosity well developed, occupying 3/4 to 4/5 of face 58

58 (57). Face gibbosity reduced to a moderate elevation at oral margin 59
Face gibbosity well developed, occupying ¾ to 4/5 of face 60

59 (58). Mystax with long, weak and rare hairs distributed over the small facial gibbosity. Two marginal scutellar bristles (Chile, Argentina) .... *Menexenus* Artigas, 1970
Mystax with abundant, long and strong hairs. Normally more than 2 marginal scutellar bristles (Chile) .... *Chilesus* Bromley, 1932

60 (58). Posterior margin of vertex with 5-6 pairs of slender, strongly latero-clinate setae which are much longer than adjacent occipital bristles; abdomen much shorter than wings; male termninalia robust, in dorsal view wider than abdominal segment 2 (epandrial arms well separated medially but open area obscured by dense setae) (Bolivia: Sara; Brazil: Minas Gerais, Rio de Janeiro, São Paulo, Santa Catrarina) ....*Threnia* Schiner, 1866
Posterior margin of vertex with only straight to weakly latero-clinate, slender setae which are never longer than

adjacent occipital bristles; abdomen as long as or longer than wings; male terminalia slender, in dorsal view much narrower than abdominal segment 2 13

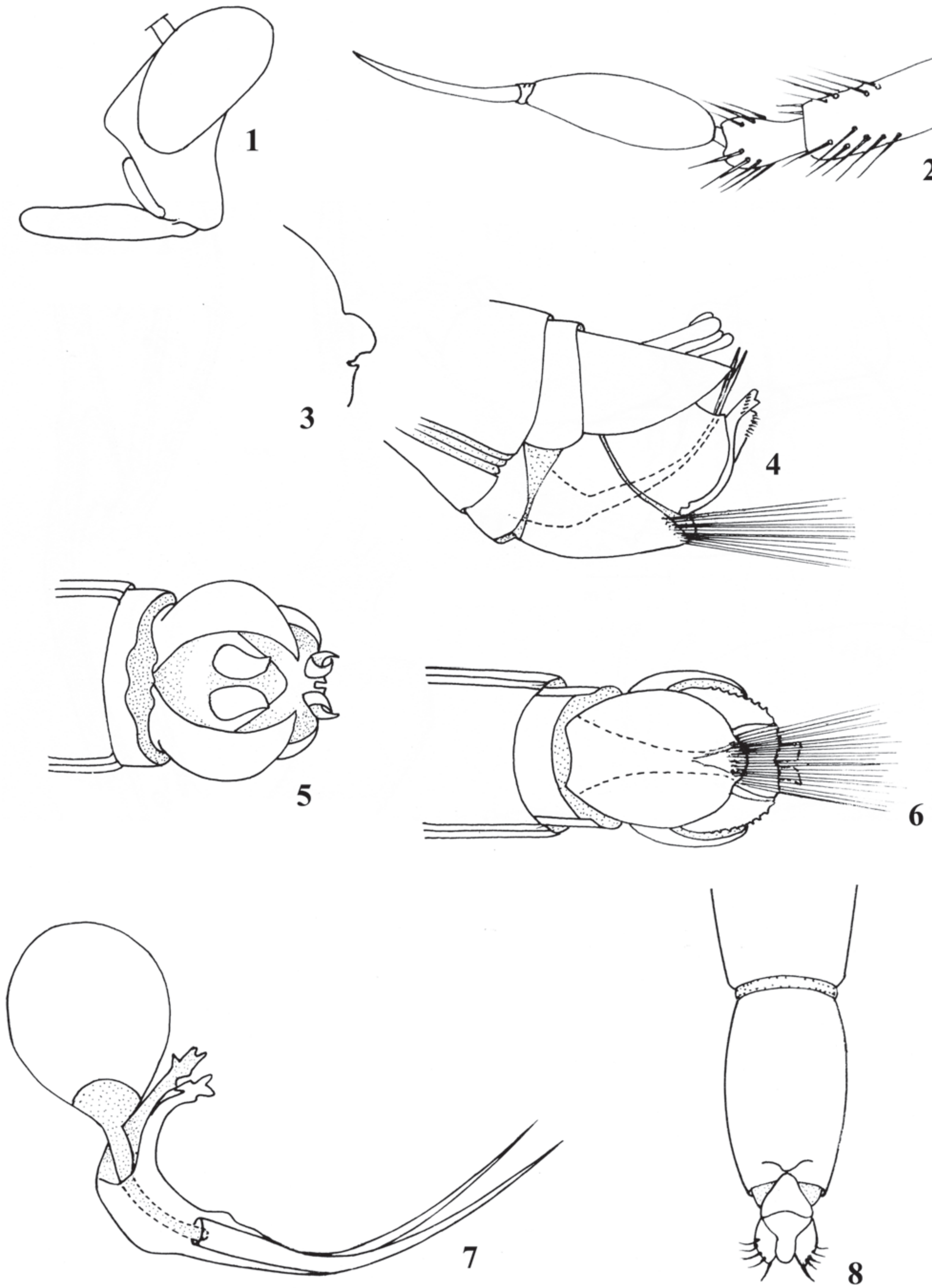
13(12). Disc of scutellum normally with two separate tufts of woolly white hairs, separated by a bare space along the midline of the scutellum. Anterior femur with a row of over 8 spinous bristles on the ventral surface (Chile) .... *Cratopoda* Hull, 1962

Vestiture of scutellum never as above 14

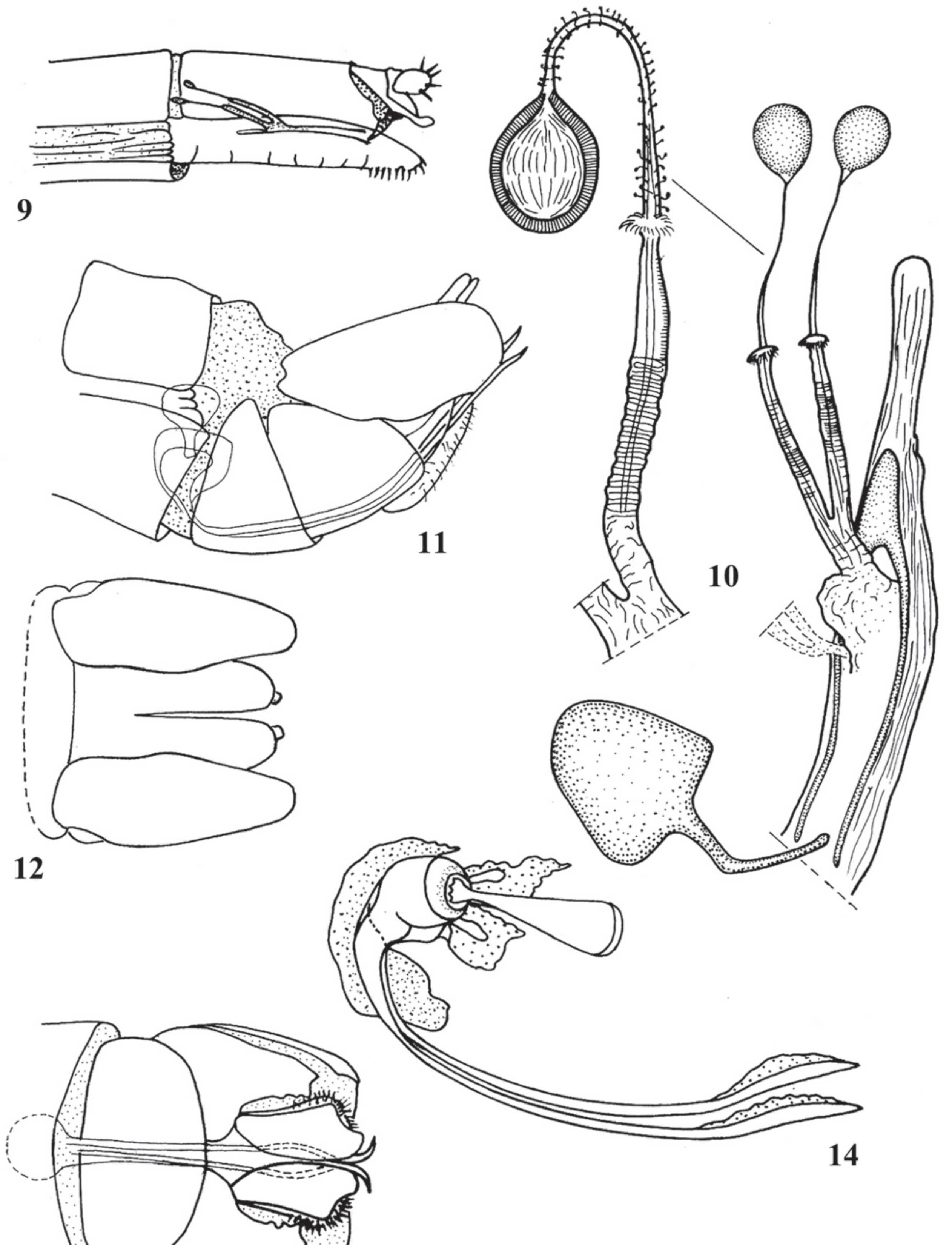
14 (13). From 6 to 20 robust occipital bristles along the posterior border of each eye. Male terminalia large and globose. First flagellomere pyriform, either short or of medium length (Chile) .... *Lochyrus* Artigas, 1970

Occipital bristles undefined, the rest of the occipital vestiture formed by abundant, slender hairs, bent forward. First flagellomere long and slender. (Chile, Argentina) .... *Stizolestes* Hull, 1962

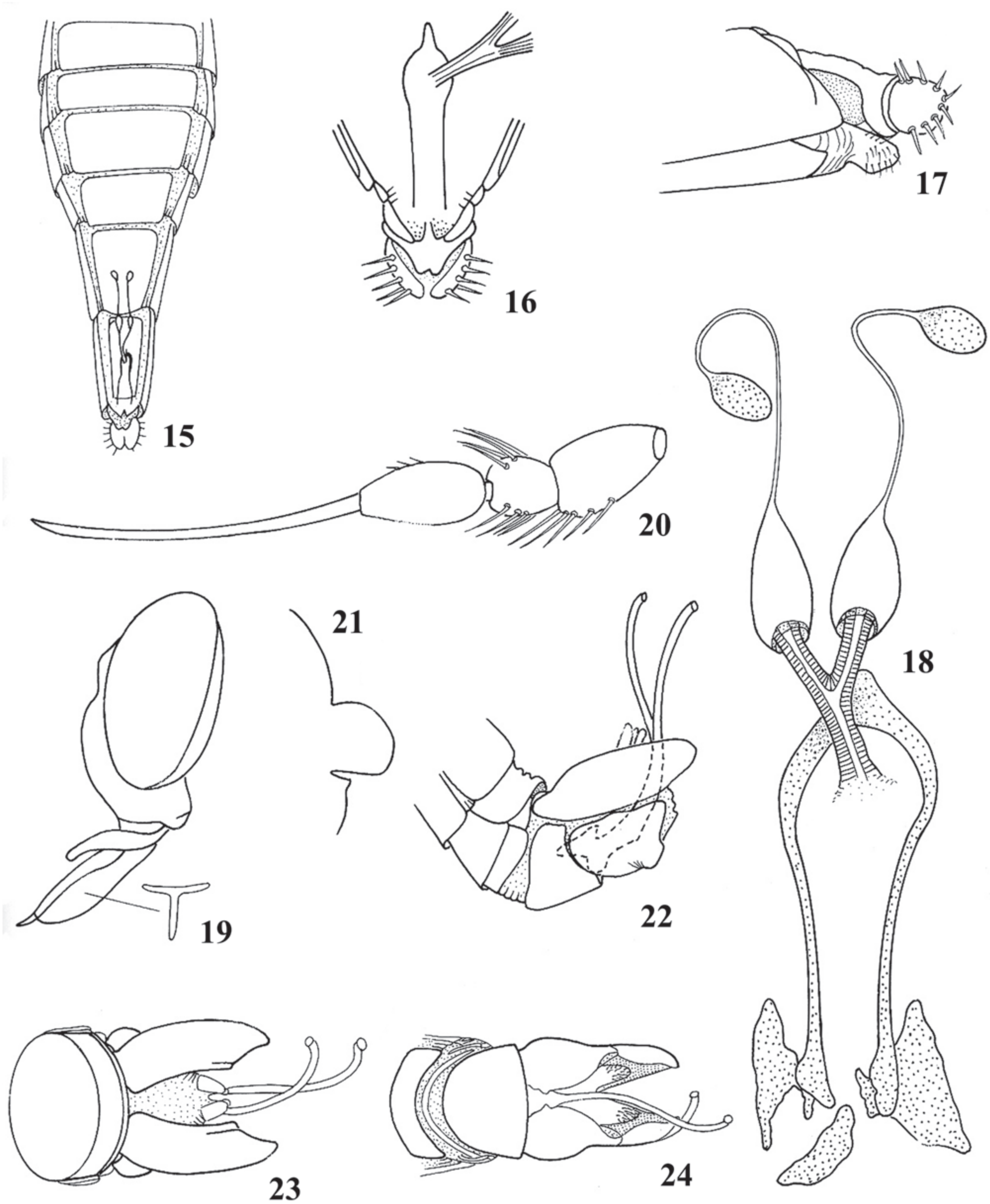
The keys and illustrations presented here were adapted from the papers by Artigas & Papavero (1998a, 19988b, 1989, 1990, 1991a, 1991b, 1991c, 1991e, 1991f, 1993, 1995a, 1995b, 1995c, 1995d, 1995e, 1995f, 1995g, 1997a, 1997b, 1997c), Artigas, Papavero & Costa (1997), Artigas, Papavero & Pimentel (1988) and Artigas, Papavero & Serra (1991).



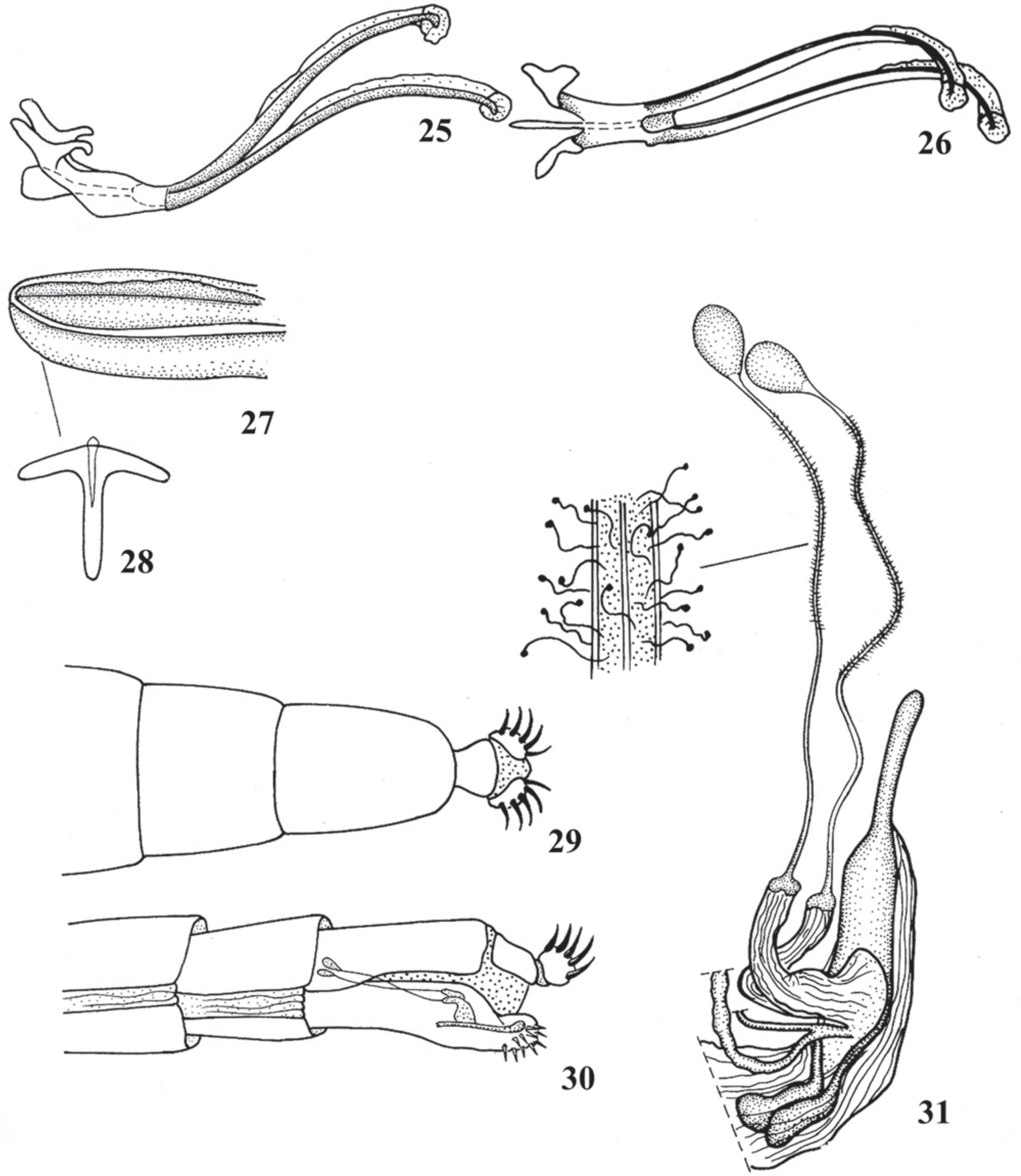
Figures 1-8. *Proctacanthella cacopiloga* (Hine, 1909). 1. Head in lateral view. 2. Antenna. 3. Profile of scutellum. 4. Male terminalia, lateral view. 5. Same, dorsal view. 6. Same, ventral view. 7. Aedeagus. 8. Female terminalia in dorsal view.



