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A Review of *Minilimosina* (*Svarciella*) Roháček, with Descriptions of Fourteen New Species (Diptera: Sphaeroceridae)

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Abstract

A worldwide review of *Minilimosina* (*Svarciella*) Roháček 1983, comprising 27 species, is provided, with data about the primary types, published descriptions and figures, synonyms and distribution including new records. A key to *Svarciella* species is presented and 14 new species are described and illustrated: *M. floreni* (Sweden), *M. aterga*, *M. fanta*, *M. furculipexa*, *M. brachyptera*, *M. amphicuspa* (all Nepal), *M. triplex*, *M. cornigera* (both Malaysia), *M. concinna*, *M. hastata* (both Philippines), *M. spinifera* (Papua New Guinea), *M. flagrella* (Bismarck Is.), *M. xanthosceles* (Ecuador) and *M. xestops* (USA: Florida). *M. furculisterna* (Deeming 1969) is re-described, including the previously undescribed female, and recorded from Japan. The female of *M. unica* (Papp 1973) is described for the first time and the species is recorded from northern Europe. *M. hackmani* (Roháček 1977) is removed from synonymy with *M. dissimilicosta* (Spuler 1925) and synonymized under *M. unica* (Papp). *M. paravitripennis* (Papp 1973) is a new synonym of *M. vitripennis* (Zetterstedt 1847). The egg of *M. concinna* sp.n. is described and illustrated. The phylogeny and biogeography of world *Svarciella* species are discussed.

Introduction

The subgenus *Svarciella* Roháček, 1983 is a distinctive group of small, relatively shining, black or dark brown species currently placed in the genus *Minilimosina* Roháček, 1983 (Limosiniinae). *Svarciella* species are characterized by a surstylus with a cup-shaped

outer lobe and complex set of inner lobes often carrying various spines; a simple distiphallus, sometimes with an elongate looped or sinuate ventral (functionally dorsal) sclerite and separate dorsal sclerites; sparse thoracic chaetotaxy including few rows of long acrostichal microsetae and 2 pairs of dorsocentral bristles; wing with slightly sinuate R4 + 5 and C usually surpassing its apex; a greatly enlarged syntergite 1 + 2; a differentiated and usually deflexed posteromedial lobe on male sternite 5 (lost in some species); elongate telescoping female postabdomen, and usually slender, long-haired female cerci. The majority of *Svarciella* species are further characterized by yellow or orange appendages or their parts, contrasting with the shining black body colour, and are thus quite striking in appearance compared to uniform brown of most other sphaerocerids. Another striking character of many species is the desclerotization or reduction of abdominal tergites 3-5.

The present review forms a continuation and supplement to revisions of the European (Roháček 1983) and New World (Marshall 1985) *Minilimosina*, with a number of new records, corrections and descriptions of new species from hitherto neglected regions. A total of 27 species of *Svarciella* are recognized in the world fauna of Limosiniinae. They are reviewed, keyed and their phylogeny and biogeography discussed below. All the morphological terminology used in the present paper is that of McAlpine (1981).

Material Examined:

The specimens examined (including the type material) are deposited in the following collections and museums:

- ANSP - Academy of Natural Sciences, Philadelphia
 BMNH - British Museum (Nat. Hist.), London (U.K.)
 BRI - Biosystematics Research Institute, Ottawa (Canada)
 CAS - California Academy of Sciences, San Francisco (USA)
 GUE - University of Guelph (Canada)
 HNHM - Hungarian Natural History Museum, Budapest (Hungary)
 JRO - Collection of J. Roháček, Silesian Museum, Opava (Czechoslovakia)
 MNG - Museum d'Histoire Naturelle, Geneve (Switzerland)
 NRS - Naturhistoriska Riksmuseet, Stockholm (Sweden)
 UNH - University of New Hampshire, Durham (USA)
 USNM - U.S. National Museum of Natural History, Washington (USA)
 UZMC - Universitets Zoologiske Museet, Copenhagen (Denmark)
 ZIL - Zoological Institute, University of Lund (Sweden)
 ZMB - Zoologisches Museum an der Humboldt-Universität, Berlin (GDR)
 ZMH - Zoological Museum of the University, Helsinki (Finland)
 ZMUM - Zoological Museum, University of Moscow (USSR)

**Key to the Species of
 Minilimosina (Svarciella)
 of the World**

1. Wing reduced (Fig. 84), reaching only to end of preabdomen. Face, frons up to ocellar triangle, antennae and fore part of gena yellowish orange to orange brown
 *M. brachyptera* sp.n. (Nepal)
 1'. Wing normal, reaching beyond end of abdomen. Major part of head usually dark brown to black (except for *M. aphicuspa*, *M. cornigera*) 2
 2(1). Antennae yellow to brownish orange, contrasting with dark head, sometimes also face and

- lower frons with lunule orange to reddish brown 3
 2'. Antennae dull, not contrasting in colour with head and face always dark (but rarely with silver microtomentum) 20
 3(2). Legs entirely yellow, at most hind and mid femora yellowish brown 4
 3'. Legs at least partly black or brown 6
 4(3). Most of episternum (Fig. 97) shining. Male sternite 5 simple
 *M. xanthosceles* sp.n. (Ecuador)
 4'. Shining areas on episternum (Figs. 93, 117) small. Male sternite 5 with comb-like structures posteromedially 5
 5(4'). Anepisternum and katepisternum with large shining spot (Fig. 93). Male sternite 5 (Fig. 106) posteriorly emarginate, with dense setae and small posteromedial comb consisting of 4 blunt spines. Female postabdomen with shortened epiproct, spectacles-shaped sclerite and ball-shaped spermathecae with internal grains and cerci with reduced setosity (Figs. 107- 110) . . .
 *M. flagrella* sp.n. (Bismarck Is.)
 5'. Anepisternum tomentose and katepisternum with only very small shining spot (Fig. 117). Male sternite 5 with large posteromedial comb, 2 horn-like robust spines and trilobed posterior structure (Figs. 112-113)
 *M. cornigera* sp.n. (Malaysia)
 6(3'). Fore tarsus or only its 4 apical tarsomeres white or pale whitish yellow, distinctly paler than yellow mid and hind tarsi 7
 6'. Fore tarsus yellow or brown, not paler than other tarsi 10
 7(6). Abdominal tergites 3-5 pale pigmented, desclerotized and often much reduced in contrast to blackish and heavily sclerotized syntergite 1+2. Second hind tarsomere without bristle 8
 7'. Abdominal tergites 3-5 dark and well sclerotized as syntergite 1+2. Second hind tarsomere with a distinctive ventral bristle (Fig. 91). Male sternite 5 with a lance-like projection on left side of posterior sclerite (Fig. 90)
 *M. hastata* sp.n. (Philippines)
 8(7). First tarsomere of fore leg blackish brown in contrast to whitish rest of tarsus (Fig. 19); male mid femur ventrally without curved bristles. Paramere (Fig. 28) extraordinarily broad . . .
 . . . *M. furculisterna* (Deeming) (Nepal, Japan)
 8'. First tarsomere yellowish white as is rest of fore tarsus (Fig. 20); male mid femur ventrally with

- a row of curved bristles (Figs. 21, 47). Paramere more slender 9
- 9(8'). Fore coxa and femur orange; mid and hind femur with broad, brown to blackish, annulus (Figs. 21, 23); halter yellowish orange
. *M. triplex* sp.n. (Malaysia)
- 9'. Fore coxa brown and all femora blackish brown, with only small basal part orange (Fig. 47); halter with blackish brown knob
. *M. concinna* sp.n. (Philippines)
- 10(6'). Abdominal tergites 3-5 darkly pigmented and heavily sclerotized as is syntergite 1+2 11
- 10'. Abdominal tergites 3-5 much paler, often desclerotized and reduced in contrast to large and darkly pigmented syntergite 1+2 13
- 11(10). Anepisternum with minute shining spot above fore coxa much smaller than that on katepisternum (Fig. 1). Male mid femur and tibia ventrally without spines or curved setae (Fig. 4); male sternite 6 posteromedially simple
. *M. floreni* sp.n. (Sweden)
- 11'. Anepisternum with larger shining spot similar in size to that on katepisternum (see Roháček 1983: Fig. 228); male mid femur with a row of curved ventral bristles proximally and mid tibia with a double row of small ventral spines (Roháček 1983: Fig. 226); male sternite 6 with posteromedial tubercles 12
- 12(11'). Gena with shining spot below eye
. *M. intercepta* Marshall
(eastern North America)
- 12'. Gena completely tomentose
. *M. ismayi* Roháček (Spain)
- 13(10'). Both anepisternum and katepisternum with large shining areas (cf. Figs. 98, 101) 14
- 13'. Anepisternum microtomentose, katepisternum with a small shining spot (Fig. 100) 17
- 14(13). Tibiae with proximal and distal fifth yellow and middle part black (Fig. 49). Katepisternum with anterior and posterior shining spots (Fig. 101). Male sternite 5 with posteromedial comb of spines and 2 pale lobes (Fig. 35)
. *M. aterga* sp.n. (Nepal)
- 14'. Tibiae brown, at most with paler apices; katepisternum with single, very large shining area; male sternite 5 without comb of spines
. 15
- 15(14). Male sternite 5 simple. Spermathecal ducts heavily sclerotized and longer than body of spermatheca (Fig. 133) 16
- 15'. Male sternite 5 with a dark, deflexed process (Marshall 1985: Fig. 28); spermathecae with ducts (their sclerotized part) shorter than body of spermatheca (Marshall 1985: Fig. 176)
. *M. contrasta* Marshall
(eastern North America)
- 16(15). Scutellum slightly convex. Lateral membrane of distiphallus bare, surstylus with 4 posteromedial spines (Figs. 128, 130). Spermathecae acorn-shaped (Figs. 129, 133)
. *M. xestops* sp.n. (USA: Florida)
- 16'. Scutellum distinctly convex. Lateral membrane of distiphallus with spinose lobe; surstylus without posteromedial spines (Marshall 1985: Figs. 85, 86). Spermathecae flat on apex (Marshall 1985: Fig. 179)
. *M. niveipennis* (Malloch)
(Antilles, Central America)
- 17(13'). Lower frons broadly and frontal lunule entirely yellowish orange; face reddish brown. Male sternite 5 with large, pointed, internally serrate posteromedial lobes (Fig. 118). Distiphallus with long double whip-like sclerite (Fig. 121)
. *M. amphicuspa* sp.n. (Nepal)
- 17'. Lower frons at most with orange margin; face black. Male sternite 5 with posteromedial comb of spines. Distiphallus without whip-like sclerite 18
- 18(17'). Mid and hind tibia yellow to orange; frontal lunule tomentose 19
- 18'. Mid and hind tibia blackish brown with yellowish distal and proximal ends; frontal lunule shining. Male sternite 5 with posteromedial lobes projecting and pointed (Fig. 43)
. *M. fanta* sp.n. (Nepal)
- 19(18). Male sternite 5 (Fig. 52) with posterior bifurcate lobe carrying 2 separate comb-like rows of blunt spines. Surstyli asymmetrical (Fig. 56). Female tergite 8 projecting in 2 dark, narrow posterolateral lobes (Figs. 57, 58)
. *M. furculipexa* sp.n. (Nepal)
- 19'. Male sternite 5 (Fig. 74) with simple posteromedial comb of spines and robust spine-like bristles in front of it. Surstyli symmetrical (Fig. 71). Female tergite 8 simple divided, not projecting, but hypoproct much enlarged (Fig. 73)
. *M. spinifera* sp.n. (Papua New Guinea)
- 20(2'). Tergites 3-5 lightly pigmented, often desclerotized, more or less contrasting with darker syntergite 1+2 21
- 20'. Tergites 3-5 heavily sclerotized and dark pigmented, shining like syntergite 1+2 23

- 21(20). Male sternite 5 with simple posteromedial setulose lobe; distiphallus short, with rod-like sclerites (Marshall 1985: Figs. 40, 96). Female sternite 8 reduced, narrower than hypoproct. Spermathecae ball-shaped (Marshall 1985: Figs. 164, 165) *M. bipara* Marshall (Panama, Mexico, Venezuela)
- 21'. Male sternite 5 with deflexed posteromedial process. Distiphallus with a long whip-like sclerite. Female sternite 8 wider than hypoproct. Spermathecae never ball-shaped 22
- 22(21'). Frons, ocellar triangle, lunule, face and gena silvery white tomentose, only frontal triangle shining and bare. Deflexed posteromedial process of male sternite 5 broadly Y-shaped, with only small setulae (Roháček 1982: Fig. 185) *M. vitripennis* (Zetterstedt) (Holarctic)
- 22'. Head without silvery tomentose areas. Deflexed posteromedial process of male sternite 5 with a large comb of flat spines (Marshall 1985: Fig. 26) *M. archboldi* Marshall (USA: Florida)
- 23(20'). C uniformly pale yellowish brown. Anepisternum with large shining area (Roháček 1982: Fig. 191). Male sternite 5 with a modified deflexed posteromedial process bearing setulae and a row of small tubercles (Roháček 1982: Fig. 200) *M. splendens* (Duda) (Palearctic)
- 23'. C with blackish pigmented 2nd (sometimes also partly 3rd) sector contrasting with pale rest of C. Anepisternum with small shining spot. Male sternite 5 with posteromedial comb of spines. 24
- 24(23'). Male mid femur with curved ventral bristles and mid tibia with a double row of short spines ventrally (Roháček 1982: Fig. 213). Male sternite 5 flat. Female sternite 8 wider than long 25
- 24'. Male mid femur and tibia without ventral bristles and spines. Male sternite 5 with a very large convex bulge (Figs. 8, 11). Female sternite 8 shield-shaped, cordate, longer than wide (Figs. 15, 17) 26
- 25(24). Male sternite 6 with a pair of posteromedial tubercles. Spermathecae tuberculate (Marshall 1985: Fig. 170) *M. vixa* Marshall (eastern North America)
- 25'. Male sternite 6 without tubercles. Spermathecae cylindrical, with simple surface (Roháček 1983: Fig. 223) *M. v-atrum* (Villeneuve) (Europe)
- 26(24'). Male sternite 5 with a large projecting bulge most densely setose dorsobasally (Fig. 11); surstylus anteriorly angulate (Fig. 12); paramere more slender apically (Fig. 13). Female postabdominal sclerites with longer setae and hypoproct with deeply cleft unpigmented area (Fig. 17) *M. dissimilicosta* (Spuler) (Nearctic)
- 26'. Male sternite 5 with a smaller projecting bulge most densely setulose on its apex (Fig. 8); surstylus anteriorly rounded (Fig. 9); paramere much thicker, with blunt apex (Fig. 10). Female postabdominal sclerites shorter setose and hypoproct with a weakly indented unpigmented area (Fig. 15) *M. unica* (Papp) (northern Palearctic)

A Review of Species of the Subgenus *Svarciella*

1. *Minilimosina (Svarciella) v-atrum* (Villeneuve 1917).

Leptocera (Limosina) v-atrum Villeneuve, 1917:142

Limosina (Scotophilella) guestphalica Duda, 1918:117

Minilimosina (Svarciella) v-atrum: Roháček, 1982:281 (Figs. 210-214); Roháček, 1983:35-36 (redescription and synonymy), 169-171 (Figs. 215-224).

Type material: *L. v-atrum* Vill. - types 1 male, 1 female from Berlin env.; depository not traced, probably lost (see Roháček 1983). *L. guestphalica* Duda - Lectotype male (des. by Roháček in 1979) "Herten Westf. Duda, 24 4 16" (ZMB) (examined); for paralectotype see Roháček (1983:35).

New records: Sweden. Varmland, Eksharad, Skallberg, 1 female 23.5.1977, window trap, J. Regnander leg. (NRS); Torne Lappmark, Abisko loc.4, Nuoljatuneln, 1 male 13.7.1957, P.I. Persson leg. (ZIL).

Distribution: Europe: G. Britain, FRG, GDR, Czechoslovakia, Hungary, Denmark, Finland, Sweden (new), USSR: Estonia (Roháček 1983; Papp 1984).

2. *Minilimosina (Svarciella) vixa* Marshall, 1985.

Minilimosina (Svarciella) vixa Marshall, 1985:29 (description), 42 (Figs. 34-37), 56 (Figs. 169-171), 58 (Fig. 207).

Type material: Holotype male Nova Scotia: Cape Breton Highland N.Pk., North Mt., 400 m, 10.viii.1983, PG 766864, fen pan trap, J. Martin (BRI) (examined). For paratypes see Marshall (1985:29).

New records: USA: New Hampshire, Coos Co., 3mi. E.Inlet Dam, Norton Pool, 25.vii-7.viii.1986, D. Chandler, intercept trap, 5 males, 5 females in same sample as 2 *M. (S.) intercepta* (GUE).

Distribution: Canada (New Brunswick, Nova Scotia, Ontario), USA (Maine, New Hampshire) (Marshall 1985).

3. *Minilimosina (Svarciella) intercepta* Marshall, 1985.

Minilimosina (Svarciella) intercepta Marshall, 1985:24-25 (description), 42 (Figs. 30-33), 56 (Figs. 166-168), 58 (Figs. 188-205).

Type material: Holotype male USA, Illinois: Campaign Co., Mahomet Hardwoods, 20-26.v.1979, S. Peck, Malaise intercept trap in oak woods (BRI) (examined). For paratypes see Marshall (1985:25).

New records: USA, New Hampshire, Coos Co., 3mi. E.Inlet Dam, Norton Pool, 10-24.vii. and 25.vii-7.viii.1986, D. Chandler, intercept trap, 1 male, 1 female in same sample as 10 *M. (S.) vixa* (GUE).

Distribution: Canada (Ontario), USA (Arkansas, Georgia, Illinois, Kentucky, Louisiana, New Hampshire, North Carolina, Oklahoma, Tennessee, Texas, Virginia) (Marshall, 1985).

4. *Minilimosina (Svarciella) ismayi* Roháček, 1983.

Minilimosina (Svarciella) ismayi Roháček, 1983:36-37 (description, male only), 171-172 (Figs. 225-234).

Type material: Holotype male Spain: Grazalema nr. Ronda, ca 1000 m, 16-17.5.1979, J. Roháček leg. (JRO) (examined). Distribution:

Spain (Roháček 1983); no specimen is known apart from the holotype.

5. *Minilimosina (Svarciella) floreni* sp.n. (Figs. 1-7)

Type material: Holotype male Sweden, Smaland: Lagan, Trotteslov, 19.8.1982, trap 1 (820819:1), yellow trap, potato field, R. Sigvald leg. (NRS). Paratype male (poor condition, faded) Sweden, Haland: Enslov, Arnilt, 12.6.1973, on sapping *Acer platanoides*, H. Andersson leg. (JRO).

Description: Male only. Body length 1.7 mm, general colour brownish black, shining despite some tomentum. Head black but anterior margin of frons and ocellar triangle brown, frontal lunule and antennae yellowish brown. Frontal triangle almost reaching anterior margin of frons and shining; rest of frons, face and gena tomentose. Three very small interfrontals, hardly longer than additional setulae in front of anterior eye margin. Eye diameter about 2.2 times as long as smallest genal height. Gena with small shining spot below eye. Arista relatively long ciliate.

Thorax brownish black and shining, sparsely tomentose. Anepisternum with small shining spot, katepisternum with larger shining spot (Fig. 1). Two dorsocentrals, anterior short; 6 rows of acrostichal microsetae; apical scutellars twice as long as scutellum. Legs dark to blackish brown, with yellowish trochanters, knees and tarsi. Mid tibia with chaetotaxy as in Figs. 4, 5, ventrally with only apicoventral bristle. Wing with 2nd costal sector dark brown and contrasting with pale yellowish brown rest of C. R4+5 very slightly sinuate, cell dm of medium length and with reduced process of CuA1 beyond dm-cu. Wing length 1.49 mm, width 0.62 mm, C-index = 0.68, dm-index (distance between r-m and dm-cu on M1 : length of dm-cu) = 2.55. Halter with large dark brown knob and pale yellow stem.

Abdomen with long syntergite 1+2 having a tomentose pattern similar to that of *M. v-atrum*. All preabdominal tergites and sternites blackish brown, with relatively long though sparse setae. Sternite 5 (Fig. 7) large, with pale pigmented posterior areas on both sides of hind medial lobe; the latter overgrown by small spinulae and terminated by a comb-like row of short blunt spines. Two small, subtriangular sclerites hidden below posterior lobe of sternite 5, each carrying 3 setulae.

Genitalia: Surstylus small compared to epandrium (Figs. 2, 3), with external long setose lobe and internal lobe carrying 2 short and one longer robust spines. Aedeagal complex characterized by compact sclerites (Fig. 6). Basiphallus strongly projecting anteriorly into a pointed process; distiphallus also with robust dorsal (functionally ventral) sclerites. Paramere thick, posteriorly sinuously margined, and its apex looking cut off. Ejaculatory apodeme present.

Female: Unknown.

Dedication: The species is named in honour of its discoverer Mr. Folke Floren (NRS), who kindly submitted it to us to be included in the present review.

Comments: *M. floreni* sp.n. belongs to the *M. v-atrum*-group and apparently forms a sister-group to all other included species. It differs from them mainly by the simple chaetotaxy of male mid leg (plesiomorphic), the different tomentose pattern on episternum, the armature of male sternite 5, and the aedeagal complex which includes a compact and anteriorly projecting basiphallus.

Distribution: Sweden.

6. *Minilimosina (Svarciella) dissimilicosta* (Spuler, 1925). (Figs. 11-13, 17, 18, 102)

Leptocera (Scotophilella) dissimilicosta Spuler, 1925:148.

Minilimosina (Svarciella) dissimilicosta: Marshall, 1985:23-24 (redescription), 42 (Figs. 38-39), 56 (Figs. 172-174), 58 (Fig. 204).

Type material: Holotype female USA: Washington: Olga, 17.v.10, Melander Coll. (USNM) (examined). For paratypes see Marshall (1985:24).

New records: Canada. Yukon, Dempster Highway, km 95, km 141, pan traps in sphagnum, mushroom baits, 6-12.vii.1985, S.A.Marshall (6 females, GUE).

Comments: Marshall (1985:23) treated *M. hackmani* (Roháček, 1977) as a synonym of this species. Present comparison of Palaearctic and Nearctic specimens showed that *M. hackmani* is different from *M. dissimilicosta* but conspecific with *M. unica* (Papp). The latter species is, however, very closely related to *M. dissimilicosta* and forms with it a distinctive sister-pair. For differences between them see below.

Distribution: Canada (Alberta, British Columbia, Yukon), USA (Alaska, Colorado, New Mexico, Utah), see Marshall (1985).

