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To Professor T. Okada,
with compliments of the authors,

Badi

Taxonomic studies on Neotropical species of seven genera of Drosophilidae (Diptera)*

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Abstract. The external and genital morphology of both ordinary and type specimens belonging to 145 species of Neotropical Drosophilidae are described or redescribed and the terminalia illustrated. The systematic position of the species is revised, and the following new synonymies are proposed: *Drosophila coffeata* WILLISTON, 1896 = *D. flavolineata* DUDA, 1927 = *D. umbripennis* HENDEL, 1936; *Drosophila fuscolineata* DUDA, 1925 = *D. castanea* PATTERSON & MAINLAND, 1944 = *D. fumosa* PAVAN & CUNHA, 1947; *Drosophila impudica* DUDA, 1927 = *D. para* PAVAN & BURLA, 1950; *Drosophila lutzi* STURTEVANT, 1916 = *D. floricola* STURTEVANT, 1942; *Drosophila maculifrons* DUDA, 1927 = *D. guarumunu* DOBZHANSKY & PAVAN, 1943; *Drosophila marmoria* HUTTON, 1901 = *D. hydei* STURTEVANT, 1921; *Drosophila mediosirtata* DUDA, 1925 = *D. crocina* PATTERSON & MAINLAND, 1944; *Drosophila mesophragmatica* DUDA, 1927 = *D. andina* DOBZHANSKY & PAVAN, 1943; *Drosophila ornatifrons* DUDA, 1927 = *D. guarani* DOBZHANSKY & PAVAN, 1943; *Drosophila paraguayensis* DUDA, 1927 = *D. mediosignata* DOBZHANSKY & PAVAN, 1943 = *D. medionotata* FROTA-PESSOA, 1954; *Drosophila semialba* DUDA, 1925 = *D. sucheae* PIPKIN & HEED, 1964; *Drosophila subinfumata* DUDA, 1925 = *D. parabocainoides* WHEELER & MAGALHÃES, 1962. The following new species are described: *Diathoneura dudai*, *Diathoneura smithi*, *Drosophila annulosa*, *Drosophila davidgrimaldii*, *Drosophila frotapeossoi*, *Drosophila hendeli*, *Drosophila mapiriensis*, *Drosophila parannularis*, *Drosophila pichis*, and *Drosophila pseudorepleta*. Some genera and species groups are redefined and new combinations are proposed. Species transferred to the genus *Cladochaeta* are as follows: *Diathoneura adumbrata* DUDA, *Diathoneura bomplandi* MALLOCH, *Diathoneura minuta* DUDA, *Diathoneura uniradiata* DUDA, and *Drosophila sororia* WILLISTON. The following species are transferred to the genus *Diathoneura*: *Cladochaeta albinota* (WHEELER), *Cladochaeta bicolor* (FROTA-PESSOA), *Cladochaeta carrerai* (FROTA-PESSOA), *Cladochaeta cavalcantii* (FROTA-PESSOA), *Cladochaeta iheringi* (FROTA-PESSOA), *Cladochaeta longipennis* (MALLOCH), *Cladochaeta montei* (FROTA-PESSOA), *Cladochaeta maculipennis* (MALLOCH), *Cladochaeta pilifrons* (FROTA-PESSOA), *Cladochaeta trisetata* (MALLOCH), and *Drosophila superba* STURTEVANT; *Neorhinoleucophenga quinquelineata* DUDA is transferred to the genus *Zygothrica*. The subspecies *Drosophila repleta prorrepleta* DUDA is elevated to species rank. Lectotypes have been designated whenever appropriate.

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INTRODUCTION

The study of the Neotropical drosophilid fauna can be roughly divided into three periods: from 1830 to 1908, 54 species have been described mainly by WIEDEMANN, LOEW, and WILLISTON; from 1913 to 1938 a total of 238 species were recognized by STURTEVANT, MALLOCH, DUDA and a few other authors; since 1941 more than 400 species have been distinguished essentially by two groups of drosophilists, working at the University of Texas, Austin, Texas (USA), and at the Universidade de São Paulo, São Paulo, Brazil, respectively (VAL et al. 1982). Whereas in the third period most of the species have been described in a more or less modern way, many of the species named earlier cannot be easily recognized due to inadequate descriptions. One possibility for improving the situation is to revise the type collections upon which the descriptions were based.

The early collections were largely made by European collectors, and the flies are now mostly deposited in European museums. Some species have been described by their own collectors; however, the majority were studied by dipterists, such as LOEW, WILLISTON, DUDA, and HENDEL, who have been entrusted with the specimens by the collectors and/or the curators of the collections.

The aims of this paper are twofold: the revision of certain groups of species, primarily those housed in European collections, as well as the reinvestigation of the morphology, particularly the description or redescription of the terminalia of such old specimens in order to evaluate their systematic position.

It should be pointed out that two of the species, namely *Drosophila latifasciaeformis* and *D. virilis*, treated in this paper are not native to the Neotropics but were introduced there through human activities. The Nearctic species *D. tripunctata*, the only species in its large nominal group whose range does not include the Neotropical Region is also dealt with.

MATERIAL AND METHODS

This study is based on 389 type-specimens and 138 ordinary specimens which are deposited in the following 11 collections (with abbreviations used in the item "Material examined" under each binomial): British Museum (Natural History), London (BMNH); California Academy of Sciences, San Francisco (CAS); Canterbury Museum, Christchurch, New Zealand (CMC); National Museum of Natural History, Smithsonian Institution, Washington D.C. (NMNH); Hungarian Natural History Museum, Budapest (HNHM); Museu de Zoologia, Universidade de São Paulo, São Paulo (MZUSP); Naturhistorisches Museum Wien, Vienna (NMW); Snow Entomological Museum, Lawrence, Kansas (SEM); Staatliches Museum für Tierkunde, Dresden (SMTD); Zoologisches Museum, Humboldt-Universität, Berlin (ZMB); Zoologisches Museum, Universität Zürich-Irchel,

Zürich (ZMZ). Out of the 138 ordinary specimens analyzed, 27 specimens (now deposited in the latter museum) were obtained from 4 strains which are currently being maintained in the National Drosophila Species Resource Center, Bowling Green State University, Bowling Green, Ohio (NDSRC). Unfortunately we were unable to obtain specimens from the American Museum of Natural History, New York; certain questions must therefore be left open.

Usually the type specimens have been adequately labelled so that there was no or little doubt as to their status and affiliation. However, there are some exceptions which caused problems of interpretation, e.g., not all specimens described by WILLISTON (1896) have identification labels, usually only one or two flies, probably the first ones in the original row, are fully labelled. Unfortunately, the specimens in the series of two of his species, *Drosophila pallida* and *Drosophila bellula*, proved to be not conspecific; the differences are so obvious that at first we had some doubts as to whether Williston could have had made a mistake or, whether some specimens have been inadvertently rearranged later on. Considering that syntype specimens of both of these species, including such misidentifications, have been sent, probably by WILLISTON himself, to the Snow Entomological Museum we decided to consider all these specimens as syntypes.

Where appropriate, lectotypes (preferentially selected among the males) were designated. Label data attached to each holotype and lectotype are cited as given (our own notes are included parenthetically). A slash indicates a label change.

All specimens were analyzed regarding their external morphology and 282 (171 ♂, 111 ♀) regarding their terminalia morphology. Preparations were made following WHEELER & KAMBYSELLIS (1966) and KANESHIRO (1969); the abdominal structures, including the dissected terminalia, are preserved in microvials filled with glycerin and attached by the stopper to the pin of the respective specimen.

Morphological terms and indices are mostly based on MCEVEY (1990) who discussed the terminology proposed by MCALPINE (1981). Additions and/or modifications are detailed below.

External Morphology: For wing cells we applied the names used by STURTEVANT (1921); the names of wing veins and indices, including abbreviations, are given by BÄCHLI (1971) and VILELA (1983), an additional index, prox. x index, showing the position of the proximal crossvein, is defined as the ratio between the length of the basal section of r_{4+5} and the third section of m. Frontal width is measured just above the ptilinal suture. The cheek index is the ratio between the greatest eye length and the width of the gena from the lowest eye margin to the mouth border. The eye index is the ratio between the greatest length and the width measured vertical to length. The scut position index is the ratio of the distance between apical scutellars and the distance between apical and basal scutellars. The h index is the ratio between the upper and lower postpronotals, the vt index between the inner and the outer verticals, the vibrissal index between the second oral and the vibrissal (first oral), the dc index between the anterior and the posterior dorsocentrals, the scut index between the lateral and the apical scutellars.

Terminalia: The following citations (in parentheses) refer to the papers where the preceding terms were defined. Marginal bristles, primary and secondary teeth of surstylus, tip of cercus (HSU, 1949:82); bow of hypandrium (FROTA-PESSOA, 1954:260); anterior and posterior parameres (OKADA, 1954:37); decaesternum, distal and marginal teeth of ovipositor plate (OKADA, 1956:1); paragenital fringe of female's tergite VIII (WHEELER, 1957:92). Both surstylus and ovipositor teeth and bristles shapes vary gradually from heavily

sclerotized, stout and peg-shaped tooth to long and thin bristle. On the other hand, their relative positions on the surfaces of the sclerites also may vary. Thus, sometimes they were arbitrarily classified in the descriptions, which should be ignored if not associated with the respective illustrations. To classify the ovipositor setae into marginal and distal teeth we use the uppermost sensillum (there are usually three, in addition to the lower and large subterminal bristle = "sub-terminal hair" of OKADA, 1956:1) as a mark to separate the setae of the left ovipositor plate as follows: those standing clockwise from the uppermost sensillum are named marginal teeth and those standing counterclockwise are named discal teeth (Fig. 37).

Due to the great modifications observed in the shapes and relative positions of many terminalia structures, we might not have been very successful in our attempts to homologize the structures of the male terminalia found in the species belonging to the genus *Drosophila* to those found in the species belonging to the other genera included in this paper. To avoid confusion, the terms used in the descriptions of terminalia of species belonging to different genera and/or species groups are labelled in the following figures: 6, 25, 31, 34, 37, 53, 61, 99, 124, 129 and 139.

Illustrations were drawn using a camera lucida. Whenever possible, 9 drawings were prepared for each species (8 for ♂, 1 for ♀) as follows: oblique posterior view of the epandrium and associated structures, posterior view of the surstyli, posterior view of the hypandrium and associated structures, five views (clockwise from dorsal through ventral) of the aedeagus and associated structures (to give a three-dimensional effect) and lateral view of the left ovipositor plate. For some females, besides the latter illustration, the tergite VIII, the epiproct and the hypoproct were also figured but their micropubescences were intentionally omitted. Additionally, whenever possible, the following photographs were taken for each species: aedeagus (usually with associated structures) and spermathecae in profile view and wing (whenever useful) in dorsal view. Each wing was mounted in Canadian balsam and the microslide attached through its cardboard end to the pin of the respective specimen. Unless otherwise indicated, all figures presented on the same page were drawn to the same scale and all the photographs, were also taken at and enlarged to the same magnification.

The genera and subgenera are alphabetically ordered as are the species groups under each genus and the binomials under each species group. Our starting point for the systematic position of the species is the World catalog of WHEELER (1981, 1986). Whenever needed, diagnoses were brought up to date for the analyzed species groups; in some cases just a reference to a revision is made. List of references under each binomial are not exhaustive and mainly includes papers dealing with new combinations, lectotype designations and/or presenting illustrations of terminalia.

As this paper deals with morphospecies and no hybridization tests were performed, the proposed synonyms probably are quite subjective. For this reason, we also present illustrations of the terminalia of most junior synonyms proposed hereafter. The missing ones will be presented in forthcoming papers by the first author.

TAXONOMIC RESULTS

Genus *Chymomyza* CZERNY, 1903:199.

Species included: 32. See WHEELER, 1981:33.

Diagnosis. See BOCK, 1982:37.

Chymomyza laevilimbata DUDA, 1927

(Figs. 1; 2; 153; 164)

Chymomyza laevilimbata DUDA, 1927:65.

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Peru - Meshagua 1.10.03. Urubambafl. / (blank label) / *Chymomyza laevilimbata* DET. DR. O. DUDA / *Cotypus laevilimbata* Duda / Staatl. Museum für Tierkunde Dresden / *Chymomyza laevilimbata* Syntype ♀ G.Bächli det. 1988 / LECTOTYPE ♂ *Chymomyza laevilimbata* Duda by Bächli & Vilela 1990"; 3 paralectotypes ♀, 1 from "Peru - 150m 20.11.03. Pachitea - Münd.", 1 from "Peru - Pichis XII. 03. Pto. Bermudes" and 1 from "Bolivia - Mapari (sic) 20.III.03 S. Ernesto 800m", deposited in SMTD.

Diagnosis. Body color mainly black in ♂, yellow in ♀; frontorbital plates very broad, glossy, brown in ♂; mid orbital distinctly in front of and outside of anterior one; facial carina absent; thorax black in ♂, yellow in ♀; pleura brown in ♂, posteriorly brownish in ♀; legs yellow, femora of mid and hind legs basally brownish, foreleg black except tarsal joints 2 - 5 which are whitish; wings narrow, with brown costal cell, veins r_{4+5} and m convergent; abdomen glossy, black in ♂, brown with darker marginal bands in ♀.

Redescription. Head yellow. Frons pollinose, laterally glossy, frontal length 0.23 - 0.25 mm, frontal index 0.67 - 0.88, top to bottom width ratio 1.33 - 1.38. Frontal triangle brown in M, about half frontal length; ocellar triangle black, about 1/3 - 1/2 frontal length. Frontorbital plates not diverging from eye margin, about 85% frontal length. Distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.73 - 0.77, of mid to anterior orbital 0.8 - 1.11; poc 20% - 21%, oc 64% - 73% of frontal length; vibrissal index 0.56 - 0.75; vt index 1.0 - 1.15. Cheek index about 9 - 14. Eye nude, index 1.16 - 1.29. First flagellomere short-haired; length to width ratio 1.0 - 1.5. Arista with 3 upper and 2 lower long branches, plus terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax length about 0.82 - 1.06 mm. Scutum glossy; h index 1.8; 6 rows of acrostichals. Transverse distance of dc about 2x longitudinal distance; dc index 0.53 - 0.65. Scutellum distinctly shorter than broad; scut position index much larger than 1.0, basal scut slightly convergent, scut index 0.52 - 0.65; sterno index 0.53 - 0.69; mid katapisternal about 18% - 38% of the anterior one. Halteres white.

Wing length 1.65 - 2.05 mm; length to width ratio 2.38 - 2.5. Indices: C, 1.04 - 1.27; ac, 4.8 - 5.5; hb, 0.81 - 0.83; 4c, 1.57 - 1.75; 4v, 2.36 - 2.58; 5x, 2.5 - 3.0; M, 0.64 - 0.75; prox. x, 0.43 - 0.67.

Terminalia ♂ (Figs. 1; 2; 153 A). Epandrium with about 30 lower and no upper bristles; ventral lobe finger-shaped and directed backwards. Cerci small, not

fused to epandrium. Surstylus not micropubescent, with 8-9 very long primary teeth; secondary teeth and marginal bristles absent. Decasternum membranous as in fig. 1. Hypandrium as long as epandrium, linked to it through a pair of lateral, stalk-shaped sclerites; bow sclerotized; gonopod fused both to paramere and to hypandrium, which bears 2 very long and 3 shorter bristles on dorsal prolongation, in addition to 3 sensilla on inner surface; ventral region medially expanded backwards, bifid. Aedeagus tube-shaped, bent. Aedeagal apodeme shorter than aedeagus, laterally flattened posteriorly, dorso-ventrally flattened anteriorly. Ventral rod as in fig. 2.

Terminalia ♀ (Figs. 1; 164 A). Ovipositor plate apically rounded, with 13-14 mostly long bristles. Spermatheca tiny, weakly sclerotized.

Chymomyza pectinifemur DUDA, 1927
(Figs. 1; 3; 153; 164)

Chymomyza pectinifemur DUDA, 1927:66.

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Chymomyza pectinifemur n. sp. ♂ d. Duda / 1. Flügel phot. / Syn-Typus / Zool. Mus. Berlin / LECTOTYPE ♂ Chymomyza pectinifemur Duda by Bächli & Vilela 1990"; 1 paralectotype ♀ (dissected), same data as lectotype, both deposited in ZMB.

Diagnosis. Body color mainly yellow; mid orbital distinctly in front of and outside of anterior one which is bent inwards; wings narrow, apically pointed, with white tip, faintly brownish along costal margin, costal cell completely brown, veins r_{4+5} and m convergent; length 2.01 - 2.08 mm; abdomen black, bluish glossy.

Redescription. Head yellow. Frons subshiny golden yellow, laterally shiny whitish, frontal length 0.25 mm, frontal index 0.84 - 0.89, top to bottom width ratio 1.21 - 1.28. Frontal triangle indistinct; ocellar triangle darker, about 45% frontal length. Frontorbital plates broad, shiny whitish, not diverging from eye margin, about 85% frontal length. Distance of posterior orbital to anterior one more than half of that to inner vertical. Length ratio of anterior to posterior orbital 0.75 - 0.92, of mid to anterior orbital 1.09 - 1.22; poc 25%, oc 63% - 69% of frontal length; vibrissal index 0.88 - 1.0; vt index 1.15. Face shiny yellow. Facial carina absent. Cheek index about 6 - 9. Eye index 1.13. First flagellomere slightly brownish; length to width ratio 1.0. Arista with 3 upper and 1 - 2 lower relatively short branches, plus terminal fork, inner branches short. Proboscis and palpi whitish.

Thorax yellow; length about 1.0 - 1.02 mm. Scutum shiny, with 3 faint diffuse darker longitudinal stripes in median and lateral areas; h index 0.25 - 0.27; 6 rows of acrostichals. Transverse distance of dc about 2x longitudinal distance; dc index 0.55 - 0.57. Scutellum apically round, pollinose; scut nearly equidistant, basal scut parallel, scut index 0.56 - 0.61. Pleura brownish above, shiny; sterno index 0.69; mid katepisternal absent. Halteres and legs yellow, coxae whitish, tarsi darker, foreleg dark brown, knees and tarsal joints 2 - 5 whitish, fore femora of M with 2 ventral rows of strong bristles.

Wing length to width ratio 2.35 - 2.42. Indices: C, 1.36 - 1.5; ac, 5.0 - 5.5; hb, 0.77 - 0.8; 4c, 1.67 - 1.83; 4v, 2.58 - 2.67; 5x, 2.5 - 2.75; M, 0.83 - 0.92; prox. x, 0.75 - 0.83.

Terminalia ♂ (Figs. 1; 3; 153 B). Epandrium long, with about 30 lower and no upper bristles; ventral lobe finger-shaped, directed backwards. Cerci large, not fused to epandrium. Surstylus not micropubescent, with 4 very long primary teeth; secondary teeth and marginal bristles absent. Decasternum membranous as in fig. 1. Hypandrium shorter than epandrium linked to it through a pair of lateral, stalk-shaped sclerites; bow sclerotized; gonopod fused both to paramere and to hypandrium which bears 2 very long and 4 shorter bristles on dorsal, bifid prolongation in addition to three ones on inner surface; ventral region medially expanded backwards, bifid. Aedeagus dorsally mostly membranous, bent. Aedeagal apodeme shorter than aedeagus, dorso-ventrally flattened. Ventral rod as in fig. 1.

Terminalia ♀ (Figs. 1; 164 B). Ovipositor plate apically rounded, with 13-16 mostly long bristles. Spermatheca long, light bulb-shaped, weakly sclerotized; duct deeply invaginated.

Genus *Cladochaeta* COQUILLET, 1900:263

Species included: 13. According to the shape of ♂ and ♀ terminalia as well as based on the modified diagnosis given below the following species, in addition to the species mentioned hereafter, belong to *Cladochaeta*: *C. armata* (FROTA-PESSOA, 1947:195), NEW COMBINATION; *C. inversa* (WALKER, 1861:331); *C. travassosi* (FROTA-PESSOA, 1947:214), NEW COMBINATION.

Diagnosis. Arista with 1 to 6 upper and 0 or 1 lower branches; mid orbital usually minute; postocellars convergent, relatively short; only 1 prominent vibrissal; facial carina more or less absent; upper postpronotal much larger than lower one; no prescutellars; acrostichals usually in 6 rows; anterior katapisternal relatively short (index less than 0.6); eyes usually more or less nude; hb index less than 0.5; anal cell and anal vein absent; alula reduced; epandrium usually much longer than wide, cerci relatively reduced and placed near the upper region of epandrium; surstyli mostly elongate, projected backwards and covered with numerous, tiny bristles; hypandrium posteriorly concave, mostly bearing a keel-shaped projection that splits off dorsally; ovipositor plates usually fused to each other and ventrally linked to a single, directed frontwards, heavily sclerotized plate; spermathecae apparently absent; ventral receptacle in many species expanded and introverted at distal end.

Ecology. Three species, namely *C. inversa*, *C. paradoxa* and *C. sturtevantii*, are known to be inquilines of cercopid nymphs (see ASHBURNER, 1981:408-410). Whether or not all species of *Cladochaeta* are associated to those nymphs is not yet known.

Note. After having analyzed most of the described species belonging to the genera *Cladochaeta* and *Diathoneura* we are more than ever in agreement with the statement of WHEELER & TAKADA (1979:232) that "the generic limits of these two genera are not apparent". Considering that male specimens of the type-species of *Cladochaeta* and *Diathoneura*, namely *C. nebulosa* and *D. taeniatipennis*, respectively, are so far unknown, we have decided to postpone any decision regarding to the status of these two nominal genera. Whether they are to be considered congeneric or not remains an open question.

✓ *Cladochaeta adumbrata* (DUDA, 1925), comb. nov.
(Figs. 4; 153)

Diathoneura adumbrata DUDA, 1925:178; WHEELER, 1963:54 (complementary description).

Material examined. Holotype ♂ (dissected, right wing missing), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.III.31. / *Diathoneura adumbrata* ♂ n. sp. Typ. DET. DR. O. DUDA Holotypus", deposited in HHNM.

Diagnosis. Body color mainly brown; mid orbital near to and slightly outside of anterior one; facial carina absent; wings with large brown clouds along crossveins, costal margin broadly brownish, veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen shiny dark brown.

Redescription. Head mainly brownish. Frons yellowish brown, darker posteriorly, frontal length 0.27 mm, frontal index 1.0, top to bottom width ratio 1.25. Frontal triangle brown, about half frontal length; ocellar triangle about 35% frontal length. Frontorbital plates brown, relatively narrow, apically diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one equal to that to inner vertical; poc 44%, oc 75% of frontal length; vibrissal index 0.3. Face blackish, paler above. Gena brown below eye, cheek index about 12. Eye round, more or less nude, index 1.04. Proboscis brownish; palpi black.

Thorax mainly brown; length about 0.92 mm. Scutum subshiny, yellow anteriorly, darker posteriorly; 6 rows of acrostichals. Transverse distance of dorsocentrals less than 2x longitudinal distance; dc index 0.65. Scutellum round, brown with paler margin; scutellars nearly equidistant. Pleura blackish brown, pollinose. Halteres yellow. Legs brownish yellow, coxae and basal half of fore femora dark brown.

Wing length 1.72 mm; length to width ratio 2.3. Indices: C, 2.6; ac, 1.88; hb, 0.33; 4c, 0.94; 4v, 1.63; 5x, 0.88; M, 0.44; prox. x, 0.63.

Terminalia ♂ (Figs. 4; 153 C). Epandrium with about 5 lower and 3 upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, mostly covered with small bristles on distal surface, linked to epandrium by membranous tissue. Decasternum absent. Hypandrium posteriorly concave and keeled, shorter than epandrium; bow absent; gonopod absent. Aedeagus laterally flattened, subapically bearing lateral folds which act as sheath for the parameres, ventral base (which probably represents the fused anterior paramere) keel-shaped. Aedeagal apodeme linked to both hypandrium and to parameres by membranous tissue, shorter than aedeagus, probably reduced to the ventral rod, which has a deep dorsal invagination where the ventral "keel" of aedeagus lies. Ventral rod as in fig. 4 E. Posterior parameres long, bent downwards, sharply pointed, proximally fused to each other, strongly asymmetric, right one less than two third length of left one.

• *Cladochaeta bomplandi* (MALLOCH, 1934), comb. nov.
(Figs. 5 A, B; 143)

Diathoneura bomplandi MALLOCH, 1934:438.

Clastopteromyia bomplandi (Malloch); FROTA-PESSOA, 1947:198, 227 (♀ terminalia); WHEELER, 1957:107.

Material examined. Holotype ♀ (left wing missing), labelled "Holotype / Type / *Diathoneura bomplandi* Type det. JRMALLOCH / Bompland. 13-14.I.1927 /

Argentina Misiones Terr. F. & M. Edwards BM. 1927-63 / ♀ *Cladochaeta bomplandi* (Malloch) Bächli & Vilela det. 1990"; paratype ♀ (dissected, right wing microslide-mounted) same data as holotype, both deposited in BMNH.

Diagnosis. Body color mainly yellow; mid orbital just outside of or slightly in front of anterior one; facial carina narrow, flat, short; wings with 2 black large spots around crossveins and an oblique transverse band from tip of vein r_{2+3} to m; veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen brown.

Redescription. Head yellow. Frons golden yellow, frontal length 0.27 mm, frontal index 0.8 - 0.84, top to bottom width ratio 1.2 - 1.26. Frontal triangle indistinct; ocellar triangle darker, about 35% frontal length. Frontorbital plates narrow, not diverging from eye margin, about 60% frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.75 - 0.87, of mid to anterior orbital 0.5 - 0.62; poc 50% - 56%, oc 100% - 113% of frontal length; vibrissal index 0.29 - 0.46. Cheek index about 9 - 10. Eye index 1.08 - 1.11. First flagellomere short-haired; length to width ratio 1.14 - 1.57. Arista with 5 upper and 1 lower branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax yellow; length 1.06 mm; h index 2.14 - 2.29; 6 - 8 rows of acrostichals; dc index 0.62. Transverse distance of dorsocentrals about 2.5x longitudinal distance; sterno index 0.43; mid katepisternal about 50% of anterior. Halteres and legs yellow.

Wing (Fig. 143), length 2.31 - 2.51 mm; length to width ratio 2.33 - 2.38. Indices: C, 2.0 - 2.15; ac, 2.0 - 2.22; hb, 0.35 - 0.4; 4c, 1.05 - 1.25; 4v, 1.84 - 2.06; 5x, 0.89 - 1.0; M, 0.42 - 0.5; prox. x, 0.42 - 0.63.

Terminalia ♀ (Figs. 5 A, B). Ovipositor plate distally micropubescent and bearing 15 long bristles; plates proximally fused to each other and linked to a single, concave, directed frontwards, heavily sclerotized plate. Spermatheca and ventral receptacle not identified.

• *Cladochaeta floridana* (MALLOCH, 1924)

(Figs. 6; 143; 153)

Cladoteromyia floridana MALLOCH, 1924:10; STURTEVANT, 1942:27; FROTA-PESSOA, 1947:216.

Cladochaeta floridana (MALLOCH); WHEELER & TAKADA, 1971:234 (proposed new combination, ♂ terminalia, misidentification).

Material examined. Holotype ♂ (originally described as a ♀, dissected, left wing microslide-mounted), labelled "Fort Lauderdale Feb. 18.1919, Fla. / AWetmore Collector / Type No. 26699 U.S.N.M. / *Cladoteromyia floridana* Mall. Det. JRMalloch / ♂ *Cladochaeta floridana* (Malloch) Bächli & Vilela det 1990", deposited in NMNH.

Diagnosis. Body color yellowish brown; facial carina absent; wings brownish, darker along costal margin, with 2 large clouds along both crossveins, vein r_{4+5} and m divergent, anal vein absent, alula reduced; length 1.91 mm; abdomen black.

Redescription. Head yellow. Frons dull yellow, frontal length 0.25 mm, frontal index 1.0, top to bottom width ratio 1.2. Frontal triangle about 2/3 frontal length; ocellar triangle about 1/3 frontal length. Frontorbital plates narrow, slightly diverging from eye margin, about 60% frontal length. Distance of posterior orbital to anterior one 80% of that to inner vertical; poc 40%, oc 73%

of frontal length; vibrissal index 0.33. Cheek index about 10. Eye nude, index 1.05. First flagellomere short-haired; length to width ratio 1.4. Arista with 3 upper branches, lower branches and terminal fork absent, inner branches short. Proboscis and palpi yellow.

Thorax yellowish brown; length about 0.79 mm. Scutum slightly pollinose. Transverse distance of dorsocentrals about 170% longitudinal distance; dc index 0.76; scut nearly equidistant, basal scut parallel. Halteres and legs yellow.

Wing (Fig. 143), length to width ratio 2.32. Indices: C, 2.13; ac, 2.29; hb, 0.44; 4c, 1.07; 4v, 1.67; 5x, 1.33; M, 0.53; prox. x, 0.53.

Terminalia ♂ (Figs. 6; 153 E). Epandrium with about 4 lower and 3 upper bristles. Cerci not fused to epandrium. Surstylus partially micropubescent, bearing about 25 bristles on distal surface, linked to epandrium by membranous tissue. Decasternum absent. Hypandrium posteriorly concave and keeled, shorter than epandrium; bow absent; gonopod absent. Aedeagus mouse skull-shaped, ventral end pointed downwards (probably represents the fused anterior parameres). Aedeagal apodeme shorter than aedeagus, apparently reduced to the ventral rod, linked to both hypandrium and parameres by membranous tissue. Posterior parameres long, bent downwards, sharply pointed, proximally fused to each other, strongly asymmetric, right one about two third length of left one.

Note. The male terminalia figured by WHEELER & TAKADA (1971:236) as probably belonging to *Cladochaeta floridana* are quite different from those of the holotype of this species and certainly belong to an undescribed species.

• *Cladochaeta infumata* (DUDA, 1925)
(Figs. 5 C, D; 143; 164)

Diathoneura infumata DUDA, 1925:179.

Clastopteromyia infumata (DUDA); FROTA-PESSOA, 1947:216 (proposed new combination).

Cladochaeta infumata (DUDA); WHEELER, 1963:55 (proposed new combination); WHEELER & TAKADA, 1971:233 (♂ terminalia).

Material examined. Holotype ♀ (dissected, left wing microslide-mounted), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.IV.14. / *Diathoneura infumata* ♀ n. sp. d. DUDA / Holotypus / Lectotypus Bächli '83 / ♀ *Cladochaeta infumata* (Duda) Bächli & Vilela det. 1990", deposited in HHM.

Diagnosis. Body color mainly yellow; mid orbital near to and outside of anterior one; facial carina absent; arista long, with only 1 upper branch near to base; wings narrow, fuscous, especially along costal margin, both crossveins slightly clouded, anal vein absent, alula reduced; abdomen shiny brownish, margins slightly darker.

Redescription. Head yellow. Frons golden yellow, frontal length 0.3 mm, frontal index 1.13, top to bottom width ratio 1.25. Frontal triangle not very distinct, about 45% frontal length; ocellar triangle darker, about 1/3 frontal length. Frontal vittae slightly brownish above, with 6 relatively long interfrontals. Frontorbital plates narrow, distinctly diverging from eye margin, about 60% frontal length. Distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.92, of mid to anterior orbital 0.25; poc 44%, oc 72% of frontal length; vibrissal index 0.36; vt index 1.14. Cheek index about 12. Eye round, nude, index 1.04. Pedicel and first flagellomere brown; length to width ratio 1.5. Proboscis and palpi yellow.

Thorax mainly yellow; length about 1.06 mm. Scutum dull brownish yellow; h index 1.67; 6 rows of acrostichals. Transverse distance of dorsocentrals about 1.7x longitudinal distance. Scutellum apically round; scut nearly equidistant, basal scut divergent, scut index 1.21; sterno index 0.57; mid katepisternal absent. Halteres and legs yellow.

Wing (Fig. 143), length 2.31 mm; length to width ratio 2.5. Indices: C, 3.54; ac, 1.86; hb, 0.31; 4c, 0.68; 4v, 1.63; 5x, 1.5; M, 0.47; prox. x, 0.53.

Terminalia ♀ (Figs. 5 C, D; 164 C). Ovipositor plate mostly micropubescent, distally bearing 4-5 long bristles; plates proximally fused to each other and linked to a single, concave, directed frontwards, heavily sclerotized plate. Spermatheca not identified. Ventral receptacle expanded and introverted at distal end.

- *Cladochaeta minuta* (DUDA, 1925), comb. nov.

(Figs. 7; 8; 153)

Diathoneura minuta DUDA, 1925:182; WHEELER, 1963:55 (lectotype designation, complementary description), 59 (♂ terminalia).

Material examined. Lectotype ♂ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.V.14 / D. minuta type DET. DR. O. DUDA / Syntypus / LECTOTYPE minuta Duda selected by MRWheeler JUNE 1962 / ♂ *Cladochaeta minuta* (Duda) Bächli & Vilela det. 1990"; 3 paralectotypes (1 ♂, 2 ♀), same data as lectotype except date of collection, 1 ♀ (dissected) "1921.V.9.", 1 ♀ (dissected) "1921.V.6.", 1 ♂ "1921.V.11.", all except the ♂ paralectotype (in ZMB) deposited in HHNM.

Diagnosis. Body color mainly brownish; mid orbital very near to and outside of anterior one; facial carina absent; wings slightly brown, anal vein absent, alula reduced; abdomen dull brown.

Redescription. Head yellow with brown frons. Frontal length 0.17 mm, frontal index 0.83, top to bottom width ratio 1.17 - 1.25. Frontal triangle subshiny, about half frontal length; ocellar triangle darker, about 40% frontal length. Frontorbital plates relatively narrow, not diverging from eye margin, about 3/4 frontal length. Length ratio of anterior to posterior orbital 0.88 - 1.17, of mid to anterior orbital 0.29; poc 50%, oc 70% - 80% of frontal length; vibrissal index 0.29 - 0.38. Cheek index about 16. Eye nude, index 1.07 - 1.14. Pedicel and first flagellomere brown; length to width ratio 1.0 - 1.2. Arista with 4 upper and 1 lower short branches, plus small terminal fork. Proboscis brownish. Palpi black.

Thorax brownish; length about 0.53 - 0.59 mm; h index 3.5; 6 rows of acrostichals; dc index 0.5 - 0.57. Scutellum apically round and pale; scut nearly equidistant, basal scut divergent, scut index 1.07 - 1.15; sterno index 0.55; mid katepisternal absent. Halteres and legs brown.

Wing length 1.32 - 1.42 mm; length to width ratio 2.15 - 2.5. Indices: C, 1.85 - 1.92; ac, 1.86 - 3.25; hb, 0.38 - 0.46; 4c, 1.3; 4v, 2.0 - 2.1; 5x, 3.0; M, 0.9; prox. x, 0.5 - 0.6.

Terminalia ♂ (Figs. 7; 8 A-E; 153 D). Epandrium with about 4 lower and 2 upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, anteriorly bearing about 5 ribbon-shaped and 20 long bristles on inner surface. Decasternum absent Hypandrium posteriorly concave, anteriorly keeled, shorter than epandrium; bow absent; gonopod absent. Aedeagus linked to parameres by

membranous tissue, laterally expanded (which probably represents anterior paramere fused to aedeagus), ventrally flattened; dorsal region membranous at distal half, which is covered with some tiny spines. Aedeagal apodeme as long as aedeagus, laterally flattened. Ventral rod as in fig. 7 E. Posterior parameres bare, long, proximally widely fused to each other and linked to apodeme by membranous tissue, distally bent downwards, partially covering the aedeagus; anterior parameres absent.

Terminalia ♀ (Fig. 8 F-G). Ovipositor plate fused to tergite VIII, mostly micropubescent, distally bearing 11 long bristles. Spermatheca and ventral receptacle not identified.

Note. The paralectotype labelled "1921.V.6." (Fig. 8 H-I), the one probably mentioned by Wheeler (1963:55), has a more roundish wing tip, divergent veins r_{4+5} and m ; it belongs to a different species and is additionally labelled "Cladochaeta undet. sp. Bächli & Vilela det. 1990".

Cladochaeta nebulosa COQUILLET, 1900

(Figs. 37 C, D; 143)

Cladochaeta nebulosa COQUILLET, 1900:263; WHEELER, 1957:103; WHEELER & TAKADA, 1971 (♂ terminalia).

Material examined. Holotype ♀ (dissected, right wing microslide-mounted, head missing), labelled "Arroyo Feb 1899 / PortoRico AugBusck / Type No. 4341 U.S.N.M. / Cladochaeta nebulosa Coq.", deposited in NMNH.

Diagnosis. Body color mainly yellow; wings long, narrow, brownish along costal margin, with brown clouds along both crossveins, veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen pollinose brown.

Redescription. Thorax yellow; length about 0.8 mm; 6 rows of acrostichals. Transverse distance of dorsocentrals about 175% of longitudinal distance. Scutellum brownish, apically round; scut nearly equidistant, basal scut convergent. Pleura dark above. Halteres and legs yellow.

Wing (Fig. 143), length 1.78 mm. Indices: C, 2.0; hb, 0.33; 4c, 1.15; 4v, 1.77; prox. x, 0.69.

Terminalia ♀ (Fig. 37 C, D). Ovipositor plate distally micropubescent and bearing 8 long bristles; plates anteriorly fused to each other, proximally linked to a single, narrow, concave, anteriorly directed frontwards, heavily sclerotized plate. Ventral lobes of tergite VIII extensively fused to each other. Spermatheca not identified. Ventral receptacle expanded and introverted at distal end.

Cladochaeta paradoxa (LAMB, 1918)

(Figs. 5 E, F; 144; 153)

Drosophila paradoxa LAMB, 1918:159; STURTEVANT, 1921:72 (redescription).

Clastopterymyia paradoxa (LAMB); STURTEVANT, 1942:27 (proposed new combination); FROTA-PESSOA, 1947:217.

Cladochaeta paradoxa (LAMB); WHEELER, 1981:34 (proposed new combination).

Material examined. LECTOTYPE ♂ (by present designation, in bad conditions, previously dissected, glued on a plastic square, left wing microslide-

mounted, head missing), labelled "SYNTYPE / Type / TRINIDAD St. Joseph 5.XII.17 C.B.Williams Clastoptera / Pres. by Imp. Bur. Ent. Brit. Mus. 1925-510. / ♂ genitalia in slide collection / Dr. paradoxa the supposed ♀ / LECTOTYPE ♂ *Cladochaeta paradoxa* (Lamb) by Bächli & Vilela 1990"; 2 paralectotypes ♀ (misidentified as males on the labels, right wing of one ♀ microslide-mounted), both collected in the same island as lectotype in XII.1917, and bearing one additional label "parasite of cercopid Clastoptera sp.", all deposited in BMNH.

Diagnosis. Body color mainly yellow; mid orbital just outside of anterior one; facial carina absent; one additional somewhat enlarged dorsocentral in front of the anterior one; wings brownish, darker along costal margin, both crossveins distinctly clouded, anal vein absent, alula reduced; abdomen shiny brown, darker towards tip.

Redescription. Head yellow. Frontal length 0.27 - 0.29 mm, frontal index 0.94 - 1.0, top to bottom width ratio 1.11 - 1.19. Frontal triangle not very distinct, about 60% frontal length; ocellar triangle about 40% frontal length. Frontorbital plates relatively broad, not diverging from eye margin, about 70% frontal length. Distance of posterior orbital to anterior one 70% of that to inner vertical. Length ratio of anterior to posterior orbital 0.86, of mid to anterior orbital 0.5; poc 35% - 38%, oc 76% - 81% of frontal length; vibrissal index 0.44 - 0.6. Cheek index about 8 - 12. Eye round, more or less nude, index 1.04. First flagellomere short-haired; length to width ratio 1.17. Arista with 3 upper and 1 lower long branches, plus long terminal fork. Proboscis and palpi yellow.

Thorax yellow; length about 0.89 mm; h index 1.38; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.5 - 0.52. Scutellum apically round; scut nearly equidistant, basal scut divergent, scut index 1.14 - 1.19; sterno index 0.5 - 0.53; mid katapisternal absent. Halteres and legs yellow.

Wing (Fig. 144), length 1.65 - 1.68 mm; length to width ratio 2.13 - 2.17. Indices: C, 2.14 - 2.21; ac, 2.8; hb, 0.29 - 0.36; 4c, 0.93 - 1.0; 4v, 1.4 - 1.64; 5x, 1.17 - 1.6; M, 0.5 - 0.53; prox. x, 0.47 - 0.5.

Terminalia ♂ (Fig. 5, 153 F). Epandrium with 7-8 lower and no upper bristles. Cerci not fused to epandrium. Surstylus linked to epandrium by membranous tissue, not micropubescent, bearing apparently more than 20, less than 30 bristles on its distal surface. Decasternum absent. Hypandrium shorter than epandrium; bow absent; gonopod absent. Aedeagus mostly membranous, positioned between the dorsal and ventral branches of parameres. Aedeagal apodeme as long as aedeagus, laterally flattened. Posterior parameres long, curved, proximally fused to each other, distally sharply pointed, submedially bifid at ventral region, linked to apodeme by membranous tissue; dorsal branches directed frontwards and about three times longer than ventral branches, which are directed inwards.

Terminalia ♀ (Fig. 5 E, F). Ovipositor plate not micropubescent, distally bearing 6 long bristles on its dorsal margin; plates dorsally fused to each other, proximally linked to a single, distally bifid, concave, directed frontwards, heavily sclerotized plate. Spermatheca not identified. Ventral receptacle with the diameter slightly larger at distal end.

Note. The male terminalia of this species seem to be very similar to those figured by WHEELER and TAKADA (19781:235) for a specimen collected in Ontario, Canada, and identified by them as *Cladochaeta inversa*, whose type is apparently lost.

✓ *Cladochaeta sororia* (WILLISTON, 1896), comb. nov.

(Figs. 9; 10; 144; 153)

Drosophila sororia WILLISTON, 1896:408; STURTEVANT, 1921:87 (redescription).

Material examined. LECTOTYPE ♂ (by present designation, head & left wing missing, dissected), labelled "SYNTYPE / Cotype / Windward side St. Vincent, W.I. H.H.Smith / W. Indies 1907-66. / *Drosophila sororia* Will. / LECTOTYPE ♂ *Cladochaeta sororia* (Williston) by Bächli & Vilela 1990"; 3 paralectotypes (1 ♂, 2 ♀, all dissected, right wings of ♂ and 1 ♀ microslide-mounted), same labels as lectotype but 1 ♀ bears one additional "1000 feet", all deposited in BMNH.

Diagnosis. Body color mainly yellow; mid orbital very narrow to and slightly outside of anterior one; facial carina absent; wings with large brown spots around both crossveins and at tip of vein r_{2+3} ; veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen brown, with narrow, diffuse darker marginal bands.

Redescription. Head mainly yellow. Frontal length 0.22 mm, frontal index 1.0, top to bottom width ratio 1.23. Frontal triangle not very distinct, about 2/3 frontal length; ocellar triangle darker, about 40% frontal length. Frontorbital plates narrow, apically slightly diverging from eye margin, about 60% frontal length. Distance of posterior orbital to anterior one half of that to inner vertical. Length ratio of anterior to posterior orbital 0.9, of mid to anterior orbital 0.33; poc 38%, oc 77% - 85% of frontal length; vibrissal index 0.5. Cheek index about 9 - 10. Eye index 1.12. First flagellomere brown. Arista with 3 - 4 long upper and no lower branches, plus very long terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax yellow; length about 0.66 - 0.69 mm; h index 1.5 - 2.0; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.73. Scutellum apically round; scutellars nearly equidistant; scut index 1.0; sterno index 0.5. Halteres and legs yellow.

Wing (Fig. 144), length 1.39 - 1.55 mm; length to width ratio 2.35. Indices: C, 1.85; ac, 2.33 - 2.6; hb, 0.36 - 0.38; 4c, 1.27 - 1.3; 4v, 1.9; 5x, 1.5 - 1.75; M, 0.6 - 0.64; prox. x, 0.6 - 0.64.

Terminalia ♂ (Figs. 9 A, B; 10; 153 G). Epandrium with 10-11 lower and no upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, mostly covered with large bristles on distal surface, linked to epandrium by membranous tissue. Decasternum membranous. Hypandrium posteriorly concave and slightly keeled, shorter than epandrium; bow absent; gonopod absent. Aedeagus slightly asymmetric at distal end, linked both to parameres and to apodeme by membranous tissue; proximal region laterally flattened with 3 sharply pointed projections. Aedeagal apodeme as long as aedeagus, hypandrium-shaped, with a deep dorsal invagination, which acts as a sheath for 2 proximal projections (which probably represent the fused anterior parameres) of ventral surface of aedeagus. Ventral rod as in fig. 10 G. Posterior parameres long, dorsoventrally flattened, strongly asymmetric, right one pointed at tip, left one widely expanded laterally at distal end.

Terminalia ♀ (Fig. 9 C, D). Ovipositor plate very wide, distally micropubescent, bearing about 12 long bristles; plates anteriorly fused to each other, proximally linked to a single, concave, directed frontwards, heavily sclerotized plate. Spermatheca and ventral receptacle not identified.

✓ *Cladochaeta sturtevanti* WHEELER & TAKADA, 1971
(Figs. 11; 144; 153)

Cladochaeta sturtevanti WHEELER & TAKADA, 1971:234.

Material examined. Two ♂ (one dissected and left wing microslide-mounted), labelled "Arcadia Cal. 10-15-49 MWheeler Coll. / Clast. inversa (sic) / ♂ *Cladochaeta sturtevanti* W. & T. Bächli & Vilela det. 1990", both deposited in ZMZ.

Diagnosis. Body color mainly yellow; mid orbital just outside of anterior one; facial carina absent; wings brownish, darker along costal margin, both crossveins distinctly clouded, anal vein absent, alula reduced; abdomen brown.

Redescription. Head yellow. Frontal length 0.27 mm, frontal index 0.94, top to bottom width ratio 1.29. Frontal triangle short; ocellar triangle about 35% frontal length. Frontorbital plates narrow, apically somewhat diverging from eye margin, about 60% frontal length. Distance of posterior orbital to anterior one about 80% of that to inner vertical. Length ratio of anterior to posterior orbital 0.86, of mid to anterior orbital 0.33; poc 38%, oc 88% of frontal length; vibrissal index 0.33. Cheek index about 6. Eye index 1.05. First flagellomere brownish; length to width ratio 1.33. Arista with 4 upper and 1 lower branches, plus short terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax yellow; length about 0.92 mm; h index 1.36; 6 rows of acrostichals. Transverse distance of dorsocentrals 2x longitudinal distance; dc index 0.5; scutellars nearly equidistant; scut index 1.18. Halteres brownish. Legs pale yellow.

Wing (Fig. 144), length 2.15 mm; length to width ratio 2.41. Indices: C, 2.24; ac, 2.83; hb, 0.35; 4c, 1.13; 4v, 2.07; 5x, 2.4; M, 0.8; prox. x, 0.6.

Terminalia ♂ (Figs. 11; 153 H). Epandrium with 4 lower and no upper bristles. Cerci not fused to epandrium. Surstylus linked to epandrium by membranous tissue, not micropubescent, bearing about 38 bristles on inner distal surface, distally developed into a hook-shaped ventral projection, which is directed backwards. Decasternum absent. Hypandrium posteriorly concave and keeled, shorter than epandrium; bow absent, gonopod absent. Aedeagus mostly membranous. Aedeagal apodeme as long as aedeagus, with a dorsal invagination, laterally flattened. Ventral rod as in fig. 11 E. Two pairs of bare parameres, anterior ones bent, sharply pointed downwards; posterior parameres proximally widely fused to each other, linked to apodeme by membranous tissue, submedially bifid; uppermost projections standing between anterior parameres and aedeagus.

✓ *Cladochaeta uniradiata* (DUDA, 1925), comb. nov.
(Figs. 12; 153)

Diathoneura uniradiata DUDA, 1925:181; WHEELER, 1963:57 (lectotype designation, complementary description), 59 (♂♀ terminalia).

Clastopteryomyia uniradiata (DUDA); FROTA-PESSOA, 1947:218 (proposed new combination).

Material examined. Lectotype ♂ (dissected), labelled "COSTA RICA SUÍZA DE TURRIALBA / 1921.V.7. / *Diathoneura uniradiata* n. sp. ♂ d. Duda / Syntypus / LECTOTYPE *uniradiata* Duda selected by MRWheeler June 1962"; 5 paralectotypes (3 ♂, 2 ♀), same data as lectotype except date of collection, 1 ♂ "1921.IV.23", 1 ♂ "1921.VI.20.", 1 ♂ "1921.VI.29", 1 ♀ (dissected) "1921.V.21", 1 ♀ "1921.VI.3."; to all paralectotypes we add the label "PARALECTOTYPE *Cladochaeta uniradiata* (Duda) by Bächli & Vilela 1990", all except 1 ♂ ("VI.20.", in ZMB) deposited in HHNM.

Diagnosis. Body color mainly brown; mid orbital just outside of anterior one; facial carina absent; wings brown, slightly darker along costal section II, anal vein absent, alula reduced; abdomen shiny brown, paler at base, with diffuse darker narrow marginal bands.

Redescription. Head yellowish brown. Frons dull brown, frontal length 0.26 - 0.3 mm, frontal index 0.84 - 0.9, top to bottom width ratio 1.16 - 1.25. Frontal triangle indistinct; ocellar triangle darker, about 40% frontal length. Frontorbital plates not diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one 40% of that to inner vertical. Length ratio of anterior to posterior orbital 0.76 - 0.87, of mid to anterior orbital 0.46 - 0.54; poc 50% - 56%, oc 94% - 106% of frontal length; vibrissal index 0.33 - 0.36. Face brownish yellow. Cheek index about 9 - 10. Eye more or less nude, index 1.07 - 1.12. First flagellomere brown; length to width ratio 1.14 - 1.43. Arista with 5 - 6 upper and only 1 lower long branches, plus long terminal fork, inner branches relatively long. Palpi brownish.

Thorax mainly yellow; length about 0.73 - 0.83 mm. Scutum dull brownish yellow, darker brown posteriorly; h index 3.5 - 4.3; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.73 - 0.76. Scutellum brown, apically yellow and round; scut nearly equidistant, basal scut divergent, scut index 1.0 - 1.04. Pleura dark brown; sterno index 0.41 - 0.43; mid katepisternal about 44% - 67% of the anterior one. Halteres and legs brownish, knees lighter, femora somewhat thickened.

Wing length 2.44 mm; length to width ratio 2.39. Indices: C, 2.56; ac, 1.7 - 1.8; hb, 0.33 - 0.47; 4c, 0.81 - 1.11; 4v, 1.62 - 1.65; 5x, 1.83 - 1.86; M, 0.55 - 0.62; prox. x, 0.45.

Terminalia ♂ (Figs. 12 A-G; 153 I). Epandrium with about 7 lower and 4 upper bristles. Cerci not fused to epandrium. Surstylus mostly micropubescent, distally with a lobe bearing 5 long bristles. Decasternum absent. Hypandrium posteriorly concave and keeled, shorter than epandrium, linked to apodeme by membranous tissue; bow absent; gonopod absent. Aedeagus linked both to parameres and aedeagal apodeme by membranous tissue, laterally flattened; ventral end pointed downwards, dorsal end expanded upwards and subapically covered with tiny spines. Aedeagal apodeme slightly longer than aedeagus, anteriorly flattened dorso-ventrally, with a deep dorsal invagination which acts as a sheath for the anterior parameres. Ventral rod as in fig. 12 E. Two pairs of bare parameres, anterior ones ventrally fused, posterior ones long, sinuate, distally pointed and partially covering the aedeagus.

Terminalia ♀ (Fig. 12 H, I). Ovipositor plate L-shaped in profile, distally bearing strong bristles and medially micropubescent. Spermatheca not identified. Ventral receptacle expanded and introverted at distal end.

Genus *Diathoneura* DUDA, 1924:180

Species included: 37. According to the shape of ♂ and ♀ terminalia as well as based on the modified diagnosis given below the following species, in addition to the species mentioned thereafter, belong to *Diathoneura*: *D. bicolor* (FROTA-PESSOA, 1947:211), NEW COMBINATION; *D. carrerai* (FROTA-PESSOA, 1947:200), NEW COMBINATION; *D. cavalcantii* (FROTA-PESSOA, 1947:204), NEW COMBINATION; *D. iheringi* (FROTA-PESSOA, 1947:206), NEW COM-

BINATION; *D. lopei* (FROTA-PESSOA, 1947:213), NEW COMBINATION; *D. montei* (FROTA-PESSOA, 1947:210), NEW COMBINATION; *D. pilifrons* (FROTA-PESSOA, 194:208), NEW COMBINATION; *D. superba* (STURTEVANT, 1916:342), NEW COMBINATION; *Cladochaeta aberrans* (WHEELER, 1957:107) is probably also to be included here.

Diagnosis. Arista with 3 to 10 upper and 2 to 5 lower branches; mid orbital usually minute; postocellars convergent, relatively short; usually only 1 prominent vibrissal; facial carina more or less absent; upper postpronotal shorter or longer than lower one; no prescutellars; acrostichals in 4 to 10, usually in 6 rows; anterior katepisternal of variable length; eyes usually more or less nude; hb index usually more than 0.5; anal cell and anal vein absent; alula reduced; in many species, ventral margin of male cercus extended downwards into a distally slightly twisted plate, which lies between surstyli; most species with a relatively short aedeagus, not fused to the long, rod-shaped, aedeagal apodeme; spermathecae membranous (except at least in *Diathoneura cruciata*) somewhat spherical, bearing a bag-shaped expansion apically.

Note. Regarding the generic limits, see our comments under the genus *Cladochaeta*.

* *Diathoneura albifacies* DUDA, 1925

(Figs. 13; 154)

Diathoneura albifacies DUDA, 1925:181; WHEELER, 1963:54 (lectotype designation).

Clastopteromyia albifacies (DUDA); FROTA-PESSOA, 1947:216 (proposed new combination).

Material examined. Lectotype ♂ (dissected), labelled "COSTA RICA 1921. SUIZA DE TURRIALBA / VI.30. / *Diathoneura albifacies* ♂ DET. DR. O. DUDA / SynTypus / LECTOTYPE albifacies Duda selected by MRWheeler JUNE 1962"; 5 paralectotypes (1 ♂, 4 ♀; 1 ♀ dissected), same data as lectotype except date of collection: 3 ♀ with no specified date, 1 ♀ "1921.VI.20." and the ♂ "1921.V.22"; all except 1 ♀ (in ZMB, without date, not dissected) deposited in HHNM.

Diagnosis. Body color mainly yellowish brown; mid orbital just outside of anterior one; face shiny white; facial carina absent; pleura with 2 more or less sharp brown longitudinal stripes; wings brownish, darker along costal margin, anal veins absent, alula reduced; abdomen dull brownish.

Redescription. Head mainly yellow. Frons dull brownish yellow, darker posteriorly, frontal length 0.27 - 0.3 mm, frontal index 0.67 - 0.86, top to bottom width ratio 1.14; ocellar triangle about 40% frontal length. Frontorbital plates relatively narrow, not diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.67, of mid to anterior orbital 0.67 - 0.7; poc 43%, oc 94% - 107% of frontal length; vibrissal index 0.31. Cheek index about 14 - 16. Eye nude, index 1.12 - 1.19. Pedicel and first flagellomere brown; length to width ratio 1.5 - 1.6. Arista with 6 upper and 3 lower relatively long branches, plus small terminal fork. Palpi brown.

Thorax brownish yellow; length about 1.0 - 1.12 mm. Scutum brownish, anteriorly yellowish. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.64. Scutellum apically round, brown, with paler margin; scut nearly equidistant, basal scut divergent, scut index 1.04; sterno index 0.32; mid katepisternal about 200% of the anterior one. Halteres and legs yellow.

Wing length 2.05 - 2.41 mm; length to width ratio 2.38 - 2.52. Indices: C, 1.79 - 1.9; ac, 2.63 - 2.71; hb, 0.67 - 0.68; 4c, 1.11 - 1.36; 4v, 1.74 - 2.0; 5x, 1.43 - 1.5; M, 0.53 - 0.64; prox. x, 0.47 - 0.57.

Terminalia ♂ (Figs. 13 A-H; 154 A). Epandrium mostly covered with long bristles. Cerci not fused to epandrium, lower margin extended downwards into a distally directed backwards, twisted plate. Surstylus not micropubescent, bearing on inner margin a compact tuft of about 12 long bristles ventrally, and about 12 shorter bristles dorsally plus many additional bristles on inner surface. Decasternum absent. Hypandrium shorter than epandrium; bow absent; gonopod fused to hypandrium which is bare. Aedeagus not fused to aedeagal apodeme, rounded at tip, laterally with a small concavity at middle area. Aedeagal apodeme longer than aedeagus, laterally flattened, anteriorly expanded. Ventral rod as in fig. 13 F. Anterior paramere curved, distally twisted, linked to apodeme, to aedeagus and to hypandrium by membranous tissue, laterally bearing about 8 sensilla on a paramedian row; distal margin serrated. Posterior parameres apparently fused to each other and transformed into a bow-shaped sclerite probably fused to posterior region of hypandrium.