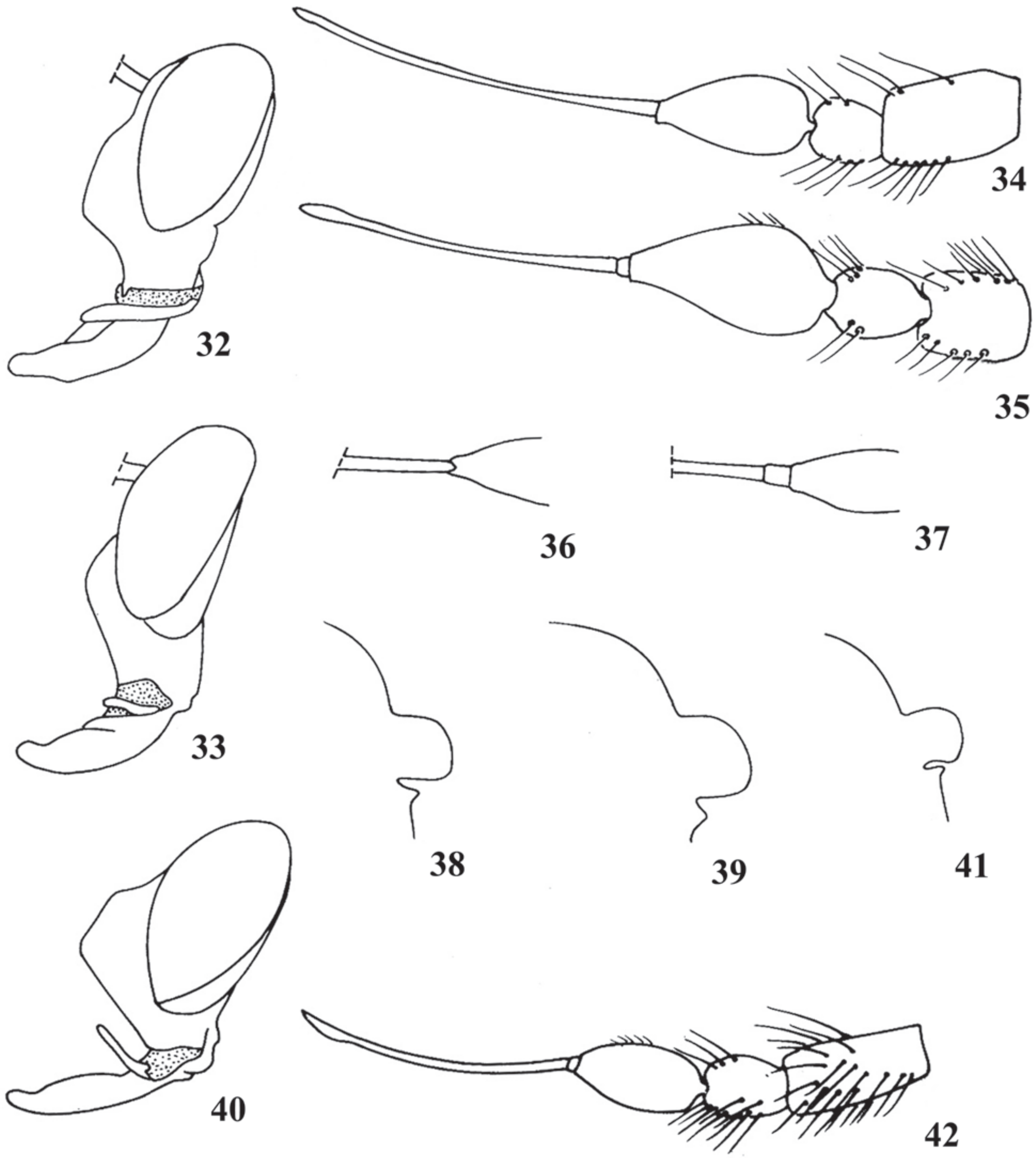
Figures 9-14. 9-10. *Proctacanthella cacopiloga* (Hine, 1909). 9. Female terminalia in lateral view showing situation of spermathecae. 10. Spermathecae. 11-14. *Eccritosia rubriventris* (Macquart, 1850). 11. Male terminalia, lateral view. 12. Same, dorsal view. 13. Ventral view. 14. Aedeagus in lateral view.



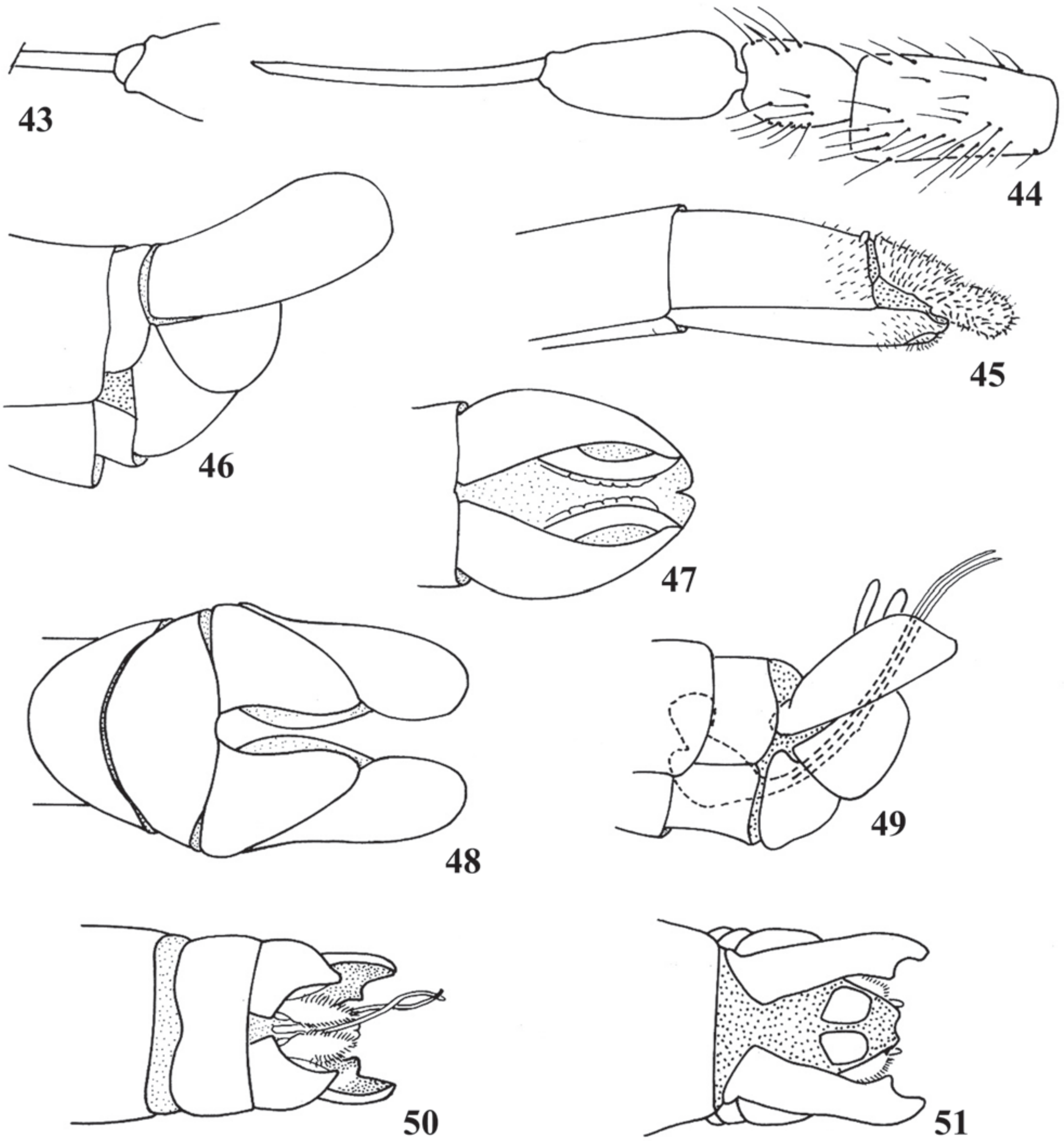
Figures 15-24. 15-18. *Eccritosia rubriventris* (Macquart, 1850). 15. Female terminalia in ventral view, showing situation of spermathecae. 16-17. Ovipositor in ventral and dorsal views. 18. Spermathecae. 19-21. *Taurhynchus bromleyi* (Curran, 1931). 19. Head in lateral view. 20. Antenna. 21. Profile of scutellum. 22-24. *Taurhynchus fervidus* (Curran, 1934). 22. Male terminalia, lateral view. 23. Same, dorsal view. 24. Same, ventral view.



Figures 25-31. *Taurhynchus fervidus* (Curran, 1934). 25-26. Aedeagus, lateral view. Same, dorsal view.s. 27. Tip of proboscis. 28. Cross-section of proboscis. 29-30. Female terminalia in dorsal and lateral view, the last showing situation of spermathecae. 31. Spermathecae.



Figures 32-42. 32, 35, 38. *Eccritosia rubriventris* (Macquart, 1850). 32. Head in lateral view. 35. Antenna. 38. Profile of scutellum. 33, 34, 39. *Eccritosia barbata* (Fabricius, 1787). 33. Head in lateral view. 34. Antenna. 39. Profile of scutellum. 36. *Eccritosia zamon* (Townsend, 1895), tip of third flagellomere. 37. *Eccritosia plinthopyga* (Wiedemann, 1821), tip of third flagellomere. 40-42. *Proctacanthus micans* Schiner, 1867. 40. Head in lateral view. 41. Profile of scutellum. 42. Antenna.



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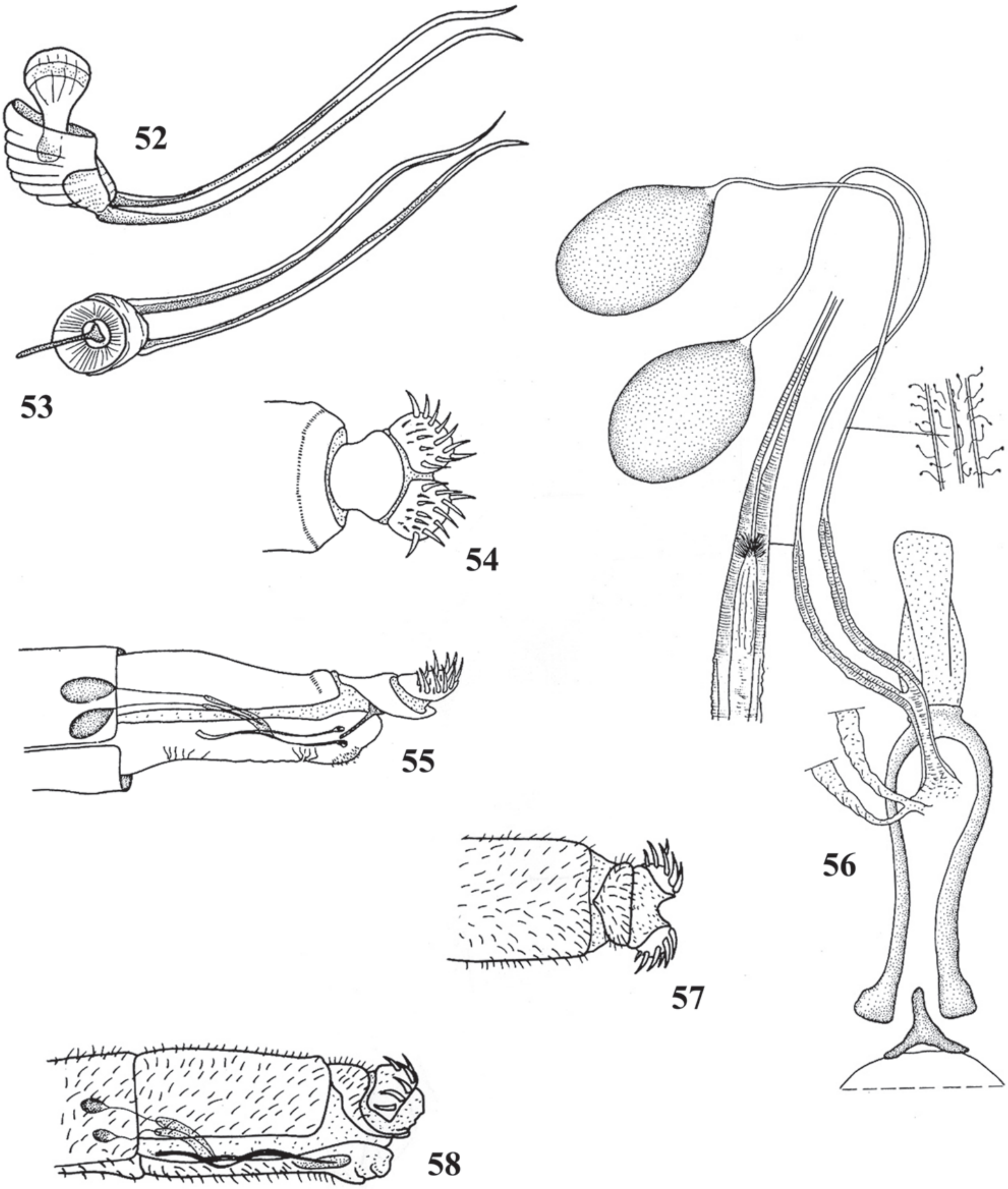

Figures 52-58. 52-56. *Proctacanthus lerneri* Curran, 1951. 52-53. Antenna, lateral view. Same, dorsal view. 54. Ovipositor, dorsal view. 55. Same, lateral view, showing situation of spermathecae. 56. Spermathecae. 57-58. *Proctacanthus milbertii* Macquart, 1838. 57. Ovipositor, dorsal view. 58. Same, lateral view, the last showing situation of spermathecae.