7. *Minilimosina (Svarciella) unica* (Papp, 1973) (Figs. 8-10, 14-16, 51)

Limosina unica Papp, 1973:413 (male only)

Limosina hackmani Roháček, 1977:115 (male only) syn.comb.n.

Minilimosina (Svarciella) hackmani: Roháček, 1982:281-282 (Figs. 205-209; Roháček, 1983:34-35 (redescription)).

Type material: *L. unica* Papp - holotype male Mongolia: Central aimak, Bogdo ul, Bugijn az achuj 1950 m, Exp. Dr. Z.Kaszab, 1967, Nr.755, 31.V.1967 (HNHM) (examined). *L. hackmani* Roh. - holotype male Finland: Ks: Kuusamo, R.Frey (ZMH, type No. 14280) (examined).

New records: Sweden. Varmland: Eksharad, Skallberg 1 male 2 females 23.5.1977, window trap, J.Regnander leg. (NRS, JRO); Lycksele Lappmark: Ammaras, N.St. Tjultrask (lake), Kaisset Mt., 600m, 1 male June 1971, G.Andersson leg. (ZIL); same locality, at Foot of Valle, 550m, 1.7.1971 1 male, J.Jonasson leg. (ZIL); Pite Lappmark: Pieljekaise 900m, 1 female 28. 6.1981, window trap, T.Leiler leg. (NRS); Torne Lappmark: Stordalen, loc.2, 1 female 12.7.1957; Abisko, loc.4, Nuoljattunneln, 1 male 13.7. 1957, both P.I.Persson leg. (ZIL); Abisko, Jebrenjokk 1 male 23.-30.6.1976, window trap; ditto, Nat. Vet. Station, light-trap, 1 female 30.6.-7.7.1975, both K. Muller leg. (ZIL, JRO).

Description: Female (new). External characters as in male but setae on mid tibia slightly longer, Episternum with tomentose pattern as in *M. dissimilicosta* (see Fig. 102). Postabdomen generally resembling that of *M. dissimilicosta* but tergites and sternites with shorter setae (Fig. 15, cf. Fig. 17), the cordate sternite 8 somewhat shorter, hypoproct with different anteromedial unpigmented area and spermathecae longer and more slender (Fig. 16).

Male *M. unica* differ from *M. dissimilicosta* in having the bulge projecting from the middle of sternite 5 smaller and most densely setulose on its apex (Fig. 8, cf. Fig. 11), differently shaped surstylus (Fig. 9, cf. Fig. 12) and considerably more robust paramere (Fig. 10, cf. Fig. 13).

Comments: Re-examination of the male holotype of *M. unica* resulted in finding that this species is identical with *M. hackmani* (Roháček) which is thus removed from the synonymy of *M. dissimilicosta* and placed as new junior synonym under *M. unica*. Papp (1973) described *M. unica* as having the 2nd and 3rd costal sectors black. In fact only about half of the 3rd sector is dark in his holotype, as is also the case in many specimens of *M. dissimilicosta*.

Distribution: A Boreal Palaearctic species known from Mongolia (Papp 1973), Finland (Roháček 1977, 1983) and Sweden (new).

8. *Minilimosina (Svarciella) splendens* (Duda, 1928)

Limosina (Scotophilella) splendens Duda, 1928:167

Minilimosina (Svarciella) splendens: Roháček, 1982:278-280 (Figs. 191-204); Roháček, 1983:33-34 (redescription and synonymy).

Type material: Lectotype female (des. by Roháček in 1979) "Wustung b. Habelschwerdt, I.Duda, 19 5 21 (ZMB) examined). For paralectotype female see Roháček (1983:33).

New records: USSR. Far East: Juzh.Primorje, 40 km SE Ussurijsk, 1 male 30.8.1984, on carrion; 1 female same locality, 21.8.1984, on chicken carrion, Ozerov leg. (ZMUM).

Distribution: Hitherto only known from Europe (G.Britain, FRG, Switzerland, Poland, Czechoslovakia, Hungary, USSR: Ingria - Roháček 1983; Papp 1984, 1985) but the new records from the Far East demonstrate that it is a transpalaeartic species connected to zone of deciduous forests.

9. *Minilimosina (Svarciella) furculisterna* (Deeming, 1969) (Figs. 19, 24-30, 103)

Leptocera (Limosina) furculisterna Deeming, 1969: 70 (male only).

Type material: Holotype male Nepal: Taplejung Distr., between Sangu and Tamrang, c. 5,200', mixed plants by damp cliff in deep river gorge, i-ii.1962, R.L.Coe (BMNH); paratype male, same data, mixed shrubs in deep gorge, x-xi.1961, R.L.Coe (BMNH) (examined).

New records: Nepal: 27 58'N. 8500'E. Malaise trap 1, 11,100', 1 female 7.vi.1967, Canadian Nepal Expedition (BRI). Japan: Shikoku, Ishizuchi Mt.N.P., Tsuchigoya, 1400 m, 4 males 11 females 11.-18.viii.1980, Abies forest, S.Peck (BRI,GUE,JRO); Omogo Valley, 700 m, 1 female 18.-25.viii.1980, S.Peck (GUE).

Redescription: Male. Body length ca. 1.5-1.9 mm. General colour shining black; antenna, stem of halter, fore coxa, all trochanters, basal half of fore femur, extreme bases of mid and hind femora, mid tibia and tarsus, hind tibia with the usual exception of broad preapical annulus, and sometimes last 3 segments of hind tarsus yellow; last 4 tarsal segments of fore leg whitish yellow (Fig. 19). Frons lightly pollinose except for bare, shining areas beside ocellar triangle. Interfrontal plate slightly wider than high, bordered by 3 small interfrontals, upper and lower pairs minute. Face shining black with distinct, pollinose carina and reddish brown anterior margin. Lunule reddish brown, small. Eye 2.5 times as high as gena; gena entirely tomentose or with a small anterior shining area.

Thorax rather shining. Acrostichal setulae long, hair-like, in 4-6 rows between anterior dorsocentrals. Dorsocentral bristles in 2 pairs, anterior pair 0.7 times as long as prescutellar pair which is slightly shorter than scutellum. Prescutellar acrostichals in a single pair equal in length to other acrostichals. Scutellum flat, 0.7 times as long as wide, apical scutellar bristles twice as long as scutellum. Episternum tomentose except for a

small shining area on katepisternum (Fig. 103). Two katepisternal setae, anterior small. Mid tibia with only apical bristle ventrally; distal anterodorsal longer than distal posterodorsal bristle; other setae in posterodorsal row reduced; distal dorsal bristle twice as long as posterodorsal. Wing brownish; C uniformly dark brown, other veins light brown; C distinctly surpassing tip of the sinuate R4+5; cell dm with anterior outer corner acute to rectangular, shortly appendiculate; posterior outer corner with longer process of CuAl. Wing length 1.64 mm, width 0.69 mm, C-index = 0.90-1.03, dm-index = 2.13. Halter brown, stem yellow.

Abdomen with syntergite 1+2 entirely dark, slightly darker and 1.5 times as wide and twice as long as tergite 3; tergites 4-5 smaller and brown, tergite 5 desclerotized medially, divided into 2 sclerites. Sternite 5 with a small, setose lobe posteromedially flanked by a pair of larger, elongate, apically setose lobes; posteromedial lobe with an apical comb-row of closely appressed, short spines (Fig. 24).

Genitalia: Surstylus (Figs. 25, 26) with a large, spoon-shaped outer lobe and several setose inner lobes. Paramere (Fig. 28) extraordinarily broad, over half as broad as long. Distiphallus simple, mostly membranous, with a long thin dorsal sclerite and a short ventral one (Fig. 28); basiphallus long and slender, distinctly bent.

Female (new): Similar to male but mid tibia with longer bristles, particularly the apicoventral. Body length 2.1 mm. Mid basitarsus longer than half of mid tibia. Wing length 1.71 mm, width 0.75 mm, C-index = 1.11, dm-index = 1.78. Abdomen (Fig. 30) with large blackish syntergite 1+2, much smaller but dark tergite 3; all other tergites of preabdomen small, narrow, pale brown pigmented and weakly sclerotized.

Postabdomen (Figs. 29, 30): Tergite 8 darkly pigmented laterally, very lightly dorsally. Epiproct longer than wide, with posterior half setulose. Sternite 8 large, broader than long, uniformly pigmented, with a row of 4 closely appressed posteromedial bristles (Fig. 29). Hypoproct large, uniformly pigmented and entirely finely haired. Spermathecae spherical, with no apparent apical invagination but with an apical cluster of minute papillae; sclerotized part of ducts ca. as long as spermathecal diameter or slightly longer (Fig. 27).

Comments: This species is diagnosed by leg colour, particularly the fore tarsus; 2 large posterior setose lobes on male sternite 5; unusually wide paramere; large female sternite 8; simple hypoproct; and spherical spermathecae. Distribution: Nepal (Deeming 1969), Japan (new).

10. *Minilimosina (Svarciella) aterga* sp.n. (Figs. 31-35, 49, 101)

Type material: Holotype male Nepal: Katmandu, Godavari, 6000', 3.viii.1967, Malaise trap, Canadian Nepal Expedition (BRI).

Description: Male. Body length ca. 2.0 mm. General colour shining black, lightly tomentose. Antennae, apices of femora and tibia, trochanters and tarsus of mid leg yellow; fore tarsus luteous, first and second hind tarsomeres brown, others yellow. Interfrontal plate small, 1.5 times as high as wide, bordered by 4 minute interfrontals. Frons shining black, covered with light silvery pollinosity except for shining spots beside ocellar triangle. Face shining black and weakly carinate, fore margin orange brown medially. Eye diameter 2.0 times genal height; anterior half and posterior stripe of gena shining (Fig. 31).

Thorax with shining mesonotum; pleuron dull apart from distinctive shining spots on episternum (Fig. 101). Two dorsocentral bristles, anterior half as long as prescutellar which is 0.7 times as long as scutellum. Acrostichal microsetae sparse, in 4 rows between anterior dorsocentrals, in 6 rows on suture. Scutellum flat, 1.5 times as wide as long, apical scutellar bristles 1.4 times as long as scutellum. Three katepisternal bristles (Fig. 101), the anterior short. Mid tibia with only an apical bristle ventrally; distal anterodorsal bristle hardly larger than distal posterodorsal bristle terminating posterodorsal row of setae (Fig. 49). Wing clear, pale yellowish, veins (including C) uniformly pale brown; C ending at tip of slightly sinuate R4+5. Cell dm large, anterior outer corner rectangular, posterior corner obtuse-angled. Processes of M1 and CuA1 beyond dm-cu long. Wing length 1.68 mm, width 0.71 mm, C-index = 0.79, dm-index = 2.29.

Abdomen: Syntergite 1+2 black, twice as long as and 1.5 times as wide as tergite 3; tergites 3-4 very pale, barely distinguishable from surrounding membrane; tergite 5 divided into 2 pale but distinct sclerites separated by their own width. Sternite 5 large and dark (Fig. 35), posteromedial area with modified lobes separated from body of sternite by a depigmented patch; modified area including a central comb of larger blunt spines and 2 lateral lobes each bearing a long bristle.

Genitalia: Surstylus with a setose, spoon-shaped outer lobe and a number of inner lobes; anterodorsal inner lobe with a large, stout spine; posterodorsal inner lobe with a strongly flattened, curved spine (Figs. 32, 33). Paramere long, thin, slightly bent. Basiphallus very long, much longer than distiphallus. Distiphallus with a single dark dorsal sclerite and a pair of pale, thin

ventral sclerites distally surrounded by spinulose membrane (Fig. 34).

Female: Unknown.

Etymology: The name *aterga* refers to the virtual absence of tergites between syntergite 1+2 and tergite 5.

Comments: *M. aterga* sp.n. differs from all relatives by external characters (cf. tomentose pattern of episternum, 3 katepisternal setae) and genital characters (unique long basiphallus and conspicuous distiphallus, armature of male sternite 5 and surstylus).

Distribution: Nepal.

11. *Minilimosina (Svarciella) triplex* sp.n. (Figs. 20-23, 36-42)

Type material: Holotype male and paratype female Malaysia: Kuala Lumpur, Ulu Gombak Fld.St.Ctr., 8-14.ii.1980 (BRI).

Description: Male. Body length ca. 1.8 mm. Generally black except for antennae and legs. Head black including frons, but frontal lunule, dorsal part of carina and 2 minute medial spots on anterior margin of face yellowish orange. Frons greyish tomentose but narrow frontal triangle subshining and reaching to anterior margin of frons. Facial cavities, large triangular spot on gena below eye, and a perpendicular narrow spot at posterior margin of gena all glossy black. Orbital bristles small and interfrontals (3) minute. Eye diameter about 2.7 times as long as genal height. Antennae orange yellow, arista medium long ciliate.

Thorax black with mesonotum more shining and pleural part duller because of microtomentum. Scutellum relatively flat and wide. Two dorsocentrals, both short; 4 rows of acrostichal setulae on suture. Apical scutellar bristle longer than scutellum. Two katepisternal setae, anterior weak. Katepisternum with shining spot in anterodorsal corner; anepimeron also with a glossy area. Legs coloured as follows: fore leg with coxa, trochanter, femur orange, tibia blackish brown and tarsus whitish yellow (Fig. 20); mid and hind legs orange to yellow (tarsi) but femora (Figs. 21, 23) in basal half to two-thirds brown to blackish. Mid femur basally with ventral row of 4 curved bristles and anteriorly subapically with a strong bristle; setae on mid tibia shortened on both dorsal (Fig. 22) and ventral side (Fig. 21) but there is a double row of short spinulae in its apical half. Wing brownish yellow, membrane distinctly infuscated. C slightly surpassing tip of R4+5 which is somewhat sinuate. Cell dm short, with rectangular anterior and obtuse-angled posterior outer corner; the latter with distinct process of CuA1 beyond dm-cu. Wing length 1.15

mm (wings relatively short), width 0.56 mm, C-index = 0.54, dm-index = 1.92. Halter yellowish orange.

Abdomen with large blackish syntergite 1+2; other preabdominal tergites pale yellowish brown. Tergites 3-5 desclerotized, reduced and medially divided; tergites 3 and 4 moreover much shortened. Sternites 2-4 longer, wider posteriorly, pale brownish yellow. Sternite 5 and postabdominal sclerites darkly pigmented. Sternite 5 with similar armature to that of *M. spinifera* sp.n. but spine-like setae not so strong and more numerous and posterior bent sclerites (behind postero-medial comb) absent (Fig. 36).

Genitalia: Epandrium relatively long (Fig. 37). Surstylus small, posteriorly projecting lobe terminated by 3 very robust and one smaller spine, ventral lobe with 3 thick but short spines (Figs. 37, 38). Aedeagal complex (Fig. 39) with simple, slightly anteriorly projecting basiphallus and plain distiphallus formed by slender dorsal and ventral sclerites and large membranous part between them. Parameres slightly asymmetrical (in contrast to all relatives), left paramere strongly curved subapically, right paramere more regularly arched.

Female: Body length 1.75 mm. Externally similar to male but mid tibia with longer apicoventral seta, and without ventral row of spines; also mid femur ventro-basally with only small setulae. Wing length 1.23 mm, width 0.58 mm, C-index = 0.67, dm-index = 2.25. Abdomen (Fig. 40) with much reduced and desclerotized tergites 3-5 but also tergite 6 pale and medially depigmented. Sternites 2-6 pale pigmented and becoming wider posteriorly.

Postabdomen: Tergite 7 dark, tergite 8 divided into lateral plates and posteriorly carrying 2 slender, arched connectives to hypoproct. Epiproct pale, small, not longer than wide. Sternite 7 dark and wide, sternite 8 shortened and transverse, pale pigmented. Two minute sclerites between sternite 8 and both parts of tergite 8, probably of tergal origin. Hypoproct intricate (Fig. 42), with a complex structure in the anterior incision of its posterior simple part. Spermathecae pyriform (Fig. 41), with minute terminal impression and sclerotized part of ducts shorter than length of body of spermatheca. Cerci slender, long haired.

Etymology: The specific epithet refers to two triplicate groups of spines on male surstylus.

Comments: *M. triplex* sp.n. resembles *M. furculisterna* (Deem.) in leg colouring, but differs from it by many characters, e.g. by yellowish white fore basitarsus, mid femur and tibia of male ventrally spinose, quite different abdomen and terminalia. Sternite 5 and the

aedeagal complex of the male and the terminalia of the female indicate a close affinity to *M. fanta* and allies, although *M. triplex* lacks the typically developed anterior projecting lobe of the surstylus, and the parameres are slightly asymmetrical.

Distribution: Malaysia.

12. *Minilimosina (Svarciella) fanta* sp.n. (Figs. 43-46, 59-61)

Type material: Holotype male Nepal: Katmandu, Pulchauki 6800', 14.vii.1967, Canadian Nepal Expedition (BRI). Paratypes: 1 female, same data as for holotype; 2 males Nepal, Katmandu, Godavari, 5000', 15.iv. and 28.ii.1967, Canadian Nepal Expedition (all BRI).

Description: Male. Body length ca. 1.8 mm. General colour shining black with some tomentum; antenna, lunule, apices of femora and tibia, and mid and hind tarsi orange, orange to yellow. Interfrontal plate small, 1.5 times as high as wide, bordered by 3 minute, hair-like bristles; frons covered with a light silvery tomentum except for 2 indistinct shining areas beside posterior ocelli. Frontal lunule shining orange. Face blackish, with 2 orange-brown small spots at fore margin and shining except for a weak, tomentose carina. Eye 2.3 times as high as gena; gena with anterior and posterior shining areas.

Thorax blackish, rather shining, with pleural part more tomentose than mesonotum. Acrostichal setulae sparse, long, in 5-6 rows on suture. Two dorsocentral bristles, anterior 0.7 times as long as prescutellar which is equal in length to scutellum. Scutellum flat, 0.7 times as long as wide, apical scutellar bristle 1.6 times as long as scutellum. Episternum tomentose except for shining anterodorsal corner of katepisternum (cf. Fig. 103); 2 katepisternal setae, anterior weak. Mid tibia with only an apical bristle ventrally; distal anterodorsal bristle subequal to distal posterodorsal and less than half as long as distal dorsal bristle. Wing clear, pale yellowish brown, all veins yellow. C surpassing tip of the slightly sinuate R4+5 by width of C. Cell dm with acute-angled to rectangular anterior and obtuse-angled posterior outer corner; processes of M1 and CuA1 beyond dm-cu short. Wing length 1.42-1.50 mm, width 0.64-0.69 mm, C-index = 0.71-0.86, dm-index = 2.07-2.23. Halter dark brown with a white stem.

Abdomen: Syntergite 1+2 large and uniformly dark, about 3 times as long as and equal in width to tergite 3; tergites 3-4 short but fully sclerotized; tergite 5 divided into 2 darkly pigmented sclerites separated by a narrow median strip. Sternite 5 short, wide, with deflexed and modified posteromedial area with a central comb of flat

black spines recessed into a basally dark and distally pale bifurcate lobe (Fig. 43).

Genitalia: Surstylus with a setose, spoon-shaped outer lobe and a number of inner lobes; posterodorsal inner lobe with a large, flattened, curved spine; anterodorsal lobe with only small bristles (Figs. 44, 45). Paramere long, thin. Basiphallus shorter than distiphallus; distiphallus with a long, looped dorsal sclerite and a small ventral sclerite (Fig. 46).

Female: Body length 1.8 mm. Mid tibia with longer ventroapical bristle. Mid basitarsus somewhat longer compared to tibial length. Wing length 1.67 mm, width 0.79 mm, C-index = 0.80, dm-index = 2.33. Abdomen with syntergite 1+2 dark, heavily sclerotized; tergites 3-5 wide but shortened, pale pigmented and weakly sclerotized but medially undivided. Tergite 6 non-reduced, though paler than tergite 7. Sternites 2-5 pale pigmented but not reduced; sternite 6 dark as is sternite 7.

Postabdomen (Figs. 59, 61); tergite 8 medially membranous but with a small pale brown spot; lateral parts strongly sclerotized and dark. Epiproct relatively large, but pale. Sternite 8 small, pale, trapezoidal, setulose. Hypoproct (Fig. 61) posteriorly finely haired and pale, anteriorly with deep medial incision, dark pigmented and connected with 2 complex crooked sclerites attached to lateral parts of tergite 8. Spermathecae (Fig. 60) relatively simple, subcylindrical, with very shallow terminal impression and short sclerotized parts of ducts. Cerci darker than epiproct, conical, with long, hair-like setae.

Etymology: The name *fanta* can be considered an arbitrary collection of letters.

Comments: The species differs from related and similarly coloured species in having a shining orange frontal lunule, distinctive modification of posteromedial lobe of male sternite 5, relatively simple aedeagal complex, and a complex hypoproct.

13. *Minilimosina (Svarciella) furculipexa* sp.n. (Figs. 52-58)

Type material: Holotype male Nepal: Arun Valley, below Tumlingtar, River Sabhaya, west shore, c. 1800', dead leaves lying in sun on sandy shore, 22.xii.1961, R.L. Coe (BMNH). Paratype female Nepal: River Arun below Tumlingtar, c. 1800', evergreen shrubs bordering dry stream beds, 14-23.xii.1961, R.L. Coe (BMNH). Both holotype and paratype were listed by Deeming (1969) as *Leptocera (Limosina)* sp. near *furculisterna* Deeming.

Description: Body length ca. 1.6 mm. General colour black; antennae, extreme lower frons, apices of fore tibia, mid tibia, hind tibia, trochanters and tarsi yellow, apical 4 fore tarsal segments infuscated. The chaetotaxy cannot be described because both type specimens are severely rubbed. Frons lightly tomentose except for small shining areas beside ocellar triangle. Face shining black, with a distinct, tomentose carina. Lunule brown.

Thorax with tomentose pleural part except for a very small shining anterodorsal part of katepisternum; this shining area no wider than tibia. Scutellum flat, 0.6 times as long as wide. Wing brownish, C uniformly brown, other veins pale. C slightly surpassing R4+5 which is slightly sinuate; cell dm strongly appendiculate. C-index = 0.70, dm-index = 1.67. Halter dark brown with yellow stem.

Abdomen: Syntergite 1+2 large, black, over twice as long and 1.5 times as wide as tergite 3. Tergite 3 brown; tergites 4 and 5 very pale and medially desclerotized. Sternite 5 transverse, with a large posteromedial forked lobe, each arm with an inner row of 10 stout, closely appressed spines and an inner apical pair of thin setae (Fig. 52).