Terminalia ♀ (Fig. 13 I). Inner margin of tergite VIII, just below the hypoproct, heavily sclerotized. Ovipositor plate apically curved, proximally fused to very long, hypandrium-shaped, heavily sclerotized sclerite, and bearing 6-7 stout teeth and 4 bristles; plates dorsally linked to each other by a heavily sclerotized bridge. Spermatheca membranous, somewhat spherical, bearing a bag-shaped structure apically.

↓ ***Diathoneura albinota* (WHEELER, 1957), comb. nov.**
(Figs. 14; 154)

Clastopteromyia albinota WHEELER, 1957:108.

Cladochaeta albinota (WHEELER); WHEELER & TAKADA, 1971:234 (proposed new combination).

Material examined. Holotype ♂ (dissected), labelled "Panama Cerro la Campana / 60 Klm (sic) SW Panama City / WBHeed HLCarson MWasserman / Aug 1956 / HOLOTYPE / *Clastopteromyia albinota* Wheeler / ♂ *Diathoneura albinota* (Wheeler) Bächli & Vilela det. 1990", deposited in NMNH.

Diagnosis. Body color mainly whitish yellow; orbitals equidistant, nearly in a line; facial carina absent; gena white, vibrissal area blackish; palpi black; scutum yellowish white, with 2 narrow, faint longitudinal stripes along dc lines; pleura with 2 sharply defined broad black longitudinal stripes, interrupted by a narrow yellow stripe; wings uniformly brown, veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen subshiny brown.

Redescription. Head whitish. Frons subshiny white, frontal length 0.25 mm, frontal index 0.83, top to bottom width ratio 1.22. Frontal triangle indistinct; ocellar triangle about 1/3 frontal length. Frontal vittae yellowish white. Frontorbital plates narrow, apically diverging from eye margin, about 3/4 frontal length. Distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.83, of mid to anterior orbital 0.2; poc 20%, oc 87% of frontal length; vibrissal index 0.33; vt index 0.86. Face white. Cheek index about 12. Eye nude, roundish, oblique, index 1.19. First flagellomere marginally black; length to width ratio 1.33. Arista with 4 upper and 2 lower relatively long branches, plus terminal fork, inner branches long. Proboscis brown.

Thorax dorsally white, laterally black; length about 0.82 mm; h index 0.9; 6 rows of acrostichals. Transverse distance of dorsocentrals about 230 % of longitudinal distance; dc index 0.67. Scutellum white, apically round; scut nearly equidistant, basal scut divergent, scut index 1.05; sterno index 0.59; mid katepisternal about 30% of the anterior one. Halteres black. Legs brown.

Wing length 1.68 mm; length to width ratio 2.32. Indices: C, 1.8; ac, 2.14; hb, 0.53; 4c, 1.25; 4v, 1.83; 5x, 1.4; M, 0.58; prox. x, 0.58.

Terminalia ♂ (Figs. 14; 154 B). Epandrium with 6 lower and 3 upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 7 primary teeth on a sinuate row, no secondary teeth and about 3 large marginal bristles. Decasternum as in fig. 14 B. Hypandrium shorter than epandrium, extended (which probably represents a fused paramere) and twisted backwards; bow absent; gonopod fused to hypandrium which bears a pair of lateral bristles and a row of about 7 sensilla on lateral surface distally. Aedeagus apically pointed, fused to apodeme. Aedeagal apodeme longer than aedeagus, rod-shaped, proximally expanded. Ventral rod absent. Anterior parameres apparently fused to hypandrium.

Diathoneura borgmeieri DUDA, 1927

(Figs. 35; 144; 164)

Diathoneura borgmeieri DUDA, 1927:92.

Clastopteronymia borgmeieri (DUDA); PROTA-PESSOA, 1947:198 (proposed new combination).

Material examined. Holotype ♀ (dissected, right wing microslide-mounted), labelled "Petrop. / *Diathoneura borgmeieri* n. sp. DET. DR. O. DUDA / 1. Flügel phot. / Holotypus / Zool. Mus. Berlin", deposited in ZMB.

Diagnosis. Body color mainly brown; mid orbital just outside of anterior one; facial carina absent; wings basally narrowed, brown, with 8 clear spots: one behind costal section I, one in mid of costal section II, one at begin of costal section III, one covering costal section IV, one outside of posterior crossvein, one outside mid of discal cell, narrowly connected with spot 2, two basally and apically, respectively, in cubital cell; veins r_{4+5} and m distinctly divergent but apically slightly convergent, anal vein absent, alula reduced; abdomen shiny dark brown.

Redescription. Head brown above, whitish below. Frons dull brown, anterior corner whitish, frontal length 0.25 mm, frontal index 0.75, top to bottom width ratio 1.1. Frontal triangle indistinct; ocellar triangle blackish, about 40% frontal length. Frontorbital plates narrow, apically diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.8, of mid to anterior orbital 0.42; poc 27%, oc 87% of frontal length; vibrissal index 0.33. Face whitish. Cheek index about 8. Eye nude, index 1.09. First flagellomere brown, marginal hairs about 1/3 width; length to width ratio 1.6. Arista with 4 upper and 2 lower short branches, plus small terminal fork. Palpi black.

Thorax brown; length about 0.8 mm. Scutum shiny. Scutellum short, apically round; scut position index much smaller than 1.0. Halteres yellow. Legs brownish, coxae and basal half of femora white.

Wing (Fig. 144), length 2.31 mm; length to width ratio 2.26. Indices: C, 1.22; ac, 2.08; hb, 0.59; 4c, 1.42; 4v, 1.63; 5x, 1.29; M, 0.47; prox. x, 0.37.

Terminalia ♀ (Figs. 35; 164 D). Inner margins of tergite VIII, just below hypoproct, heavily sclerotized, extended downwards. Ovipositor plate apically curved, distally bearing 3 stout teeth and about 8 bristles, proximally fused to a long, hypandrium-shaped, heavily sclerotized sclerite; plates dorsally heavily sclerotized and twisted inwards subapically. Spermatheca not identified.

✓ *Diathoneura brasiliensis* DUDA, 1927

(Figs. 15; 145; 154; 164)

Diathoneura brasiliensis DUDA, 1927:93.

Clastopterymia brasiliensis (DUDA); FROTA-PESSOA, 1947:201 (proposed new combination), 227 (♀ terminalia).

Material examined. LECTOTYPE ♂ (by present designation, dissected, left wing microslide-mounted), labelled "Petrov / D. brasiliensis n. sp. DET. DR. O. DUDA / Syn-Typus / Zool. Mus. Berlin / LECTOTYPE ♂ *Diathoneura brasiliensis* Duda by Bächli & Vilela 1990"; 1 paralectotype ♀ (dissected, left wing missing, photograph in the original description), with no locality label, both deposited in ZMB.

Diagnosis. Body color mainly brown; mid orbital just outside of anterior one; facial carina absent; wings mainly brown, with 3 irregularly formed clear spots, the brown areas seem to be formed by more or less connected large clouds at wing base, along both crossveins around tip of vein r_{2+3} and at wing tip, anal vein absent, alula reduced; abdomen dark brown pollinose.

Redescription. Head mainly whitish yellow. Frons pale brown, medially and laterally yellowish, frontal length 0.25 - 0.29 mm, frontal index 0.88 - 0.89, top to bottom width ratio 1.12 - 1.16. Frontal triangle about half frontal length; ocellar triangle black, about 40% frontal length. Frontorbital plates narrow, apically diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.79 - 0.87, of mid to anterior orbital 0.46 - 0.64; poc 20% - 24%, oc 80% - 82% of frontal length; vibrissal index 0.38 - 0.5. Face whitish yellow. Cheek index about 11 - 13. Eye more or less nude, index 1.1 - 1.3. Pedicel and first flagellomere brown, marginal hairs slightly enlarged; length to width ratio 1.4 - 1.6. Arista with 4 - 5 upper and 2 - 3 lower short branches, plus small terminal fork. Palpi brown.

Thorax brown; length about 0.76 - 0.89 mm. Scutum pollinose; h index 2.25; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.72. Scutellum slightly pointed, apically yellowish; scut position index much smaller than 1.0, basal scut parallel or slightly convergent, inserted very near to base of scutellum; scut index 1.1; sterno index 0.5 - 0.53; mid katapisternal about 44% of the anterior one. Halteres and legs yellow.

Wing (Fig. 145), length 2.05 - 2.31 mm; length to width ratio 2.41 - 2.48. Indices: C, 1.74 - 1.81; ac, 3.0 - 3.17; hb, 0.57 - 0.68; 4c, 1.11 - 1.19; 4v, 1.79 - 1.88; 5x, 1.29 - 1.33; M, 0.47 - 0.5; prox. x, 0.37 - 0.44.

Terminalia ♂ (Figs. 15 A-G; 154 C). Epandrium with 5-6 lower and 2 upper bristles. Cerci not fused to epandrium; ventral margin extended downwards into a long, narrow, distally twisted plate. Surstylus not micropubescent, with 13-15 sharply pointed teeth arranged in 2 sets separated by a gap. Decasternum dorso-ventrally flattened, two third height of epandrium, ventrally concave. Hypandrium shorter than epandrium; bow spurious; gonopod fused to hypandrium, which is

bare. Aedeagus not fused to aedeagal apodeme, pointed at tip, slightly directed frontwards, distally bearing a membranous tube, proximally bearing a long, cylindrical, backwards directed, dorsal expansion (which probably represents the posterior parameres fused both to each other and to aedeagus). Aedeagal apodeme longer than aedeagus, laterally flattened. Ventral rod as in fig. 15 F. Anterior paramere bare, narrow, very long, curved, distally slightly bifid, proximally expanded, linked to apodeme, to aedeagus and to hypandrium by membranous tissue.

Terminalia ♀ (Figs. 15 H; 164 E). Inner margins of tergite VIII, just below the hypoproct, heavily sclerotized and expanded downwards. Ovipositor plate apically curved, proximally fused to a very long, hypandrium-shaped, heavily sclerotized sclerite bearing 1 stout tooth at distal end and about 4 small bristles on inner surface. Spermatheca membranous, somewhat spherical, bearing a bag-shaped structure apically.

✓ *Diathoneura cruciata* DUDA, 1925

(Figs. 16 A, B; 17; 36 C; 154; 163; 164)

Diathoneura cruciata DUDA, 1925:177; WHEELER, 1963:54; BÄCHLI, 1984a:236 (lectotype designation).

Clastopteromyia cruciata (DUDA); FROTA-PESSOA, 1947:216 (proposed new combination).

Material examined. Lectotype ♀ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / *Diathoneura cruciata* sp. n. Duda / typus / Lectotypus D. cruciata Duda Bächli '83", deposited in NMNH; 2 paralectotypes (1 ♂, dissected, and 1 ♀), same data as lectotype and with dates of collection "1921.IV.5." (♂) and "1921.IV.19" (♀), both deposited in ZMB.

Diagnosis. Body color mainly yellow; mid orbital near to and slightly outside of anterior one; facial carina narrow, prominent in upper half; wings clear, anal vein absent, alula reduced; abdomen yellow, with shiny blackish brown marginal bands which are medially slightly enlarged, most conspicuously so on tergites 6 and 7.

Redescription. Head yellow. Frontal length 0.22 - 0.25 mm, frontal index 0.68, top to bottom width ratio 1.11 - 1.18. Frontal triangle about 60% of frontal length; ocellar triangle brownish, about half frontal length. Frontorbital plates narrow, apically diverging from eye margin, about 3/4 frontal length. Distance of posterior orbital to anterior one about 40% of that to inner vertical. Length ratio of anterior to posterior orbital 0.62 - 0.64, of mid to anterior orbital 0.33 - 0.38; poc 77% - 86%, oc 93% - 100% of frontal length; vibrissal index 0.6 - 0.67; vt index 1.14 - 1.19. Face shiny whitish yellow. Cheek index about 8 - 12. Eye with sparse pile, index 1.09 - 1.21. Pedicel and first flagellomere slightly brownish; length to width ratio 1.4. Arista with 6 upper and 2 lower relatively long branches, plus small terminal fork. Proboscis and palpi yellow.

Thorax yellow; length about 0.79 - 1.0 mm. Scutum shiny; h index 0.36 - 0.53; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.55 - 0.64. Scutellum apically round; scut position index smaller than 1.0, basal scut divergent, scut index 1.28 - 1.43; sterno index 0.5; mid katapisternal about 90% of the anterior one. Halteres and legs yellow.

Wing length 1.65 - 2.31 mm; length to width ratio 2.26 - 2.38. Indices: C, 2.57 - 2.88; ac, 2.67 - 2.8; hb, 0.21 - 0.25; 4c, 0.89 - 1.0; 4v, 1.94 - 2.0; 5x, 1.2 - 2.0; M, 0.33 - 0.57; prox. x, 0.44 - 0.5.

Terminalia ♂ (Figs. 16 A, B; 17; 154 D). Epandrium mostly covered with long bristles; inner margin paramedially bearing a pointed lobe. Cerci not fused to epandrium. Surstylus partially micropubescent, with 4 primary teeth, no secondary teeth and 12 marginal bristles. Decasternum as in fig. 16 B. Hypandrium as long as epandrium; bow absent; gonopod fused to hypandrium, which is slightly micropubescent. Aedeagus apparently not fused to aedeagal apodeme, mostly membranous, bearing 2 lateral, flattened, sharply pointed, dorsally crossed at tip, sclerotized blades; ventrally partially micropubescent. Aedeagal apodeme longer than aedeagus, rod-shaped, distally expanded. Ventral rod apparently absent. Anterior paramere directed sideways, linked to apodeme, to aedeagus and to hypandrium by membranous tissue, and bearing many bristles mainly on ventral surface. Posterior parameres are probably fused to each other and transformed into a dorsal, roof-shaped sclerite apparently linked to aedeagus by membranous tissue.

Terminalia ♀ (Figs. 36 C; 164 F). Inner margin of tergite VIII, just below the hypoproct, heavily sclerotized, backwards extended. Ovipositor plate apically rounded, with about 17 stout teeth; plates dorsally linked to each other by a single, frontwards directed, heavily sclerotized bridge, which seem to be ventral to two inner, also heavily sclerotized plates apparently arising from latero-ventral margins of tergite VIII. The latter ones are somewhat similar to that found in the females of *Cladochaeta* species and in *Diathoneura taeniatipennis* as well. Spermatheca spherical (unusual, as it is characteristically membranous in the remaining so far known species of *Diathoneura*), sclerotized; duct medially invaginated.

Note. One completely developed larva (Fig. 163 K) was found in the "uterus" of the female lectotype. Its cephalopharyngeal skeleton was directed frontwards and its posterior spiracles directed backwards. This fact represents the first case of probable viviparity reported for the genus *Diathoneura*.

♂ *Diathoneura dudai*, sp. nov.

(Figs. 18; 145; 154)

Diathoneura nigrescens DUDA, 1925:184, in part.

Material examined. Holotype ♂ (dissected, mouldy, right wing microslide-mounted), labelled "COSTA RICA SUIZA DE TURRIALBA / 1922.VI.14. / D. nigrescens ♂ DET. DR. O. DUDA / typus / Paralectotypus Bächli '83 / HOLOTYPE ♂ *Diathoneura dudai* sp. nov. Bächli & Vilela det 1990", deposited in HNHM.

Diagnosis. Body color mainly yellowish brown; mid orbital slightly nearer to and slightly outside of anterior one; facial carina more or less absent; pedicel with only one strong bristle on anterior margin; palpi dark brown, broad, with about 8 relatively small ventral bristles; wings relatively long, slightly brownish, anal vein absent, alula reduced; abdomen shiny brown.

Description. Head mainly yellow. Frons broad, shiny brownish, more yellowish anteriorly, frontal length 0.27 mm, frontal index 0.8, top to bottom width ratio 1.3. Frontal triangle indistinct; ocellar triangle brown, about 30% frontal length. Frontorbital plates narrow, not diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 1.0, of mid to anterior orbital 0.27; oc 81% of frontal length; vibrissal index 0.4; verticals relatively distantly inserted, vt index 0.71. Cheek index about 9. Eye more or less nude,

index 1.13. First flagellomere brown; length to width ratio 1.25. Arista with 4 upper and 2 lower long branches, plus terminal fork, inner branches relatively short. Proboscis brown.

Thorax mainly yellow. Scutum shiny, darker posteriorly; dc index 0.67; scut nearly equidistant, basal scut divergent scut index 0.85; sterno index 0.58; mid katepisternal about 55% of the anterior one. Halteres and legs yellow.

Wing (Fig. 145), length 2.67 mm; length to width ratio 1.94. Indices: C, 1.94; ac, 3.0; hb, 0.5; 4c, 1.2; 4v, 2.0; 5x, 1.14; M, 0.53; prox. x, 0.6.

Terminalia ♂ (Figs. 18; 154 E). Epandrium with 7-8 lower and 5-6 upper bristles. Cerci not fused to epandrium; plates slightly fused to each other at tip. Surstylus not micropubescent, mostly fused to epandrium, extended as finger-shaped projections both at upper and lower region; upper projection bearing 4-5 long bristles, lower projection bent, sharply pointed, bare. Decasternum absent. Hypandrium shorter than epandrium; bow absent; gonopod absent. Aedeagus linked to hypandrium by membranous tissue, laterally flattened, distally expanded upwards; ventral surface deeply concave at distal end. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod and parameres absent (the latter probably fused both to each other and to aedeagus).

Etymology. Named in honor of the dipterist OSWALD DUDA.

Note. The male holotype of this species originally belonged to the type-series of *D. nigrescens* Duda with which it somewhat resembles regarding the external morphology but possesses quite different terminalia.

***Diathoneura euryopa* DUDA, 1925**
(Figs. 16 E, F; 19; 36 G; 154; 164)

Diathoneura euryopa DUDA, 1925:179; WHEELER, 1963:54 (lectotype designation, complementary description); WHEELER & TAKADA, 1971:234.
Clastopteronomyia euryopa (DUDA); FROTA-PESSOA, 1947:216 (proposed new combination).

Material examined. Lectotype ♂ (designated by Wheeler, 1963:54, dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / *Diathoneura euryopa* ♂ n. sp. d. DUDA / SynTypus / LECTOTYPE *euryopa* Duda selected by MRWheeler JUNE 1962"; 1 paralectotype ♀ (dissected), same data as lectotype plus date of collection "1921.V.3.", both deposited in HNHN.

Diagnosis. Body color mainly brown; head longer than high; mid orbital just outside or slightly in front of anterior one; face shiny whitish yellow; facial carina absent; arista with short branches; pleura with a diffuse broad dark brown longitudinal stripe in upper half; wings long, basally narrowed, slightly brownish, anal vein and alula absent; abdomen dull blackish brown.

Redescription. Head mainly whitish yellow. Frons flat, dull, whitish anteriorly and laterally, darker posteriorly, frontal length 0.3 - 0.32 mm, frontal index 1.06 - 1.36, top to bottom width ratio 1.18 - 1.43. Frontal triangle shiny, about 40% frontal length; ocellar triangle darker, about 1/3 frontal length. Front-orbital plates shiny whitish, narrow, apically slightly diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one about 80% of that to inner vertical. Length ratio of anterior to posterior orbital 1.0 - 1.08, of mid to anterior orbital 0.77 - 0.82; poc 33% - 37%, oc 58% - 78% of frontal length; vibrissal index 0.18 - 0.2. Gena whitish, nearly linear. Eye with nearly horizontal main axis, index 1.26 - 1.3. Occiput brown, lighter below. Pedicel yellow. First flagellomere brown, with slightly enlarged marginal hairs at tip;

length to width ratio 1.4. Arista with 3 - 5 upper and 3 lower short and curved branches, plus small terminal fork. Proboscis yellow. Palpi small, blackish at tip.

Thorax dull brownish; length about 0.73 - 0.79 mm; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.63 - 0.65. Scutellum dark, slightly pointed; scut position index smaller than 1.0; scut index 0.71 - 1.05; sterno index 0.6 - 0.67. Halteres brown. Legs yellow, coxae and basal half of femora whitish.

Wing length 1.71 mm; length to width ratio 2.48. Indices: C, 1.87 - 1.89; ac, 3.0 - 3.6; hb, 0.67; 4c, 1.15 - 1.29; 4v, 2.0; 5x, 1.8 - 2.25; M, 0.64 - 0.69; prox. x, 0.46 - 0.64.

Terminalia ♂ (Figs. 16 E, F; 19; 154 F). Epandrium with about 8 lower and 3 upper bristles. Cerci not fused to epandrium. Surstylus crescent-shaped, not micropubescent, with 10 sharply pointed primary teeth, no secondary teeth and 3 marginal bristles. Decasternum as in fig. 16 F. Hypandrium longer than epandrium; bow absent; gonopod fused to hypandrium, which is bare. Aedeagus not fused to aedeagal apodeme, apically pointed upwards, bearing a slightly curved, backwards directed, dorsal expansion (which probably represents the posterior parameres fused to each other and to aedeagus). Aedeagal apodeme longer than aedeagus, laterally flattened, proximally wide, distally narrow. Ventral rod as in fig. 19. Anterior paramere long, curved, linked to apodeme, to aedeagus and to hypandrium by membranous tissue, bearing about 5 sensilla, strongly asymmetric, right one shorter, bent and apically blunt, left one longer, directed frontwards and apically sharply pointed.

Terminalia ♀ (Figs. 36 G; 164 G). Ovipositor plate apically pointed, distally bearing 4 stout teeth and 6 tiny distal bristles; proximally fused to a long, hypandrium-shaped, heavily sclerotized sclerite; plates dorsally linked to each other by a heavily sclerotized bridge. Spermatheca membranous, somewhat spherical, bearing a bag-shaped structure distally.

' *Diathoneura flavolineata* DUDA, 1927

(Figs. 35 H; 145)

Diathoneura flavolineata DUDA, 1927:97.

Clastopteryomyia flavolineata (DUDA); FROTA-PESSOA, 1947:216 (proposed new combination).

Material examined. Holotype ♀ (dissected, right wing microslide-mounted), labelled "S. José C.R. VIII.23. Tur / *Diathoneura flavostriata* (sic) ♀ Det. DR. O. DUDA Holotype / Holotypus / Zool. Mus. Berlin", deposited in ZMB.

Diagnosis. Body color mainly brown; frons pollinose, dark brown posteriorly, more yellowish anteriorly, brown along anterior margin, yellow in upper corners; mid orbital near to and outside of anterior one; facial carina absent; palpi brown; scutum with a broad brown, anteriorly narrowed or reduced median longitudinal stripe, laterally brown; pleura with 2 broad brown longitudinal stripes, one from propleura to base of halteres, the other crossing katapisterna; wings brownish, anal vein absent, alula reduced; abdomen shiny pale brown, some tergites with narrow yellow marginal bands.

Redescription. Head mainly yellowish. Frontal length 0.27 mm, frontal index 0.7, top to bottom width ratio 1.17. Frontal triangle yellowish, about 40% frontal length; ocellar triangle about 35% frontal length. Frontorbital plates narrow, anteriorly brown, posteriorly yellow, diverging from eye margin, about 70% frontal length. Distance of posterior orbital to anterior one shorter than that to

inner vertical. Length ratio of mid to anterior orbital 0.42; poc 31%, oc 94% of frontal length; vibrissal index 0.36; vt index 0.75. Face yellow. Gena white, cheek index about 9. Eye round, with sparse pile, index 1.0. Pedicel and first flagellomere brown; length to width ratio 1.29. Arista with 5 upper and 2 lower branches, plus terminal fork, inner branches relatively long.

Thorax mainly brownish yellow; length about 1.09 mm; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.48. Scutellum brown, round with paler margin; scut position index larger than 1.0, basal scut divergent, scut index 1.08; sterno index 0.41; mid katapisternal about 56% of the anterior one. Halteres and legs yellow.

Wing (Fig. 145), length 2.41 mm. Indices: C, 1.86; ac, 2.33; hb, 0.57; 4c, 1.17; 4v, 1.83; prox. x, 0.61.

Terminalia ♀ (Fig. 35 H). Ovipositor plate apically pointed, with about 2 stout, apical teeth and 17 bristle-shaped teeth. Spermatheca not identified.

✓ *Diathoneura guttipennis* DUDA, 1925

(Figs. 16 C, D; 20; 36 B; 145; 154)

Diathoneura guttipennis DUDA, 1925:171; WHEELER, 1957:106 (complementary description); 1963:55 (lectotype designation); WHEELER & TAKADA, 1971:234.

Clastopteryomyia guttipennis (DUDA); FROTA-PESSOA, 1947:216 (proposed new combination).

Material examined. Lectotype ♂ (head missing, dissected, left wing microslide-mounted), labelled "COSTA RICA 1921. SUIZA DE TURRIALBA / VI.29. / *Diathoneura guttipennis* n. sp. typus det. Duda / typus / LECTOTYPE guttipennis Duda selected by MRWheeler JUNE 1962"; 3 paralectotypes (1 ♂, dissected, and 2 ♀, one dissected), same data as lectotype except date of collection, 1 ♀ (dissected) "1921.V.5.", 1 ♀ "1921.V.31." and ♂ "1921.V.16", all except one ♀ ("V.31.", in ZMB) deposited in HNHM.

Diagnosis. Body color mainly black; mid orbital very near to and outside of anterior one; facial carina absent; wings basally distinctly narrowed, dark brown, with white roundish spots or transverse bands, one behind costal section I crossing the wing, a small one behind r_1 , a transverse band at mid of costal section II reaching to cu, a transverse band at tip of r_{2+3} , reaching to m, and 4 spots along hind margin, anal vein and alula absent; abdomen glossy black.

Redescription. Head mainly black. Frons black, laterally brownish, anteriorly yellow, frontal length 0.25 mm, frontal index 0.75, top to bottom width ratio 1.2 - 1.25. Frontal triangle not very distinct, about half frontal length; ocellar triangle black, subshiny, about 40% frontal length. Frontorbital plates narrow, slightly diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.92 - 1.0, of mid to anterior orbital 0.2 - 0.36; poc 47%, oc 87% of frontal length; vibrissal index 0.33. Face whitish yellow. Cheek index about 14 - 15. Eye nude, index 1.08 - 1.11. Occiput black. Pedicel and first flagellomere brown; length to width ratio .29 - 1.67. Arista with 5 upper and 3 lower branches, plus short terminal fork. Proboscis brown. Palpi black.

Thorax mainly blackish brown; length about 0.92 - 1.0 mm. Scutum shiny, diffuse yellowish anteriorly; h index 1.67 - 1.71; 8 rows of acrostichals. Transverse distance of dorsocentrals about 2.5x longitudinal distance. Scutellum apically paler; scut position index smaller than 1.0, basal scut divergent, sterno index 0.48 - 0.58; mid katapisternal about 40% of the anterior one. Halteres and legs yellow, coxae and basal half of femora whitish.

Wing (Fig. 145), length 2.48 mm; length to width ratio 2.42 - 2.5. Indices: C, 1.82 - 1.9; ac, 2.1 - 2.44; hb, 0.64 - 0.67; 4c, 1.11 - 1.22; 4v, 1.74 - 1.89; 5x, 1.29; M, 0.47 - 0.5; prox. x, 0.5 - 0.53.

Terminalia ♂ (Figs. 16 C, D; 20; 154 G). Epandrium with 4-5 lower and 4-5 upper bristles. Cerci not fused to epandrium, ventral margin extended downwards into a long, narrow, twisted plate. Surstylus not micropubescent, with 11-12 bristle-shaped teeth somewhat scattered along inner margin. Decasternum as in fig. 16 D. Hypandrium shorter than epandrium; bow spurious; gonopod fused to hypandrium, which bears a pair of subapical bristles distally. Aedeagus not fused to aedeagal apodeme, rounded at tip, distally bearing a long membranous tube, anteriorly bearing a long, wide, cylindrical, backwards directed, dorsal expansion (which probably represents the posterior parameres fused both to each other and to aedeagus). Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod as in fig. 20 C. Anterior paramere long, curved, distally rounded, ventrally serrated at the submedian region, linked to apodeme, to aedeagus and to hypandrium by membranous tissue.

Terminalia ♀ (Fig. 36 B). Inner margin of tergite VIII, just below the hypoproct, heavily sclerotized, expanded downwards, distally slightly bifid. Ovipositor plate apically curved, distally bearing 3 stout teeth and about 6 bristles, proximally fused to a very long, hypandrium-shaped, heavily sclerotized sclerite; plates dorsally linked to each other by a heavily sclerotized bridge. Spermatheca membranous, somewhat spherical, bearing a bag-shaped structure apically.

Note. Sex of lectotype was wrongly cited as male by WHEELER (1963:55).

✓ *Diathoneura laticeps* DUDA, 1925
(Fig. 35 E)

Diathoneura laticeps DUDA, 1925:175; WHEELER, 1963:55; WHEELER & TAKADA, 1971:234, 238 (♂ terminalia).

Classteromyia laticeps (DUDA); FROTA-PESSOA, 1947:217 (proposed new combination).

Material examined. Holotype ♀ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.V.2. / *Diathoneura laticeps* n. sp. Typus det. D. DUDA / Holotypus / Lectotypus (sic) Bächli; '83", deposited in HHNM.

Diagnosis. Body color mainly yellow; mid orbital very near to and distinctly outside of anterior one; face shiny yellowish, partly transparent; facial carina absent; pleura shiny yellow, with a narrow longitudinal stripe from propleura to wing base and a transverse band from base of halteres to hind part of katepisterna; wings clear, anal vein absent, alula reduced; abdomen basally dull, apically shiny, with broad brown marginal bands; tergite 2 with triangular side spots, tergite 3 with a medially to anterior margin enlarged band, tergite 4 with a medially narrowly interrupted relatively narrow band, tergites 5 and 6 blackish with median yellow longitudinal stripe.

Redescription. Head mainly yellow. Frons dull greyish brown, laterally shiny yellow, frontal length 0.3 mm, frontal index 0.86, top to bottom width ratio 1.19. Frontal triangle shiny brownish, about 3/4 frontal length; ocellar triangle brown, about 45% frontal length. Frontorbital plates glossy yellow, narrow, not diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one half of that to inner vertical. Length ratio of anterior to posterior orbital 1.0, of mid to anterior orbital 0.36; poc minute; vibrissal index 0.29, vibrissals obviously fine and short; vt index 0.86. Cheek index about 14. Eye round, more or less nude, index 1.04.

Thorax mainly yellow; length about 0.92 mm. Scutum shiny, posteriorly slightly darker; 8 rows of acrostichals. Transverse distance of dorsocentrals nearly 3x longitudinal distance; dc index 0.55. Scutellum brown, apically round and yellow, laterally darker; scut equidistant, basal scut parallel, sterno index 0.44; mid katepisternal about 38% of the anterior one. Halteres and legs yellow.

Wing length 1.88 mm. Indices: C, 2.06; ac, 2.83; hb, 0.59; 4c, 1.06; 4v, 1.69; M, 0.44; prox. x, 0.5.

Terminalia ♂ (Fig. 35 E). Inner margin of tergite VIII, just below hypoproct, heavily sclerotized, extended downwards. Ovipositor plate apically curved, distally bearing 1 stout teeth and about 11 bristles, proximally fused to a long, hypandrium-shaped, heavily sclerotized sclerite; plates dorsally heavily sclerotized, twisted inwards. Spermatheca membranous.

Note. Sex of holotype cited as uncertain by WHEELER (1963:55).

✓ *Diathoneura longipennis* (MALLOCH, 1926), comb. nov.

(Figs. 21; 154)

Clastopteromyia longipennis MALLOCH, 1926:34; FROTA-PESSOA, 1947:217; WHEELER, 1957:106; WHEELER & TAKADA, 1971:239 (♂ terminalia).

Material examined. Holotype ♂ (dissected), labelled "Higuito SanMateoCR / Pablo Schild Coll / Type No. 28473 U.S.N.M. / *Clastopteromyia longipennis* Type Det JRMalloch", deposited in NMNH.

Diagnosis. Body color mainly yellow; facial carina absent; scutum subshiny, brownish yellow, darker posteriorly, with 2 short brown posterior longitudinal stripes inside dc lines; scutellum brown, apically yellowish and rounded; pleura shiny yellow, with 2 dark brown longitudinal stripes, from propleura to base of halteres and in upper half of katepisterna; wings very narrow, long, uniformly brownish, veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen brown, subshiny, with diffuse darker marginal bands.

Redescription. Head yellow. Frons golden yellow, frontal length 0.34 mm, frontal index 0.83, top to bottom width ratio 1.17. Frontal triangle about 2/3 frontal length; ocellar triangle about 40% frontal length. Frontorbital plates narrow, not diverging from eye margin, about 80% frontal length. Mid orbital just outside of anterior one, distance of posterior orbital to anterior one less than half of that to inner vertical. Length ratio of anterior to posterior orbital 0.57, of mid to anterior orbital 0.62; poc 40%, oc 100% of frontal length; vibrissal index 0.18. Face white. Eye nude, index 1.19. First flagellomere short-haired; length to width ratio 1.83. Arista with 7 upper and 4 lower very short branches, plus small terminal fork.

Thorax mainly brownish; length about 1.29 mm; 10 rows of acrostichals. Transverse distance of dorsocentrals 2.5x longitudinal distance; scut nearly equidistant, basal scut slightly divergent, mid katepisternal about 320% of the anterior one. Halteres and legs yellow, coxae and femora whitish.

Wing length 3.07 mm; length to width ratio 2.74. Indices: C, 3.16; ac, 1.58; hb, 0.58; 4c, 0.68; 4v, 1.43; 5x, 1.71; M, 0.43; prox. x, 0.32.

Terminalia ♂ (Figs. 21; 154 H). Epandrium with about 18 bristles. Cerci not fused to epandrium; ventral margin extended downwards into a long, distally twisted plate. Surstylus not micropubescent, with 13-15 bristles on inner margin and lower surface. Decasternum as in fig. 21 B. Hypandrium shorter than

epandrium; bow spurious; gonopod fused to hypandrium, which is bare. Aedeagus not fused to aedeagal apodeme, sharply pointed at tip, ventrally membranous, medially wrinkled. Aedeagal apodeme longer than aedeagus, laterally flattened, proximally widely expanded. Ventral rod as in fig. 21 D. Paramere (probably anterior and posterior parameres fused to each other) medially wrinkled, linked to apodeme, to aedeagus and to hypandrium by membranous tissue, distally pointed and curved; ventral margin subapically concave; dorsal margin bearing a submedian lobe, laterally directed and somewhat covering a row of about 7 sensilla.

Note. In the drawings of terminalia presented by WHEELER & TAKADA (1971:24 c and d) the aedeagus and associated structures are depicted in a different relative position, probably due to their mobility.

✓ *Diathoneura maculipennis* (MALLOCH, 1926), *comb. nov.*

(Figs. 35 F, G; 146)

Clastopteromyia maculipennis MALLOCH, 1926:33; FROTA-PESSOA, 1947:217

Material examined. Holotype ♀ (dissected, right wing microslide-mounted), labelled "Higuito SanMateoCR / Pablo Schild coll / Type No. 28472 U.S.N.M. / *Clastopteromyia maculipennis* Type Det JRMalloch / ♀ *Diathoneura maculipennis* (Malloch) Bächli & Vilela det. 1990", deposited in NMNH.

Diagnosis. Body color mainly brown; mid orbital very near to and outside of anterior one; facial carina absent; wings dark brown, with 5 clear longish windows: below costal section I to basal cell; from mid of costal section II to vein cu; from tip of r_{2+3} to m; apical of posterior crossvein to hind margin; behind anterior crossvein to hind margin; veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen black.

Redescription. Head brownish yellow. Frons frontal length 0.25 mm, frontal index 0.83, top to bottom width ratio 1.28. Frontal triangle indistinct; ocellar triangle black, about 1/3 frontal length. Frontorbital plates narrow, not diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.92, of mid to anterior orbital 0.36; poc 20%, oc 97% of frontal length; vibrissal index 0.38. Face shiny whitish. Cheek index about 13. Eye index 1.13. First flagellomere with marginal hairs of 1/3 width; length to width ratio 1.4. Arista with 4 upper and 2 lower branches, plus small terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax brown; length about 0.86 mm. Scutum subshiny, anteriorly paler; h index 0.44; 6 rows of acrostichals. Scutellum apically round, paler; scut position index smaller than 1.0, basal scut parallel, sterno index 0.38; mid katapisternal about 67% of the anterior one. Halteres and legs yellow, coxae and basal half of femora whitish.

Wing (Fig. 146), length 1.91 mm; length to width ratio 2.23. Indices: C, 1.89; ac, 1.64; hb, 0.61; 4c, 1.29; 4v, 1.86; 5x, 1.17; M, 0.5; prox. x, 0.57.

Terminalia ♀ (Fig. 35 F, G). Inner margins of tergite VIII, just below hypoproct, heavily sclerotized and extended downwards. Ovipositor plate apically curved, with 8 stout marginal teeth and about 8 bristles; plates dorsally heavily sclerotized and twisted inwards in subapical region. Spermatheca membranous, somewhat spherical, bearing a bag-shaped structure apically.

✓ *Diathoneura magnipennis* DUDA, 1927
(Figs. 22; 154)

Diathoneura (*Calatila*) *magnipennis* DUDA, 1927:100.

Clastopteromyia magnipennis (DUDA); FROTA-PESSOA, 1947:217 (proposed new combination).

Material examined. Holotype ♂ (dissected), labelled "Bolivia 9.X.06 Yungasweg 3500m / Macroptera n.gen. magnipennis n.sp. / Typus magnipennis / Staatl. Museum für Tierkunde Dresden / Diathoneura (*Calatila*) magnipennis D. Holotype ♂ G.Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color black; frons dull blackish, medially and laterally shiny; frontorbital plates broad, shiny, not diverging from eye margin; mid orbital just outside of anterior one; facial carina absent; palpi yellow, broad, flat; wings clear, veins r_{4+5} and m convergent, anal vein absent, alula reduced; abdomen black, silvery shiny in anterior half, posteriorly glossy.

Redescription. Head black. Frontal length 0.27 mm, frontal index 0.89, top to bottom width ratio 1.28. Frontal triangle shiny, narrowly reaching to anterior margin; ocellar triangle about 45% frontal length. Frontorbital plates about 85% frontal length. Distance of posterior orbital to anterior one slightly more than half of that to inner vertical. Length ratio of anterior to posterior orbital 0.7, of mid to anterior orbital 1.0; poc 69%, oc 81% of frontal length; vibrissal index 0.5; vt index 1.21. Cheek index about 8. Eye with dense pile; index 1.25. Pedicel and first flagellomere yellow; length to width ratio 1.0. Arista with 3 upper and 2 lower short branches, plus small terminal fork. Proboscis black.

Thorax length about 1.02 mm. Scutum subshiny; h index 1.31; 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.73; scut position index smaller than 1.0, basal scut divergent, sterno index 0.61; mid katepisternal absent. Halteres yellow. Legs yellow, femora black except yellow tip.

Wing length 2.74 mm; length to width ratio 2.31. Indices: C, 1.35; ac, 5.17; hb, 0.58; 4c, 1.19; 4v, 1.46; 5x, 1.38; M, 0.42; prox. x, 0.31.

Terminalia ♂ (Figs. 22; 154 I.) Epandrium with 9-10 lower and 2 upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with a row of about 11 stout teeth on inner and 6 bristles on outer surface. Hypandrium shorter than epandrium; bow absent; gonopod fused to hypandrium, which is bare. Aedeagus not fused to aedeagal apodeme, small, largely covered with parameres. Aedeagal apodeme longer than aedeagus, laterally flattened, anteriorly expanded, posteriorly slightly bifid. Ventral rod apparently absent. Anterior paramere (probably anteriorly fused to posterior paramere) triangle-shaped, bearing a curved row of 8-9 sensilla, linked to apodeme, to aedeagus and to hypandrium by membranous tissue.

✓ *Diathoneura nana* (WILLISTON, 1896), comb. nov.
(Figs. 23; 154)

Drosophila nana WILLISTON, 1896:416; STURTEVANT, 1921:87 (redescription); WHEELER & TAKADA, 1971:237 (♂ terminalia).

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "SYNTYPE / Cotype / Windward side St. Vincent, W.I. I.L.I.Smith / W. Indies 1907-66. / *Drosophila nana* Will / LECTOTYPE ♂ *Diathoneura nana*

(Williston) by Bächli & Vilela 1990"; 5 paralectotypes (3 ♀, and 2 ♂, both lacking abdomen; one with missing wings, dissected), 1 (sex unknown) from the same locality as lectotype and one additional label "1500", the remaining ones, collected in the same island but place not specified, all deposited in BMNH.

Diagnosis. Body color mainly brown; mid orbital near to and slightly outside of anterior one; facial carina absent; wings clear, veins r_{4+5} and m somewhat divergent, anal vein absent, alula reduced; abdomen glossy blackish brown, with darker narrow diffuse marginal bands.

Redescription. Head brown. Frontal length 0.27 mm, frontal index 0.89, top to bottom width ratio 1.17. Frontal triangle blackish brown, about 60% frontal length; ocellar triangle black, about 1/3 frontal length. Frontorbital plates narrow, apically slightly diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.92, of mid to anterior orbital 0.27; poc 19%, oc 15% of frontal length; vibrissal index 0.31. Cheek index about 13 - 14. Eye nude, index 1.08. Pedicel and first flagellomere brown; length to width ratio 1.4. Arista with 4 upper and 2 lower long branches, plus large terminal fork, inner branches long.

Thorax brown; length about 0.69 - 0.89 mm. Scutum shiny; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.56. Scutellum apically round and yellowish; scut position index larger than 1.0, basal scut divergent, scut index 0.68; sterno index 0.68; mid katepisternal very small or absent. Halteres brown. Legs brownish yellow, tips of tibiae and tarsi lighter.

Wing length 1.35 - 1.88 mm; length to width ratio 2.38 - 2.41. Indices: C, 1.43 - 1.76; ac, 2.443 - 2.8; hb, 0.57 - 0.59; 4c, 1.21 - 1.56; 4v, 1.86 - 2.11; 5x, 1.25 - 1.6; M, 0.56 - 0.57; prox. x, 0.57 - 0.67.

Terminalia ♂ (Figs. 23 A-G; 154 J). Epandrium with 4 lower and 4 upper bristles. Cerci not fused to epandrium; lower margin slightly extended downwards between the surstyli; plates fused to each other at tip. Surstylus not micropubescent, with 7-9 primary teeth, no secondary teeth and 9 somewhat strong marginal bristles, which stand from upper to lower surface. Decasternum as in fig. 23 B. Hypandrium shorter than epandrium; bow absent; gonopod fused to hypandrium, which is bare. Aedeagus not fused to aedeagal apodeme, curved, bearing a long, membranous tube distally. Aedeagal apodeme as long as aedeagus, Y-shaped, laterally flattened. Ventral rod absent. Anterior paramere with 1 sensillum, linked to hypandrium by membranous tissue. Posterior parameres are probably fused to each other and transformed into a dorsal, pointed backwards, posteriorly flattened laterally, anteriorly flattened dorsoventrally, bow-shaped sclerite, which is linked to hypandrium by membranous tissue.

Terminalia ♀ (Fig. 23 H). Inner margins of tergite VIII, just below the hypoproct, heavily sclerotized. Ovipositor plate apically curved, distally bearing 6-7 stout teeth and about 4 bristles, proximally fused to a very long, hypandrium-shaped, heavily sclerotized sclerite; plates dorsally linked to each other by a heavily sclerotized, directed frontwards, bridge. Spermatheca membranous, bearing a bag-shaped structure apically.

✓ *Diathoneura nigrescens* DUDA, 1925
(Figs. 24 A, B; 25; 36 A, B; 146; 154)

Diathoneura nigrescens DUDA, 1925:184; WHEELER, 1963:55 (lectotype designation, complementary description).

Clastopterymyia nigrescens (DUDA); FROTA-PESSOA, 1947:217 (proposed new combination).

Material examined. Lectotype ♂ (dissected, right wing microslide-mounted), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.V.2. / *D. nigrescens* ♂ DET. DR. O. DUDA / SynTypus / LECTOTYPE *nigrescens* Duda selected by MRWheeler JUNE 1962"; 28 paralectotypes (16 ♂, 12 ♀; 1 ♂ and 2 ♀ dissected), same data as lectotype with different dates of collection (between 6.IV. and 30.VI.1921), from 1 ♂ paralectotype just the pin remains; all except 3 paralectotypes (1 ♂, 2 ♀, in ZMB) deposited in HHNM. One additional ♂ paralectotype, collected on 14.VI.1922 (the only one not collected in 1921) belongs to a new species (*Diathoneura dudai*) and is treated under that binomial.

Diagnosis. Body color mainly brown; mid orbital very near to and outside of anterior one; facial carina absent; about 4 orals of decreasing length; pedicel brown, with about 4 ventrally directed bristles on anterior surface; wings brown, slightly darker along costal margin, anal vein absent, alula reduced; abdomen shiny black.

Redescription. Head brown above, yellow below. Frons dull brownish, darker posteriorly, paler anteriorly, frontal length 0.27 mm, frontal index 0.76 - 0.94, top to bottom width ratio 1.24. Frontal triangle not very distinct; ocellar triangle brown, about half frontal length. Frontorbital plates narrow, very slightly diverging from eye margin, about 70% frontal length. Distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.67 - 0.81, of mid to anterior orbital 0.23 - 0.3; poc 25% - 38%, oc 81% - 88% of frontal length; vibrissal index 0.6 - 0.8. Face greyish brown. Cheek index about 12 - 15. Eye nude, index 1.09 - 1.11. First flagellomere blackish; length to width ratio 1.17 - 1.33. Arista with 5 - 6 upper and 2 - 3 lower long branches, plus small ventral bristles. Proboscis brown. Palpi apically blackish brown, with 2 - 3 apical-ventral bristles.

Thorax blackish brown; length about 1.09 mm. Scutum subshiny, paler anteriorly; 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.65 - 0.73. Scutellum apically round, with paler margin; scut nearly equidistant, scut index 1.12 - 1.25; sterno index 0.65; mid kat-episternal about 60% - 69% of the anterior one. Halteres and legs more or less brown.

Wing (Fig. 146), length 1.85 - 2.31 mm; length to width ratio 2.33 - 2.5. Indices: C, 2.13 - 2.28; ac, 2.0 - 2.29; hb, 0.44 - 0.56; 4c, 0.94 - 1.14; 4v, 1.58 - 1.93; 5x, 1.5 - 1.6; M, 0.47 - 0.64; prox. x, 0.53 - 0.57.

Terminalia ♂ (Figs. 24 A, B; 25; 154 K). Epandrium with 17-18 lower and 5-6 upper bristles; inner margin of ventral lobe twisted and extended downwards into long, somewhat proximally flattened plates. Cerci not fused to epandrium; lower region extended downwards between the surstyli; plates fused to each other at tip. Surstylus slightly micropubescent at lower margin, roughly with 3 sets of teeth, being 5-6, 7-8, and 6-7 teeth on the upper, inner and outer set, respectively. Decasternum as in fig. 24 B. Hypandrium shorter than epandrium and extremely reduced to a pair of paddle-shaped sclerites, which are linked to each other, to gonopod and to aedeagus by membranous tissue; bow absent; gonopod rod-shaped, submedially wrinkled. Aedeagus fused to aedeagal apodeme, ventrally flattened, blunt at tip, bearing a long membranous tube distally, subapically mostly micro-

pubescent and bearing tiny spines. Aedeagal apodeme wide, as long as aedeagus, laterally flattened. Ventral rod absent. Anterior parameres apparently fused to each other and transformed into the flattened, latero-ventral surface of aedeagus. Posterior parameres fused to each other and apparently as well as to antero-dorsal margin of aedeagus.

Terminalia ♀ (Fig. 36 A), specimen collected on 26.VI.1921: Ovipositor plate apically pointed; dorsal margin straight, with 13 marginal and 7-8 discal teeth. Spermatheca not identified. (Fig. 36 D), specimen collected on 5.V.1921: Ovipositor plate apically pointed; dorsal margin concave, with 16-17 marginal and 7-8 discal (bristle-shaped) teeth. Spermatheca not identified.

Note. Two different but apparently closely related species were found among the female paralectotypes and one of each was dissected and illustrated. We were unable to decide which one, if any, of these females could be conspecific with the male lectotype specimen collected on 2.V.1921.

Diathoneura nigrifrons DUDA, 1925

(Figs. 24 C, D; 26; 36 E; 146; 154)

Diathoneura nigrescens var. *nigrifrons* DUDA, 1925:184.

Clastopterymyia nigrescens var. *nigrifrons* (DUDA); FROTA-PESSOA, 1947:217 (proposed new combination).

Diathoneura nigrifrons DUDA; WHEELER, 1963:56 (lectotype designation, proposed new status); WHEELER & TAKADA, 1971:234.

Material examined. Lectotype ♂ (dissected, right wing microslide-mounted), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.IV.17 / *D. nigrescens* ♂ var. *nigrifrons* DET. DR. O. DUDA / Syntypus / LECTOTYPE *nigrifrons* Duda selected by MRWheeler JUNE 1962"; 3 paralectotypes (1 ♂, 2 ♀; 1 ♀ dissected), same data as lectotype except date of collection, 1 ♀ "1921.IV.3.", 1 ♂ "1921.IV.4" and 1 ♀ without date; all except the ♂ paralectotype (in ZMB) deposited in HNHM.

Diagnosis. Body color mainly brown to black; mid orbital near to and outside of anterior one; facial carina absent; wings brown, slightly darker along costal margin, anal vein absent, alula reduced; abdomen shiny black.

Redescription. Head brown. Frons velvety black, medially and laterally subshiny, anteriorly narrowly yellow, frontal length 0.27 (♂) - 0.29 (♀) mm, frontal index 0.73 - 0.74, top to bottom width ratio 1.17 - 1.23. Frontal triangle subshiny, about 2/3 frontal length; ocellar triangle darker, about half frontal length. Frontorbital plates narrow, subshiny, diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.71, of mid to anterior orbital 0.25 - 0.33; poc 38% - 41%, oc 138% of frontal length; vibrissal index 0.43; vt index 0.89. Face shiny black. Cheek index about 11 - 18. Eye nude, index 1.14 - 1.17. Pedicel and first flagellomere brown; length to width ratio 1.6 - 1.67. Arista with 6 upper and 3 - 4 lower long branches, plus large terminal fork, inner branches long. Proboscis brown. Palpi black.

Thorax dark brown; length about 1.12 (♂) - 1.25 (♀) mm. Scutum shiny; h index 0.72 - 0.8; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.63 - 0.68. Scutellum apically round; scut nearly equidistant, basal scut divergent, scut index 1.0 - 1.04; sterno index 0.71 - 0.77; mid katapisternal about 41% - 47% of the anterior one. Halteres and legs brown, knees paler.

Wing (Fig. 146), length 2.38 (♂) - 2.64 (♀) mm; length to width ratio 2.32 - 2.35. Indices: C, 2.19 - 2.21; ac, 2.33 - 2.38; hb, 0.48 - 0.53; 4c, 1.06 - 1.11; 4v, 1.78 - 1.95; 5x, 1.67 - 1.71; M, 0.56 - 0.63; prox. x, 0.5 - 0.53.

Terminalia ♂ (Figs. 24 C, D; 26; 154 L). Epandrium with 9-10 lower and 5 upper bristles. Cerci not fused to epandrium; plates ventrally linked to each other by membranous tissue. Surstylus slightly micropubescent, with 2 sets of sharply pointed teeth, one having 6 teeth, bordering upper margin and another having 7-9 teeth at the median region; about 31 bristles are concentrated at the lower and inner surface. Decasternum as in fig. 24 D. Hypandrium longer than epandrium; bow spurious; gonopod fused to hypandrium, which bears a pair of subapical bristles distally. Aedeagus not fused to aedeagal apodeme, pointed at tip, distally bearing a long, membranous tube, proximally micropubescent at ventral membranous surface, slightly expanded upwards dorso-anteriorly. Aedeagal apodeme longer than aedeagus, rod-shaped. Paramere (probably anterior and posterior parameres fused to each other) wide, distally blunt, linked to apodeme, to aedeagus and to hypandrium by membranous tissue, submedially bearing a laterally directed lobe, with about 3 sensilla below lobe.

Terminalia ♀ (Fig. 36 E). Ovipositor plate apically pointed, with 24-26 marginal and 8 discal teeth. Spermatheca not identified.

♣ *Diathoneura nubeculosa* DUDA, 1925

(Figs. 27; 146; 155)

Diathoneura nubeculosa DUDA, 1925:180; WHEELER, 1963:56; WHEELER & TAKADA, 1971:234.

Clastopterymia nubeculosa (DUDA); FROTA-PESSOA, 1947:217 (proposed new combination).

Material examined. Holotype ♂ (dissected, left wing microslide-mounted), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.V.6. / *Diathoneura nubeculosa* ♂ n. sp. typus DET. DR. O. DUDA / Holotypus", deposited in HHNM.

Diagnosis. Body color mainly yellow; mid orbital just outside of or slightly in front of anterior one; face slightly whitish; facial carina absent; pleura shiny yellow, with 2 distinct blackish stripes, one from propleura to base of halteres, one from base of halteres to katapisterna; wings narrow, apically pointed, with relatively diffuse brown shadows along costal margin, in apical 1/4 of wing, and along basal part of m, posterior crossvein and tip of cu, anal vein absent, alula reduced; abdomen shiny black, basally paler.

Redescription. Head yellowish. Frontal length 0.32 mm, frontal index 0.83, top to bottom width ratio 1.17. Frontal triangle not very distinct; ocellar triangle blackish, about 40% frontal length. Frontorbital plates narrow, not diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.71, of mid to anterior orbital 0.58; poc 42%, oc 89% of frontal length; vibrissal index 0.33. Cheek index about 1/. Eye nude, index 1.1/. Pedicel brownish. First flagellomere brown; length to width ratio 1.57. Arista with 6 upper and 3 lower branches, plus small terminal fork. Palpi brownish.

Thorax mainly yellow; length about 1.25 mm. Scutum brownish yellow, shiny, anteriorly yellow, posteriorly darker; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2.5x longitudinal distance; dc index 0.5. Scutellum apically round; scut position index smaller than 1.0, basal scut divergent, scut

index 1.07; sterno index 0.34; mid katapisternal about 170% of the anterior one. Halteres yellow. Legs yellow, basally whitish.

Wing (Fig. 146), length 2.8 mm; length to width ratio 2.58. Indices: C, 2.52; ac, 2.1; hb, 0.76; 4c, 0.88; 4v, 1.46; 5x, 1.71; M, 0.5; prox. x, 0.42.

Terminalia ♂ (Figs. 27; 155 A). Epandrium mostly covered with long bristles. Cerci not fused to epandrium; lower margin extended downwards into a distally directed backwards, twisted plate. Surstylus not micropubescent, bearing on inner margin a compact tuft of about 10 long bristles ventrally, and about 13 small bristles dorsally plus many additional bristles on inner surface. Decasternum absent. Hypandrium shorter than epandrium; bow absent; gonopod fused to hypandrium, which is bare. Aedeagus not fused to aedeagal apodeme, slightly straight at tip, laterally with a large concavity. Aedeagal apodeme longer than aedeagus, laterally flattened, anteriorly greatly expanded. Ventral rod long, twisted as in fig. 27 F. Anterior paramere curved, distally twisted, linked to apodeme, to aedeagus and to hypandrium by membranous tissue, laterally bearing about 11 sensilla on a paramedian row; distal margin straight. Posterior parameres apparently fused to each other and transformed into a bow-shaped sclerite linked to posterior region of hypandrium by membranous tissue.

↓ *Diathoneura opaca* (WILLISTON, 1896)

(Figs. 24 E, F; 28; 36; 155)

Drosophila opaca WILLISTON, 1896:411; STURTEVANT, 1921:104 (redescription); WHEELER & TAKADA, 1971:237 (♂ terminalia).

Clastopteronomyia opaca (WILLISTON); FROTA-PESSOA, 1947:202 (proposed new combination), 229 (♀ terminalia).

Diathoneura opaca (WILLISTON); DUDA, 1927:94 (proposed new combination).

Material examined. LECTOTYPE ♂ (by present designation, dissected, head missing), labelled "SYNTYPE / Cotype / Leeward side St. Vincent W.I. H.H.Smith / W. Indies / 1907-66. / *D. opaca* Williston / LECTOTYPE ♂ *Diathoneura opaca* (Williston) by Bächli & Vilela 1990"; 4 paralectotypes (2 ♂, 2 ♀; 1 ♀ dissected) as it follows: 1 ♂ and 1 ♀ with same data as lectotype, the remaining collected in the same island but place not specified, all deposited in BMNH.

Diagnosis. Body color mainly dull blackish brown; frons blackish, medially and laterally brown, anteriorly narrowly yellowish; mid orbital very near to and outside of anterior one; facial carina absent; pleura black above, sharply defined yellow below, with a narrow yellow stripe behind postpronotum; wings diffuse brownish, veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen yellow, tergites with brown marginal bands which are medially narrow, laterally extended to anterior margin.