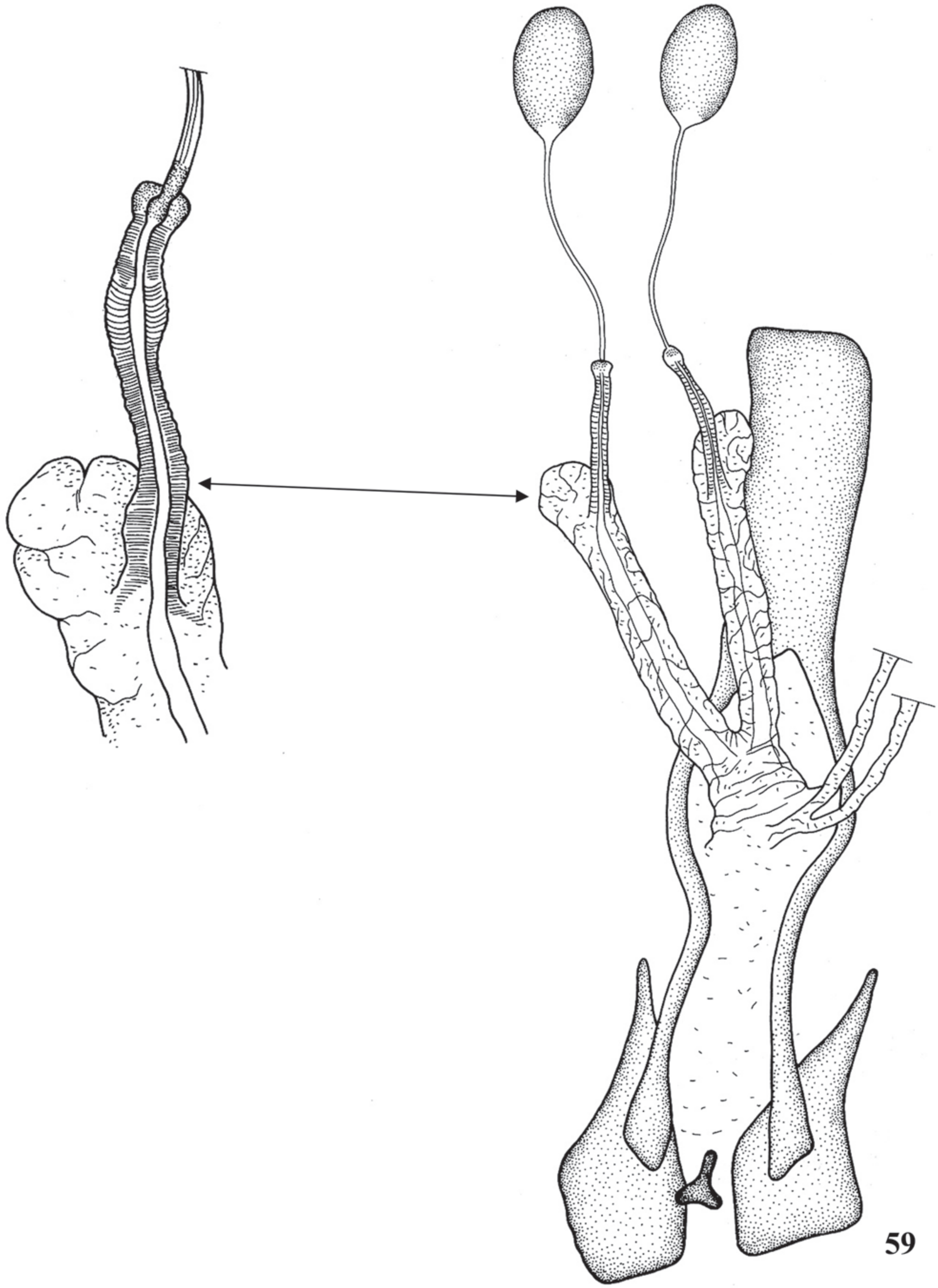

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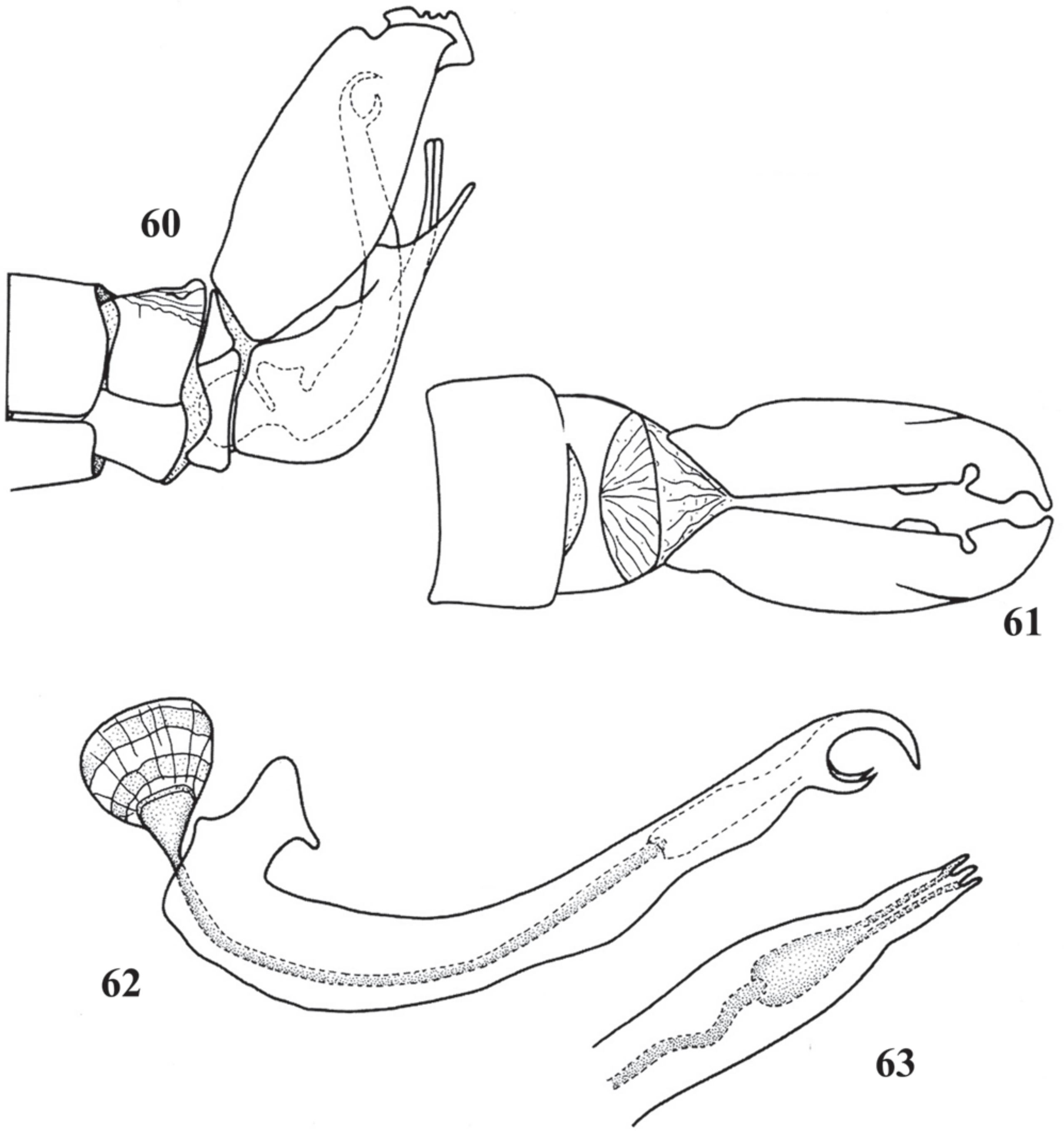
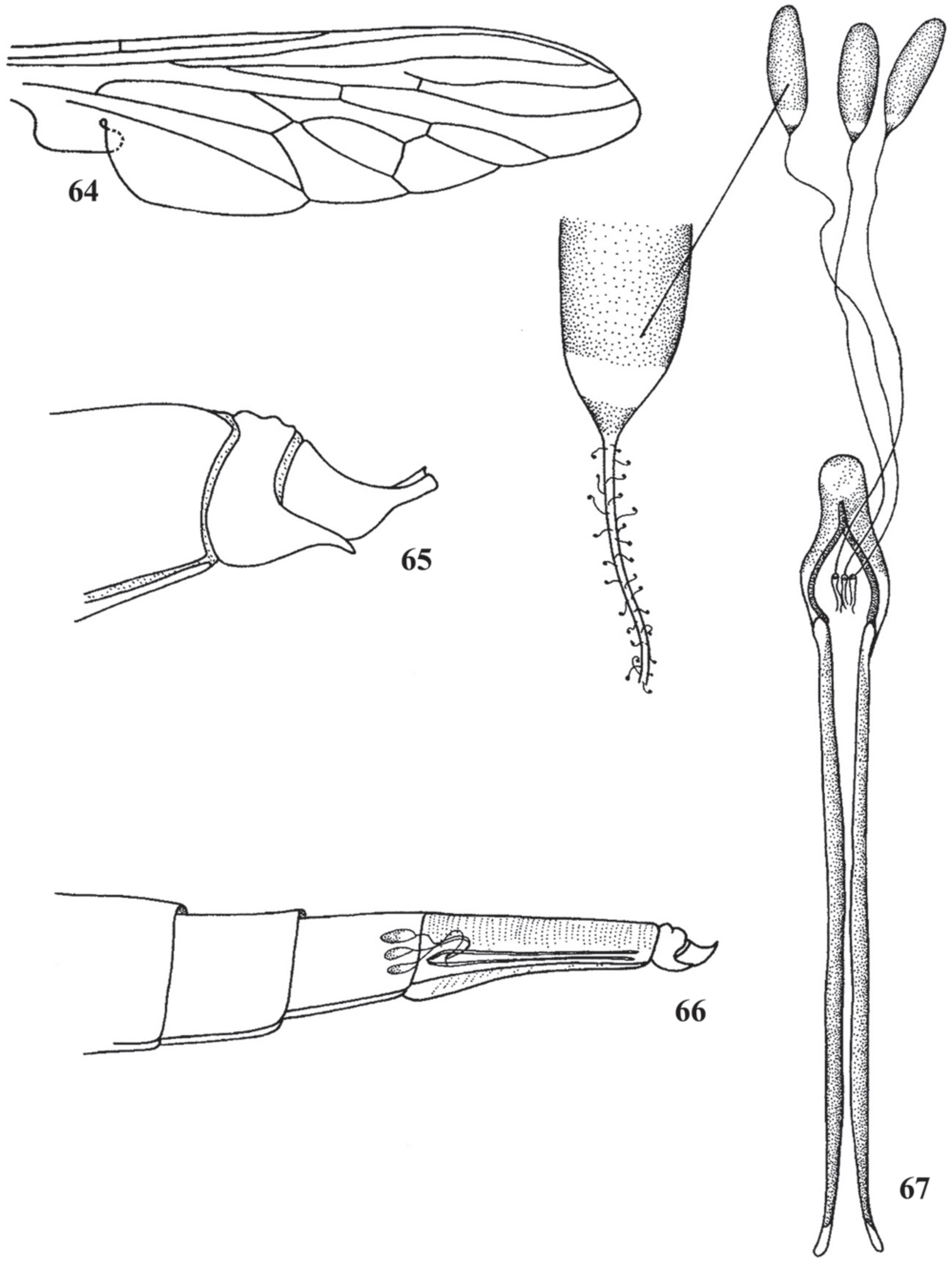
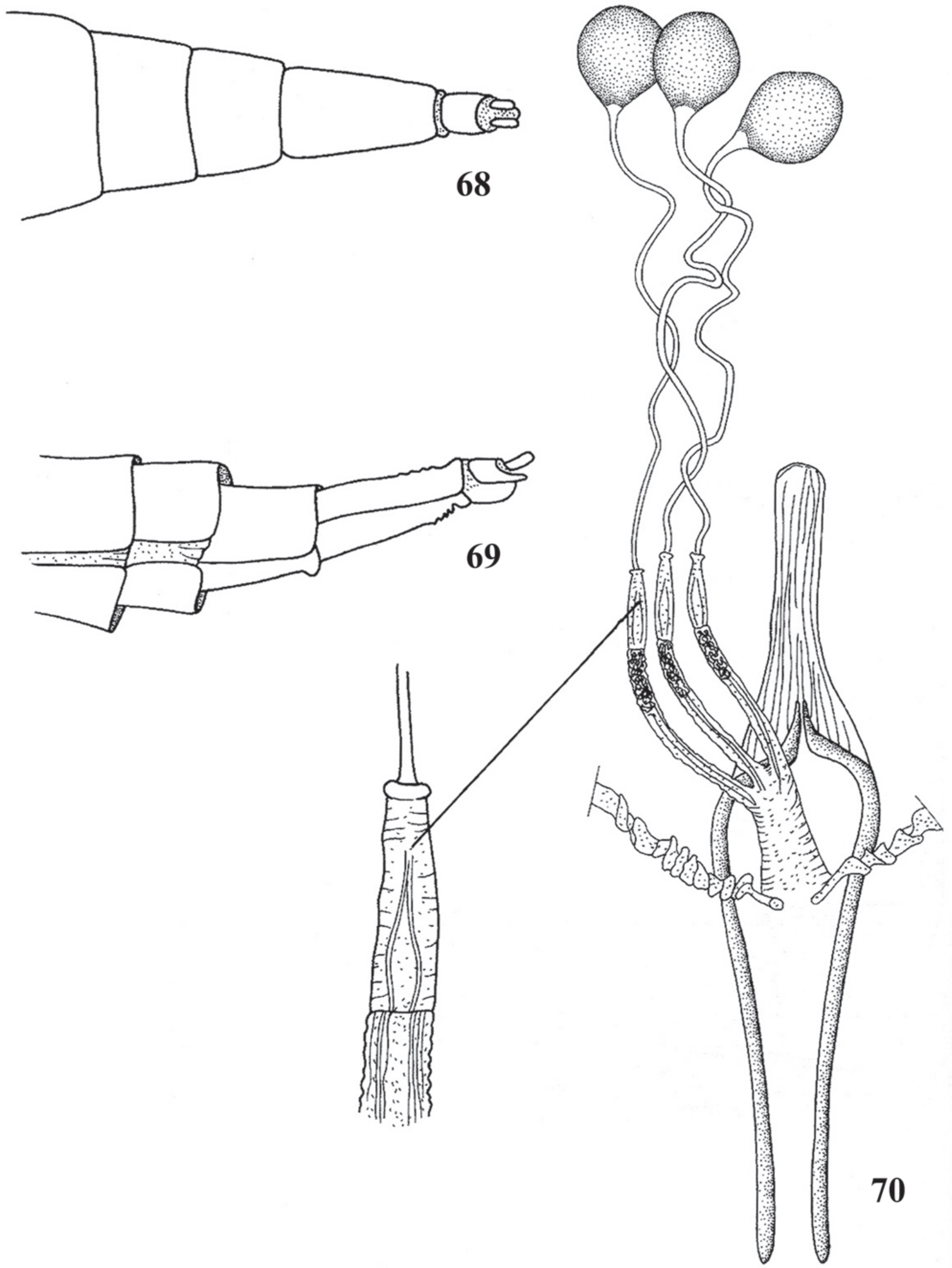
Figure 59. *Proctacanthus milbertii* Macquart, 1838. Spermathecae and detail.



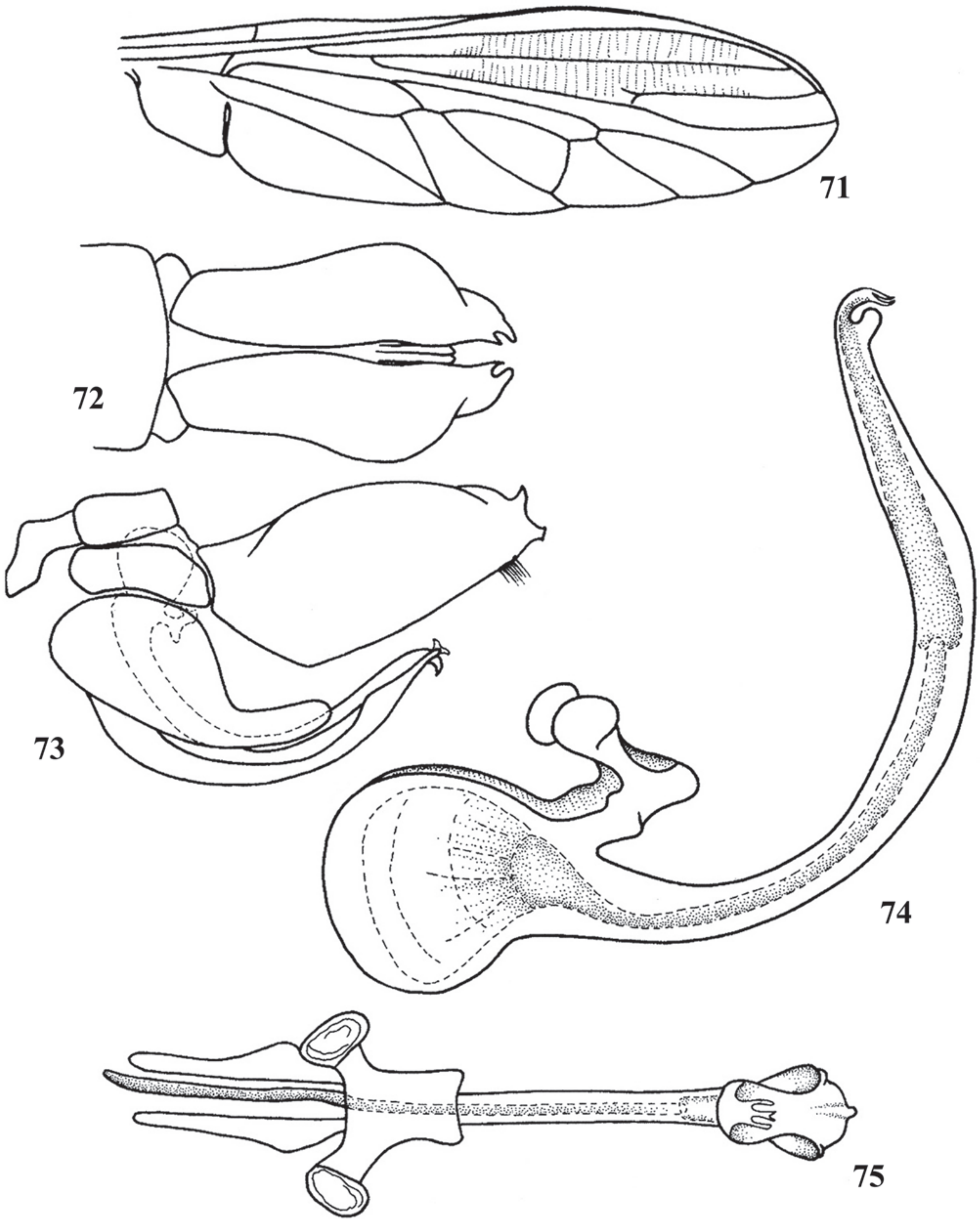
Figures 60-63. *Pogoniefferia bicaudata* (Hine, 1919), male terminalia. 60. Lateral view. 61. Same, dorsal view. 62. Aedeagus, lateral view. 63. Same, dorsal (apex) view.



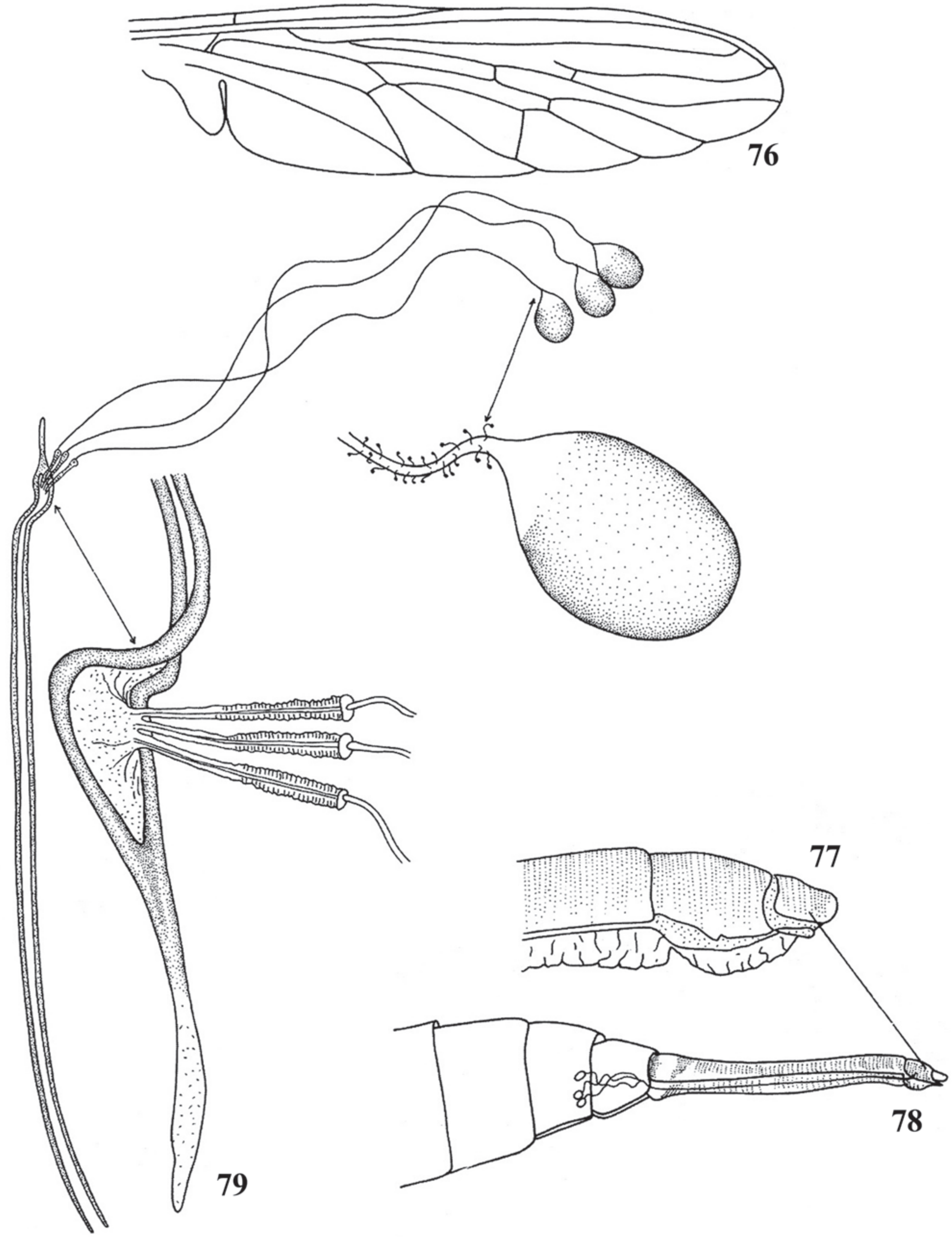
Figures 64-67. *Pogoniefferia bicaudata* (Hine, 1919). 64. Wing. 65. Female ovipositor, apex. 66. Ovipositor in lateral view, showing situation of spermathecae. 67. Spermarthecae and detail of capsule.