Genitalia: Surstylus complex, with spoon-shaped outer lobe bearing 2 short, stout spines posteroventrally; several inner lobes, including a long anterior, ventrally projecting lobe. Anterior lobe of left surstylus blunt, with 2 closely appressed, short, stout spines; anterior lobe of right surstylus longer, bifurcate, apical spines widely separated (Figs. 55, 56). Entire paramere not clearly visible on only known male specimen, but strongly bent and with a finger-like apical process (Fig. 53). Distiphallus simple, with long, thin dorsal and ventral sclerites, dorsal sclerite forming a distal ring; apical membranous parts finely spinulose; basiphallus posteroventrally expanded.

Female: Abdomen (Fig. 57) with large syntergite 1+2; tergites 3-6 small, very pale and medially desclerotized, particularly tergites 4-5 greatly reduced.

Postabdomen: Tergite 8 desclerotized medially, divided into 2 dark lateral sclerites each bearing a long, thin, black posterolateral process (Fig. 57). Epiproct broader than long, entirely setulose. Hypoproct unusually complex, finely setulose in posterior half, with an isolated central pigmented area, anterolateral processes infolded and apparently continuous with complexly folded lateral sclerites connecting hypoproct and tergite 8 (Fig. 58). Sternite 8 smaller than hypoproct, distinctively pigmented with dark areas confined to bristle bases and a central band. Spermathecae some-

what peanut-shaped, with a shallow apical invagination; sclerotized part of ducts short (Fig. 54).

Etymology: The name *furculipexa* is from the Latin words for "fork" and "comb", and refers to the forked posteromedial part of the male sternite 5 which, unlike that of most of relatives, bears large comb-rows on each branch.

Comments: This species is easily recognized by its distinctive male genitalia, particularly the asymmetrical surstyli, but is also characterized by modified female terminalia including the presence of separate sclerites between the hypoproct and the strikingly black posteroventral projecting margin of tergite 8. Distribution: Nepal.

14. *Minilimosina (Svarciella) concinna* sp.n. (Figs. 47, 48, 62-70)

Type material: Holotype male and 4 male and 2 female paratypes Philippines: Palawan, Mantalingajan, Tagembung, 1150 m, 19.Sept.1961, Noona Dan Exp. 61-62 (UZMC). Other paratypes: 1 male same data, 18. Sept.1961, Malaise-traps; 1 male same data, 20.Sept.1961 (UZMC).

Description: Male. Body length 1.3-1.5 mm. General colour brownish black. Head blackish but anterior margin of frons, lunule, 2 small spots on anterior margin of face and antennae orange. Frons slightly tomentose, frontal triangle and interfrontalia indistinctly delimited. Two orbitals strong but all 3 interfrontals very small. Facial cavities and carina lightly tomentose, subshining. Gena with very small shining spot below eye. Eye diameter ca. 3.2 times as long as smallest genal height. Antenna elongated, arista relatively long ciliate.

Thorax blackish with brown tomentum, subshining. Mesonotum with paler brown notopleuron. Episternum more densely tomentose, with only small shining spot in anterodorsal corner of katapisternum. Anepimeron usually also with shining spot. Two dorso-centrals, also anterior rather strong. Six rows of acrostichal setulae on suture. Apical scutellar bristle much longer than scutellum which is slightly convex and posteriorly rounded. Only one katapisternal seta. Legs variegated as follows: all coxae and femora brown; trochanters, bases of femora, knees, mid and hind tibiae and tarsi yellowish to orange; fore tibia brown with pale apex and fore tarsus whitish yellow. Mid femur ventrobasally (Fig. 47) with a row of curved bristles (5-8); mid tibia ventrally with a double row of short spinulae terminated by a reduced apicoventral bristle; dorsal chaetotaxy of mid tibia as in Fig. 48. Wing with brownish

membrane and yellowish brown veins; C darker but unicolorous and distinctly extending beyond tip of clearly sinuate R4+5. Cell dm relatively broad, with rectangular to acute-angled anterior and obtuse-angled posterior outer corner. M1 forming a short process beyond dm-cu but that of CuA1 longer. Wing length 1.19-1.39 mm, width 0.50-0.59 mm, C-index = 0.75-0.91, dm-index = 1.92-2.27. Halter with blackish brown knob and orange stem.

Abdomen with long and blackish syntergite 1+2. Tergites 3-5 pale pigmented, reduced and more or less distinctly divided into two parts. Sternite 2 narrow, desclerotized and pale medially; other sternites dark pigmented and well sclerotized. Sternite 5 (Fig. 62) transverse, sparsely setulose except a group of setae in front of posteromedial bilobed structure carrying 2 separate comb-rows of blunt appressed spines.

Genitalia: Surstylus complex (Figs. 63, 67), most similar to that of *M. furculipexa*, with an outer convex lobe terminated in 2 posterior curved projections and 2 strong spines; with two more internal lobes, the anterior being very long but without spines; the largest posterior lobe with another robust pointed spine internally (Fig. 67). Basiphallus short, transverse, firmly connected with ventral (functionally dorsal) sclerite of distiphallus which is simple, composed of dorsal and ventral rod-like sclerites and membranous between them. Paramere relatively simple, apically slender, straight and pointed (Fig. 66).

Female: Body length 1.5-1.8 mm. Anterior orange margin of frons narrower; fore tarsus darker, but always paler than mid and hind tarsi. Mid femur and tibia without specialized ventral setae but ventroapical bristle much longer than in male. Wing length 1.50-1.59 mm, with 0.63-0.67 mm, C-index = 0.87-0.92, dm-index = 2.06. Abdomen (Fig. 69) with dark syntergum 1+2, pale, desclerotized and medially divided tergites 3-5. Sternite 2 as in male, with medial pale area but sternites 3-5 much narrower and paler.

Postabdomen: Tergite 8 medially membranous and both lateral parts widely separated (Fig. 69) and bearing a black keel-like strip ventrolaterally (Fig. 68). Epi-proct about as long as wide, small and pale. Sternite 8 large, posteriorly tapered, medially darkly pigmented and with 2 long setae. Hypoproct broad, complex (Fig. 68) with medial narrow sclerite, lateral convex plates and 2 crooked sclerites connecting it with tergite 8. Spermathecae simple (Fig. 70), with shallow apical invagination and sclerotized parts of ducts not longer than body of spermatheca. Cerci slender, with long sinuate hairs.

Egg (Figs. 64, 65) simple, whitish, anteriorly more tapered and with blunt apex. Chorion finely tuberculate wrinkled. Dorsal respiratory structure in form of two ledges composed of small lobes. Micropyle situated in cut anterior part, near margin. Egg length 0.54 mm, width 0.16 mm.

Etymology: The species is named *concinna* (= symmetrical) because of its entirely symmetrical surstyli in contrast to closely related *M. furculipexa* sp.n.

Comments: The male sternite 5 (divided comb of spines) surstylus, basiphallus, female sternite 8 and hypoproct indicate that this species is most closely allied to *M. furculipexa* sp.n., forming with it a distinct pair of sister species. *M. concinna* differs from the latter in having whitish yellow fore tarsomeres, symmetrical surstyli, straight postgonite, different female tergite 8 and hypoproct etc. The above described egg of *M. concinna* (prepared from female abdomen) is the first preimaginal stage known in the subgenus *Svarciella*.

Distribution: Philippines.

15. *Minilimosina (Svarciella) spinifera* sp.n. (Figs. 71-77)

Type material: Holotype male and 1 male and 1 female paratypes Papua New Guinea: Kokoda Trail, Iora Creek 17 km S Kokoda, 3.-6.viii.1976, dung, O. Kukal; paratype male ditto, 23 km S Kokoda (Templeton's Cross.), Kokoda Trail, Iora Creek, 1900 m, 6.-8.viii.1976, dung, O.Kukal (BRI). Description: Male. Body length 1.5-1.6 mm. Head black except for orange antennae, frontal lunule and 2 small spots at anterior margin of face. Frontal triangle subshining and reaching anterior margin of frons. Three small subequal interfrontals, 2 orbitals. Face shining black except for tomentose carina. Gena greyish tomentose, with a small triangular spot below eye. Longest diameter of eye 1.9 times as long as smallest genal height. Antenna with elongate-oval 3rd segment; arista with medium long cilia.

Thorax black, shining despite brownish tomentum. Episternum tomentose except for small shining spot on katapisternum (as in *M. brachyptera* or slightly larger); anepimeron with oval shining area. Two dorsocentrals, anterior relatively short; 6 irregular rows of acrostichal microsetae; apical scutellars longer than scutellum; scutellum slightly convex. Two katapisternal setae, anterior very weak. Legs with dark brown coxae, blackish femora and yellowish ochreous knees, trochanters, tarsi, mid and hind tibia. Fore tibia dark brown at middle, pale brown to yellowish at both base and apex. Chaetotaxy of mid tibia: apicoventral bristle

reduced but distinct, distal anterodorsal seta well above (more proximally) dorsal bristle and a row of posterodorsal setae (about 5) present. Wing distinctly yellowish brown. C entirely uniformly yellowish brown, indistinctly surpassing apex of R4+5; the latter very slightly sinuate, apically straight. Cell dm with anterior outer corner rectangular, both its processes beyond dm-cu very small. Wing length 1.39-1.47 mm, width 0.65-0.68 mm, C-index = 0.84-0.97, dm-index = 2.06-2.15. Halter with whitish yellow stem and dark brown knob.

Abdomen with blackish brown syntergite 1+2, other preabdominal tergites pale ochreous. Tergites 3 and 4 reduced, shortened and desclerotized, tergite 5 longer and medially divided. Sternites becoming wider posteriorly, sternite 5 widest and darkest. Armature of sternite 5 (Fig. 74) characterized by 6 very robust and long spines posteromedially; behind them, attached to a microsetulose lobe, there is a comb of blunt spines and below it (partly hidden) a complex bipartite structure bent dorsally and connected with the usual lateral pale lobes.

Genitalia: Surstylus short compared to epandrium (Figs. 71, 75), of complex nature, composed of posterior convex lobe, middle internal lobe with a short ventroexternal and long internal robust spine, and anterior lobe projecting into a pointed process. Aedeagal complex (Fig. 77) similar to that of *M. concinna* sp.n., basiphallus with a short transverse posterior part and an elongate anterior part to which the simple distiphallus is connected. Paramere sinuously margined and apically pointed.

Female: Body length 1.8 mm. Apicoventral seta on mid tibia longer than in male. Wing length 1.6 mm, width 0.7 mm, other features not measurable on the only female studied. Abdomen with greatly reduced and desclerotized tergites 3-5 (Fig. 76). Sternites 2-6 also pale pigmented but of the usual length.

Postabdomen: Tergite 6 paler than tergite 7. Tergite 8 completely divided and both parts shifted quite laterally. Epiproct pale, small, about as long as wide. Sternite 6 pale pigmented in contrast to very dark sternite 7. Sternite 8 unusually small, pale, forming a hexagonal plate with 2 longer hairs. Hypoproct (Fig. 73) very large, expanded anteriorly where deeply incised, its lateral lobes bent and connected with tergite 8, a minute curved sclerite in incision. Spermathecae (Fig. 72) simply ovoid to pyriform, with shallow terminal impression. Sclerotized part of ducts about as long as spermatheca. Cerci short, their sinuate setae relatively short.

Etymology: The species name refers to the very strong spines on male sternite 5 and surstylus.

Comments: *M. spinifera* sp.n. externally most closely resembles *M. furculipexa* sp.n. but differs from it by many details of the male and female terminalia (male sternite 5, surstylus, paramere, female tergite 8, sternite 8, hypoproct).

Distribution: Papua New Guinea.

16. *Minilimosina (Svarciella) brachyptera* sp.n. (Figs. 78-87, 99)

Type material: Holotype male E.Nepal: No. 26, Kosi, Val. Induwa Kola, 2100 m, 17.iv.1984, Lobl - Smetana (MNG). Paratypes: 28 males 23 females same data as for holotype; 1 male Induwa Kola, 2000m, 16.iv.1984, Lobl - Smetana (MNG,HNHM,GUE,JRO).

Description: Male. Body length 1.2-1.6 mm. General colour blackish but head mostly orange to orange brown. Frons orange to orange brown up to ocellar triangle, occiput blackish brown. Frontal triangle more shining than other parts of frons; interfrontalia indistinct. Lunule yellowish orange; gena anteriorly orange brown, posteriorly blackish; face orange and shining. Two orbitals, anterior much shorter; 3, rarely; 4, minute interfrontals. Eye diameter about 4.2 times as long as smallest genal height. Antenna orange; 3rd segment elongate and apically tapered; arista relatively shortly ciliate.

Thorax almost black, at notopleuron reddish brown. Scutellum rather large, flat. Two dorsocentrals, anterior short; 6 rows of acrostichal setulae on suture, fewer posteriorly; apical scutellar bristle much longer than scutellum. Katepisternum with small shining spot (Fig. 99) and anepimeron also with shining area. Two katepisternal setae but anterior very reduced. Legs with dark brown coxae, blackish femora and central part of tibiae; trochanters, knees, apices of tibiae and tarsi yellow to yellowish brown, fore tarsi usually darker, particularly on distal segments. Chaetotaxy of mid tibia: apicoventral relatively long, distal anterodorsal well above dorsal bristle, posterodorsal setae (4-6) short and forming long row. Wing short (Fig. 84), hardly reaching beyond tergite 5, with rather dark infusate membrane; veins paler than membrane, yellowish brown. C slightly surpassing apex of R4+5, the latter slightly sinuate to almost straight. Cell dm short, with outer corners obtuse-angled and shortly appendiculate. Wing length 0.82-1.11 mm, width 0.40-0.58 mm, C-index = 0.65-0.74, dm-index = 1.33- 1.80. Halter small, with yellowish stem and reduced blackish knob.

Abdomen (Fig. 83): Syntergite 1+2 large, black; tergites 3- 5 reduced, desclerotized and medially divided. Sternites 2-5 dark brown, and particularly sternites 3 and 4 broad, equal to or wider than sternite 5 and fine-

ly setulose. Sternite 5 (Fig. 78) with the usual posteromedial comb of blunt spines and a group of thicker setae in front of it; posteromedial bilobed structure with blunt lobes each carrying 2 setae.

Genitalia: Epandrium medium long, cerci reduced (Figs. 79, 80). Surstylus (Figs. 80, 82) intricate, roughly trilobed. Posteroexternal lobe the largest, convex, shortly setulose; anterior lobe slender, projecting and terminated by a short spine; internal lobe complex and provided with a number of spine- like and hair-like setae (Fig. 82). Aedeagal complex (Fig. 81) with short but ventrally expanded basiphallus (almost as high as length of paramere); distiphallus formed by slender rod-like sclerites, membraneous between them. Paramere slightly sinuate, apically pointed, dark. Ejaculatory apodeme small, slender.

Female: Body length 1.2-1.75 mm; mid tibia with longer bristles, especially the apicoventral one. Wing yet more reduced, length 0.75-1.05 mm, width 0.32-0.50 mm, C-index = 0.50-0.64, dm-index = 1.11-1.60. Preabdominal sclerites (except for large and black syntergite 1+2) pale brownish pigmented. Tergites 3-6 yet more reduced than in male (Fig. 85); sternites 2-6 narrower and paler but not desclerotized.

Postabdomen with dark and strongly sclerotized tergite 7, sternite 7 and tergite 8, the latter dorso-medially membraneous but not divided. Epiproct hardly longer than wide. Sternite 8 pale, trapezoidal, with 2 longer setae. Hypoproct (Fig. 86) with anterior part composed of several sclerites and posterior simple part anteromedially emarginate. Spermathecae (Fig. 87) reversely pyriform, with more slender terminal part and shallow impression on apex; sclerotized part of ducts shorter than body of spermatheca.

Etymology: The species is named according to shortened wings, a unique feature among all known species of the genus *Minilimosina*.

Comments: *M. brachyptera* sp.n. is easily recognizable by its brachyptery and orange head. Its male and female terminalia demonstrate clearly its appurtenance to the *M. fanta*-group, while also exhibiting many species-specific details (cf. surstylus, basiphallus, hypoproct and sternite 8 of female).

Distribution: Nepal.

17. *Minilimosina (Svarciella) bipara* Marshall 1985

Minilimosina (Svarciella) bipara Marshall, 1985:21-22 (description), 43 (Fig. 40), 49 (Figs. 94-96), 57 (Figs. 163-165), 58 (Fig. 209).

Type material: Holotype male Panama: Chiriqui, 2 km E Cerro Punta, 2200m, 1-4.vi.1977, forest carrion trap, S.B.Peck (BRI). For paratypes see Marshall (1985:22).

New records: Costa Rica. Pta. Monteverde Res., Cloud Forest, 1500 m, ii.1980, W.Mason, 1 male (BRI). Comments: A species of uncertain relationships (see Marshall 1985). Generally similar to members of the *M. vitripennis*-group but with simple distiphallus, without whip-like sclerite.

Distribution: Costa Rica, Mexico, Panama, Venezuela (Marshall 1985).

18. *Minilimosina (Svarciella) hastata* sp.n. (Figs. 88-92)

Type material: Holotype male and paratype male Philippines: Palawan, Mantalingajan, Tagembung, 1150 m, 19.Sept.1961, Noona Dan Exp. 61-62 (UZMC). Both specimens with some legs (or their parts) and one wing lost; the other wing mounted together with dissected abdomina and other detached parts in tubes in glycerine pinned below specimens.

Description: Male. Body length 1.3-1.5 mm. General colour brownish black, sparsely tomentose, rather shining. Head black, with only antennae yellowish orange. Frons with indistinctly separated frontal triangle and interfrontalia. Apparently only posterior orbital present (or anterior reduced to a microseta); 3 minute interfrontals. Gena with a small triangular shiny spot below eye; vibrissal angle brown in contrast to black gena. Eye diameter about 3.8 times as long as genal height. Antenna with alongately oval 3rd segment, arista long and relatively shortly ciliate.

Thorax black, mesonotum laterally brown. Microtomentum denser on pleural part but distinct also on mesonotum and scutellum. Two dorsocentrals, anterior relatively long; 6 rows of acrostichal setulae on suture but fewer posteriorly. Scutellum wider than long, apical scutellar bristle longer than scutellum. Katepisternum with a small shining spot in anterodorsal corner; anepimeron also with oval shiny area. Only a short posterior katepisternal seta present. Legs with brown coxae and femora, yellow trochanters and yellowish brown knees. Fore tibia dark brown with pale base; fore tarsus with basitarsus brown but sometimes its apex whitish yellow as are the remaining segments of fore tarsus. Mid and hind tibiae and tarsi unicolorously ochreous to yellow. Mid tibia with well-developed apicoventral bristle; anterodorsal seta rather close to dorsal distal bristle; posterodorsal setae (4-5) reduced to microsetae. Second tarsomere of hind leg (Fig. 91) with a distinctive ventral

spine. Wing brownish with yellowish brown veins and C unicolorous, slightly but distinctly overpassing apex of R4 + 5. R4 + 5 slightly sinuate. Cell dm with both outer corners obtuse-angled; process of M1 beyond dm-cu short but that of CuA1 almost as long as dm-cu. Wing length 1.0-1.10 mm, width 0.47-0.49 mm, C-index = 0.76-0.80, dm-index = 2.30-2.52. Halter orange but base of stem yellow.

Abdomen blackish brown, sparsely and finely setulose. Syntergite 1+2 large, other tergites shorter but wide, all heavily sclerotized; sternites dark and fully sclerotized, much wider than usual in *Minilimosina*, with setulae fine but denser than on terga. Sternite 5 with peculiar posterior armature (Fig. 90) formed by flattened sclerite strongly projecting on left and weakly so on right, medially bearing a row of short robust spines and both lateral lobes terminated by 4 (left) and 3 (right) spines, respectively.

Genitalia: Epandrium long, unlike congeners (Fig. 89). Surstylus formed by large spoon-shaped posterior lobe and by a slender, pointed, ventrally projecting process (Figs. 89, 90). No robust spine on inner side of surstylus. Aedeagal complex (Fig. 92) with large, anteriorly projecting basiphallus and mostly membranous distiphallus with ventral sclerite prolonged into simple, short flagellum. Paramere unusually large (as long as aedeagal apodeme), flat, bent in distal third. Ejaculatory apodeme observed but minute.

Female: Unknown.

Etymology: The species is named after the lance-shaped projection of male sternite 5 (hasta = lance).

Comments: *M. hastata* resembles *M. flagrella* and *M. cornigera* (the *M. flagrella* group) in having a distiphallus with a simple whip-like sclerite, probably a plesiomorphic character within the larger clade (*flagrella*) plus *vitripennis* groups) defined on the presence of a whip-like sclerite. *M. hastata* differs from other members of the *flagrella* group in having fully sclerotized tergites 3-5, a spine on the second hind tarsomere, a peculiar projecting lobe on sternite 5 of the male, and a long, robust paramere. The sclerotized preabdomen is probably plesiomorphic compared to other species group members. *M. hastata* has only a single orbital bristle, a character here considered to have arisen independently in *M. hastata* and in the group comprising *M. niveipennis* (Mall.) and *M. xanthosceles* n.sp.

Distribution: Philippines.

19. *Minilimosina (Svarciella) flagrella* sp.n. (Figs. 93-96, 104-110)

Type material: Holotype male and 1 male and 1 female paratypes Bismarck Isl., Mussau, Talumalaus, 20.Jan.1962, caught by Mercury-light, Noona Dan Exp. 61-62 (UZMC). Further paratypes: 1 male 1 female same data, 19.Jan.1962; 1 female same data, 31.Jan.1962; 1 male same data 3.February 1962; 1 male Bismarck Isl., Manus, Lorengau, 18.June 1962, Noona Dan. Exp.61-62 (UZMC). Some paratypes (particularly females) in very poor condition, with extremities lost or detached and preserved in tubes with glycerine pinned below specimens.

Description: Male. Body length 0.9-1.0 mm. General colour brown to dark brown. Frons with long, shining, narrow frontal triangle; orbits and very narrow interfrontalia pale greyish, other parts brown tomentose. Anterior margin of frons pale brown to orange, lunule ochreous. Face dark brown, shining except its very narrow tomentose anterior margin. Gena tomentose with almost indistinct shining spot below eye. Three orbitals and 3 very minute interfrontals. Eye diameter about 4.2 times as long as smallest genal height. Antennae yellow, 3rd segment little elongate, arista with medium long cilia.

Thorax brown to reddish brown, subshining. Scutellum distinctly triangular and longer than usual. Two dorsocentral bristles, anterior short, 4 rows of acrostichal setulae on suture; apical scutellar bristle much longer than scutellum. Episternum with a large glabrous shining spot (Fig. 93). Only one small katapisternal seta. Legs completely yellow or mid and hind femora yellowish brown. Chaetotaxy of mid tibia as in Figs. 95, 96, ventroapical seta short. Wing yellowish brown including veins. C distinctly produced beyond apex of R4 + 5 which is almost straight. Cell dm with acute-angled to rectanular anterior and obtuse-angled posterior outer corner. Process of M1 beyond dm-cu short, that of CuA1 relatively long. Wing length 0.98-1.01 mm, width 0.42-0.45 mm, C-index = 0.68-0.76, dm-index = 2.00-2.14. Halter yellow, stem paler.