Redescription. Head mainly brown. Frontal length 0.24 mm, frontal index 0.78 - 0.82, top to bottom width ratio 1.24 - 1.28. Frontal triangle brown, reaching to anterior margin; ocellar triangle flat, about 35% frontal length. Front-orbital plates relatively broad, apically somewhat diverging from eye margin, about 70% frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.82, of mid to anterior orbital 0.22 - 0.33; poc 29%, oc 79% of frontal length; vibrissal index 0.33 - 0.44. Face brown. Gena anteriorly brown, posteriorly yellow, cheek index about 12 - 13. Eye nude, index 1.14 - 1.19. Pedicel and first flagellomere brown;

length to width ratio 1.0 - 1.5. Arista with 5 - 6 upper and 3 lower long branches, plus small terminal fork, inner branches short. Palpi brown, darker posteriorly.

Thorax dull brownish, ventrally yellow; length about 0.76 - 0.86 mm; h index 0.88 - 1.0; 4 rows of acrostichals. Transverse distance of dorsocentrals about 1.5x longitudinal distance; dc index 0.5 - 0.73; scut nearly equidistant, basal scut divergent, scut index 1.06 - 1.07; sterno index 0.47 - 0.53; mid katapisternal absent. Halteres and legs yellow.

Wing length 1.45 - 1.55 mm; length to width ratio 2.32 - 2.35. Indices: C, 1.47 - 1.6; ac, 2.14; hb, 0.4 - 0.47; 4c, 1.25 - 1.36; 4v, 1.58 - 1.91; 5x, 1.5 - 1.75; M, 0.5 - 0.64; prox. x, 0.5 - 0.55.

Terminalia ♂ (Figs. 24; 28; 155 B). Epandrium with 7-8 lower and 5 upper bristles. Cerci not fused to epandrium. Surstylus slightly micropubescent, with 14 primary teeth arranged in a question mark-shaped row, no secondary teeth and 10 marginal bristles. Decasternum as in fig. 24 E and F. Hypandrium shorter than epandrium; bow spurious; gonopod fused to hypandrium, which is bare. Aedeagus not fused to aedeagal apodeme, pointed at tip, distally bearing a long membranous tube as well as a long, bent, directed frontwards, dorsoventrally flattened, dorsal expansion (which probably represents posterior parameres fused both to each other and to aedeagus) in the submedian region; ventral surface membranous and partially micropubescent. Aedeagal apodeme longer than aedeagus, laterally flattened, distally bifid. Anterior paramere long, curved, apically rounded, linked to apodeme, to aedeagus and to hypandrium by membranous tissue, bearing about 9 sensilla on outer surface and an undetermined structure (probably a tuft of tiny bristles) distally.

Terminalia ♀ (Fig. 36 F). Ovipositor plate apically rounded, with about 12 marginal and 5 discal teeth. Spermatheca membranous, bearing a bag-shaped structure apically; ventral receptacle slightly sclerotized, expanded and introverted at distal end.

✓ *Diathoneura peruviana* DUDA, 1927
(Figs. 29; 155)

Diathoneura peruviana DUDA, 1927:96.

Clastopteromyia peruviana (DUDA); FROTA-PESSOA, 1947:217 (proposed new combination).

Material examined. Holotype ♂ (dissected, right wing microslide-mounted), labelled "Peru - Meshag. 14.9.03 Urubambafl. / *Diathoneura peruviana* ♂ d. Duda / Typus peruviana Duda / Staatl. Museum für Tierkunde Dresden / *Diathoneura peruviana* Holotype ♂ G.Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly yellow; mid orbital just outside of anterior one; facial carina absent; wings brownish along costal margin, both crossveins broadly clouded, veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen dull brownish.

Redescription. Head yellow. Frontal length 0.24 mm, frontal index 1.08, top to bottom width ratio 1.31. Frontal triangle indistinct; ocellar triangle brownish, about 35% frontal length. Frontorbital plates narrow, somewhat diverging from eye margin, about 60% frontal length. Distance of posterior orbital to anterior one half of that to inner vertical. Length ratio of anterior to posterior orbital 0.83, of mid to anterior orbital 0.2; poc 21%, oc 79% of frontal length; vibrissal index 0.63. Cheek index about 11. Eye nude, index 1.21. First flagellomere short-

haired; length to width ratio 1.75. Arista with 3 upper and 1 lower branches, plus long terminal fork, inner branches very short. Proboscis and palpi yellow.

Thorax yellow; length about 0.73 mm. Scutum pollinose; h index 1.5; 8 rows of acrostichals; dc index 0.61; scut position index smaller than 1.0, apical scut bent upwards, basal scut divergent, scut index 1.57; sterno index 0.53; mid kat-episternal about 33% of the anterior one. Halteres and legs yellow.

Wing length 3.13 mm; prox. x index 0.52.

Terminalia ♂ (Figs. 29; 155 C). Epandrium with 7-9 lower and 8 upper bristles. Cerci not fused to epandrium; plates fused to each other at tip. Surstylus not micropubescent, with about 13 bristles scattered on inner surface and 1 longer on upper margin of outer surface. Decasternum absent. Hypandrium U-shaped, longer than epandrium; bow absent; gonopod absent, probably fused to hypandrium which is bare. Aedeagus fused to aedeagal apodeme, rounded (in profile) at tip, laterally flattened, distally expanded downwards, dorsally membranous; anterior region probably represents posterior parameres fused both to each other and to aedeagal apodeme. Aedeagal apodeme shorter than aedeagus, dorso-ventrally flattened. Ventral rod apparently absent and replaced by parameres. Anterior paramere bare, fused both to aedeagus and to aedeagal apodeme, linked to hypandrium by membranous tissue.

Diathoneura pleurolineata DUDA, 1925

(Figs. 30; 155)

Diathoneura pleurolineata DUDA, 1925:183; WHEELER, 1963:56 (lectotype designation, complementary description).

Clastopteromyia pleurolineata (DUDA); FROTA-PESSOA, 1947:218 (proposed new combination).

Material examined. Lectotype ♀ (dissected), labelled "COSTA RICA 1921. SUIZA DE TURRIALBA / V.31. / *Diathoneura pleurostriata* (sic) n. sp. ♀ DET. DR. O. DUDA / SynTypus / LECTOTYPE *pleurolineata* Duda selected by MRWheeler JUNE 1962"; 1 paralectotype ♂ (dissected), same data as lectotype except date of collection "1921.IV.15", both deposited in HHNM.

Diagnosis. Body color mainly brown; mid orbital near to and slightly outside of anterior one; facial carina narrow, sharp, indistinctly reaching to mouth border; pleura shiny yellow, with a distinct broad black stripe in upper half; wings brown, darker along costal margin, veins r_{4+5} and m slightly divergent, anal vein absent, alula reduced; abdomen shiny dark brown.

Redescription. Head mainly yellow. Frons golden yellow, medially and laterally shiny, frontal length 0.18 - 0.22 mm, frontal index 0.79 - 1.08, top to bottom width ratio 1.14 - 1.17. Frontal triangle shiny, about 3/4 frontal length; ocellar triangle black, about 35% frontal length. Frontorbital plates narrow, apically somewhat diverging from eye margin, about 3/4 frontal length. Distance of posterior orbital to anterior one 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.89 - 1.0, of mid to anterior orbital 0.2 - 0.25; poc 23% - 27%, oc 127% of frontal length. Face brownish. Cheek index about 6 - 21. Eye with dense short pile, index 1.05 - 1.06. Pedicel brownish. First flagellomere brown. Arista with 6 upper and 2 lower relatively long branches, plus small terminal fork, inner branches short. Palpi brown.

Thorax mainly brown; length about 0.59 - 0.73 mm. Scutum dull brown, with 2 diffuse yellowish paramedian stripes in anterior half; h index 0.57; 4 - 6 rows of acrostichals; dc index 0.47 - 0.57. Scutellum blackish, apically round; scut

nearly equidistant, basal scut divergent, scut index 1.07; sterno index 0.38 - 0.46; mid katepisternal absent. Halteres blackish brown. Legs yellow, coxae and basal half of femora whitish.

Wing length 1.65 - 2.21 mm; length to width ratio 2.23 - 2.5. Indices: C, 1.73 - 2.31; ac, 1.86 - 1.88; hb, 0.33 - 0.38; 4c, 1.08 - 1.36; 4v, 1.92 - 2.0; 5x, 2.25 - 3.0; M, 0.75 - 0.82; prox. x, 0.55 - 0.58.

Terminalia ♂ (Figs. 30 A-H; 155 D). Epandrium mostly covered with long bristles. Cerci not fused to epandrium; plates ventrally fused to each other. Surstylus not micropubescent, with a row of about 13 long bristles on inner surface and 1 long bristle on upper margin of outer surface. Decasternum absent. Hypandrium extremely reduced, shorter than epandrium; bow absent; gonopod fused to hypandrium, which is bare. Aedeagus fused to aedeagal apodeme, rhinoceros head-shaped in profile, distally pointed and directed backwards, bearing 8 stout and large teeth and 6 smaller, sharply pointed teeth on the upper surface, dorsally bearing a paramedian pillow-shaped, membranous, heavily wrinkled structure (which might have been modified as a result of technical treatments); anterior region probably represents the posterior parameres fused both to aedeagus and aedeagal apodeme. Aedeagal apodeme unknown (probably destroyed by dermestids, which also partially damaged the left region of epandrium anteriorly). Ventral rod as in fig. 30. Anterior parameres apparently fused to each other and to aedeagus and linked to hypandrium by a pair of tiny sclerites.

Terminalia ♀ (Fig. 30 I). Inner margins of tergite VIII, just below the hypoproct, heavily sclerotized. Ovipositor plate apically pointed, with 11 stout marginal teeth and 6 discal bristles, proximally fused to a hypandrium-shaped, heavily sclerotized sclerite; plates dorsally linked to each other by a heavily sclerotized bridge. Spermatheca not identified.

Note. The relative size and position of cerci somewhat resemble the species belonging to the genus *Cladochaeta*.

↓ *Diathoneura plumata* DUDA, 1927 (Figs. 35 C; 147)

Diathoneura plumata DUDA, 1927:99.

Clastopteromyia plumata (DUDA); FROTA-PESSOA, 1947:218 (proposed new combination).

Material examined. Holotype ♀ (dissected, right wing microslide-mounted), labelled "Bolivia - Mapiri 7.III.03 Sarampioni 700 / *Diathoneura plumata* ♀ DET. DR. O. DUDA / Typus plumata Duda / Staatl. Museum für Tierkunde Dresden / *Diathoneura plumata* Holotype ♀ G. Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly brown with yellow head; mid orbital just outside of anterior one; facial carina absent; arista with numerous long branches; scutum brown, whitish behind postpronota, anteriorly with 2 yellow paramedian spots; pleura yellow, with 2 broad brown longitudinal stripes; wings brownish, veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen brown.

Redescription. Head yellow. Frontal length 0.29 mm, frontal index 0.74, top to bottom width ratio 1.17. Frontal triangle whitish, about 55% frontal length; ocellar triangle about 40% frontal length. Frontorbital plates apically somewhat diverging from eye margin, about 60% frontal length. Distance of posterior orbital to anterior one 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.57, of mid to anterior orbital 0.75; poc 47%, oc 118% of frontal length; vibrissal index 0.16; vt index 1.15. Cheek index about 17. Eye

nude, index 1.13. First flagellomere brownish; length to width ratio 2.0. Arista with about 10 upper and 5 lower long branches, plus small terminal fork, inner branches very short. Palpi brownish.

Thorax length about 1.22 mm; h index 1.57; 8 rows of acrostichals. Transverse distance of dorsocentrals about 2.5x longitudinal distance; dc index 0.61. Scutellum brown, with broad yellow margin; scut position index much larger than 1.0, basal scut convergent, scut index 1.13; sterno index 0.3; mid katepisternal about 211% of the anterior one. Halteres and legs yellow.

Wing (Fig. 147), length 2.9 mm; length to width ratio 2.75. Indices: C, 2.89; ac, 1.73; hb, 0.74; 4c, 0.76; 4v, 1.48; 5x, 1.38; M, 0.44; prox. x, 0.48.

Terminalia ♀ (Fig. 35 C). Inner margins of tergite VIII, just below hypoproct, heavily sclerotized. Ovipositor plate apically pointed, with about 6-7 stout marginal teeth and 6-7 bristle-shaped discal teeth, proximally fused to a long, hypandrium-shaped, heavily sclerotized sclerite; plates dorsally linked to each other by a trapezoidal, sclerotized bridge. Spermatheca not identified.

• *Diathoneura quadrivittata* DUDA, 1925

(Figs. 31; 147; 155)

Diathoneura quadrivittata DUDA, 1925:172.

Clastopteromyia quadrivittata (DUDA); FROTA-PESSOA, 1947:218 (proposed new combination).

Material examined. LECTOTYPE ♂ (by present designation, dissected, right wing microslide-mounted), labelled "COSTA RICA 1921. SUIZA DE TURRIALBA / V.22. / *Diathoneura quadrivittata* n. sp. det. Duda / Syn-Typus / Zool. Mus. Berlin / LECTOTYPE ♂ *Diathoneura quadrivittata* Duda by Bächli & Vilela 1990", deposited in NHNM.

Diagnosis. Body color mainly brown; mid orbital just outside of anterior one; facial carina absent; wings brown, with 4 shiny whitish transverse bands, the 2 inner ones not reaching to anterior and posterior margin, respectively, anal vein absent, alula reduced; abdomen shiny brown, apically yellowish.

Redescription. Head yellowish. Frons golden yellow, brownish posteriorly, frontal length 0.24 mm, frontal index 0.82, top to bottom width ratio 1.29. Frontal triangle about half frontal length; ocellar triangle blackish, about 40% frontal length. Frontorbital plates narrow, apically diverging from eye margin, about 80% frontal length. Distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.77, of mid to anterior orbital 0.6; poc 36%, oc 86% of frontal length; vibrissal index 0.3. Face whitish. Cheek index about 11. Eye with dense short pile, roundish, index 1.1. Pedicel and first flagellomere brown; length to width ratio 1.33. Arista with 6 upper and 3 lower branches, plus small terminal fork, inner branches relatively long. Palpi brown.

Thorax brown; length about 0.76 mm. Scutum shiny; h index 2.33; 6 rows of acrostichals; dc index 0.65. Scutellum short, apically round; scut nearly equidistant, basal scut divergent, scut index 1.3; sterno index 0.42; mid katepisternal about 38 % of the anterior one. Halteres brown. Legs mainly yellowish.

Wing (Fig. 147), length 2.05 mm; length to width ratio 2.48. Indices: C, 1.79; ac, 2.11; hb, 0.58; 4c, 1.12; 4v, 1.53; 5x, 1.17; M, 0.41; prox. x, 0.41.

Terminalia ♂ (Figs. 31; 155 E). Epandrium with 8 lower and 6 upper bristles. Cerci not fused to epandrium; ventral margin extended downwards into a

long, narrow plate. Surstylus not micropubescent, with 15-16 sharply pointed teeth, somewhat scattered along the inner margin. Decasternum as in fig. 31 B. Hypandrium shorter than epandrium; bow spurious; gonopod fused to hypandrium, which is laterally partially micropubescent and bears a pair of subapical bristles distally. Aedeagus not fused to aedeagal apodeme, pointed at tip, slightly directed frontwards, distally bearing a membranous tube, proximally bearing a short, pointed backwards, dorsal expansion (which probably represents posterior parameres fused both to each other and to aedeagus). Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod as in fig. 31 E. Anterior paramere narrow, very long, curved, distally blunt and bearing some micropubescent, submedially incised at ventral margin, linked to apodeme, to aedeagus and to hypandrium by membranous tissue.

Note. From the supposed ♂ paralectotype only the pin remains in the collection of the HNHM, same data as lectotype except date of collection "1921.V.19".

✓ *Diathoneura smithi*, sp. nov.

(Figs. 32; 147; 155)

Drosophila pallida WILLISTON, 1896:415, in part.

Material examined. Holotype ♂ (dissected, right wing microslide-mounted), labelled "SYNTYPE / Cotype / Windward side St. Vincent, W.I. H.H. Smith / W. Indies 1907-66. / 500 feet. / *D. pallida* Williston / HOLOTYPE ♂ *Diathoneura smithi* sp. nov. Bächli & Vilela det. 1990", deposited in BMNH.

Diagnosis. Body color mainly yellow; mid orbital just outside of anterior one; facial carina absent; pleura with 2 brown longitudinal stripes, one from propleura to base of halteres, the other in upper half of katapisterna; wings clear, veins r_{4+5} and m divergent, anal vein absent, alula reduced; abdomen brown.

Description. Head mainly yellow. Frons golden yellow, laterally brownish, frontal length 0.22 mm, frontal index 0.72, top to bottom width ratio 1.22. Frontal triangle brownish, subshiny, about 2/3 frontal length; ocellar triangle darker, about half frontal length. Frontorbital plates subshiny, brown, slightly diverging from eye margin, about 3/4 frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical; poc 38%, oc 69% of frontal length; vibrissal index 0.36. Cheek index about 13. Eye nude, index 1.13. First flagellomere brown, marginal hairs about 1/3 width; length to width ratio 1.4. Arista with 7 upper and 2 lower branches, plus terminal fork. Proboscis and palpi yellow.

Thorax brownish yellow; length about 0.66 mm. Scutum pollinose; h index 1.57; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.58. Scutellum apically round; scut nearly equidistant, basal scut parallel, scut index 0.95; sterno index 0.28; mid katapisternal about 220% of the anterior one. Halteres and legs yellow, fore femora broadened, fore tarsi with long recurved hairs on inner surface.

Wing (Fig. 147), length 1.65 mm; length to width ratio 2.27. Indices: C, 1.63; ac, 2.67; hb, 0.56; 4c, 1.33; 4v, 1.92; 5x, 2.0; M, 0.67; prox. x, 0.5.

Terminalia ♂ (Figs. 32; 155 F). Epandrium with about 16 bristles. Cerci not fused to epandrium; lower margin extended both laterally and downwards into a distally directed backwards, twisted plate; Surstylus not micropubescent, laterally wrinkled, with a tuft of about 5 long bristles on inner margin, ventrally with 4-5 small bristles on upper margin plus some small bristles on lower surface and a

large one just below lateral lobe of cercus. Decasternum as in fig. 32 B. Hypandrium shorter than epandrium; bow absent; gonopod fused to hypandrium which is bare. Aedeagus not fused to aedeagal apodeme, curved, distally bearing a pair of dorso-lateral lobes; dorsal margin expanded (which probably represents posterior parameres fused both to each other and to aedeagus) laterally at sub-median region. Aedeagal apodeme longer than aedeagus, rod-shaped, anteriorly expanded. Ventral rod as in fig. 32 F. Anterior paramere long, curved, linked to apodeme, to aedeagus and to hypandrium by membranous tissue, distally trifid, each lobe being twisted and sharply pointed; laterally bearing about 7 sensilla on anterior half.

Etymology. Named in honor of the collector.

Note. The male holotype of this species originally belonged to the type-series of *Drosophila pallida* WILLISTON (= *D. willistoni* STURTEVANT).

• *Diathoneura taeniatipennis* DUDA, 1925

(Figs. 37 A, B; 147)

Diathoneura taeniatipennis DUDA, 1925:172; BÄCHLI 1984a:257 (lectotype designation).

Clastopteryomyia taeniatipennis (DUDA); FROTA-PESSOA, 1947:218 (proposed new combination).

Material examined. Lectotype ♀ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.V.5. / taeniatipennis DET. DR. O. DUDA / Holotypus (sic) / Lectotypus D. taeniatipennis D. G. Bächli det. 1983", deposited in HHNM; 1 ♀ paralectotype (right wing microslide-mounted), same locality as lectotype, without date of collection, deposited in ZMB.

Diagnosis. Body color mainly yellow; mid orbital just outside of anterior one; facial carina absent; wings with brown margin along costal sections I and II and 3 brown transverse bands, a broad subapical one and 2 along crossveins, anal vein absent, alula reduced; abdomen blackish brown, basally diffusely yellowish.

Redescription. Head mainly yellow. Frontal length 0.27 mm, frontal index 0.73, top to bottom width ratio 1.23. Frontal triangle about half frontal length; ocellar triangle darker, about 45% frontal length. Frontorbital plates narrow, subshiny, somewhat diverging from eye margin, about 60% frontal length. Distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.85, of mid to anterior orbital 0.45; poc 63%, oc 100% of frontal length; vibrissal index 0.33. Cheek index about 10. Eye with dense short pile, index 1.04. Pedicel and first flagellomere brown; length to width ratio 1.38. Arista with 4 upper and 2 lower branches, plus small terminal fork. Palpi brownish.

Thorax mainly yellow; length about 1.12 mm. Scutum posteriorly darker; h index 1.56; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance, an additional slightly enlarged dc in front of the anterior one; dc index 0.7. Scutellum brownish, apically round; scut position index much larger than 1.0, basal scut divergent. Pleura with diffuse darker longitudinal band. Legs yellow.

Wing (Fig. 147), length 2.64 mm; length to width ratio 2.35. Indices: C, 2.53; hb, 0.42; 4c, 1.0; 4v, 1.84; 5x, 1.11; M, 0.53; prox. x, 0.53.

Terminalia ♀ (Fig. 37 A, B). Ovipositor plate absent, probably fused to tergite VIII which is extremely reduced and linked to a single, concave, anteriorly directed frontwards, heavily sclerotized plate. Spermatheca not identified. Ventral receptacle expanded and introverted at distal end.

Note. According to some features of the female terminalia (such as, presence of a single, internal, directed frontwards, heavily sclerotized plate linked to the ventral region of tergite VIII, in addition to the ventral receptacle distally expanded and introverted) *D. taeniatipennis* seems to be much closer related to the species of *Cladochaeta* than to those of *Diathoneura* where, in some cases, one ovipositor plate somewhat similar to that found in species of the genus *Drosophila* is to be found. However, as in the remaining *Diathoneura* species it has more than one lower arisal branch; see our comments under the genus *Cladochaeta*.

✓ *Diathoneura tanyptera* DUDA, 1925

(Figs. 33; 155)

Diathoneura tanyptera DUDA, 1925:170; WHEELER, 1963:56.

Clastopteronmyia tanyptera (DUDA); FROTA-PESSOA, 1947:218 (proposed new combination).

Material examined. Holotype ♂ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / *Diathoneura tanyptera* ♂ DET. DR. O. DUDA n. sp. / Holotypus", deposited in HHNM.

Diagnosis. Body color mainly brown; frons golden yellow, laterally shiny brown; mid orbital just outside of anterior one; facial carina absent; palpi broad, flat, black; scutum dark brown, pollinose, with a median yellowish longitudinal stripe in anterior half; pleura yellow, with a distinct, relatively narrow blackish longitudinal stripe from propleura to base of halteres; wings dark brown, very narrow and long, distinctly conical at base, anal vein and alula absent; abdomen very narrow, shiny blackish brown.

Redescription. Head yellow. Frontal length 0.37 mm, frontal index 1.05, top to bottom width ratio 1.38. Frontal triangle indistinct; ocellar triangle shiny brown, about 30% frontal length. Frontorbital plates shiny brown, narrow, diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.84, of mid to anterior orbital 0.38; poc 18%, oc 100% of frontal length; vibrissal index 0.42. Cheek index about 12. Eye distinctly oblique, nude, index 1.24. First flagellomere brown, marginal hairs about 1/3 width; length to width ratio 1.67. Arista with 5 upper and 2 lower branches, plus small terminal fork.

Thorax brown above, yellow below; length about 1.09 mm; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.56. Scutellum triangular, pointed; scut position index about 0.5, basal scut divergent, scut index 1.77; sterno index 0.55; mid katepisternal about 58% of the anterior one. Halteres dark brown. Legs yellow.

Wing length 3.0 mm; length to width ratio 3.0. Indices: C, 3.28; ac, 1.38; hb, 0.44; 4c, 0.46; 4v, 0.85; 5x, 1.6; M, 0.21; prox. x, 0.26.

Terminalia ♂ (Figs. 33; 155 G). Epandrium with about 5 lower and 14 upper bristles. Cerci not fused to epandrium; ventral margin extended downwards into a slightly twisted plate. Surstylus not micropubescent, with 2 sets of long bristles along the inner margin, being 8-9 and 5-6 bristles in the upper and lower row, respectively; about 6 smaller bristles are to be found on the lower surface. Decasternum slightly sclerotized as in fig. 33 B. Hypandrium shorter than epandrium; bow absent; gonopod fused to hypandrium, which bears a pair of paramedian bristles. Aedeagus not fused to aedeagal apodeme, oval and mostly hidden by the parameres. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod apparently absent. Paramere (probably anterior and posterior para-

meres fused to each other) shell-shaped, acting as a sheath for the aedeagus, linked to apodeme, to aedeagus and to hypandrium by membranous tissue, laterally bearing a serrated blade and about 5 sensilla.

4 *Diathoneura tessellata* DUDA, 1925

(Figs. 34; 36 H, I; 148; 155)

Diathoneura tessellata DUDA, 1925:174; WHEELER, 1963:56 (lectotype designation, complementary description), 59 (♀ terminalia); WHEELER & TAKADA, 1971:238 (♂ terminalia).

Clastopteromyia tessellata (DUDA); FROTA-PESSOA, 1947:218 (proposed new combination).

Material examined. Lectotype ♂ (dissected, right wing microslide-mounted), labelled "COSTA RICA SUÍZA DE TURRIALBA / 1921.V.8. / tessellata ♂ DET. DR. O. DUDA / (card with mounted terminalia) / typus / LECTOTYPE tessellata (sic) Duda selected by MRWheeler JUNE 1962"; 4 paralectotypes (1 ♂, 3 ♀; 1 ♂, 2 ♀ dissected), same data as lectotype except date of collection, 1 ♂ "V.15.", 1 ♀ "V.16" (right wing microslide-mounted) and 2 ♀ "1921.V.7", all except one the latter ♀ paralectotypes (in ZMB) deposited in HHNM.

Diagnosis. Body color mainly yellow with distinct brown pattern; frons dull brown, medially and laterally subshiny, anteriorly broadly yellow; mid orbital just outside of anterior one; facial carina very narrow, low, sharp, not noselike; scutum subshiny, anteriorly brownish yellow, posteriorly brownish, with 5 more or less distinct brown longitudinal stripes, a median one, 2 in dc lines and 2 lateral ones; pleura with 2 dark brown longitudinal stripes, from propleura to bases of halteres and across katapisterna; wings with brown spot along r1, anal vein absent, alula reduced; abdomen yellow, tergite 2 with a narrow median spot and triangular marginal bands laterally, tergites 2 - 6 with a median longitudinal spot, 2 paramedian round spots and triangular marginal bands laterally, ventral area dark with round yellow spots.

Redescription. Head mainly yellow. Frontal length 0.25 - 0.27 mm, frontal index 0.73 - 0.75, top to bottom width ratio 1.18 - 1.25. Frontal triangle subshiny, about 2/3 - 3/4 frontal length; ocellar triangle black, about 40% frontal length. Frontorbital plates subshiny, apically slightly diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.71 - 0.79, of mid to anterior orbital 0.45 - 0.58; poc 40% - 44%, oc 113% - 127% of frontal length; vibrissal index 0.4 - 0.5; vt index 0.82 - 0.94. Cheek index about 9 - 10. Eye nude, index 1.07 - 1.21. Pedicel and first flagellomere brownish; length to width ratio 1.29 - 1.5. Arista with 5 upper and 3 lower branches, plus terminal fork. Palpi brown, with 2 prominent apical bristles.

Thorax mainly yellow; length about 1.0 - 1.12 mm; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.69. Scutellum brown, with yellow tip and side corners, apically round; scut nearly equidistant, basal scut parallel, scut index 0.69; sterno index 0.67; mid katapisternal absent. Halteres and legs yellow, femora with brown apical ring, tibiae with brown basal and subapical rings.

Wing (Fig. 148), length 2.31 mm; length to width ratio 2.33 - 2.5. Indices: C, 1.57 - 1.7; ac, 2.86 - 2.88; hb, 0.6 - 0.65; 4c, 1.25 - 1.44; 4v, 2.0 - 2.19; 5x, 1.67; M, 0.63; prox. x, 0.56 - 0.63.

Terminalia ♂ (Figs. 34; 155 H). Epandrium mostly covered with bristles, longest ones along the inner ventral margin where they are arranged as a tuft. Cerci not fused to epandrium. Surstylus not micropubescent, with 9 primary teeth

on upper surface, no secondary teeth and a tuft of strong bristles plus some scattered ones on lower surface, ventrally on inner margin. Decasternum as in fig. 34 B. Hypandrium shorter than epandrium; bow absent; gonopod fused to hypandrium. Aedeagus not fused to aedeagal apodeme, reduced, apically wrinkled and upwards directed. Aedeagal apodeme longer than aedeagus, laterally flattened. Ventral rod absent. Anterior paramere ribbon-shaped, twisted. Posterior parameres are probably fused to each other and transformed into a bow-shaped sclerite which is posteriorly expanded into a long, pointed, turned frontwards, spur-shaped projection and laterally linked to hypandrium by membranous tissue.

Terminalia ♀ (Fig. 36 H, I). Ovipositor plate apically pointed, unusually extended, subapically noticeable asymmetric (right plate wider and one sixth longer than left one); distally serrate at dorsal margins, bearing 19-21 tiny sensilla near ventral margin. Spermatheca not identified.

✓ *Diathoneura triseta* (MALLOCH, 1924), comb. nov.
(Figs. 35 A, B; 148)

Clastopterymyia triseta MALLOCH, 1924:10; FROTA-PESSOA, 1947:218.

Material examined. Holotype ♀ (dissected, right wing microslide-mounted), labelled "Higuito SanMateoCR / Pablo Schild Coll / Type No. 26686 U.S.N.M. / *Clastopterymyia triseta* Mall. Type Det. JRMalloch / ♀ *Diathoneura triseta* (Malloch) Bächli & Vilela det. 1990", deposited in NMNH.

Diagnosis. Body color mainly brownish; frontorbital plates broad, not diverging from eye margin; mid orbital outside of and slightly in front of anterior one; facial carina absent; palpi blackish; pleura with 2 diffuse dark brown longitudinal stripes, one from propleura to base of halteres, the other in upper half of katepisterna; wings narrow, brownish, distinctly darker in costal half, anal vein absent, alula reduced; abdomen subshiny brown, apically darker.

Redescription. Head yellow. Frons dull yellow, anteriorly lighter, frontal length 0.29 mm, frontal index 0.81, top to bottom width ratio 1.19. Frontal triangle about 2/3 frontal length; ocellar triangle black, about 60% frontal length. Frontorbital plates about 70% frontal length. Distance of posterior orbital to anterior one about 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.81, of mid to anterior orbital 0.69; oc 82% of frontal length. Check index about 13. Eye nude, index 1.04. Pedicel and first flagellomere brown; length to width ratio 1.33. Arista with 6 upper and 3 lower branches, plus terminal fork, inner branches short. Proboscis brown.

Thorax brown; length about 0.92 mm. Scutum dull yellowish brown, darker posteriorly; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals 2.5x longitudinal distance; dc index 0.55; scut position index distinctly smaller than 1.0, basal scut parallel, scut index 0.96; sterno index 0.35; mid katepisternal about 233% of the anterior one. Halteres and legs yellow.

Wing (Fig. 148), length 2.11 mm: length to width ratio 2.56. Indices: C, 1.96; ac, 2.57; hb, 0.5; 4c, 1.06; 4v, 1.59; 5x, 1.4; M, 0.41; prox. x, 0.41.

Terminalia ♀ (Fig. 35 A, B). Inner margins of tergite VIII, just below hypoproct, heavily sclerotized. Ovipositor plate apically curved, distally bearing 1 stout teeth and about 5 bristles, proximally fused to a long, hypandrium-shaped, heavily sclerotized sclerite; plates dorsally linked to each other by 2 heavily sclerotized lobes. Spermatheca membranous, somewhat spherical, bearing a bag-shaped structure apically.

Genus *Drosophila* FALLÉN, 1823:4

Subgenus *Chusqueophila* BRNCIC, 1957:100

Species included: *D. appendiculata* MALLOCH.

Diagnosis. See BRNCIC, 1957:100.

• *Drosophila appendiculata* MALLOCH, 1934

(Figs. 38; 155)

Drosophila appendiculata MALLOCH, 1934:441.

Drosophila (Chusqueophila) appendiculata MALLOCH; BRNCIC, 1957:101 (redescription), 102 (♂ terminalia).

Material examined. Holotype ♂ (dissected), labelled "Holotype / *Drosophila appendiculata* Type det. JRMALLOCH / Puntra. 19.xii.1926 / S. Chile Chiloe I. F. & M. Edwards. B.M. 1927-63.", deposited in BMNH.

Diagnosis. Wing with 3 spur crossveins at the hind side of m, and with distinct dark clouds around both crossveins and all spur crossveins (figures in MALLOCH, 1934, plate viii, and BRNCIC, 1957:103, 1987:50); abdomen yellow, with large distinct brown triangles on tergites 2 - 5, that of tergite 2 rounded, and with dark tergites 1 and 6.

Redescription. Head yellow. Frontal length 0.5 mm, frontal index 0.81, top to bottom width ratio 1.3. Frontal triangle indistinct; ocellar triangle blackish around ocelli, about 1/3 frontal length. Frontorbital plates narrow, diverging from eye margin, about 65% frontal length. Distance of posterior orbital to anterior one nearly equal to that to inner vertical. Length ratio of anterior to posterior orbital 0.67, of mid to anterior orbital 0.5; poc 70%, oc 80% of frontal length; vibrissal index 0.78. Facial carina somewhat sulcate. Check index about 8. Eye index 1.32. Arista with 5 upper and 2 lower branches, plus a small terminal fork and few short inner branches. Proboscis and palpi yellow.

Thorax yellowish-brown; length about 2.08 mm. Scutum somewhat silvery pollinose, with 2 faint medial longitudinal lines; h index 0.82; 6 rows of acrostichals. Transverse distance of dorsocentrals about 115% of the longitudinal distance; dc index 0.83. Scutellum centrally darker; apical scutellars narrowed, somewhat turned upright, laterals slightly divergent; scut index 1.2; sterno index 0.56; mid katapisternal about 52% of the anterior one. Halteres and legs yellow.

Wing with 3 spur crossveins, 2 at the second and 1 at the third section of m, respectively; with faint darkening along r_{2+3} and r_{4+5} , along the hind margin and forming a longish triangle apically in the cell R_{4+5} ; length 4.95 mm; length to width ratio 2.46. Indices: C, 4.04; ac, 1.36; hb, 0.65; 4c, 0.49; 4v, 0.98; 5x, 0.94; M, 0.28; prox. x, 0.47.

Terminalia ♂ (Figs. 38; 155 I). Epandrium with about 10 lower and no upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 11-12 primary teeth and 45-49 secondary teeth plus marginal bristles. Decasternum as in fig. 38 H. Hypandrium longer than epandrium; bow ventrally expanded; gonopod fused to paramere, bearing 1 long bristle. Aedeagus subapically expanded downwards, dorsally mostly membranous; tip laterally serrated and bearing a membranous expansion turned upwards. Aedeagal apodeme as long as aedeagus, dorso-ventrally flattened. Ventral rod as in fig. 38 F.

Subgenus *Drosophila* FALLÉN, 1823:4

annulimana species group PAVAN & CUNHA, 1947:57

Species included: 15. See VILELA, 1985:1961; PEREIRA & VILELA, 1987:13.

Diagnosis. See HSU, 1949:114, and PATTERSON & STONE, 1952:42.

✓ *Drosophila annulimana* DUDA, 1927

(Figs. 136 B; 164)

Drosophila (*Paradrosophila*) *annulimana* DUDA, 1927:117.

Drosophila (*Drosophila*) *annulimana* DUDA; DOBZHANSKY & PAVAN, 1943:57; HSU, 1949:114; BREUER & PAVAN, 1950:474.

Material examined. LECTOTYPE ♀ (by present designation, dissected), labelled "Bolivia - Mapiri III.03 Sarampioni 700m / Para*Drosophila annulimana* n.sp. ♀ det. Duda / *Cotypus annulimana* Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila annulimana* D. Syntype ♀ G.Bächli det. 1988 / LECTOTYPE ♀ *Drosophila annulimana* Duda by Vilela & Bächli 1990"; 3 paralectotypes ♀, one with same labels as lectotype plus an additional "r. Flügel phot.", one from "Bolivia, Mapiri I.I.03 S. Carlos 800 m" and one from "Bolivia, Mapiri 19.II.03, S. Antonio 1000", all deposited in SMTD.

Diagnosis. Body color mainly brown; frons with several whitish pollinose spots at anterior and posterior margin as well as along eye margin; facial carina very high and broad, noselike, slightly sulcate above, distinctly so at lower end; scutum whitish pollinose, each bristle with a small brown spot at base; prescutellars 90% of anterior dorsocentrals; wings distinctly brown along costal margin, with blackish clouds around tip of costal section I and both crossveins, veins r_{4+5} and m distinctly convergent; abdomen mainly shiny brown, with narrow antero-lateral marginal bands which are silvery shiny when seen from front.

Redescription. Head brown. Frontal length 0.5 - 0.57 mm, frontal index 0.81 - 0.83, top to bottom width ratio 1.19 - 1.31. Frontal triangle nearly reaching to anterior margin; ocellar triangle blackish, about 45% frontal length. Frontal vittae with about 30 irregularly scattered interfrontals. Frontorbital plates relatively narrow, diverging from eye margin, about 2/3 frontal length. Mid orbital in front of and outside of anterior one, distance of posterior orbital to anterior one about 1/2 of that to inner vertical. Length ratio of anterior to posterior orbital 0.84 - 1.0, of mid to anterior orbital 0.7 - 0.75; poc 47% - 59%, oc 67% - 76% of frontal length; vt index 1.1; vibrissal index 0.5 - 0.52. Face brownish. Cheek index about 4 - 5. Eye index 1.25. Occiput brown. First flagellomere short-haired; length to width ratio 1.87. Arista with 4 upper and 2 - 3 lower long branches, plus large terminal fork, inner branches long. Proboscis brownish. Palpi broad, brown.

Thorax dorsally yellowish, laterally brown; length about 2.0 - 2.15 mm; 8 - 10 rows of acrostichals. Transverse distance of dorsocentrals more than 2.5x longitudinal distance; dc index 0.66 - 0.69. Scutellum brown, laterally and apically black, with 6 - 8 roundish or longish whitish spots; scut position index smaller than 1.0, basal scut convergent, scut index 0.78 - 0.86. Pleura subshiny brown; sterno index 0.81; mid katapisternal about 30% - 37% of the anterior one. Halteres brown. Legs brown, tarsi yellow, tip of first joint and joints 4 and 5 brown.

Wing length 3.3 - 3.7 mm; length to width ratio 2.11 - 2.19. Indices: C, 3.56 - 3.63; ac, 3.0 - 3.17; hb, 0.72 - 0.74; 4c, 0.61 - 0.64; 4v, 1.39 - 1.46; 5x, 0.92 - 1.0; M, 0.35 - 0.39; prox. x, 0.65 - 0.71.

Terminalia ♀ (Figs. 136 B; 164 H). Ovipositor plate apically rounded, with 16-18 marginal and 5 discal teeth. Spermatheca long, weakly sclerotized; duct deeply invaginated.

calloptera species group FREIRE-MAIA & PAVAN, 1950:23

Species included: *D. atrata* BURLA & PAVAN, *D. calloptera* SCHINER, *D. kallima* WHEELER, *D. lindae* WHEELER, *D. maracaya* WHEELER, *D. ornatipennis* WILLISTON, *D. quadrum* (WIEDEMANN), *D. schildi* MALLOCH.

Diagnosis. Mid orbital minute (index 0.15 - 0.45). Only one prominent vibrissa (index 0.13 - 0.36), except in *D. ornatipennis*. Facial carina wide, flattened, strong. Genae narrow, cheek index 7 - 15. Arista with 6 - 8 upper and 3 - 4 lower branches plus terminal fork. Six, rarely 8, rows of acrostichals. Sterno index 0.44 - 0.68. Mid katepisternal usually as long as anterior one (index 0.71 - 1.13). Basal scut divergent. Legs with first joint of hind tarsus with 2 - 3 basal-ventral bristles. Wings heavily and irregularly spotted. Indices: C, 2.09 - 3.92; ac, 1.18 - 2.0; hb, 0.46 - 0.8; 4c, 0.57 - 1.05; 4V, 1.04 - 1.5; 5x, 0.45 - 0.88; M, 0.24 - 0.43; prox. x, 0.55 - 0.93. Abdominal tergites mostly dark brown to blackish, with lateral bands of whitish or bluish pollinosity on anterior borders. Several species with whitish pollinose anterior half of scutum, which is irregularly bordered by dark spots within the white area and by white spots within the dark area. End of costal section 1 usually broad, lappet-shaped, deeply incised, bent upwards. Often a brown spot in the upper third of the frontorbital plate. Several species have a spur crossvein in the marginal or the cubital cell.

Note. An extended diagnosis was proposed by BURLA & PAVAN, 1953:292.

✓ *Drosophila atrata* BURLA & PAVAN, 1953

(Figs. 39; 148; 155)

Drosophila (Drosophila) atrata BURLA & PAVAN, 1953:307.

Drosophila calloptera, DUDA, 1927:156 (misidentification according to BURLA & PAVAN, 1953:307, not *D. calloptera* SCHINER).

Material examined. Holotype ♂ (dissected, left wing microslide-mounted), labelled "D. atrata n. sp. Type ♂ Pirassununga vi-51 / Publicação: BURLA e PAVAN, 1953", deposited in MZUSP.

Diagnosis. Body color black brown; scutellum sulcate along lateral margins; wings as in fig. 148, with relatively large dark areas and no isolated dark spots, costal lappet small, flat; a short spur crossvein near end of vein r_{2+3} .

Redescription. Head generally dark brown. Frons dull brown, length 0.32 mm, frontal index 0.73, top to bottom width ratio 1.19. Frontal triangle not very distinct, slightly lighter than frons, about 2/3 length of frons, ocellar triangle blackish, about 1/3 length of frons. Frontal vittae dark brown, with a narrow, lighter margin above antennae. Frontorbital plates somewhat shiny, diverging from eye margin, about 70% length of frons. Orbitals nearly in a row, distance of posterior orbital to anterior one equal to that to inner vertical. Length ratio of mid to anterior orbital 0.45; poc 68% of frontal length; vibrissal index 0.21. Face

dark brown. Facial carina very broad below. Cheek index about 13. Eye pile, index 1.27. Length to width ratio of first flagellomere about 2.0. Arista incomplete, inner branches rather small. Palpi brown.

Thorax about 1.4 mm long, generally blackish, nearly unicolorous; 8 rows of acrostichals; transverse distance of dorsocentrals about 2.5x length distance, dc index 0.68; scutellars nearly equidistant, index 1.0; sterno index 0.52; Pleura blackish, sterno index 0.52; mid katepisternal 70% of anterior. Halteres missing. Legs brown, tibiae apically and tarsi slightly lighter; first joint of hind tarsus with 2 black basal-ventral bristles.

Wing length 2.57 mm; length to width ratio 2.23. Indices: C, 2.09; ac, 1.36; hb, 0.68; 4c, 1.05; 4v, 1.29; 5x, 0.45; M, 0.24; prox. x, 0.71.

Terminalia ♂ (Figs. 39; 155 J). Epandrium with 1 lower and no upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 8-9 primary teeth, no secondary teeth and 11 marginal bristles. Decasternum as in fig. 39 B. Hypandrium longer than epandrium, circle-shaped; bow sclerotized; gonopod fused to paramere, posteriorly membranous, bearing 1 long and 1 shorter bristle. Aedeagus dorsally membranous, ventrally sclerotized; antero-dorsal region bifid, expanded upwards and mostly covered with tiny spines; distal margin somewhat straight, laterally serrated; ventro-submedian surface bearing some spines. Aedeagal apodeme longer than aedeagus, rod-shaped, bent. Ventral rod as in fig. 39 F.

✓ *Drosophila calloptera* SCHINER, 1868

(Figs. 40; 149; 155; 164)

Drosophila calloptera SCHINER, 1868:239; STURTEVANT, 1921:103 (redescription).

Drosophila (Drosophila) calloptera SCHINER; PATTERSON, 1943:193 (redescription); BURLA & PAVAN, 1953:300, 301, 306 (♂♂ terminalia).

Paramyodrosophila tephritoptera HENDEL, 1936:95 (synonymized by BURLA & PAVAN, 1953:300).

Material examined. LECTOTYPE ♂ (by present designation) and 2 ♀ paratopotypes (all dissected, left wing of lectotype microslide-mounted) of *D. calloptera*, labelled as cited by BÄCHLI (1988:134), plus lectotype and paratopotype labels, deposited in NMW.

Diagnosis. Body color mainly brown with whitish head; scutum with whitish anterior area and 4 narrow longitudinal lines, the inner pair shortened within the white area; scutellum with basal and lateral furrows, somewhat shiny; wings as in fig. 149, apical dark spot relatively large, ac index high, costal lappet large.

Redescription. Head generally whitish yellow. Frontal length 0.33 - 0.35 mm. frontal index 0.69 - 0.81; top to bottom width ratio 1.19 - 1.39. Frontal triangle indistinct. Ocellar triangle blackish around ocelli, about 1/3 length of frons. Frontorbital plates diverging from eye margin, about 65% length of frons. Orbitals nearly in a row, distance of posterior orbital to anterior one about 60% of that to inner vertical, length ratio of anterior to posterior orbital 0.87, of mid to anterior orbital 0.15 - 0.23; poc 57% - 60%, oc about 85% length of frons, vibrissal index 0.23 - 0.36. Cheek index about 12 - 13. Eye index 1.27 - 1.32. Arista with 7 - 8 dorsal and 3 - 4 ventral branches, plus terminal fork. Proboscis and palpi yellow.

Thorax about 1.19 - 1.26 mm long, brown, the whitish area at the anterior part of the scutum relatively small, the inner pair of longitudinal stripes sometimes continuing into the white area; h index about 0.7; dc index 0.78;

Scutellars nearly equidistant, scut index 0.89; sterno index 0.5 - 0.64; mid katepisternal 0.81 - 1.08 anterior. Halteres brownish yellow. Legs brown, knees yellow; first joint of hind tarsus with 2 - 3 black basal-ventral bristles.

Wing length 2.21 - 2.54 mm; length to width ratio about 2.1; costal lappet somewhat bent upwards. Indices: C, 2.17 - 2.37; ac, 1.8 - 1.9; hb, 0.75 - 0.79; 4c, 0.9; 4v, 1.19 - 1.35; 5x, 0.5 - 0.67; M, 0.24 - 0.3; prox. x, 0.71 - 0.75.

The lighter anterior areas of the abdominal tergites are whitish pollinose, the dark marginal bands on tergites 2 - 4 often not reaching the posterior margin.

Terminalia ♂ (Figs. 40 A-H; 155 K). Epandrium with 1 lower and 2 upper bristles. Cerci not fused to epandrium. Surstylus strongly sclerotized, not micropubescent, with 7-8 primary teeth, no secondary teeth and 7-8 marginal bristles that come up to upper surface. Decasternum as in fig. 40 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, posteriorly membranous, partially micropubescent, bearing 1 long and 2-3 smaller bristles. Aedeagus subapically membranous at dorsal region; sclerotized tip slightly invaginated, marginally serrated. Aedeagal apodeme as long as aedeagus, rod-shaped, bent. Ventral rod as in fig. 155 K.

Terminalia ♀ (Figs. 40 I; 164 I). Ovipositor plate apically pointed, with 15-17 marginal and 5-6 discal teeth. Spermatheca ball-shaped, weakly sclerotized; duct medially invaginated.

*** *Drosophila kallima* WHEELER, 1957**

(Figs. 41; 149; 155)

Drosophila (Drosophila) kallima WHEELER, 1957:87.

Material examined. Holotype ♂ (dissected, right wing microslide-mounted), labelled "Santa Maria de Ostuma / 11 klm (sic) N Matagalpa Nicaragua 57.12 / HOLOTYPE / kallima W. / *Drosophila kallima* Wheeler", deposited in NMNH.

Diagnosis. Body color mainly brown with whitish head and white and brown marked thorax; scutellum brown basally and at bases of bristles; wings as in fig. 149, with relatively extensive dark pattern and a spur crossvein in a dark area of the marginal cell, costal lappet large.

Redescription. Head generally whitish yellow, brown in the ocellar triangle, in the uppermost part of the frontorbital plates and below the eyes. Frontal length 0.29 mm, frontal index 0.81, top to bottom width ratio 1.29. Frontal triangle indistinct, ocellar triangle brown, about 1/3 length of frons. Frontorbital plates with dark upper corner, somewhat diverging from eye margin, about 60% length of frons. Mid orbital slightly outside row of orbitals, distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.73, of mid to anterior orbital 0.27; poc 65%, oc 82% of frontal length, vibrissal index 0.27. Facial carina relatively narrow. Cheek index about 10. Eye index 1.25. Arista with 6 dorsal and 3 ventral branches, plus terminal fork.

Thorax about 1.2 mm long; h index 0.86; 4 - 6 rows of acrostichals; transverse distance of dorsocentrals about 2x length distance, dc index 0.76, a pair of somewhat enlarged dc bristles near transverse suture. Scutellum with a large basal spot and 4 smaller ones at bases of scutellars, the latter equidistant, scut index 1.17; sterno index 0.48; mid katepisternal about 109% anterior. Halteres yellow. Legs brown, knees slightly lighter; first joint of hind tarsus with 2 black basal-ventral bristles.

Wing length 2.31 mm; length to width ratio about 2.2, costal lappet bent upwards. Indices: C, 3.07; ac, 1.56; hb, 0.64; 4c, 0.78; 4v, 1.33; 5x, 0.75; M, 0.33; prox. x, 0.78.

Terminalia ♂ (Figs. 41; 155 L). Epandrium with 1 lower and no upper bristles. Cerci not fused to epandrium. Surstylus strongly sclerotized dorsally, membranous medially, not micropubescent, with 10 primary teeth, no secondary teeth and 10 marginal bristles that come up to upper surface Decasternum as in fig. 41 B. Hypandrium as long as epandrium; bow absent; gonopod fused to paramere, posteriorly membranous, bearing 1 long anterior bristle. Aedeagus mostly membranous, both ventrally and dorsally bifid at tip and covered with tiny spines; median region sclerotized. Aedeagal apodeme longer than aedeagus, rod-shaped, bent. Ventral rod as in fig. 41 F.

*** *Drosophila lindae* WHEELER, 1968**

(Figs. 42; 149; 156)

Drosophila (Drosophila) lindae WHEELER, 1968:431.

Material examined. Holotype ♂ (dissected, right wing microslide-mounted), labelled "30 klm (sic) Popayan COLOMBIA / MRWheeler Collector Mar. 1958 / *Drosophila lindae* Wh. HOLOTYPE / *Drosophila lindae* Wheeler", deposited in NMNH.

Diagnosis. Body color mainly brown with whitish head; an additional pair of dorsocentrals anterior of the suture; scutellum with dark spots at the bases of scutellars; wings as in fig. 149, with numerous, rather small dark spots and a spur crossvein within the clear center of a dark spot in the marginal cell, costal lappet large.

Redescription. Frons whitish yellow, silvery when seen from an angle, frontal length 0.35 mm, frontal index 0.68, top to bottom width ratio 1.16. Frontal triangle narrow, nearly reaching to the anterior margin. Ocellar triangle brown, about 40% frontal length. Frontorbital plates narrow, distinctly diverging from eye margin, about 2/3 frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.76, of mid to anterior orbital 0.19; poc 67%, ocellars 95% of frontal length; vibrissal index 0.25. Face white. Facial carina extremely broad, nearly flat. Cheek index about 8. Eye index 1.33. Occiput with 2 lateral triangular black spots. Pedicel brown above. First flagellomere white, relatively short-haired, length to width ratio 2.17. Arista with 8 upper and 4 lower branches, plus terminal fork and relatively short inner branches. Proboscis yellow. Palpi basally black, apically white.

Thorax length about 1.48 mm. Scutum with the usual white anterior area, but also with large white parts in the posterior half, with dark brown spots around the dorsocentrals and above the postpronota and the wing base, and a central brown spot behind the suture. Transverse distance of dorsocentrals less than twice the longitudinal distance. An additional pair of dc bristles, smaller than the anterior ones, in front of the suture, dc index 0.74. Scutellum centrally pale brown, the rest whitish except the roundish spots at the bristles bases, scutellars equidistant, scut index 1.03. Pleura with brown spots and greyish pollinose mosaic, sterno index 0.52, mid katepisternal about 94% of anterior. Halteres brown. Legs yellow, with brown coxae and brown basal and subapical rings on femora and tibiae, first joint of hind tarsus with 2 strong basal-ventral bristles.

Wing with numerous rather small dark spots; length 2.97 mm, length to width ratio 2.09, costal lappet broad, black, bent upwards. Indices: C, 2.75; ac, 1.67; hb, 0.75, 4c, 0.83; 4v, 1.33; 5x, 0.67; M, 0.33; prox. x, 0.75.

Abdomen with grey-bluish pollinosity in the anterior half of tergites.

Terminalia ♂ (Figs. 42; 156 A). Epandrium with 1 lower, 1 median and 1 upper bristle. Cerci not fused to epandrium. Surstylus strongly sclerotized, not micropubescent, with 9 primary teeth, no secondary teeth and 8-9 marginal bristles that come up to upper surface. Decasternum as in fig. 42 B. Hypandrium as long as epandrium; bow slightly sclerotized medially; gonopod fused to paramere, posteriorly membranous, bearing 1 long anterior bristle. Aedeagus mostly membranous, both ventrally and dorsally bifid at tip, covered with tiny spines dorsally, slightly micropubescent ventrally; median region sclerotized. Aedeagal apodeme longer than aedeagus, rod-shaped, bent. Ventral rod absent.

✓ *Drosophila maracaya* WHEELER, 1957
(Figs. 43; 150; 156)

Drosophila (Drosophila) maracaya WHEELER, 1957:88.

Material examined. Holotype ♂ (dissected, left wing microslide-mounted), labelled "Venezuela Rancho Grande near Maracay / M. Wasserman Oct - Nov. 1956 / HOLOTYPE / *Drosophila maracaya* Wheeler", deposited in NMNH.

Diagnosis. Body color mainly brown with whitish head; black brown thorax without white areas; scutellum laterally yellow; wings as in fig. 150, with some whitish areas and a faint spur crossvein in the discal cell, costal lappet small, flat; abdomen with relatively extensive yellow anterior hands.

Redescription. Head generally whitish. Frontal length 0.34 mm, frontal index 0.8, top to bottom width ratio 1.2. Frontal triangle indistinct. Ocellar triangle about 1/3 frontal length. Frontorbital plates narrow, somewhat diverging from eye margin, about 60% frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one 1/2 of that to inner vertical; poc 65%, oc 80% of frontal length, vibrissal index 0.25. Facial carina relatively broad. Cheek index about 10. Eye index 1.31. Arista with 7 upper and 4 lower branches, plus terminal fork, inner branches short. Palpi dark brown.

Thorax generally dark brown, length about 1.25 mm. Scutum spotted pollinose, with 6 narrow darker longitudinal lines and 2 paramedian golden pollinose stripe in the anterior half. Transverse distance of dorsocentrals about 180% of the longitudinal distance. Two enlarged bristles at the inner end of the suture. Scutellum laterally yellow, scutellars nearly equidistant, mid katapisternal about 73% of anterior. Halteres yellow. Legs irregularly brown, first joint of hind tarsus with 2 small basal-ventral bristles.

Wing length 2.54 mm, length to width ratio 2.26; some of the clear areas are whitish; costal lappet not differentiated. Indices: C, 3.92; ac, 1.18; hb, 0.46; 4c, 0.65; 4v, 1.3; 5x, 0.67; M, 0.8; prox. x, 0.65.

Abdomen with reduced width of the dark marginal bands, the basal areas of the tergites yellow.

Terminalia ♂ (Figs. 43; 156 B). Epandrium with 1 lower and 2 upper bristles. Cerci not fused to epandrium. Surstylus strongly sclerotized, not micropubescent, with 9 primary teeth, no secondary teeth and 6-7 marginal bristles that come up to upper surface. Decasternum as in fig. 43 B. Hypandrium as long as epandrium; bow sclerotized; gonopod fused to paramere, bearing 1 long and 1

smaller bristle, posteriorly membranous. Aedeagus distally membranous, bearing at tip 1 conspicuous, strongly sclerotized, laterally flattened, serrated plate; membranous surface covered with tiny spines. Aedeagal apodeme longer than aedeagus, rod-shaped, bent. Ventral rod as in fig. 43 F.

***Drosophila ornatipennis* WILLISTON, 1896**

(Figs. 44; 150; 156; 164)

Drosophila ornatipennis WILLISTON, 1896:407.

Drosophila (Drosophila) ornatipennis WILLISTON; BURLA & PAVAN, 1953:302 (complementary description).

Material examined. LECTOTYPE ♂, (by present designation, dissected, left wing microslide-mounted), labelled "SYNTYPE / COTYPE / Woodward side St. Vincent, W.I. H.H.Smith / W. Indies. 1907-66. / *D. ornatipennis* Williston / LECTOTYPE ♂ *Drosophila ornatipennis* Williston by Vilela & Bächli 1990", deposited in BMNH; 10 paralectotypes (7 ♂, 3 ♀), from St. Vincent Island, all but 2 ♂ (in SEM) deposited in BMNH.