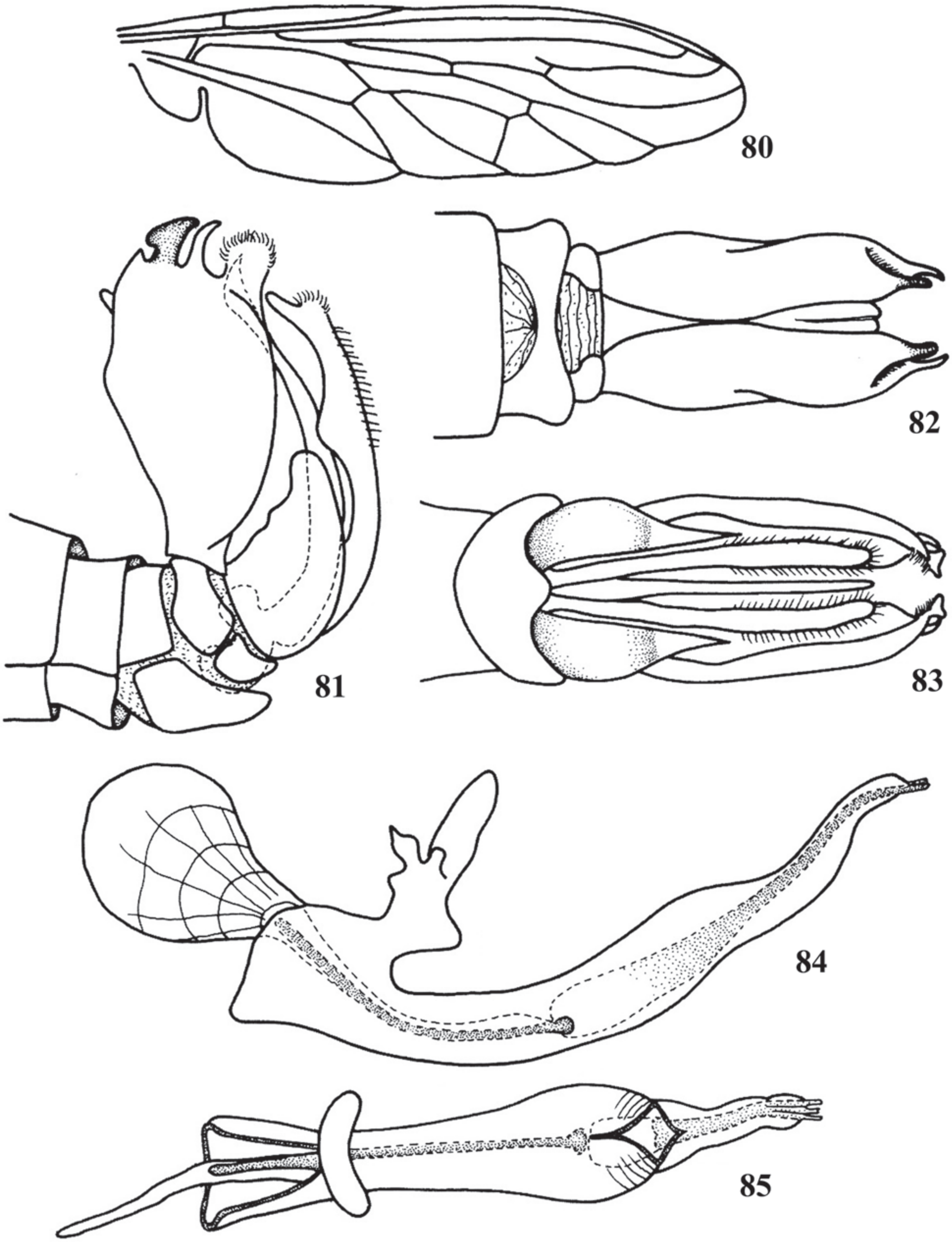
Figures 68-70. *Triorla striola* (Fabricius, 1805). 68. Apex of female abdomen, dorsal view. 69. Same, lateral view. 70. Spermathecae and detail.



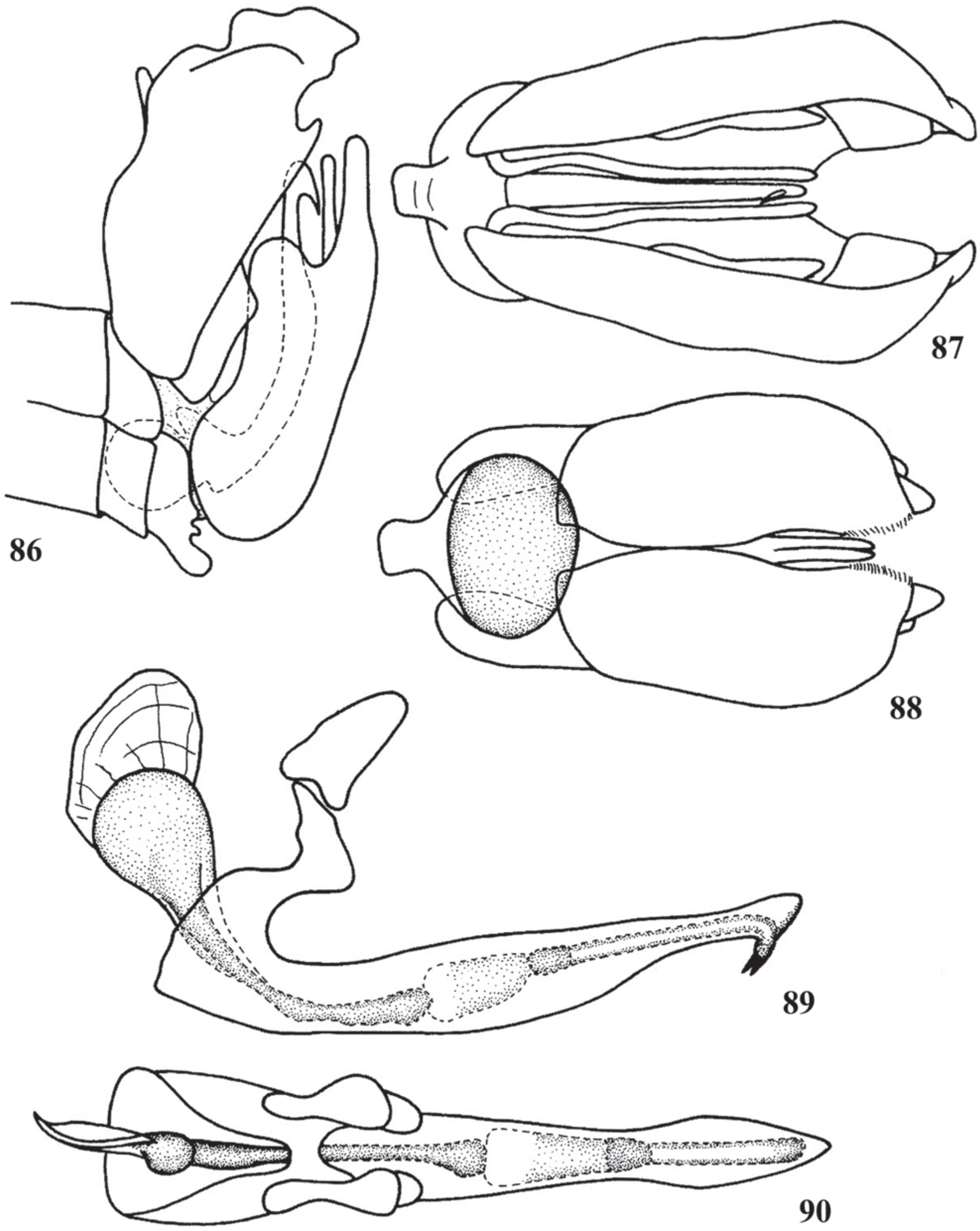
Figures 71-75. *Diplosynapsis argentifascia* Enderlein, 1914. 71. Wing. 72. Male terminalia, dorsal. 73. Same, lateral view. 74. Aedeagus, lateral view. 75. Same, dorsal view.



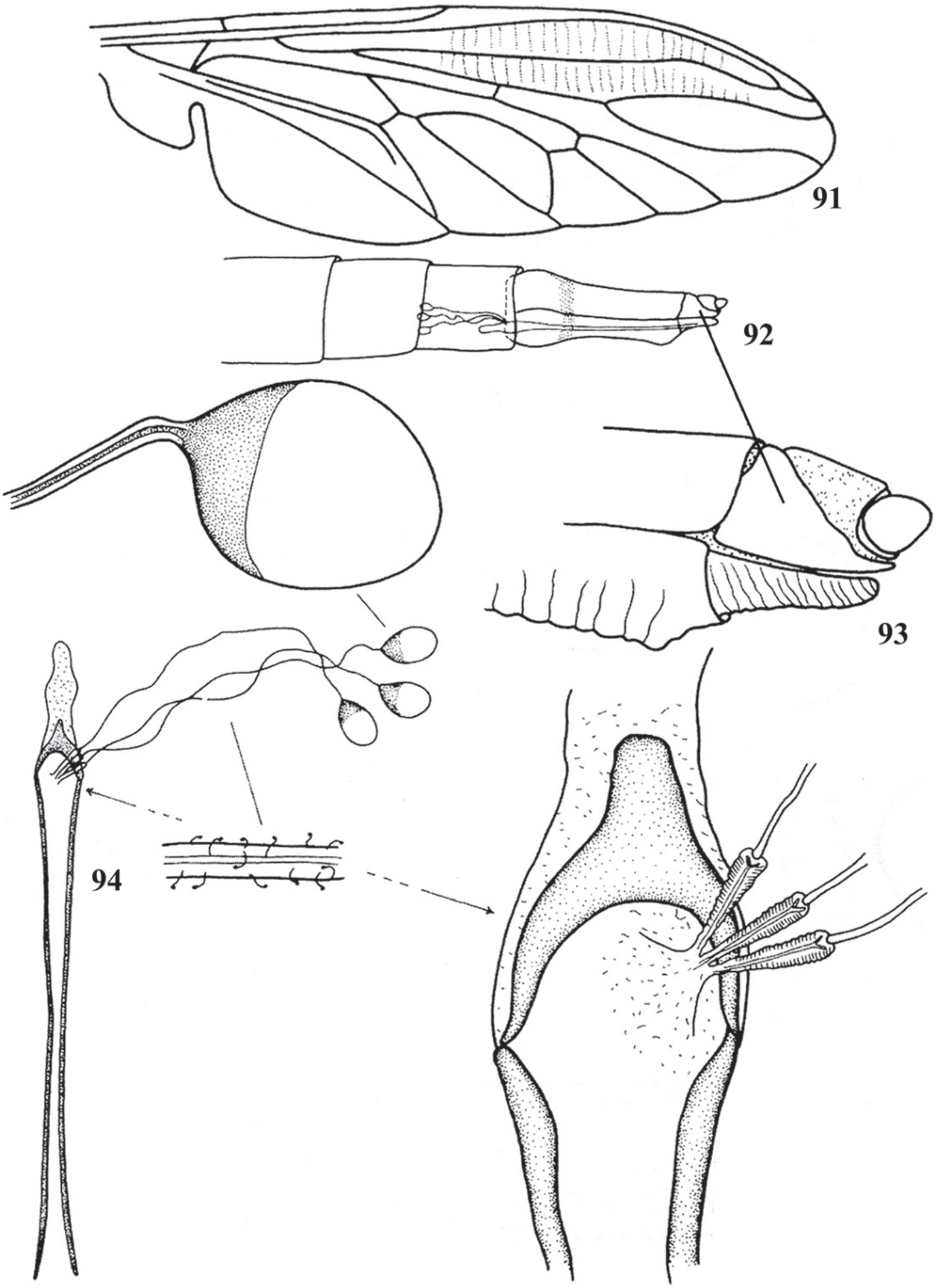
Figures 76-79. *Diplosynapsis argentifascia* Enderlein1914. 76. Wing. 77. Female ovipositor, lateral view. 78. Apex of female abdomen, lateral view, showing situation of spermathecae. 79. Spermathecae and details.



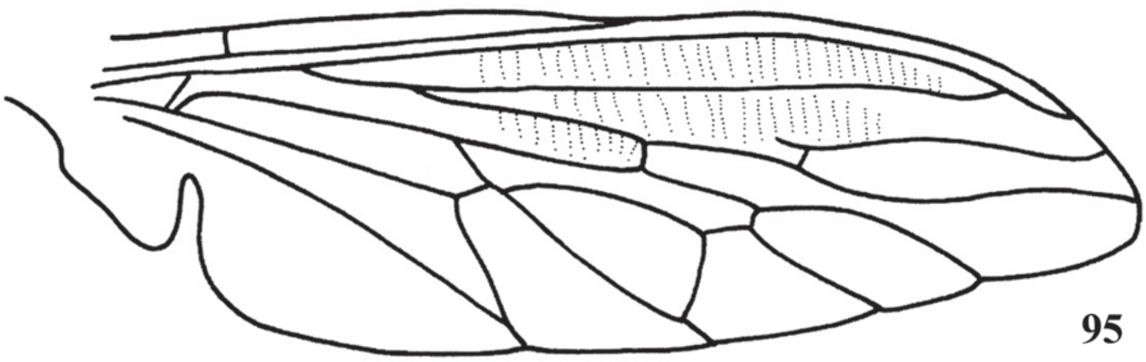
Figures 80-85. *Diplosynapsis sp.*. 80. Wing. 81. Male terminalia, lateral view. 82. Same, dorsal view. 83 Same, ventral view. 84. Aedeagus, lateral view. 85. Same, ventral view.



Figures 86-90. *Porasilus barbiellinii* Curran, 1934, male terminalia. 86. Lateral view. 87. Ventral view. 88. Same, dorsal view. 89. Aedeagus, lateral view. 90. Same, dorsal view.



Figures 91-94. *Porasilus barbiellinii* Curran, 1934. 91. Wing. 92. Apex of abdomen, showing situation of spermathecae. 93. Female ovipositor, lateral view. 94. Spermathecae and details.



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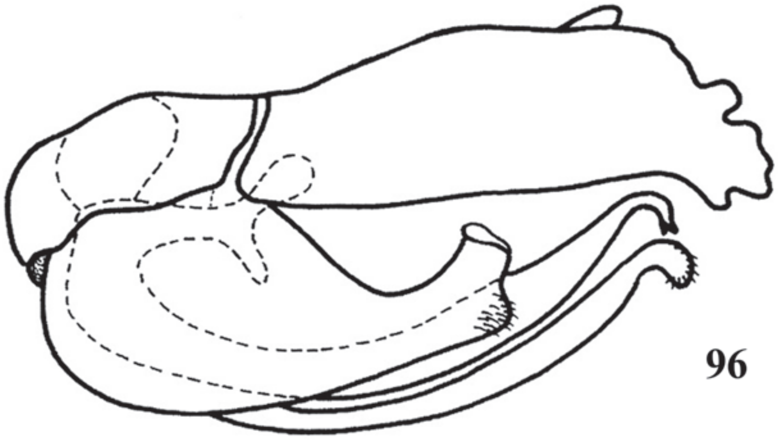

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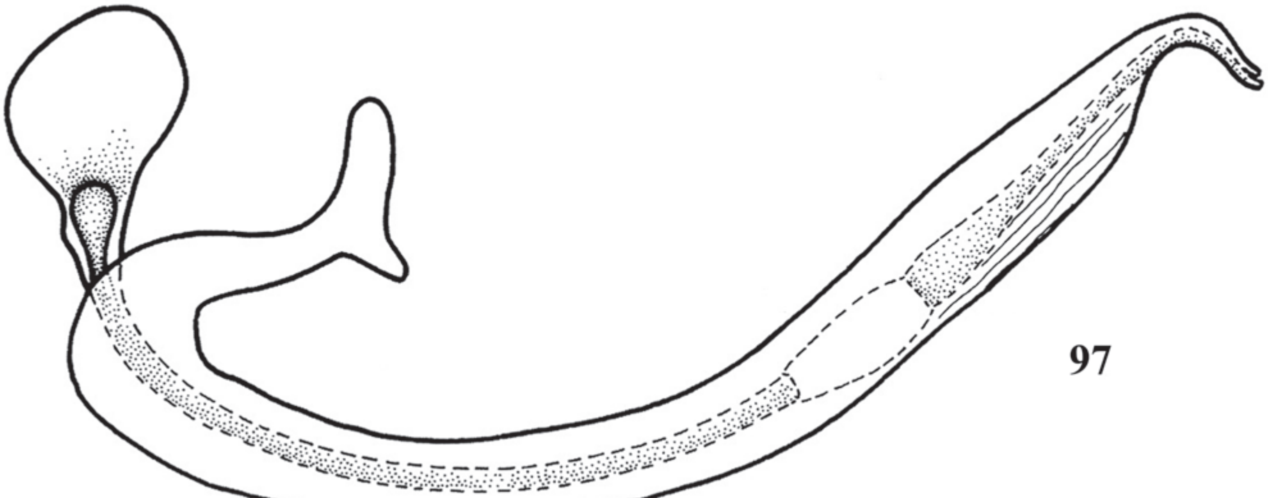

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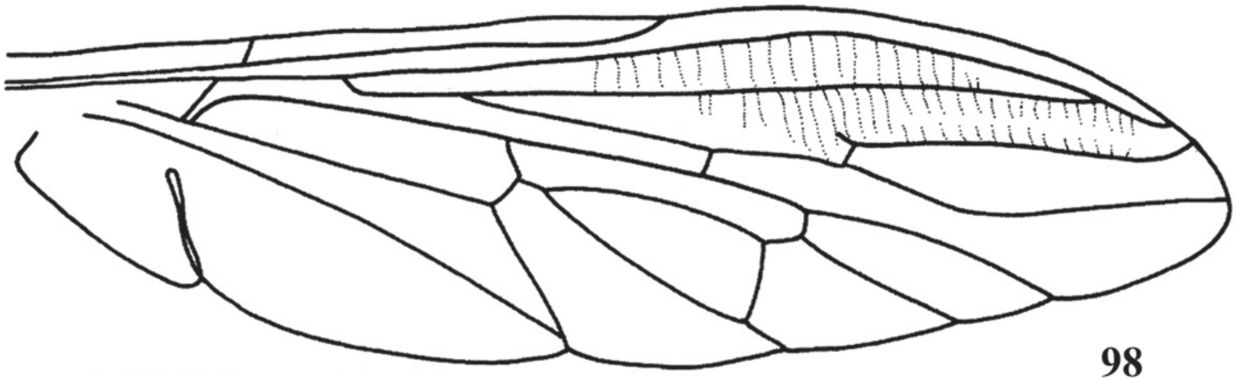
Figures 95-97. *Porasilus garciai* Lamas, 1971. 95. Wing. 96. Male terminalia, lateral view. 97. Aedeagus, lateral view.