Abdomen with large syntergite 1+2 dark brown as are also postabdominal sclerites. Tergites 3-5 desclerotized, pale pigmented but only slightly reduced; sternites 2-4 also pale pigmented, becoming wider posteriorly. Sternite 5 large and darkly pigmented (Fig. 106) but medially with a paler pigmented area in front of posteromedial emargination which is at posterior margin overgrown by dense setae. Inside emargination, in posterior membrane, there is a short comb (4 spines) inserted on a small, dark pigmented lobe.

Genitalia: Surstylus (Figs. 104, 105) without thick spines but externally with longer setae; its posterior part projecting into a short lobe. Basiphallus projecting posteriorly, forming a typical epiphallus; distiphallus most similar to that of *M. hastata* sp.n., with a long, whip-like, apically finely serrate, ventral sclerite, 2 dorsal sclerites, and a weakly sclerotized middle part (Fig. 94). Paramere slender, long, pale, apically pointed.

Female. Body length 1.03-1.18 mm. Mid tibia with longer setae, particularly apicoventral one. Wing length 1.01-1.06 mm, width 0.42-0.49 mm, C-index = 0.70-0.76, dm-index = 1.95-2.00. Abdomen with strongly reduced and desclerotized tergites (Fig. 109) and small, pale sternites.

Postabdomen: Tergite 8 with pale-pigmented medial stripe and projecting lateroventral lobes; epiproct unusually short and transverse, with medial depigmented stripe. Sternite 7 with pale-pigmented spot in the middle; sternite 8 posteriorly projecting into 2 rounded lobes and deeply emarginate between them (Fig. 107). Hypoproct broad, short, with medial pale stripe as has epiproct. Segment 8 with an internal spectacles-shaped sclerite (Fig. 110) formed by 2 circular rings and a group of small pigmented tubercles. Spermathecae (Fig. 108) ball-shaped, with internal grains and non-sclerotized terminal parts of ducts. Cerci atypical for *Minilimosina*, almost without micropubescence and with strongly reduced setosity.

Etymology: The name *flagrella* is derived from the long, whip-like sclerite of distiphallus (flagrum = whip).

Comments: *M. flagrella* sp.n. together with *M. cornigera* sp.n. and *M. hastata* sp.n. form a separate *M. flagrella*-group, characterized by a similar distiphallus. The modified female postabdomen (known only in *M. flagrella* sp.n.), is extraordinary for the genus *Minilimosina* (cf. shortened epiproct, modified sternite 8, internal spectacles-shaped sclerite, spermathecae, reduced setosity of cerci). *M. flagrella* sp.n. can be easily separated from other members of the above group in having a large shining spot on the episternum, different male sternite 5, basiphallus with epiphallus, simple surstylus etc.

Distribution: Bismarck Is.

20. *Minilimosina (Svarciella) cornigera* sp.n. (Figs. 111-117)

Type material: Holotype male Malaysia: Kuala Lumpur, Ulu Gombak Fld St.Ctr., 8-14.ii.1980 (BRI).

Description: Male. Body length 1.6 mm. General colour dark brown. Head brown; frons anteriorly

brownish orange up to ocellar triangle; its posterior part and occiput dark brown to black. Frontal triangle indistinctly delimited from other parts of frons, only orbits more tomentose. Face brownish orange and subshining; frontal lunule yellowish ochreous and densely tomentose. Two orbital bristles, anterior weak; 3 very small and pale interfrontals. Gena brown and dull, with very small shining spot below eye. Eye diameter about 1.8 times as long as smallest genal height. Antenna orange to ochreous; arista with medium long cilia.

Thorax dark brown, more shining on mesonotum and scutellum, duller on pleural part. Scutellum flat; katepisternum with a small shining spot (Fig. 117). Two dorsocentral bristles, anterior relatively long; acrostichal setulae in 4-6 rows on suture. Only posterior katepisternal seta present, small. Legs yellow but coxae, mid and hind femora brownish orange to pale brown. Chaetotaxy of mid tibia: apicoventral seta small as long as width of tibia; distal anterodorsal situated above dorsal bristle and preceded by 2 smaller setae; a row of 4 short posterodorsal setae present. Mid basitarsus long, tibia only 1.60 times its length. Hind basitarsus with a short ventroapical spine. Wing yellowish brown including all veins. C distinctly surpassing tip of R4 + 5 which is slightly sinuate with straight apical part. Cell dm with acute-angled anterior and obtuse-angled posterior outer corner, the latter distinctly appendiculate. Wing length 1.27 mm, width 0.58 mm, C-index = 0.89, dm-index = 2.17. Halter pale to dirty whitish yellow.

Abdomen with long syntergite 1+2 dark-pigmented. Tergites 3-4 pale yellowish brown, reduced, short and transverse; tergite 5 pale brown but not shortened. Sternites becoming wider and darker posteriorly, first two pale. Sternite 5 widest and darkest, simply setulose on disc but its armature highly diagnostic (Fig. 112), formed by a posteromedial comb of elongate blunt spines, 2 very robust, horn-like but flattened spines laterally to it and by a trilobed posteromedial structure (Fig. 113) hidden below the above mentioned comb.

Genitalia: Cerci distinctly separated and pale (Figs. 115, 116). Surstylus (Fig. 114, 116) with several outer and inner lobes, the posterior armed by thick setae arranged in a row, the middle with a spine projecting ventrally, and a lobe in front of the latter with a spine directed inwardly. Internal genitalia extremely complex (Fig. 111), basiphallus strongly modified, projecting anteriorly and connected with distiphallus (besides the usual contact with dorsal and ventral sclerites) by 2 slender, strip-like projections reaching middle of distiphallus. Ventral sclerite of distiphallus very thin, whip-like but simple at apex. Paramere slender, dark, sinuate.

Female: unknown.

Etymology: The species is named for the horn-like spines on male sternite 5 (cornigera = horned).

Comments: *M. cornigera* sp.n. is a highly derived member of the *M. flagrella*-group. It resembles *M. flagrella* sp.n., but differs from it in having a tomentose anepisternum and conspicuous spines on male sternite 5, more complex surstylus and a peculiar and voluminous aedeagus with uniquely modified basiphallus. Further, its hind basitarsus carries a short ventroapical spine-like seta.

Distribution: Malaysia.

21. *Minilimosina (Svarciella) archboldi* Marshall, 1985

Minilimosina (Svarciella) archboldi Marshall, 1985: 21 (description), 41 (Fig. 26), 48 (Figs. 89-90).

Type material: Holotype male USA: Florida: Archbold Biological Station, Highlands Co., 23.iv.1967, B.V. Peterson (BRI). For paratype male see Marshall (1985:21).

Distribution: USA (Florida - Marshall 1985).

22. *Minilimosina (Svarciella) amphicuspa* sp.n. (Figs. 50, 100, 118-121)

Type material: Holotype male Nepal: Kachuhani nr. Birganj, 450', 4-15.ix.1967, Malaise trap No.33, Canad. Nepal Exped. (BRI).

Description: Male. Body length 1.5 mm. General colour dark brown, lightly tomentose; antennae, lower frons, frontal lunule, tarsi, trochanters and apices of femora and tibiae luteous to pale yellow. Interfrontal plate narrow, bordered by 5 very small interfrontal setae; frons tomentose except for an indistinct, narrow, shining frontal triangle; face reddish brown with yellowish orange fore margin and shining except for tomentose, weak carina. Eye 2.5 times as high as gena; gena with anterior and posterior shining areas.

Thorax shining despite some tomentum. Acrostichal setulae sparse, in 4 rows between anterior dorsocentral bristles; 2 dorsocentrals, anterior half as long as prescutellar which is slightly shorter than scutellum. Scutellum flat, 0.6 times as long as wide, apical scutellar bristles slightly longer than scutellar width. Katepisternum (Fig. 100) with a distinct shining spot in anterodorsal corner. Only 1 katepisternal seta present. Mid tibia with only an apical bristle ventrally; distal anterodorsal bristle half as long as distal dorsal bristle; distal posterodorsal bristle small, terminating a row of

posterodorsal setae (Fig. 50). Hind basitarsus with a dark basal ventral bristle over half as long as tarsomere and 2 smaller bristles. Wing whitish, C. brown, other veins pale. C surpassing tip of R4 + 5 by its width. R4 + 5 slightly sinuate; cell dm with anterior outer corner rectangular, posteriorly obtuse-angled. Wing length 1.09 mm, width 0.49 mm, C-index = 0.71, dm-index = 1.75. Halter brown, stem yellow.

Abdomen: Syntergite 1+2 brown, dark brown at anterolateral corners, slightly darker than, 1.5 times as wide and twice as long as tergite 3; other preabdominal tergites similar in pigmentation to tergite 3. Sternite 5 with posteromedial area flanked by 2 dark lobes, each terminating in a dark, pointed tooth and internally serrate, with 2 bristles on a basal lobe (Fig. 118).

Genitalia: Surstylus with a broad, spoon-shaped outer lobe, internally with several smaller lobes, posterior inner lobe bearing a large, blunt bristle (Figs. 119, 120). Paramere simple, apex blunt. Basiphallus with an elongate distal part from which a long, bipartite, flagellum-like ventral (functionally dorsal) sclerite of distiphallus arises; dorsal distiphallus sclerite shorter, distally bifurcate but not forming a ring, surrounded by finely spinulose membrane (Fig. 121).

Etymology: The name *amphicuspa* refers to the two, pointed, tooth-like processes of male sternite 5.

Comments: On external characters the species resembles some members of the *M. fanta*-group (e.g. *M. fanta*, *furculipexa*, *spinifera*) but differs from them by orange lower frons and reddish brown face (similar to *M. brachyptera*) but its genitalia (distiphallus with double whip-like sclerite) clearly demonstrate its affinity to the *M. vitripennis* group. The peculiar armature of male sternite 5 is unique in the genus *Minilimosina* and the proximoventral bristle on hind basitarsus is also highly diagnostic.

Distribution: Nepal.

23. *Minilimosina (Svarciella) niveipennis* (Malloch, 1913)

Limosina niveipennis Malloch, 1913:370.

Limosina varicosta Malloch, 1914:14.

Limosina mollis Richards, 1963:243.

Minilimosina (Svarciella) niveipennis: Marshall, 1985:26-27 (redescription and synonymy), 41 (Fig. 27), 48 (Figs. 85-86), 57 (Figs. 178-180).

Type material: *L. niveipennis* Mall. - holotype male Porto Rico, Mayaguez, Jan. 1899, A. Busck (USNM Type No. 14953) (examined). *L. varicosta* Malloch - holotype male Costa Rica, Alajuela, 15.ix.1909, 3100', sweepings,

P.P. Calvert (ANSP) (examined); for paratypes see Marshall (1985:27). *L. mollis* Richards - holotype male and 5 female paratypes, Honduras, Bras Lagoon, 25.iv.1947, C.W. Cook (CAS) (examined).

New records: St. Kitts: Bayford Dairy, 1-15.xii.1985, 300 m, Malaise trap in old orchard, L. Coote, 6 males, 4 females (GUE); St. Kitts: Wingfield Mt., 1-30.xi.1985, 400 m, old field, forest, L. Coote, 2 males (GUE). Dominican Republic: La Combres (P. Plata), 21-24.iii.1978, L. Masner, 1 male (BRI).

Distribution: USA (Puerto Rico), Dominican Republic (new), Jamaica, St. Kitts (new), Costa Rica, Honduras (Marshall 1985).

24. *Minilimosina (Svarciella) xanthosceles* sp.n. (Figs. 97, 122-127)

Type material: Holotype male and paratype female Ecuador: Guailabamba, Pichincha, 6-7.vi.1965, 1650 m, L. Pena (BRI). Other paratypes: male Ecuador: Tandapi, 40 km SW Quito, 1300-1500 m, 15-21.vi.1965, L. Pena (BRI).

Description: Male. Body length 1.8 mm. Colour black to dark brown except yellow legs, orange antennae and stem of halter. Orbits and ocellar triangle pollinose; interfrontal plate shining black, broad, width at top equal to height, bordered by 2 thin interfrontal setae. Face shining except for broad, tomentose carina. Eye 2 times as high as gena; anterior half of gena shining, posterior half contrastingly dull, tomentose. Only one orbital bristle.

Thorax with scutum and scutellum convex, shining. Four rows of acrostichal setulae between anterior dorsocentrals. Two dorsocentral bristles, anterior barely longer than acrostichal setulae, posterior twice as long. Scutellum strongly convex, twice as wide as long, apical scutellars 1.2 times as long as scutellum. Episternum shining except posterior margin and posteroventral corner of anepisternum (Fig. 97); 2 weak katapisternal setae. Mid tibia with a short apicoventral bristle and no other ventral bristles; distal anterodorsal bristle long, distal posterodorsal bristle minute or absent. Mid basitarsus long and slender; tibia about 1.6 times as long as mid basitarsus. Wing membrane slightly milky, veins light brown except for dark, thickened 2nd costal sector. C ending slightly beyond tip of somewhat sinuate R4 + 5. Cell dm tapered distally, with outer corners obtuse-angled, anterior corner appendiculate. Wing length 1.36 mm, width 0.62 mm, C-index = 0.53, dm-index = 2.00. Halter brown, stem yellow.

Abdomen: Syntergite 1 + 2 uniformly dark, wide, other preabdominal tergites reduced and very pale, especially medially. Sternite 5 simple.

Genitalia: Surstylus broad, with 4 long posteroventral spine-like bristles directed medially and not visible laterally (Figs. 122, 124). Paramere elongate, very narrow in distal half. Distiphallus with a long, split ventral flagellum and a lateral cluster of spines near base (Fig. 127), dorsal sclerites of distiphallus more complex.

Female: Body length about 1.9 mm. Wing length 1.58 mm, width 0.68 mm, C-index 0.59, dm-index = 2.25. Abdomen (Fig. 125) with much reduced and depigmented tergites 3-5, tergite 6 and 7 pale pigmented and medially divided.

Postabdomen: Tergite 8 darkly pigmented laterally and medially. Epiproct setulose, with 2 bristles. Sternite 8 large, broader than long; hypoproct large, entirely setulose. Each spermatheca with a spherical body and short, cylindrical apical section; sclerotized part of ducts very long (Figs. 123, 126).

Etymology: The specific epithet *xanthosceles* is from the Greek words for "yellow" and "leg", and refers to the strikingly yellow legs of this species. Comments: The cluster of spines on the distiphallus, the single orbital bristle, enlarged spermathecal ducts and the pattern of shining areas on the head and thorax are characters shared by *M. xanthosceles* sp.n. and *M. niveipennis* (Mall.). These closely related species are easily distinguished by their different leg colour and specific differences in terminalia. *Leptocera (Limosina) monorbiseta* Deeming, 1969, described from Nepal on the basis of a single female, is similar to *M. niveipennis* and *M. xanthosceles* sp.n. (and also *M. hastata* sp.n.) in having only a single orbital bristle. *L. monorbiseta* is of uncertain generic placement but characters such as its long dorsocentral bristles and 8 rows of acrostichals preclude its inclusion in *Svarciella*.

Limosina pallicornis Malloch, 1914, described from Costa Rica, exhibits a remarkable external similarity to *M. xanthosceles*. Both species have a dark, partly shining body with contrasting yellow to orange antennae and legs. *L. pallicornis*, however, exhibits no similarity to *Svarciella* species in characters of the male or female abdomen, and is of uncertain generic placement.

Distribution: Ecuador.

25. *Minilimosina (Svarciella) xestops* sp.n.

(Figs. 98, 128-134)

Type material: Holotype male and 1 male and 3 female paratypes USA: Florida, Putnam Co., Welaka

Exp. Sta., 25.v.1983, sweeping grass by pond, D.S. Chandler (UNH).

Description: Male. Body length 1.0 mm. General colour shining dark brown except yellow-orange antennae, tarsi, and tibial apices. Interfrontal plate small, bordered by 2 minute, hair-like interfrontal setae. Frons with microtomentum except for a large, wider than long, rounded, shining frontal triangle; face shining and weakly carinate. Two orbital bristles, anterior less than half as long as posterior. Eye 2 times as high as gena.

Thorax shining despite tomentose areas. Four rows of acrostichal setulae on suture; 2 dorsocentral bristles, anterior short, posterior subequal in length to scutellum. Scutellum slightly convex, twice as wide as long; apical scutellar bristle as long as scutellar width. Episternum with large shining areas both on anepisternum and katepisternum (Fig. 98); only posterior katepisternal seta present. Mid tibia with only an apical bristle ventrally; distal anterodorsal and posterodorsal bristles small. Wing membrane slightly milky, veins pale. C slightly surpassing tip of R4 + 5; the latter distinctly sinuate. Cell dm tapered distally, with both outer corners obtuse-angled or anterior rectangular and both very shortly appendiculate. Wing length 0.90 mm, width 0.42 mm, C-index = 0.47; dm-index = 1.87. Halter with black knob, stem yellow.

Abdomen: Syntergite 1 + 2 twice as long as tergite 3, darkly pigmented except for large anteromedial pale area (cf. Fig. 134). Other preabdominal tergites lightly brown pigmented but distinctly sclerotized. Sternite 5 simple.

Genitalia: Surstylus broad, with 4 stout posteroventral spine-like bristles and a large inner basal lobe bearing another strong bristle (Figs. 128, 130). Paramere thin, slightly sinuously curved. Distiphallus with a long ventral double flagellum recurved into dorsal part of distiphallus (Fig. 132). Dorsal sclerite of distiphallus robust and basiphallus projecting distally.

Female: Body length about 1.2 mm. Wing length 1.15 mm, width 0.49 mm, C-index = 0.52, dm-index = 2.22. Abdomen (Fig. 134) with large, pale pigmented, anteromedial, triangular area; tergites 4-6 also pale pigmented but not desclerotized and becoming narrower posteriorly.

Postabdomen: Tergite 8 with a medial and 2 lateral dark pigmented areas (Fig. 134). Epiproct longer than wide, setulose in posterior half, with 2 setae. Sternite 8 large, as broad as long. Hypoproct entirely setulose, broad (Fig. 131). Each spermatheca acorn-shaped, with long, darkly pigmented sclerotized parts of ducts (Figs.

129, 133). Cerci long and slender, with long sinuate hair-like setae.

Etymology: The specific epithet was formed from the Greek words for "polished" and "face", referring to the very shiny face of this species.

Comments: The simple male sternite 5 suggests that *M. xestops* sp.n. is closely related to *S. niveipennis* and *M. xanthosceles* sp.n., and probably forms the sister-group to the latter two neotropical sister-species. It differs in having 2 orbital bristles, a smaller shining pattern on episternum, and a number of differences in the male and female terminalia.

Distribution: USA (Florida).

26. *Minilimosina (Svarciella) contrasta* Marshall, 1985

Minilimosina (Svarciella) contrasta Marshall, 1985: 22-23 (description), 41 (Fig. 28), 49 (Figs. 91-93), 57 (Figs. 175-177).

Type material: Holotype male Canada: Ontario: Ottawa, 18.ix.1956, on ground under prostrate *Picea*, J.R. Vockeroth (BRI). For paratypes see Marshall (1985: 23)(examined).

Distribution: Canada (Ontario, Quebec), USA (Florida, Maryland, Virginia) (Marshall 1985).

27. *Minilimosina (Svarciella) vitripennis* (Zetterstedt, 1847)

Limosina vitripennis Zetterstedt, 1847: 2505.

Leptocera (Scotophilella) albifrons Spuler, 1925: 147.

Minilimosina (Svarciella) vitripennis: Roháček, 1982: 275-277 (Figs. 177-190); Roháček, 1983: 31-33 (redescription and synonymy); Marshall, 1985: 27-28 (diagnosis and synonymy), 39 (Fig. 8), 41 (Fig. 29), 48 (Figs. 87, 88), 57 (Figs. 184-186), 58 (Fig. 208).

Limosina paravitripennis Papp, 1973: 404. new synonym.

Type material: *L. vitripennis* Zett. - Lectotype male (des. by Roháček in 1979) labelled "*L. vitripennis* male female Esp.un" (ZIL); for paralectotype female see Roháček (1983: 32)(examined). *L. albifrons* Spuler - holotype male Idaho: Kendrick, 7.vi.1917, A.L. Melander (USNM); for paratypes see Marshall (1985: 28)(examined). *L. paravitripennis* Papp - holotype female Mongolia: Bajan-Olgij aimak, im Tal des Flusses Chavcalyn gol, 25 km O von Somon Caganuur, 1850 m, Exp. Dr. Z. Kaszab, 1968, Nr. 1056, 3.VII.1968 (HNHM)(examined).

Comments: The holotype of *Limosina paravitripennis* Papp proved to be a teneral specimen of *M. vitripennis* and therefore it is synonymized under the latter herewith. Most of differences against *M. vitripennis* mentioned by Papp (1973) are caused by its immature condition (pale anterior margin of frons, gena, halter, legs, 2nd costal sector) which is also apparent on the abdomen. No difference was found in the postabdomen or the microstructure of spermathecae. Only the frontal triangle is longer than usual in normal *M. vitripennis* specimens, apparently lying on the extreme limit of the variability of this feature.

Distribution: Holarctic species, recorded from Spain, France, G. Britain, Switzerland, Belgium, FRG, GDR, Poland, Czechoslovakia, Hungary, Austria, Italy, Yugoslavia, Bulgaria, Denmark, Sweden, Finland, Faeroe Is., Iceland, USSR/Estonia, W. Siberia, Cyprus, Afghanistan, Mongolia (Roháček 1983; Papp 1984, 1985), Canada (Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, North West Territories, Nova Scotia, Ontario, Quebec, Yukon), USA (Alaska, Arizona, Colorado, California, Idaho, New Hampshire, North Carolina, Oregon, Pennsylvania, Utah, Washington) (Marshall 1985).

Phylogeny and Zoogeography

Figure 136 shows a possible pattern of phylogenetic relationship between *Svarciella* species, and shows the distribution of putative synapomorphies which provide evidence for that phylogenetic pattern. The phylogenetic methodology used is explained in Marshall (1987), along with a discussion of explicit character weighting as used here.

Svarciella can be conveniently broken into five monophyletic groups, with the exclusion of the aberrant species *bipara*. *Minilimosina bipara* is of uncertain placement because of the greatly reduced or strongly modified nature of most of the characters of phylogenetic value at the species group level or below. Each species group is labeled on Figure 136, and they are discussed separately below.