Diagnosis. Body color mainly brownish with yellow head; scutum with faint, narrow longitudinal lines; scutellum flat, dull; wings as in fig. 150, with rather low C and 4c indices, apical dark spot small, anterior crossvein somewhat distant from wing base, no costal lappet.

Redescription. Head yellowish. Frontal length 0.31 - 0.35 mm, frontal index 0.72 - 0.88, top to bottom width ratio 1.08 - 1.26. Frontal triangle indistinct. Ocellar triangle brown, about 1/3 frontal length. Frontal vittae golden yellow. Frontorbital plates not much diverging from eye margin, usually yellow, rarely with brown upper corner, about 2/3 frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one less than half of that to inner vertical. Length ratio of anterior to posterior orbital 0.71 - 0.88, of mid to anterior orbital 0.15 - 0.27, poc 52% - 67%, oc 84% - 95% of frontal length, vibrissal index 0.67 - 0.92. Facial carina relatively broad. Gena yellow, cheek index about 10 - 14. Eye index 0.95 - 1.36. First flagellomere short-haired, length to width ratio 1.67 - 1.83. Arista with 7 - 8 upper and 3 - 4 lower branches, plus end fork. Proboscis and palpi yellow.

Thorax length about 1.05 - 1.19 mm. Scutum yellow, rarely darker in the posterior half, with 6 brown longitudinal lines, the innermost pair sometimes confluent, h index 0.65 - 0.71; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals somewhat greater than the longitudinal distance, dc index 0.65 - 0.72. Scutellum usually yellow, with a tendency to a darker central area, scutellars nearly equidistant, scut index 0.85 - 0.96. Pleura brownish patterned, sterno index 0.5 - 0.63, mid katepisternal about 79 - 109% of anterior. Halteres and legs yellow, first joint of hind tarsus with 2 basal-ventral bristles.

Wing length 1.84 - 2.31 mm, length to width ratio 2.11 - 2.41, with relatively large dark areas and few isolated dark spots, costal lappet not differentiated. Indices: C, 2.47 - 2.85; ac, 1.27 - 1.67; hb, 0.71 - 0.8; 4c, 0.81 - 0.94; 4v, 1.13 - 1.5; 5x, 0.73 - 0.86; M, 0.31 - 0.43; prox. x, 0.81 - 0.93.

Abdomen with silvery anterior areas of tergites, when seen from an angle.

Terminalia ♂ (Figs. 44 A-H; 156 C). Epandrium with 1 lower, 1 median and 1 upper bristle. Cerci not fused to epandrium. Surstylus not micropubescent, with 6-7 primary teeth, no secondary teeth and 7 marginal bristles that come up to upper surface. Decasternum as in fig. 44 B. Hypandrium as long as epandrium;

bow sclerotized; gonopod fused to paramere, posteriorly membranous, slightly micropubescent, bearing 1 long and 1 shorter bristle. Aedeagus subapically membranous at dorsal region, covered with tiny spines at ventral region, distal margin slightly invaginated, laterally serrated Aedeagal apodeme shorter than aedeagus, rod-shaped, bent. Ventral rod as in fig. 44 F.

Terminalia ♀ (Figs. 44 I; 164 J). Ovipositor plate apically pointed, with 14-15 marginal and 5 discal teeth. Spermatheca ball-shaped, weakly sclerotized; duct medially invaginated.

4 *Drosophila quadrum* (WIEDEMANN, 1830)

(Figs. 45; 151; 156; 164)

Trypeta quadrum WIEDEMANN, 1830:507.

Drosophila (Drosophila) quadrum (WIEDEMANN); BURLA & PAVAN, 1953:303, 304, 306 (♂ terminalia).

Material examined. Holotype ♀ (dissected, left wing microslide-mounted), labelled "4638 / *Drosophila* / Type / quadrum Wied. Brasil N. Olfers", deposited in ZMB. 1 ♂, 1 ♀ (both dissected, ♂ right wing microslide-mounted), collected in March 1952 in Rio de Janeiro, Brazil, deposited in ZMZ.

Diagnosis. Body color mainly brown with whitish yellow head; scutellum mainly glossy black; wings as in fig. 151, with a spur crossvein within a dark spot in the marginal cell, anterior crossvein near to wing base, dark spot small and numerous, confluent, costal lappet large, a somewhat orange longitudinal band along the wing center.

Redescription. Head generally yellow. Frontal length 0.30 - 0.40 mm, frontal index 0.73 - 0.75, top to bottom width ratio 1.14 - 1.29. Frontal triangle not very distinct, about half of frontal length. Ocellar triangle often dark, about 1/3 frontal length. Frontal vittae somewhat whitish pollinose. Frontorbital plates slightly diverging from eye margin, with a brown spot near the upper margin, about 2/3 frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.68 - 0.76, of mid to anterior orbital 0.23 - 0.4; poc 67%, oc 75 - 89% of frontal length; vibrissal index 0.33 - 0.38. Face white. Facial carina very broad. Cheek index about 11. Eye index 1.24. First flagellomere whitish, length to width ratio 1.83 - 2.17. Arista with 7 upper and 3 - 4 lower branches, plus terminal fork. Proboscis and palpi yellow.

Thorax length about 1.28 - 1.58 mm. Scutum with large white pollinose area, h index 0.65 - 0.69; 4 - 6 rows of acrostichals. Transverse distance of dorsocentrals 180% of the longitudinal distance, dc index 0.67 - 0.69. Scutellum with 5 small yellow spots, 2 lateral and 1 apical; scut position index greater than 1.0. Pleura spotted brown pollinose, sterno index 1.0, mid katepisternal about 106 - 133% of anterior. Halteres black. Legs yellow, femora and tibia with very faint brown rings, first joint of hind tarsus with 2 black basal-ventral bristles.

Wing length 2.44 - 3.04 mm, length to width ratio 2.24 - 2.3. The dark spots are small and numerous; costal lappet broad, bent upwards. Indices: C, 2.82 - 3.0; ac, 1.36 - 1.55; hb, 0.6 - 0.74; 4c, 0.76 - 0.81; 4v, 1.28 - 1.42; 5x, 0.75 - 0.8; M, 0.32 - 0.6; prox. x, 0.57 - 0.6.

Abdomen very dark brown, silvery shining in the basal-lateral parts of tergites.

Terminalia ♂ (Figs. 45 A-H; 156 D). Epandrium with 2 lower and 4 upper bristles. Cerci not fused to epandrium. Surstylus heavily sclerotized, not micro-

pubescent, with 8-9 primary teeth, no secondary teeth and 14-15 marginal bristles that come up to upper surface. Decasternum as in fig. 45 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, posteriorly membranous, bearing 1 long bristle. Aedeagus mostly membranous, subapically bifid at dorsal region, ventrally mostly micropubescent, dorso-subapically partially covered with tiny spines, internally bearing a pair of sclerotized stripes. Aedeagal apodeme as long as aedeagus, rod-shaped. Ventral rod absent.

Terminalia ♀ (Figs. 45 I, J; 164 K, L). Ovipositor plate apically pointed, with 17-19 marginal and 6-7 discal teeth (in lectotype). Spermatheca long, sclerotized; duct deeply invaginated.

✓ *Drosophila schildi* MALLOCH, 1924

(figs. 46; 150; 151; 156; 164)

Drosophila schildi MALLOCH, 1924:10.

Drosophila (Drosophila) schildi MALLOCH; BURLA & PAVAN, 1953:305, 306 (♂ terminalia).

Paramyco-drosophila poeciloptera DUDA, 1925:226 (synonymized by WHEELER, 1963:57, lectotype designation).

Drosophila poecila BURLA & PAVAN, 1953:311 (unjustified junior replacement name for *Paramyco-drosophila poeciloptera* DUDA, 1925, not *Drosophila poeciloptera* DUDA, 1940).

Material examined. Holotype ♀ of *D. schildi* (left wing microslide-mounted), labelled "Higuito San Mateo CR / Pablo Schild coll. / Type No. 26674 U.S.N.M. / *Drosophila schildi* Type Mall. Det. JRMalloch", deposited in NMNH. Lectotype ♂ of *D. poeciloptera* (dissected, right wing microslide-mounted), labelled "Costa Rica 1921. SUIZA DE TURRIALBA v. 20. / Paramyco-Drosophila poeciloptera ♂ DET. Dr. O. DUDA / Syntypus / LECTOTYPE poeciloptera Duda selected by MRWheeler JUNE 1962" and 20 paralectotypes (8 ♂, 12 ♀; 1 ♂, 1 ♀ dissected) from the same collection site as the lectotype, deposited in NHNM.

Diagnosis. Body color mainly dark brown with whitish head; scutellum dull brown; wings as in figs. 150 and 151, with a spur crossvein in a dark spot in the marginal cell, rather high C and 4c indices, anterior crossvein nearer to wing base, costal lappet large.

Redescription. Head generally whitish yellow. Frontal length 0.31 - 0.39 mm, frontal index 0.69 - 0.8, top to bottom width ratio 1.12 - 1.23. Frontal triangle silvery. Ocellar triangle brown, about 40% of frontal length. Frontorbital plates narrow, silvery, with dark spots in upper corner, distinctly diverging from eye margin, about 60% of frontal length. Orbitals in a line, distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.64 - 0.78, of mid to anterior orbital 0.17 - 0.31, poc 57% - 68%, oc 0.75% - 0.86% of frontal length, vt index 1.11 - 1.38, vibrissal index 0.13 - 0.36. Face white. Facial carina bulbous. Cheek index about 7 - 13. Eye index 1.27 - 1.35. Occiput with a brown median transverse band. First flagellomere short haired, length to width ratio 1.57 - 2.0. Arista with 6 - 7 upper and 3-4 lower branches, plus terminal fork. Palpi basally brown.

Thorax generally dark, length about 1.25 - 1.58 mm. Scutum with rather small white areas, h index 0.68 - 0.84. Transverse distance of dorsocentrals about half the longitudinal distance, dc index 0.66 - 0.75. Scutellum largely brown, with apical and lateral white spots, scutellars equidistant, scut index 0.97 - 1.09. Pleura with brown pollinose mosaic, sterno index 0.48 - 0.68, mid katepisternal about 71 - 113% of anterior. Halteres brown. Legs brownish, coxae and basal half of femora

darker, tibiae with basal and subapical dark rings, first joint of hind tarsus with 2 basal-ventral bristles.

Wing length 2.27 - 2.87 mm, length to width ratio 2.12 - 2.24, with small and numerous dark spots, costal lappet large, bent upwards. Indices: C, 3.14 - 3.86; ac, 1.3 - 1.67; hb, 0.62 - 0.79; 4c, 0.64 - 0.65; 4v, 1.04 - 1.3; 5x, 0.75 - 0.88; M, 0.27 - 0.35; prox. x, 0.52 - 0.61.

Abdomen black brown, with silvery basal-lateral areas of tergites, when seen from an angle.

Terminalia ♂ (Figs. 46 A-H; 156 E). Epandrium with 2 lower, 2 median and 2 upper bristles. Cerci not fused to epandrium. Surstylus strongly sclerotized, not micropubescent, with 9 primary teeth, no secondary teeth and 9 marginal bristles that come up to upper surface. Decasternum as in fig. 46 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, posteriorly membranous; bearing 1 long anterior bristle. Aedeagus mostly membranous, dorsally bifid at tip and covered with tiny spines; ventral region somewhat micropubescent, median region sclerotized. Aedeagal apodeme longer than aedeagus, rod-shaped, bent. Ventral rod as in fig. 46 F.

Terminalia ♀ (Figs. 46 I; 164 M). Ovipositor plate apically pointed, with 18 marginal and 6 discal teeth. Spermatheca light bulb-shaped, weakly sclerotized; duct medially invaginated.

canaline species group WHEELER, 1957:90

Species included: *D. albomarginata* DUDA, *D. annularis* STURTEVANT, *D. annulosa* sp. nov., *D. canalinica* PATTERSON & MAINLAND, *D. canalinoides* WHEELER, *D. davidgrimaldii*, sp. nov., *D. hendeli*, sp. nov., *D. melanoptera* DUDA, *D. panamensis* MALLOCH, *D. parannularis* sp. nov., and *D. paracanalinea* Wheeler.

Diagnosis. Body color mainly dark brown; frons with complex pattern of brown and whitish pollinose areas, mesonotum usually with dark spots at bristles bases and complex pattern of brown and yellow areas, forming diffuse longitudinal stripes; basal scutellars convergent; legs mostly dark, tibiae yellow with 2 brown rings; both crossveins usually clouded; tergites with broad, brown, medially narrowly interrupted marginal bands. Tergite VIII of ♀ with prominent paragenital fringe of many long slender bristles; ovipositor plates with sharply pointed teeth, longer than usual.

Note. The shape and size of the spermathecae vary remarkably among the species of this group and might, when more information will be available, be a useful diagnostic character.

✓ *Drosophila albomarginata* DUDA, 1927

(Figs. 47; 156)

Drosophila albomarginata DUDA, 1927:173

Drosophila (Drosophila) albomarginata DUDA; WHEELER, 1970:11.

Material examined. Holotype ♂ (dissected), labelled "Bolivia - Mapiro II. 03 Sarampioni 700m / (blank label) / Dr. albomarginata n. sp. ♂ DET. DR. O. DUDA / Typus albomarginata Duda / Staatl. Museum für Tierkunde Dresden /

Drosophila albomarginata D. Holotype ♂ G. Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly yellowish brown; frons upwards diverging, whitish, with 2 brown longitudinal stripes and black upper corner; palpi brown; scutum irregularly brown and whitish spotted; h index 0.79; mid katapisternal about 14% of the anterior one; wings clear, costal section 1 apically black, veins r_{4+5} and m convergent; C index 2.13; hb index 0.63; 5x index 1.14; abdomen brown.

Redescription. Head mainly yellow. Frontal length 0.35 mm, frontal index 1.0, top to bottom width ratio 1.43. Frontal triangle whitish narrowly reaching to anterior margin; ocellar triangle about 40% frontal length. Frontal vittae diffuse brown. Frontorbital plates anteriorly whitish, posterior half abruptly black, diverging from eye margin, about 2/3 frontal length. Mid orbital near to and slightly outside of anterior one, distance of posterior orbital to anterior one about 3/4 of that to inner vertical. Length ratio of anterior to posterior orbital 0.92, of mid to anterior orbital 0.50; poc 52%, oc 71% of frontal length; vibrissal index 0.38. Face white. Facial carina noselike, relatively narrow. Cheek index about 7. Eye index 1.25. Pedicel and first flagellomere whitish; length to width ratio 1.5. Arista with 6 upper and 2 lower long branches, plus terminal fork. Proboscis yellowish.

Thorax mainly yellow; length about 1.25 mm; 6 rows of acrostichals; dc index 0.81; scutellum laterally brown. Pleura yellow and brown spotted; sterno index 0.76. Halteres white.

Wing length 2.41 mm; length to width ratio 2.43. Indices: ac, 3.2; 4c, 0.89; 4v, 1.5; M, 0.44; prox. x, 0.56.

Terminalia ♂ (Figs. 47; 156 F). Epandrium with about 9 lower and no upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with 8 primary teeth, no secondary teeth and 6-8 marginal bristles. Hypandrium shorter than epandrium; bow absent; gonopod bearing 1 anterior bristle. Aedeagus rounded at tip, submedially expanded downwards, bearing a pair of ventral, long, waved and pointed upwards spurs; distal dorsal region covered with tiny spines, which also cover most of the ventro-lateral surface of the spurs. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 47 E. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

Drosophila annularis STURTEVANT, 1916

(Figs. 48; 156; 165)

Drosophila annulata WILLISTON, 1896:409.

Drosophila pulchella STURTEVANT (in part, originally described as *bellula* WILLISTON, 1896:410, see note under Material & Methods).

Drosophila annularis STURTEVANT, 1916:327 (proposed new name for *Drosophila annulata* WILLISTON, 1896, not *Notiphila annulata* FALLÉN, 1813, at that time considered to be a *Drosophila* species); STURTEVANT, 1921:99 (redescription).

Drosophila (Drosophila) annularis STURTEVANT; WHEELER, 1957:94 (complementary description).

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "SYNTYPE / COTYPE / Windward side St. Vincent, W.I. H.H. Smith / W. Indies 1907-66 / D. annulata Williston / LECTOTYPE ♂ *Drosophila annularis* Sturtevant by Vilela & Bächli 1990"; 3 ♀ paralectotypes, same labels as lectotype, one of them bears an additional label "1500 feet."; all deposited in BMNH. Two paralectotypes (1 ♂, 1 ♀) of *Drosophila pulchella* Sturtevant (see note under

Material & Methods), the ♂ is labelled "SYNTYPE / COTYPE / (red label) / 8 / St. Vincent W.I. H.H.Smith / W. Indies 1907-66. / D. bellula Williston / PARALLECTOTYPE ♀ *Drosophila pulchella* by Vilela & Bächli 1990 / ♀ *Drosophila annularis* Sturtevant Vilela & Bächli det. 1990", the ♂ has the same data as the ♀ plus one additional yellow square label, both deposited in BMNH.

Diagnosis. Body color mainly brown; frons blackish brown, medially and laterally brown, with 2 paramedian semicircular yellow spots at anterior margin; scutum brown, variably patterned, usually with 4 dark longitudinal lines, 2 paramedian ones and 2 in dorsocentral lines, with yellowish pollinose spots arranged in 9 mostly interrupted longitudinal stripes; h index 0.59 - 0.63; mid katepisternal about 36% - 57% of the anterior one; wings slightly brownish along costal margin, both crossveins and a more or less large area behind costal section I blackish clouded; C index 1.89 - 2.16; hb index 0.79 - 0.83; 5x index 0.88; abdomen yellow, tergites 2 - 6 with broad black marginal bands which are medially more or less interrupted and laterally extended to anterior margin.

Redescription. Head brown. Frontal length 0.33 (♂) - 0.37 (♀) mm, frontal index 0.88, top to bottom width ratio 1.23. Frontal triangle silvery brown, narrowly reaching to anterior margin; ocellar triangle black, about 40% frontal length. Frontorbital plates narrow, silvery brown, diverging from eye margin, about 3/4 frontal length. Mid orbital nearer to and outside of anterior one, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.81 - 0.86, of mid to anterior orbital 0.42 - 0.54; poc 55% - 73%, oc 85% - 91% of frontal length; vt index 1.1 - 1.29; vibrissal index 0.47 - 0.54. Facial carina noselike, sulcate. Cheek index about 8 - 9. Eye index 1.19 - 1.23. First flagellomere short-haired; length to width ratio 1.71. Arista with 6 - 7 upper and 3 lower branches, plus terminal fork. Proboscis and palpi brown.

Thorax mainly dark brown; length about 0.89 (♂) - 1.0 (♀) mm; 8 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.64 - 0.74. Scutellum brown, apically slightly pointed, with yellow spots around scutellars; scut position index distinctly smaller than 1.0; scut index 0.82 - 0.88. Pleura with brownish mosaic; sterno index 0.55. Halteres yellow. Legs yellow, coxae and femora except knees brown, tibiae with basal and apical brown rings.

Wing length 2.11 (♂) - 2.44 (♀) mm; length to width ratio 2.13 - 2.18. Indices: ac, 1.58 - 4.5; 4c, 1.0 - 1.06; 4v, 1.44 - 1.83; M, 0.39 - 0.44; prox. x, 0.61 - 0.67.

Terminalia ♂ (Figs. 48 A-H; 156 G). Epandrium with about 10 lower and no upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with 7 primary teeth, no secondary teeth and 3 marginal bristles. Decasternum as in fig. 48 B. Hypandrium as long as epandrium; bow absent; gonopod bare. Aedeagus pointed (in profile) at tip, dorso-ventrally flattened, bearing a pair of ventral, median, short, directed frontwards, pointed spurs; dorsal surface somewhat wrinkled. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod as in fig. 48 F. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

Terminalia ♀ (Figs. 48 I, J; 165 A). Paragenital fringe bearing 18-20 long bristles. Ovipositor plate apically rounded, with 15-17 marginal and 5 discal teeth. Spermatheca mushroom-shaped, sclerotized; duct deeply invaginated.

Note. Regarding the geographical distribution of *D. annularis*, WHEELER (1957:94) stated "... the various published records of this species from Central and

South America localities are to be viewed with suspicion". We have analyzed specimens identified as *D. annularis* from three of such published records (DUDA, 1925:216, Costa Rica; DUDA, 1927:173, Bolivia; HENDEL, 1936:98, Brazil) and were able to confirm the suspicion stated by WHEELER, as none of the 20 (8 ♂, 12 ♀) analyzed specimens belong indeed to *D. annularis*. The 8 analyzed ♂ (3 from Brazil, 1 from Bolivia and 4 from Costa Rica) belong to four different sibling species which are described below as new species. We were unable to ascribe the 12 analyzed ♀ (2 from Brazil, 10 from Costa Rica) to their respective species but we could recognize five different species which are being referred below to as undetermined sp. a, b, c, d, and e, respectively. Further analyses of isofemale lines would certainly allow to associate ♂ and ♀ of these sibling species.

• *Drosophila annulosa*, sp. nov.
(Figs. 49; 156)

Drosophila annularis, DUDA, 1927:173 (1 ♂, misidentification, not *D. annularis* STURTEVANT).

Material examined. Holotype ♂ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.IV.9. / Dr. annularis ♂ Sturt. DET. DR. O. DUDA / HOLOTYPE ♂ *Drosophila annulosa* sp. nov. Vilela & Bächli det 1990", deposited in HHNM.

Diagnosis. Characters mainly as in *D. annularis*, but sterno index smaller (0.61) and ac index higher (3.17).

Description. *Terminalia* ♂ (Figs. 49; 156 H). Epandrium with about 10 lower and no upper bristles. Cerci anteriorly fused to epandrium at lower two third. Surstylus not micropubescent, with 8 primary teeth, no secondary teeth and 5 marginal bristles. Decasternum as in fig. 49 B. Hypandrium as long as epandrium; bow absent; gonopod bearing 1 long anterior bristle. Aedeagus slightly pointed at tip, bearing a pair of subapical, long, curved spines directed frontwards. Aedeagal apodeme shorter than aedeagus, laterally flattened, bent. Ventral rod absent. Paramere long, with distal inner surface mostly micropubescent, linked to gonopod by membranous tissue.

Etymology. Named in allusion to the annulated tibiae, in analogy to *D. annularis*.

• *Drosophila canalinea* PATTERSON & MAINLAND, 1944
(Figs. 50; 156; 165)

Drosophila (Drosophila) canalinea PATTERSON & MAINLAND, 1944:50; WHEELER, 1957:92.

Material examined. Two ♂ and 2 ♀ (1 ♂ and 1 ♀ dissected), labelled "NDSRC strain 15050-1201.0 formerly H378.4 Austin (=Minatitlan Veracruz Mexico) / *Drosophila canalinea* P. & M. Vilela & Bächli det. 1990. Two ♂ (one dissected) and 1 ♀, labelled "NDSRC/ strain 15050-1201.1 formerly SB19.9A Austin (=Huichihuayan S.L.P. Mexico) / *Drosophila canalinea* P. & M. Vilela & Bächli det. 1990", deposited in ZMZ.

Diagnosis. Body color mainly blackish brown; frons blackish, medially and laterally greyish pollinose, with 2 paramedian semicircular yellow spots at anterior margin; antennae and palpi blackish; scutum with irregular mosaic of silvery pollinose spots; h index 0.58 - 0.72; mid katepisternal about 67% - 79% of

the anterior one; wings slightly brownish tinged, both crossveins and area below tip of costal section I blackish clouded; C index 2.56 - 2.89; hb index 0.67 - 0.72; 5A index 1.13 - 1.43; abdomen yellow with broad black marginal bands which are medially interrupted, paramedially extended, laterally reaching to anterior margin, light areas whitish pollinose when seen from front.

Redescription. Head brown. Frontal length 0.42 (♂) - 0.45 (♀) mm, frontal index 0.96 - 1.0, top to bottom width ratio 1.25 - 1.29. Frontal triangle whitish pollinose, about 60% frontal length; ocellar triangle black, about 35% frontal length. Frontorbital plates narrow, whitish pollinose, diverging from eye margin, about 2/3 frontal length. Mid orbital distinctly nearer to and somewhat outside of anterior one, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.82 - 0.93, of mid to anterior orbital 0.5 - 0.62; poc 44% - 52%, oc 67% - 74% of frontal length; vibrissal index 0.59 - 0.69; vt index 1.0 - 1.18. Facial carina broad, flat, noselike, slightly sulcate. Gena brown, cheek index about 6 - 7. Eye index 1.14 - 1.22. Pedicel and first flagellomere blackish; length to width ratio 1.5 - 1.71. Arista with 6 - 7 upper and 3 lower long branches, plus long terminal fork, inner branches long. Proboscis brown.

Thorax subshiny black; length about 1.48 (♂) - 1.62 (♀) mm; 6 rows of acrostichals. Transverse distance of dorsocentrals about 220% of longitudinal distance; dc index 0.56 - 0.62. Scutellum prolonged, black, laterally and apically slightly yellowish; scut position index distinctly smaller than 1.0; scut index 0.84 - 0.9; sterno index 0.68 - 0.81. Halteres white. Legs yellow, coxae and femora, except knees, black, tibiae with basal and apical black rings, fore tarsi of M with long recurved hairs on inner side.

Wing length 2.57 (♂) - 2.81 (♀) mm; length to width ratio 2.21 - 2.26. Indices: ac, 2.25 - 2.57; 4c, 0.82 - 0.8; 4v, 1.55 - 1.6; M, 0.41 - 0.5; prox. x, 0.64 - 0.7.

Terminalia ♂ (Figs. 50 A-H; 156, I, J). Epandrium with about 21 lower and no upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with 9 primary teeth, no secondary teeth and 8-9 marginal bristles. Decasternum as in fig. 50 B. Hypandrium as long as epandrium; bow absent; gonopod bare. Aedeagus dorsally concave, rounded (in profile) at tip, dorsoventrally flattened, bearing a pair of ventro-median, directed frontwards, pointed spurs. Aedeagal apodeme longer than aedeagus, laterally flattened. Ventral rod absent. Paramere bare, linked to gonopod by membranous tissue.

Terminalia ♀ (Figs. 50 I, J; 165 B, C). Paragenital fringe bearing 11 long bristles. Ovipositor plate apically rounded, with 20-21 marginal and 6 discal teeth. Spermatheca oval, distally warty, sclerotized; duct medially invaginated.

Note. The metaphase chromosomes of both strains, kindly analyzed by Dr. E. HAUSCHTECK-JUNGEN, show 2R, 4V, 2D, in accordance with CLAYTON & WHEELER, 1975:474 and the original description.

** Drosophila davidgrimaldii, sp. nov.*
(Figs. 51; 156)

Drosophila annularis, DUDA, 1925:216 (2 ♂, misidentification, not *D. annularis* STURTEVANT);
HENDEL, 1936:98 (1 ♂, misidentification, not *D. annularis* STURTEVANT).

Material examined. Holotype ♂ (dissected), labelled "COSTA RICA 1921. SUIZA DE TURRIALBA / VII.2. / Dr. annularis St. ♂ DET. DR. O. DUDA /

HOLOTYPE ♂ *Drosophila davidgrimaldii* sp. nov. Vilela & Bächli det. 1990"; 1 paratype ♂ (dissected), same data as holotype except date of collection "1921. V.13"; 1 paratype ♂ (dissected), labelled "Unt. Amaz. Taperinha b. Santarem 11.-20.VI.27 Zerny / PARATYPE ♂ *Drosophila davidgrimaldii* sp. nov. Vilela & Bächli det. 1990", all except the latter (in NMW) deposited in HHNM.

Diagnosis. Characters mainly as in *D. annularis*, but mid orbital finer (ratio to anterior 0.42 - 0.45), sterno index smaller (0.4 - 0.44) and ac index higher (2.83 - 3.0).

Description. *Terminalia* ♂ (Figs. 51; 156 K, L). Epandrium with about 7 lower and no upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with 7 primary teeth, no secondary teeth and 8-9 marginal bristles. Decasternum as in fig. 51 B. Hypandrium as long as epandrium; bow absent; gonopod bearing 1 anterior bristle. Aedeagus rounded at tip, bearing a pair of subapical, ventral, long, directed frontwards, curved spurs; posterior lateral surface somewhat wrinkled. Aedeagal apodeme shorter than aedeagus, laterally flattened, bent. Ventral rod spurious. Paramere long, with median inner surface slightly micropubescent, linked to gonopod by membranous tissue.

Etymology. Named in honor of the drosophilist DAVID GRIMALDI.

• *Drosophila hendeli*, sp. nov.

(Figs. 52; 157)

Drosophila annularis, HENDEL, 1936:98 (1 ♂, misidentification, not *D. annularis* STURTEVANT).

Material examined. Holotype ♂ (dissected), labelled "Unt. Amaz. Taperinha b. Santarem 11.-20.VI.27 Zerny / *Drosophila annularis* Sturt. F. Hendel det. / HOLOTYPE ♂ *Drosophila hendeli* sp. nov. Vilela & Bächli det 1990", deposited in NMW.

Diagnosis. Characters mainly as in *D. annularis*, but sterno index lower (0.64) and ac index higher (3.0).

Description. *Terminalia* ♂ (Figs. 52; 157 A). Epandrium with about 13 lower and no upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with 5 primary teeth, no secondary teeth and 4 marginal bristles. Decasternum as in fig. 52 B. Hypandrium as long as epandrium; bow absent; gonopod bearing one anterior bristle. Aedeagus humpbacked, bearing a pair of subapical, relatively short, directed frontwards, slightly curved spurs. Aedeagal apodeme longer than aedeagus, laterally flattened. Ventral rod spurious. Paramere long, with a bare inner surface, linked to gonopod by membranous tissue.

Etymology. Named in honor of the dipterist FRIEDRICH HENDEL.

• *Drosophila melanoptera* DUDA, 1927

(Figs. 53 A, B; 165)

Drosophila melanoptera DUDA, 1927:158; WHEELER, 1970:29.

Material examined. Holotype ♀ (dissected), labelled "Bolivia - Mapiri IV.03 S. Carlos 800m / *Drosophila melanoptera* n. sp. Typus d. Duda / I. Flügel phot. / Typus *melanoptera* Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila melanoptera* D. Holotype ♀ G.Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color brown with whitish areas; frons relatively long, whitish, with black triangle and black posterior corners; eye very narrow; scutum dull greyish pollinose, with 2 paramedian brown longitudinal stripes and about 8 more or less isolated brown spots; h index 0.71; mid katepisternal about 31% of the anterior one; wings dark brown, veins r_{4+5} and m strongly convergent; C index 3.0; hb index 0.95; 5x index 1.1; abdomen mainly dull blackish brown, with narrow yellow slightly silvery basal and apical marginal bands which are medially more or less distinctly interrupted.

Redescription. Head mainly yellow pollinose. Frontal length 0.57 mm, frontal index 0.87, top to bottom width ratio 1.08. Frontal triangle black, about 2/3 frontal length; ocellar triangle about 35% frontal length. Frontal vittae slightly darker. Frontorbital plates narrow, whitish in the anterior half, abruptly black posteriorly, distinctly diverging from eye margin, about 55% frontal length. Mid orbital near to anterior one, in a line, distance of posterior orbital to anterior one nearly equal to that to inner vertical. Length ratio of anterior to posterior orbital 0.94, of mid to anterior orbital 0.53; poc 68%, oc 62% of frontal length; vibrissal index 0.43. Facial carina low, very broad, slightly sulcate, not reaching to mouth border. Gena black, with a yellow line along orals, cheek index about 5. Eye index 1.43. Pedicel and first flagellomere whitish; length to width ratio 2.29. Arista with 9 upper and 4 lower long branches, plus terminal fork and about 3 short inner branches. Proboscis with broadened black clypeus.

Thorax greyish white with black spots; length about 1.91 mm; 8 - 10 rows of acrostichals. Transverse distance of dorsocentrals about 3x longitudinal distance; dc index 0.65. Scutellum pointed, blackish, laterally and apically broadly whitish; scut position index distinctly smaller than 1.0; scut index 0.97; sterno index 0.85. Halteres yellow. Legs yellow, coxae and femora except knees, blackish brown, tibiae with subbasal and apical brown rings.

Wing length 3.3 mm; length to width ratio 2.08. Indices: ac, 2.86; 4c, 0.74; 4v, 1.63; M, 0.41; prox. x, 0.74.

Terminalia ♀ (Figs. 53 A, B; 165 D). Paragenital fringe bearing 49-50 long bristles. Ovipositor plate apically rounded, with 23-25 marginal and 3-4 discal teeth. Spermatheca oval, weakly sclerotized; duct not invaginated.

- *Drosophila parannularis*, sp. nov.
(Figs. 54; 156)

Drosophila annularis, DUDA, 1925:216; 1927:171 (2 ♂, both misidentifications, not *D. annularis* STURTEVANT).

Material examined. Holotype ♂ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / Dr. annularis St. ♀ (sic) DET. DR. O. DUDA / HOLOTYPE ♂ *Drosophila parannularis* sp. nov. Vilela & Bächli det. 1990", deposited in HNHM; 1 paratype ♂ (dissected), labelled "Bolivia - Mapiri IV. 03 S. Carlos 800m / (blank label) / *Drosophila annularis* Sttv. ♂ d. Duda / Staatl. Museum für Tierkunde Dresden / PARATYPE ♂ *Drosophila parannularis* sp. nov. Vilela & Bächli det 1990", deposited in SMTD.

Diagnosis. Characters mainly as in *D. annularis*, but sterno index smaller (0.59) and ac index higher (3.6 - 4.2).

Description. *Terminalia* ♂ (Figs. 54; 156 B, C). Epandrium with about 11 lower and no upper bristles. Cerci anteriorly fused to epandrium at lower half.

Surstylus not micropubescent, with 7 primary teeth, no secondary teeth and 6-7 marginal bristles. Decasternum as in fig. 54 B. Hypandrium as long as epandrium; bow absent; gonopod bearing 1 bristle. Aedeagus blunt at tip, bearing a pair of subapical, ventral, directed frontwards, curved spurs. Aedeagal apodeme shorter than aedeagus, laterally flattened, bent. Ventral rod spurious. Paramere relatively short, with posterior inner surface slightly micropubescent, linked to gonopod by membranous tissue.

***Drosophila* undet. sp. a**

(Figs. 53 C, D; 165)

Drosophila annularis, DUDA, 1925:216 (2 ♀, both misidentifications, not *D. annularis* STURTEVANT).

Material examined. Two ♀ (both dissected), labelled "♀ canalinea gr. *Drosophila* undet. sp. a Vilela & Bächli det. 1990", deposited in NMW.

Description. *Terminalia* ♀ (Figs. 53 C D; 165 E). Paragenital fringe bearing 17-18 long bristles. Ovipositor plate apically rounded, with 16-18 marginal and 4-6 discal teeth. Spermatheca as in fig. 165 E, heavily sclerotized; duct deeply invaginated.

***Drosophila* undet. sp. b**

(Figs. 55 A, B; 165)

Drosophila annularis, DUDA, 1925:216 (2 ♀, both misidentifications, not *D. annularis* STURTEVANT).

Material examined. Two ♀ (both dissected), labelled "♀ canalinea gr. *Drosophila* undet. sp. b Vilela & Bächli det. 1990", deposited in HNHM.

Description. *Terminalia* ♀ (Figs. 55 A, B; 165 F). Paragenital fringe bearing 27-29 long bristles. Ovipositor plate apically rounded, with 18-19 marginal and 4-5 discal teeth. Spermatheca as in fig. 165 F, weakly sclerotized; duct distally enlarged, medially invaginated.

***Drosophila* undet. sp. c**

(Figs. 55 C, D; 165)

Drosophila annularis, DUDA, 1925:216 (3 ♀, all misidentifications, not *D. annularis* STURTEVANT).

Material examined. Three ♀ (all dissected), labelled "♀ canalinea gr. *Drosophila* undet. sp. c Vilela & Bächli det. 1990", deposited in HNHM.

Description. *Terminalia* ♀ (Figs. 55 C, D; 165 G). Paragenital fringe bearing 27 long bristles. Ovipositor plate apically rounded, with 19-20 marginal and 4-5 discal teeth. Spermatheca mushroom-shaped, sclerotized; duct slightly invaginated.

***Drosophila* undet. sp. d**

(Figs. 55 E, F; 165)

Drosophila annularis, DUDA, 1925:216 (4 ♀, all misidentifications, not *D. annularis* STURTEVANT).

Material examined. Four ♀ (all dissected), labelled "♀ canaleina gr. *Drosophila* undet. sp. d Vilela & Bächli det. 1990", deposited in HHNM.

Description. *Terminalia* ♀ (Figs. 55 E, F; 165 H). Paragenital fringe bearing 24-26 long bristles. Ovipositor plate apically rounded, with 18 marginal and 4-5 discal teeth. Spermatheca long, heavily sclerotized; duct deeply invaginated.

***Drosophila* undet. sp. e**

(Figs. 55 G, H; 165)

Drosophila annularis, DUDA, 1925:216 (1 ♀, misidentification, not *D. annularis* STURTEVANT).

Material examined. One ♀ (dissected), labelled "♀ canaleina gr. *Drosophila* undet. sp. e Vilela & Bächli det. 1990", deposited in HHNM.

Description. *Terminalia* ♀ (Figs. 55 G, H; 165 I). Paragenital fringe bearing 23 long bristles. Ovipositor plate apically rounded, with 16-20 marginal and 4 discal teeth. Spermatheca mushroom-shaped, heavily sclerotized; duct deeply invaginated.

***cardini* species group STURTEVANT, 1942:31**

Species included: 16. See VAL et al. 1981:146.

Diagnosis. See STURTEVANT 1942:31.

Note. The specimens determined as *D. cardini* by DUDA (1927:193) were all misidentified and belong to three different species, i.e. *D. paramediotriata* TOWNSEND & WHEELER (1955), fig. 160 L, M, *D. cardinoides* DOBZHANSKY & PAVAN (1943), fig. 157 E, and one undetermined species of the *cardini* group, fig. 157 F. *D. similis* of DUDA (1927:193) was also a misidentification and belongs to *D. polymorpha* DOBZHANSKY & PAVAN (1943). One ♂ paralectotype of *D. pallida* WILLISTON (1896), labelled "SYNTYPE / det. C. Couch / COTYPE / Windward side St. Vincent, W.I. H.H.Smith. / W. Indies 1907 - 66. / *D. pallida* Williston / PARALECTOTYPE ♂ *Drosophila willistoni* Sturtevant by Vilela & Bächli 1990 / ♂ *Drosophila cardini* Sturtevant Vilela & Bächli det 1990" belongs to *D. cardini* STURTEVANT.

***Drosophila similis* WILLISTON, 1896**

(Figs. 56; 157)

Drosophila similis WILLISTON, 1896:415; STURTEVANT, 1921:79 (redescription).

Drosophila pallida, WILLISTON, 1896:415 (in part, see "Material examined" under *D. willistoni*).

Drosophila (Drosophila) similis WILLISTON; STURTEVANT, 1939:140; PATTERSON & MAINLAND, 1944:45; STALKER, 1953:352; HEED, 1962:177 (Lectotype designation, terminalia).

Drosophila (Drosophila) similis grenadensis HEED, 1962:178.

Material examined. Five paralectotypes (2 ♂, 3 ♀) of *Drosophila willistoni* Sturtevant; 1 ♂ (dissected) and 2 ♀ are labelled "SYNTYPE / COTYPE / Leeward side St. Vincent, W.I. H.H.Smith / W. Indies 1907 - 66. / *D. pallida* Williston / PARALECTOTYPE *Drosophila willistoni* Sturtevant by Vilela & Bächli 1990", the ♂ has one additional label "1000 feet"; 2 ♀, same labels as preceding ♀ except locality "Windward side St. Vincent, W.I. H.H.Smith"; 1 ♂ (dissected), same labels as former specimens except locality "Kingston. St. Vincent, W.I. H.H.Smith", all deposited in BMNH. Two additional specimens (1 ♂, dissected, and 1 ♀) are labelled "St. Vincent / COTYPE *Drosophila pallida* Will. / PARALECTOTYPE *Drosophila willistoni* Sturtevant by Vilela & Bächli 1990", the ♂ with two additional blank labels (one red, one white), both deposited in SEM. To all the specimens cited above we added the label "*Drosophila similis* Williston Vilela & Bächli det. 1990".

Diagnosis. Body color mainly yellow with black abdomen; facial carina relatively narrow, flat, noselike; abdomen yellow, tergites 2 - 4 with brown, medially enlarged marginal bands, more or less interrupted on tergite 4, tergites 5 and 6 glossy black.

Redescription. Head yellow. Frons golden to brownish yellow, frontal length 0.3 - 0.34 mm, frontal index 0.87 - 1.05, top to bottom width ratio 1.22 - 1.32. Frontal triangle indistinct; ocellar triangle brown, about 40% frontal length. Frontorbital plates relatively narrow, diverging from eye margin, about 2/3 frontal length. Mid orbital slightly nearer to and outside of anterior one, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.83 - 0.92, of mid to anterior orbital 0.3 - 0.5; poc 43% - 55%, oc 63% - 74% of frontal length; vibrissal index 0.91 - 1.0; vt index 1.0 - 1.15. Cheek index about 7 - 11. Eye index 1.14 - 1.3. First flagellomere brownish; length to width ratio 1.6 - 2.0. Arista with 4 upper and 2 lower branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax brownish yellow; length about 0.95 - 1.19 mm. Scutum shiny; h index 0.8 - 0.92; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.57 - 0.7. Scutellum apically round; scut nearly equidistant, laterals convergent, scut index 0.7 - 0.85; sterno index 0.45 - 0.63; mid katepisternal about 58% - 78% of the anterior one. Halteres and legs yellow.

Wing clear; length 1.85 - 2.18 mm; length to width ratio 2.11 - 2.3. Indices: C, 3.27 - 3.73; ac, 1.83 - 2.75; hb, 0.36 - 0.55; 4c, 0.69 - 0.8; 4v, 1.56 - 2.0; 5x, 1.14 - 1.8; M, 0.44 - 0.57; prox. x, 0.44 - 0.71.

Terminalia ♂ (Figs. 56; 157 D). Epandrium with 1 median bristle. Cerci not fused to epandrium. Surstylus not micropubescent, with 6 primary teeth, 4-5 secondary teeth and 8-9 marginal bristles that come up to upper surface. Decasternum as in fig. 56 B. Hypandrium as long as epandrium; bow sclerotized; gonopod fused to paramere, mostly corrugate, posteriorly membranous, bearing 1 long and 1 tiny bristle. Aedeagus straight, subapically with a membranous sheath covered with tiny spines; surface of lateral end covered with spines. Aedeagal apodeme longer than aedeagus, rod-shaped, bent. Ventral rod as in fig. 56 F.

***coffeata* species group, new group**

castaneu group THROCKMORTON, 1975:445.

Species included: *Drosophila coffeata* WILLISTON, *D. fuscolineata* DUDA, *D. pagliolii* CORDEIRO, and *D. pedroi* VILELA.

Diagnosis. Body color mainly brown; frontal vittae brown, darker than rest of frons; anterior scutellars convergent; tergites with broad dark marginal bands which medially may be interrupted; Ventral epandrium lobe large, covering most of the surstyli; parameres bare (except in *D. fuscolineata*); cerci fused to epandrium.

Note. No diagnosis was proposed by THROCKMORTON (op. cit.) for his monotypic *castaneu* group. The type specimens of *D. pagliolii* were not located and are probably lost but, according to CORDEIRO (1963:404), the species is closely related to *D. fuscolineata* (cited as *D. fumosa* PAVAN & CUNHA). Topotypes should be studied to clarify the identity of this species which is only known from its original description.

Etymology. The group is named after the first described species included at present.

• *Drosophila coffeata* WILLISTON, 1896:409

(Figs. 134 D, G; 165)

Drosophila coffeata WILLISTON, 1896:409; STURTEVANT, 1921:98.

Drosophila (Drosophila) coffeata WILLISTON; VILELA, 1984:59 (lectotype designation, redescription), 60, 61 (♂ terminalia).

Drosophila flavolineata DUDA, 1927:157. NEW SYNONYM.

Drosophila (Drosophila) flavolineata DUDA; PAVAN, 1950:11 (redescription).

Drosophila umbripennis HENDEL, 1936:99. NEW SYNONYM.

Material examined. Holotype ♀ (dissected) of *D. flavolineata*, labelled "Bolivia - Mapiri III.03 Sarampioni 700m / (blank label) / *Drosophila flavolineata* n.sp. ♀ Type det. Duda / Typus flavolineata Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila flavolineata* D. Holotype ♀ G. Bächli det. 1988", deposited in SMTD. LECTOTYPE ♂ (by present designation, dissected) of *D. umbripennis*, labelled "Unt. Amaz. Taperinha b. Santarem 11.-20.VI.27. Zerny / Type / *Drosophila umbripennis* LECTOTYPE ♂ by C. Vilela / Lectotype ♂ *Drosophila umbripennis* Hendel by Vilela & Bächli 1990 / *Drosophila coffeata* Williston Vilela & Bächli det. 1990"; 10 paralectotypes (6 ♂, 4 ♀; 4 ♂, 2 ♀ dissected) of *D. umbripennis*, collected in same locality, month and year of lectotype, all deposited in NMW.

Diagnosis. Head yellow; frons relatively narrow, brown, posteriorly darker; frontal vittae brown; inner branches of arista missing; thorax generally yellowish-brown; scutum pollinose, with 6 faint brownish longitudinal stripes, darker posteriorly; wings brownish, with slightly darker crossveins; abdomen mainly brown, with narrow yellow anterior-lateral bands

Redescription. Frontal length 0.5 (♂) - 0.55 (♀) mm, frontal index 0.97 - 1.11, top to bottom width ratio 1.32 - 1.38. Frontal triangle narrowly reaching to frontal margin; ocellar triangle darker, nearly half frontal length. Frontorbital plates anteriorly somewhat diverging from eye margin, about 60% frontal length. Orbitals nearly in a line, mid nearer to anterior one, distance of posterior orbital to anterior one about 80% of that to inner vertical. Length ratio of anterior to posterior orbital 0.71 - 0.77, of mid to anterior orbital 0.59; poc 48% - 53%, oc

75% - 83% of frontal length; vibrissal index 0.95 - 1.0. Facial carina broad, flat, slightly sulcate. Cheek index about 9. Eye with sparse short pile, nearly nude, index 1.09 - 1.17. First flagellomere brownish, short-haired; length to width ratio 1.38 - 1.43. Arista with 3 upper and 2 lower long branches, plus large terminal fork. Proboscis and palpi yellow.

Thorax length about 1.68 (♂) - 1.88 (♀) mm; 10 rows of acrostichals. Transverse distance of dorsocentrals about 2.5x longitudinal distance; dc index 0.69 - 0.77. Scutellum apically rounded, scut position index much smaller than 1.0, basal scut convergent, scut index 0.79 - 0.89; sterno index 0.72 - 0.79; mid katapisternal about 22% - 40% of the anterior one. Halteres yellow. Legs brownish.

Wing length 2.73 (♂) - 3.3 (♀) mm; length to width ratio 2.08 - 2.2. Indices: C, 2.43 - 2.85; ac, 2.0 - 2.3; hb, 0.75; 4c, 0.78 - 0.85; 4v, 1.37 - 1.44; 5x, 1.0 - 1.11; M, 0.33 - 0.43; prox. x, 0.65 - 0.72.

Terminalia ♀ (Figs. 134 D, G; 165 J). Values in parentheses refer to the synonym *D. umbripennis*. Ovipositor plate long, apically rounded, with 29 (27) marginal and 12-14 (11-12) discal teeth. Spermatheca short, as in fig. 165 G, sclerotized; duct expanded before entering spermatheca.

Relationships. VILELA (1984) in a previous redescription of *D. coffeata* was not sure about the position of this species in the subgenus *Drosophila* mainly because of the unusual absence of the tiny inner branches on the arista. However, we have recently observed this feature in *Drosophila nannoptera* WHEELER, a species belonging also to the subgenus *Drosophila*. On the other hand, *D. coffeata* is related to *D. fuscolineata* and *D. pedroi*, both species bearing such tiny branches.

Note. The present redescription of the external morphology is based on the holotype of *D. flavolineata* and on the lectotype and one ♀ paralectotype of *D. umbripennis*. The type-series of *D. coffeata* has been previously analyzed by one of us (VILELA 1984).

4 *Drosophila fuscolineata* DUDA, 1925 (Figs. 57; 157; 165)

Drosophila fuscolineata DUDA, 1925:213; BÄCHLI, 1984a:241 (lectotype designation).

Drosophila (Drosophila) fuscolineata DUDA; WHEELER, 1963:53 (complementary description).

Drosophila (Drosophila) castanea PATTERSON & MAINLAND, 1944:51; Hsu, 1949:142 (♂ terminalia). NEW SYNONYM.

Drosophila (Drosophila) fumosa PAVAN & CUNHA, 1947:31; VAL, 1982:345 (lectotype designation, ♂ terminalia). NEW SYNONYM.

Material examined. Lectotype ♂ (dissected) of *D. fuscolineata*, erroneously cited as holotype by Wheeler, 1963:53, labelled "COSTA RICA SUIZA DE TURRIALBA / 1921. IV. 6. / *Drosophila fuscotriata* (sic) DET. DR. O. DUDA / HOLOTYPUS / *D. fuscolineata* n. sp. Type det. Duda / LECTOTYPUS ♂ *D. fuscolineata* Duda G. Bächli det. 1983", deposited in HNHM; 2 paralectotypes ♂♀ (both dissected) from San José, Costa Rica, deposited in ZMB. HOLOTYPE ♂ (dissected) of *D. castanea*, deposited in MNH. Paralectotype ♂ (dissected) of *D. fumosa*, labelled "D. fumosa Pavan & Cunha Iporanga 1944 / PARA-LECTOTIPO", deposited in MZUSP.

Diagnosis. Head mainly yellow; frontal vittae brown; arista with about 7 relatively long inner branches; thorax yellowish brown; scutum pollinose, with 2 slightly darker, broad, paramedian, posteriad enlarged longitudinal stripes;

abdomen with dark marginal bands which are laterally narrowing and medially extended but narrowly interrupted.

Redescription. Frontal length 0.37 (♂) - 0.42 (♀) mm, frontal index 0.85 - 0.92, top to bottom width ratio 1.11 - 1.33. Frontal triangle indistinctly reaching to frontal margin; ocellar triangle about 40% frontal length. Frontal vittae with rather long interfrontal bristles. Frontorbital plates anteriorly diverging from eye margin, about 60% frontal length. Orbitals nearly in a line, mid nearer to anterior one, distance of posterior orbital to anterior one about 70% of that to inner vertical. Length ratio of anterior to posterior orbital 0.82 - 0.88, of mid to anterior orbital 0.57 - 0.64; poc 64% - 73%, oc 88% - 95% of frontal length; vibrissal index 0.5 - 0.69. Facial carina relatively narrow, slightly widened below, sulcate. Cheek index about 6 - 8. Eye index 1.18 - 1.22. First flagellomere short-haired; length to width ratio 1.33 - 1.57. Arista with 4 - 5 upper and 3 lower branches, plus terminal fork. Proboscis and palpi yellow.

Thorax length about 1.45 (♂) - 1.62 (♀) mm; 8 - 10 rows of acrostichals. Transverse distance of dorsocentrals about 230% of longitudinal distance; dc index 0.59 - 0.71. Scutellum brown, laterally lighter; apical scut near together, laterals convergent, scut index 0.86 - 0.89; mid katepisternal about 35% of the anterior one. Halteres and legs yellow; first joint of hind tarsus with 2 - 3 basal-ventral bristles.

Wing faintly brownish, with a slightly shadowed posterior crossvein; length 2.71 (♂) - 2.97 (♀) mm; length to width ratio 2.16 - 1.29. Indices: C, 2.5 - 2.75; ac, 2.11 - 2.5; hb, 0.53 - 0.6; 4c, 0.87; 4v, 1.57 - 1.74; 5x, 1.33 - 1.5; M, 0.52 - 0.57; prox. x, 0.55 - 0.65.

Terminalia ♂ (Figs. 57 A-H; 157 G, H). Epandrium with about 26 lower and 7 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with about 11 primary teeth, no secondary teeth and 6 marginal bristles. Hypandrium shorter than epandrium; bow absent; gonopod slightly wrinkled on the median region, bearing 1 long anterior bristle. Aedeagus bent, slightly invaginated. at dorsal end; antero-lateral surface slightly wrinkled. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 57 F, H. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

Terminalia ♀ (Figs. 57 I; 166 K). Ovipositor plate apically pointed, with 20 marginal and 6-7 discal teeth. Spermatheca mushroom-shaped, sclerotized; duct deeply invaginated.

Note. The redescription is based on the type specimens of *D. fuscolineata*.

dreyfusi species group PATTERSON & STONE, 1952:43

Species included: *D. boliviana* DUDA, *D. briegei* PAVAN & BREUER, *D. camargoi* DOBZHANSKY & PAVAN, *D. decemseriata* HENDEL, *D. dreyfusi* DOBZHANSKY & PAVAN, *D. fuscipennis* DUDA, *D. krugi* PAVAN & BREUER, *D. lugubripennis* DUDA, and *D. wingei* CORDEIRO.

Diagnosis. See PAVAN & BREUER 1954:459.

Drosophila boliviiana DUDA, 1927

(Figs. 58; 59; 158; 165)

Drosophila boliviiana DUDA, 1927:198.

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Bolivia - Mapiri 17.II.03 Sarampioni 700 / paraalfari (sic) ♂ / D. boliviiana ♂ DET. DR. O. DUDA / Cotypus boliviiana Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila boliviiana* D. Syntype ♂ G. Bächli det. 1988 / LECTOTYPE ♂ *Drosophila boliviiana* Duda by Vilela & Bächli 1990"; 2 paralectotypes ♀ (both dissected), one from the same locality as lectotype but collected in 8.III.03 and the other from Bolivia, Yungas von Coroico, 1600m, 18.10.06; all deposited in SMTD.

Diagnosis. Body color mainly yellow; facial carina narrow, nearly flat, noselike; scutum with whitish pollinose pattern; abdomen brownish yellow, with diffuse darker marginal bands.

Redescription. Head yellow, frontal length 0.4 - 0.47 mm, frons broad, frontal index 0.87 - 1.04, top to bottom width ratio 1.22 - 1.29. Frontal triangle indistinct; ocellar triangle brownish, about 40% frontal length. Frontorbital plates apically diverging from eye margin, about 2/3 frontal length. Mid orbital distinctly nearer to and outside of anterior one, distance of posterior orbital to anterior one 60% - 80% of that to inner vertical. Length ratio of anterior to posterior orbital 0.68 - 0.87, of mid to anterior orbital 0.5 - 0.6; poc 46% - 63%, oc 71% - 85% of frontal length; vibrissal index 0.2 - 0.53. Cheek index about 5 - 6. Eye index 1.1 - 1.19. First flagellomere short-haired; length to width ratio 1.57 - 1.75. Arista with 4 - 6 upper and 2 - 3 lower long branches, plus terminal fork, inner branches long. Proboscis and palpi yellow.

Thorax yellow; length about 1.32 - 1.72 mm; h index 0.95 - 1.25; 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.69 - 0.71. Scutellum apically slightly pointed, scut position index distinctly smaller than 1.0, basal scut slightly convergent, scut index 0.84 - 0.97; sterno index 0.71 - 0.77; mid katepisternal about 32% - 39% of the anterior one. Halteres and legs yellow.

Wing clear, veins r_{4+5} and m slightly convergent; length 2.61 - 3.45 mm; length to width ratio 2.29 - 2.36. Indices: C, 2.67 - 3.6; ac, 1.8 - 2.57; hb, 0.39 - 0.6; 4c, 0.65 - 0.86; 4v, 1.52 - 1.67; 5x, 1.1 - 1.38; M, 0.41 - 0.52; prox. x, 0.57 - 0.74.

Terminalia ♂ (Figs. 58 A-C; 59; 158 A). Epandrium with about 36 lower and 4 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus mostly micropubescent, with about 14 primary teeth, 14 secondary teeth and 7 marginal bristles. Decasternum as in fig. 58 B. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 anterior bristle. Aedeagus subapically pointed at basal end, with short, marginally serrated, lateral processes at median dorsal region and with a pair of long ventral, curved, subapical spurs. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 59 C. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

Terminalia ♀ (Figs. 58 D; 166 A). Ovipositor plate apically rounded, with 21 marginal and 3 discal teeth. Spermatheca mushroom-shaped, sclerotized; duct deeply invaginated.

Note. The ovipositor (Fig. 58 E.) and the spermathecae (Fig. 166 B) of one female paralectotype from "Yungas von Coroico" is quite different from those of the female cited above (from Sarampioni) and they are certainly not conspecific.

Drosophila decemseriata HENDEL, 1936
(Fig. 60)

Drosophila decemseriata HENDEL, 1936:98.

Drosophila camargoi, DOBZHANSKY & PAVAN, in PAVAN, 1950: 6 (in part); see Note.