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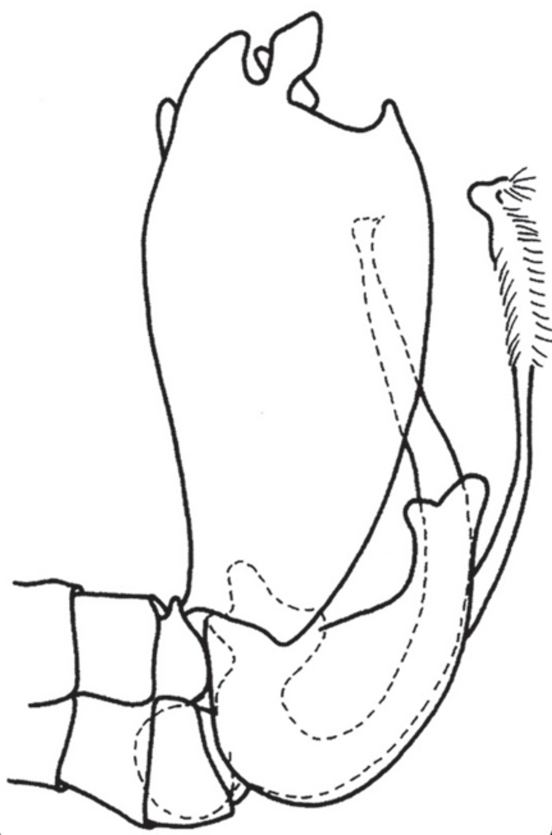

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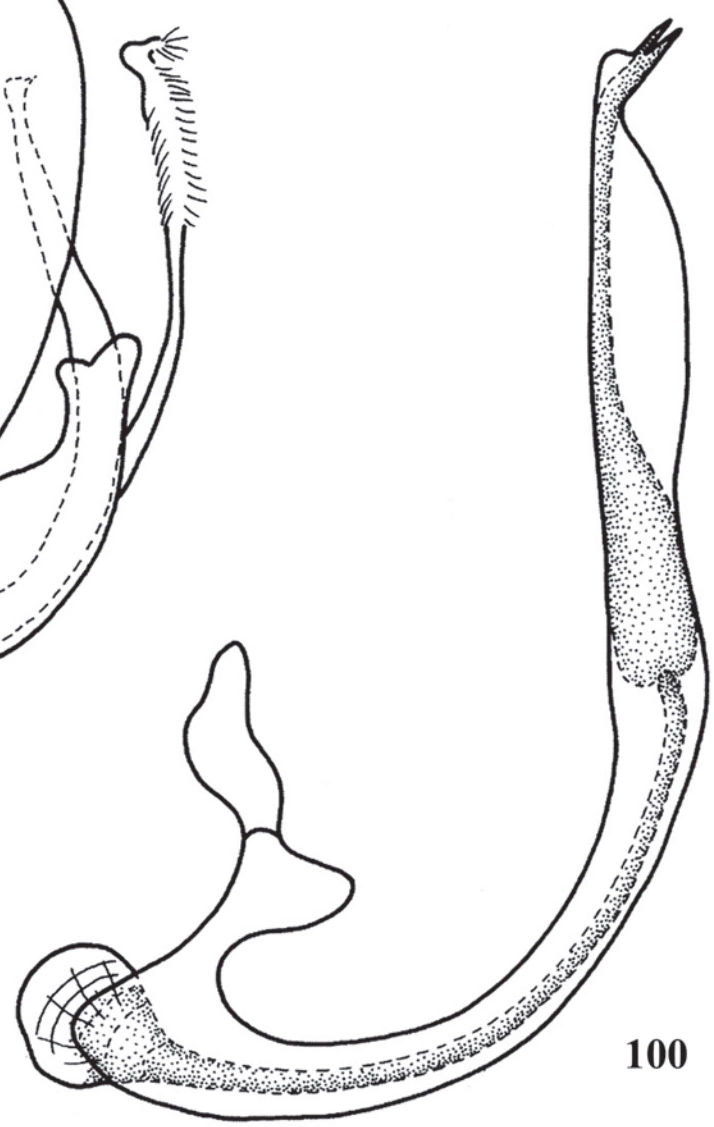

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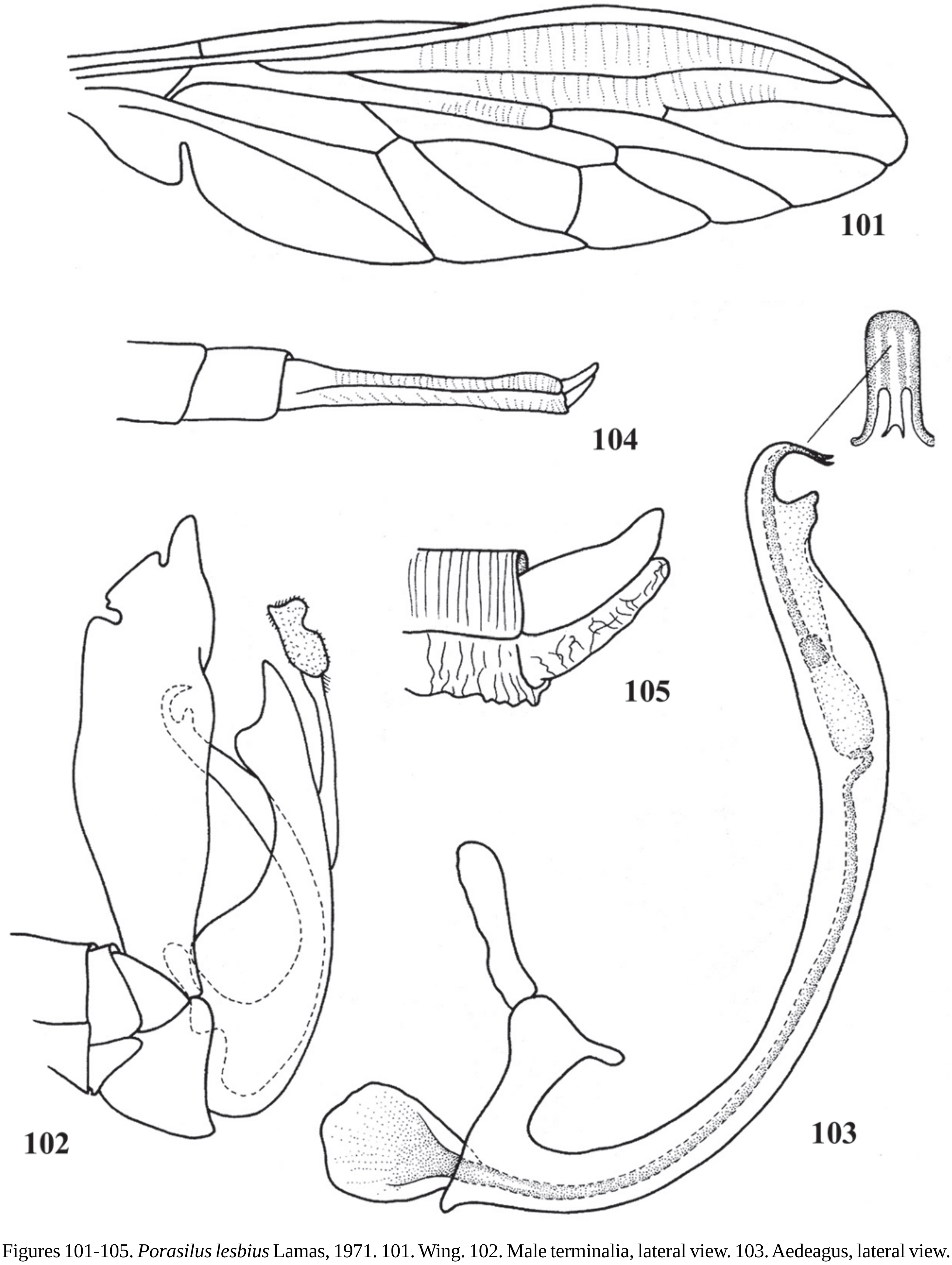
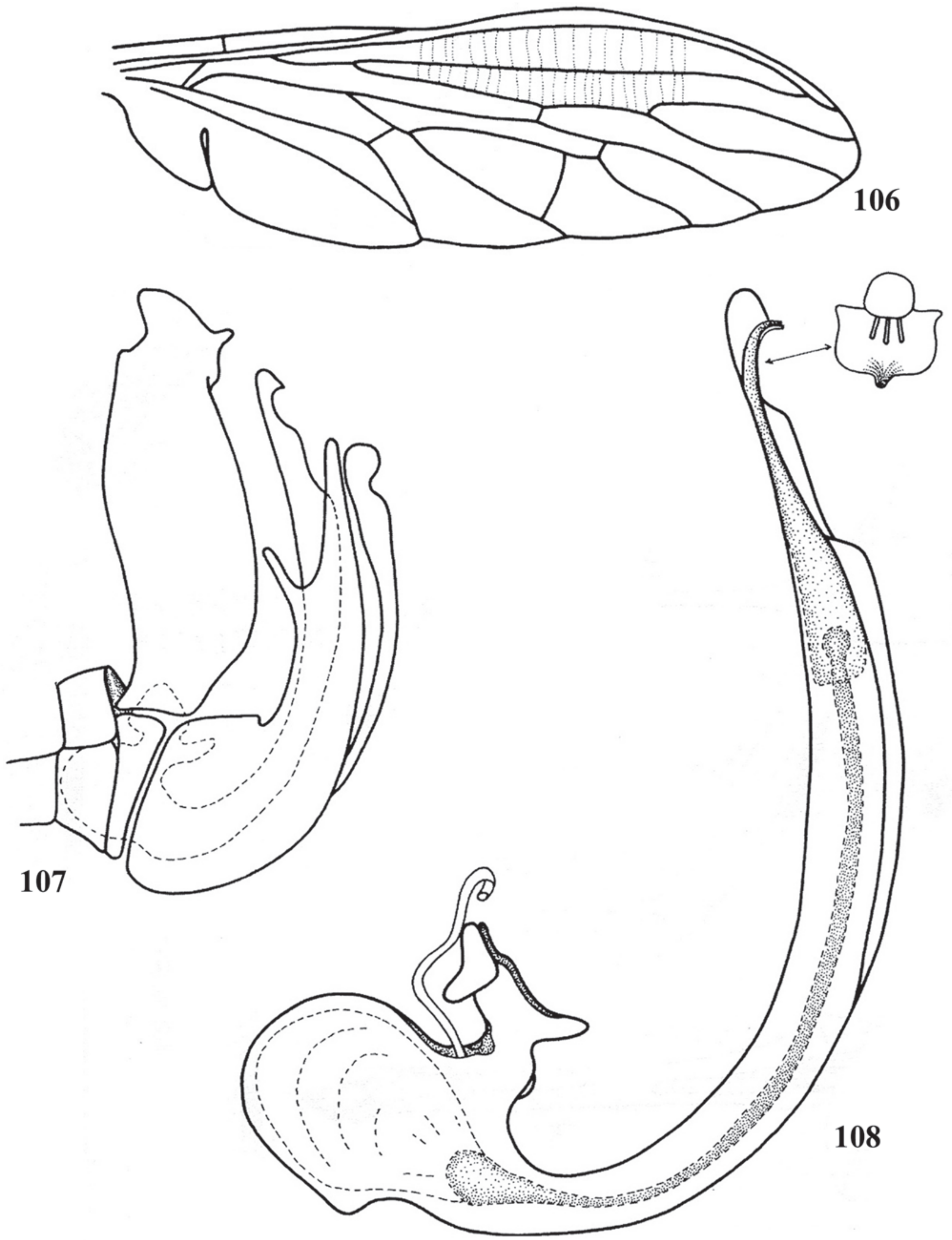
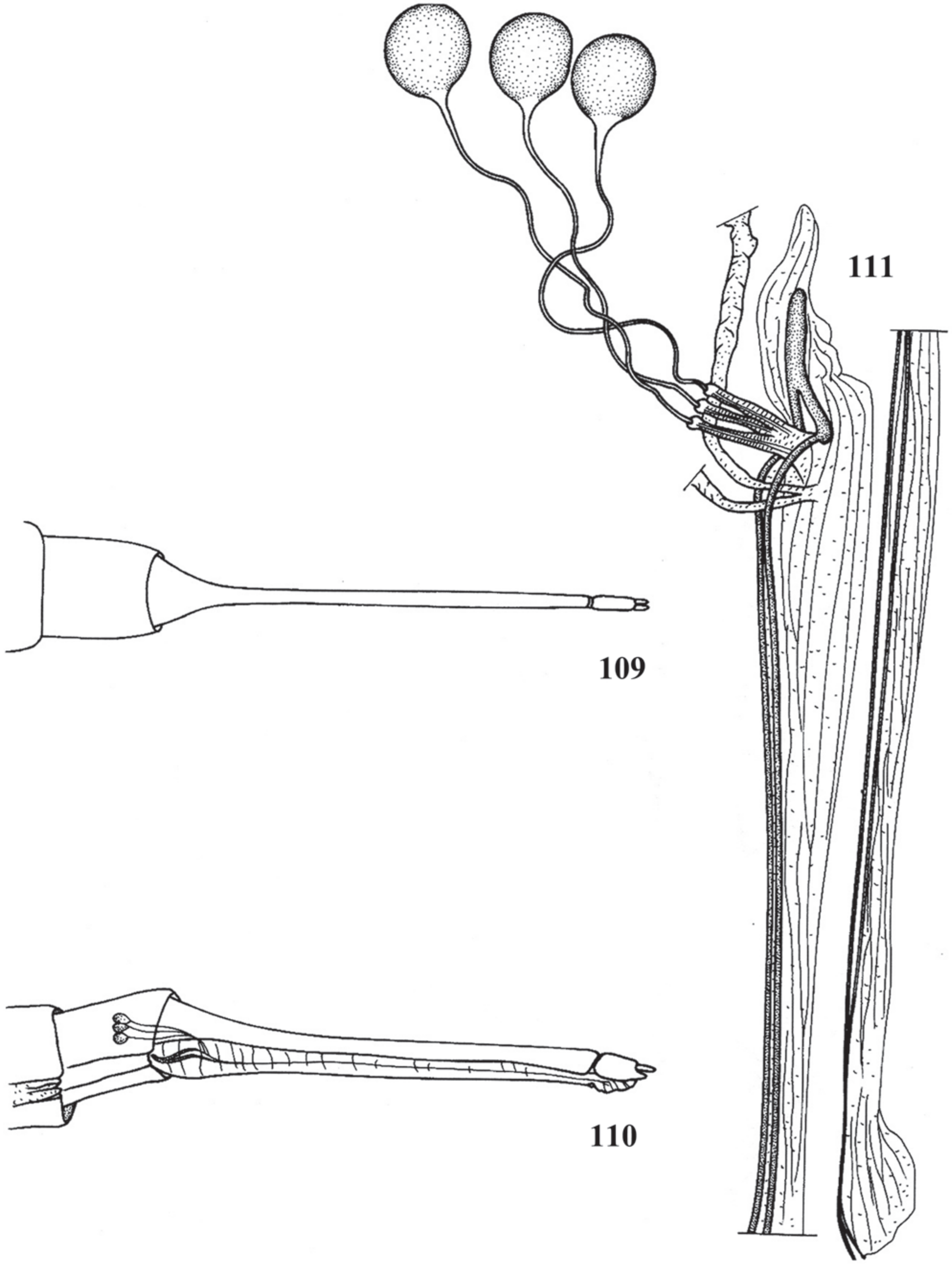
Figures 98-100. *Porasilus intermedius* Lamas, 1971. 98. Wing. 99. Male terminalia, lateral view. 100. Aedeagus, lateral view.



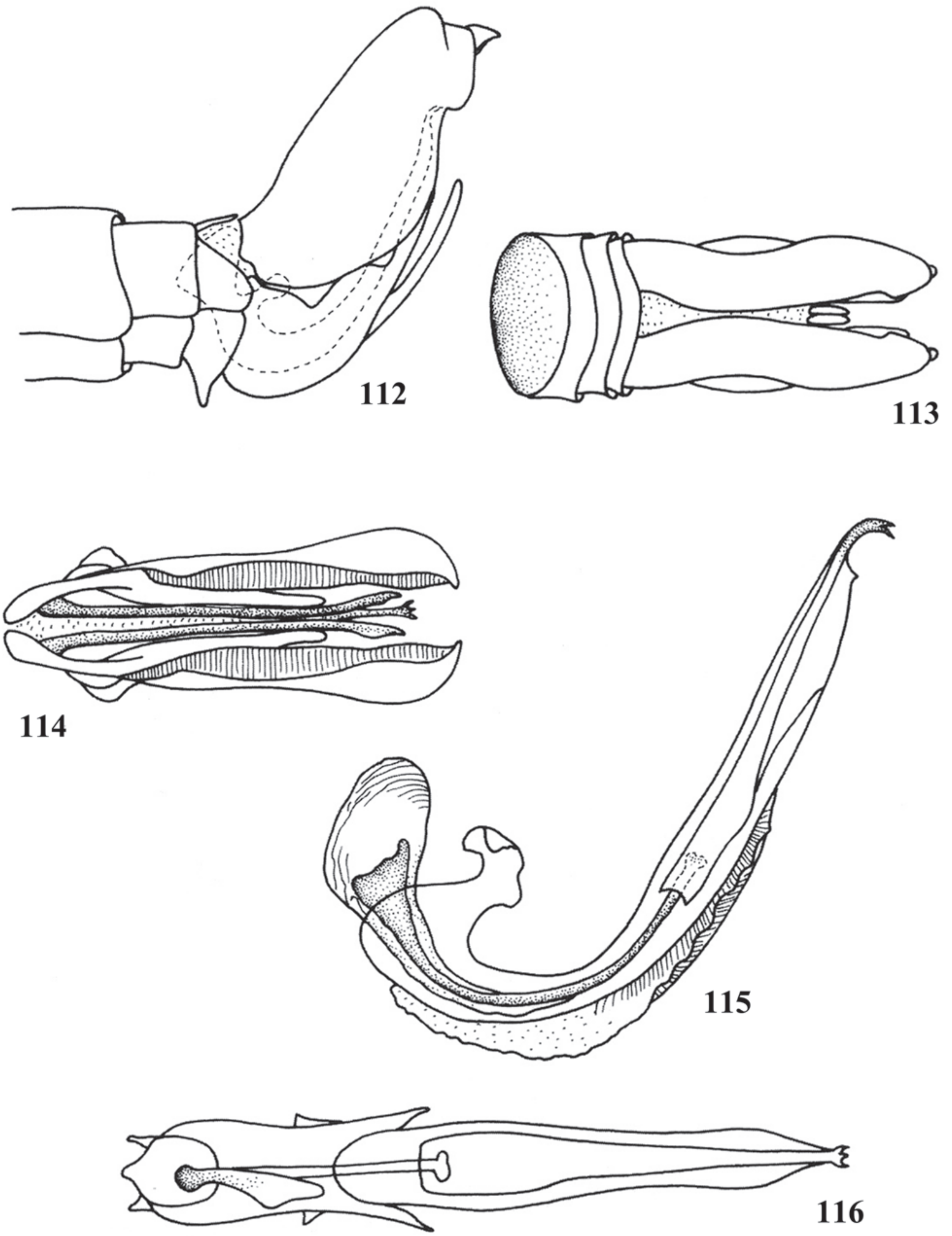
Figures 101-105. *Porasilus lesbius* Lamas, 1971. 101. Wing. 102. Male terminalia, lateral view. 103. Aedeagus, lateral view. 104. Apex of abdomen, lateral view. 105. Female ovipositor, lateral view.