The *v-atrum* group

This species group is characterized by the uniquely modified surstylus and reduction of the ventral sclerite of the distiphallus (Fig. 135). *Minilimosina floreni*, a Boreal Palaearctic species, is the sister taxon to the rest of the group which comprises two very closely related European-Eastern North American sister species pairs. If such species pairs were formed by the vicariance of ancestral species due to the formation of a North Atlantic barrier, then these closely related

species pairs are 40-50 MY old. It follows that other speciation events within the group must be older. The *v-atrum* group appears to be the sister group to the rest of the subgenus, species outside the *v-atrum* group being characterized by the uniquely modified male sternite 5 with membranous lobes flanking the postero-medial comb-area.

The *dissimilicosta* group

This small group of 3 species is characterized by a cup-like surstylus with reduced inner lobes. It includes one pair of species characterized by conspicuous, bulging male sternite 5. These species, the western Nearctic *dissimilicosta* and the northern Palaearctic *unica* are so close as to be almost indistinguishable, and probably share an ancestor that had a continuous distribution across Beringia during the Pleistocene. The *dissimilicosta* group appears to be the sister taxon to the remaining three species groups, all of which are characterized by a set of synapomorphies including orange antennae and a derived male sternite 5.

The *fanta* group

This group as a whole is characterized by a longitudinally split or greatly reduced 5th tergite. Five of the 8 species in this group are from Nepal or Nepal and Japan, with the remaining 3 species from the Philippines, Malaysia and Papua New Guinea. *M. furculisterna*, the plesiomorph sister species to the rest of the group, occurs in Japan and Nepal, and thus in both the Palaearctic and Oriental regions as currently defined in the Oriental and Palaearctic Diptera catalogs. With the exception of the Pacific (New Guinea) species *spinifera*, the rest of the group is part of the Oriental region. Within the *fanta* group, the least equivocal sister species pair is made up of *furculipexa* from Nepal plus *concinna* from the Philippines, suggesting a pattern of disjunction between northern and southern Oriental species.

The sister taxon to the *fanta* group is the clade comprising the *flagrella* group plus the *vitripennis* group, a clade for which the major defining character is the long, whip-like apomorphic state of the ventral distiphallus sclerite.

The *flagrella* group

The most diagnostic feature of this group is the long, unsplit distiphallus flagellum. This distinctive feature is probably plesiomorphic relative to the split flagellum of the *vitripennis* group. The *flagrella* group is poorly defined phylogenetically, with no strong defining synapomorphies. This group comprises 2 Oriental and one Pacific species, with the Pacific species *flagrel-*

la, from Bismark Is., forming a sister species pair with one of the Oriental species, *cornigera* from Malaysia.

The *vitripennis* group

The monophyly of this group is strongly suggested by the unique, apically split whip-like distiphallus sclerite which serves as a defining synapomorphy. With the exception of the southeastern Nearctic species *archboldi*, this group is characterized by desclerotized preabdominal tergites. The species with desclerotized tergites include a pair of sister taxa, one of which (*amphicuspa*) is from Nepal and the other one of which comprises 5 New World or Holarctic species. This close relationship between a Nepalese species and a Holarctic group suggests that the Nepalese fauna includes a disjunct part of a Holarctic element as well as the Oriental element discussed above (the *fanta* group). It seems likely that further members of the *vitripennis* group will be discovered in Asia.

Four of the New World species of the *vitripennis* group form a distinct clade defined on the reduction of the size and number of interfrontal bristles. Within this clade, *niveipennis* (Antilles and Central America) plus *xanthosceles* (Ecuador) form a strongly defined Neotropical species-pair which together form a sister group to the southeastern North American *xestops*. The above three species together are the sister group to the Eastern North American species *contrastata*. This pattern suggests an eastern Nearctic origin for the Neotropical species. The eastern Nearctic ancestor could have originated by fragmentation of an arcto-tertiary ancestor into eastern North American, northern Palaearctic (*vitripennis*, later spreading into North America) and southern Palaearctic or northern Oriental (*amphicuspa*) species.

Summary

The subgenus *Svarciella*, described just a few years ago to include five Palaearctic species, is shown to be a diverse group in all zoogeographic regions except the Afrotropical. The species are distinctive, and can be reliably placed in monophyletic species groups on the basis of several complex morphological characters. Each species group spans two or more zoogeographic regions, and some interesting disjunctions can be identified within each species group.

A close eastern North America-western Europe disjunction is repeated twice in the *v-atrum* group, and a corresponding western North America-Palaearctic disjunction is noted in the *dissimilicosta* group. The *fanta* group presents a mosaic of northern Oriental, southern Oriental, or Pacific disjunctions. The *vitripennis* group

seems to involve an old pattern of relationship between Nepal and Eastern North America and a subordinate pattern of Neotropical species origin from eastern North American ancestors.

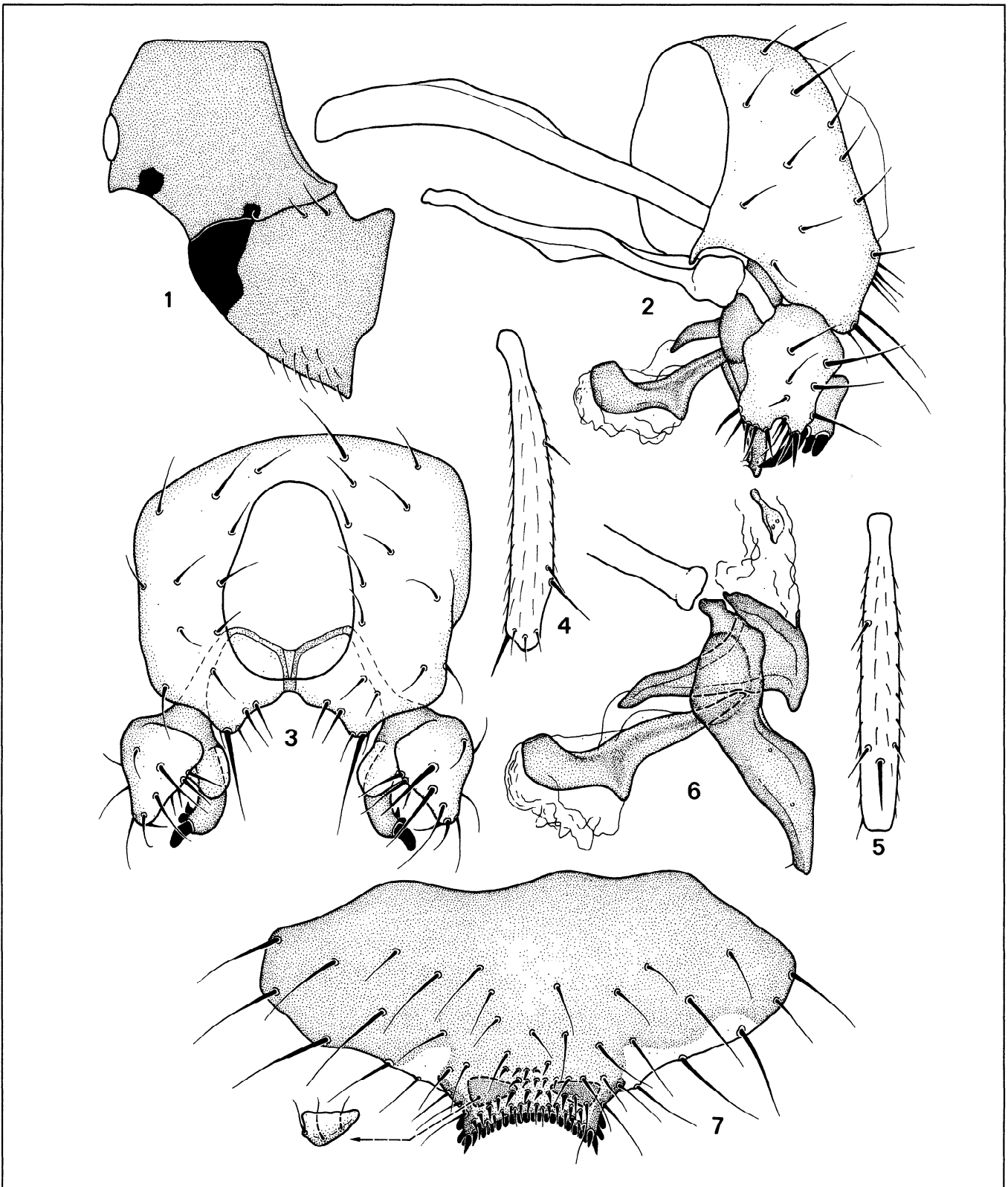
It is clear from the high number of species here described on the basis of a relatively small number of specimens, that many *Svarciella* species remain to be discovered. It is hoped that the present paper offers a sound taxonomic framework for the addition of those species, and that the addition of new species will provide interesting tests to the phylogenetic hypotheses and zoogeographic patterns presented herein.

Acknowledgements

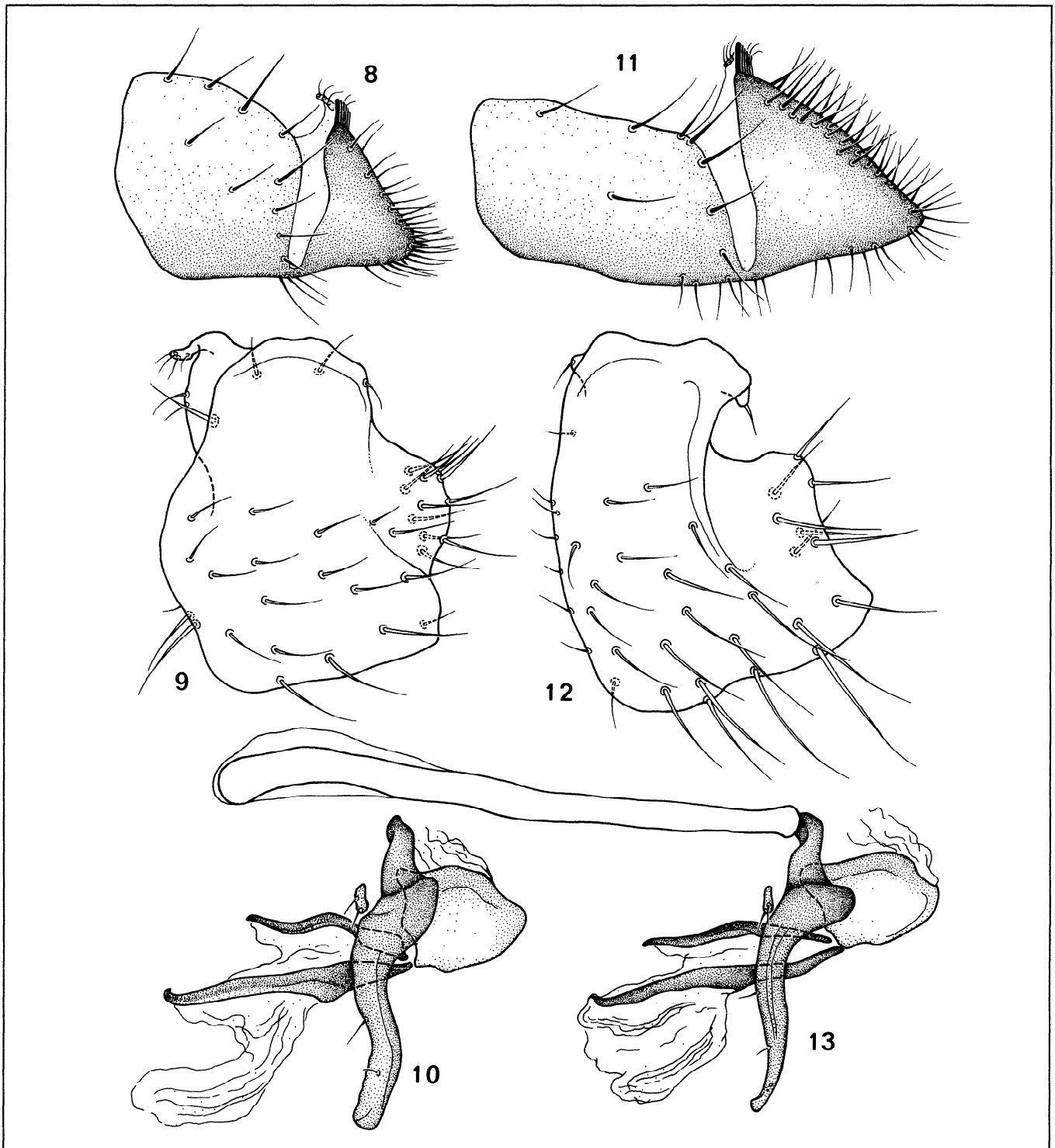
Our thanks are due to Mr. F. Floren (NRS) for making it possible to study *Svarciella* specimens from Sweden including *M. floreni* sp.n. which he discovered; to Dr. L. Papp (HNHM) who generously gave us his new species, *M. brachyptera* sp.n. and provided us with pencil drawings of it to be used in our review; to Dr. R. Danielsson (ZIL), Dr. A.L. Ozerov (ZMUM), Dr. I. Lobl (MNG), Dr. H. Schumann (ZMB), Dr. D. Azuma (ANSP), Dr. B. Pitkin (BMNH), Dr. H. Teskey (BRI), Dr. D. Chandler (UNH), Dr. P. Arnaud, Jr. (CAS), Dr. A. Norrbom (USNM), Dr. L. Lyneborg (UZMC), for enabling examination of *Svarciella* material under their care.

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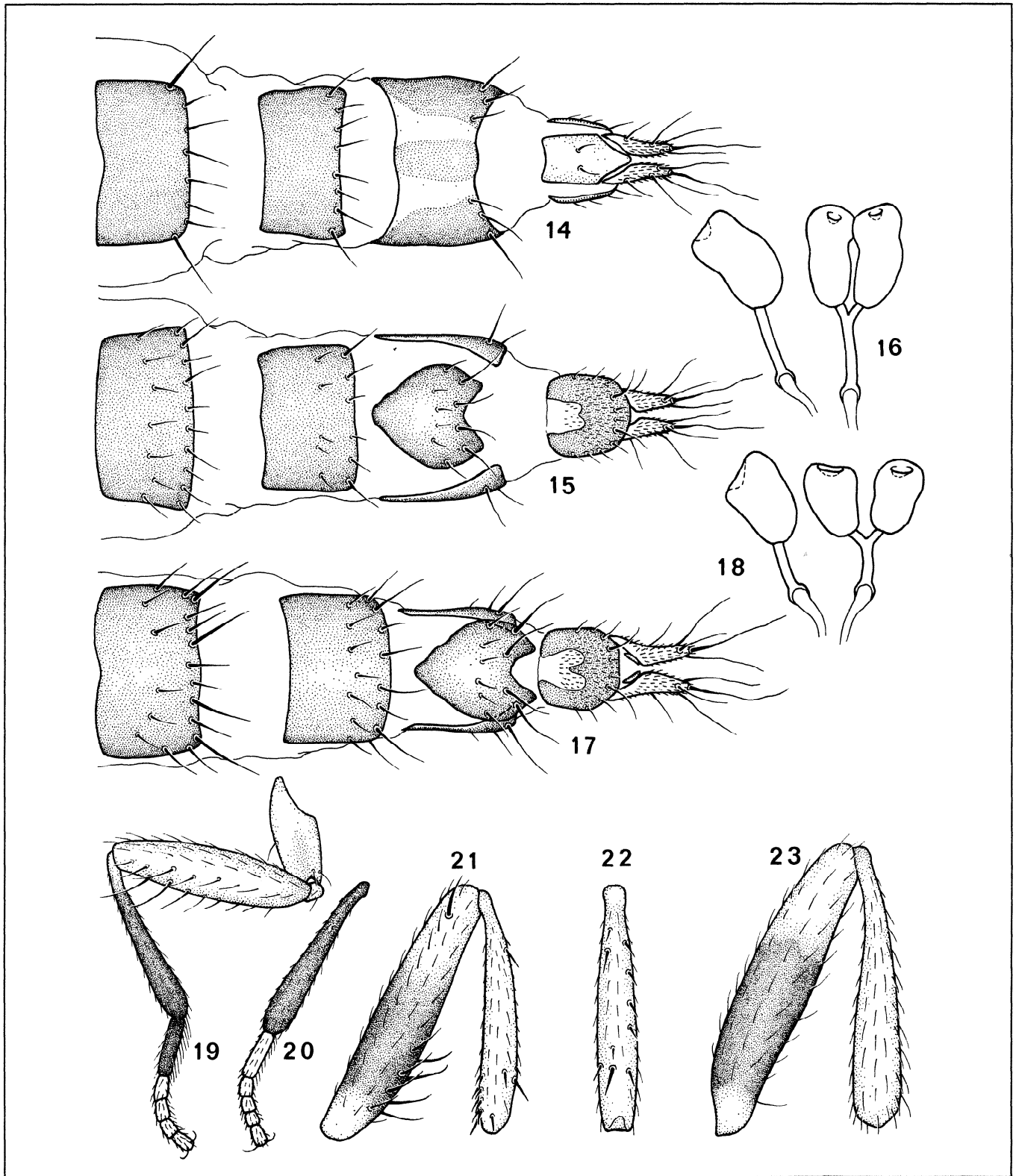
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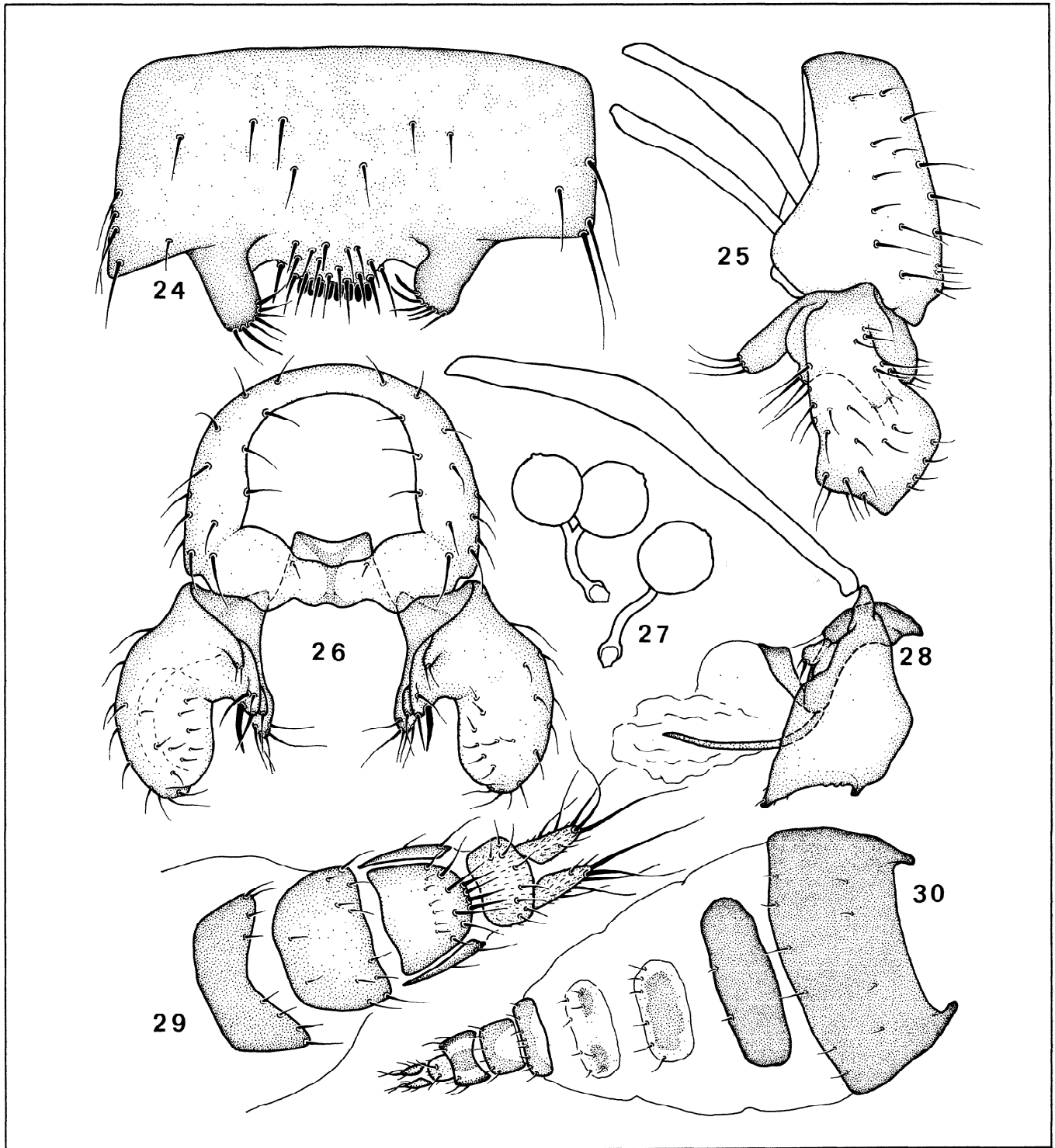
Figures 1-7. *Minilimosina (S.) floreni* sp.n.: 1) episternum (tomentose areas dotted); 2) male genitalia) left lateral; 3) same, posterior (external only); 4) mid tibia, anterior; 5) same, dorsal; 6) aedeagal complex, left lateral (ae.apodeme partly omitted); 7) male sternite 5.