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Unt. Amaz. Taperinha b. Santarem 11.20.VI.27. Zerny / SYNTYPUS *Drosophila decemseriata* H. G. Bächli det. 1985 / Type / *Drosophila decemseriata* LECTOTYPE ♂ by C. Vilela / LECTOTYPE ♂ *Drosophila decemseriata* Hendel by Vilela & Bächli 1990"; 9 paralectotypes (3 ♂, 6 ♀; 3 ♂, 1 ♀ dissected), all from the same locality as lectotype, collected in different dates and deposited in NMW.

Diagnosis. Body color mainly brownish yellow, bristles generally strong, black; frons brownish yellow, anteriorly yellow; facial carina relatively broad, noselike, somewhat sulcate; palpi slightly enlarged; scutum dull brownish yellow; wings brownish; abdomen brown.

Redescription. Head yellow. Frontal length 0.5 mm, frontal index 1.0, top to bottom width ratio 1.0. Frontal triangle subshiny, about 4/5 frontal length; ocellar triangle elongated, blackish, about 30% frontal length. Frontorbital plates narrow, subshiny, distinctly diverging from eye margin, about 2/3 frontal length. Mid orbital nearer to anterior one, in a line, distance of posterior orbital to anterior one about 90% of that to inner vertical. Length ratio of anterior to posterior orbital 0.84, of mid to anterior orbital 0.56; poc 57%, oc 80% of frontal length; vibrissal index 0.47. Cheek index about 7. Eye index 1.17. First flagellomere brown; length to width ratio 1.38. Arista with 6 upper and 3 lower long branches, plus terminal fork, inner branches long. Proboscis and palpi yellow.

Thorax yellow; length about 1.68 mm; 10 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.77; scut position index distinctly smaller than 1.0, basal scut convergent, scut index 0.86. Pleura pollinose; sterno index 0.78; mid katapisternal about 32% of the anterior one. Halteres and legs yellow, fore tarsi with long recurved hairs on inner side.

Wing veins r_{4+5} and m somewhat convergent; length 2.84 mm; length to width ratio 2.1. Indices: C, 3.56; ac, 2.0; hb, 0.63; 4c, 0.7; 4v, 1.57; 5x, 1.22; M, 0.48; prox. x, 0.7.

Terminalia ♂ (Fig. 60). Epandrium with about 20 lower and 7 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus partially micropubescent, with 11-12 primary teeth, 11-12 secondary teeth and 6 marginal bristles. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 anterior bristle. Aedeagus straight, bearing lateral, marginally serrated processes at the median dorsal region; dorso-distal end bifid and turned frontwards; ventro-lateral margin subapically covered with tiny spines. Aedeagal apodeme much longer than aedeagus, laterally flattened, anteriorly expanded. Ventral rod as in fig. 60 G. Paramere with 2 sensilla, linked to gonopod by membranous tissue.

Note. The redescription of external morphology is based on the lectotype of *D. decemseriata* only. Two paralectotypes (1 ♂, 1 ♀) do not belong to the same species as the lectotype and the remaining 7 paralectotypes; the ♂ labelled "Unt. Amaz. Taperinha b. Santarem 11.-20.VI.27 Zerny / SYNTYPUS *Drosophila decemseriata* H. G. Bächli det. 1985 / Type / *Drosophila decemseriata* PARALECTOTYPE ♂ by C. Vilela / *Drosophila camargoi* ♂ C. Vilela det." belongs to *Drosophila camargoi* Dobzhansky & Pavan, 1950 and the ♀ labelled "Unt. Amaz. Taperinha b. Santarem 11.-20.VI.27. Zerny / SYNTYPUS *Droso-*

phila decemseriata H. G. Bächli det. 1985 / Type / *Drosophila decemseriata* PARALECTOTYPE ♀ by C. Vilela" is different from the remaining 5 ♀ paralectotypes and probably also belongs to *Drosophila camargoi*.

✓ *Drosophila fuscipennis* DUDA, 1927

(Figs. 135 E; 166)

Drosophila fuscipennis DUDA, 1927:198.

Drosophila (Drosophila) fuscipennis DUDA; DOBZHANSKY & PAVAN, 1943:62.

Material examined. Holotype ♀ (dissected), labelled "Peru - Rosali 18.9.03 Urubambafl. / *Drosophila fuscipennis* n. sp. Type ♀ det. Duda / TYPUS fuscipennis Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila fuscipennis* D. Holotype ♀ G. Bächli det. 1988", deposited in SMTD. One ♀ labelled "Bolivia - Mapiri II.03 Sarampioni 700m / *Drosophila fuscipennis* D.", deposited in NMW.

Diagnosis. Body color mainly yellow; facial carina narrow, noselike; wings brownish tinged, diffusely darker along r_1 , both crossveins narrowly clouded; abdomen brownish yellow, with narrow faint darker marginal bands.

Redescription. Head yellow. Frontal length 0.54 mm, frontal index 0.94, top to bottom width ratio 1.32. Frontal triangle indistinct; ocellar triangle darker, about 40% frontal length. Frontorbital plates broad, apically diverging from eye margin, about 3/4 frontal length. Mid orbital nearer to and slightly outside of anterior one, distance of posterior orbital to anterior one equal to that to inner vertical. Length ratio of anterior to posterior orbital 0.73, of mid to anterior orbital 0.81; poc 50%, oc 91% of frontal length; vibrissal index 0.32. Cheek index about 6. Eye index 1.16. First flagellomere short-haired; length to width ratio 1.5. Arista with 4 upper and 2 lower long branches, plus terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax yellow; length about 1.95 - 2.28 mm. Scutum pollinose; 8 rows of acrostichals. Transverse distance of dorsocentrals more than 2.5x longitudinal distance; dc index 0.67 - 0.74; scut position index distinctly smaller than 1.0; scut index 0.87 - 0.92; sterno index 0.73; mid katepisternal about 33% - 37% of the anterior one. Halteres and legs yellow.

Wing veins r_{4+5} and m somewhat convergent; length 3.63 - 4.19 mm; length to width ratio 2.24 - 2.35. Indices: C, 4.14 - 3.82; ac, 1.83 - 2.2; hb, 0.59 - 0.68; 4c, 0.63 - 0.71; 4v, 1.45; 5x, 1.09 - 1.2; M, 0.34 - 0.39; prox. x, 0.55 - 0.6.

Terminalia ♀ (Figs. 135 E; 166 C). Ovipositor plate apically pointed, with an unusual arrangement of the teeth, which are mostly (56-64) tiny and bristle-shaped; only few (11-14) are typically stout, peg-shaped. Spermatheca tiny, mushroom-shaped, sclerotized; duct medially invaginated.

✓ *Drosophila lugubripennis* DUDA, 1927

(Figs. 61, 138)

Drosophila lugubripennis DUDA, 1927:199.

Drosophila (Drosophila) lugubripennis DUDA; DOBZHANSKY & PAVAN, 1943:62.

Material examined. Holotype ♂ (dissected), labelled "Peru - Laristhal 10.8.03. 1-2000 m / lugubripennis (sic) ♂ n. sp. / TYPUS lugubripennis Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila lugubripennis* D. Holotype ♂ G. Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly yellowish brown; facial carina broad, not noselike, sulcate; wings narrow, brownish, darker at base; abdomen basally brownish black, apically brown to yellow.

Redescription. Head mainly yellow. Frons brownish, frontal length 0.52 mm, frontal index 0.94, top to bottom width ratio 1.3. Frontal triangle paler, about 2/3 frontal length; ocellar triangle blackish, about 40% frontal length. Frontorbital plates apically diverging from eye margin, about 60% frontal length. Mid orbital somewhat nearer to and outside of anterior one, distance of posterior orbital to anterior one slightly smaller than that to inner vertical. Length ratio of anterior to posterior orbital 1.0, of mid to anterior orbital 0.59; poc 58%, oc 71% of frontal length; vibrissal index 0.53. Cheek index about 6, orals relatively long, in 2 rows. Eye index 1.13. First flagellomere short-haired; length to width ratio 1.1. Proboscis and palpi yellow.

Thorax length about 1.88 mm. Scutum brown; h index 1.25; 8 rows of acrostichals; dc index 0.67. Scutellum with yellowish margin, somewhat pointed, scut position index distinctly smaller than 1.0, basal scut convergent, scut index 0.89; sterno index 0.77; mid katepisternal about 41% of the anterior one. Halteres and legs yellow.

Wing length 4.06 mm; length to width ratio 2.62. Indices: C, 3.9; ac, 1.91; hb, 0.43; 4c, 0.62; 4v, 1.5; 5x, 1.7; M, 0.5; prox. x, 0.5.

Terminalia ♂ (Figs. 61; 158 B). Epandrium with about 16 lower and 6 upper bristles. Cerci anteriorly fused to epandrium at lower two third. Surstylus partially micropubescent, with 12-14 primary teeth, no secondary teeth and 11-14 marginal bristles. Decasternum as in fig. 61 B. Hypandrium as long as epandrium; bow absent; gonopod bearing one anterior bristle. Aedeagus bent, bearing a pair of wide, long, distally crossed, subapical spurs, which are directed frontwards; with a pointed, bifid tip slightly turned upwards. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 61 F. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

***guarani* species group DOBZHANSKY & PAVAN, 1943:66.**

Species included: 11. See VAL et al. (1981:147), VILELA & PEREIRA (1985:435) and modifications proposed below.

Diagnosis. Body color brownish; 2 prominent vibrissals of nearly equal size; basal scut divergent; crossveins usually clouded; tergites usually with interrupted dark marginal bands.

Note. According to the original description *D. alexandrei* CORDEIRO (1951:1) is obviously a member of this group (no specimen was analyzed). *D. neoguaramunu* FRYDENBERG, described as a member of the *guarani* group and considered by VAL et al. (1981:148) and VAL (1982:314-315) as a probable member of the *tripunctata* group, is definitely transferred hereby to that group.

✓ *Drosophila griseolineata* DUDA, 1927
(Figs. 62; 157; 166)

Drosophila griseolineata DUDA, 1927:161.

Drosophila griseolineata DUDA, 1927; DOBZHANSKY & PAVAN, 1943:33 (redescription); VAL, 1982:327 (♂ terminalia).

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Borgmeier Petrop. 20.VI.22 / *Drosophila griseostriata* (sic) n. sp. ♂ d. Duda / Syn-Typus / Zool. Mus. Berlin / griseolineata / LECTOTYPE ♂ *Drosophila griseolineata* Duda by Vilela & Bächli 1990"; 1 paralectotype ♀ (dissected), labelled "*Drosophila griseostriata* (sic) ♀ d. Duda / Syn-Typus / Zool. Mus. Berlin / griseolineata (sic) / PARALECTOTYPE ♀ *Drosophila griseolineata* Duda by Vilela & Bächli 1990"; both deposited in ZMB.

Diagnosis. Body color yellowish-brown; scutum greyish-pollinose, with 3 darker longitudinal stripes; wing with distinct clouds over both crossveins and near the basal fork of the r veins, tip of r_{2+3} slightly shadowed; hb index 0.44; abdomen yellowish, apically blackish in M, tergites with blackish marginal bands which are medially enlarged, forming a continuous longitudinal band.

Redescription. Head mainly yellow; frontal length 0.25 (♀) - 0.32 (♂) mm, frontal index 0.86 - 0.71, top to bottom width ratio 1.19 - 1.23; ocellar triangle black, about 30% - 40% frontal length. Frontal vittae brownish-yellow; frontorbital plates narrow, darker below, diverging from eye margin, about 60% - 70% frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one about 80% of that to inner vertical. Length ratio of anterior to posterior orbital 0.63 - 0.71, of mid to anterior orbital 0.3 - 0.5; poc 47% - 60%, oc 100% of frontal length; vt index 1.08 - 1.14; vibrissal index 0.64 - 0.89. Facial carina somewhat bulbous. Cheek index about 6 - 10. Eye index 1.15 - 1.19. First flagellomere with enlarged marginal hairs; length to width ratio 1.6 - 2.0. Arista with 5 - 6 upper and 3 lower branches, plus terminal fork, inner branches short. Proboscis and palpi brownish-yellow.

Thorax yellowish; length about 1.15 mm. Scutum with 3 darker longitudinal stripes, medially and in the dc lines; h index 0.87; 6 rows of acrostichals. Transverse distance of dorsocentrals somewhat more than 2x longitudinal distance; dc index 0.67. Scutellum slightly darkened; scutellars nearly equidistant; scut index 0.92. Pleura with 2 diffuse brown longitudinal stripes; sterno index 0.55; mid katapisternal about 69% - 75% of the anterior one. Halteres yellow. Legs brownish.

Wing length 2.15 (♂) - 2.4 (♀) mm; length to width ratio 2.32. Indices: C, 3.86 - 4.09; ac, 1.83 - 2.33; 4c, 0.69 - 0.82; 4v, 1.82 - 2.0; 5x, 1.25; M, 0.56 - 0.59; prox. x, 0.69 - 0.76.

Terminalia ♂ (Figs. 62 A-H; 157 I). Epandrium with 6 lower and no upper bristle, somewhat membranous at lower region. Cerci not fused to epandrium. Surstylus not micropubescent, with 6 primary teeth, 6-7 secondary teeth and 4 marginal bristles that come up to upper surface. Decasternum as in fig. 62 B. Hypandrium as long as epandrium; bow sclerotized; gonopod fused to paramere, bearing 1 long and 2 shorter bristles. Aedeagus straight, distally membranous and covered with tiny spines; ventral margin subapically serrated. Aedeagal apodeme longer than aedeagus, laterally flattened proximally. Ventral rod as in fig. 62 F.

Terminalia ♀ (Figs. 62 I; 166 D). Ovipositor plate apically pointed, with 14-15 marginal and 6-8 discal teeth; dorsal margin strongly concave. Spermatheca ball-shaped, weakly sclerotized; duct deeply invaginated.

✓ *Drosophila guaraja* KING, 1947

(Figs. 63; 157; 166)

Drosophila (Drosophila) guaraja KING, 1947a:48; VAL, 1982:326 (♂ terminalia).

Drosophila (Drosophila) pulla PAVAN & CUNHA, 1947:10 (synonymized by FREIRE-MAIA & PAVAN, 1950:23).

Material examined. Paratype ♀ of *D. guaraja* KING, labelled "Campos de (sic) Jordão Stock / *D. guarajá* (sic) sp. nov. J. C. King det. / PARATYPE ♀ *Drosophila guaraja* King by Vilela & Bächli 1990"; LECTOTYPE ♂ (by present designation, dissected, considered by Val, 1982:311 to be a paratype) of *D. pulla* Pavan & Cunha, labelled ".... (illegible) Iporanga / *D. pulla* Pavan e Cunha Iporanga 1944 / LECTOTYPE ♂ *Drosophila pulla* Pavan & Cunha by Vilela & Bächli 1990"; 2 paralectotypes (♂, ♀) of *D. pulla* (♂ dissected), labelled "D. pulla Pavan e Cunha Iporanga 1944 / PARALECTOTYPE *Drosophila pulla* Pavan & Cunha by Vilela & Bächli 1990", all deposited in MZUSP.

Diagnosis. Body color yellowish-brown; frons yellow with a median and 2 lateral greyish pollinose longitudinal stripes; gena relatively broad; wing with faintly clouded crossveins and a darker spot at the end of c_1 , tips of veins r_{2+3} and r_{4+5} often shadowed; C index 3.08 - 3.29; hb index 0.43 - 0.58; abdomen generally slightly pollinose, with yellow ground color and very broad, dark brown bands on tergites 2 - 4 which are laterally broadened.

Redescription. Head mainly yellow. Frontal length 0.26 (♂) - 0.30 (♀) mm, frontal index 0.78 - 0.84, top to bottom width ratio about 1.16. Frontal triangle roundish above, narrowly prolonged to the anterior margin; ocellar triangle about 37% - 39% frontal length. Frontal vittae yellow, darker above. Frontorbital plates greyish pollinose, diverging from eye margin, about 70% frontal length. Orbitals equidistant, nearly in a line, distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.59 - 0.71, of mid to anterior orbital 0.4; poc 69% - 72%, oc 94% - 100% of frontal length; vt index 1.0 - 1.13; vibrissal index 0.92 - 1.0. Facial carina broad, flat, noselike. Cheek index about 5 - 7. Eye index 1.17 - 1.19. First flagellomere short-haired; length to width ratio 1.6 - 1.67. Arista with 4 upper and 2 lower branches, plus terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax mainly brownish; length about 0.92 (♂) - 1.22 (♀) mm. Scutum golden pollinose, yellowish anteriorly, darker posteriorly; h index 1.09 - 1.2; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.62 - 0.71. Scutellum brown, scut position index slightly larger than 1.0; scut index 0.9 - 1.04. Pleura brown, somewhat shiny; sterno index 0.57 - 0.62; mid katepisternal 46% - 67% of the anterior one. Halteres and legs yellowish, coxae and femora darker; first joint of hind tarsus with 2 yellow basal-ventral bristles.

Wing length 2.05 (♂) - 2.38 (♀) mm; length to width ratio 2.12 - 2.21. Indices: ac, 2.0 - 2.33; 4c, 0.74 - 0.92; 4v, 1.53 - 2.15; 5x, 1.0 - 1.33; M, 0.44 - 0.62; prox. x, 0.61 - 0.77.

Terminalia ♂ (Figs. 63 A-H; 157 J). Epandrium somewhat membranous at lower region, with 3 lower and no upper bristles. Cerci not fused to epandrium, tip bearing 4 cotton swab-shaped bristles. Surstylus heavily sclerotized, not micropubescent, with 7-8 primary teeth and 18-19 secondary teeth plus marginal bristles. Decasternum as in fig. 63 B. Hypandrium longer than epandrium; bow sclerotized; gonopod fused to paramere, slightly micropubescent, bearing 1 long and 1 tiny bristle. Aedeagus antero-dorsally mostly membranous, subapically bearing 2 dorso-lateral projections directed frontwards and 1 single, ventral,

serrated plate; membranous region submedially bifid and laterally covered with tiny spines; lateral surface subapically corrugate. Aedeagal apodeme longer than aedeagus, laterally flattened, anteriorly expanded. Ventral rod as in fig. 63 F.

Terminalia ♀ (Figs. 63 I; 166 E). Ovipositor plate apically pointed, with 19-20 marginal and 6-7 discal teeth. Spermatheca light bulb-shaped, sclerotized; duct deeply invaginated.

✓ *Drosophila guaru* DOBZHANSKY & PAVAN, 1943
(Figs. 64; 157; 166)

Drosophila (Drosophila) guaru DOBZHANSKY & PAVAN, 1943:37; KING, 1947b:144 (♂ terminalia); VAL., 1982:332 (♂ terminalia).

Material examined. Holotype ♂ (dissected, right wing missing), labelled "Amalia São Paulo VI. 943 G. Schreiber / TIPO / *Drosophila guaru* Type / HOLOTYPE ♂ *Drosophila guaru* D. & P. Vilela & Bächli det. 1990"; 2 paratypes ♂♀ (both dissected), same data as holotype; all deposited in MZUSP.

Diagnosis. Body color yellow; frons yellow, with a median and 2 lateral greyish pollinose longitudinal stripes; wings slightly brownish, crossveins and tips of veins c_1 , r_{2+3} and r_{4+5} faintly shadowed; hb index 0.33 - 0.42; abdomen mainly yellow, slightly pollinose, tergites 2 - 4 with narrow, pale brownish, medially interrupted marginal bands.

Redescription. Head generally yellow. Frontal length 0.37 mm, frontal index 0.88, top to bottom width ratio 1.2. Frontal triangle greyish pollinose, roundish above, narrowed below, reaching to anterior margin; ocellar triangle about 35% frontal length. Frontorbital plates greyish pollinose, diverging from eye margin, nearly 70% frontal length. Orbitals in a line, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.63, of mid to anterior orbital 0.42; poc 59%, oc 77% of frontal length; vibrissal index 0.86. Facial carina broad, noselike, sulcate. Cheek index about 10. Eye index 1.21. First flagellomere short-haired; length to width ratio 1.8. Arista with 7 upper and 3 lower branches, plus terminal fork. Proboscis and palpi yellow.

Thorax yellow; length about 1.29 (♂) - 1.49 (♀) mm. Scutum slightly golden pollinose; h index 0.94 - 1.33; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2.5x longitudinal distance; dc index 0.59. Scutellum somewhat darker; scutellars nearly equidistant; scut index 0.81 - 1.04. Pleura slightly darker; sterno index 0.59 - 0.65; mid katepisternal about 75% - 80% of the anterior one. Halteres and legs yellow.

Wing length 2.38 mm; length to width ratio 2.12 - 2.25. Indices: C, 4.17 - 4.33; ac, 1.71 - 2.0; 4c, 0.55 - 0.6; 4v, 1.41 - 1.6; 5x, 1.13 - 1.29; M, 0.41 - 0.45; prox. x, 0.5.

Terminalia ♂ (Figs. 64 A-H; 157 K). Epandrium with 7-8 lower and no upper bristles. Cerci not fused to epandrium; tip bearing 2 long, heavily sclerotized, curved spines. Surstylus not micropubescent, with about 7 primary teeth and 22-26 secondary teeth plus marginal bristles. Decasternum as in fig. 64 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, bearing 1 long and 2 shorter bristles, slightly micropubescent near the latter ones. Aedeagus posteriorly bifid, laterally covered with many spines and marginally serrated at tip, antero-dorsal region bifid, covered with tiny spines;

subapical dorsal margin narrowly concave in profile Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod absent.

Terminalia ♀ (Figs. 64 I; 166 F). Ovipositor plate with about 13-17 marginal and 5-6 discal teeth. Spermatheca light bulb-shaped, sclerotized; duct deeply invaginated.

Note. See note under *D. subbadia*.

Drosophila limbinervis DUDA, 1925
(Figs. 65; 157; 166)

Drosophila limbinervis DUDA, 1925:215.

Drosophila (Drosophila) limbinervis DUDA; WHEELER, 1963:53 (lectotype designation).

Material examined. Lectotype ♂ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / *D. limbinervis* ♂ n. sp. DET. DR. O. DUDA / SynTYPUS / LECTOTYPE *limbinervis* Duda selected by MRWheeler JUNE 1962"; ♀ paralectotype, same data as lectotype, both deposited in HHNM.

Diagnosis. Body color brown; frons brown, with a median and 2 lateral greyish pollinose stripes; gena relatively narrow; scutum anteriorly yellowish, with 4 darker longitudinal stripes, 2 paramedian ones and 2 in the dc lines; scut index 1.12 - 1.19; mid katepisternal about 140% of anterior one; wings with large dark clouds along the crossveins and near the basal fork of r, and with faint shadows at tips of r_{2+3} , r_{4+5} and m; hb index 0.3; abdomen basally mainly yellow, somewhat pollinose, apically glossy blackish, tergites 2 and 3 with a narrow, laterally broadened marginal band, that of tergite 3 medially enlarged and more or less interrupted; in the ♂ the tergites 4 and 5 with a median, yellow, triangular interruption and, on tergite 4, with a narrow yellow basal band.

Redescription. Head yellow. Frontal length 0.34 mm, frontal index 0.74 - 0.87, top to bottom width ratio 1.22 - 1.26. Frontal triangle pollinose, reaching to anterior margin; ocellar triangle black, about 40% frontal length. Frontal vittae brown, as well as anterior-lateral frontal areas. Frontorbital plates narrow, pollinose, somewhat diverging from eye margin, about 60% - 75% frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one about 79% of that to inner vertical. Length ratio of anterior to posterior orbital 0.62 - 0.73, of mid to anterior orbital 0.38 - 0.45; poc 60% - 70%, oc 85% - 100% of frontal length; vibrissal index 0.86 - 0.91. Facial carina noselike. Cheek index about 13 - 17. Eye index 1.14 - 1.21. First flagellomere short-haired; length to width ratio about 1.8. Arista with 6 upper and 3 lower branches, plus terminal fork, inner branches relatively long. Proboscis yellow. Palpi apically darker.

Thorax brown; length about 1.29 (♂) - 1.49 (♀) mm; 6 rows of acrostichals. Transverse distance of dorsocentrals about 185% of longitudinal distance; dc index 0.69; scutellars nearly equidistant. Pleura dark brown; sterno index 0.48 - 0.56. Halteres yellow. Legs brown, hind femora of W basally darker; first joint of hind tarsus with 2 - 3 basal-ventral bristles.

Wing length 2.54 (♀) - 3.07 (♂) mm; length to width ratio 2.2 - 2.33. Indices: C, 3.86 - 4.0; ac, 1.75 - 2.29; 4c, 0.8 - 0.88; 4v, 2.13 - 2.5; 5x, 1.2 - 1.25; M, 0.6 - 0.63; prox. x, 0.9 - 0.94.

Terminalia ♂ (Figs. 65 A-H; 157 L). Epandrium with 3 lower and no upper bristles. Cerci not fused to epandrium. Surstylus strongly sclerotized, not micro-pubescent, with 8 primary teeth, 11 secondary teeth and 11-12 marginal bristles. Decasternum as in fig. 65 B. Hypandrium longer than epandrium; bow sclerotized;

gonopod fused to paramere, bearing 3 long bristles. Aedeagus subapically projected upwards, dorsally membranous, marginally serrated at ventral end; lateral surface subapically covered with tiny spines. Aedeagal apodeme longer than aedeagus, rod-shaped, anteriorly expanded. Ventral rod as in fig. 65 F.

Terminalia ♀ (Figs. 65 I; 166 G). Ovipositor plate apically rounded, with 14 marginal and 5-6 discal teeth. Spermatheca weakly sclerotized; duct apparently not invaginated.

✓ *Drosophila maculifrons* DUDA, 1927
(Figs. 66; 67; 158; 166)

Drosophila (Acanthophila) maculifrons DUDA, 1927:122.

Drosophila (Drosophila) guaramunu DORZHANSKY & PAVAN, 1943:39; KING, 1947b:144 (♂ terminalia); VAL, 1982:329 (♂ terminalia). NEW SYNONYMY.

Material examined. LECTOTYPE ♂ (by present designation, dissected) of *D. maculifrons*, labelled "Peru - Rosalina 30.8.03 Urubambafl. / (blank label) / *D. maculifrons* ♂ DET. DR. O. DUDA / *Cotypus maculifrons* Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila maculifrons* D. Syntype ♂ G. Bächli det. 1988 / LECTOTYPE ♂ *Drosophila maculifrons* Duda by Vilela & Bächli 1990; 2 ♂ paralectotypes, from same locality of lectotype, all deposited in SMTD. Holotype ♂ (dissected) of *D. guaramunu*, labelled "Amalia São Paulo VI. 1943 G. Schreiber / *Drosophila guaramunu* Type / HOLOTIPO"; ♀ paratype, same data as holotype, both deposited in MZUSP.

Diagnosis. Body color yellowish-brown; frons darker above, medially whitish pollinose; gena relatively broad; scutum golden pollinose, posteriorly darker; wings with distinct narrow clouds along the crossveins; veins r_{4+5} and m slightly convergent; hb index 0.54 - 0.6; abdomen yellow, with dark, laterally enlarged marginal bands which are medially narrowed or nearly interrupted on tergites 2 and 3, broadened on tergite 4, and reaching to the anterior margin on tergites 5 and 6.

Redescription. Head mainly brownish yellow; frontal length 0.26 (♂) - 0.36 (♀) mm, frontal index 0.7 - 0.8, top to bottom width ratio 1.16 - 1.30. Frontal triangle indistinct, pollinose, nearly reaching to the anterior margin; ocellar triangle blackish, about 37% - 43% frontal length. Frontal vittae slightly brownish, darker above. Frontorbital plates narrow, diverging from eye margin, about 65% - 70% frontal length. Orbitals equidistant, nearly in a line, distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.69 - 0.77, of mid to anterior orbital 0.27 - 0.42; poc 60% - 69%, oc 86% - 100% of frontal length; vt index 1.0 - 1.13; vibrissal index 0.77 - 1.0. Facial carina broad, flat, noselike. Cheek index about 7 - 9. Eye index 1.15 - 1.23. First flagellomere brownish, with slightly enlarged marginal hairs; length to width ratio 1.6 - 2.0. Arista with 5 - 6 upper and 3 lower branches, plus terminal fork, inner branches relatively short. Proboscis and palpi yellow.

Thorax brownish, pollinose; length about 1.19 - 1.35 mm; h index 0.82 - 0.93; 6 rows of acrostichals. Transverse distance of dorsocentrals 180 - 210 % of longitudinal distance; dc index 0.7 - 0.74. Scutellum brown, laterally lighter; scut position index slightly larger than 1.0; scut index 0.96 - 1.0. Pleura brown, subshiny; sterno index 0.5 - 0.65; mid katapisternal about 57% - 79% of the anterior one. Halteres with brownish knob, legs yellowish brown; fore femora with an

antero-ventral row of short stout bristles, first joint of hind tarsus with 2 strong black basal-ventral bristles.

Wing length 2.27 - 2.77 mm; length to width ratio 2.15 - 2.38. Indices: C, 3.33 - 4.15; ac, 1.86 - 2.5; 4c, 0.62 - 0.79; 4v, 1.48 - 2.0; 5x, 1.11 - 1.29; M, 0.43 - 0.53; prox. x, 0.61 - 0.71.

Terminalia ♂ (Figs. 66; 67; 158 C, D). Values in parentheses refer to holotype of junior synonym *D. guaraninu* (Fig. 67). Epandrium with about 11 (7) lower and no upper bristles, somewhat membranous at lower region. Cerci not fused to epandrium. Surstylus not micropubescent, with 6 (5-6) primary teeth, 11-12 (10) secondary teeth and 4 (3-5) marginal bristles. Decasternum as in fig. 66 B, 67 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, bearing 1 long and 1 shorter bristle. Aedeagus bent; membranous and slightly invaginated at tip, distally expanded both laterally and ventrally; membranous area mostly covered with tiny spines; ventral margin subapically serrated; dorsal and lateral surfaces medially covered with tiny spines. Aedeagal apodeme shorter than aedeagus, rod-shaped, bent. Ventral rod as in fig. 66 F.

Terminalia ♀ (Figs. 67 I; 166 H). Ovipositor plate apically pointed, with 14-18 marginal and 5-6 discal teeth; dorsal margin medially strongly sclerotized and directed upwards. Spermatheca light bulb-shaped, strongly sclerotized; duct deeply invaginated.

✓ *Drosophila ornatifrons* DUDA, 1927

(Figs. 68; 69; 158; 166)

Drosophila ornatifrons DUDA, 1927:162.

Drosophila (Drosophila) guarani DOBZHANSKY & PAVAN, 1943:36; KING, 1947b:144 (♂ terminalia); VAL, 1982:331 (♂ terminalia); MALOGOLOWKIN, 1963:257 (♂ terminalia); NEW SYNONYM.

Material examined. LECTOTYPE ♂ (by present designation, dissected) of *D. ornatifrons*, labelled "Petrov. / (blank label) / *Drosophila ornatifrons* n. sp. ♂ d. Duda / Syn-TYPUS / Zool. Mus. Berlin / LECTOTYPE ♂ *Drosophila ornatifrons* Duda by Vilela & Bächli 1990"; 1 paralectotype ♀ (dissected), labelled "*Drosophila ornatifrons* ♀ det. Duda / Syn-TYPUS / Zool. Mus. Berlin / PARALECTOTYPE ♀ *Drosophila ornatifrons* Duda by Vilela & Bächli 1990"; both deposited in ZMB. Holotype ♂ (dissected) of *D. guarani*, labelled "Cantareira São Paulo IV. 1943 / *Drosophila guarani* Type / HOLOTIPO"; 1 ♀ paratype (dissected), same data as holotype, both deposited in MZUSP.

Diagnosis. Body color yellowish-brown; frons brown, with 3 sharply defined, yellow-pollinose longitudinal stripes, a median and 2 lateral ones; gena relatively narrow; scutum with about 3 faint darker longitudinal stripes, posteriorly brown; wings brownish, crossveins and tips of c_1 , r_{2+3} and r_{4+5} shadowed; hb index 0.23 - 0.38; abdomen yellow, subshining, tergites 2 - 5 with narrow, medially broadly interrupted, laterally narrowed brown marginal bands.

Redescription. Head mainly yellow. Frontal length 0.31 (♂) - 0.37 (♀) mm, frontal index 0.8 - 0.91, top to bottom width ratio 1.17 - 1.2. Frontal triangle small, pollinose, continued as narrow median stripe to the anterior margin; ocellar triangle somewhat darker, about 35% - 40% frontal length. Frontal vittae brownish above, golden yellow below. Frontorbital plates narrow, pollinose, diverging from eye margin, with yellow pollinose continuation to the anterior margin, about 70% frontal length. Orbitals nearly in a line, distance of posterior

orbital to anterior one about 70% of that to inner vertical. Length ratio of anterior to posterior orbital 0.63 - 0.76, of mid to anterior orbital 0.42 - 0.5; poc about 65%, oc 86% - 95% of frontal length; vt index 0.88 - 0.94; vibrissal index about 0.9 - 1.0. Facial carina flat, noselike. Cheek index about 7 - 12. Eye index 1.18 - 1.24. First flagellomere brownish; length to width ratio 1.5 - 1.83. Arista with 6 upper and 3 lower branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax brownish-yellow; length about 1.28 (♂) - 1.49 (♀) mm; h index 0.83 - 0.94; 6 rows of acrostichals. Transverse distance of dorsocentrals 225% - 240% of longitudinal distance; dc index 0.63 - 0.71. Scutellum brown; scutellars nearly equidistant; scut index 1.04 - 1.07; sterno index 0.5 - 0.62; mid katepisternal 61% - 93% of the anterior one. Halteres and legs yellow, first joint of hind tarsus with 2 black basal-ventral bristles.

Wing length 2.47 (♂) - 2.84 (♀) mm; length to width ratio 2.08 - 2.28. Indices: C, 3.92 - 4.62; ac, 1.63 - 2.17; 4c, 0.52 - 0.62; 4v, 1.48 - 1.64; 5x, 0.9 - 1.38; M, 0.39 - 0.5; prox. x, 0.48 - 0.57.

Terminalia ♂ (Figs. 68; 69; 158 E, F). Values in parentheses refer to holotype of junior synonym *D. guarani* (Fig. 69). Epandrium with about 9 (7) lower and 1 (3) upper bristles. Cerci not fused to epandrium, tip bearing 2 long, heavily sclerotized, curved spines. Surstylus not micropubescent, with 7 (7) primary teeth and 28-29 (27-29) secondary teeth plus marginal bristles. Decasternum as in fig. 68 B, 69 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, bearing 1 long and 2 shorter bristles. Aedeagus posteriorly bifid, laterally covered with many spines and marginally serrated at tip; antero-dorsal region bifid, membranous and covered with tiny spines; dorsal margin subapically strongly concave. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod absent.

Terminalia ♀ (Figs. 68 I; 69 I; 166 I, J). See note under *Terminalia* ♂. Ovipositor plate apically pointed, with about 12-13 (13-14) marginal and 5 (4-5) discal teeth. Spermatheca light bulb-shaped, sclerotized; duct deeply invaginated.

Drosophila peruensis WHEELER, 1959

(Figs. 135 G; 166)

Drosophila maculipennis DUDA, 1927:167.

Drosophila (Drosophila) peruensis WHEELER, 1959:183 (proposed new name for *Drosophila maculipennis* DUDA, 1927, not *Drosophila maculipennis* GIMMERTHAL, 1845); VILELA & PEREIRA, 1985:437-439 (♂ genitalia, probably misidentification, not *D. peruensis* WHEELER).

Material examined. Holotype ♀ (dissected), labelled "Peru 10.9.03 Urubambafl. / (blank label) / *Drosophila maculipennis* (sic) n. sp. ♀ d. Duda / Typus maculipennis Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila maculipennis* D. Holotype ♀ G. Bächli det. 1988 / *D. peruensis* W G. Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly yellow; frontorbital plates brownish, prominent around orbitals, facial carina broad, flat, noselike, sulcate; scutum yellowish, slightly greyish pollinose, with small brown spots at bases of bristles; scutellum with brown spots around apical scutellars; wings with distinct brown spots along crossveins and at tips of veins r_{2+3} , r_{4+5} and m; tip of c_1 black, thickened; veins r_{4+5} and m apically divergent; abdomen subshiny whitish yellow, with small brown spots at bases of bristles.

Redescription. Head yellow. Frons yellowish, slightly pollinose, frontal length 0.25 mm, frontal index 0.75, top to bottom width ratio 1.15. Frontal triangle indistinct; ocellar triangle brownish, about 1/3 frontal length. Frontorbital plates slightly diverging from eye margin, about 2/3 frontal length. Mid orbital just outside of anterior one, distance of posterior orbital to anterior one about 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.91, of mid to anterior orbital 0.7; poc 53%, oc 80% of frontal length; vibrissal index 0.5. Cheek index about 4. First flagellomere short-haired; length to width ratio 1.5. Arista with 5 upper and 2 lower long branches, plus terminal fork, inner branches long. Proboscis and palpi yellow.

Thorax length about 1.0 mm; scut position index slightly larger than 1.0; scut index 1.0. Pleura brown; sterno index 0.79; mid katepisternal about 40% of the anterior one. Halteres and legs yellow.

Terminalia ♀ (Figs. 135 G; 166 K). Ovipositor plate apically rounded, with 14-15 marginal and 3 discal teeth. Spermatheca long, sclerotized; duct medially invaginated.

Note. The shape of the spermathecae as well as that of the ovipositor plates of the holotype are different from those depicted by Vilela & Pereira (1985:437, 438) in the redescription of *D. peruensis*, which was based on specimens collected in Peru and Colombia. We believe that *D. peruensis* sensu VILELA & PEREIRA might be a different species. Such an open question will probably be solved only after a male can be associated to the female holotype, whose precise type-locality in Peru is unknown.

***Drosophila subbadia* PATTERSON & MAINLAND, 1943**
(Figs. 70; 158)

Drosophila (Drosophila) subbadia PATTERSON & MAINLAND, in PATTERSON, 1943:198; PATTERSON & MAINLAND, 1944:plate XVI (color picture); KING, 1947b:144 (♂ terminalia); HSU, 1949:139 (♂ terminalia).

Material examined. Holotype ♂ (dissected), labelled "Laguna Patzcaro Mich. Mex. Aug. 1942 / G. B. Mainland / HOLOTYPE / 1344.14 ♂ / *Drosophila subbadia* Patterson & Mainland"; deposited in NMNH.

Diagnosis. Body color brown; frons brownish-yellow, darker above; scutum pollinose, anteriorly with 2 paramedian yellow triangles; wings with narrow clouds along crossveins and faintly shadowed tips of veins r_{2+3} and r_{4+5} ; veins r_{4+5} and m slightly convergent, hb index 0.23; Abdomen basally yellow, pollinose, apically brown, shiny, tergites 2 - 5 with narrow, dark brown, medially broadly interrupted marginal bands, lateral parts of tergites brown.

Redescription. Frontal length 0.45 mm, frontal index 1.13, top to bottom width ratio 1.17. Frontal triangle slightly shiny, narrowed below, about 3/4 frontal length; ocellar triangle black, about 1/4 frontal length. Frontorbital plates narrow, somewhat shiny, diverging from eye margin, about 1/2 frontal length. Orbitals equidistant, in a line, distance of posterior orbital to anterior one 3/4 that to inner vertical. Length ratio of anterior to posterior orbital 1.0, of mid to anterior orbital 0.42; poc 41%, oc 70% of frontal length; vibrissal index 1.0. Face yellow. Facial carina relatively narrow. Cheek index about 12. Eye with index about 1.2. Pedicel yellow. First flagellomere brown, short-haired; length to width ratio 1.5. Arista with 7 upper and 3 lower branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax brownish-yellow; length about 1.32 mm; 8 rows of acrostichals. Transverse distance of dorsocentrals 240% of longitudinal distance; dc index 0.63. Scutellars nearly equidistant; scut index 1.07. Pleura brown; sterno index 0.59; mid katepisternal about 75% of the anterior one. Halteres and legs yellow; first joint of hind tarsus with 2 basal-ventral bristles.

Wing length 2.44 mm; length to width ratio 2.31; upper apical bristle of costal section I stronger. Indices: C, 4.0; ac, 2.17; 4c, 0.62; 4v, 1.57; 5x, 1.43; M, 0.48; prox. x, 0.57.

Terminalia ♂ (Figs. 70; 158 G). Epandrium with 8-9 lower and no upper bristles. Cerci not fused to epandrium; tip bearing 2 long, heavily sclerotized, curved spines. Surstylus not micropubescent, with 7 primary teeth and 25-26 secondary teeth plus marginal bristles. Decasternum as in fig. 70 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, bearing 1 long and 2 shorter bristles. Aedeagus posteriorly bifid, laterally covered with many spines and marginally serrated at tip; antero-dorsal region bifid, membranous and covered with tiny spines; subapical dorsal margin narrowly concave in profile. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod absent.

Note. The genitalia of *D. subbadia* are apparently identical to that of *D. guaru*, and both species probably are conspecific. However, we did not take any decision, because according to KING (1947a:54) reciprocal crosses show some degree of reproductive isolation. We believe that further analysis using strains from all the range of distribution of both species will probably reveal that they indeed belong to the same biological species or species "in statu nascendi".

***mesophragmatica* species group BRNCIC & KOREF, 1957:64**

Species included: 9. See VAL et al. 1981:141 and modifications proposed below.

Diagnosis. Body color mainly brown; arista with about 8 branches; anterior and posterior orbitals of nearly equal size, mid anterior about half anterior; only one vibrissal; facial carina prominent, sulcate, widened below; gena relatively broad; basal scut divergent; sterno index about 0.7; legs brownish yellow; abdomen usually yellow with medially interrupted dark marginal bands.

***Drosophila canescens* DUDA, 1927**

(Figs. 136 F; 166)

Drosophila canescens DUDA, 1927:210

Material examined. Holotype ♀ (dissected, head lost), labelled "Peru 19.II.06 Urubamba 3000 mtr. (sic) / *Drosophila canescens* n. sp. type ♀ d. Duda / Typus canescens Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila canescens* D. Holotype ♀ G.Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly brown; frons dull brown, medially and laterally greyish, anteriorly yellow; facial carina broad, noselike, sulcate; thorax mainly brown; wings relatively narrow; abdomen dark brown, shiny, anterior half of tergites silvery when seen from front.

Redescription. Head brownish. Frontal triangle greyish pollinose, narrowly reaching to anterior margin; ocellar triangle black, about 40% frontal length. Frontorbital plates narrow, greyish pollinose, apically diverging from eye margin, about 2/3 frontal length. Mid orbital very near to and slightly outside of anterior one, distance of posterior orbital to anterior one about 60% of that to inner vertical. Gena brown below eye. Arista with 4 upper and 2 lower branches, plus terminal fork, inner branches relatively long. Proboscis yellow. Palpi yellow, slightly broadened.

Thorax length about 1.39 mm. Scutum slightly pollinose; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals about 170% longitudinal distance. Scutellum apically rounded; scutellars nearly equidistant, laterals divergent; scut index 1.06; sterno index 0.72. Halteres white. Legs yellow.

Wing clear; length 3.3 mm; length to width ratio 2.38. Indices: C, 3.72; ac, 1.8; hb, 0.28; 4c, 0.69; 4v, 1.69; 5x, 1.56; M, 0.54; prox. x, 0.62.

Terminalia ♀ (Figs. 136 F; 166 L). Ovipositor plate apically rounded, with 13-16 marginal and 3 discal teeth. Spermatheca mushroom-shaped, heavily sclerotized; duct deeply invaginated.

Note. This species has not been previously ascribed to any group; however, according to both external and genital morphology it is clearly a member of the *mesophragmatica* group.

✓ *Drosophila mesophragmatica* DUDA, 1927

(Figs. 71; 72; 158; 166)

Drosophila mesophragmatica DUDA, 1927:205.

Drosophila (Drosophila) mesophragmatica DUDA, PAVAN & CUNHA, 1947:41; BRNCIC & KOREF, 1957:66 (redescription); BRNCIC, 1958:7 (redescription); NACRUR, 1958:247 (♂ terminalia).

Drosophila (Drosophila) andina DOBZHANSKY & PAVAN, 1943:59; VAL, 1982:333 (♂ terminalia); NEW SYNONYMY.

Material examined. LECTOTYPE ♂ (by present designation, dissected, left wing missing) of *D. mesophragmatica*, labelled "Peru Cuzco 27.III.05. 3200 m / l. Flügel phot. / *Drosophila mesophragmatica* ♂ d. Duda / COTYPUS / Staatl. Museum für Tierkunde Dresden / *Drosophila mesophragmatica* Duda Syntype ♂ G. Bächli det. 1988 / LECTOTYPE ♂ *Drosophila mesophragmatica* Duda by Vilela & Bächli 1990"; 5 paralectotypes (2 ♂, 3 ♀; 2 ♂ and 1 ♀ dissected), all but one ♀ from the same locality as lectotype and collected in different dates, the latter ♀ (not dissected) is labelled "Bolivia La Paz O. Garlepp e (sic) / Coll. W. Schnuse 1911-3 / *Drosophila mesophragmatica* D. ♀ Type / Hinterleib gezeichnet / *D. mesophragmatica* ♀ Type det. Duda / COTYPUS / Staatl. Museum für Tierkunde Dresden / *Drosophila mesophragmatica* Duda Syntype ♀ G. Bächli det. 1988 / PARALECTOTYPE ♀ *Drosophila mesophragmatica* Duda by Vilela & Bächli 1990"; all deposited in SMTD. Holotype ♂ (dissected) of *D. andina*, labelled "Huancayo Peru IV.1943 / *Drosophila andina* TYPE / HOLOTIPO", deposited in MZUSP.

Diagnosis. Body color mainly yellow; frons brownish yellow; scutum medially and posteriorly brown; abdomen yellow, with brown, narrow, medially interrupted marginal bands.

Redescription. Head mainly yellow. Frontal length 0.35 (♀) - 0.4 (♂) mm, frontal index 0.81 - 0.86, top to bottom width ratio 1.22. Frontal triangle not very distinct, about 2/3 frontal length; ocellar triangle slightly darker, about 40% -

50% frontal length. Frontorbital plates relatively narrow, diverging from eye margin, about 60% - 70% frontal length. Mid orbital very narrow to and just outside of anterior one, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.82 - 0.88, of mid to anterior orbital 0.5 - 0.57; poc 54% - 62%, oc 83% - 114% of frontal length; vibrissal index 0.43 - 0.47. Facial carina broad, sulcate. Cheek index about 5. Eye index 1.18 - 1.21. First flagellomere short-haired; length to width ratio 1.29. Arista with 3 - 4 upper and 2 lower long branches, plus terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax brownish yellow; length about 1.32 (♂) - 1.42 (♀) mm; 8 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.64 - 0.71. Scutellum brownish, apically round; scutellars nearly equidistant, laterals divergent; scut index 0.91 - 1.02; sterno index 0.62 - 0.72; mid katepisternal about 43% - 61% of the anterior one. Halteres and legs yellow.

Wing clear; length 3.13 (♂) - 3.23 (♀) mm; length to width ratio 2.13 - 2.61. Indices: C, 3.5; ac, 2.0 - 2.11; hb, 0.22; 4c, 0.59 - 0.69; 4v, 1.25 - 1.58; 5x, 1.0 - 1.1; M, 0.34 - 0.42; prox. x, 0.5 - 0.54.

Terminalia ♂ (Figs. 71 A-H; 72 A-H; 158 H, I). Values in parentheses refer to holotype of junior synonym *D. andina*). Epandrium with about 19 (21) lower and 5 (4) upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with 11-12 (11-13) primary teeth, no secondary teeth and 12-13 (8-9) marginal bristles that come up to upper surface. Decasternum as in fig. 71 B, 72 B. Hypandrium shorter than epandrium; bow absent; gonopod bare. Aedeagus pointed and slightly bifid at tip. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 71. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

Terminalia ♀ (Figs. 71 I; 166 M). Ovipositor plate apically rounded, with 19-22 marginal and 4 discal teeth. Spermatheca mushroom-shaped, strongly sclerotized; duct deeply invaginated.

✓ *nannoptera* species group WHEELER, 1949:177

Species included: *D. acanthoptera* WHEELER, *D. nannoptera* WHEELER, and *D. pachea* PATTERSON & WHEELER.

Diagnosis. Body color mainly brown; facial carina relatively broad; only one prominent vibrissal; arisal branches relatively short; basal scut slightly convergent; sterno index about 0.5; C index about 2.5; hb index less than 1/3.

Note. No diagnosis was proposed by WHEELER (op. cit.).

✓ *Drosophila acanthoptera* WHEELER, 1949 (Figs. 73; 158)

Drosophila (Sordophila) acanthoptera WHEELER, 1949:171; HSU, 1949:130 (♂ terminalia).

Drosophila (Drosophila) acanthoptera WHEELER; WARD & HEED, 1970:248 (proposed transference of subgenus).

Material examined. Holotype ♂ (dissected), labelled "HOLOTYPE / 1808.21 acanthoptera / *Drosophila acanthoptera* Wheeler", deposited in MNH.

Diagnosis. Facial carina very broad; arista with short branches; palpi broad, with many short hairs; wing with enlarged marginal bristles along costa in nearly regular intervals; abdomen diffuse brownish, darker towards tip.

Redescription. Head yellow. Frontal length 0.34 mm, frontal index 0.71, top to bottom width ratio 1.14. Frontal triangle somewhat shining; ocellar triangle about 45% frontal length. Frontorbital plates broad, somewhat shining, apically brownish, diverging from eye margin, about half frontal length; mid orbital just outside anterior one, distance of posterior orbital to anterior one about 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.8, of mid to anterior orbital 0.58; poc 60%, oc 80% of frontal length; vibrissal index 0.53. Facial carina somewhat sulcate. Gena very broad, cheek index about 4. Eye oblique, index 1.25. First flagellomere brownish; length to width ratio 1.2. Arista with 4 upper and 2 lower short branches, plus terminal fork, inner branches short.

Thorax yellow; length about 1.19 mm. Scutum with faint darker stripes in both dorsocentral lines and with a slight darkening in front of the scutellum; 6 rows of rather stout acrostichals. Transverse distance of dorsocentrals 150% of the longitudinal distance; dc index 0.76, with an additional pair of prolonged bristles in front of the anterior dorsocentrals. Scutellum basally slightly darker; scutellars nearly equidistant; anterior scutellars slightly convergent; scut index 0.79; sterno index 0.5. Halteres and legs yellow.

Wing length 2.24 mm; length to width ratio 2.27; costal sections 1 - 3 with enlarged marginal bristles in nearly regular intervals, in the intervals about 4 also somewhat enlarged marginal hairs; both bristles at the tip of costal section I strong and of equal size. Indices: C, 2.47; ac, 2.43; hb, 0.29; 4c, 0.94; 4v, 1.44; 5x, 1.29; M, 0.5; prox. x, 0.61.

Terminalia ♂ (Figs. 73; 158 J). Epandrium with about 13 lower and no upper bristles. Cerci not fused to epandrium. Surstylus micropubescent, with 9 primary teeth and 10-12 secondary teeth plus marginal bristles (two of them on left and one on right lobe arising from finger-shaped structures. Decasternum as in fig. 73 B. Hypandrium shorter than epandrium, trapeziform; bow spurious; gonopod fused to hypandrium, bearing 1 anterior bristle. Aedeagus bent, dorso-apically pointed, with a pleated dorso-lateral surface; ventral region subapically bearing a pair of asymmetric spurs (left one directed downwards, right one frontwards, and preceded by membranous areas. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 73 F. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

• *Drosophila nannoptera* WHEELER, 1949

(Figs. 74; 158)

Drosophila (*Sophophora*) *nannoptera* WHEELER, 1949:177; HSU, 1949:130 (♂ terminalia).

Drosophila (*Drosophila*) *nannoptera* WHEELER; THROCKMORTON, 1962:208 (proposed transference of subgenus).

Material examined. Holotype ♂ (dissected), labelled "60 mi S. Oaxaca Oaxaca / MRWheeler FACowan / Sept. 1947 / HOLOTYPE / 1801.1 M / *Drosophila nannoptera* Wheeler", deposited in NMNH.

Diagnosis. Head brown; frons generally darker; frontal triangle black, sharply defined; frontorbital plates black; arista with short branches; abdomen somewhat shiny, brown, tergites 2 - 6 with relatively narrow blackish brown marginal bands.

Redescription. Frontal length 0.35 mm, frontal index 0.95, top to bottom width ratio 1.18. Frontal triangle more than half frontal length; ocellar triangle about 45% frontal length. Frontorbital plates apically diverging from eye margin, about 60% frontal length; mid orbital just outside of the anterior one, distance of posterior orbital to anterior one about 60% of that to the inner vertical. Length ratio of anterior to posterior orbital 0.92, of mid to anterior orbital 0.73; poc and oc 52% of frontal length; vibrissal index 0.73. Cheek index about 6. Eye index 1.13. Pedicel dorsally brown. First flagellomere brown; length to width ratio 1.4. Arista with 3 upper and 2 lower short branches, plus relatively long terminal fork and no inner branches. Proboscis and palpi dark brown.

Thorax generally brown; length about 1.06 mm. Scutum dull greyish pollinose, with 2 darker longitudinal stripes inside dorsocentral lines and with darker lateral areas; h index 0.82; 6 -8 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.65, an additional enlarged bristle pair in front of the anterior dorsocentrals; prescut index 0.62. Scutellum laterally slightly paler, tip somewhat pointed, apical scutellars near together, laterals convergent; distance about 60% of that to the lateral ones; scut index 0.92; sterno index 0.57; mid katepisternal about 46% of the anterior one. Halteres whitish-yellow. Legs brown, knees and tarsi lighter, femora slightly thickened.

Wing length 1.98 mm; length to width ratio 2.22; 2 bristles at tip of costal section I, the upper one shorter. Indices: C, 2.47; ac, 2.14; hb, 0.33; 4c, 1.0; 4v, 1.67; 5x, 1.17; M, 0.47; prox. x, 0.73.

Terminalia ♂ (Figs. 74; 158 K). Epandrium with 9 lower and no upper bristles. Cerci not fused to epandrium. Surstylus partially micropubescent, with 9 primary teeth, 10-11 secondary teeth, 5-7 additional teeth on the ventral margin, and 13-16 marginal bristles that come up to upper surface. Decasternum as in fig. 74 B. Hypandrium square-shaped, slightly shorter than epandrium; bow spurious; gonopod bare, fused to hypandrium. Aedeagus pointed at tip, bearing 2 subapical spines on ventral margin. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 74 F. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

✓ *onychophora* species group, new group

anthophilic group HUNTER, 1979:382; 1988:299.

Species included: *D. acuminatus* HUNTER, *D. arboloco* HUNTER, *D. bomarea* HUNTER, *D. carablanca* HUNTER, *D. chisaca* HUNTER, *D. colmenares* HUNTER, *D. desbaratabaile* HUNTER, *D. franii* HUNTER, *D. freilejoni* HUNTER, *D. hyalipennis* DUDA, *D. margarita* HUNTER, *D. onychophora* DUDA, and *D. pulvere* DUDA.

Diagnosis. Body color mainly brownish; some bristles, especially arisal branches, shorter than usual; basal scut divergent, sterno index relatively small (0.5 - 0.7); most of the surface of the wide ovipositor plates usually covered with numerous, short, stubby teeth; flower breeding (probably all species).

Note. According to the structure of the ♂ terminalia the species of this group are to be included in the subgenus *Drosophila*. Some characters, e.g. the reduction of bristle length and the association with flowers, suggesting a relation to species of the subgenus *Phloridosa*, may have been independently evolved. As the species

belonging to the *flavopilosa* group seem to be also obligate flower breeders and probably the species of the subgenus *Phloridosa* as well, we are proposing to rename the anthophilic group of Hunter, to which we include 3 species described by Duda, as *onychophora* group, based on the first described species included at present. All the types of the species described by A.S. HUNTER (except two, namely *D. arboloco* and *D. franii*, glued on cards) were previously stored in alcohol; we have pinned and dried them; the labels (in the case of paratypes and ordinary specimens) were xeroxed and attached to every specimen. *D. franii* is not being redescribed because we were unable to remove its holotype from the card where it is glued, and no male paratype is available in the CAS.

✓ *Drosophila acuminanus* HUNTER, 1988

(Figs. 75; 158)

Drosophila acuminanus HUNTER, 1988:302

Material examined. Holotype ♂ (dissected), labelled "MONSERRATE BOGOTA III-15-80 COLOMBIA / A. Hunter collr. / *Drosophila acuminanus* / Holotype / 15852", deposited in CAS.

Terminalia ♂ (Figs. 75; 158 L). Epandrium with about 37 lower and 6-7 upper bristles. Cerci anteriorly slightly fused to epandrium at upper margin, extremely developed and pointed downwards between the surstyli, lower bristles abnormally thin, plates fused to each other at tip. Surstylus mostly micropubescent, with about 9 marginal bristles, bearing a rasp-shaped structure, apparently in the same position normally occupied by the row of primary teeth, which seems to be completely absent. Decasternum as in fig. 75 B. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 long, anterior bristle. Aedeagus bent, distally slightly asymmetric and twisted, first to left, then to right side; ventral margin submedially serrated, tip dorso-ventrally bifid. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 75 F. Paramere with 1 long bristle, linked to gonopod by membranous tissue.