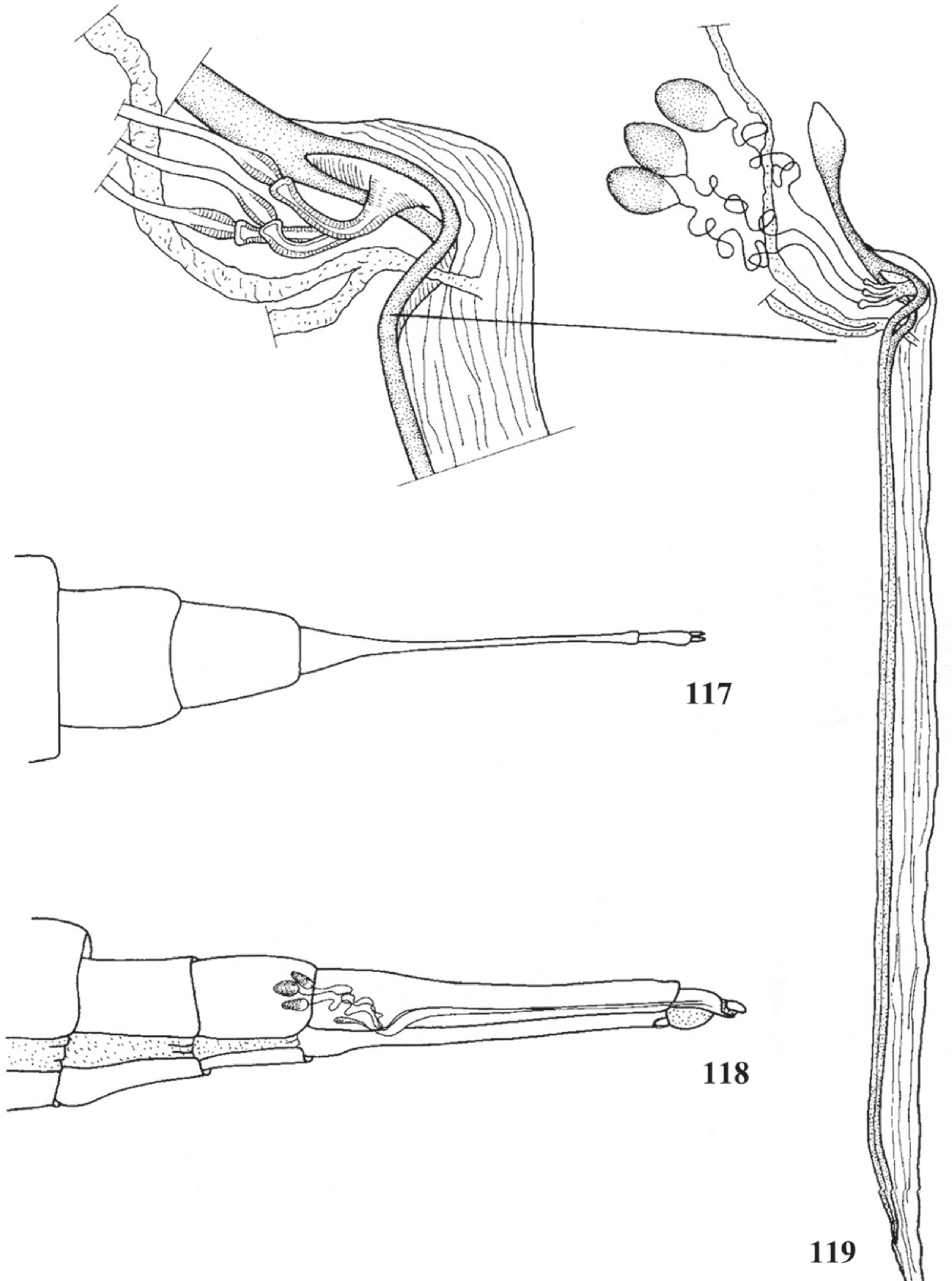
Figures 106-108. *Porasilus satyrus* Lamas, 1971. 106. Wing. l07. Male terminalia, lateral view. 108. Aedeagus, lateral view.



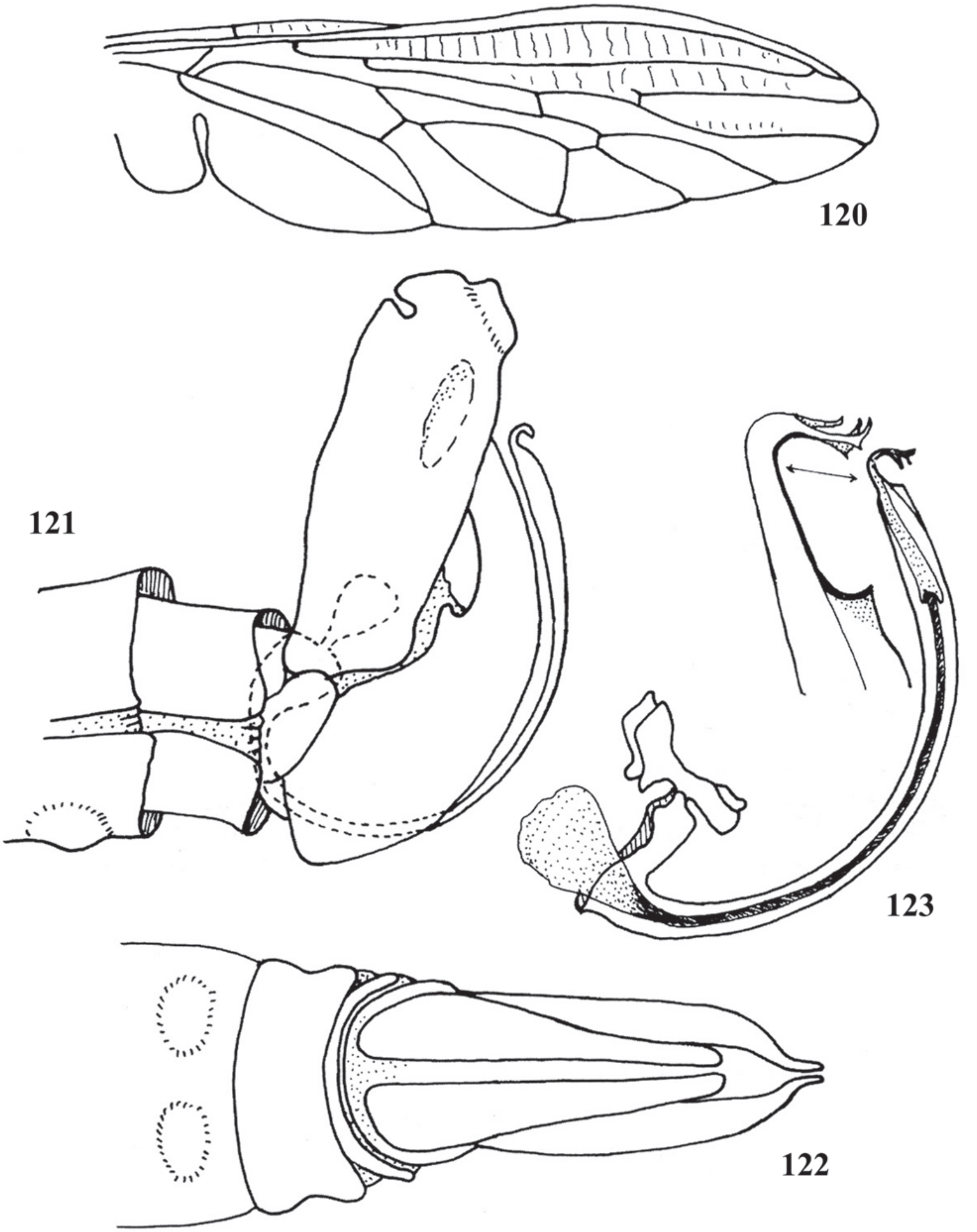
Figures 109-111. *Nerax labdophorus* (Wiedemann, 1828). 109. Apex of female abdomen, dorsal view. 110. Same, lateral view, showing situation of spermathecae. 111. Spermathecae.



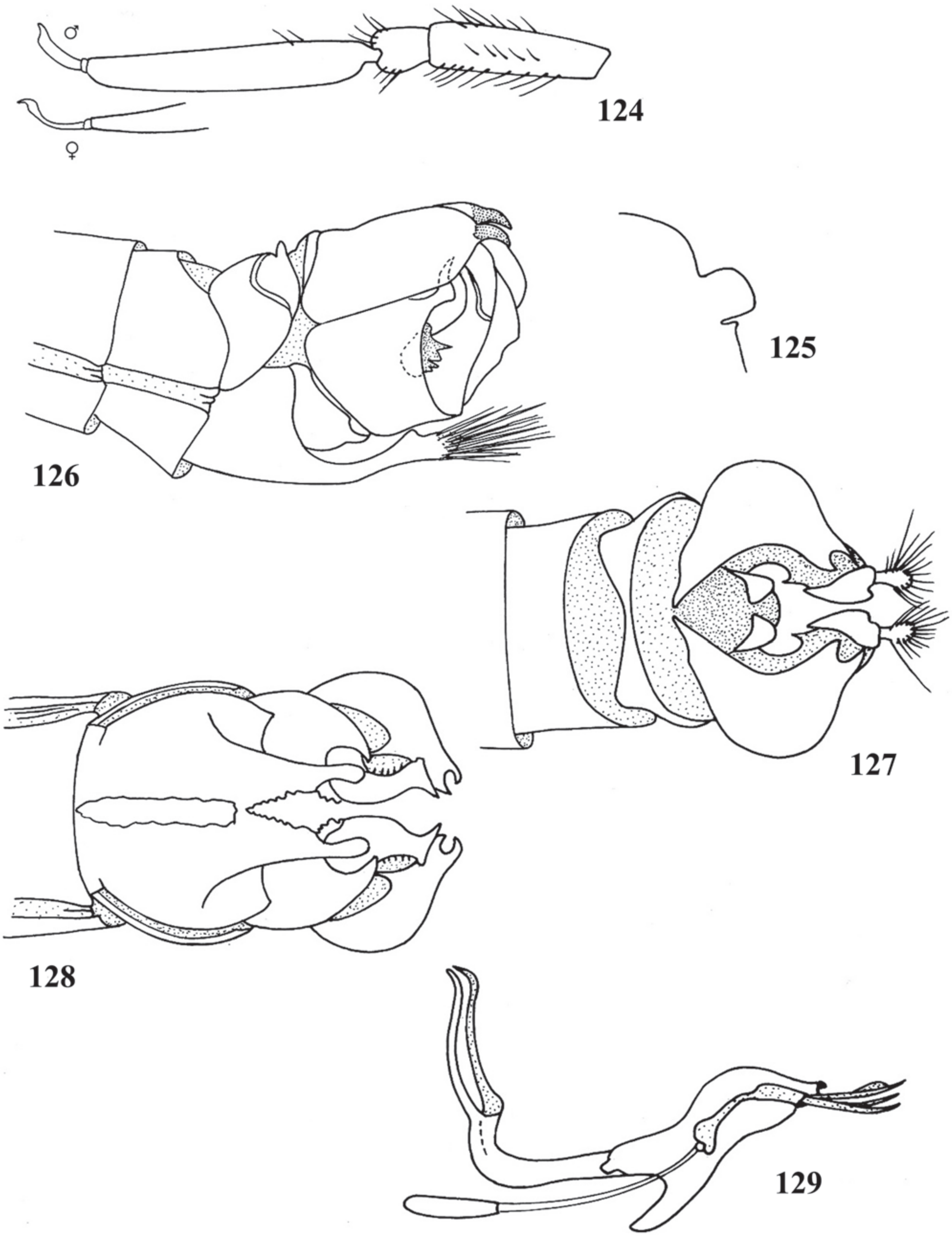
Figures 112-116. *Efferia anomala* (Bellardi, 1861), male terminalia. 112. Lateral view. 113. Same, dorsal view. 114. Ventral view. 115. Aedeagus, lateral view. 116. Same, dorsal view.



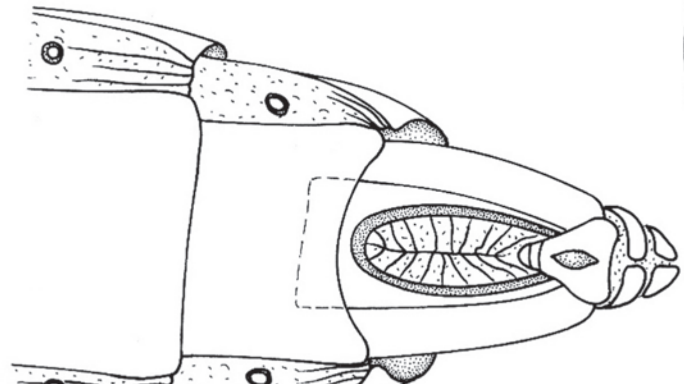
Figures 117-119. *Efferia anomala* (Bellardi, 1861). 117. Apex of female abomen, dorsal view. 118. Lateral view, showing situation of spermathecae. 119. Spermathecae and detail.



Figures 120-123. *Nerax labidophorus* (Wiedemann, 1828). 120. Wing. 121. Male terminalia, lateral view. 122. Same, ventral view. 123. Aedeagus.



Figures 124-129. *Apotinocerus brevistylatus* (Wulp, 1882). 124. Antenna. 125. Profile of scutellum. 126. Male terminalia, lateral view. 127. Same, dorsal view. 128. Same, ventral view. 129. Aedeagus.



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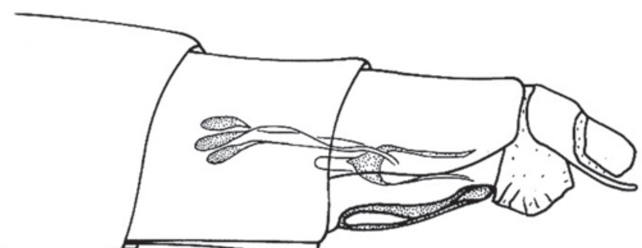

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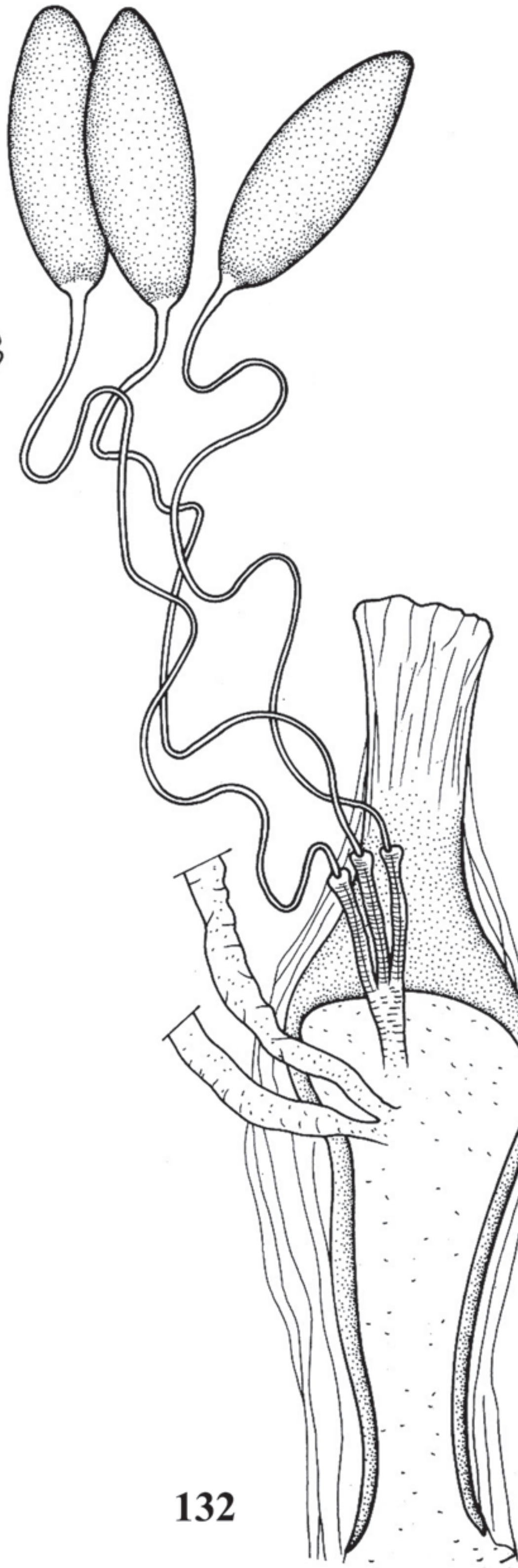