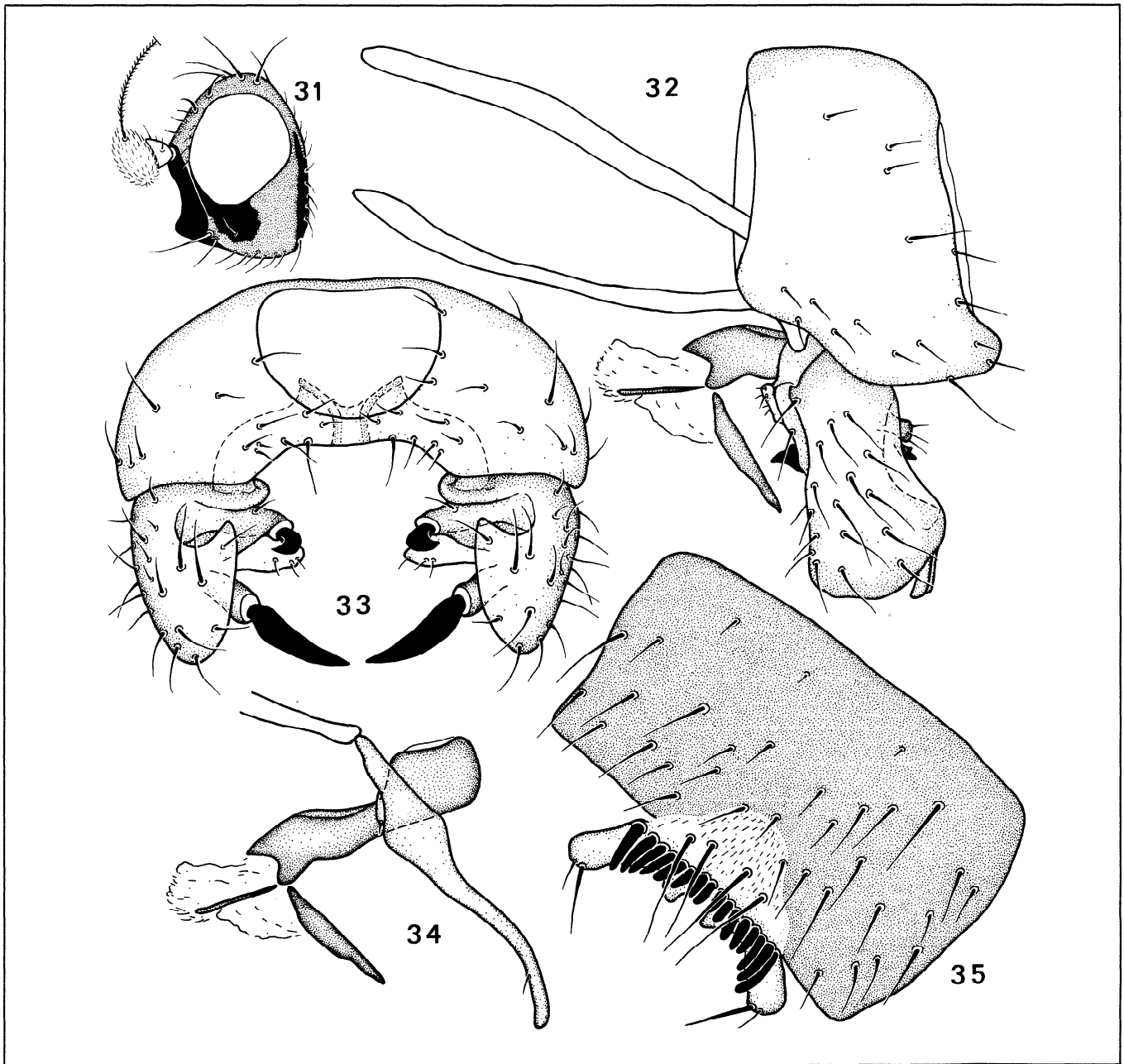
Figures 8-13. *Minilimosina (S.) unica* (Papp): 8) male sternite 5, lateral; 9) surstylus, sublateral (widest extension); 10) aedeaga complex latera (ae.apodem omitted). *M. (S.) dissimilicosta* (Spuler) 11) male sternite 5 lateral 12) surstylus (widest extension) 13) aedeaga complex, lateral.



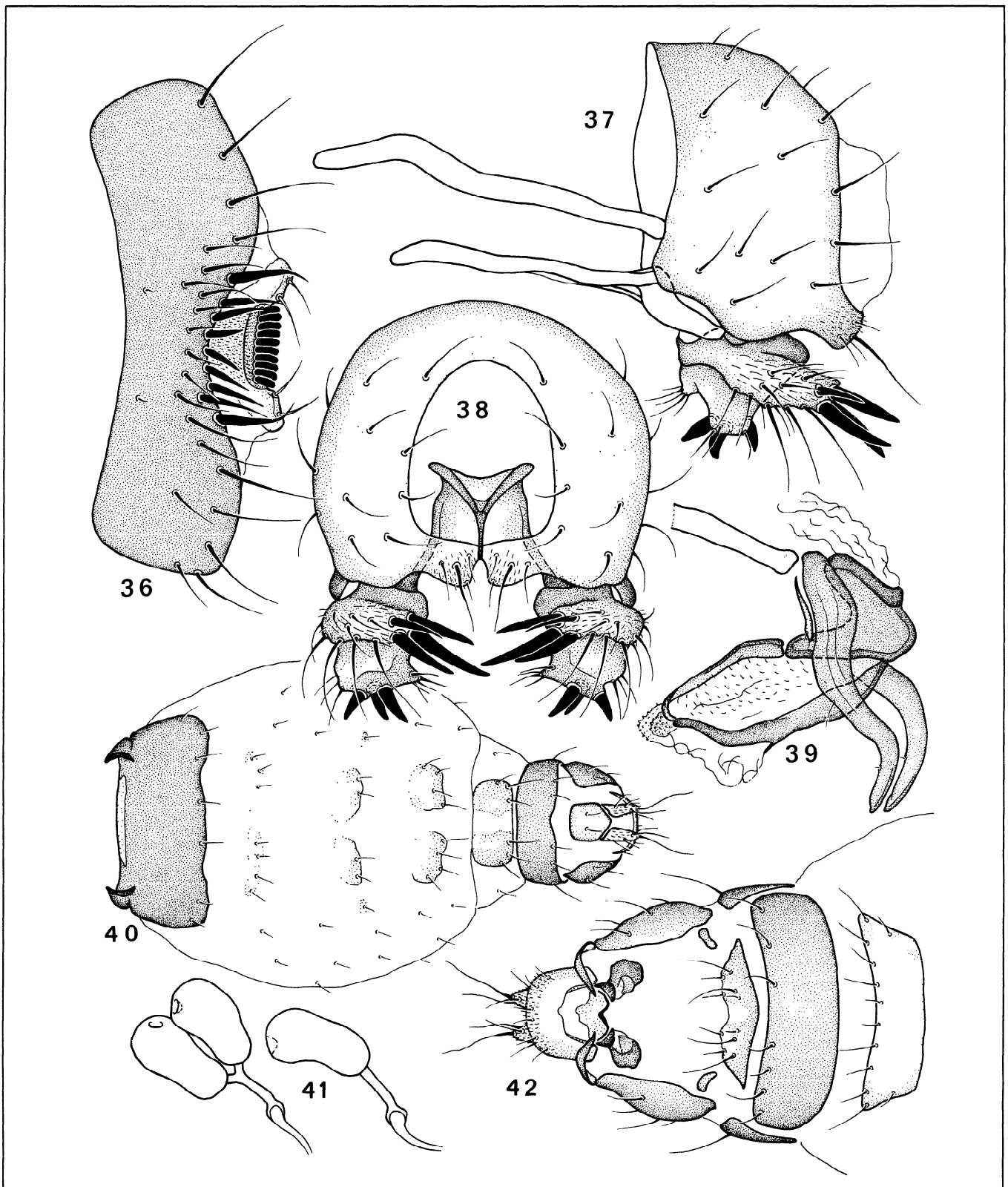
Figures 14-23. *Minilimosina (S.) unica* (Papp): 14) female postabdomen, dorsal; 15) same, ventral; 16) spermathecae. *M. (S.) dissimilicosta* (Spuler): 17) female postabdomen, ventral; 18) spermathecae. *Minilimosina (S.)* spp.: 19) *M. furculisterna* (Deem.), fore leg; Figures 20-23) *M. triplex* sp.n., 20) fore tibia and tarsus; 21) mid femur and tibia anteriorly; 22) mid tibia dorsally; 23) mid femur and tibia anteriorly .



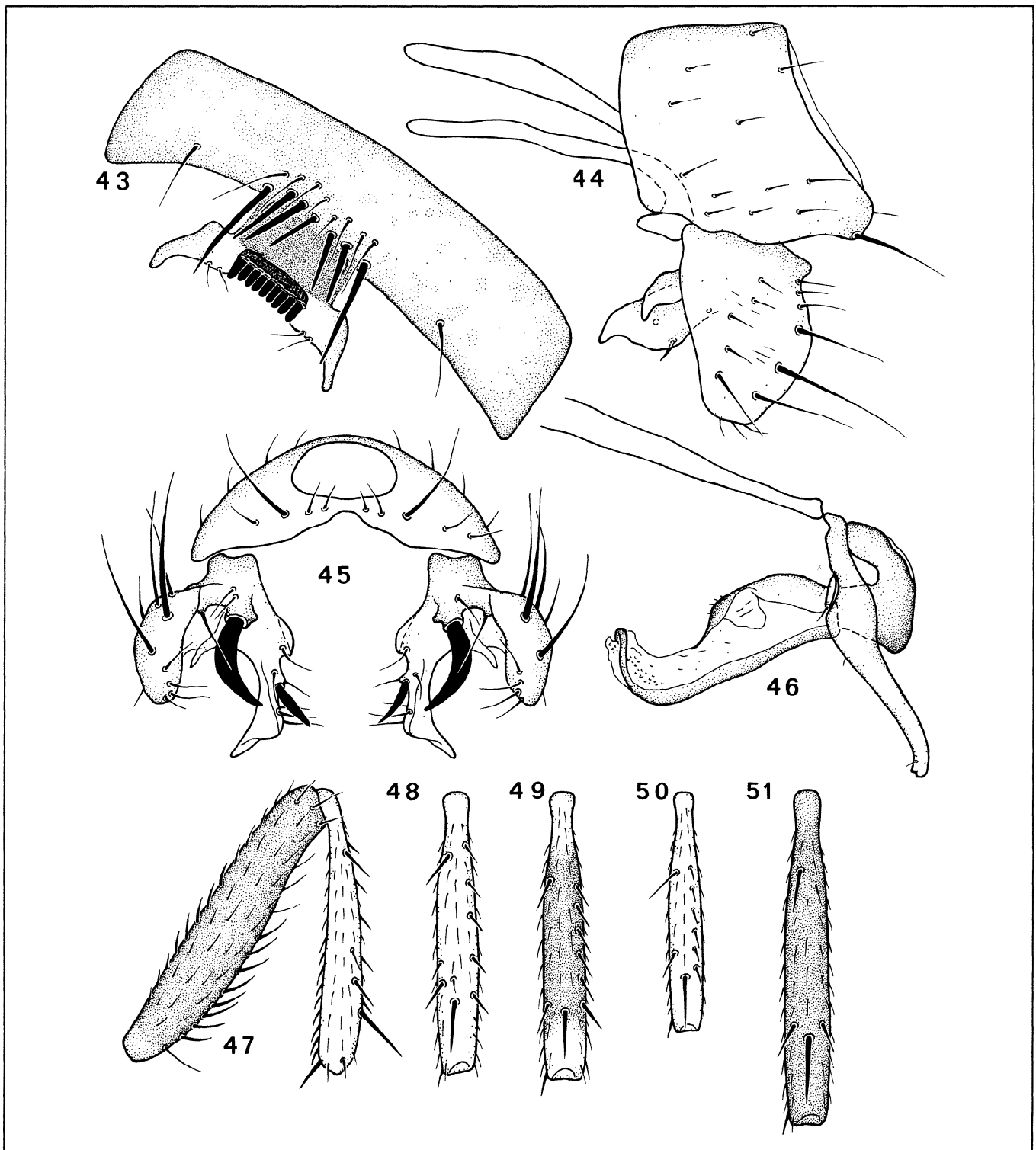
Figures 24-30. *Minilimosina* (*S.*) *furculisterna* (Deem.): 24) male sternite 5; 25) male genitalia (aedeagus omitted), lateral; 26) same, posterior (external only); 27) spermathecae; 28) aedeagal complex, lateral; 29) female postabdomen, ventral; 30) female abdomen, dorsal.



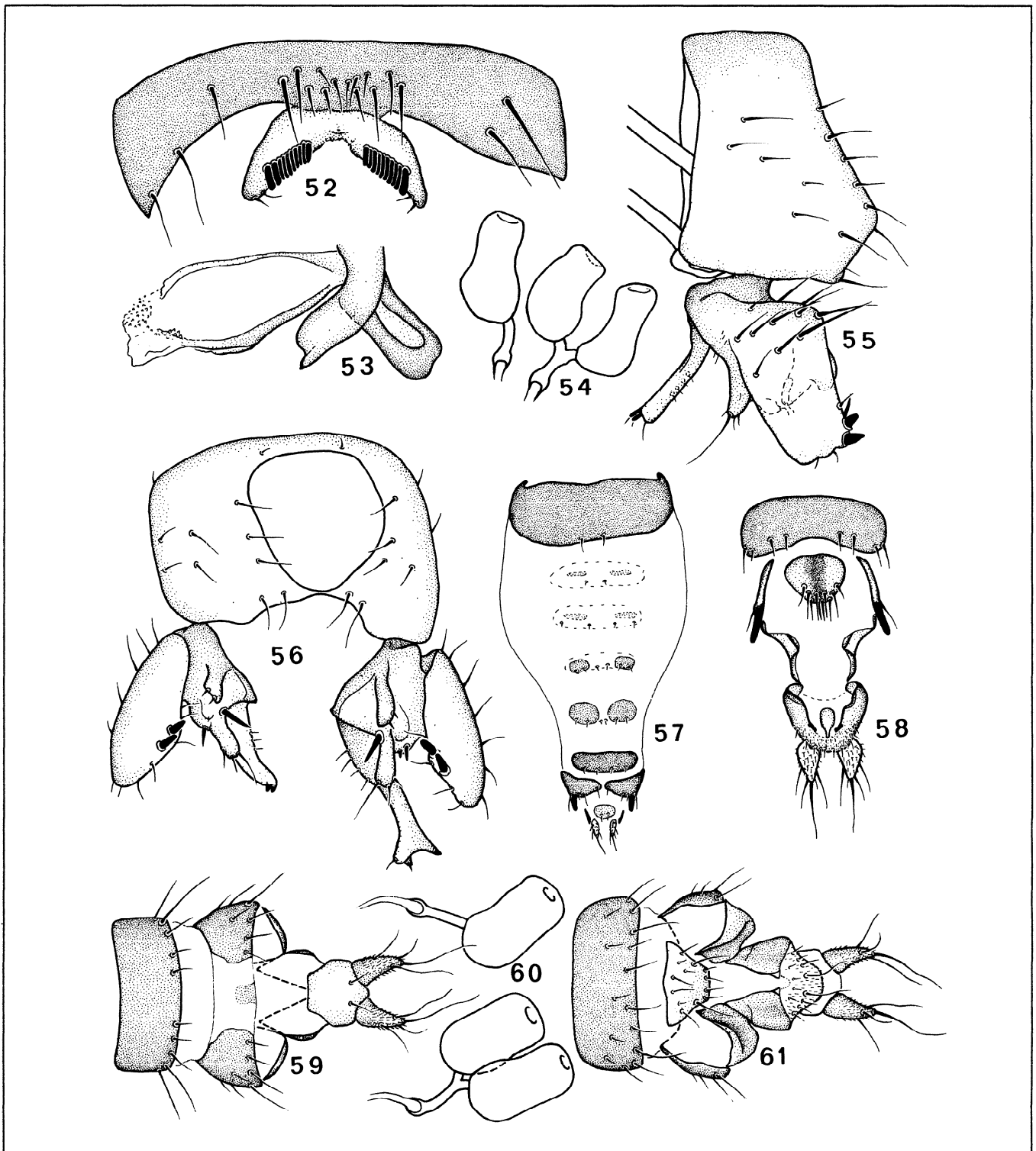
Figures 31-35. *Minilimosina* (*S.*) *aterga* sp.n.: 31) head, lateral (tomentose areas dotted); 32) male genitalia, lateral; 33) same, posteroventral (external only); 34) aedeagal complex (ac.apodeme partly omitted), lateral; 35) male sternite 5.



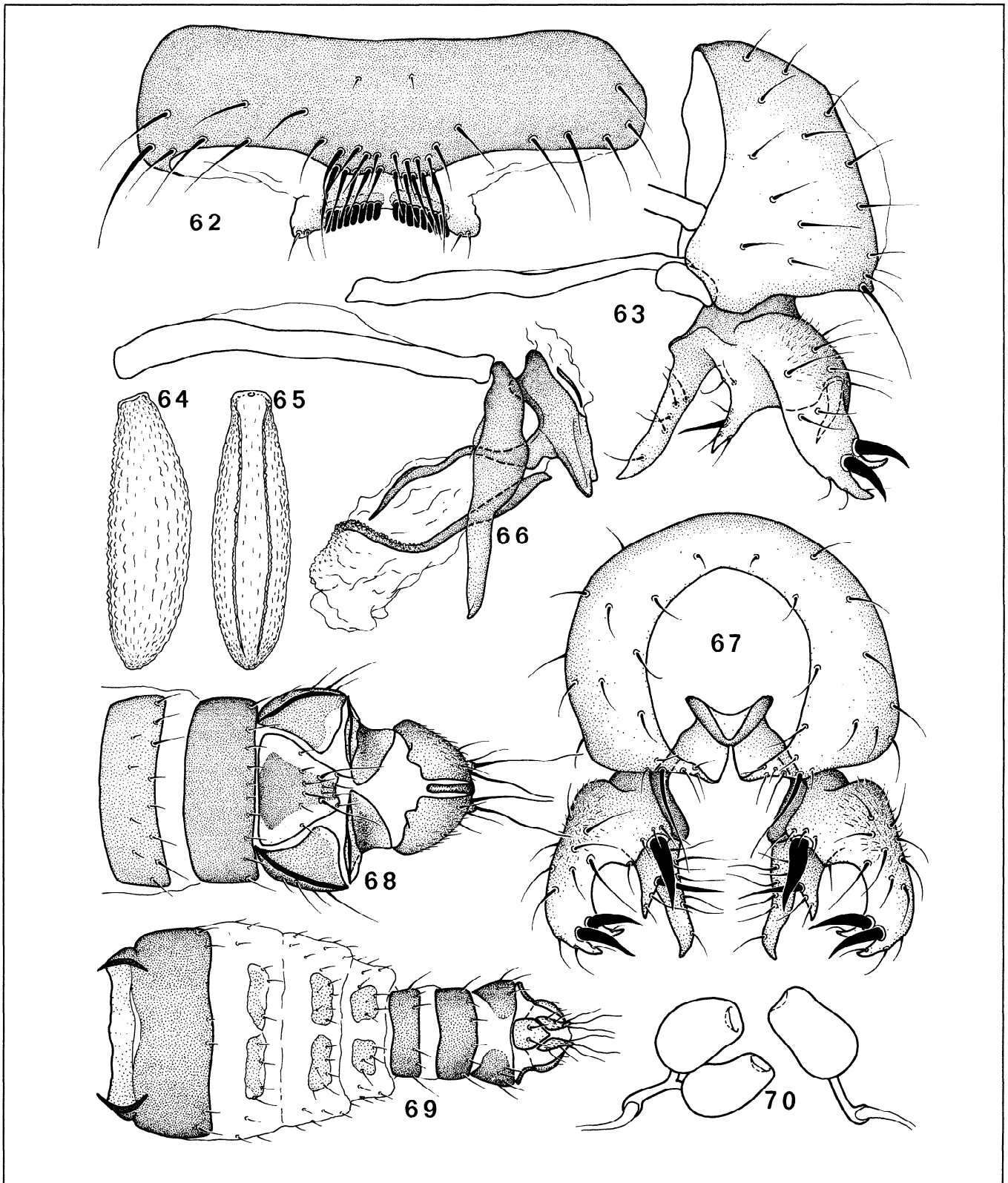
Figures 36-42. *Mimiimosina* (S.) *triplex* sp.n.: 36) male sternite 5; 37) male genitalia, lateral (aedeagus omitted); 38) same, posterior (external only); 39) aedeagal complex, lateral (ae.apodeme partly omitted); 40) female abdomen, dorsal; 41) spermatheca; 42) female postabdomen, ventral.



Figures 43-51. *Minilimosina* (*S.*) *fanta* sp.n.: 43) male sternite 5; 44) male genitalia, lateral (aedeagus omitted); 45) same, posteroventral (external only); 46) aedeagal complex, lateral (ae.apodeme partly omitted) *Minilimosina* (*S.*) spp.: 47-48) *M. concinna* sp.n., male mid femur and tibia anteriorly (47) and mid tibia dorsally (48); 49) *M. aterga* sp.n., mid tibia dorsally; 50) *M. amphicuspa* sp.n., same; 51) *M. unica* (Papp), same.



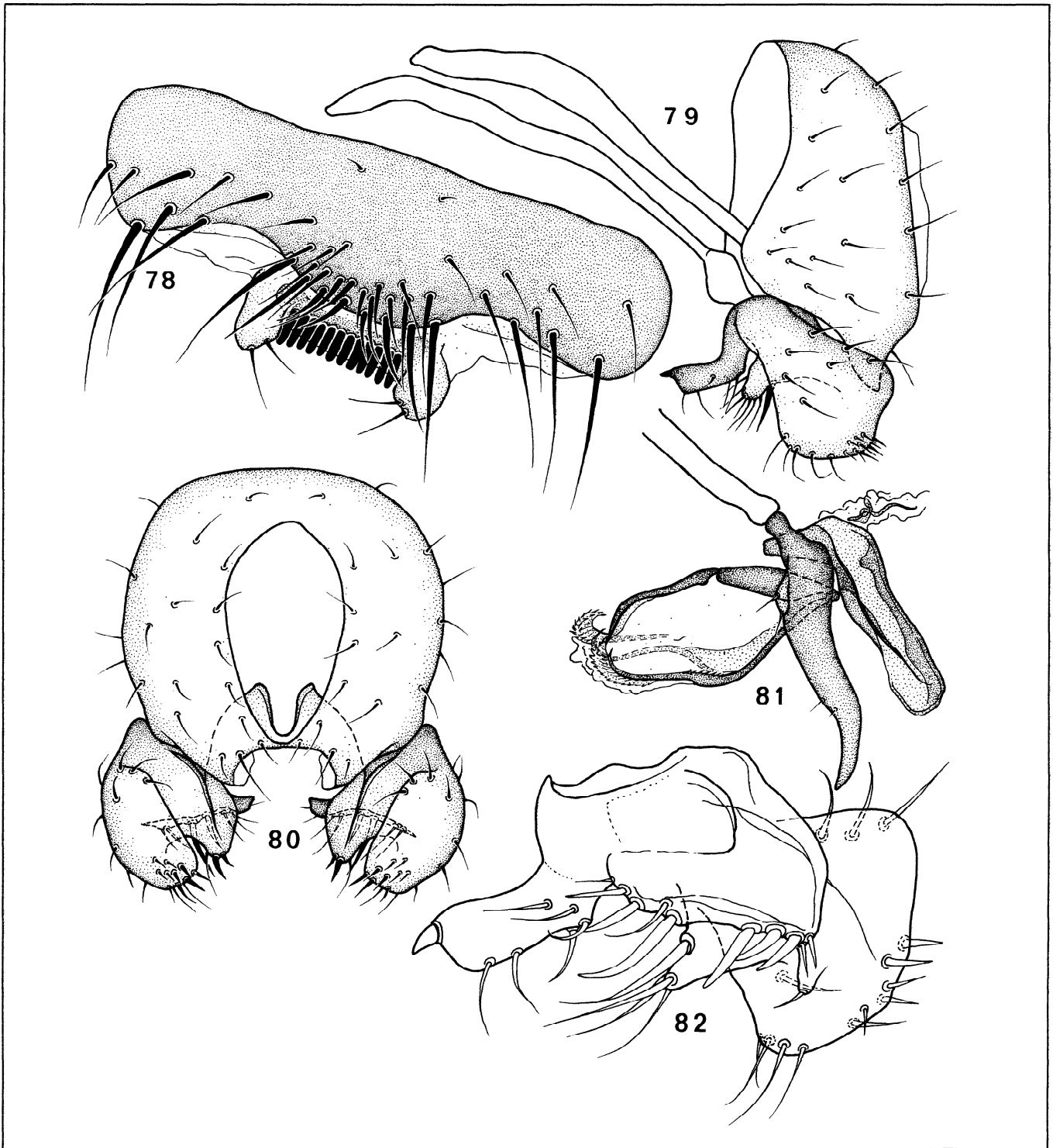
Figures 52-61. *Minilimosina* (S.) *furculipexa* sp.n.: 52 - male sternite 5; 53) aedeagal complex, lateral (ae.apodeme and basal part of paramere not figured); 54) spermathecae; 55) male genitalia, lateral (apices of ae.apodeme, hypandrium and aedeagus omitted); 56) same, posterior (external only); 57) female abdomen, dorsal; 58) female post-abdomen, ventral
Minilimosina (S.) *fanta* sp.n.: 59) female postabdomen dorsal; 60) spermathecae; 61) female postabdomen, ventral.