✓ *Drosophila arboloco* HUNTER, 1979

(Figs. 76; 159)

Drosophila arboloco HUNTER, 1979:376.

Material examined. Holotype ♀, labelled "COLOMBIA: Bogota, Pont. Univ. Javeriana 2600 meters aug. 1974 Alice S. Hunter (F134) Host plant, Montanoa ovalifolia / HOLOTYPE *Drosophila arboloco* Alice S. Hunter / Collection of the CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif. / 13472"; one ♂ specimen (dissected), labelled "*Drosophila arboloco* Hunter Mt. Guadalupe road to Choachi nr Bogota (sic), COLOMBIA VIII/13/1980 A.S.Hunter / Collection of the CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif.", both deposited in CAS.

Redescription. *Terminalia* ♂ (Figs. 76; 159 A). Epandrium with about 12 lower and 3 upper bristles. Cerci not fused to epandrium. Surstylus partially micropubescent, with 3-4 primary teeth at lower tip, no secondary teeth and about 5 marginal bristles. Decasternum as in fig. 76 B. Hypandrium shorter than epandrium; bow absent; gonopod fused to paramere although clearly identifiable,

bearing 1 anterior bristle. Aedeagus tube -shaped. Aedeagal apodeme shorter than aedeagus, laterally flattened, anteriorly expanded. Ventral rod as in fig. 76 F. Paramere with 2-3 sensilla.

✓ *Drosophila bomarea* HUNTER, 1979

(Figs. 77; 159)

Drosophila bomarea HUNTER, 1979:379.

Material examined. Holotype ♂ (dissected), labelled "COLOMBIA: Bogota savanna near aeroclub 2600m Aug. 1974 Alice S. Hunter (FB7) Host plant, Bomarea sp. / HOLOTYPE *Drosophila bomarea* Alice S. Hunter / Collection of the CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif. / 13477", deposited in CAS.

Redescription. Terminalia ♂ (Figs. 77; 159 B). Epandrium with about 25 lower and 3 upper bristles. Cerci anteriorly fused to epandrium at lower third. Surstylus not micropubescent, with about 8-9 primary teeth (the lowermost separated from the remaining by a gap), no secondary teeth and 14 marginal bristles that come up to upper surface. Decasternum as in fig. 77 B. Hypandrium longer than epandrium; bow absent; gonopod bearing 3 long bristles. Aedeagus long (longer than in *D. carablanca*), blunt (in profile) at tip, laterally expanded (more elongate than in *D. carablanca*) at tip, subapically bearing some tiny spines followed by 2 larger ones directed frontwards. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 77 F. Paramere with about 5 bristles, linked to gonopod by membranous tissue.

✓ *Drosophila carablanca* HUNTER, 1979

(Figs. 78; 159)

Drosophila carablanca HUNTER, 1979:376.

Material examined. Holotype ♂ (dissected), labelled "COLOMBIA: Bogota Savanna near aeroclub 2600m Aug. 1974 Alice S. Hunter (FB6) Host plant, Bomarea sp. / HOLOTYPE *Drosophila carablanca* Alice S. Hunter / Collection of the CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif. / 13474", deposited in CAS.

Redescription. Terminalia ♂ (Figs. 78; 159 C). Epandrium with about 22 lower and 4 upper bristles. Cerci anteriorly fused to epandrium at lower third. Surstylus not micropubescent, with 10-11 primary teeth (the lowermost separated from the remaining by a gap), no secondary teeth and 13-14 marginal bristles that come up to upper surface. Decasternum as in fig. 78 B. Hypandrium as long as epandrium; bow absent; gonopod bearing 3-4 bristles. Aedeagus long, shorter than that of *D. bomarea*, blunt (in profile) and laterally expanded (more rounded than in *D. bomarea*) at tip, subapically bearing some tiny spines followed by 2 directed frontwards, larger ones; dorsal region subapically with a large, almost circle-shaped membranous area (apparently absent in *D. bomarea*). Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 78 F. Paramere well developed, with 3-4 sensilla, linked to gonopod by membranous tissue.

✓ *Drosophila chisaca* HUNTER, 1988
(Figs. 79; 159)

Drosophila chisaca HUNTER, 1988:299.

Material examined. Holotype ♂ (dissected), labelled "CHISACA VIII-29-80 COLOMBIA S.A. / A. Hunter Collr. / *Drosophila chisaca* / Holotype / 15855" deposited in CAS.

Redescription. Terminalia ♂ (Figs. 79; 159 D). Epandrium with about 9 lower and 3 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus mostly micropubescent, with 7 primary teeth, no secondary teeth and 7-8 marginal bristles. Decasternum as in fig. 79 B. Hypandrium longer than epandrium; bow absent; gonopod slightly micropubescent, bearing 1 long anterior bristle. Aedeagus bent, pointed at tip, subapically bearing 2 pairs of tiny pointed expansions; ventral surface distally membranous. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 79 F. Paramere with 3 sensilla, linked to gonopod by membranous tissue.

✓ *Drosophila colmenares* HUNTER, 1988
(Figs. 80; 159)

Drosophila colmenares HUNTER, 1988:305.

Material examined. Holotype ♂ (dissected), labelled "MONSERRATE BOGOTA VIII-13-80 / A. Hunter Collr. / *Drosophila colmenares* / Holotype / California Academy of Sciences Type No. 15857", 4 ♂ paratypes (1 dissected), labelled "Coacili Bogata (sic) COLOMBIA S.A. VIII.20.1980 / *Drosophila colmenares* Hunter PARATYPES ♂♂ / Collection of the CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif.", all deposited in CAS.

Redescription. Terminalia ♂ (Figs. 80; 159 E). Epandrium with about 16 lower and 2 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus mostly micropubescent, with 10-11 primary teeth, no secondary teeth and about 6 marginal bristles. Decasternum as in fig. 80 B. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 long, anterior bristle. Aedeagus long, bent, dorsally pointed and ventrally membranous at distal end, bearing 1 tiny spine dorso-subdistally; distal membrane laterally expanded. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as long as aedeagal apodeme. Paramere linked to the distal end of ventral rod, bearing 5 sensilla, two of them at inner surface, linked to gonopod by membranous tissue.

✓ *Drosophila desbaratabaile* HUNTER, 1979
(Figs. 81; 159)

Drosophila desbaratabaile HUNTER, 1979:374.

Material examined. Holotype ♂ (dissected), labelled "COLOMBIA: Bogota, Carretera septima approaching Usaquen 2600m Aug. 1974 Alice S. Hunter (FB 3) Host plant, Cleome anomala / HOLOTYPE *Drosophila desbaratabaile* Alice S. Hunter / Collection of the CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif. / 13475", deposited in CAS.

Redescription. Terminalia ♂ (Figs. 81; 159 F). Epandrium with about 5-9 lower and no upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 10 primary teeth and 18-19 secondary teeth plus marginal bristles. Decasternum as in fig. 81 B. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 long anterior bristle. Aedeagus long, membranous at tip, subapically bearing a pair of lateral, long, curved spurs which are preceded by small triangle-shaped membranous areas. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 81 F. Paramere with 2 sensilla, linked to gonopod by membranous tissue.

✓ *Drosophila freilejoni* HUNTER, 1979

(Figs. 82; 159)

Drosophila freilejoni HUNTER, 1979:373.

Material examined. Holotype ♂ (dissected), labelled "COLOMBIA: Bogota, paramo de Choachi, Gudalupe (sic) Mt., 2850m, Aug. 1974 Alice S. Hunter (FB2) Host plant, Espeletia sp. / HOLOTYPE *Drosophila freilejoni* Alice S. Hunter / Collection of the CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif. / 13476", deposited in CAS.

Redescription. Terminalia ♂ (Figs. 82; 159 G). Epandrium with about 13 lower and 3 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus slightly micropubescent, with 7 primary teeth, no secondary teeth and about 6 marginal bristles. Decasternum as in fig. 82 B. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 long, anterior bristle. Aedeagus long, bent, pointed at distal end, dorsally pointed subapically; ventral margins slightly asymmetric, distally twisted, first to the left, then to the right side. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 82 F. Paramere distally finger-shaped, with about 4-5 bristles, linked to gonopod by membranous tissue.

✓ *Drosophila hyalipennis* DUDA, 1927

(Figs. 83; 159)

Drosophila (Paradrosophila) hyalipennis DUDA, 1927:119.

Drosophila (Drosophila) hyalipennis DUDA; WHEELER, 1970:16.

Material examined. Holotype ♂ (dissected), labelled "Peru - Cuzco 27.III.05. 3200 m / *Paradrosophila hyalipennis* ♂ n. sp. d. Duda / *Typus hyalipennis* Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila hyalipennis* D. Holotype ♂ G. Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color brownish with darker abdomen; frons broad, yellowish brown; facial carina relatively narrow, noselike, sulcate; mid katepisternal about 95% of the anterior one; hb index 0.13; 5x index 0.91; abdomen brown, apically darker, blackish.

Redescription. Head yellowish, frontal length 0.37 mm, frontal index 0.81, top to bottom width ratio 1.22. Frontal triangle indistinct; ocellar triangle dark, about 1/3 frontal length. Frontorbital plates slightly shiny, narrow, apically diverging from eye margin, about 70% frontal length. Orbitals equidistant, nearly in a line, distance of posterior orbital to anterior one 3/4 of that to inner vertical; vibrissal index 0.63. Cheek index about 4. Eye index 1.14. First flagellomere

short-haired; length to width ratio 1.43. Arista with 2 upper and 2 lower relatively long branches, plus small terminal fork, inner branches long. Proboscis and palpi yellow.

Thorax length about 1.52 mm. Scutum yellowish pollinose; 8 rows of acrostichals; dc index 0.62. Scutellum apically somewhat pointed; scut position index distinctly shorter than 1.0; scut index 1.08; sterno index 0.69. Halteres and legs yellow.

Wing clear; length 3.63 mm; length to width ratio 2.5. Indices: C, 4.88; ac, 1.6; 4c, 0.46; 4v, 1.26; M, 0.29; prox. x, 0.43.

Terminalia ♂ (Figs. 83; 159 H). Epandrium with about 14 lower and 5 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with 11-12 primary teeth, no secondary teeth and about 15 marginal bristles that come up to upper surface. Decasternum as in fig. 83 B. Hypandrium longer than epandrium; bow absent; gonopod bearing 3 anterior bristles and slightly micropubescent distally. Aedeagus long, laterally expanded and slightly bifid at tip, subapically bearing 2 directed frontwards, large spines; ventral margins subapically serrated. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 83 F. Paramere well developed, with 3-4 sensilla, linked to gonopod by membranous tissue.

✓ *Drosophila margarita* HUNTER, 1979

(Figs. 84; 159)

Drosophila margarita HUNTER, 1979:379.

Material examined. Holotype ♂ (dissected), labelled "COLOMBIA: Bogota, Pont. Univ. Javeriana 2600m Aug. 1974 Alice S. Hunter (FB8) found on flowers of *Chrysanthemum leucanthemum*; host for larvae not known / HOLOTYPE *Drosophila margarita* Alice S. Hunter / Collection of the CALIFORNIA ACADEMY OF SCIENCES, San Francisco, Calif. / 13477", deposited in CAS.

Redescription. *Terminalia* ♂ (Figs. 84; 159 I). Epandrium with about 8 lower and 4 upper bristles. Cerci not fused to epandrium. Surstylus slightly micropubescent, with 7-8 primary teeth, no secondary teeth and 8-9 marginal bristles. Decasternum as in fig. 84 B. Hypandrium as long as epandrium; bow absent; gonopod bearing 1 long anterior bristle. Aedeagus bent; posterior lateral surface covered with tiny spines; ventral surface membranous. Aedeagal apodeme shorter than aedeagus, laterally flattened, bent. Ventral rod as in fig. 84 F. Paramere with 2-3 sensilla, linked to gonopod by membranous tissue.

, *Drosophila onychophora* DUDA, 1927

(Figs. 85; 159)

Drosophila onychophora DUDA, 1927:208.

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Bolivia 9.X.06 Yungasweg 3500 m / ♂ onychophora I. Flügel phot. / *Cotypus onychophora* Duda / Staatl. Museum für Tierkunde Dresden *Drosophila onychophora* D. syntype ♂ G. Bächli det. 1988 / LECTOTYPE ♂ *Drosophila onychophora* Duda by Vilela & Bächli 1990"; 7 paralectotypes (4 ♂, 3 ♀; 1 ♀ dissected), same data as lectotype, all deposited in SMTD; 1 additional ♂ paralectotype (dissected), labelled "Peru Callanga / *Drosophila onychophora* DET.

DR. O. DUDA / Syn-Typus / Zool. Mus. Berlin / *PARALECTOTYPE* ♂ *Drosophila onychophora* Duda by Vilela & Bächli 1990", deposited in ZMB.

Diagnosis. Body color generally dark brown; frons black, medially and laterally lighter, greyish dusted; length ratio of mid to anterior orbital 0.55 - 0.64; facial carina relatively narrow, noselike, flat; scutum greyish dusted; mid katepisternal about 33% - 47% of the anterior one; hb index 0.21 - 0.3; 5x index 1.11 - 1.29; abdomen yellow, tergite 2 brown, tergites 3 - 6 with relatively broad marginal bands which are laterally narrowing.

Redescription. Head blackish. Frontal length 0.25 (♂) - 0.37 (♀) mm, frontal index 0.81 - 0.89, top to bottom width ratio 1.27 - 1.44. Frontal triangle brown, about 2/3 frontal length; ocellar triangle darker, about 40% frontal length. Frontal vitta velvety black. Frontorbital plates brown, apically diverging from eye margin, about 3/4 frontal length. Mid orbital nearer to and slightly outside of anterior, distance of posterior orbital to anterior one nearly equal to that to inner vertical. Length ratio of anterior to posterior orbital 0.59 - 0.74; poc 50% - 75%, oc 82% - 100% of frontal length; vibrissal index 0.4 - 0.58. Gena anteriorly darker, cheek index about 3 - 5. Eye index 1.1 - 1.26. First flagellomere whitish; length to width ratio 1.29 - 1.4. Arista with 2 - 3 upper and 1 lower short branches, plus small terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax blackish brown; length about 1.02 (♂) - 1.42 (♀) mm; h index 1.0 - 1.36; 8 rows of acrostichals. Transverse distance of dorsocentrals about 1.5x longitudinal distance; dc index 0.69 - 0.83. Scutellum apically slightly pointed; scutellars nearly equidistant; scut index 1.1 - 1.29. Pleura pollinose; sterno index 0.57 - 0.65. Halteres whitish yellow. Legs brownish, knees lighter.

Wing clear; length 2.44 (♂) - 3.53 (♀) mm; length to width ratio 2.31 - 2.49. Indices: C, 3.5 - 3.93; ac, 1.75 - 2.0; 4c, 0.59 - 0.76; 4v, 1.26 - 1.8; M, 0.35 - 0.47; prox. x, 0.38 - 0.6.

Terminalia ♂ (Figs. 85 A-H; 159 J). Epandrium with 11-12 lower and no upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, slightly wrinkled, with 7 primary teeth, no secondary teeth and 5-6 marginal bristles. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 long anterior bristle. Aedeagus bent, subapically blunt at dorsal tip, distally bearing a heavily sclerotized, finger-shaped projection. Aedeagal apodeme shorter than aedeagus, laterally flattened, anteriorly expanded. Ventral rod as in fig. 85 F. Paramere with about 3 sensilla, linked to gonopod by membranous tissue.

Terminalia ♀ (Fig. 85 I). Ovipositor plate wide, apically rounded, with about 74-82 marginal plus discal teeth, some of them bristle-shaped, anteriorly bearing a long sclerotized process. Spermatheca not identified.

Note. Ventrally the 7th tergite of the ♀ is twice as wide as the 6th one. One ♀ paralectotype has a nearly unicolorous yellow frons and slightly larger body size.

Drosophila pulverea DUDA, 1927

(Figs. 134 E; 167)

Drosophila pulverea DUDA, 1927:136 (misspelled *pulvera* on p. 181, considered improperly by WHEELER, 1981:66 as the correct spelling, see remarks below).

Material examined. LECTOTYPE ♀ (by present designation, dissected), labelled "Bolivia 9.X.06 Yungasweg 3500 m / *pulverea* ♀ d. Duda / *Cotypus pulverea* Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila pulverea* D.

Syntype ♀ G. Bächli det. 1988 / LECTOTYPE ♀ *Drosophila pulverea* Duda by Vilela & Bächli 1990"; 5 ♀ paralectotypes, same labels as lectotype, all except one paralectotype (in ZMB) deposited in SMTD. One additional ♀ paralectotype with same labels as lectotype except the first one "Peru- Laristhal 8.8.03. 3-4000 m" is deposited in SMTD.

Diagnosis. Body color brownish yellow; frons brownish yellow with 2 dark longitudinal stripes; length ratio of mid to anterior orbital 0.82 - 0.9; scutum greyish dusted, with a diffuse median and 2 interrupted lateral stripes; mid katepisternal about 47% - 53% of the anterior one; hb index 0.15 - 0.18; 5x index 1.0; abdomen yellowish brown, posterior margins of tergites slightly darker.

Redescription. Head mainly yellow. Frontal length 0.27 - 0.34 mm, frontal index 0.81 - 0.87, top to bottom width ratio 1.19 - 1.22. Frontal triangle about 3/4 frontal length; ocellar triangle blackish, about 45% frontal length. Frontal vittae brownish black. Frontorbital plates relatively broad, apically diverging from eye margin, about 3/4 frontal length. Mid orbital distinctly nearer to and somewhat outside of anterior one, distance of posterior orbital to anterior one equal to that to inner vertical. Length ratio of anterior to posterior orbital 0.59 - 0.73; poc 60% - 76 %, oc 80% - 100% of frontal length; vibrissal index 0.43 - 0.57. Facial carina broad, flat, sulcate, noselike. Gena darker below, cheek index about 3 - 5. Eye index 1.05 - 1.15. First flagellomere short-haired; length to width ratio 1.33 - 1.8. Arista with 2 - 3 upper and 2 lower short branches, plus small terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax generally brownish; length about 1.0 - 1.25 mm; 6 rows of acrostichals. Transverse distance of dorsocentrals somewhat less than 2x longitudinal distance; dc index about 0.7. Scutellum yellow, apically rounded; scutellars nearly equidistant; scut index 1.13 - 1.2. Pleura brown; sterno index 0.6. Halteres and legs yellow.

Wing narrow, clear; length 2.64 - 3.17 mm; length to width ratio 2.34 - 2.42. Indices: C, 3.82 - 4.54; ac, 1.86 - 1.89; 4c, 0.57 - 0.63; 4v, 1.48 - 1.57; M, 0.37 - 0.43; prox. x, 0.48 - 0.56.

Terminalia ♀ (Figs. 134 E; 167 A). Ovipositor plate unusually wide, resembling a grater, apically rounded, bearing 4 distal sensilla (instead of the usual 3), 115-131 peg-shaped and 2-3 bristle-shaped teeth, in addition to the one large usually present ventrally on inner surface. Spermatheca oval, weakly sclerotized; duct not invaginated.

Note. Two paralectotypes, to which we add one additional label "♀ *Drosophila* sp. Vilela & Bächli det 1990" are excluded from this species mainly because of differences in the size and shape of the facial carina. The species name is often cited as "*pulvera*" but this seems to be a misprint, used only - and unfortunately - in the formal description (DUDA, 1927:181) whereas the spelling "*pulverea*" is used twice elsewhere in the paper as well as on the labels.

4. *peruviana* species group THROCKMORTON, 1975:426

Species included: *Drosophila peruviana* DUDA.

Diagnosis. Body color mainly yellow or brown; facial carina noselike, sulcate; 8 rows of acrostichals; basal scut convergent; legs yellow; abdomen yellow with paramedian semicircular marginal spots.

Note. THROCKMORTON (op. cit.) did not propose a group diagnosis.

' *Drosophila peruviana* DUDA, 1927
(Figs. 136 A; 152)

Drosophila peruviana DUDA, 1927:204.

Drosophila (Drosophila) peruviana DUDA; PAVAN, 1950:24.

Material examined. Holotype ♀ (dissected, left wing microslide-mounted), labelled "Peru - Meshag 13.9.03. Urubambafl. / peruviana ♀ n. sp. / Hinterl. gezeich / TYPUS peruviana Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila peruviana* D. Holotype ♀ G. Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly yellow; facial carina broad, noselike, sulcate; 8 rows of acrostichals; basal scut curved inwards; abdomen subshiny yellow with a median pollinose longitudinal stripe, tergites 2 - 6 with paramedian anteriorly roundish black spots along posterior margin.

Redescription. Head yellow. frontal length 0.4 mm, frontal index 0.96, top to bottom width ratio 1.1. Frontal triangle indistinct; ocellar triangle darker, about 40% frontal length. Frontorbital plates apically diverging from eye margin, about 2/3 frontal length. Orbitals equidistant, nearly in a line, distance of posterior orbital to anterior one nearly equal to that to inner vertical. Length ratio of anterior to posterior orbital 0.76, of mid to anterior orbital 0.54; poc 50%, oc 75% of frontal length; vibrissal index 0.53. Cheek index about 6. Eye index 1.1. First flagellomere short-haired; length to width ratio 1.38. Arista with 4 upper and 2 lower long branches, plus terminal fork. Proboscis and palpi yellow.

Thorax length about 1.29 mm. Scutum subshiny. Transverse distance of dorsocentrals 2.5x longitudinal distance; dc index 0.62; scut position index smaller than 1.0; scut index 0.81; sterno index 0.86; mid katepisternal about 32% of the anterior one. Halteres and legs yellow.

Wing (Fig. 152) clear; length 2.38 mm; length to width ratio 2.32. Indices: C, 2.39; ac, 3.0; hb, 0.5; 4c, 1.0; 4v, 1.72; 5x, 1.29; M, 0.5; prox. x, 0.61.

Terminalia ♀ (Fig. 136 A). Ovipositor plate apically rounded, with 20-21 marginal and 7 discal teeth (the most distal 5 times longer than the preceding ones). Spermatheca small, mushroom-shaped, weakly sclerotized; duct invaginated.

***repleta* species group STURTEVANT, 1942:31**

Species included: 89. See WASSERMAN, 1982:61; VILELA, 1983:4, WASSERMAN et al., 1983:675; FONTDEVILA et al., 1988:380, 1990:444, 446; HEED, 1989:276; RAFAEL & ARCOS, 1988:167; SUYO et al., 1988:58; TOSI et al., 1990:21, and modifications proposed below. Two of the species included above have just been described as *D. arizonae* and *D. navojoa*, but we do not have the reference yet.

Diagnosis. See VILELA 1983:4.

Note. The specimens considered to be *D. repleta* by DUDA (1925:210, 1927:168) belong to the following species: *D. ellisoni* VILELA, 1983, *D. fulvimaculoides* WASSERMAN & WILSON, 1957, *D. ivai* VILELA, 1983, *D. mapi-riensis*, sp. nov., *D. mercatorum* PATTERSON & WHEELER, 1942, *D. pseudo-repleta*, sp. nov., *D. repleta* WOLLASTON, 1858, and *D. vicentinae* VILELA, 1983.

Drosophila fasciola WILLISTON, 1896

(Figs. 89; 159)

Drosophila fasciola WILLISTON, 1896:410; STURTEVANT, 1921:99.

Drosophila (Drosophila) fasciola WILLISTON; DOBZHANSKY & PAVAN, 1943:44; VILELA, 1983:9 (lectotype designation, 10 (♂ terminalia)).

Material examined. Lectotype ♂ (dissected), labelled "LECTOTYPE / Cotype / Windward side St. Vincent W.I. H.H.Smith / W. Indies 1907-66. / *Drosophila fasciola* Will. / LECTOTYPE *Drosophila fasciola* Williston ♂ by C.R.Vilela", deposited in BMNH.

Diagnosis. Body color mainly pale brownish; frontal index 1.15; facial carina very narrow, sharp, noselike; scutum dull yellowish brown, spotted, with 2 broad longitudinal stripes inside dc lines, 2 darker ones outside dc lines which are interrupted by the transverse suture; costal section 1 apically distinctly black; C index 1.75; ac index 3.2; 4c index 1.23.

Redescription. Head mainly yellow. Frons brown, laterally whitish, anteriorly yellow, frontal length 0.39 mm, top to bottom width ratio 1.3. Frontal triangle paler, about 2/3 frontal length; ocellar triangle black, about 40% frontal length. Frontal vittae brown, pollinose, darker above. Frontorbital plates narrow, whitish pollinose, with small brown spots at bases of orbitals and pvt, diverging from eye margin, about 60% frontal length. Mid orbitals just outside of anterior one, distance of posterior orbital to anterior one 3/4 of that to inner vertical. Length ratio of anterior to posterior orbital 1.0, of mid to anterior orbital 0.5; poc 48%, oc 61% of frontal length; vt index 1.14; vibrissal index 0.67. Cheek index about 7. Eye index 1.14. First flagellomere short-haired; length to width ratio 1.5. Arista with 3 upper and 2 lower relatively short branches, plus terminal fork, the few inner branches relatively long. Proboscis and palpi yellow.

Thorax brownish yellow, with spots and longitudinal stripes; length about 1.06 mm; h index 0.82; 8 rows of acrostichals. Transverse distance of dorsocentrals 2.5x longitudinal distance; dc index 0.67. Scutellum yellowish, medially slightly darker, with large spots at bases of scut; scut position index distinctly smaller than 1.0; scut index 0.71. Pleura with 3 broad longitudinal stripes; mid katepisternal about 33% of the anterior one. Halteres and legs yellow, coxae and basal half of femora brown, tibiae with 2 dark rings, fore tarsi with enlarged, recurved hairs on inner side.

Wing clear, apically relatively round; length 1.75 mm; length to width ratio 2.04. Indices: hb, 0.56; 4v, 1.77; 5x, 1.6; M, 0.62; prox. x, 0.69.

Abdomen with medially interrupted, broad marginal bands.

Terminalia ♂ (Figs. 89; 159 K). Epandrium with about 9 lower and 3 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micro-pubescent, with 10 primary teeth, no secondary teeth and 7-8 marginal bristles. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 anterior bristle, distally linked to its pair by a slightly sclerotized, triangle shaped sclerite, which also probably connects the parameres. Aedeagus bent, bearing a pair of wide, long, sinuous, weakly sclerotized on anterior half, subapical spurs, which are directed frontwards and distally not crossed. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod spurious. Paramere with 1 tiny sensillum; linked to gonopod by membranous tissue, dorsal margin strongly concave.

✓ *Drosophila hydei* STURTEVANT, 1921
(Figs. 135 F; 167)

Drosophila marmorata HUTTON, 1901:91. NEW SYNONYM.

Drosophila hydei STURTEVANT, 1921:101.

Drosophila (Drosophila) hydei STURTEVANT; STURTEVANT, 1942:31; HSU, 1949:135 (♂ terminalia); BREUER & ROCHA, 1971:123 (♂ terminalia); VILELA, 1983:31 (redescription, ♂ terminalia).

Material examined. Holotype ♀ (dissected) of senior synonym *D. marmorata* Hutton, labelled "Type / *Drosophila marmorata* Type Hutton / Revision A. Tonnair 1923 / Revision 1950 R.A.Harrison / I.703 / HOLOTYPE / ♀ *Drosophila hydei* Sturtevant Vilela & Bächli det. 1990", deposited in CMC.

Redescription of the holotype of *D. marmorata*. Head missing. Thorax yellowish brown, distinctly darker spotted; length about 1.42 mm. Scutum pollinose; h index 1.25; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.67. Scutellum apically rounded, medially brown, laterally yellowish, with large spots at bases of scut; scut position index distinctly smaller than 1.0. Pleura irregularly blackish brown spotted, pollinose; sterno index 0.79; mid katepisternal about 37% of the anterior one. Halteres yellow. Legs brown.

Wing clear, veins r_{4+5} and m apically slightly convergent; length 2.87 mm; length to width ratio 2.12; costal section I apically clear. Indices: C, 3.5; ac, 2.0; hb, 0.5; 4c, 0.76; 4v, 1.71; 5x, 1.11; M, 0.48; prox. x, 0.86.

Abdomen mainly dark brown, with narrow paramedian basal yellowish bands.

Terminalia ♀ (Figs. 135 F; 167 B). Ovipositor plate apically rounded, with 16-19 marginal and 5 discal teeth. Spermatheca small, sclerotized, forming a flat shield at tip of an expanded and elongated duct, which is slightly invaginated.

Note. Although the binomial *Drosophila marmorata* has priority we are keeping its junior synonym *Drosophila hydei* as a valid name while waiting for the decision of the ICZN about the proposition (No. 2767) we have made to suppress the name *D. marmorata*.

✓ *Drosophila mapiriensis*, sp. nov.
(Figs. 90; 159)

Drosophila repleta, DUDA, 1927:168 (misidentification, in part, not *D. repleta* WOLLASTON, see remarks under *repleta* group).

Material examined. Holotype ♂ (dissected), labelled "Bolivia- Mapiri 24.II.03 S. Antonio 1000 / *D. repleta* W. ♀ (sic) d. Duda / Staatl. Museum für Tierkunde Dresden / HOLOTYPE ♂ *Drosophila mapiriensis* sp. nov. Vilela & Bächli det. 1990", deposited in SMTD.

Diagnosis. Body color mainly yellowish brown; frontal index 0.9; facial carina narrow, not noselike; scutum with confluent spots at bases of bristles, forming 2 faint longitudinal stripes inside dc lines and diffuse posterior patches; costal section I apically brown; C index 1.94; ac index 3.2; 4c index 1.14; abdomen yellow, tergites 2 - 6 with narrow marginal bands which are medially interrupted and laterally extended to anterior margin, lateral dark areas with large yellow spots.

Description. Head mainly yellowish brown. Frons whitish pollinose with brown spots, frontal length 0.3 mm, top to bottom width ratio 1.2. Frontal

triangle indistinct; ocellar triangle about 45% frontal length. Frontal vittae brown above, yellowish below. Frontorbital plates whitish pollinose, with brown spots at bases of orbitals, diverging from eye margin, about 2/3 frontal length. Mid orbital just outside of anterior one, distance of posterior orbital to anterior one 1/2 of that to inner vertical. Length ratio of anterior to posterior orbital 0.85, of mid to anterior orbital 0.73; poc 50%, oc 78% of frontal length; vt index 1.5; vibrissal index 0.62. Cheek index about 8. Eye index 1.19. First flagellomere short-haired; length to width ratio 1.5. Arista with 5 upper and 2 lower branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax yellow; length about 1.09 mm; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.65; scut position index smaller than 1.0; scut index 0.8. Pleura with 3 diffuse longitudinal stripes; sterno index 0.81; mid katepisternal about 29% of the anterior one. Halteres yellow. Legs yellow, coxae and basal half of femora brown, tibiae with 2 faint rings, fore tarsi with long recurved hairs on inner side.

Wing clear; length 1.85 mm; length to width ratio 2.0. Indices: hb, 0.56; 4v, 1.71; 5x, 1.6; M, 0.57; prox. x, 0.71.

Terminalia ♂ (Figs. 90; 159 L). Epandrium with about 9 lower and 4 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micro-pubescent, with 12 primary teeth, no secondary teeth and 7-8 marginal bristles. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 anterior bristle. Aedeagus bent, bearing a pair of wide, long, sinuous, weakly sclerotized on apical half, subapical spurs which are directed frontwards and distally crossed. Aedeagal apodeme bent, shorter than aedeagus, laterally flattened. Ventral rod spurious. Paramere with 1 tiny sensillum, linked to gonopod by membranous tissue, dorsal margin straight.

Etymology. Named in allusion to area of collection.

Relationships. Belongs to the *fasciola* subgroup; it is cryptic with *D. fasciola* WILLISTON from which it differs mainly in the shape of aedeagus and parameres.

3 *Drosophila prorepleta* DUDA, 1925, stat. nov.

Drosophila repleta var. *prorepleta* DUDA, 1925:210; BÄCHLI, 1984b:37 (lectotype designation).

Drosophila repleta prorepleta DUDA; WHEELER, 1981:49 (proposed change of status).

Material examined. Lectotype ♀, labelled "COSTA RICA 1921. SUIZA DE TURRIALBA / VI.29. / Holotypus (sic) / *Drosophila pararepleta* (sic) ♀ n. sp. ? DET. DR. O. DUDA / *prorepleta* type ♀ det. Duda / LECTOTYPUS ♀ D. *prorepleta* Duda G. Bächli det. 1983, deposited in SMTD; paralectotype ♀, collected in the same locality but dated VI. 28., deposited in ZMB.

Diagnosis. Body color pale brownish; frons brown with whitish pollinose areas; frontal index 1.0 - 1.2; facial carina relatively broad, somewhat sulcate, noselike; scutum with confluent spots at bases of bristles, forming 6 longitudinal stripes, 2 paramedian ones in posterior half, 2 inside dc lines in anterior half, and 2 darker ones outside dc lines, separated by the suture; pleura with 3 dark brown longitudinal stripes; costal section I apically black; C index 2.17 - 2.63; ac index 2.38 - 2.57; 4c index 0.9 - 1.13.

Redescription. Head mainly yellow. Frontal length 0.4 - 0.45 mm, top to bottom width ratio 1.33 - 1.45. Frontal triangle narrowly reaching to anterior

margin; ocellar triangle black, about 45% frontal length. Frontal vittae brown. Frontorbital plates narrow, whitish pollinose, diverging from eye margin, about 2/3 frontal length. Mid orbital nearer to and somewhat outside of anterior one, distance of posterior orbital to anterior one about 3/4 of that to inner vertical. Length ratio of anterior to posterior orbital 0.93, of mid to anterior orbital 0.57; poc 46% - 52%, oc 58% - 67% of frontal length; vt index 1.11 - 1.21; vibrissal index 0.41 - 0.54. Check index about 6. Eye index 1.11 - 1.21. First flagellomere short-haired; length to width ratio 1.38. Arista with 4 upper and 2 lower branches, plus terminal fork. Proboscis and palpi yellow.

Thorax yellow with darker stripes; length about 1.19 - 1.49 mm; h index 1.07 - 1.18; 8 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.68 - 0.71. Scutellum centrally brown, laterally yellowish, with 4 spots at bases of scut; scut position index smaller than 1.0; scut index 0.76 - 0.81; sterno index 0.77 - 0.82; mid katepisternal about 35% of the anterior one. Halteres and legs yellow, coxae and femora brown, tibiae with a narrow basal and a broader apical ring; first joint of hind tarsus with 2 - 3 basal-ventral bristles.

Wing clear; length 2.24 - 2.71 mm; length to width ratio 2.13 - 2.16. Indices: hb, 0.47 - 0.5; 4v, 1.67 - 1.81; 5x, 1.25 - 1.29; M, 0.48 - 0.56; prox. x, 0.71 - 0.75.

Abdomen with indistinct marginal bands.

Terminalia. Not analyzed.

Note. This species is only known from the two type specimens. The spots of the mesonotum, partially fused and forming elaborate patterns as it occurs in most members of the forest-dwelling *fasciola* subgroup, are present in *D. prореpleta*, so far considered as subspecies of *D. repleta* WOLLASTON, which belongs to the *repleta* subgroup. Although *D. prореpleta* is clearly a member of the *fasciola* subgroup we were not able to determine the identity of this species, as most members of this subgroup are cryptic and so far only the characters of the male terminalia allow a precise identification to species. Until a male specimen of *D. prореpleta* is found, the identity of this *fasciola* subgroup species remains uncertain.

↓ *Drosophila pseudorepleta*, sp. nov.

(Figs. 91; 160; 167)

Drosophila repleta, DUDA, 1927:168 (misidentification, in part, not *D. repleta* WOLLASTON, see remarks under *repleta* group).

Material examined. Holotype ♂ (dissected), labelled "Paraguay 21.X.07 Hohenau 250m / (blank label) / *D. repleta* Woll. ♂ d. Duda / Staatl. Museum für Tierkunde Dresden / HOLOTYPE ♂ *Drosophila pseudorepleta* sp. nov. Vilela & Bächli det. 1990"; 1 paratype ♀, same data as holotype; both deposited in SMTD.

Diagnosis. Body color yellowish brown; frons greyish pollinose, dark brown in front of anterior orbitals; frontal index 0.96 - 1.1; facial carina broad, noselike, sulcate; scutum golden pollinose, with relatively small spots; pleura with diffuse brown longitudinal stripes; costal section I apically dark; C index 2.82 - 3.11; ac index 1.8 - 2.13; 4c index 0.86 - 0.89; abdomen yellow with broad marginal bands, medially diffusely interrupted, paramedially slightly broadened, laterally extended to anterior margin, with yellow spots in the dark lateral areas.

Description. Head mainly yellow. Frontal length 0.37 (σ) - 0.45 (φ) mm, top to bottom width ratio 1.29 - 1.35. Frontal triangle indistinct; ocellar triangle darker, about 45% frontal length. Frontal vittae brownish. Frontotibial plates narrow, with roundish spots around posterior orbitals and pvt, apically somewhat diverging from eye margin, about 2/3 frontal length. Mid orbital near to and slightly outwards of anterior one, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.83 - 0.93, of mid to anterior orbital 0.57 - 0.67; poc 55% - 59%, oc 73% of frontal length; vt index 1.05 - 1.11; vibrissal index 0.47 - 0.56. Cheek index about 6 - 7. Eye index 1.17 - 1.2. First flagellomere short-haired; length to width ratio 1.38 - 1.57. Arista with 4 upper and 3 lower relatively short branches, plus terminal fork. Proboscis and palpi yellow.

Thorax brownish yellow; length about 1.32 (σ) - 1.58 (φ) mm; h index 1.0 - 1.33; 8 rows of acrostichals. Transverse distance of dorsocentrals about 1.7x longitudinal distance; dc index 0.72 - 0.96. Scutellum medially brownish, laterally pale with distinct dark spots around scut; scut position index much smaller than 1.0; scut index 0.83 - 0.88; sterno index 0.66 - 0.86; mid katepisternal about 33% of the anterior one. Halteres and legs yellow, fore leg mainly brown, tibiae with faint dark basal rings.

Wing length 2.57 (σ) - 2.94 (φ) mm; length to width ratio 2.34 - 2.44. Indices: hb, 0.53 - 0.61; 4v, 1.74 - 1.81; 5x, 1.25 - 1.63; M, 0.53 - 0.62; prox. x, 0.71 - 0.74.

Terminalia σ (Figs. 91; 160 A, B). Epandrium with about 8 lower and 3 upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with 9-10 primary teeth, no secondary teeth and 8-9 marginal bristles. Decasternum as in fig. 91 B. Hypandrium shorter than epandrium; bow absent; gonopod bare. Aedeagus slightly invaginated at tip, which is spatulate in profile (pointed in *D. repleta*; see VILELA 1983:88, 90); dorsal region neither proximally rounded and expanded upwards as in *D. eleonorae* (see TOSI et al., 1990:23) nor proximally pointed and expanded upwards as in *D. repleta*. Aedeagal apodeme shorter than aedeagus, rod-shaped. Ventral rod as long as paramere. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

Terminalia φ (Figs. 91 I; 167 C). Ovipositor plate apically pointed, ventral margin more straight than that of *D. repleta*; with 17-19 marginal and 3-5 discal teeth. Spermatheca finger-stall-shaped, heavily sclerotized, relatively shorter than that of *D. repleta* (Fig. 81 J); duct deeply invaginated.

Relationships. Belongs to the *repleta* subgroup; it seems to be the closest species to *D. repleta* Wollaston ever described, from which it differs mainly in the shape and/or size of aedeagus, ovipositor plates and spermathecae.

Note. For comparison purposes one female specimen of *Drosophila repleta* Wollaston, labelled "Biel BE 27.-31.7.73 G. Bächli coll. / *Drosophila repleta* W. G. Bächli det. / σ (sic)" and one male "Varna BG 25.IX.1985 K. Ralchev leg. / σ / *Drosophila repleta* W. G. Bächli det." were dissected (Figs. 81 J; 91 J).

tripunctata species group STURTEVANT, 1942:30

Species included: 53. See VAL et al. 1981:144 and modifications proposed below.

Diagnosis. See FROTA-PESSOA, 1954:259.

✓ *Drosophila angustibucca* DUDA, 1925
(Figs. 92; 160; 167)

Drosophila angustibucca DUDA, 1925:218.

Drosophila (Drosophila) angustibucca DUDA; FROTA-PESSOA, 1954:278; WHEELER, 1963:53 (lectotype designation).

Material examined. Paralectotype ♂ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / Dr. angustibucca n. sp. ♂ DET. DR. O. DUDA / typus / Paralectotypus angustibucca ♂ G. Bächli det. 1983; 12 paralectotypes ♀ (one dissected), same locality as paralectotype ♂, however some with different date of collection; all deposited in HHNM.

Diagnosis. Body color yellow; facial carina, slightly sulcate; wings slightly brownish, particularly along costal margin, both crossveins distinctly and broadly clouded; abdomen yellow, shiny, with dark marginal bands which are medially and laterally narrowed on tergite 2, variably enlarged on tergites 3 - 6, the yellow basal areas sometimes reduced to roundish paramedian spots.

Redescription. Head yellow. Frons brownish, frontal length 0.37 - 0.45 mm, frontal index 0.75 - 0.87, top to bottom width ratio 1.16 - 1.29. Frontal triangle indistinct; ocellar triangle black, about 40% frontal length. Frontal vittae golden yellowish-brown. Frontorbital plates narrow, diverging from eye margin, about 3/4 frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one about 1/2 of that to inner vertical. Length ratio of anterior to posterior orbital 0.67 - 0.75, of mid to anterior orbital 0.27 - 0.4; poc 61% - 75%, oc 76% - 92% of frontal length; vt index 1.0 - 1.21; vibrissal index 0.29 - 0.63. Facial carina broad, noselike. Cheek index about 9 - 14. Eye index 1.18 - 1.25. First flagellomere with somewhat prolonged marginal hairs; length to width ratio 1.67 - 1.86. Arista with 6 - 7 upper and 3 - 4 lower long branches, plus terminal fork, inner branches short, apically longer. Palpi flat.

Thorax generally yellowish-brown; length about 1.35 - 1.75 mm. Scutum subshining, posteriorly darker; h index 0.73 - 1.06; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.97 - 1.13. Scutellum darker, scut position index smaller than 1.0, scut index 0.97 - 1.13. Pleura brownish; sterno index 0.54 - 0.65; mid katepisternal about 79% - 95% of the anterior one. Halteres and legs yellowish; first joint of hind tarsus with 2 basal-ventral bristles.

Wing length 2.64 - 3.37 mm; length to width ratio 2.18 - 2.37. Indices: C, 3.69 - 5.0; ac, 1.27 - 1.67; hb, 0.47 - 0.62; 4c, 0.5 - 0.67; 4v, 1.32 - 1.54; 5x, 0.75 - 0.91; M, 0.31 - 0.42; prox. x, 0.5 - 0.65.

Terminalia ♂ (Figs. 92 A-J; 160 E). Epandrium with 1 lower and 1 median bristle. Cerci not fused to epandrium. Surstylus not micropubescent, with 7 primary teeth, no secondary teeth and 9-11 marginal bristles that come up to upper surface. Decasternum as in fig. 92 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, posteriorly membranous, medially slightly micropubescent, bearing one long and one shorter

bristle. Aedeagus sclerotized in the ventral surface and marginally serrated subapically in the lateral surface, with a dorsal, bifid, rough membrane which is covered with tiny spines. Aedeagal apodeme longer than aedeagus, rod-shaped, bent. Ventral rod as in fig. 92 H.

Terminalia ♀ (Figs. 92 K; 167 E). Ovipositor plate apically slightly pointed, with 19 marginal and 7 discal teeth. Spermatheca light bulb-shaped, sclerotized; duct slightly invaginated.

Note. The lectotype ♀ is deposited in HHNM and was not analyzed. This species belongs to subgroup I. Regarding to the identity of the Brazilian specimens of *D. angustibucca*, WHEELER (1963:53) stated that "... this was enough to indicate that the species considered *D. angustibucca* in Brazil by FROTA-PESSOA (1954) is probably an undescribed sibling species." As we have not analyzed any specimens collected in Brazil and identified as *D. angustibucca*, we are unable, for the time being, to confirm WHEELER's suspicion.

Drosophila divisa DUDA, 1927

(Figs. 93; 160; 167)

Drosophila divisa DUDA, 1927:187.

Drosophila (Drosophila) divisa DUDA; FROTA-PESSOA, 1954:280

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Bolivia - Mapiri 13.3.03 Sarampioni 700 / triangulifera (sic) ♂ d. Duda / triangulina v. divisa ♂ ? DET. DR. O. DUDA / COTYPUS v. divisa Duda / Staatl. Museum für Tierkunde Dresden / Drosophila divisa D. Syntype ♂ G. Bächli det. 1988 / LECTOTYPE ♂ *Drosophila divisa* Duda by Vilela & Bächli 1990"; 1 paralectotype ♀ (dissected), labelled "Peru - Laristhal 10.8.03, 1-2000 m / triangulina v. divisa ♀ ? DET. DR. O. DUDA / COTYPUS v. divisa Duda / Staatl. Museum für Tierkunde Dresden / Drosophila divisa D. Syntype ♀ G. Bächli det. 1988 / PARALECTOTYPE ♀ *Drosophila divisa* Duda by Vilela & Bächli 1990"; 1 paralectotype ♀ (dissected), labelled "Bolivia 11.X.06 Yungasweg 2500-4000 m / triangulina var. divisa ♀ DET. DR. O. DUDA / Cotypus v. divisa DUDA / Staatl. Museum für Tierkunde Dresden / Drosophila divisa D. Syntype ♀ G. Bächli det. 1988 / PARALECTOTYPE ♀ *Drosophila divisa* Duda by Vilela & Bächli 1990", all deposited in SMTD.

Diagnosis. Body color yellow; cheek index about 4 - 7; wings with faintly clouded crossveins; C index 4.46 - 5.46; hb index 0.25 - 0.31; 5x index 1.1 - 1.25; prox. x index 0.33 - 0.42; abdomen yellow, with dark brown marginal bands which are laterally narrowed, paramedially extended and medially interrupted.

Redescription. Head yellow, frontal length 0.3 - 0.37 mm, frontal index 0.69 - 0.81, top to bottom width ratio 1.19 - 1.22. Frontal triangle indistinct, narrowly reaching to anterior margin; ocellar triangle darker, about 35% frontal length. Frontal vittae darker above. Frontorbital plates somewhat shiny, narrow, diverging from eye margin, about 65% frontal length. Orbitals in a line, distance of posterior orbital to anterior one about 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.63 - 0.71, of mid to anterior orbital 0.33 - 0.42; poc 59% - 83%, oc 86% - 196% of frontal length; vt index 1.0 - 1.15; vibrissal index 0.31 - 0.4. Eye index 1.13 - 1.16. First flagellomere short-haired, length to width ratio 1.83. Arista with 4 - 6 upper and 2 - 3 lower relatively short branches, plus terminal fork, inner branches short, apically longer.

Thorax brownish-yellow; length about 1.35 - 1.45 mm. Scutum darker posteriorly, subshiny; h index 1.13 - 1.16; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.75 - 0.78. Scutellum brownish, scut position index smaller than 1.0; scut index 1.13 - 1.32. Pleura brownish, subshiny; sterno index 0.61 - 0.66; mid katepisternal about 63% - 67% of the anterior one. Halteres and legs yellow; first joint of hind tarsus with 2 - 3 yellow basal-ventral bristles.

Wing length 2.71 - 3.47 mm; length to width ratio 2.41 - 2.63. Indices: ac, 1.63 - 2.0; 4c, 0.41 - 0.54; 4v, 1.25 - 1.46; M, 0.31 - 0.42.

Terminalia ♂ (Figs. 93 A-H; 160 F). Epandrium with 2 lower and no upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 8-9 primary teeth, no secondary teeth and 13 marginal bristles that come up to upper surface. Decasternum as in fig. 93 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, bearing 1 long anterior bristle. Aedeagus with distal end marginally serrated; subapical lateral surface membranous and covered with tiny spines. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod absent.

Terminalia ♀ (Figs. 93 I, J; 167 F, G). Ovipositor plate apically pointed in one female ("18.8.03", Peru) but rounded in the other ("11.X.06", Bolivia), with 20-22 marginal and 8-9 discal teeth, and 15-16 marginal and 6-7 discal teeth, respectively. Spermatheca mushroom-shaped and slightly sclerotized in both females; duct medially invaginated.

Note. This species belongs to subgroup III. The two female paralectotypes are obviously not conspecific.

♣ *Drosophila frotapessoai*, sp. nov.
(Figs. 94; 160)

Drosophila (Drosophila) mediostriata, COVA GARCIA & SUAREZ, 1962:330 (figures, misidentification, not *D. mediostriata* DUDA).

Material examined. Holotype ♂ (dissected), labelled "Peru - Urubambagl. 13.9.03 Umahuankilia / ♂ cardini St / Staatl. Museum für Tierkunde Dresden / HOLOTYPE ♂ *Drosophila frotapessoai* sp. nov. Vilela & Bächli det. 1990", deposited in SMTD.

Diagnosis. Body color yellow; mid orbital relatively short; wings with very narrow, faint clouds along both crossveins; 5x index 1.17.

Description. Head yellow. Frontal length 0.25 mm, frontal index 0.75, top to bottom width ratio 1.2. Frontal triangle slightly shiny, narrowly reaching to anterior margin; ocellar triangle darker, about 40% frontal length. Frontal vittae dull golden yellow. Frontorbital plates subshiny, diverging from eye margin, about 2/3 frontal length. Orbitals in a line, distance of posterior orbital to anterior one 1/2 of that to inner vertical. Length ratio of anterior to posterior orbital 0.82, of mid to anterior orbital 0.22; poc 67%, oc 87% of frontal length; vt index 1.17; vibrissal index 0.67. Facial carina noselike. Cheek index about 12. Eye index 1.08. First flagellomere short-haired; length to width ratio 1.6. Arista with 6 upper and 2 lower branches, plus terminal fork.

Thorax yellow; length about 1.3 mm. Scutum subshiny; 6 rows of acrostichals. Transverse distance of dorsocentrals 2x longitudinal distance; dc index 0.39. Scutellum apically rounded; scutellars equidistant; scut index 0.91. Halteres and legs yellow; fore femora with an antero-ventral row of spines; first joint of hind tarsus with 2 - 3 yellow basal-ventral bristles.

Wing length about 2.0 mm; length to width ratio 2.5. Indices: C, 4.0; ac, 1.67; hb, 0.5; 4c, 0.63; 4v, 1.69; M, 0.44; prox. x, 0.5.

Terminalia ♂ (Figs. 94; 160 G). Epandrium with about 5 lower and no upper bristles, somewhat membranous at lower region. Cerci not fused to epandrium. Surstylus not micropubescent, with 4 primary teeth and 12-13 secondary teeth plus marginal bristles. Decasternum as in fig. 94 B. Hypandrium as long as epandrium; bow medially slightly sclerotized; gonopod fused to paramere, bearing 1 long and 2 tiny bristles. Aedeagus bearing 2 directed backwards, large spines, membranous at posterior margin, whose lateral surface is covered with tiny spines, which also occur laterally at median region. Aedeagal apodeme shorter than aedeagus, rod-shaped. Ventral rod as in fig. 94 F.

Note. This species belongs to subgroup II.

Etymology. Named in honor of the drosophilist OSWALDO FROTA-PESSOA.

✓ *Drosophila mediostrata* DUDA, 1925

(Figs. 95; 96; 160)

Drosophila mediostrata DUDA, 1925:223.

Drosophila (Drosophila) mediostrata DUDA; DOBZHANSKY & PAVAN, 1943:28 (redescription); FROTA-PESSOA, 1954: plates XVII, XVIII (♀ terminalia), XIII, XVI (♂ terminalia, misidentification, not *D. mediostrata* DUDA, see Note); COVA GARCIA & SUAREZ, 1962:330 (♀ terminalia, misidentification, see *D. frotapessoi*, sp. nov.).

Drosophila (Drosophila) crocina PATTERSON & MAINLAND, 1944:34; HSU, 1949:234 (♂ terminalia); HEED, 1957:15 (complementary description); BREUER & ROCHA, 1971:134 (♂ terminalia). NEW SYNONYM.

Drosophila campestris BURLA, in PAVAN, 1950:9 (synonymized by WHEELER, 1970:14); FROTA-PESSOA, 1954: plate XV (♂ terminalia), XVIII (♀ terminalia).

Material examined. Holotype ♂ (dissected) of *D. mediostrata*, labelled "COSTA RICA 1921 SUIZA DE TURRIALBA / VI.2. / Spinulophila mediostrata ♂ DET. D. O. DUDA / HOLOTYPE", deposited in HNHM. Holotype ♂ (dissected) of *D. crocina* Patterson & Mainland, labelled "Barranca de Metlac V. Cruz, Mexico June 1943 G. B. Mainland / 1383.10 M / HOLOTYPE / Drosophila crocina Patterson & Mainland / Drosophila mediostrata Duda Vilela & Bächli det 1990", deposited in NMNH.

Diagnosis. Body color yellow; vibrissal index 0.67; wings with relatively broad clouds along both crossveins; C index 3.25 - 3.45; ac index 2.75; 4c index 0.85 - 0.92; 4v index 2.0 - 2.15; 5x index 1.2 - 1.4; M index 0.46 - 0.54; prox. x index 0.77 - 0.92; abdomen yellow, tergites with black marginal bands which are laterally narrowed, medially mostly extended and reaching to anterior margin.

Redescription. Head yellow, frontal length 0.22 mm, frontal index 0.65 - 0.68, top to bottom width ratio 1.16 - 1.2. Frontal triangle indistinct; ocellar triangle dark, about 45% frontal length. Frontal vittae golden yellow. Frontorbital plates narrow, distinctly diverging from eye margin, about 3/4 frontal length. Orbitals nearly equidistant, in a line. Length ratio of anterior to posterior orbital 0.64 - 0.73, of mid to anterior orbital 0.33 - 0.38; poc 62% - 69%, oc 85% - 100% of frontal length; vt index 1.08 - 1.25. Facial carina narrow. Cheek index 6 - 9. Eye index 1.15 - 1.17. First flagellomere short-haired; length to width ratio 1.75 - 2.0. Arista with 6 upper and 2 lower branches, plus terminal fork, inner branches short.

Thorax yellow; length about 0.92 mm. Scutum shiny; h index 0.82; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.63; scutellars nearly equidistant; scut index 0.79 - 0.83; sterno

index 0.47; mid katepisternal 82% of anterior one. Halteres and legs yellow; fore femora with an antero-ventral row of spines; first joint of hind tarsus with 2 basal-ventral bristles.

Wing length 1.88 mm; length to width ratio 2.19 - 2.38; hb index 0.45 - 0.5; *Terminalia* ♂ (Figs. 95; 96; 160 H, I). Values in parentheses refer to holotype of junior synonym *D. crocina*. Epandrium with about 6 (10) lower and 1 upper bristle, somewhat membranous at lower region. Cerci not fused to epandrium. Surstylus not micropubescent, with 6-7 (7) primary teeth and 10-11 (10) secondary teeth plus marginal bristles. Decasternum as in fig. 95 B, 96 B. Hypandrium shorter than epandrium; bow medially slightly sclerotized; gonopod fused to paramere, bearing 1 long and about 2 smaller bristles. Aedeagus membranous at tip, subapically bearing 2 directed downwards, large spines. Aedeagal apodeme shorter than aedeagus, rod-shaped. Ventral rod as in fig. 95 G, 96 G.

Note. This species belongs to subgroup III. *D. mediotriata* sensu FROTA-PESSOA (1954) is a misidentification, the complementary description presented by him in that paper refers to *D. paramediotriata* TOWNSEND & WHEELER (1955), instead. The drawings of male terminalia presented by COVA GARCIA & SUAREZ (1962:330) for specimens identified as *D. mediotriata* depict instead *D. frotapessoai*, sp. nov. Hence, the occurrence of *D. mediotriata* DUDA in Venezuela remains uncertain.

✓ *Drosophila neoguaramunu* FRYDENBERG, 1956

(Figs. 97; 160; 167)

Drosophila (Drosophila) neoguaramunu FRYDENBERG, 1956:57; VAL, 1982:330 (♂ terminalia).

Material examined. Holotype ♂ (dissected), labelled "*Drosophila neoguaramunu* Frydenberg ♂ + ♀; Peru 1955 / TIPO"; ♀ paratype, originally double-mounted together with holotype, remounted on a separate pin, labels xeroxed from the original ones.

Diagnosis. Body color yellow; wings with broad clouds along both cross-veins; abdomen yellow, subshiny, with relatively narrow marginal bands which are laterally enlarged and medially narrowed on tergites 2 - 3, enlarged on tergites 4 and 5.

Redescription. Head yellow. Frontal length 0.3 (♂) - 0.37 (♀) mm, frontal index 0.71 - 0.78, top to bottom width ratio 1.13. Frontal triangle indistinct; ocellar triangle darker, about 40% frontal length. Frontorbital plates narrow, diverging from eye margin, about 60% - 70% frontal length. Orbitals equidistant, in a line, distance of posterior orbital to anterior one about 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.4 - 0.67, of mid to anterior orbital 0.3 - 0.43; poc 56% - 68%, oc 78% - 91% of frontal length; vt index 0.78 - 1.1; vibrissal index 0.58. Cheek index about 6 - 8. Eye index about 1.15. First flagellomere short-haired; length to width ratio 1.57 - 1.6. Arista with 7 upper and 4 lower branches, plus terminal fork.