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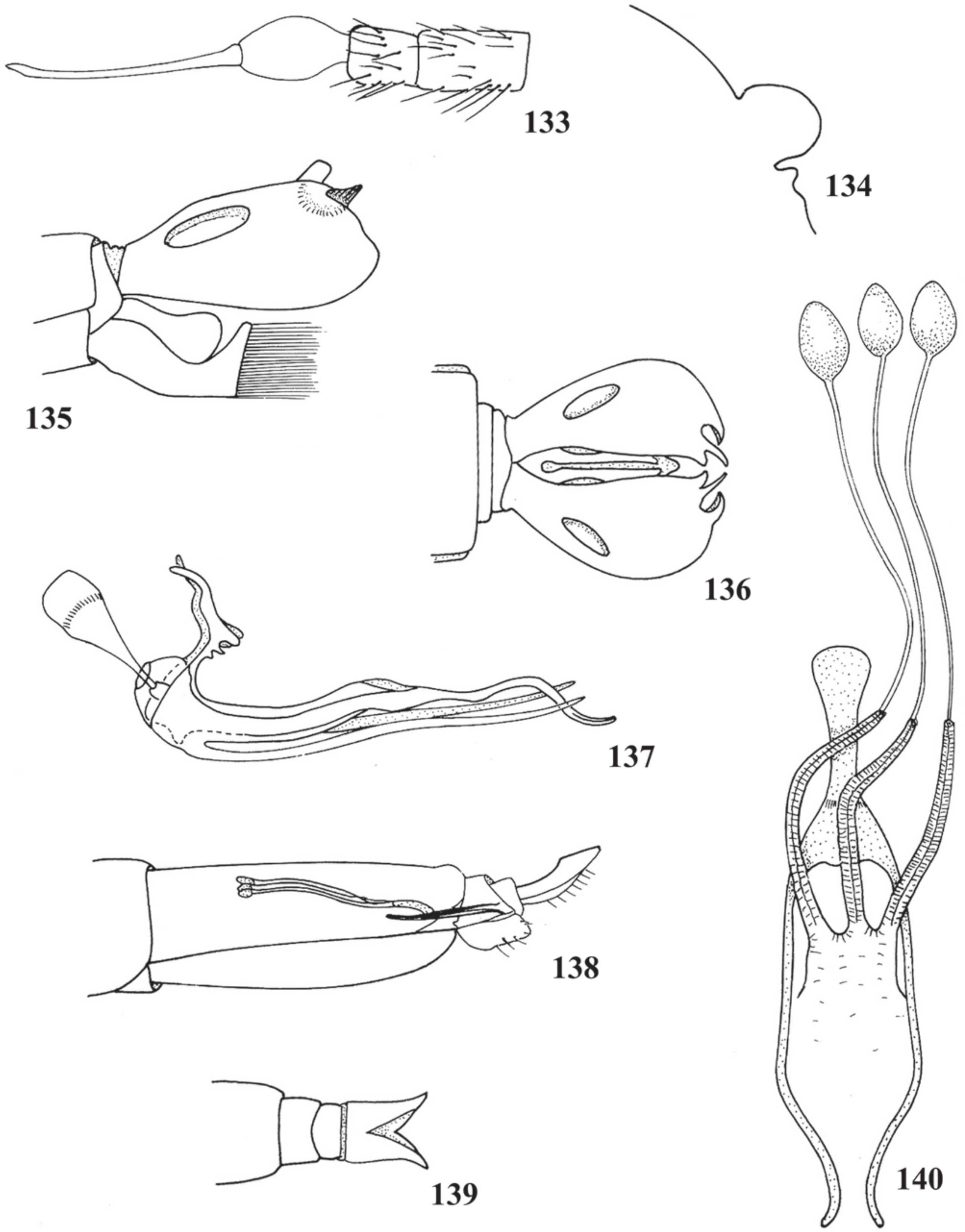
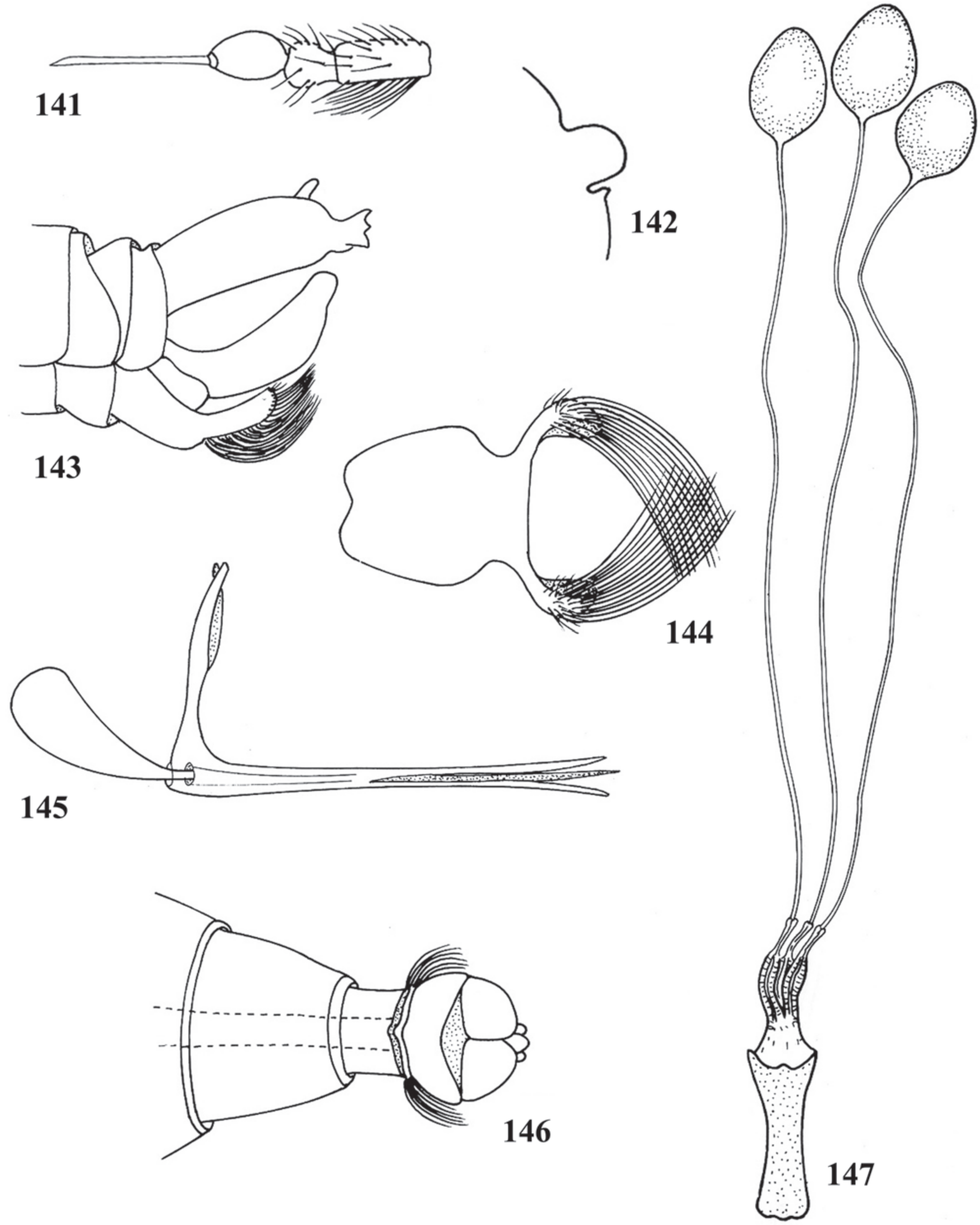
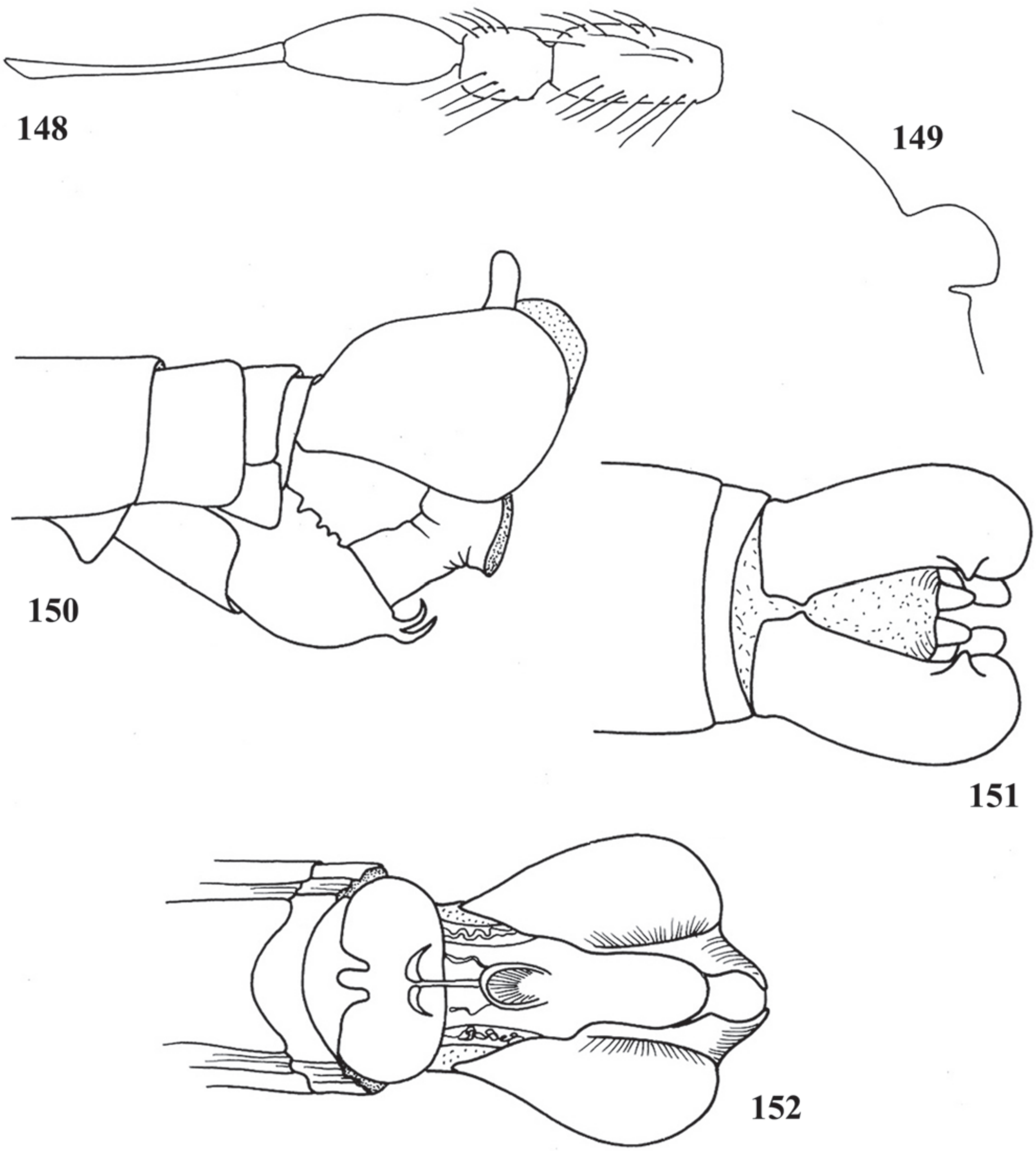
Figures 130-132. *Apotinocerus brevistylatus* (Wulp, 1882). 130. Female terminalia, ventral view. 131. Same, lateral view, showing situation of spermathecae. 132. Spermathecae.



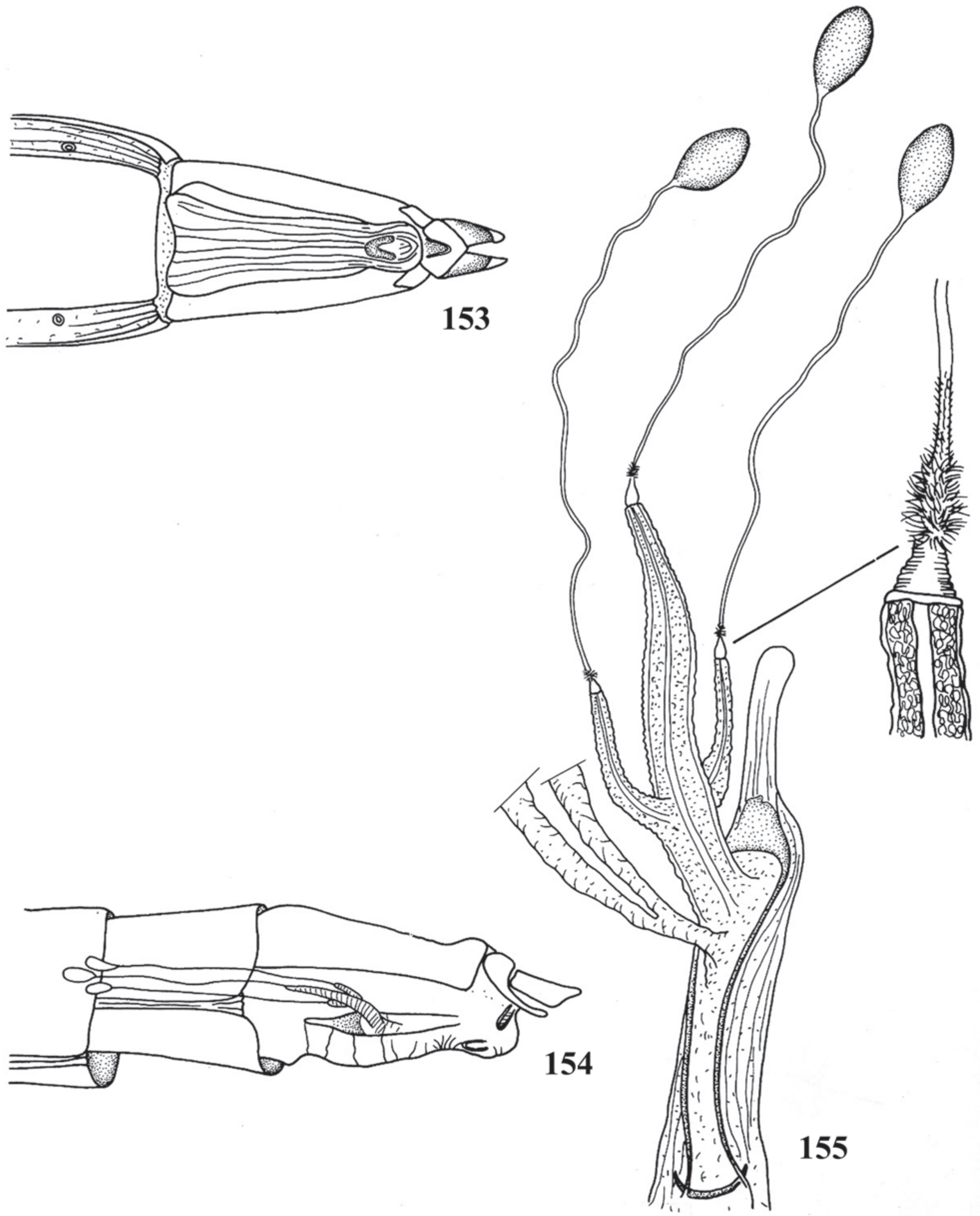
Figures 133-140. *Lochmorhynchus tumbrensis* (Artigas, 1970). 133. Antenna. 134. Profile of scutellum. 135-136. Male terminalia, lateral and dorsal views. 137. Aedeagus, lateral view. 138. Female terminalia, lateral view, showing situation of spermathecae. 139. Apex of female terminalia, dorsal view. 140. Spermathecae.



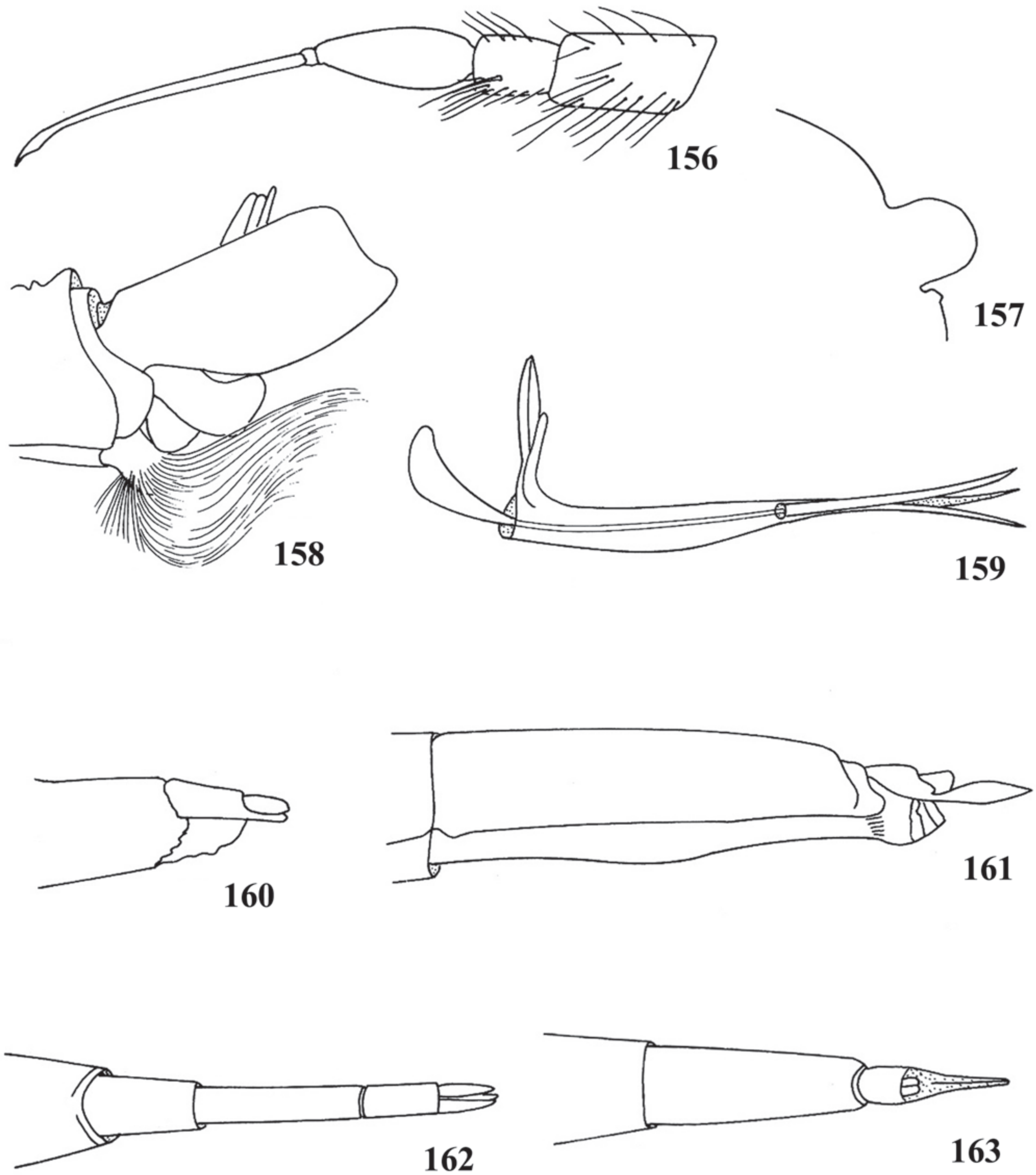
Figures 141-147. *Lochmorhynchus mucidus* (Walker, 1837). 141. Antenna. 142. Profile of scutellum. 143. Male terminalia, lateral view. 144. Male sternite 8 (hypandrium), ventral view. 145. Aedeagus. 146. Female terminalia, dorsal view. 147. Spermathecae.