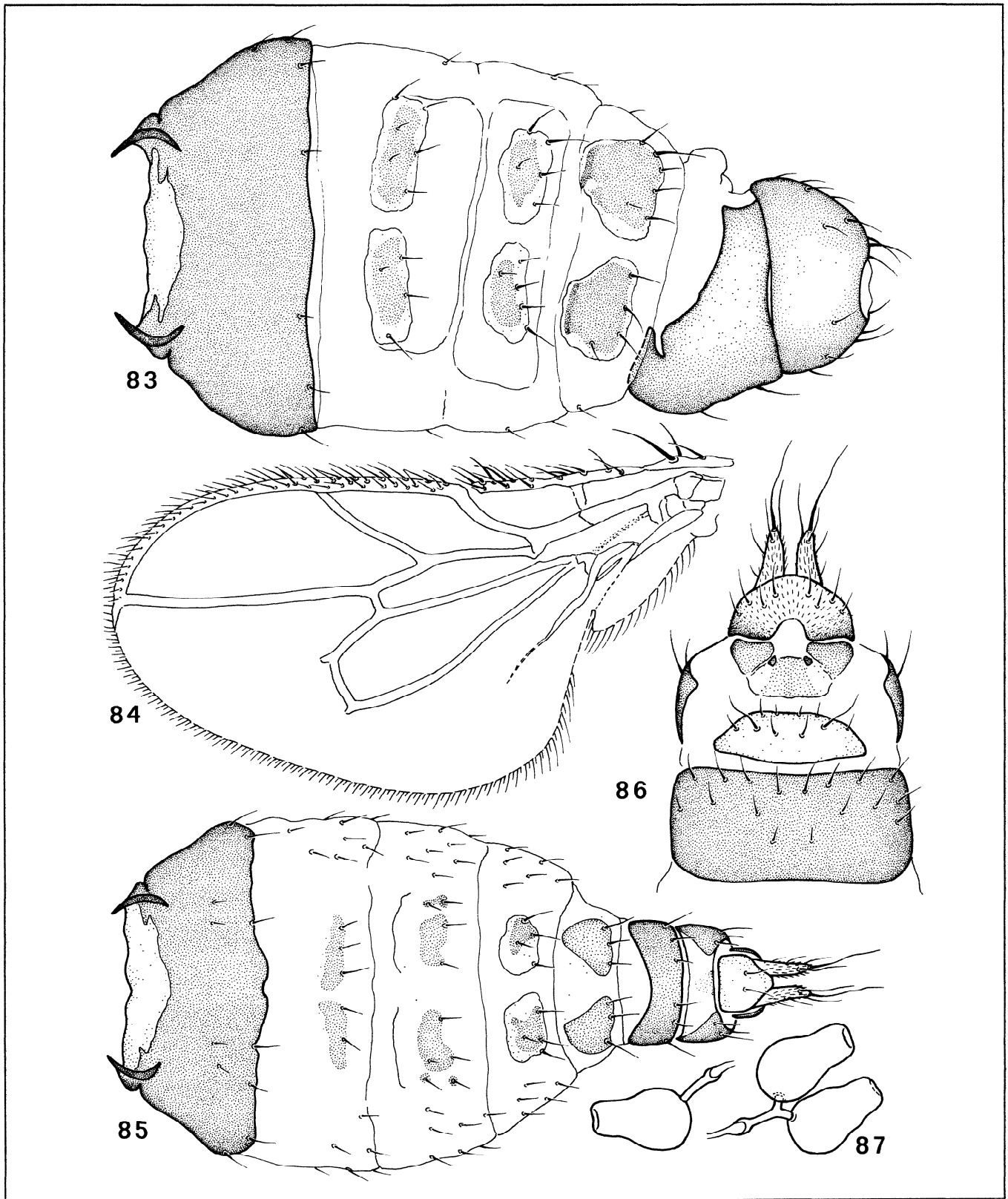
Figures 62-70. *Minilimosina* (S.) *concinna* sp.n.: 62) male sternite 5; 63) male genitalia, lateral (ae.apodeme and aedeagus omitted); 64) egg, lateral; 65) egg, dorsal; 66) aedeagal complex, lateral; 67) male genitalia, posterior (external only); 68) female postabdomen, ventral; 69) female abdomen, dorsal; 70) spermathecae.



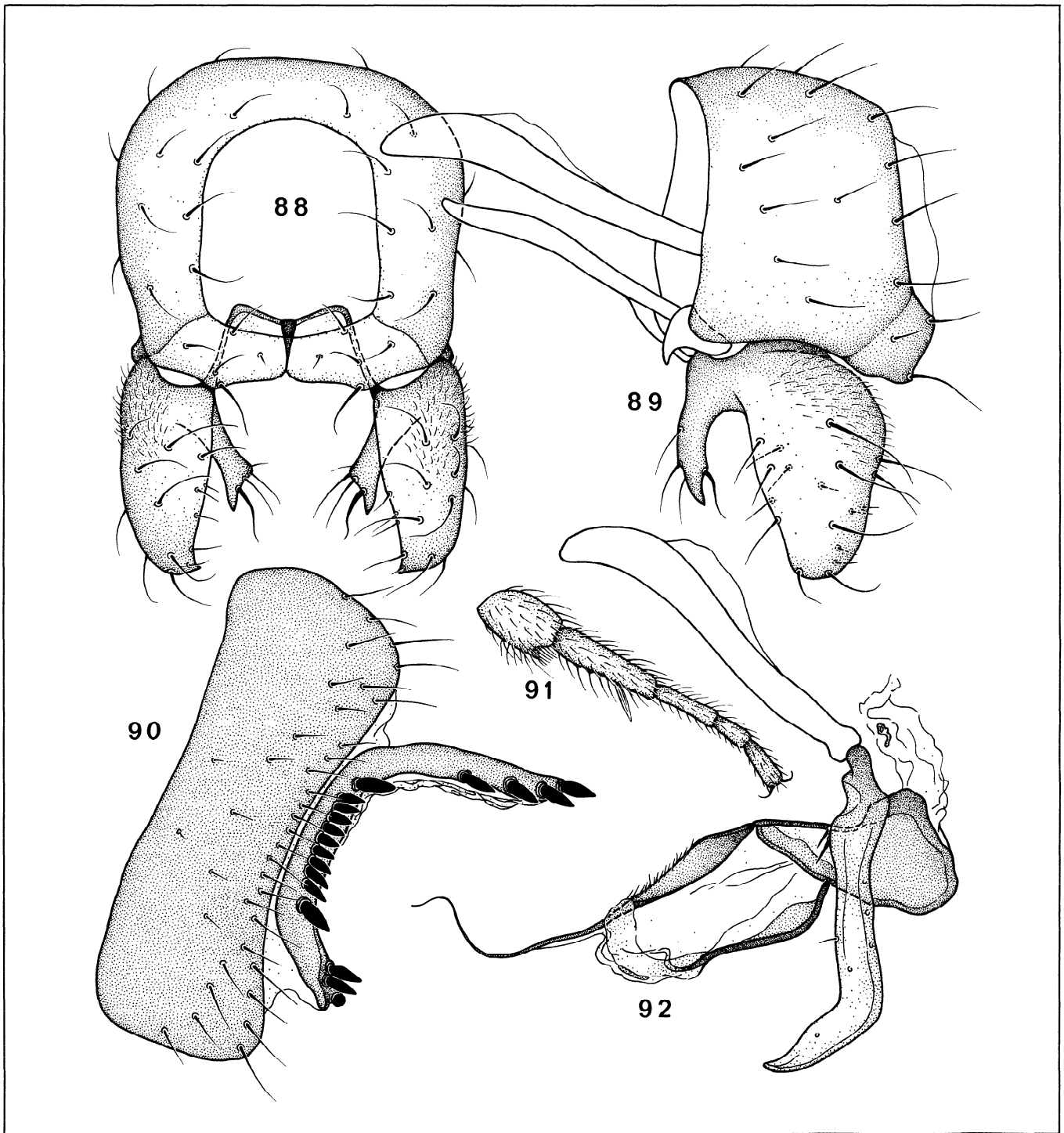
Figures 71-77. *Minilimosina (S.) spinifera* sp.n.: 71 - male genitalia, posterior (external only); 72) spermathecae; 73) female postabdomen, ventral; 74) male sternite 5; 75) male genitalia, lateral (ae.apodeme partly and aedeagus omitted); 76) female abdomen, dorsal; 77) aedeagal complex, lateral.



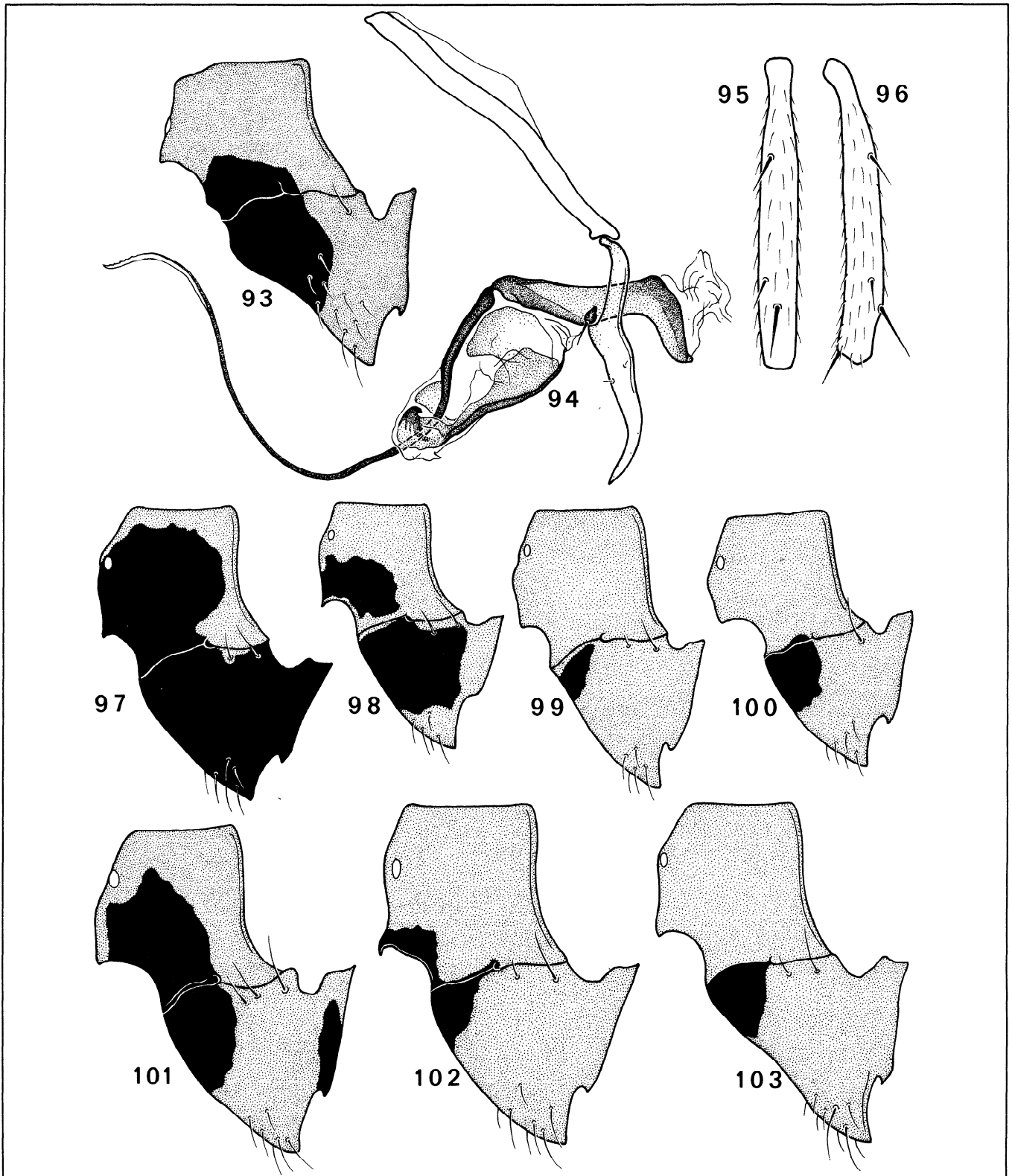
Figures 78-82. *Minilimosina* (S.) *brachyptera* sp.n.: 78) male sternite 5; 79) male genitalia, lateral (aedeagus omitted); 80) same, posterior (external only); 81) aedeagal complex (ae.apodeme partly omitted); 82) surstylus, internal.



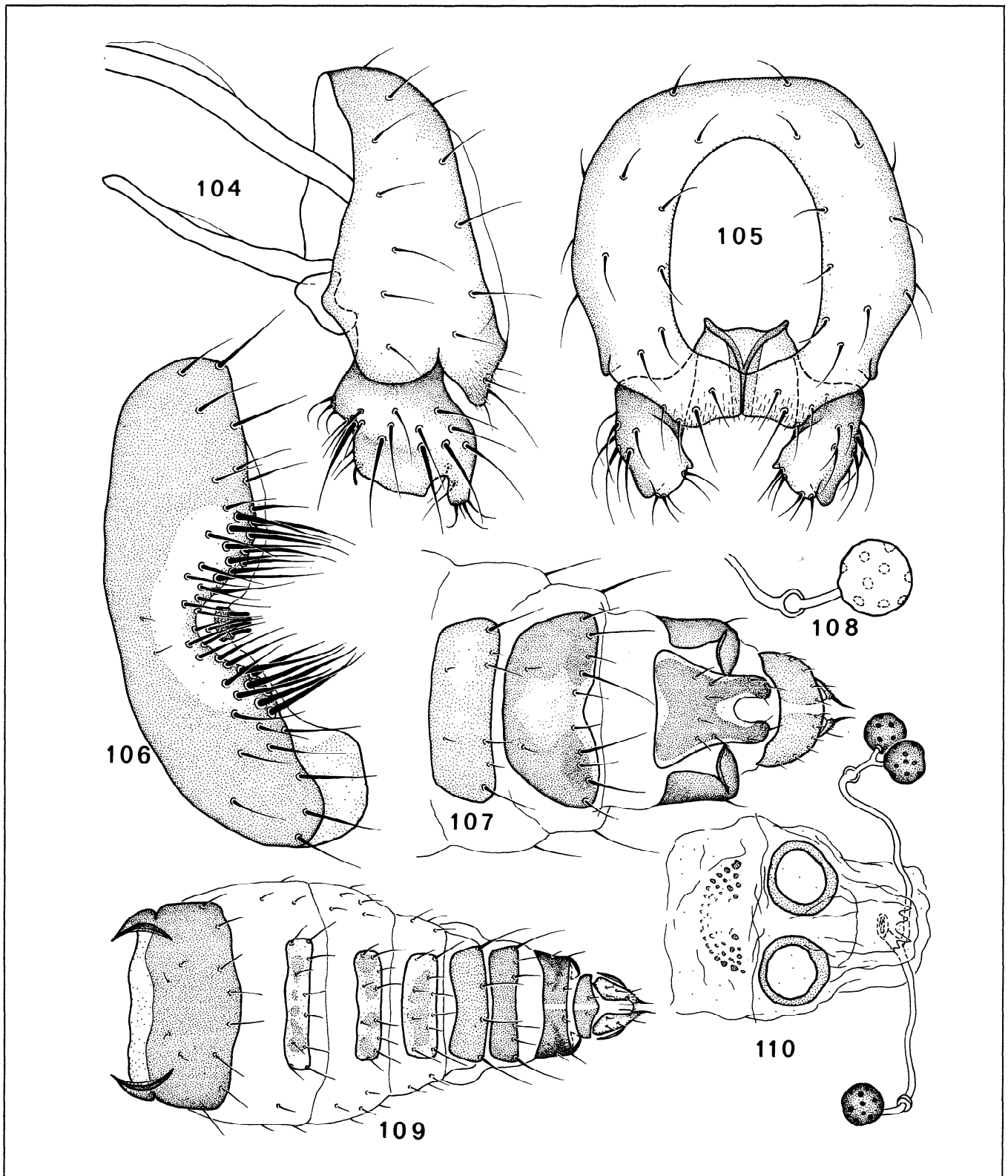
Figures 83-87. *Mnilimosina* (S.) *brachyptera* sp.n.: 83) male abdomen, dorsal; 84) left wing; 85) female abdomen, dorsal; 86) female postabdomen, ventral; 87) spermathecae.



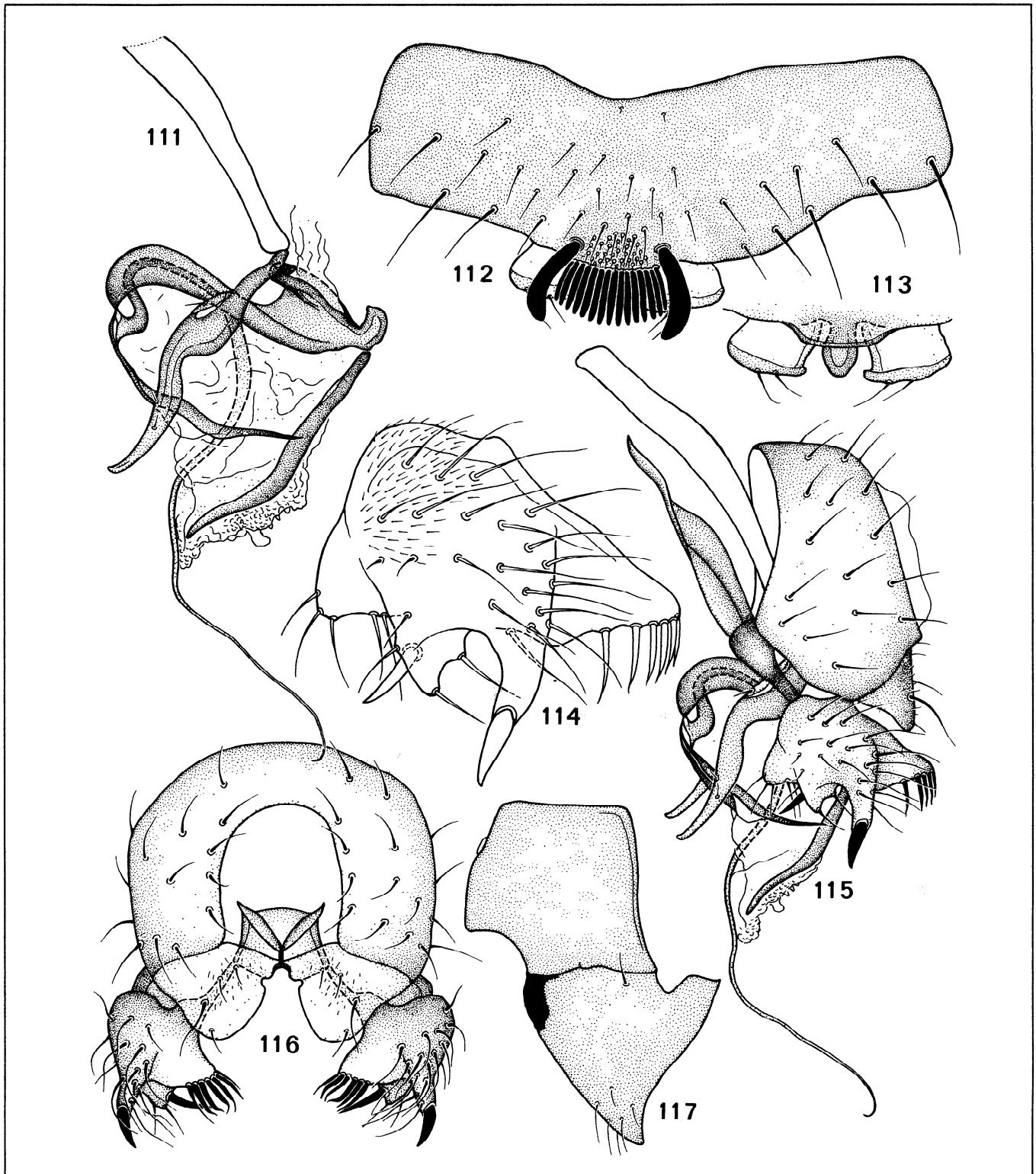
Figures 88-92. *Minilimosina (S.) hastata* sp.n.: 88) male genitalia, posterior (external only); 89) same, lateral (aedeagus omitted); 90) male sternite 5; 91) hind tarsus, anterior; 92) aedeagal complex, lateral.