Thorax brownish-yellow; length about 1.15 (♂) - 1.62 (♀) mm. Scutum subshiny; h index 0.88; 6 rows of acrostichals. Transverse distance of dorso-centrals about 2x longitudinal distance; dc index 0.68 - 0.78; scut position index somewhat smaller than 1.0; scut index 0.96. Pleura brownish; sterno index 0.57 - 0.62; mid katepisternal about 89% - 92% of the anterior one. Halteres brown at tip. Legs yellow; first joint of hind tarsus with 2 - 3 basal-ventral bristles.

Wing length 2.34 (♂) - 2.94 (♀) mm; length to width ratio 2.22 - 2.29. Indices: C, 4.43 - 4.92; ac, 1.27 - 1.5; hb, 0.5 - 0.58; 4c, 0.56 - 0.67; 4v, 1.32 - 1.56; 5x, 0.88; M, 0.32 - 0.39; prox. x, 0.64 - 0.72.

Terminalia ♂ (Figs. 97 A-H; 160 J). Epandrium with 1 lower and 1 median bristle. Cerci not fused to epandrium. Surstylus strongly sclerotized, not micropubescent, with 8 primary teeth, no secondary teeth and 6-8 marginal bristles. Decasternum as in fig. 97 B. Hypandrium as long as epandrium; bow sclerotized; gonopod fused to paramere, bearing 1 long and 1 shorter bristle. Aedeagus with a dorsal, bifid, rough membrane, which is covered with tiny spines, sclerotized in the ventral surface and marginally serrated subapically in the lateral surface. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod as in fig. 97.

Terminalia ♀ (Figs. 97 I; 167 H). Ovipositor plate apically pointed, with 17-18 marginal and 6-7 discal teeth. Spermatheca bulb-shaped, weakly sclerotized; duct deeply invaginated.

Note. This species belongs to subgroup I. See our note under *guarani* species group.

♂ *Drosophila paraguayensis* DUDA, 1927

(Figs. 98-100; 160)

Drosophila paraguayensis DUDA, 1927:185.

Drosophila (Drosophila) paraguayensis DUDA; FROTA-PESSOA, 1954:274 (complementary description).

Drosophila (Drosophila) mediosignata DOBZHANSKY & PAVAN, 1943:24; VAL, 1982:337 (♂ terminalia); FROTA-PESSOA, 1954: plate XV (♂ terminalia). NEW SYNONYM.

Drosophila (Drosophila) medionotata FROTA-PESSOA, 1954:288, plate XV (♂ terminalia); VAL, 1982:336 (♂ terminalia). NEW SYNONYM.

Material examined. LECTOTYPE ♂ (by present designation, dissected) of *D. paraguayensis*, labelled "Petrop. / paraguayensis ♂ ? d. Duda / Syn-Typus / Zool. Mus. Berlin / LECTOTYPE ♂ *Drosophila paraguayensis* Duda by Vilela & Bächli 1990", deposited in ZMB. One paratype ♂ of *D. mediosignata*, labelled "Iporanga S. Paulo VII-943 / PARATIPO"; 1 paratype ♂ of *D. medionotata*, labelled "PARATIPO *Drosophila medionotata* ♂ Col. Pavan Vila Atlantica, S. P. IX.1952 Frota-Pessoa det.", both deposited in MZUSP.

Diagnosis. Body color yellow; cheek index about 15; wings slightly brownish, both crossveins clouded; abdomen yellow, with diffuse, darker marginal bands.

Redescription. A generally teneral specimen. Head yellow, frontal length 0.25 mm, frontal index 0.75, top to bottom width ratio 1.25. Frontal triangle indistinct; ocellar triangle blackish, about 40% frontal length. Frontorbital plates narrow, diverging from eye margin, about 2/3 frontal length. Orbitals equidistant, nearly in a line, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.77, of mid to anterior orbital 0.3; oc 93% of frontal length; vibrissal index 0.45. Facial carina relatively narrow. Eye index 1.24. First flagellomere short-haired; length to width ratio 2.2. Arista with 5 upper and 3 lower branches, plus terminal fork, inner branches relatively short.

Thorax yellow; length about 1.06 mm; 6 rows of acrostichals, transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.64; scutellars nearly equidistant; scut index 1.18; sterno index 0.57; mid katepisternal about 67% of the anterior one. Halteres and legs yellow.

Wing length 1.88 mm; length to width ratio 2.09. Indices: C, 4.27; ac, 1.57; hb, 0.45; 4c, 0.55; 4v, 1.4; 5x, 1.0; M, 0.4; prox. x, 0.45.

Terminalia ♂ (Figs. 98-100; 160 K). Values in parentheses refer to holotypes of both junior synonyms *D. medionotata* and *D. mediosignata*, respectively. Epandrium with about 3 (3; 6) lower, 1 (1; 1) median and 2 (0; 0) upper bristles. Cerci not fused to epandrium. Surstylus heavily sclerotized, not micropubescent, with about 8 (8; 9) primary teeth, no secondary teeth and 8-9 (9; 16) marginal bristles. Decasternum as in fig. 98 B, 99 B, 100 B. Hypandrium shorter than epandrium; bow slightly sclerotized medially; gonopod fused to paramere, bearing 1 large and 1 tiny bristle. Aedeagus bearing 2 subapical, serrated, lateral processes; both subapical surface ventrally and posterior lateral surface membranous, covered with tiny spines. Aedeagal apodeme longer than aedeagus, rod-shaped, bent. Ventral rod as in figs. 98 F; 99 F; 100 F.

Note. The redescription of external morphology is based only on the lectotype of *D. paraguayensis*. This species belongs to subgroup II.

Drosophila prosimilis DUDA, 1927

(Figs. 134 F; 167)

Drosophila prosimilis DUDA, 1927:194.

Drosophila (Drosophila) prosimilis DUDA; DOBZHANSKY & PAVAN, 1943:23 (redescription); FROTA-PESSOA, 1954:285.

Material examined. Holotype ♀ (dissected, left wing missing), labelled "Peru - Pichis XII. 03. Pto. Bermudes / prosimilis ♀ d. Duda / Typus f. prosimilis Duda / Staatl. Museum für Tierkunde Dresden / Drosophila prosimilis D. Holotype ♀ G. Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color yellow; vibrissal index 0.7; mid katepisternal about 33% of the anterior one; wings without clouds; ac index 1.83; hb index 0.64; 4c index 0.61; M index 0.44; abdomen yellow, shiny, tergites 2 - 6 with narrow, short, medially interrupted marginal bands which are paramedially somewhat extended on tergite 4 and forming 2 triangular spots on tergite 5.

Redescription. Head generally yellow. Frons paler, frontal length 0.27 mm, frontal index 0.73, top to bottom width ratio 1.14. Frontal triangle indistinct; ocellar triangle brown, about 35% frontal length. Frontorbital plates slightly shiny, diverging from eye margin, about 2/3 frontal length. Orbitals equidistant, in a line, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.67, of mid to anterior orbital 0.4; poc 75%, oc 94% of frontal length. Facial carina flat, noselike, broadened below. Cheek index about 7. Eye index 1.17. First flagellomere short-haired; length to width ratio 1.8. Arista with 5 upper and 2 lower long branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax yellow; length about 1.22 mm. Scutum somewhat shiny. Transverse distance of dorsocentrals slightly larger than longitudinal distance. Scutellum apically rounded; scutellars equidistant. Pleura slightly shiny; sterno index 0.52. Halteres and legs yellow; first joint of hind tarsus with 2 yellow basal-ventral bristles.

Wing clear. Indices: C, 3.82; 4v, 1.61; 5x, 1.14; prox. x, 0.44.

Terminalia ♀ (Figs. 134 F; 167 I). Ovipositor plate apically pointed, with 13 marginal and 7-8 discal teeth. Spermatheca spherical, sclerotized; duct deeply invaginated.

Note. This species belongs to subgroup II.

Drosophila rostrata DUDA, 1925
(Figs. 101; 161; 169)

Drosophila rostrata DUDA, 1925:219.

Drosophila (Drosophila) rostrata DUDA; WHEELER, 1963:54 (redescription).

? *Drosophila medioobscurata* DUDA, 1925:217.

Material examined. Holotype ♂ of *D. rostrata* (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.IV.14. / Dr. rostrata ♂ n. sp. typus DET. DR. O. DUDA / HOLOTYPUS", deposited in HNHM.

Diagnosis. Body color yellow; wings with clouds along both crossveins; abdomen yellow, subshiny, with relatively narrow marginal bands which are laterally narrowed and medially extended on tergites 2 and 3, interrupted on tergites 4 and 5, tergite 6 with median triangular spot.

Redescription. Head yellow. Frontal length 0.3 mm, frontal index 0.75, top to bottom width ratio 1.17. Frontal triangle indistinct; ocellar triangle darker, about 40% frontal length. Frontorbital plates narrow, diverging from eye margin, about 60% frontal length. Orbitals equidistant, in a line, distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.69, of mid to anterior orbital 0.27; poc 58%, oc 78% of frontal length; vibrissal index 0.36. Cheek index about 11. Eye index 1.18. First flagellomere relatively short-haired; length to width ratio 1.67. Arista with 6 upper and 3 lower branches, plus terminal fork.

Thorax yellow; length about 1.19 mm. Scutum subshiny; h index 0.64; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.95; scut position index smaller than 1.0; sterno index 0.63; mid katapisternal about 67% of the anterior one. Halteres yellow. Legs yellow; first joint of hind tarsus with 2 basal-ventral bristles.

Wing length 2.34 mm; length to width ratio 2.22. Indices: C, 3.77; ac, 1.63; hb, 0.46; 4c, 0.65; 4v, 1.4; 5x, 1.14; M, 0.4; prox. x, 0.55.

Terminalia ♂ (Figs. 101; 161 A). Epandrium not micropubescent, with 1 lower and no upper bristles. Cerci not fused to epandrium. Surstylus strongly sclerotized, not micropubescent, with 6 primary teeth, no secondary teeth and 6-7 marginal bristles that come up to upper surface. Decasternum as in fig. 101 B. Hypandrium as long as epandrium; bow medially slightly sclerotized, partially micropubescent; gonopod fused to paramere, bearing 1 long and 1 shorter bristle. Aedeagus mostly membranous, with a dorsal, bifid, rough membrane, which is covered with tiny spines, sclerotized at ventral surface, which is slightly invaginated at tip and covered with tiny spines. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod as in fig. 101 F.

Note. According to DUDA, 1927:138 this species could be a synonym of *D. medioobscurata* DUDA, but due to lack of type material of the latter species we hesitate to decide on this matter. This species belongs to subgroup I. The thornlike structure on the proboscis (fig. 169 F) was suggested to us as by Dr. H. BURLA as being a probable specimen of fungi (perhaps Laboulbeniales), but according to Dr. I. TAVARES, Berkeley (personal comm.), this is unlikely and might represent a plant tissue or other fine object may have been stuck to the proboscis. Contrary to the usual belief that this aberrant structure of the proboscis of *D. rostrata* is a diagnostic character we just regard it as an alien and undetermined structure.

✓ *Drosophila semialba* DUDA, 1925
(Figs. 102; 103; 161)

Drosophila semialba DUDA, 1925:208.

Drosophila (Drosophila) sucheae PIPKIN & HEED, 1964:262. NEW SYNONYM.

Material examined. LECTOTYPE ♂ (by present designation, dissected) of *D. semialba*, labelled "COSTA RICA 1921 SUIZA DE TURRIALBA / V.23 / *Drosophila albonigra* (sic) M DET. DR. O. DUDA / Syn-TYPUS / *semialba* D. / LECTOTYPE ♂ *Drosophila semialba* Duda by Vilela & Bächli 1990", deposited in HNHM; 1 paralectotype ♀ of *D. semialba*, same labels as lectotype, except date (V.19), deposited in ZMB. Holotype ♂ of *D. sucheae* (dissected), labelled "D. sucheae Pipkin and Heed / HOLOTYPE / Cerro Campana 2,200 ft. Panama S. Pipkin coll. oct. 1963, 45C.18", deposited in NMNH.

Diagnosis. Body color whitish; vibrissal index 0.64 - 0.73; mid katepisternal about 93% of the anterior one; wings with faintly clouded crossveins; ac index 2.0 - 2.17; hb index 0.25 - 0.31; 4c index 0.67 - 0.76; M index 0.39 - 0.47; abdomen shiny, tergites 1 - 3 blackish-brown, 4 - 6 whitish-yellow.

Redescription. Head mainly yellow. Frons mat yellow, darker above, frontal length 0.25 (♂) - 0.29 (♀) mm, frontal index 0.68 - 0.81, top to bottom width ratio 1.23 - 1.29. Frontal triangle indistinct; ocellar triangle dark, about 35% - 40% frontal length. Frontorbital plates narrow, apically diverging from eye margin, about 60% frontal length. Orbitals equidistant, nearly in a line, distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.67 - 0.71, of mid to anterior orbital 0.2 - 0.4; poc 73%, oc 82% - 87% of frontal length. Face white. Facial carina relatively narrow. Cheek index about 9. Eye index 1.27. First flagellomere brown; length to width ratio 1.4. Arista with 5 upper and 2 lower long branches, plus terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax whitish-yellow; length about 1.05 (♂) - 1.09 (♀) mm. Scutum shiny; h index 0.62 - 0.77; posterior acrostichals missing. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.68. Scutellum dorsally brownish, laterally darker, apically blackish; scut position index smaller than 1.0; scut index 1.04. Pleura whitish-yellow, shiny; sterno index 0.67. Halteres and legs whitish-yellow; first joint of hind tarsus with a row of decreasing basal-ventral bristles.

Wing length 2.31 mm; length to width ratio 2.41 - 2.5. Indices: C, 3.54 - 4.08; 4v, 1.72 - 1.76; 5x, 0.88 - 1.0; prox. x, 0.88 - 1.0.

Terminalia ♂ (Figs. 102; 103; 161 B). Values in parentheses refer to holotype of junior synonym *D. sucheae*. Epandrium with 1 (2) lower and 2 (1) median bristles. Cerci not fused to epandrium. Surstylus strongly sclerotized, not micropubescent, with about 6 (6) primary teeth, no secondary teeth and 6-7 (9) marginal bristles that come up to upper surface. Decasternum as in fig. 102 B, 103 B. Hypandrium as long as epandrium; bow sclerotized; gonopod fused to paramere, bearing 1 (1, in addition to 1 tiny) long bristle. Aedeagus straight, both distally and ventrally membranous, with 2 submedian, membranous, lateral expansions, covered with tiny spines. Aedeagal apodeme as long as aedeagus, rod-shaped. Ventral rod as in figs. 102 F; 103 F.

Note. This species belongs to subgroup IV. The redescription of the external morphology is based on the specimens from SMTD.

• *Drosophila triangulina* DUDA, 1927

(Figs. 104; 161; 167)

Drosophila triangulina DUDA, 1927:186.

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Peru - Laristhal / 10.8.03, 1-2000 m / (blank label) / *D. triangulina* n. sp. ♂ d. Duda / COTYPUS *triangulina* Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila triangulina* D. Syntype ♂ G. Bächli det. 1988 / LECTOTYPE ♂ *Drosophila triangulina* Duda by Vilela & Bächli 1990"; 1 ♀ paralectotype (dissected), same data as lectotype, both deposited in SMTD.

Diagnosis. Body color yellow; cheek index about 7; wings with very faintly clouded crossveins; C index 4.63 - 5.58; hb index 0.31 - 0.33; 5x index 1.25; abdomen yellow, with dark brown marginal bands which are laterally narrowed, paramedially extended and medially interrupted.

Redescription. Head yellow. Frontal length 0.34 mm, frontal index 0.87, top to bottom width ratio 1.35. Frontal triangle subshiny, about 2/3 frontal length; ocellar triangle about 40% frontal length. Frontal vittae golden yellow, anteriorly dull. Frontorbital plates narrow, subshiny, somewhat diverging from eye margin, about 70% frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.71, of mid to anterior orbital 0.42; poc 60%, oc 85% of frontal length; vibrissal index 0.36. Facial carina relatively narrow, noselike, flat. Eye index 1.22. First flagellomere short-haired; length to width ratio 1.71. Arista with 5 upper and 2 lower branches, plus terminal fork. Proboscis and palpi yellow.

Thorax yellow; length about 1.39 (♂) - 1.58 (♀) mm. Scutum brownish, subshiny, posteriorly slightly darker; h index 1.43; 6 rows of acrostichals. Transverse distance of dorsocentrals 185% of longitudinal distance; dc index 0.69. Scutellum brownish; scut position index smaller than 1.0; scut index 1.02 - 1.19; sterno index 0.61; mid katepisternal about 60% of the anterior one. Halteres and legs yellow; first joint of hind tarsus with 2 yellow basal-ventral bristles.

Wing length 3.16 mm; length to width ratio 2.64. Indices: ac, 1.2 - 1.78; 4c, 0.4 - 0.55; 4v, 1.3 - 1.52; M, 0.33 - 0.45; prox. x, 0.37 - 0.55.

Terminalia ♂ (Figs. 104 A-H; 161 C.). Epandrium with about 7 lower and no upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 8-9 primary teeth, no secondary teeth and 10-13 marginal bristles that come up to upper surface. Decasternum as in fig. 104 B. Hypandrium longer than epandrium; bow medially slightly sclerotized; gonopod fused to paramere, bearing 1 long bristle. Aedeagus straight, laterally expanded, slightly invaginated and pointed inwards at tip, dorso-subapically membranous and covered with tiny spines, latero-distal margins subapically serrated. Aedeagal apodeme as long as aedeagus, rod-shaped. Ventral rod as in fig. 104 F

Terminalia ♀ (Figs. 104 I, J; 167 J). Paragenital fringe bearing 21 long bristles. Ovipositor plate apically rounded, with about 13-16 marginal and 6 discal teeth. Spermatheca distally flattened, marginally serrated; duct not invaginated.

Note. According to Wheeler (1957:92) the paragenital fringe of the circumanal (8th) tergite occurs on the females of all species of the *canalineae* group, but had not been found on species of any other group until that date. It should be pointed out that the female of *D. triangulina* redescribed above, although not belonging to the *canalineae* group, presents two features which typically occur on females of the species of the latter group, i.e., the well developed fringe and the ovipositor plate with sharply pointed teeth, longer than

usual. On the other hand, the shape of the spermathecae of *D. triangulina* is quite unusual for all Neotropical species of *Drosophila* ever seen.

Note. This species belongs to subgroup III.

Drosophila tripunctata LOEW, 1862
(Figs. 105; 161; 167)

Drosophila tripunctata LOEW, 1862:231; STURTEVANT, 1921:82 (redescription).

Drosophila (Drosophila) tripunctata LOEW; PATTERSON, 1943:108 (redescription); HSU, 1949:134 (♂ terminalia); FROTA-PESSOA, 1954:298 (redescription); MALOGOLOWKIN, 1953:256 (♂ terminalia).

Material examined. Eight specimens (4 ♂, 4 ♀, 2 ♂ and 2 ♀ dissected), labelled "NDSRC strain 15220-2401.0 formerly 1878.6 Austin", collected in Morrow Mt. State Park, North Carolina, USA, and "NDSRC strain 15220-2401.1 formerly 1910.4 Austin", collected in Dexter, Missouri, USA, all deposited in ZMZ.

Diagnosis. Body color yellowish; vibrissal index 0.8 - 1.0; mid katepisternal about 80% - 92% of the anterior one; wings slightly brownish, both crossveins and tips of veins r_{2+3} and r_{4+5} distinctly clouded, veins r_{4+5} and m apically slightly convergent; ac index 1.86 - 2.17; hb index 0.23 - 0.33; 4c index 0.65 - 0.71; M index 0.47 - 0.53; abdomen yellow, subshiny, tergites 2 and 3 with broad marginal bands which are medially interrupted, paramedially extended, laterally narrowed, tergite 4 with a diffuse median spot and a narrow, faint marginal band, tergites 5 and 6 glossy, with black round median spots.

Redescription. Head mainly yellow. Frons darker, frontal length 0.3 (♂) - 0.34 (♀) mm, frontal index 0.83 - 0.95, top to bottom width ratio 1.17 - 1.3. Frontal triangle not very distinct, narrowly reaching to anterior margin; ocellar triangle brownish, about 1/3 frontal length. Frontal vittae dull yellow. Frontorbital plates narrow, slightly diverging from eye margin, about 3/4 frontal length. Orbitals equidistant, in a line, distance of posterior orbital to anterior one nearly as long as that to inner vertical. Length ratio of anterior to posterior orbital 0.73 - 0.8, of mid to anterior orbital 0.25 - 0.36; poc 53% - 61%, oc 74% - 83% of frontal length; Facial carina long, noselike, flat. Cheek index about 10 - 12. Eye index 1.18 - 1.28. First flagellomere brownish, short-haired; length to width ratio 1.8 - 2.0. Arista with 5 upper and 2 lower branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax yellowish brown; length about 1.06 (♂) - 1.22 (♀) mm. Scutum subshiny; h index 0.79 - 0.92; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.7 - 0.8. Scutellum brownish, apically rounded, scut position index somewhat smaller than 1.0; scut index 1.04; sterno index 0.59 - 0.68. Halteres and legs yellow; first joint of hind tarsus with 2 basal-ventral bristles.

Wing length 2.15 (♂) - 2.54 (♀) mm; length to width ratio 2.18 - 2.32. Indices: C, 3.92 - 4.15; 4v, 1.7 - 1.82; 5x, 1.13 - 1.29; prox. x, 0.59 - 0.65.

Terminalia ♂ (Figs. 105 A-H; 161 D, E). Epandrium with about 3 lower and no upper bristles. Cerci not fused to epandrium. Surstylus heavily sclerotized, not micropubescent, with 9-10 primary teeth, no secondary teeth and 16-17 marginal bristles. Decasternum as in fig. 105 B. Hypandrium as long as epandrium; bow sclerotized; gonopod posteriorly membranous, fused to paramere, bearing 1 long and 2 tiny bristles; anterior surface slightly micropubescent. Aedeagus slightly

invaginated at tip, bearing 2 serrated, subapical, lateral processes; posterior lateral surface covered with tiny spines. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod as in fig. 105 F.

Terminalia ♀ (Figs. 105 I; 167 K). Ovipositor plate apically spatulate, with 18-19 marginal and 6 discal teeth. Spermatheca mushroom-shaped, sclerotized; duct deeply invaginated.

Note. This species belongs to subgroup IV.

virilis species group STURTEVANT, 1942:30

Species included: 11. See THROCKMORTON, 1982:228, and TAKADA & YOON, 1989:111.

Diagnosis. Body color generally blackish; facial carina usually prominent, sulcate, broadened below; posterior crossvein clouded; basal scut divergent; sterno index 0.8 - 0.9.

Note. This is not a Neotropical but a Holarctic group instead; *D. virilis* is the only domestic species in the group and, although rarely, present in the Neotropics.

Drosophila virilis STURTEVANT, 1916

(Figs. 106; 161)

Drosophila virilis STURTEVANT, 1916:330.

Drosophila (Drosophila) virilis STURTEVANT; PATTERSON, 1943:98; HSU, 1949:134 (♂ terminalia); MALOGOLOWKIN, 1953:247 (♂ terminalia).

Material examined. Paratype ♂ (dissected, right wing microslide-mounted), labelled "New York, N.Y. STOCK A.H.Sturtevant / ♂ / Gonotype / *Drosophila virilis* Sturt. Sturt. (sic) / Paratypus / Zool. Mus. Berlin", deposited in ZMB.

Diagnosis. Body color mainly pale brown (as shown in examined paratype, usually dark brown to black); facial carina broad, noselike, distinctly sulcate; scutum with darker, posteriorly broader median longitudinal stripe; wings with slightly clouded crossveins, the posterior one more distinctive.

Redescription. Frontal length 0.35 mm, frontal index 0.84, top to bottom width ratio 1.2; ocellar triangle about 40% frontal length. Frontorbital plates diverging from eye margin, about 2/3 frontal length. Mid orbital very near to and outside of anterior one, distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.92, of mid to anterior orbital 0.58; poc 52%, oc 76% of frontal length; vibrissal index 0.85. Cheek index about 4. Eye index 1.2. First flagellomere short-haired; length to width ratio 1.5. Arista with 3 upper and 2 lower branches, plus terminal fork, inner branches relatively short.

Thorax length about 1.22 mm; h index 1.15; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.67; scut position index somewhat larger than 1.0, basal scut divergent, scut index 0.96; sterno index 0.87; mid katepisternal about 40% of the anterior one.

Wing length 2.64 mm; length to width ratio 2.22. Indices: C, 2.88; ac, 2.13; hb, 0.59; 4c, 0.94; 4v, 1.89; 5x, 1.0; M, 0.56; prox. x, 0.72.

Terminalia ♂ (Figs. 106; 161 F). Epandrium with about 22 lower and no upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus

partially micropubescent, with 6 primary teeth, no secondary teeth and 8-9 marginal bristles. Decasternum as in fig. 106 B. Hypandrium mostly micropubescent, as long as epandrium; bow absent; gonopod bearing one long median bristle. Aedeagus short, slightly invaginated at tip, bearing 2 tiny spines at ventral distal end. Aedeagal apodeme as long as aedeagus, anteriorly rod-shaped. Ventral rod as in fig. 106 F. Paramere bare, linked to gonopod by membranous tissue.

Ungrouped species of the subgenus *Drosophila*

✓ *Drosophila ampliennisi* MALLOCH, 1934

(Figs. 107; 161)

Drosophila ampliennisi MALLOCH, 1934:442.

Drosophila (Drosophila) ampliennisi MALLOCH; BRNCIC, 1957:99 (redescription), 198.

Material examined. Holotype ♂ (dissected), labelled "Holotype / Type / *Drosophila ampliennisi* Type det JRMALLOCH / I. Correntoso 18-25-xi.1926. / Argentina: Terr. Rio Negro F. & M. Edwards. M.M. 1927-63."; 1 paratype ♀, same locality and date as holotype, both deposited in BMNH.

Diagnosis. Head brownish yellow; frontal triangle black; frontorbital plates brown; scutum brownish, with 3 faint brown longitudinal stripes; pleura with a diffusely defined broad brown longitudinal band; wing with a distinct spot along the costa, covering the apical third of the wing and reaching back nearly to r_{4+5} ; abdomen shining blackish, tergites 3 - 6 with yellow anterior bands, laterally narrowing, medially interrupted by a black roundish spot.

Redescription. Frontal length 0.38 (♂) - 0.45 (♀) mm; frontal index 0.77; top to bottom width ratio 1.2 - 1.3. Frontal triangle about half frontal length; ocellar triangle about 30% - 40% frontal length. Frontorbital plates narrow, lower third distinctly diverging from eye margin, about 70% frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one about 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.74; of mid to anterior orbital 0.36; poc 78% - 83%, oc 85% - 87% of frontal length; vibrissal index 0.47 - 0.54. Facial carina narrow, somewhat broadened below, brownish. Cheek index about 7. Eye index about 1.15. First flagellomere yellowish brown, length to width ratio 1.44 - 1.71. Arista with 6-7 upper and 3 lower branches, plus terminal fork, inner branches short.

Thorax yellowish, length about 1.65 (♂) - 1.68 (♀) mm. Scutum brownish in the posterior third, with 3 diffuse brown longitudinal stripes, in the median and dorsocentral lines; h index 0.71 - 0.75; 6 rows of acrostichals. Transverse distance of dorsocentrals nearly twice longitudinal distance, dc index 0.69 - 0.73. Scutellum brownish with yellow side margins, scutellars nearly equidistant, apicals somewhat turned upright, laterals divergent; scut index 1.15 - 1.21; sterno index 0.62 - 0.66; mid katepisternal about 48% - 62% of the anterior one. Halteres and legs yellow.

Wing with narrow shadows on both crossveins and a faint darkening between r_{4+5} and m; length 4.16 (♂) - 4.32 (♀) mm; length to width ratio 2.42 - 2.47. Indices: C, 4.29 - 4.48; ac, 1.75 - 1.91; hb, 0.33; 4c, 0.57; 4v, 1.57 - 1.75; 5x, 1.0 - 1.08; M, 0.35 - 0.39; prox. x, 0.43.

Terminalia ♂ (Figs. 107; 161 G). Epandrium with about 4 lower and no upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 10-11 primary teeth, no secondary teeth and 16-18 marginal bristles that come up to upper surface. Decasternum as in fig. 107 B. Hypandrium as long as epandrium; bow ventrally expanded as a semicircle blade; gonopod fused to paramere, bearing 1 long and 2 shorter anterior bristles. Aedeagus ventrally as well as dorso-distally membranous; tip covered with tiny spines. Aedeagal apodeme longer than aedeagus, rod-shaped, anteriorly expanded laterally. Ventral rod absent.

✓ *Drosophila crassa* PATTERSON & MAINLAND, 1944
(Figs. 108; 161)

Drosophila (Drosophila) crassa PATTERSON & MAINLAND, 1944:52; HSU, 1949:142 (♂ terminalia).

Material examined. Holotype ♂ (dissected), labelled "Barranca de Metlac V. Cruz, Mexico / June 1943 G.B. Mainland / 1383.9 M / HOLOTYPE / *Drosophila crassa* Patterson & Mainland"; deposited in NMNH.

Diagnosis. Body color generally yellow; facial carina narrow; 8 rows of acrostichals; abdomen with diffuse brown areas lateral-marginally on tergite 2, paramedially on tergite 3.

Redescription. Head mainly brownish yellow, frontal length 0.35 mm, frontal index 1.0, top to bottom width ratio 1.24. Frontal triangle indistinct; ocellar triangle about 40% frontal length. Frontorbital plates narrow, diverging from eye margin, about 70% frontal length. Orbitals nearly in a line, distance of posterior orbital to anterior one longer than that to inner vertical; poc 48%, oc 62% of frontal length; vibrissal index 0.27. Facial carina narrow. Cheek index about 9. Eye index 1.44. Palpi apically brown.

Thorax yellow; length about 1.25 mm. Scutum slightly pollinose, laterally somewhat brownish; h index 1.4. Transverse distance of dorsocentrals more than 3x longitudinal distance; dc index 0.55; scutellars nearly equidistant; basal scut slightly convergent, scut index 0.7; sterno index 0.7. Halteres and legs yellow.

Wing veins r_{4+5} and m slightly convergent, crossveins brown, c_1 with darker tip and no lower end bristle; length 2.24 mm; length to width ratio 2.34. Indices: C, 2.35; ac, 2.83; hb, 0.47; 4c, 0.94; 4v, 1.5; 5x, 1.17; M, 0.39; prox. x, 0.67.

Terminalia ♂ (Figs. 108; 161 H). Epandrium with about 16 lower and 14 upper bristles. Cerci anteriorly mostly fused to epandrium. Surstylus mostly micropubescent, with about 5-6 primary teeth, no secondary teeth and 19-20 marginal bristles that come up to upper surface. Decasternum as in fig. 108 B. Hypandrium shorter than epandrium; bow absent; gonopod bearing 1 long anterior bristle. Aedeagus bent, with a rounded (in profile) and expanded downwards tip, bearing 1 ventral, submedian, pointed, directed frontwards, curved spur; dorso-distal region covered with tiny spines. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 108 F. Paramere somewhat square-shaped, without sensillum, linked to gonopod by membranous tissue.

J. Drosophila gigas DUDA, 1925

(Figs. 109; 161, 168)

Drosophila gigas DUDA, 1925:216.

Drosophila (Drosophila) gigas DUDA, 1925, PATTERSON & MAINLAND, 1944:53 (redescription, misidentification?); HSU, 1949:140 (♂ terminalia); WHEELER, 1963:53 (lectotype designation, complementary description); CORDEIRO, 1964:3.

Material examined. Lectotype ♂ (dissected), labelled "Costa Rica Suiza de Turrialba / 1921.IV.28 / *D. gigantea* (sic) n. sp. ♂ DET. DR. O. DUDA / typus / *Drosophila gigas* n. sp. ♂ type det. Duda / LECTOTYPE *gigas* Duda selected by MR Wheeler JUNE 1962"; 4 paralectotypes (1 ♂, 3 ♀; 1 ♂, 1 ♀ dissected), same locality as lectotype and different dates of collection; all deposited in HNHM.

Diagnosis. Relatively large flies with yellow to brownish body color; facial carina relatively narrow, slightly sulcate; 10 rows of acrostichals; wings distinctly brownish, lighter along posterior margin. both crossveins narrowly clouded, veins r_{4+5} and m strongly converging; abdomen dull yellow, with relatively small marginal bands which are medially and laterally narrowed.

Redescription. Head mainly yellow. Frons brown, antero-laterally yellow, frontal length 0.57 - 0.64 mm, frontal index 0.9 - 1.0, top to bottom width ratio 1.2 - 1.3. Frontal triangle indistinct; ocellar triangle black, about 1/3 frontal length. Frontal vittae brown. Frontorbital plates narrow, somewhat diverging from eye margin, about 2/3 frontal length. Mid orbital very near to and slightly outside of anterior one, distance of posterior orbital to anterior one about 4/5 of that to inner vertical. Length ratio of anterior to posterior orbital 0.78 - 0.87, of mid to anterior orbital 0.62 - 0.7; poc 49% - 61%, oc 81% - 86% of frontal length; vibrissal index 0.52 - 0.85. Gena yellow, index about 7 - 10. Eye index 1.19 - 1.24. Pedicel and first flagellomere brownish; length to width ratio 1.4 - 1.67. Arista with 6 - 7 upper and 4 lower long branches, plus long terminal fork and inner branches. Proboscis and palpi yellow.

Thorax brownish; length about 2.27 - 2.48 mm. Scutum dull, darker brown posteriorly, with 3 - 4 faint brown longitudinal stripes. Transverse distance of dorsocentrals about 2.5x longitudinal distance; dc index 0.61 - 0.73. Scutellum brown, scut position index about 0.7, basal scut slightly divergent, scut index 0.91 - 0.96. Pleura brownish; sterno index 0.73 - 0.76; mid katepisternal about 45% - 66% of the anterior one. Halteres and legs yellow.

Wing length 3.96 (♂) - 4.29 (♀) mm; length to width ratio 2.17 - 2.23. Indices: C, 3.77 - 4.1; ac, 3.33 - 4.2; hb, 0.59 - 0.67; 4c, 0.46 - 0.59; 4v, 1.24 - 1.43; 5x, 0.92 - 1.2; M, 0.31 - 0.35; prox. x, 0.54 - 0.62.

Terminalia ♂ (Figs. 109 A-H; 161 I). Epandrium with about 36 lower and 4 upper bristles. Cerci anteriorly fused to epandrium at lower third. Surstylus slightly micropubescent, with 9 primary teeth, no secondary teeth and 16-17 marginal bristles that come up to upper surface. Decasternum as in fig. 109 B. Hypandrium longer than epandrium; bow absent; gonopod bearing 1 long anterior bristle. Aedeagus straight; posterior lateral surface covered with serrated wrinkles; distal end bearing 2 apical and 2 subapical spines. Aedeagal apodeme longer than aedeagus, laterally flattened, bent. Ventral rod absent. Paramere waved, without sensillum, linked to gonopod by membranous tissue.

Terminalia ♀ (Figs. 109 I; 168 A). Ovipositor plate apically slightly pointed, with 27-28 marginal and 6 discal teeth. Spermatheca hard hat-shaped, sclerotized; duct deeply invaginated.

✓ *Drosophila impudica* DUDA, 1927

(Figs. 86-88; 161; 168)

Drosophila impudica DUDA, 1927:196.

Drosophila (Drosophila) para PAVAN & BURLA, in PAVAN, 1950:22; VAL, 1982:346 (lectotype designation, ♂ terminalia). NEW SYNONYM.

Material examined. LECTOTYPE ♂ (by present designation, dissected) of *Drosophila impudica*, labelled "Peru - Urubambafl. 18.9.03 Umahuankilia / impudica M / COTYPUS impudica Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila impudica* D. Syntype ♂ G. Bächli det. 1988 / LECTOTYPE ♂ *Drosophila impudica* Duda by Vilela & Bächli 1990"; 10 paralectotypes (5 ♂, 5 ♀; 1 ♀ dissected) all except 1 ♂ (from Peru - Pichis, Pto. Bermudes on XII.03) collected in September 1903 at the same locality as lectotype; except 1 ♂ paralectotype (in BMNH), all deposited in SMTD. Lectotype ♂ (dissected) of the junior synonym *Drosophila para*, labelled "D. para Pavan e Burla Belem 1948 / TIPO / LECTOTIPO" plus 4 paralectotypes (3 ♂, 1 ♀, all dissected; one ♂ previously dissected by Val), with same data as lectotype, all deposited in MZUSP.

Diagnosis. Body color generally yellow; all bristles relatively short; facial carina relatively narrow, slightly sulcate, noselike; abdomen brownish yellow, hind margins somewhat darker.

Redescription. Head yellow. Frontal length 0.35 (♂) - 0.44 (♀) mm, frontal index 0.93 - 1.05, top to bottom width ratio 1.13 - 1.23. Frontal triangle whitish pollinose, about 60% frontal length; ocellar triangle slightly darker, about 40% frontal length. Frontorbital plates whitish pollinose, apically diverging from eye margin, about 2/3 frontal length. Mid orbital slightly nearer to anterior one, in a line, distance of posterior orbital to anterior one about 130% of that to inner vertical. Length ratio of anterior to posterior orbital 1.0 - 1.33, of mid to anterior orbital 0.45 - 0.62; poc 48% - 56%, oc 60% - 73% of frontal length; vt index 0.93 - 1.21; vibrissal index 0.27 - 0.38. Cheek index about 5 - 8. Eye index 1.12 - 1.2. First flagellomere short-haired; length to width ratio 1.5 - 1.86. Arista with 3 - 4 upper and 2 lower relatively long branches, plus terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax yellow; length about 1.02 - 1.42 mm; h index 1.0 - 1.27; 8 rows of acrostichals. Transverse distance of dorsocentrals 2.5x longitudinal distance; dc index 0.52 - 0.63; scut position index distinctly smaller than 1.0; scut index 0.53 - 0.93; sterno index 0.48 - 0.76; mid katepisternal about 26% - 35% of the anterior one. Halteres and legs yellow.

Wing clear; length 2.0 - 2.51 mm; length to width ratio 2.17 - 2.35. Indices: C, 2.21 - 2.56; ac, 2.43 - 3.0; hb, 0.53 - 0.61; 4c, 1.0 - 1.19; 4v, 1.63 - 2.0; 5x, 1.0 - 1.33; M, 0.42 - 0.57; prox. x, 0.75 - 1.0.

Terminalia ♂ (Figs. 86 A-G; 87; 88 A-K; 161 J). Values in parentheses refer to holotype of junior synonym *D. para*. Epandrium with about 19 (18) lower and no upper bristles; ventral margin spur-shaped, pointed upwards. Cerci anteriorly fused to epandrium at lower half. Surstylus partially micropubescent, with 6 (8) primary teeth, no secondary teeth and 10 (9-10) marginal bristles that come up to upper surface. Hypandrium longer than epandrium; bow absent; gonopod fused to paramere, bearing one anterior bristle. Aedeagus bent, distally expanded downwards, bearing 4 (3) subapical spines laterally and 1 long, directed frontwards, single spur, which is preceded by a serrated, single, ventral plate. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 88 I.

Terminalia ♀ (Figs. 86 H; 88 K; 168 B). See note under *Terminalia* ♂. Ovipositor plate spatulate, with about 23-26 (24) marginal and 14 (18) discal teeth. Spermatheca mushroom-shaped, sclerotized; duct slightly invaginated.

Note. The redescription of the external morphology is based only on the type-series of *D. impudica*. One ♂ paralectotype of the type-series (VAL, 1982:314) of the junior synonym *D. para* does not belong to the species *D. impudica* but belongs to an undetermined species of *Drosophila* instead. There are two descriptions (one in English and one in Portuguese) of *D. para*, in the Portuguese description it is stated that only 3 specimens were collected and in the English description they are cited as 31. The former number is likely to be a misprint but whether or not all the 31 specimens were used in the description is not clear and in the collection of MZUSP only 8 specimens (4 ♂, 4 ♀) are labelled as types of *D. para*. PAVAN & BURLA in PAVAN (1950) described *D. para* as very closely related to *D. peruviana*. However, the comparison of female terminalia of both species does not reveal such a relationship, and we believe that they are probably unrelated species.

• *Drosophila latebuccata* DUDA, 1927

(Figs. 135 B; 168)

Drosophila latebuccata DUDA, 1927:203.

Material examined. LECTOTYPE ♀ (by present designation, dissected), labelled "Peru 15.II.06 Urubamba 3000 mtr. (sic) / latebuccata ♀ / Hinterl. gez. / Cotypus latebuccata Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila latebuccata* Syntype ♀ G.Bächli det. 1988 / LECTOTYPE ♀ *Drosophila latebuccata* Duda by Vilela & Bächli 1990"; 1 paralectotype ♀, same data as lectotype except date of collection (18.II.06), both deposited in SMTD.

Diagnosis. Body color generally yellow; frontorbital plates prominent around orbitals; facial carina narrow, not noselike, flat, sulcate; abdomen yellow, subshiny, posterior margins of tergites 2 - 6 diffusely brownish.

Redescription. Head yellow. Frontal length 0.37 mm, frontal index 0.88, top to bottom width ratio 1.36. Frontal triangle very narrowly continued to anterior margin; ocellar triangle about 45% frontal length. Frontorbital plates apically diverging from eye margin, about 80% frontal length. Mid orbital near to and slightly outside of anterior one, distance of posterior orbital to anterior one nearly equal to that to inner vertical. Length ratio of anterior to posterior orbital 0.68, of mid to anterior orbital 0.67; poc 59%, oc 82% of frontal length; vibrissal index 0.53. Face shiny. Cheek index about 3. Eye index 1.03. First flagellomere short-haired; length to width ratio 1.33. Arista with 3 upper and 2 lower branches, plus small terminal fork, inner branches relatively short. Proboscis and palpi yellow.

Thorax subshiny yellow; length about 1.68 mm; 6 rows of acrostichals; dc index 0.63, an additional somewhat prolonged bristle in front of anterior dc; scut position index much smaller than 1.0, basal scut divergent, scut index 1.07; sterno index 0.77; mid katapisternal about 42% of the anterior one. Halteres and legs yellow.

Wing clear, long and narrow; length 3.73 mm; length to width ratio 2.57. Indices: C, 5.06; ac, 1.6; hb, 0.25; 4c, 0.44; 4v, 1.31; 5x, 1.0; M, 0.31; prox. x, 0.47.

Terminalia ♀ (Figs. 135 B; 168 C). Ovipositor plate apically rounded, with 18-21 marginal and 3 discal teeth; ventral margin somewhat waved medially.

Spermatheca proximally spherical, distally flattened, sclerotized; duct not invaginated.

✓ *Drosophila latecarinata* DUDA, 1927

(Fig. 135 A)

Drosophila latecarinata DUDA, 1927:170.

Material examined. Holotype ♀ (dissected, head glued on a card), labelled "Bolivia 13.III.07 Yungas von Coroico 1000m / *Drosophila latecarinata* n. sp. ♀ d. Duda / Typus latecarinata Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila latecarinata* D. Syntype ♀ G.Bächli det. 1988", deposited in SMTD.

Diagnosis. Frons dull brown, posteriorly lighter, medially and laterally greyish; facial carina very broad, triangular, flat, not noselike; thorax dorsally greyish, laterally brown; scutum greyish pollinose, with 5 short brown longitudinal stripes, a median one in posterior half, 2 inside dc lines in anterior half, 2 outside dc lines beside the anterior dc, and 2 transverse stripes in front of suture; scutellum black, apically round and broadly yellowish; wings narrow; abdomen mainly shiny dark brown, with a diffuse yellowish median longitudinal stripe, tergites with relatively narrow yellowish marginal bands which are silvery when seen from front.

Redescription. Head mainly yellow. Frontal length 0.35 mm, frontal index 0.81, top to bottom width ratio 1.23. Frontal triangle greyish pollinose, about 2/3 frontal length; ocellar triangle black, about 40% frontal length. Frontorbital plates narrow, greyish pollinose, apically diverging from eye margin, about 55% frontal length. Orbital close to anterior one and nearly in a line, distance of posterior orbital to anterior one nearly equal to that to inner vertical; poc 57%, oc 62% of frontal length; vibrissal index 0.92. Face brownish, pollinose. gena brown below eye, cheek index about 5. Eye index 1.14. Proboscis and palpi yellow.

Thorax length about 1.23 mm; 6 rows of acrostichals. Transverse distance of dorsocentrals about 1.5x longitudinal distance; dc index 0.61; scut position index distinctly smaller than 1.0, basal scut slightly convergent, scut index 0.73. Pleura dark brown; sterno index 0.77; mid katapisternal absent. Halteres and legs yellow, femora, especially fore femora, darker.

Wing clear; length 2.43 mm; length to width ratio 2.45. Indices: C, 2.5; ac, 2.25; hb, 0.67; 4c, 0.95; 4v, 1.74; 5x, 1.13; M, 0.47; prox. x, 0.84.

Terminalia ♀ (Fig. 135 A). Ovipositor plate apically pointed, with 19-21 marginal and 6 discal teeth, some of them bristles-shaped, most dorso-distal one being very long. Spermatheca tiny, mushroom-shaped, weakly sclerotized; duct not invaginated.

✓ *Drosophila macropolia* PATTERSON & MAINLAND, 1944

(Figs. 136 G; 168)

Drosophila (Drosophila) macropolia PATTERSON & MAINLAND, 1944:54.

Material examined. Holotype ♀ (dissected), labelled "D.F. Mexico / G.B. Mainland aug. 1943 / HOLOTYPE / macropolia / 1404.11 W / *Drosophila macropolia* Patterson & Mainland", deposited in NMNH.

Diagnosis. Body color yellowish to brown; frons laterally and posteriorly blackish; gena broad; scutum pollinose, with 3 greyish longitudinal stripes, one

middle and 2 outside the dc lines; wings slightly brownish, both crossveins broadly clouded; abdomen yellow, with broad marginal bands which are medially interrupted, paramedially enlarged and laterally reaching to anterior margin.

Redescription. Head mainly yellow, frontal length 0.35 mm, frontal index 0.88, top to bottom width ratio 1.21. Frontal triangle blackish brown, about 1/2 frontal length; ocellar triangle about 40% frontal length. Frontal vittae reddish brown, lighter anteriorly. Frontorbital plates blackish brown, distinctly diverging from eye margin, about 2/3 frontal length. Orbitals equidistant, in a line, posterior one directed outwards, distance of posterior to anterior one 3/4 of that to inner vertical. Length ratio of anterior to posterior orbital 0.75, of mid to anterior orbital 0.33; poc 71%, oc 86% of frontal length; vt index 1.11; vibrissal index. Facial carina noselike, sharp, relatively narrow. Gena whitish yellow, cheek index about 5. Eye index 1.25. First flagellomere black; length to width ratio 1.67. Arista with 4 upper and 2 lower branches, plus terminal fork. Inner branches short. Palpi apically brown.

Thorax mainly brown; length about 1.35 mm; h index 1.12; 6 rows of acrostichals. Transverse distance of dorsocentrals about 170% of longitudinal distance; dc index 0.7. Scutellum laterally lighter, scut position index distinctly smaller than 1.0, basal scut divergent, scut index 1.13. Pleura centrally darker brown; sterno index 0.64; mid katepisternal about 75% of the anterior one. Halteres yellow. Legs brownish yellow.

Wing with tips of veins r_{2+3} and r_{4+5} slightly shadowed; length 3.23 mm; length to width ratio 2.8. Indices: C, 4.31; ac, 2.0; hb, 0.25; 4c, 0.59; 4v, 1.63; 5x, 1.63; M, 0.48; prox. x, 0.48.

Terminalia ♀ (Figs. 136 G; 168 D). Ovipositor plate apically rounded, with 17-18 marginal and 5 discal teeth. Spermatheca oval, sclerotized; duct invaginated.

✓ *Drosophila neochracea* WHEELER, 1959
(Figs. 110; 161)

Drosophila ochracea DUDA, 1927:195 (preocc.).

Drosophila (Drosophila) neochracea WHEELER, 1959:183 (proposed new name for *Drosophila ochracea* DUDA, 1927, not *Drosophila ochracea* GRIMSHAW, 1901).

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Bolivia - Mapiri II. 03 Sarampioni 700m / D. ochracea ♂ d. Duda / 1. Flügel phot. / Cotypus ochracea Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila ochracea* D. Syntype ♂ G. Bächli det. 1988 / *Drosophila neochracea* W. G. Bächli det 1988 / LECTOTYPE ♂ *Drosophila neochracea* Wheeler by Vilela & Bächli 1990"; 3 paralectotypes (1 ♂, 1 ♀ plus 1 ?; abdomen missing), all from the same locality as lectotype, with different dates of collection, all deposited in SMTD.

Diagnosis. Relatively small flies; body color generally ochrous yellow; facial carina narrow, noselike; wings relatively short; abdomen with indistinct marginal bands which are medially and laterally narrowed.

Redescription. Head whitish yellow. Frontal length 0.25 - 0.32 mm, frontal index 0.94 - 1.06, relatively broad, top to bottom width ratio 1.26 - 1.31. Frontal triangle indistinct; ocellar triangle slightly darker, about 40% frontal length. Frontorbital plates narrow, apically somewhat diverging from eye margin, about 3/4 frontal length. Mid orbital nearer to anterior one, in a line, distance of posterior orbital to anterior one nearly equal to that to inner vertical. Length

ratio of anterior to posterior orbital 1.11 - 1.38, of mid to anterior orbital 0.45 - 0.6; poc 37% - 53%, oc 58% - 80% of frontal length; vibrissal index 0.25 - 0.29. Check index about 5 - 6. Eye index 1.13 - 1.19. First flagellomere short-haired; length to width ratio 1.2 - 1.33. Arista with 3 upper and 2 longer relatively short branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax length about 0.82 (♂) - 1.02 (♀) mm. Scutum whitish pollinose; h index 0.75 - 0.89; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.63. Scutellum longer than broad; scut position index distinctly smaller than 1.0, basal scut convergent, scut index 0.83 - 1.07; sterno index 0.67 - 0.81; mid katepisternal about 33% - 38% of the anterior one. Halteres and legs yellow.

Wing clear; length 1.55 (♂) - 2.01 (♀) mm; length to width ratio 1.96 - 2.1. Indices: C, 1.67 - 1.87; ac, 3.0 - 3.6; hb, 0.39 - 0.6; 4c, 1.15 - 1.36; 4v, 1.85 - 2.07; 5x, 1.4 - 1.67; M, 0.62 - 0.71; prox. x, 0.62 - 0.79.

Terminalia ♂ (Figs. 110; 161 K). Epandrium with about 7 lower and no upper bristle. Cerci anteriorly fused to epandrium at lower half. Surstylus mostly fused to epandrium, not micropubescent, with 4 long primary teeth, no secondary teeth and 13-14 marginal bristles. Decasternum as in fig. 110 B. Hypandrium slightly square-shaped, as long as epandrium; bow absent; gonopod apparently fused to hypandrium, bearing 1 median bristle. Aedeagus bent, subapically bearing a pair of long, proximally bifid, directed frontwards and distally pointed upwards, ventral spurs. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 110 F. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

Note. According to the structure of the ♂ terminalia this species is related to *Drosophila caponei* PAVAN & CUNHA (1947) and *D. atalaia* VILELA & SENE (1982). On the other hand, the square-shaped hypandrium and the long, sharply pointed primary teeth are similar to those found in the species of the subgenus *Hirtodrosophila*.

***Drosophila nigrifemur* DUDA, 1927**
(Figs. 136 C; 152; 168)

Drosophila nigrifemur DUDA, 1927:192.

Material examined. Holotype ♀ (dissected, right wing microslide-mounted), labelled "Bolivia - Mapiri IV.03 S. Carlos 800m / *D. nigrifemur* ♀ n. sp. DET. DR. O. DUDA / Typus nigrifemur Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila nigrifemur* D. Holotype ♀ G.Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly brown; frons dull brownish yellow, medially and laterally lighter, subshiny; facial carina broad, noselike; wings narrow, tip of c₁ brown, with 1 strong bristle on basicosta; abdomen yellowish, pollinose at base, tergites 3 and 4 with broad brown marginal bands which are medially interrupted, paramedially and laterally extended.

Redescription. Head brown. Frontal length 0.36 mm, frontal index 0.86, top to bottom width ratio 1.29. Frontal triangle subshiny, narrowly prolonged near to anterior margin; ocellar triangle darker, about 35% frontal length. Frontorbital plates apically broadened, prominent around orbitals, distinctly diverging from eye margin, about 2/3 frontal length. Mid orbital near to and outside of anterior one, distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of anterior to posterior orbital 0.53, of mid to anterior

orbital 0.6; poc 72%, oc 89% of frontal length; vibrissal index 0.85; vt index 1.11. Face shiny yellow. Cheek index about 4. Eye index 1.12. First flagellomere conical; length to width ratio 1.8. Arista with 4 upper and 2 lower long branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax brown; length about 1.09 mm. Scutum medially pollinose, laterally shiny, anteriorly yellowish, posteriorly darker; 6 rows of acrostichals. Transverse distance of dorsocentrals 2x longitudinal distance; dc index 0.75. Scutellum shiny brown, apically rounded; scutellars nearly equidistant, basal scut divergent, scut index 0.75. Pleura shiny brown; sterno index 0.55; mid katapisternal about 75% of the anterior one. Halteres and legs brownish, femora, tips of tibiae and tarsi yellow, fore femora with 4 - 5 strong posterior bristles.

Wing (Fig. 152), length 2.51 mm; length to width ratio 2.45. Indices: C, 3.85; ac, 2.17; hb, 0.46; 4c, 0.68; 4v, 1.68; 5x, 1.14; M, 0.42; prox. x, 0.68.

Terminalia ♀ (Figs. 136 C; 168 E). Ovipositor plate apically pointed, with about 15 marginal and 6 discal teeth; dorsal margin with a submedian, heavily sclerotized, triangle-shaped process. Spermatheca light bulb-shaped, sclerotized; duct deeply invaginated.

✓ *Drosophila obscuricolor* DUDA, 1927

(Figs. 134 B, C; 168)

Drosophila obscuricolor DUDA, 1927:190.

Material examined. LECTOTYPE ♀ (by present designation, dissected, left wing missing), labelled "Bolivia - Mapiří 24.II.03 Sarampioni 700m / obscuricolor ♀ d. Duda / Cotypus obscuricolor Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila obscuricolor* D. Syntype ♀ G. Bächli det. 1988 / LECTOTYPE ♀ *Drosophila obscuricolor* Duda by Vilela & Bächli 1990"; 5 paralectotypes ♀ (1 dissected), same locality as lectotype, 1 collected on the same date as lectotype, 1 on "22.II.03", 1 on "7.III.03", 1 in "II.03", 1 in "III.03" (this latter belongs to an undetermined species, see remarks); 1 additional ♀ paralectotype from "Peru - Urubambafi. 12.9.03 Umahuankilia", all deposited in SMTD.

Diagnosis. Body color mainly yellow; frons dull yellow, medially and laterally subshiny brownish; facial carina short, noselike, relatively narrow; abdomen subshiny brown, with narrow yellow whitish pollinose anterior bands which are medially and laterally interrupted.

Redescription. Head yellow. Frontal length 0.25 - 0.29 mm, frontal index 0.83 - 0.89, top to bottom width ratio 1.11. Frontal triangle brownish, about 3/4 frontal length; ocellar triangle blackish, about 40% frontal length. Frontorbital plates narrow, brownish, diverging from eye margin, about 80% frontal length. Mid orbital very near to and outside of anterior one, distance of posterior orbital to anterior one about 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.91 - 1.0, of mid to anterior orbital 0.56 - 0.6; poc 60%, oc 73 - 76% of frontal length; vibrissal index 0.88 - 0.9. Face yellow, shiny. Cheek index about 11 - 13. Eye index 1.18 - 1.21. First flagellomere with slightly prolonged marginal hairs; length to width ratio 1.2 - 1.33. Arista with 4 - 5 upper and 2 lower long branches, plus terminal fork, inner branches long. Proboscis and palpi yellowish.

Thorax brownish; length about 0.76 - 0.92 mm. Scutum subshiny, anteriorly yellowish brown, posteriorly brown; h index 0.69 - 0.73; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.55 - 0.69. Scutellum brown, shiny, laterally yellow, apically rounded; scut

position index more than 1.0, basal scut convergent, scut index 0.84. Pleura shiny darker brown; sterno index 0.47 - 0.53; mid katapisternal about 60% of the anterior one. Halteres yellow. Legs brownish, knees and tarsi lighter.

Wing clear; length 1.55 - 1.78 mm; length to width ratio 2.0 - 2.04. Indices: C, 1.86 - 2.0; ac, 2.33 - 3.0; hb, 0.5 - 0.6; 4c, 1.25 - 1.27; 4v, 2.09 - 2.17; 5x, 1.6 - 1.75; M, 0.64 - 0.67; prox. x, 0.67 - 0.73.