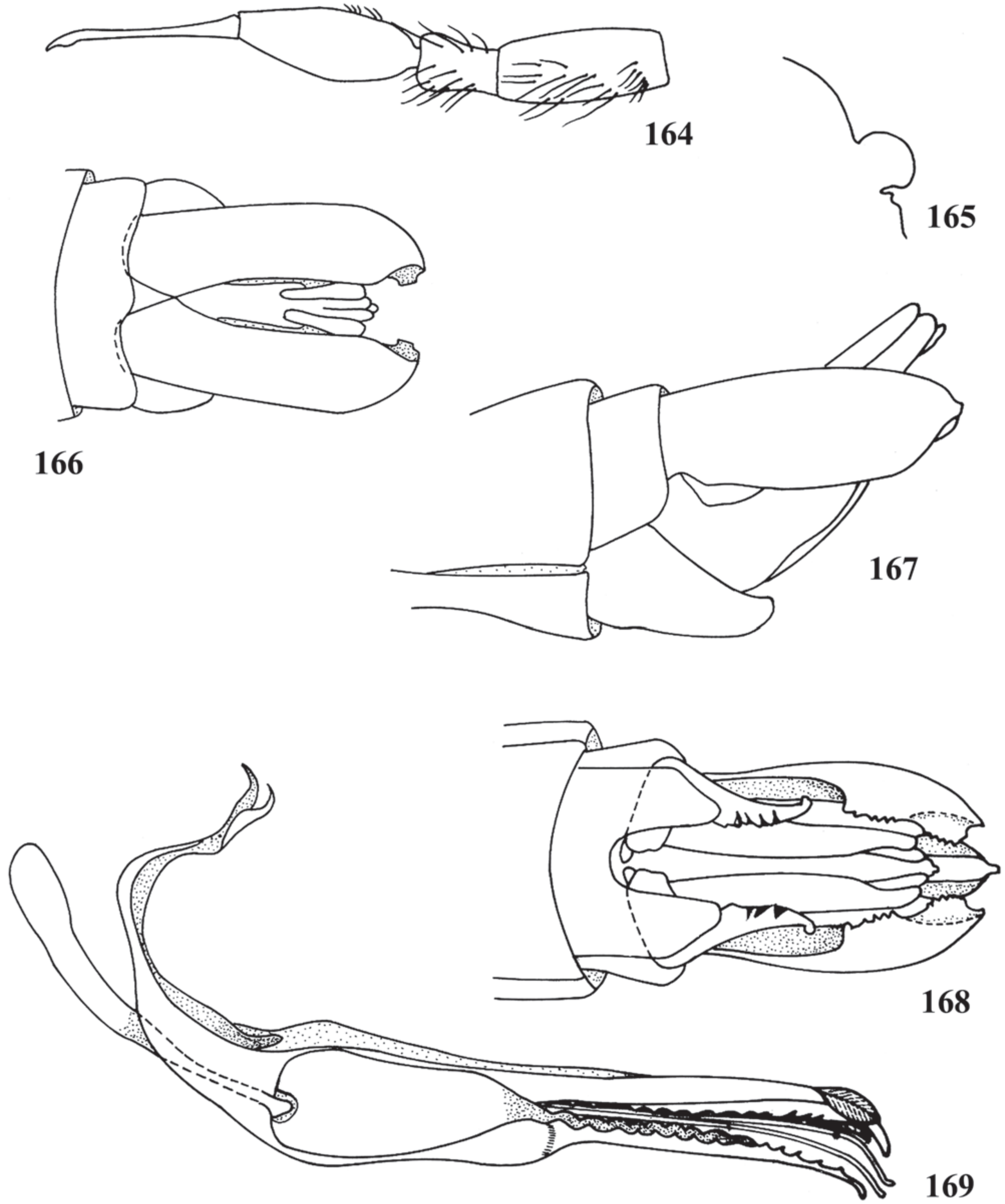
Figures 148-152. *Lochmorhynchus albicans* (Carrera & d'Andretta, 1953). 148. Antenna. 149. Profile of scutellum. 150. Male terminalia, lateral view. 151. Same, dorsal view. 152. Same, ventral view.



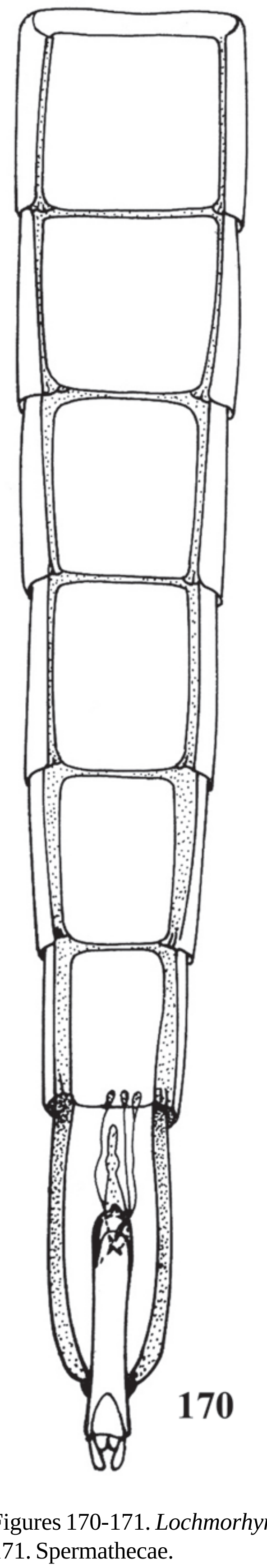
Figures 153-155. *Lochmorhynchus albicans* (Carrera & d'Andretta, 1953). 153. Female terminalia, dorsal view. 154. Same, lateral view, showing situation of the spermathecae. 155. Spermathecae.



Figures 156-161. *Lochmorhynchus borrori* Artigas, 1970. 156. Antenna. 157. Profile of scutellum. 158. Male terminalia, lateral view. 159. Aedeagus. 160. Female terminalia, lateral view. 161. Female terminalia, dorsal view. 162-163. *Lochmorhynchus griseus* (Guérin-Méneville, 1830), female terminalia. 162. Lateral view. 163. Same, dorsal view.



Figures 164-169. *Lochmorhynchus sp.* (Argentina). 164. Antenna. 165. Profile of scutellum. 166-168. Male terminalia, dorsal view. 167. Same, lateral view. 168. Same, ventral view. 169. Aedeagus.



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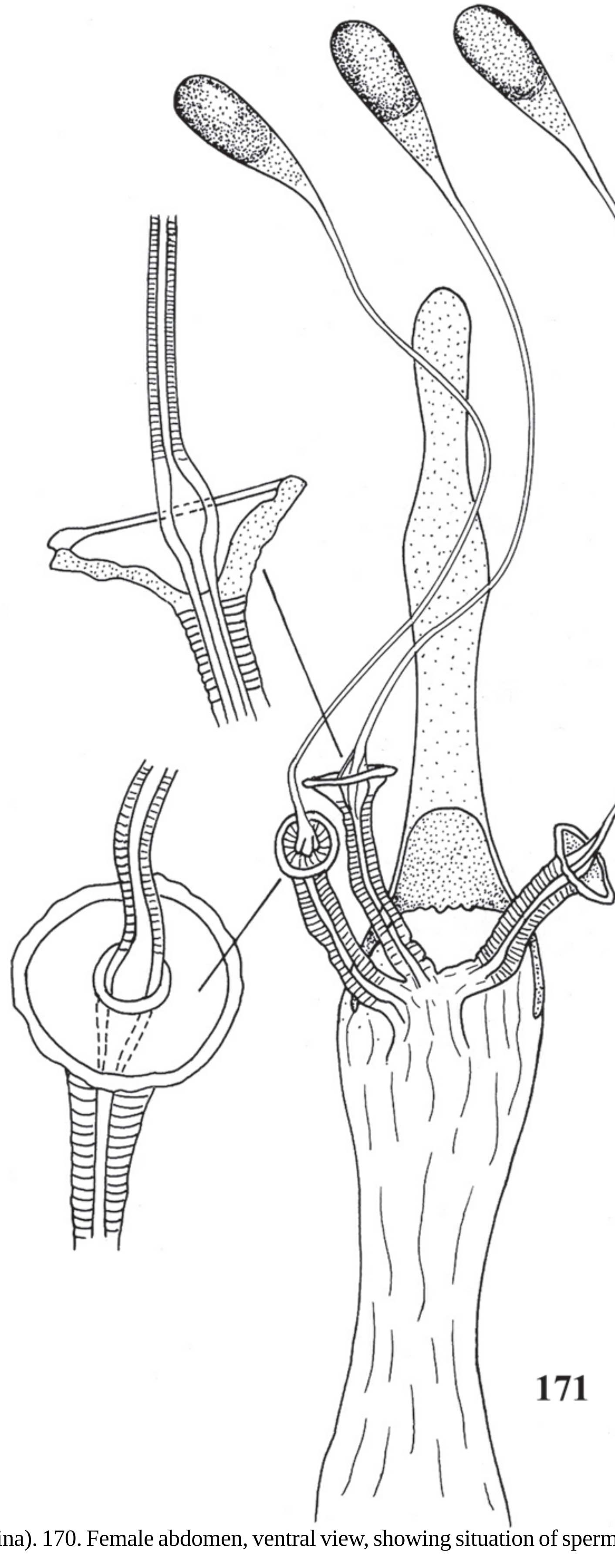

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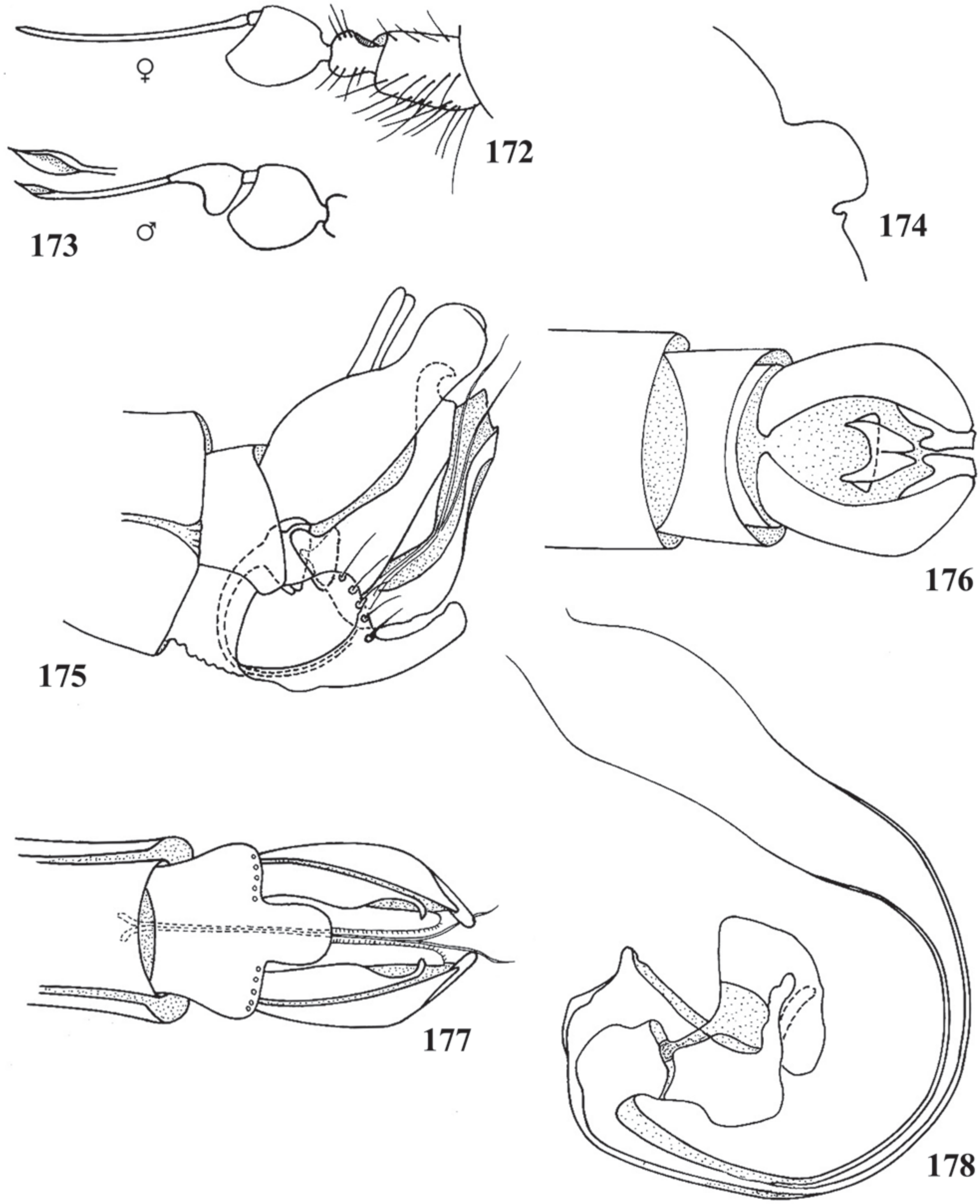
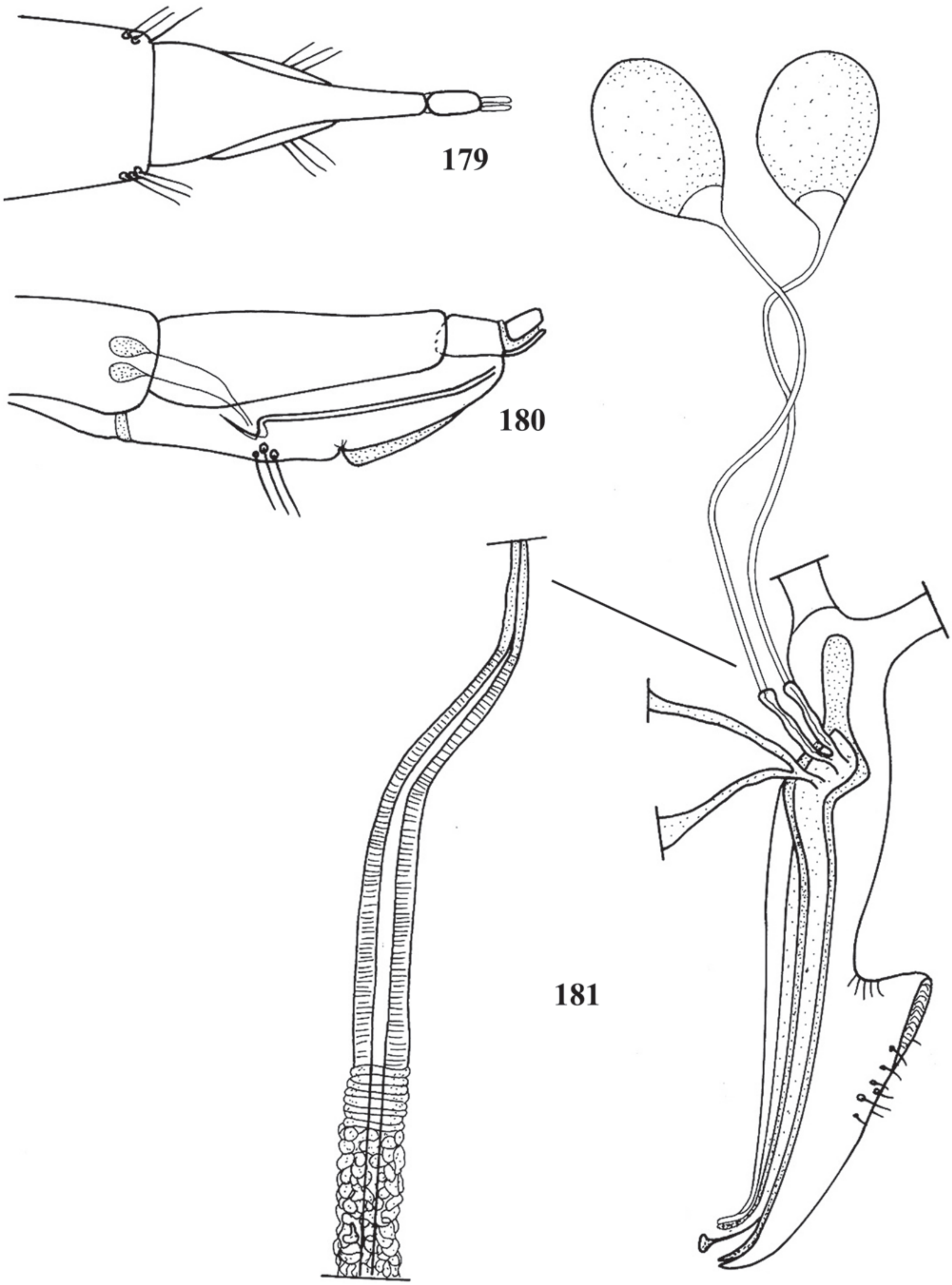
Figures 170-171. *Lochmorhynchus sp.* (Argentina). 170. Female abdomen, ventral view, showing situation of spermathecae. 171. Spermathecae.



Figures 172-178. *Cerozodus nodicornis* (Wiedemann, 1828). 172. Antenna, female. 173. Same, male. 174. Profile of scutellum. 175. Male terminalia, lateral view. 176. Same, dorsal view. 177. Same, ventral view. 178. Aedeagus, lateral view.



Figures 179-181. *Cerozodus nodicornis* (Wiedemann, 1828). 179. Ovipositor, dorsal view. 180. Same, lateral view, showing situation of spermathecae. 181. Spermathecae.