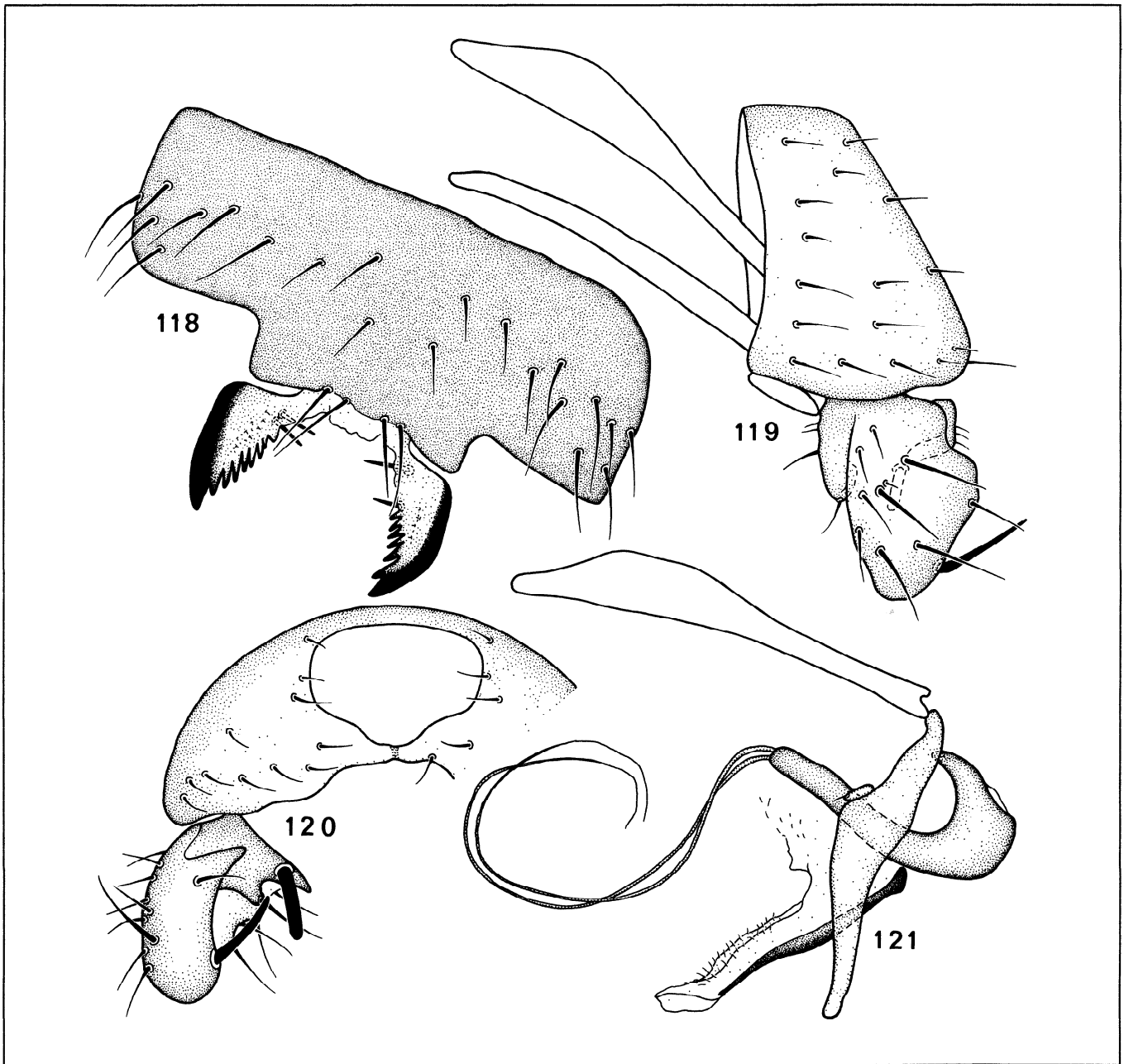
Figures 93-103. *Minilimosina (S.) flagrella* sp.n.: 93) episternum (tomentose areas dotted); 94) aedeagal complex, lateral; 95) mid tibia, dorsal; 96) same anterior *Minilimosina (S.)* spp., episternum (tomentose areas dotted); 97) *M. xanthosceles* sp.n.; 98) *M. xestops* sp.n.; 99) *M. brachyptera* sp.n.; 100) *M. ampicuspa* sp.n.; 101) *M. aterga* sp.n.; 102) *M. dissimilicosta* (Spuler); 103) *M. furculisterna* (Deem.).



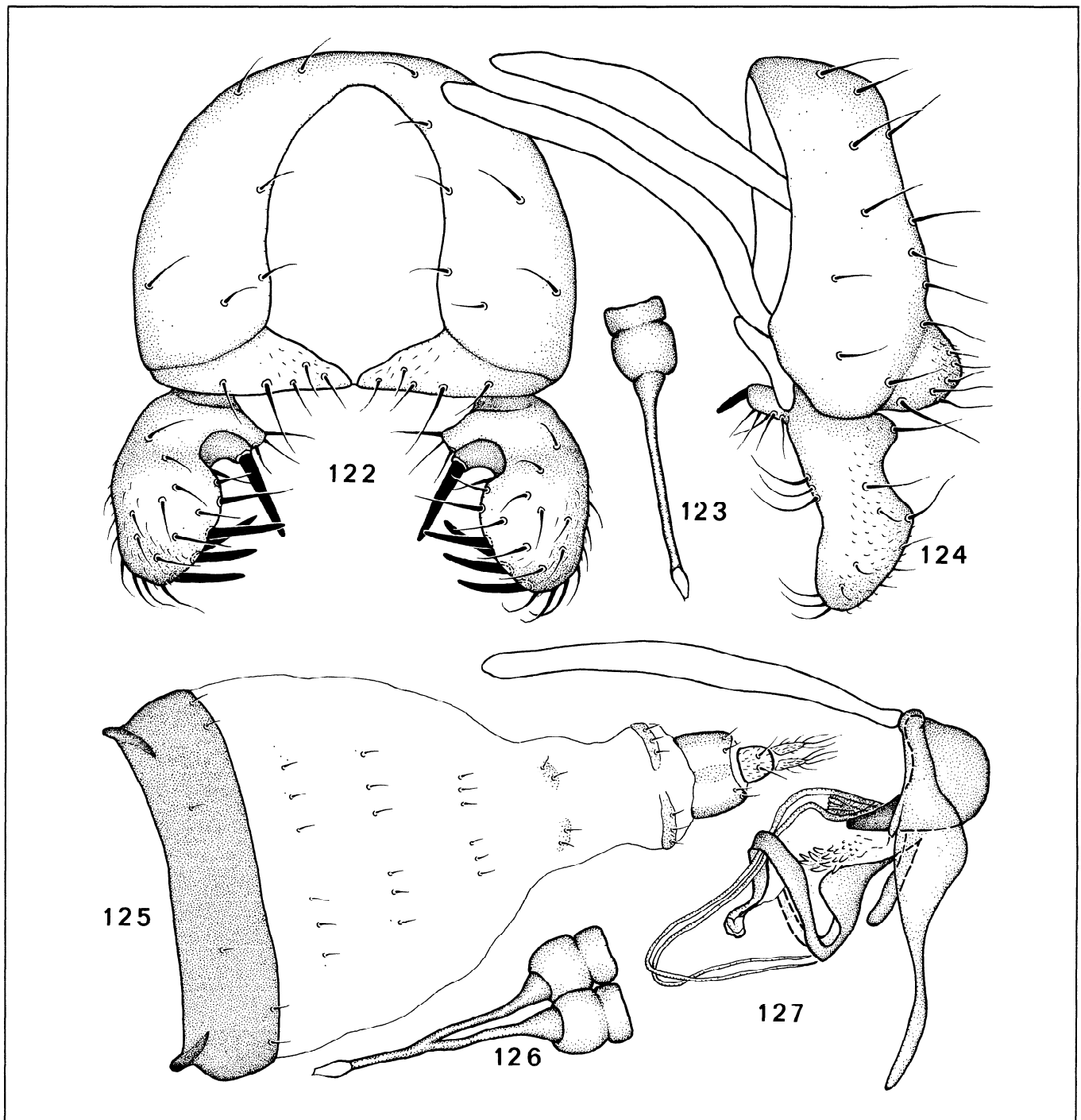
Figures 104-110. *Minilimosina* (S.) *flagrella* sp.n.: 104) male genitalia, lateral (aedeagus omitted); 105) same posterior (external only); 106) male sternite 5; 107) female postabdomen, ventral; 108) spermatheca; 109) female abdomen, dorsal; 110) spectacles-shaped sclerite and spermathecae, ventral.



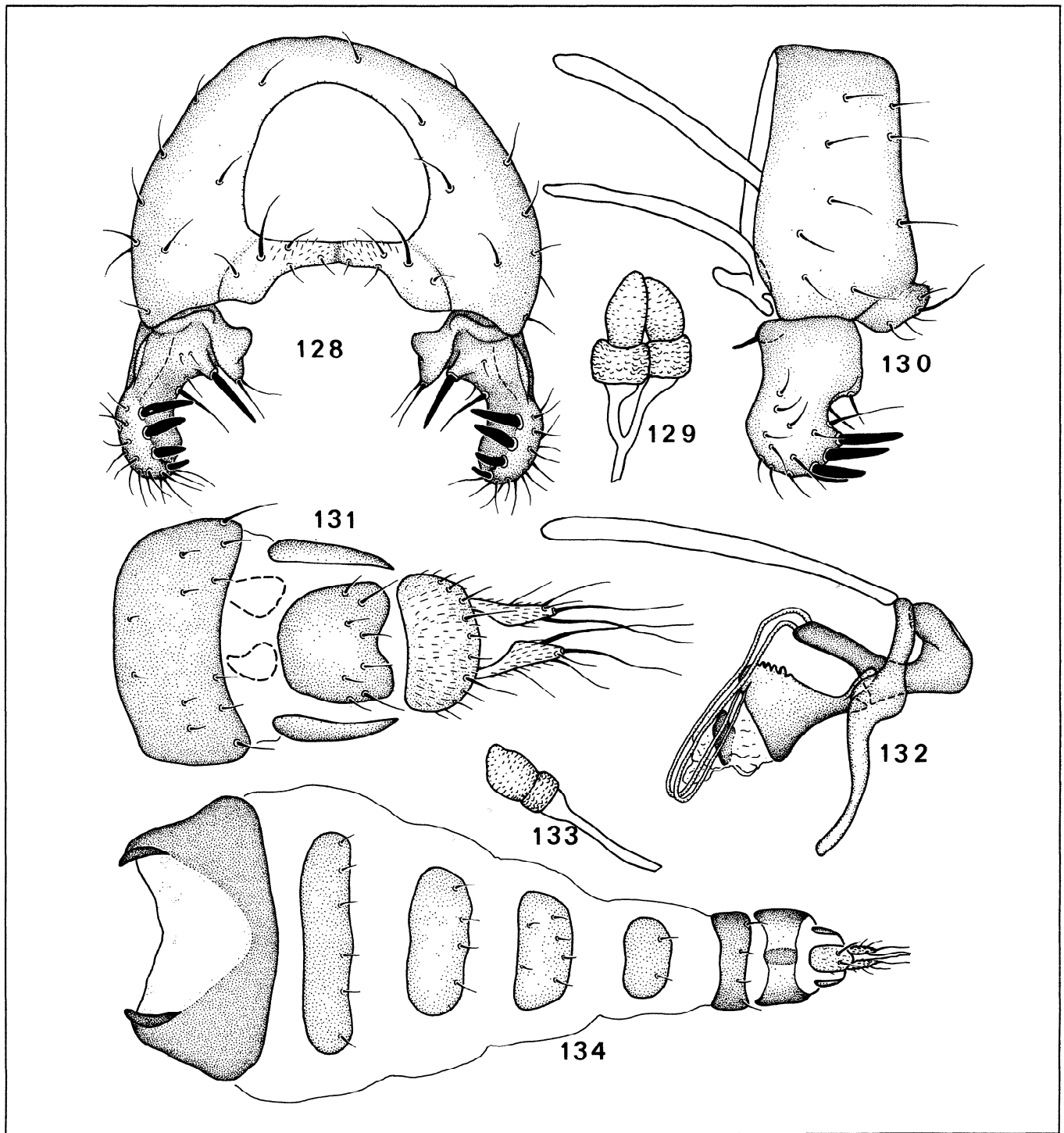
Figures 111-117. *Minilimosina (S.) cornigera* sp.n.: 111) aedeagal complex (ae.apodeme partly omitted); 112) male sternite 5; 113) posterior trilobed structure of male sternite 5, ventral; 114) surstylus, lateral; 115) male genitalia, lateral; 116) same, posterior (external only); 117) episternum (tomentose areas dotted).



Figures 118-121. *Minilimosina (S.) amphicuspa* sp.n.: 118) male sternite 5; 119) male genitalia, lateral (aedeagus omitted); 120) same, posteroventral (external only, right part omitted); 121) aedeagal complex, lateral.



Figures 122-127. *Minilimosina* (S.) *xanthosceles* sp.n.: 122) male genitalia, posterior (external only); 123) spermatheca; 124) male genitalia, lateral (aedeagus omitted); 125) female abdomen, dorsal; 126) paired spermathecae; 127) aedeagal complex, lateral.



Figures 128-134. *Minilimosina (S.) xestops* sp.n.: 128) male genitalia, posterior (external only); 129) paired spermathecae; 130) male genitalia, lateral (aedeagus omitted); 131) female postabdomen, ventral; 132) aedeagal complex, lateral; 133) spermatheca; 134) female abdomen, dorsal.

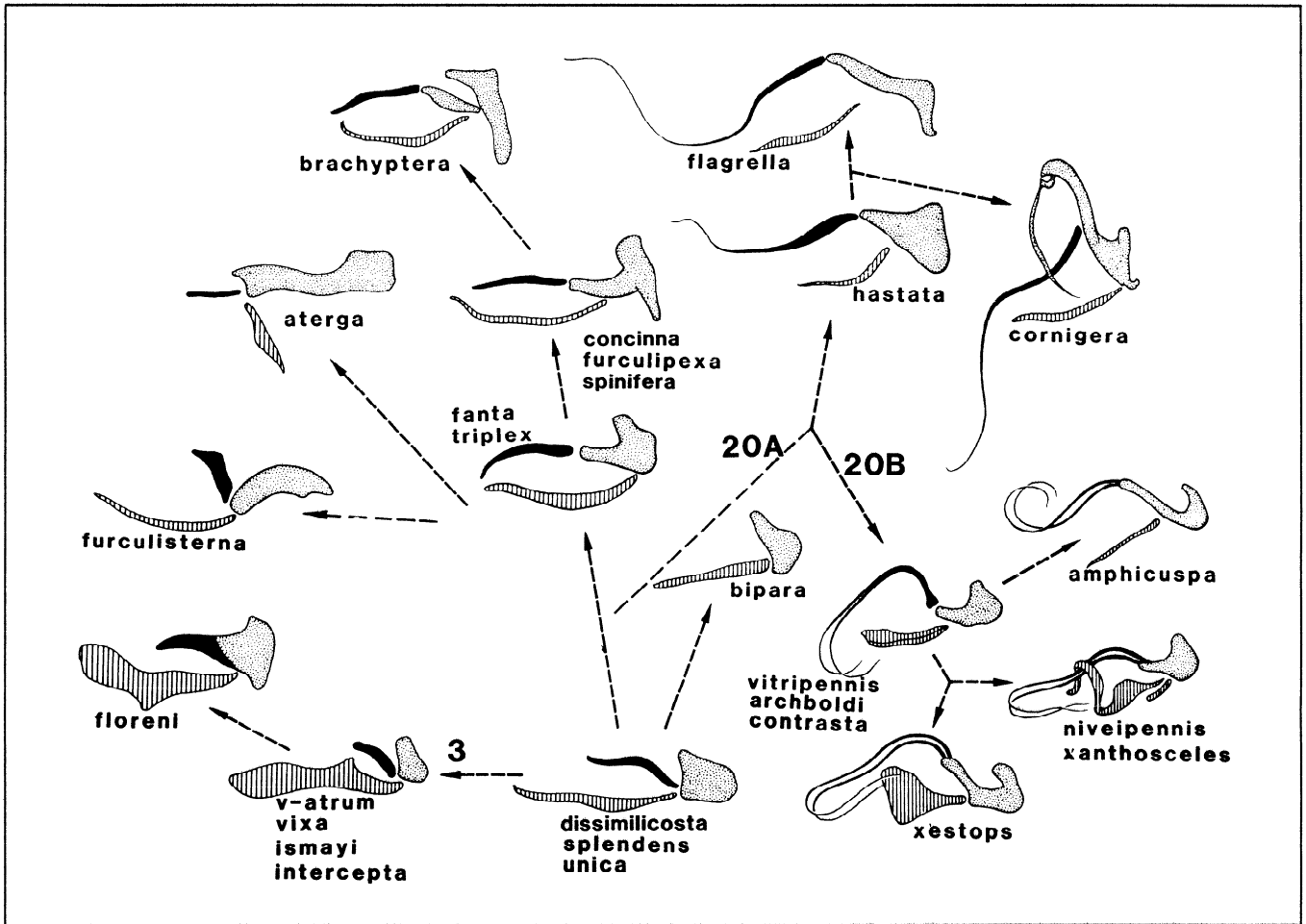


Fig. 135. Transformation series of aedeagal sclerites in *Svarciella* species (schematical), distiphallus - ventral sclerite (functionally dorsal) black, dorsal sclerite hatched; basiphallus dotted. Numbers refer to distiphallus character states as on Fig. 136.

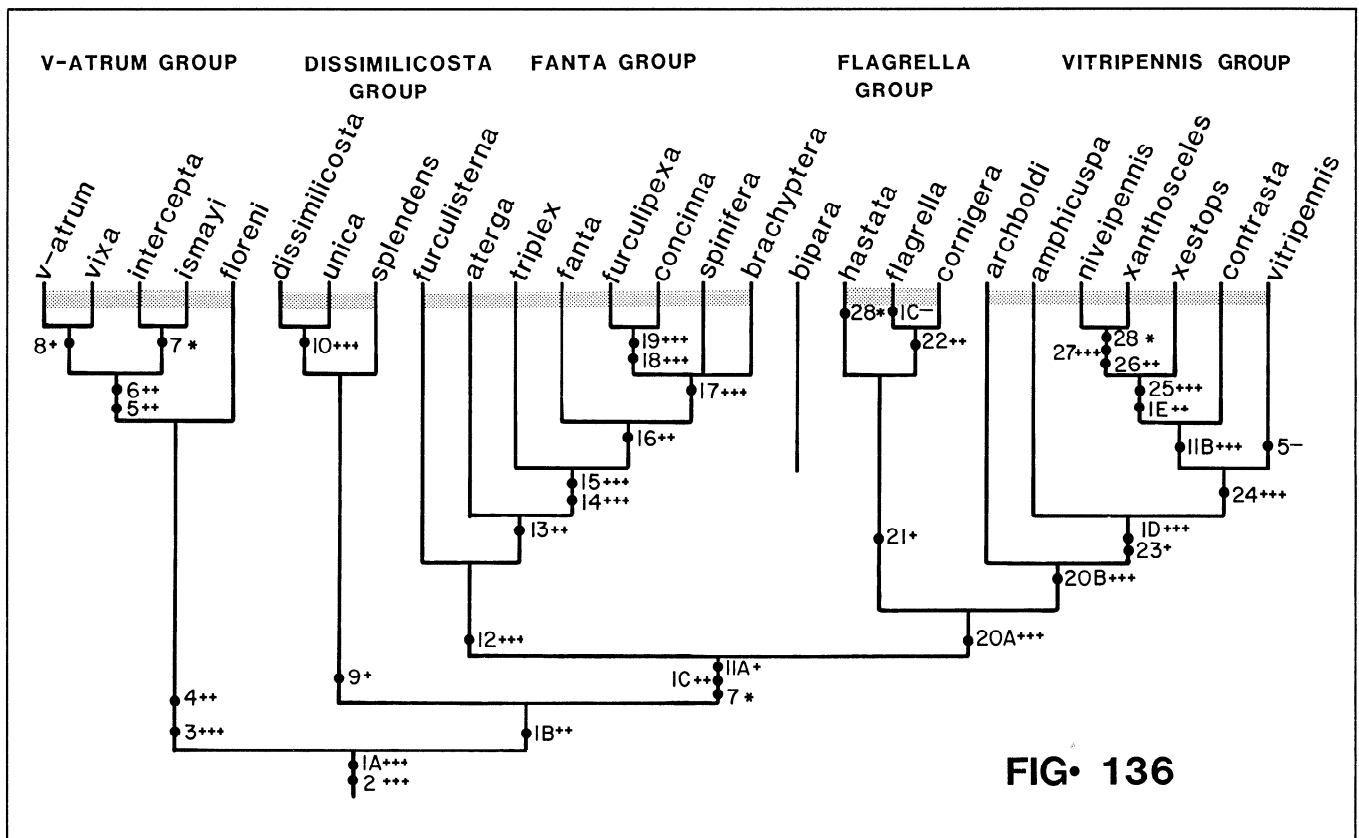


FIG. 136

Fig. 136. A phylogenetic hypothesis for *Minilimosina* subgenus *svarciella*. Numbers refer to the following characters, (+), (++) and (+++) indicate character weighting based on subjective assessment of the likelihood of misinterpretation of homology or polarity. An asterisk (*) indicates a character present as a homoplasy elsewhere in the subgenus, a minus sign (-) indicates a reversal. Character 1 is a postulated transformation series of the male sternite 5: 1A) sternite with posteromedial comb-row and weakly differentiated flanking lobes; 1B) sternite with well differentiated, mostly membranous, flanking lobes; 1C) both comb row and flanking lobes strongly differentiated from rest of sternite; 1D) comb row lost but deflexed area with flanking lobes still well developed; 1E) both comb-row and flanking lobes lost; 2) distiphallus basally split into narrow dorsal and ventral sclerites; 3) ventral sclerite of distiphallus reduced or fused with basiphallus; 4) surstylus with outer and inner lobes, the latter with 3 spines; 5) male mid tibia and mid femur with rows of ventral spines; 6) male sternite 6 with double process; 7) antenna orange; 8) one surstylus spine enlarged; 9) inner lobe of surstylus reduced, outer lobes extended; 10) male sternite 5 with a convex bulge; 11A) interfrontal bristles reduced in size; 11B) interfrontal bristles greatly reduced in size and reduced in number to 2; 12) tergite 5 divided into 2 parts or greatly reduced; 13) surstylus with very large internal spines; 14) hypoproct complex, with additional anterior sclerites (] *aterga* unknown); 15) face with 2 minute orange medial spots at anterior margin; 16) surstylus with anterior projecting lobe; 17) basiphallus with posterior extended part and anterior elongate sclerite; 18) hypoproct with medial, elongate sclerite; 19) male sternite 5 with posteromedial comb of spines divided into 2 parts; 20A) distiphallus with a long, whip-like sclerite; 20B) whip-like sclerite of distiphallus divided into 2 strips; 21) whip-like sclerite of distiphallus an elongate, tapered strand (possibly plesiomorphic; see text); 22) tergites 3-5 pale, partly desclerotized; 23) tergites 3-5 very pale or completely desclerotized; 24) spermathecae apically evaginated; 25) spermathecal ducts very long and dark; 26) scutellum convex; 27) distiphallus with lateral spinose lobe; 28) orbital bristles reduced to one pair.