Terminalia ♀ (Figs. 134 C; 168 F, K). Ovipositor plate apically pointed, with 12-13 marginal and 1 (?) discal teeth. Spermatheca ball-shaped, sclerotized, bearing an unusual, distal, narrow, tube-shaped and deeply invaginated indentation; duct not invaginated.

Note. The indented spermathecae are apparently similar to those found in some species of the *saltans* subgroup, as depicted by THROCKMORTON (1962:-258). One of the paralectotypes, collected in III.03 at the same locality as lectotype, bearing the label "Hinterl. gezeich.", although used by Duda to figure the abdomen in the original description of *D. obscuricolor*, belongs to a quite distinct and undetermined species instead (fig. 134 B) and therefore was not used in the redescription.

✓ *Drosophila pallidipennis* DOBZHANSKY & PAVAN, 1943
(Figs. 111; 161)

Drosophila (Drosophila) pallidipennis DOBZHANSKY & PAVAN, 1943:32; PATTERSON & DOBZHANSKY, 1945:429; HSU, 1949:141 (♂ terminalia); MALOGOLOWKIN, 1953:260 (♂ terminalia).

Drosophila (Drosophila) pallidipennis centralis PATTERSON & MAINLAND, 1944:57.

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Iporanga São Paulo VII-1943 / LECTOTIPO / ♂ *Drosophila pallidipennis* D. & P. Vilela & Bächli det. 1990", deposited in MZUSP.

Diagnosis. Body color mainly yellow; frons golden yellow, with about 30 densely placed interfrontals; facial carina broad, noselike, flat; palpi apically blackish; prescutellars slightly enlarged; abdomen subshiny yellow.

Redescription. Head yellow. Frontal length 0.47 mm, frontal index 0.9, top to bottom width ratio 1.19. Frontal triangle indistinct; ocellar triangle about 40% frontal length. Frontorbital plates very narrow, distinctly diverging from eye margin, about 60% frontal length. Mid orbital slightly nearer to and outside of anterior one, distance of posterior orbital to anterior one 70% of that to inner vertical. Length ratio of anterior to posterior orbital 0.85, of mid to anterior orbital 0.53; poc 64%, oc 82% of frontal length; vibrissal index 0.8. Cheek index about 6. Eye index 1.28. First flagellomere short-haired; length to width ratio 1.71. Arista with 4 upper and 2 lower branches, plus terminal fork, inner branches relatively long. Proboscis yellow.

Thorax yellow; length about 1.72 mm. Scutum pollinose; 6 rows of acrostichals. Transverse distance of dorsocentrals 2x longitudinal distance; dc index 0.71. Scutellum apically rounded; scutellars nearly equidistant, laterals strongly divergent; scut index 1.0; prescut index 0.64; sterno index 0.71; mid katapisternal about 67% of the anterior one. Halteres brownish. Legs yellow.

Wing clear, crossveins slightly darkened; length 3.07 mm; length to width ratio 2.27. Indices: C, 4.06; ac, 1.6; hb, 0.31; 4c, 0.53; 4v, 1.17; 5x, 1.0; M, 0.33; prox. x, 0.47.

Terminalia ♂ (Figs. 111; 161 L). Epandrium somewhat membranous at lower region, without bristles. Cerci not fused to epandrium. Surstylus heavily

sclerotized, not micropubescent, with 7 primary teeth, no secondary teeth and 16-17 marginal bristles that come up to upper surface. Decasternum as in fig. 111 B. Hypandrium shorter than epandrium; bow sclerotized; gonopod fused to paramere, bearing 1 long and 2 shorter bristles. Aedeagus bent, humpbacked, bearing 2 lateral, subapical, pointed downwards, small spurs; ventral surface distally both membranous and covered with tiny spines; dorsal region subapically membranous. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod as in fig. 111 F.

Note. There is some doubt about the status of the analyzed specimen cited above (VAL., 1982:315); however the date and place of collection are exactly the same as those cited in the original description so that it is very likely that this specimen originally belonged to the type series of *D. pallidipennis* and we decided to designate it as lectotype.

✓ *Drosophila pictifrons* DUDA, 1927
(Figs. 135 C; 168)

Drosophila pictifrons DUDA, 1927:182.

Material examined. Holotype ♀ (dissected), labelled "Bolivia 9.X.06 Yungasweg 3500m. / pictifrons n. sp ♀ DET. DR. O. DUDA / Hinterl. gez. / Typus pictifrons Duda / *Drosophila pictifrons* D. Holotype ♀ G. Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly yellow; frons dull yellowish brown, medially and laterally lighter subshiny yellow; facial carina short, noselike; abdomen subshiny brownish, with narrow, darker brown marginal bands.

Redescription. Head yellow. Frontal length 0.3 mm, frontal index 0.9, top to bottom width ratio 1.2. Frontal triangle subshiny yellow, about 2/3 frontal length; ocellar triangle black, about 45% frontal length. Frontorbital plates narrow, subshiny yellow, distinctly diverging from eye margin, about 60% frontal length. Mid orbital very near to and outside of anterior one, distance of posterior orbital to anterior one about 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.63, of mid to anterior orbital 0.4; poc 56%, oc 83% of frontal length; vibrissal index 0.57. Gena whitish yellow, cheek index about 6. Eye index 1.1. First flagellomere short-haired; length to width ratio 1.6. Arista with 3 upper and 2 lower short branches, plus small terminal fork, inner branches short. Proboscis and palpi whitish yellow.

Thorax yellow; length about 1.12 mm. Scutum slightly pollinose; h index 1.27; 6 rows of acrostichals. Transverse distance of dorsocentrals about 160% of longitudinal distance; dc index 0.58. Scutellum medially brownish; scut position index slightly smaller than 1.0, basal scut divergent, scut index 1.21; sterno index 0.59; mid katepisternal about 46% of the anterior one. Halteres whitish yellow. Legs yellow.

Wing narrow, clear; length 2.74 mm; length to width ratio 2.52. Indices: C, 3.24; ac, 2.43; hb, 0.29; 4c, 0.71; 4v, 1.5; 5x, 1.29; M, 0.38; prox. x, 0.5.

Terminalia ♀ (Figs. 135 C; 168 H). Ovipositor plate apically blunt, with 9-10 marginal and 4 discal teeth (median ones bristle-shaped). Spermatheca oval, distally capped, sclerotized; duct not invaginated.

***Drosophila pollinospadix* PATTERSON & MAINLAND, 1944**
(Figs. 136 E; 168)

Drosophila (Drosophila) pollinospadix PATTERSON & MAINLAND, 1944:55.

Material examined. Holotype ♀ (dissected), labelled "Pachua (sic) Hidalgo / Mexico / Aug. 1943 G B Mainland / HOLOTYPE / 1408.9 ♀ / *Drosophila pollinospadix* Patterson & Mainland", deposited in NMNH.

Diagnosis. Body color mainly brown; facial carina very broad, deeply sulcate; arista with 4 upper and 2 lower short branches, plus terminal fork, inner branches short; scutum dull brownish, with a blackish broad median longitudinal stripe, broadening posteriorly, and a shorter one inside postpronota; abdomen brownish, with following yellowish areas: longitudinal stripes medially and laterally on tergite 2, medially on tergite 3; small roundish areas paramedian-anteriorly and median-posteriorly on tergite 4, medially on tergite 5 and 6.

Redescription. Frons broad, brown pollinose, anteriorly with paramedian and lateral yellowish areas, frontal length 0.4 mm, frontal index 0.67, top to bottom width ratio 1.14. Frontal triangle narrow, about 90% frontal length; ocellar triangle about 1/2 frontal length. Frontorbital plates narrow, diverging from eye margin, about 2/3 frontal length. Mid orbital nearer to and somewhat outside of anterior one, distance of posterior orbital to anterior one 60% of that to inner vertical. Length ratio of anterior to posterior orbital 0.7, of mid to anterior orbital 0.57; poc 71%, oc 83% of frontal length; vibrissal index 0.61. Gena yellow, brownish below eye, broad, cheek index about 4. Eye index 1.23. First flagellomere black; length to width ratio 1.38. Palpi apically dark.

Thorax length about 1.68 mm; h index 1.2; 8 rows of acrostichals. Transverse distance of dorsocentrals 220% of longitudinal distance; about 4 additional prolonged dc bristles in front of the anterior one; dc index 0.71. Scutellum laterally paler, scut position index about 0.67. Pleura brown pollinose; sterno index 0.74; mid katapisternal about 39% of the anterior one. Halteres whitish. Legs brownish, fore femora darker.

Wing length 3.53 mm; length to width ratio 2.28; c_1 with 2 apical bristles. Indices: C, 3.45; ac, 2.0; hb, 0.45; 4c, 0.67; 4v, 1.3; 5x, 0.82; M, 0.3; prox. x, 0.67.

Terminalia ♀ (Figs. 136 E; 168 I). Ovipositor plate apically rounded, with 22 marginal and 4 discal teeth. Spermatheca tiny, oval, weakly sclerotized; duct not invaginated.

✓ ***Drosophila ponderosa* PATTERSON, 1943**
(Figs. 112; 161)

Drosophila (Drosophila) ponderosa PATTERSON, 1943:198.

Material examined. Holotype ♂ (dissected), labelled "Desierto de los Leones D.F., Mexico / G B Mainland July 1942 / HOLOTYPE / 134.2.6 / *ponderosa* / *Drosophila ponderosa* Patterson & Mainland", deposited in NMNH.

Diagnosis. Relatively large flies with generally dark brown body color; scutum pollinose, with small whitish spots forming narrow, interrupted stripes medially, in the dc lines and laterally; wings brownish, lighter along posterior margin, posterior crossvein with broad cloud; abdomen dark brown, tergites 3-5 with narrow paramedian yellowish basal bands, tergite 6 apically narrow yellow.

Redescription. Head with relatively strong bristles. Frons laterally and posteriorly dark brown, anterior margin yellow, frontal length 0.55 mm, frontal index 0.92, top to bottom width ratio 1.25. Frontal triangle roundish, apically pointed, about 1/2 frontal length; ocellar triangle black, about 35% frontal length. Frontal vittae reddish brown, posteriorly darker, with relatively long interfrontal bristles. Frontorbital plates dark brown, narrow, distinctly diverging from eye margin, about 2/3 frontal length. Mid orbital nearer to and slightly outside of anterior one, distance of posterior orbital to anterior one 3/4 of that to inner vertical. Length ratio of anterior to posterior orbital 0.79, of mid to anterior orbital 0.58; poc 64%, oc 91% of frontal length; vt index 1.15; vibrissal index 0.61. Face brownish. Facial carina broad, flat, slightly sulcate. Gena broad, yellow, anteriorly brown, cheek index about 4. Pedicel and first flagellomere dark brown; length to width ratio 1.3. Arista with 4 upper and 2 lower branches, plus small terminal fork and relatively long inner branches. Proboscis and palpi yellow.

Thorax length about 2.0 mm; h index 1.47; 8 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.72. Scutellum basally and laterally with small whitish areas, scut position index about 0.75, basal scut divergent, scut index 1.02; mid katepisternal about 33% of the anterior one. Halteres yellow. Legs dark brown, knees and tarsi yellow.

Wing length 4.62 mm; length to width ratio 2.33. Indices: C, 3.68; ac, 2.08; hb, 0.36; 4c, 0.74; 4v, 1.76; 5x, 1.0; M, 0.44; prox. x, 0.5.

Terminalia ♂ (Figs. 112; 161 M). Epandrium with about 12 lower and 7 upper bristles. Cerci anteriorly mostly fused to epandrium. Surstylus not micropubescent, with 13-14 primary teeth, no secondary teeth and 14 marginal bristles that come up to upper surface. Decasternum as in fig. 112 B. Hypandrium as long as epandrium; bow absent; gonopod bare. Aedeagus apically pointed and bifid, dorsally partially membranous, medially expanded downwards. Aedeagal apodeme shorter than aedeagus, rod-shaped. Ventral rod as in fig. 112 F. Paramere with 1 sensillum, linked to gonopod by membranous tissue.

Note. All features of male terminalia, except for the very short ventral rod, are very similar to those found in the species belonging to the *hydei* subgroup of the *repleta* group. However, they do not look alike regarding the external morphology.

***Drosophila reticulata* WHEELER, 1957**
(Figs. 113; 161)

Drosophila (Drosophila) reticulata WHEELER, 1957:101.

Material examined. Holotype ♂ (dissected), labelled "COLOMBIA WBHeed Nov. 1955 / Medellin 30 Klm (sic) 8000 ft / 90.6 / HOLOTYPE / *Drosophila reticulata* Wheeler", deposited in NMNH.

Diagnosis. Head generally whitish yellow; scutum brown, bluish glossy, with 2 - 4 faint brownish longitudinal stripes in anterior half; wings with clouded crossveins and distinct black spots and bullae, vein r_{2+3} strongly sinuate; abdomen yellow, with broad marginal and narrow basal bands which are medially broadened, forming an irregular longitudinal band.

Redescription. Frons without interfrontal bristles, frontal length 0.25 mm, frontal index 0.75, top to bottom width ratio 1.25. Frontal triangle indistinct; ocellar triangle dark, about 1/3 frontal length. Frontorbital plates apically

diverging from eye margin, about 2/3 frontal length. Orbitals equidistant, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 0.71, of mid to anterior orbital 0.3; poc 60%, oc 93% of frontal length; vibrissal index 0.27. Facial carina narrow, noselike. Gena brownish below eye, broad in behind, cheek index about 9. Eye ovoid, index 1.44. First flagellomere brown; length to width ratio 1.6. Arista with 6 upper and 3 lower long branches, plus terminal fork, inner branches short. Palpi white, basal-ventrally contrasting black.

Thorax length about 1.09 mm; h index 0.85; 4 rows of acrostichals. Transverse distance of dorsocentrals 160% of longitudinal distance; dc index 0.61; scutellars equidistant, basal scut nearly parallel, scut index 1.22. Pleura whitish yellow, with some small dark patches; mid katepisternal about 77% of the anterior one. Halteres and legs whitish yellow, knees somewhat darker; first joint of hind tarsus with 1 basal-ventral bristle.

Wing with distinct blackish spots: along both crossveins, at the tip of veins r_{2+3} and r_{4+5} ; 4 in marginal cell (3 isolated ones, the 4th connected with the end spot of vein r_{2+3}), 2 in submarginal cell, in addition faint clouds are near wing base, inside and outside posterior crossvein and near wing tip; and with 6 bullae laying at the spots, 4 in marginal cell, 2 in submarginal cell; vein r_{2+3} strongly sinuate, bent forwards in front of the isolated spots in marginal cell, then backwards and ending vertically in c; length 2.61 mm; length to width ratio 2.39; costal section I apically dark, only with upper end bristle. Indices: C, 2.53; ac, 2.38; hb, 0.42; 4c, 1.0; 4v, 1.84; 5x, 1.13; M, 0.47; prox. x, 0.68.

Terminalia ♂ (Figs. 113; 161 N). Epandrium with 2 lower and no upper bristles. Cerci anteriorly fused to epandrium at lower half. Surstylus not micropubescent, with 5 primary teeth, no secondary teeth and 5-6 marginal bristles that come up to upper surface. Decasternum as in fig. 113 B. Hypandrium shorter than epandrium; bow sclerotized; gonopod fused to paramere bearing 1 long and 1 shorter bristle. Aedeagus subapically membranous and expanded laterally, bent; membranous surface covered with tiny spines. Aedeagal apodeme as long as aedeagus, laterally flattened, bent. Ventral rod as in fig. 113 F.

Drosophila scioptera DUDA, 1927

(Figs. 136 D; 168)

Drosophila scioptera DUDA, 1927:179.

Material examined. LECTOTYPE ♀ (by present designation, dissected), labelled "Bolivia 11.X.06 Yungasweg 2500-4000m / (blank label) / *Drosophila scioptera* n. sp. type ♀ d. Duda / Hinterl. gez. / 1. Flügel phot. / *Cotypus scioptera* Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila scioptera* D. syntype ♀ G.Bächli det. 1988 / LECTOTYPE W *Drosophila scioptera* Duda by Vilela & Bächli 1990"; 1 paralectotype ♀, same locality and date as lectotype, both deposited in SMTD.

Diagnosis. Body color mainly brown; frons velvety black, medially and laterally brown, upper corners and anterior margin yellow; face brown; facial carina relatively broad, sulcate, noselike, dorsally slightly yellow; scutellum yellow; wings long, narrow, with diffuse broad brown shadows around crossveins, wing tip brown; abdomen relatively narrow, shiny brown.

Redescription. Head yellow. Frontal length 0.3 - 0.34 mm, frontal index 0.82 - 0.87, top to bottom width ratio 1.18 - 1.3. Frontal triangle subshiny brown,

anteriorly narrow, about 70% frontal length; ocellar triangle darker, about 35% frontal length. Frontorbital plates narrow, subshiny brown, posteriorly sharply defined yellow, distinctly diverging from eye margin, about 3/4 frontal length. Mid orbital nearer to and slightly outside of anterior one, distance of posterior orbital to anterior one equal to that to inner vertical. Length ratio of anterior to posterior orbital 0.56 - 0.63, of mid to anterior orbital 0.7 - 0.78; poc 70% - 72%, oc 85% - 89% of frontal length; vibrissal index 0.46 - 0.5; vt index 1.0 - 1.11. Cheek index about 4. Eye nearly round, index 1.04 - 1.09. Pedicel and first flagellomere brown; length to width ratio 1.4 - 1.5. Arista with 3 - 4 upper and 1 - 2 lower short branches, plus terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax mainly brown; length about 1.25 - 1.29 mm. Scutum subshiny; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.7; scutellars nearly equidistant, basal scut divergent, scut index 1.28. Pleura paler than scutum; sterno index 0.63 - 0.65; mid katepisternal about 65% - 71% of the anterior one. Halteres and legs yellow.

Wing length 3.5 mm; length to width ratio 2.52. Indices: C, 4.22; ac, 2.0; hb, 0.22; 4c, 0.51; 4v, 1.23; 5x, 1.0; M, 0.29; prox. x, 0.43.

Terminalia ♀ (Figs. 136 D; 168 J). Ovipositor plate wide, apically blunt, with 15-16 marginal and 11-13 discal teeth (most of them bristle-shaped). Spermatheca spherical, sclerotized; duct not invaginated.

✓ *Drosophila strigiventris* DUDA, 1927
(Figs. 135 D; 168)

Drosophila strigiventris DUDA, 1927:184.

Material examined. LECTOTYPE ♀ (by present designation, dissected, right wing microslide-mounted), labelled "Bolivia 18.XII.02 Sorata 2300m / strigiventris ♀ n sp. / Hinterl. gez. / Typus strigiventris Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila strigiventris* D. Holotype (sic) ♀ G.Bächli det. 1988 / LECTOTYPE ♀ *Drosophila strigiventris* Duda by Vilela & Bächli 1990"; 1 paralectotype ♀, labelled "Bolivia - Mapiri 28.IV.03 Lorenzopata / strigiventris ♀ d. Duda / Staatl. Museum für Tierkunde Dresden / PARALECTOTYPE ♀ *Drosophila strigiventris* Duda by Vilela & Bächli 1990", both deposited in SMTD.

Diagnosis. Body color mainly yellow; facial carina flat, roundish in profile; wings with diffuse shadows around crossveins and at tip of vein r_{2+3} ; abdomen basally brownish, pollinose, apically more shiny and black, each tergite with 4 more or less round yellow spots, 2 paramedian and 2 near side margin.

Redescription. Head yellow. Frons dull yellow, frontal length 0.29 mm, frontal index 0.74, top to bottom width ratio 1.22. Frontal triangle subshiny, about 45% frontal length; ocellar triangle brownish, about 40% frontal length. Frontorbital plates subshiny, apically diverging from eye margin, about 2/3 frontal length. Distance of posterior orbital to anterior one about 60% of that to inner vertical; poc 59%, oc 112% of frontal length; vibrissal index 0.27. Cheek index about 7. Eye index 1.16. First flagellomere brown; length to width ratio 1.6. Arista with 5 upper and 2 lower long branches, plus terminal fork, inner branches relatively short. Proboscis and palpi yellow.

Thorax yellow; length about 1.12 mm. Scutum subshiny, darker posteriorly; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; scut position index smaller than 1.0, basal scut divergent, scut index 1.34; sterno index 0.6; mid katepisternal about 93% of the anterior one. Halteres

brownish. Legs yellow, fore femora medially with a long and basally with a smaller lateral bristle.

Wing indices: C, 4.27; ac, 2.14; hb, 0.27; 4c, 0.63; 4v, 1.71; 5x, 1.44; M, 0.54.

Terminalia ♀ (Figs. 135 D; 168 K). Ovipositor plate apically pointed, with 12-13 marginal and 6-7 discal teeth. Spermatheca mushroom-shaped, weakly sclerotized; duct invaginated.

***Drosophila suturalis* WHEELER, 1957**

(Figs. 114; 161)

Drosophila (Drosophila) suturalis WHEELER, 1957:100.

Material examined. Holotype ♂ (dissected), labelled "Turrialba Costa Rica / WBHeed HLCarson MWasserman / HOLOTYPE / *Drosophila suturalis*", deposited in NMNH.

Diagnosis. Frons anteriorly prominent in profile, dark brown laterally and posteriorly, anterior margin yellowish; facial carina very broad, parallel-sided, flat; thorax elongated, black above, contrasting yellow on pleura, transverse suture nearly in middle position; wings with about 5 - 10 elongated marginal bristles along section c_1 ; abdomen brownish black, somewhat glossy, apically narrowly yellow.

Redescription. Head mainly yellow, with relatively short bristles. Frontal length 0.32 mm, frontal index 0.79, top to bottom width ratio 1.13. Frontal triangle dark brown, about 80% frontal length; ocellar triangle about 40% frontal length. Frontal vittae golden yellow, darker posteriorly. Frontorbital plates broad, apically diverging from eye margin, about 3/4 frontal length. Mid orbital nearer to and slightly outside of anterior one, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 1.0, of mid to anterior orbital 0.38; poc 37%, oc 47% of frontal length; vt index 1.22; vibrissal index 0.31. Face yellow. Gena large, yellow, somewhat darker anteriorly, cheek index about 4. Eye roundish, index 1.26. Pedicel and first flagellomere brownish; length to width ratio 1.4. Arista with 8 upper and 3 lower short bristles, plus small terminal for and few short inner branches. Proboscis and palpi yellow.

Thorax length about 1.02 mm. Scutum subshiny, h index 0.86; 4 rows of acrostichals. Anterior dc at level of suture, transverse distance of dorsocentrals 80% of longitudinal distance; dc index 0.62. Scutellum laterally paler, scut position index about 0.7, basal scut nearly parallel, scut index 0.68; sterno index 0.7; mid katepisternal about 43% of the anterior one. Halteres brown. Legs yellow.

Wing veins r_{4+5} and m apically converging; length about 2.0 mm; length to width ratio 2.44; costal section I only with upper end bristle. Indices: C, 2.79; ac, 2.33; hb, 0.21; 4c, 0.82; 4v, 1.47; 5x, 1.2; M, 0.35; prox. x, 0.59.

Terminalia ♂ (Figs. 114; 161 O). Epandrium with about 4 lower and no upper bristles. Cerci not fused to epandrium. Surstylus partially micropubescent, with 8-9 primary teeth, 12-13 secondary teeth and 7-8 marginal bristles. Decasternum as in fig. 114 B. Hypandrium as long as epandrium; bow sclerotized; gonopod fused to paramere, bearing 1 long bristle. Aedeagus tube-shaped, bent; lateral surface of dorsal distal end membranous, covered with tiny spines. Aedeagal apodeme bent, shorter than aedeagus, laterally flattened. Ventral rod as in fig. 114 G.

✓ *Drosophila tibialis* WHEELER, 1957
(Figs. 115; 161)

Drosophila (Drosophila) tibialis WHEELER, 1957:100.

Material examined. Holotype ♂ (dissected), labelled "Turrialba Costa Rica / W.B. Heed Sep-Oct 1955 / HOLOTYPE / *Drosophila tibialis* Wheeler", deposited in NMNH.

Diagnosis. Body color mainly brown; facial carina very narrow, noselike; legs yellow, fore femora thick, with 4 - 5 strong bristles, hind tibiae in apical 2/3 black, tips yellow; abdomen subshiny, brownish black, tergite 6 apically whitish.

Redescription. Frons relatively long, posteriorly darker, anterior margin yellow, frontal length 0.4 mm, frontal index 1.2, top to bottom width ratio 1.3. Frontal triangle about 2/3 frontal length; ocellar triangle dark brown, about 3/8 frontal length. Frontorbital plates broad, apically diverging from eye margin, about 3/4 frontal length. Orbitals equidistant, in a line, distance of posterior orbital to anterior one 80% of that to inner vertical. Length ratio of anterior to posterior orbital 0.81, of mid to anterior orbital 0.62; poc 46%, oc 58% of frontal length; vibrissal index 0.57. Face whitish. Gena brownish, cheek index about 9. Eye index 1.35. First flagellomere short-haired; length to width ratio 1.33. Arista with 2 - 3 upper and 1 lower short branches, plus terminal fork and 1 long apical inner branch. Proboscis and palpi yellow.

Thorax length about 1.32 mm. Scutum subshiny; 6 rows of acrostichals. Transverse distance of dorsocentrals 170% of longitudinal distance; dc index 0.6. Scutellum brownish black, apically rounded and slightly paler; scutellars nearly equidistant, basal scut divergent, scut index 1.04; sterno index 0.54; mid kat-episternal about 69% of the anterior one. Halteres yellowish.

Wing somewhat darker along costal margin, veins r_{4+5} and m slightly convergent; length 72 2.38 mm; length to width ratio 2.4; costal section I only with upper end bristle. Indices: C, 3.62; ac, 2.17; hb, 0.38; 4c, 0.59; 4v, 1.27; 5x, 1.14; M, 0.36; prox. x, 0.5.

Terminalia ♂ (Figs. 115; 161 P). Epandrium without bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 10 primary teeth, no secondary teeth and 17-21 marginal bristles. Decasternum as in fig. 115 B. Hypandrium longer than epandrium; bow sclerotized; gonopod fused to paramere, bearing 1 long and 1 short bristle. Aedeagus straight, expanded latero-ventrally at tip; latero-ventral margins serrated at distal end. Aedeagal apodeme as long as aedeagus, laterally flattened, bent. Ventral rod as in fig. 115 F.

Subgenus *Hirtodrosophila* DUDA, 1923:41

Species included: 142. See WHEELER, 1981:17, 52; SINGH & GUPTA, 1981: 207; BOCK, 1982:58; MCEVEY & BOCK, 1982:684; OKADA & CARSON, 1982:398; TAKADA, 1983:140; BOCK, 1984a:114; 1986:308; GRIMALDI, 1986:372; 1987a:9; TODA et al. 1987:241; GRIMALDI, 1988:323; BOCK, 1989:169; OKADA, 1988:136; TODA, 1989:375.

Diagnosis. See BURLA, 1956:258, and BOCK, 1976:26.

✓ *Drosophila clypeata* WHEELER, 1968

(Figs. 116; 162)

Drosophila (Hirtodrosophila) clypeata WHEELER, 1968:432

Material examined. Holotype ♂ (dissected), labelled "Barro Colorado Is. Canal Zone Aug. 1956 / WBHeed HLCarson MWasserman Jy-Aug 1956 / HOLOTYPE *Drosophila clypeata* WR. / *Drosophila clypeata* Wheeler 1928 (sic)"; deposited in NMNH.

Diagnosis. Body color mainly yellow; frons whitish; facial carina very narrow, short; cheek index about 9; clypeus yellow, very broad, bulbous; pleura with diffuse brownish patches; mid katepisternal about 40% of the anterior one; wings brownish tinged, posterior crossvein narrowly shadowed, veins r_{4+5} and m convergent; C index 1.9; 4c index 1.24; 4 index, 1.94; 5x index 1.5; M index 0.53; abdomen mainly brown, basally paler, tergites 4 and 5 basally with narrow yellow lateral bands.

Redescription. Head yellow. Frontal length 0.38 mm, frontal index 1.0, top to bottom width ratio 1.26. Frontal triangle indistinct; ocellar triangle black, about 30% frontal length. Frontorbital plates narrow, somewhat diverging from eye margin, about 2/3 frontal length. Mid orbital nearer to and somewhat outside of anterior one, distance of posterior orbital to anterior one 1/2 of that to inner vertical. Length ratio of anterior to posterior orbital 1.0, of mid to anterior orbital 0.29; poc 52%, oc 65% of frontal length; vibrissal index 0.33. Eye index 1.12. First flagellomere brown, marginal hairs about 1/2 width; length to width ratio 1.5. Arista with 6 upper and 1 lower branches, plus terminal fork, no inner branches. Proboscis and palpi yellow.

Thorax brownish yellow; length about 1.25 mm. Scutum subshiny; 8 rows of acrostichals. Transverse distance of dorsocentrals nearly 3x longitudinal distance; dc index 0.58; scut nearly equidistant, basal scut convergent, scut index 0.72; sterno index 0.5. Halteres and legs yellow, femora slightly darker; first joint of hind tarsus with 2 yellow basal-ventral bristles.

Wing length 2.38 mm; length to width ratio 2.4. Indices: ac, 3.5; hb, 0.43; prox. x, 0.47.

Terminalia ♂ (Figs. 116; 162 A). Epandrium with about 14 lower and 6 upper bristles. Cerci not fused to epandrium, trilobate at ventral margin; inner lobe flat, triangle-shaped. Surstylus not micropubescent, with 3 primary teeth, no secondary teeth and 11-12 marginal bristles. Decasternum as in fig. 116 B B Hypandrium square-shaped, as long as epandrium; bow absent; gonopod fused to hypandrium, bare. Aedeagus tube-shaped, bent; ventral surface and dorsal distal half wrinkled and covered with tiny spines. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod absent. Paramere with 3 sensilla, linked to gonopod by membranous tissue.

✓ *Drosophila clypeora* WHEELER, 1968

(Figs. 117; 162)

Drosophila (Hirtodrosophila) clypeora WHEELER, 1968:433.

Material examined. Holotype ♂ (dissected), labelled "Costa Rica La Lola Aug 1956 / WBHeed HLCarson MWasserman / *Drosophila clypeora* Wheeler HOLOTYPE / *Drosophila clypeora* Wheeler 1968", deposited in NMNH.

Diagnosis. Body color mainly brown; facial carina very narrow, sharp, restricted to upper half of face; cheek index about 12; clypeus very large, bulbous, black; scutum subshiny, with 3 somewhat darker longitudinal stripes in median and dc lines, posteriorly darker; mid katepisternal about 36% of the anterior one; wings slightly brownish, veins r_{4+5} and m convergent; C index 2.05; 4c index 1.0; 4v index 1.53; 5x index 1.17; M index 0.37; abdomen shiny brown, with narrow diffuse darker marginal bands.

Redescription. Head brown. Frons dull pale brown, frontal length 0.35 mm, frontal index 1.0, top to bottom width ratio 1.24. Frontal triangle indistinct; ocellar triangle black, about 40% frontal length. Frontorbital plates narrow, apically diverging from eye margin, about 60% frontal length. Orbitals equidistant, in a line, distance of posterior orbital to anterior one about 80% of that to inner vertical. Length ratio of anterior to posterior orbital 1.18, of mid to anterior orbital 0.38; poc 48%, oc 67% of frontal length; vibrissal index 0.33. Eye index 1.13. Occiput strongly concave. Pedicel brown. First flagellomere blackish, marginal hairs 1/3 width; length to width ratio 1.43. Arista with 6 upper and 1 lower long branches, plus long terminal fork, no inner branches. Proboscis brown. Palpi apically blackish.

Thorax mainly brown; length about 1.15 mm; h index 0.69; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals about 3x longitudinal distance; dc index 0.67. Scutellum dark brown, apically rounded, basal-laterally and apically yellowish; scut equidistant, basal scut divergent, scut index 0.72. Pleura brown, sutures paler; sterno index 0.52. Halteres yellow. Legs yellow, with brown coxae and femora, knees paler.

Wing length 2.24 mm; length to width ratio 2.34. Indices: ac, 3.17; hb, 0.37; prox. x, 0.37.

Terminalia ♂ (Figs. 117; 162 B). Epandrium with 22-24 lower and 7-9 upper bristles. Cerci not fused to epandrium, tip projected downwards as a somewhat triangle-shaped, flattened structure. Surstylus not micropubescent, with 7 primary teeth arranged in a square-angled row, no secondary teeth and 8-12 marginal bristles. Decasternum as in fig. 117 B. Hypandrium square-shaped, as long as epandrium; bow absent; gonopod fused to hypandrium, bearing 1 long bristle. Aedeagus bent, slightly bifid at distal end, subapically expanded downwards; lateral and dorsal surfaces distally mostly covered with tiny to median spines. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod as in fig. 117 F. Paramere with 3 bristles, linked to gonopod by membranous tissue.

• *Drosophila mexicoa* WHEELER, 1954
(Figs. 118; 162)

Paramycodrosophila mexicana WHEELER, 1949:164.

Drosophila (*Hirtodrosophila*) *mexicoa* WHEELER, 1954:54 (proposed new combination and new name for *Paramycodrosophila mexicana* WHEELER, 1949, not *Drosophila mexicana* MACQUART, 1843).

Material examined. Holotype ♂ (dissected), labelled "134.9 / HOLOTYPE / Jacona, Mich. Mexico, 8-2-42 G.B.Mainland / *Drosophila mexicoa* Wheeler", deposited in NMNH.

Diagnosis. Body color mainly brown; frons anteriorly golden yellow, laterally and posteriorly darker; facial carina narrow, noselike; gena slightly darker below, cheek index about 11; scutum subshiny, with diffuse darker longitudinal stripes; pleura brown above, sharply defined yellow below; mid

katepisternal about 50% of the anterior one; wings clear, veins r_{4+5} and m slightly convergent; C index 1.54; 4c index 1.63; 4v index 2.38; 5x index 2.33; M index 0.88; abdomen mainly dark brown, pollinose, basally yellow, tergites 4 and 5 basally with narrow paramedian yellow areas, tergite 6 apically yellow

Redescription. Head mainly yellow. Frontal length 0.32 mm, frontal index 0.83, top to bottom width ratio 1.3. Frontal triangle brown, pollinose, about 60% frontal length; ocellar triangle black, about 35% frontal length. Frontorbital plates brown, diverging from eye margin, about 70% frontal length. Mid orbital nearer to anterior one, nearly in a line, distance of posterior orbital to anterior one 2/3 of that to inner vertical. Length ratio of anterior to posterior orbital 1.18, of mid to anterior orbital 0.38; poc 53%, oc 84% of frontal length; vibrissal index 0.31. Face darker brown below. Eye index 1.14. First flagellomere brown, marginal hairs about 1/3 width; length to width ratio 1.57. Arista with 4 upper and 1 lower relatively short branches, plus terminal fork, inner branches long.

Thorax brown above; length about 1.12 mm; h index 0.69; 8 rows of acrostichals. Transverse distance of dorsocentrals about 2.5x longitudinal distance; dc index 0.5. Scutellum apically rounded; scut equidistant, basal scut convergent, scut index 0.67; sterno index 0.43. Halteres and legs yellow; first joint of hind tarsus with 2 yellow basal-ventral bristles.

Wing length 2.54 mm; length to width ratio 2.33. Indices: ac, 3.25; hb, 0.54; prox. x, 0.63.

Terminalia ♂ (Figs. 118; 162 C). Epandrium with about 8 lower and 4 upper bristles. Cerci not fused to epandrium; tip projected downwards as a flattened, somewhat triangle-shaped structure. Surstylus somewhat membranous medially, not micropubescent, with 4 sharply pointed, primary teeth, no secondary teeth and 12-13 marginal bristles. Decasternum as in fig. 118 B. Hypandrium as long as epandrium, square-shaped; bow absent; gonopod fused to hypandrium, bearing one median bristle. Aedeagus bent, membranous at tip, distally slightly turned upwards, laterally serrated and covered with tiny spines. Aedeagal apodeme shorter than aedeagus, laterally flattened, bent. Ventral rod as in fig. 118 F. Paramere with 2 sensilla, linked to gonopod by membranous tissue.

***Drosophila glabrifrons* DUDA, 1925**
(Figs. 119; 162)

Drosophila (Dasydrosophila) glabrifrons DUDA, 1925:196.

Drosophila (Hirtodrosophila) glabrifrons DUDA; FROTA-PESSOA, 1951:411; BURLA, 1956:259.

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / Hirtodrosophila glabrifrons ♂ n. sp. d. Duda / Syn-Typus / LECTOTYPE ♂ *Drosophila glabrifrons* Duda by Vilela & Bächli 1990"; 1 ♀ paralectotype, same data as lectotype plus date of collection (1921.V.15.), both deposited in NHM.

Diagnosis. Small flies; body color mainly yellow; frons dominated by the extremely large, glossy frontal triangle; frontorbital plates dull, apically slightly diverging from eye margin, about 90% frontal length; facial carina very narrow, sharp, about 2/3 length of face. Gena whitish yellow, cheek index about 4 - 5; mid katepisternal about 50% - 60% of the anterior one; wings clear; C index 1.53 - 1.64; hb index 0.35; 4c index 1.55; 4v index, 2.18 - 2.33; 5x index 2.33 - 2.67; M index 0.73 - 0.78; prox. x index 0.56; abdomen mainly yellowish brown, with narrow darker marginal bands.

Redescription. Frontal length 0.2 (♂) - 0.27 (♀) mm, frontal index 0.8 - 1.0, top to bottom width ratio 1.27 - 1.42. Frontal triangle broadly reaching to anterior margin; ocellar triangle darker, about 45% frontal length. Frontal vittae missing. Orbitals equidistant, in a line, distance of posterior orbital to anterior one about 1/2 of that to inner vertical. Length ratio of anterior to posterior orbital 0.83 - 0.86, of mid to anterior orbital 0.33 - 0.4; poc 50% - 58%, oc 50% - 75% of frontal length; vt index 1.14 - 1.25; vibrissal index 0.2 - 0.25. Eye index about 1.14. First flagellomere brownish, marginal hairs about 1/3 width; length to width ratio 1.2 - 1.4. Arista with 3 - 4 upper and 1 lower long branches, plus terminal fork, inner branches relatively short. Proboscis and palpi yellow.

Thorax length about 0.59 (♂) - 0.69 (♀) mm. Scutum brownish, subshiny. Transverse distance of dorsocentrals about 170% of longitudinal distance; dc index 0.67. Scutellum apically rounded; scut nearly equidistant; scut index 0.43; sterno index 0.5 - 0.54. Halteres and legs yellow.

Wing length 1.32 (♂) - 1.62 (♀) mm; length to width ratio 2.11 - 2.23. Indices: ac, 3.4 - 3.5.

Terminalia ♂ (Figs. 119; 162 D). Epandrium with about 8 lower and 7 upper bristles. Cerci not fused to epandrium, projected downwards as a bare, flattened, somewhat triangle-shaped structure. Surstylus not micropubescent, with 9 sharply pointed, primary teeth, no secondary teeth and 8-10 marginal bristles. Decasternum as in fig. 119 B. Hypandrium slightly shorter than epandrium; bow absent; gonopod fused both to paramere and to hypandrium, bearing 3 bristles. Aedeagus deeply bifid at tip; distal dorsal end curved upwards. Aedeagal apodeme shorter than aedeagus, laterally flattened at posterior half, dorso-laterally flattened at anterior half. Ventral rod absent.

• *Drosophila narinosa* FROTA-PESSOA, 1945

(Figs. 120; 162)

Drosophila (*Dasydrosophila*) *nasalis* DUDA, 1925:194.

Drosophila (*Hirtodrosophila*) *narinosa* FROTA-PESSOA, 1945:476 (proposed new name for *Drosophila nasalis* DUDA, 1925, not *Drosophila nasalis* GRIMSHAW, 1901).

Material examined. Holotype ♂ (dissected), labelled "COSTA RICA 1921 SUIZA DE TURRIALBA / V. 16. / Hirtodrosophila nasalis ♂ DET. DR. O. DUDA / Holotypus / HOLOTYPE ♂ *Drosophila narinosa* Frota-Pessoa Vilela & Bächli det. 1990", deposited in HHNM.

Diagnosis. Small flies; body color mainly brown; frons blackish brown, anteriorly yellow, laterally convex; facial carina narrow, sharp, noselike, very high below; gena yellow, blackish below, cheek index about 4; scutum greyish pollinose, medially and laterally brown, subshiny; mid katepisternal about 67% of the anterior one; wings yellowish tinged, veins r_{4+5} and m convergent; C index 1.68; 4c index 1.36; 4v index 2.14; 5x index 2.4; M index 0.86; abdomen dull brown, tergite 5 very large, shiny.

Redescription. Head mainly yellow. Frontal length 0.27 mm, frontal index 0.8, top to bottom width ratio 1.45. Frontal triangle dull, reaching broadly to anterior margin; ocellar triangle about 45% frontal length. Frontal vittae missing. Frontorbital plates narrow, distinctly diverging from eye margin, about 80% frontal length. Mid orbital very near to and somewhat outside of anterior one, distance of posterior orbital to anterior one slightly less than that to inner vertical. Length ratio of anterior to posterior orbital 0.91, of mid to anterior orbital 0.5; poc 56%, oc 81% of frontal length; vibrissal index 0.33. Eye index

1.04. First flagellomere conical, apically pointed, marginal hairs about 1/4 width; length to width ratio 2.17. Arista with 4 upper and 1 lower relatively long branches, plus terminal fork, inner branches long.

Thorax mainly brownish; length about 0.96 mm; h index 0.8; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance. Scutellum apically paler, rounded; scut position index nearly 2.0, basal scut slightly divergent, scut index 0.67. Pleura brownish black; sterno index 0.5. Halteres yellow. Legs brown, knees yellow.

Wing length 1.98 mm; length to width ratio 2.07. Indices: ac, 4.75; hb, 0.79; prox. x, 0.5.

Terminalia ♂ (Figs. 120; 162 E). Epandrium with about 9 lower and 4 upper bristles. Cerci not fused to epandrium; tip projected downwards into a flattened, somewhat triangle-shaped structure. Surstylus largely fused to epandrium, not micropubescent, with about 10 teeth not arranged in a row and 14 marginal bristles. Decasternum as in fig. 120 C. Hypandrium square-shaped, shorter than epandrium; bow absent; gonopod fused to hypandrium, bearing 1 median bristle. Aedeagus mostly membranous and covered with tiny spines; dorso-median region expanded laterally. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod as in fig. 120 G. Paramere with 4 sensilla, linked to gonopod by membranous tissue.

Drosophila pichis, sp. nov.

(Figs. 121; 162)

✓ *Drosophila* (*Dasydrosophila*) *glabrifrons*, DUDA, 1927:112 (misidentification, not *Drosophila glabrifrons* DUDA, 1925:196)

Material examined. Holotype ♂ (dissected, right wing lost), labelled "Bolivia - Mapiri 7.III.03 Sarampioni 700 / H. glabrifrons ♂ d. Duda / 1. Flügel phot. / Staatl. Museum für Tierkunde Dresden / HOLOTYPE ♂ *Drosophila pichis* sp. nov. Vilela & Bächli det 1990"; 1 ♂ paratype, same data as holotype; 5 paratypes (2 ♂, 3 ♀; 1 ♂ dissected), collected at Peru - Pichis, Pto. Bermudes in XII.03, all deposited in SMTD.

Diagnosis. Small flies; body color mainly yellow; frons dominated by the extremely large, glossy frontal triangle; frontorbital plates very broad, dull, apically slightly diverging from eye margin, about 90% frontal length; facial carina very narrow, sharp, about 1/3 length of face. Gena whitish yellow, cheek index about 4; mid katepisternal about 50% - 60% of the anterior one; wings clear; C index 1.25 - 1.47; hb index 0.47 - 0.56; 4c index 1.5 - 1.78; 4v index, 2.1 - 2.33; 5x index 1.75 - 2.33; M index 0.7 - 0.9; prox. x index 0.44 - 0.5; abdomen mainly yellow, subshiny, with narrow darker marginal bands.

Description. Frontal length 0.18 (♂) - 0.22 (♀) mm, frontal index 0.73 - 0.81, top to bottom width ratio 1.2 - 1.42. Frontal triangle broadly reaching to anterior margin; ocellar triangle darker, about 45% frontal length. Frontal vittae missing. Orbitals equidistant, in a line, distance of posterior orbital to anterior one about 1/2 of that to inner vertical. Length ratio of anterior to posterior orbital 1.0 - 1.2, of mid to anterior orbital 0.33; poc 38% - 45%, oc 62% - 73% of frontal length; vt index 0.69 - 1.0; vibrissal index 0.22 - 0.25. Eye index 1.07 - 1.14. First flagellomere brownish, marginal hairs about 1/3 width; length to width ratio 1.17 - 1.2. Arista with 4 upper and 1 - 2 lower relatively short branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax length about 0.59 (♂) - 0.73 (♀) mm. Scutum brownish, subshiny; h index 0.83 - 1.0; 4 rows of acrostichals. Transverse distance of dorsocentrals about 170% of longitudinal distance; dc index 0.58 - 0.67. Scutellum apically rounded; scut nearly equidistant, basal scut slightly divergent, scut index 0.47 - 0.67; sterno index 0.45 - 0.56. Halteres and legs yellow.

Wing length 1.32 (♂) - 1.48 (♀) mm; length to width ratio 2.14 - 2.22. Indices: ac, 3.2 - 4.0.

Terminalia ♂ (Figs. 121; 162 F). Epandrium with about 6 lower and 9 upper bristles. Cerci not fused to epandrium; ventral margin laterally bearing a finger-shaped lobe projected inwards; tip with membranous circle. Surstylus not micropubescent, with 7-8 primary teeth, no secondary teeth and 7-8 marginal bristles. Decasternum as in fig. 121 B. Hypandrium square-shaped, slightly shorter than epandrium; bow absent; gonopod fused to paramere, bearing 1 short and 2 tiny bristles. Aedeagus bent, distally pointed and slightly turned upwards, bearing 2 short, median, ventral spurs directed frontwards. Aedeagal apodeme as long as aedeagus, laterally flattened. Ventral rod spurious.

Etymology. Named after the collection site of many paratypes.

Subgenus *Phloridosa* STURTEVANT, 1942:28

Species included: *D. alei* BRNCIC, *D. alfari* STURTEVANT, *D. cuzcoica* DUDA, *D. denieri* STURTEVANT, *D. luzii* STURTEVANT, and *D. tristani* STURTEVANT.

Diagnosis. See STURTEVANT, 1942:28.

Drosophila cuzcoica DUDA, 1927 (Figs. 134 A; 169)

Drosophila (*Paradrosophila*) *cuzcoica* DUDA, 1927:120.

Material examined. Holotype ♀ (dissected), labelled "Peru - Cuzco 23.VI.05 3100m-3700m / (blank label) / ParaDrosophila (sic) cuzcoica n. sp. ♀ Type d. Duda / Typus cuzcoica Duda / Staatl. Museum für Tierkunde Dresden / Drosophila cuzcoica D. Holotype ♀ G. Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color mainly dark brown; all bristles black, relatively short; frons dull black, medially and laterally subshiny, anteriorly yellow; facial carina flat, broad, triangular, not noselike; arista with very short branches; thorax dark brown, shiny; short prescutellars present; wings clear, narrow, veins r_{4+5} and m apically slightly convergent; abdomen dark brown, shiny, tergite 6 yellow.

Redescription. Head mainly dark brown. Frontal length 0.28 mm, frontal index 0.81, top to bottom width ratio 1.24. Frontal triangle subshiny, about 3/4 frontal length; ocellar triangle black, about 40% frontal length. Frontorbital plates narrow, subshiny, distinctly diverging from eye margin, about 70% frontal length. Mid orbital near to and outside of anterior one, distance of posterior orbital to anterior one about 70% of that to inner vertical. Length ratio of anterior to posterior orbital 1.0, of mid to anterior orbital 0.56; poc and oc 59% of frontal length; vibrissal index 0.33. Face blackish, shiny. Cheek index about 6. Eye index 1.27. First flagellomere short-haired; length to width ratio 1.4. Arista

with 4 upper and 3 lower very short branches, plus small terminal fork, inner branches short. Palpi brownish.

Thorax length about 1.19 mm. Transverse distance of dorsocentrals about 3x longitudinal distance. Scutellum apically rounded; scut position index larger than 1.0, basal scut divergent, sterno index 0.56; mid katepisternal absent. Halteres yellow. Legs yellowish brown, femora brown, tibiae lighter.

Wing length 2.64 mm; length to width ratio 2.58. Indices: C, 2.82; ac, 2.83; hb, 0.59; 4c, 0.81; 4v, 1.71; 5x, 1.29; M, 0.43; prox. x, 0.57

Terminalia ♀ (Figs. 134 A; 169 A). Ovipositor plate somewhat squared at tip, with 9 marginal and 5 discal teeth. Spermatheca with undetermined shape (probably deformed in fig. 169 A), weakly sclerotized; duct medially invaginated.

Note. Although not previously included in the subgenus *Phloridosa*, *D. cuzcoica* is clearly a member of this subgenus. The ovipositor plate is very similar to that found in *D. denieri* BLANCHARD (figured in original description and also by VILELA, 1986:224). However, its identity will probably remain uncertain until a male can be associated to the female holotype.

• *Drosophila lutzii* STURTEVANT, 1916

(Figs. 122; 162; 169)

Drosophila lutzii STURTEVANT, 1916:340.

Drosophila (Phloridosa) lutzii STURTEVANT, 1942:28; HSU, 1949:129 (♂ terminalia, probably misidentified, not *D. lutzii* STURTEVANT); VILELA, 1984:153-155 (♂ terminalia).

• *Drosophila (Phloridosa) floricola* STURTEVANT, 1942:42; PATTERSON, 1943:65 (redescription); HSU, 1949:129 (♂ terminalia). NEW SYNONYM.

Material examined. Two ♂ (1 dissected), 4 ♀, labelled "Pasadena Oct. '41 Datura / A.H.Sturtevant Collection, 1970 / floricola"; 2 ♂ (1 dissected), 3 ♀ "Lilac, Calif. 19 Nov. 1970 F. Morishita ex. Gerbec"; 2 ♂ (1 dissected), 3 ♀ "Mexico Sn. Antonio K Tex. 1598 Jan 7-55-482 / e cut calla flowers", one ♂ has one additional label "*Drosophila floricola* Sturt. det. '55 W.Wirth"; 4 ♂ (1 dissected), 1 ♀ "Fulleston Calif. Orange co. 14 Nov. 1963 D.H.Byers", one ♂ has one additional label "*Drosophila floricola* Sturt. det. 64 W.Wirth" and the ♀ has one additional information on the label which reads "squash flowers"; 5 ♂ (1 dissected), 2 ♀ "Carrizo Ariz. 5.26.54 / A.H.Sturtevant Collection, 1970 ", 2 ♂ and 1 ♀ have an additional label "Datura flower" and 1 ♀ has another additional label "Dros. florica."; 1 ♀ "Ft. Tejan Calif. 042 / A.H.Sturtevant Collection, 1970 / floricola". To all specimens cited above we added the label "*Drosophila lutzii* Sturtevant Vilela & Bächli det. 1990". All specimens deposited in NMNH.

Diagnosis. Body color mainly brown to black; all bristles black and obviously short; frons blackish, medially and laterally subshiny; facial carina relatively broad, flat, more or less noselike; arista with very short branches; scutum subshiny, with diffuse darker longitudinal stripes; wings clear; veins r_{4+5} and m slightly convergent; abdomen brownish, apically yellow.

Redescription. Head brown. Frontal length about 0.27 mm, frontal index 0.89 - 1.0, top to bottom width ratio 1.17 - 1.19. Frontal triangle shiny, about 3/4 frontal length; ocellar triangle blackish, about 35% frontal length. Frontorbital plates relatively narrow, shiny, distinctly diverging from eye margin, about 3/4 frontal length. Orbitals equidistant, in a line, distance of posterior orbital to anterior one nearly equal to that to inner vertical. Length ratio of anterior to posterior orbital 0.86 - 1.0, of mid to anterior orbital 0.5 - 0.67; poc and oc 38%

- 50% of frontal length; vibrissal index 0.29 - 0.33. Cheek index about 6 - 11. Eye index 1.29. First flagellomere brownish; length to width ratio 1.25 - 1.5. Arista with 3 upper and 2 lower very short branches, plus small terminal fork, inner branches short. Proboscis and palpi brownish.

Thorax brownish black; length about 0.56 - 0.66 mm; h index 1.13 - 1.14; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals more than 2.5x longitudinal distance; dc index 0.43 - 0.47. Scutellum apically round; scut position index somewhat smaller than 1.0, basal scut divergent, scut index 0.88 - 0.9; sterno index 0.23 - 0.27; mid katepisternal absent. Halteres and legs brown, knees lighter.

Wing length 1.81 - 2.18 mm; length to width ratio 2.29 - 2.44. Indices: C, 2.54 - 3.08; ac, 2.6; hb, 0.69; 4c, 0.72 - 0.87; 4v, 1.56 - 1.67; 5x, 1.17 - 1.4; M, 0.39 - 0.47; prox. x, 0.56 - 0.6.

Terminalia ♂ (Figs. 122 A-I; 162 G-J). Epandrium with about 5 lower and 1 median bristle. Cerci not fused to epandrium. Surstylus not micropubescent, with 6 primary teeth, no secondary teeth and 8-9 marginal bristles that come up to upper surface. Decasternum as in fig. 122 B. Hypandrium as long as epandrium; bow absent; gonopod fused to paramere, mostly micropubescent, bearing 1 long median bristle. Aedeagus subapically bearing 2 lateral serrated expansions, slightly invaginated at tip, which is laterally covered with tiny spines. Aedeagal apodeme as long as aedeagus, rod-shaped. Ventral rod as in fig. 122 G.

Terminalia W (Figs. 122 J; 169 B). Ovipositor plate somewhat squared at tip, with 9-10 marginal and 5 discal teeth. Spermatheca ball-shaped, sclerotized; duct medially invaginated.

Note. In the original description of *Drosophila floricola*, STURTEVANT (1942:43) stated "this form (sic) was not observed until October 1941 ..." which agrees with the dates on the labels "Pasadena Oct. '41 Datura" of 6 (2 ♂, 4 ♀) out of 29 analyzed specimens listed above. The type specimens of *D. floricola* was not analyzed and are probably lost; however, the 6 specimens cited above have probably been collected together with the type specimens. There is also a possibility that they are the original specimens used by STURTEVANT in his description of *D. floricola* but are not labelled as such. On the other hand, according to the statement by STURTEVANT cited above, it seems also that this flower-breeding species was introduced from the Neotropics to the United States only in the forties, probably with flowers of different species of host-plants from where adult flies emerged. The ♂ lectotype of *D. lutzii* has been previously analyzed by one of us (VILELA, 1984:251).

Subgenus *Scaptodrosophila* DUDA, 1923:37

Species included: 240. For lists and synonyms see BOCK & PARSONS, 1978:91; MCEVEY, 1981:914; OKADA & NISHIHARU, 1981:422; WHEELER, 1981:55; GUPTA & PANIGRAHY, 1982:632; OKADA & CARSON, 1982:400; 1983:128; PANIGRAHY & GUPTA, 1983:145; BOCK, 1984a:114; 1984b:141; OKADA, 1986:442; 1988:132; TSACAS et al, 1988:181;

Diagnosis. See BOCK & PARSONS, 1978:98

✓ *Drosophila latifasciaeformis* DUDA, 1940
(Fig. 123)

Drosophila (Paradrosophila) latifasciaeformis DUDA, 1940:22;

Drosophila (Scaptodrosophila) latifasciaeformis DUDA; WHEELER, 1970:25; COVA GARCIA & SUAREZ, 1962:328 (♀ terminalia); WHEELER, 1981:77 (list of synonyms).

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Uganda Katona / Mujenje 1913.VIII. / *P. latifasciaeformis* ♂ DET. DR. O. DUDA / (blank label) / Syn-Typus / Zool. Mus. Berlin / LECTOTYPE ♂ *Drosophila latifasciaeformis* Duda by Vilela & Bächli 1990"; 2 paralectotypes (1 ♂, dissected, and 1 ♀), same labels as lectotype except "Ung. Nat. Mus." instead of "(blank label)" and "(Paradroso.)" instead of just "(P.)"; all deposited in ZMB. Thirteen additional paralectotypes (3 ♂, 10 ♀), in extremely bad conditions (from 1 ♀ just the pin remains), same labels as lectotype except two "(blank label)", "Zool. Mus. Berlin" but the month of collection is "VIII" instead of "IX", all deposited in HHNM.

Diagnosis. Relatively small flies; body color mainly yellow with dark abdomen; facial carina narrow, noselike; scutum slightly darker posteriorly; 3 nearly equal katepisternals; abdomen basally yellow to brown, tergites 3 - 6 with broad blackish marginal bands, covering mostly the whole width of tergites, leaving open narrow medially interrupted yellow anterior areas.

Redescription. Head yellow. Frontal length 0.22 - 0.27 mm, frontal index 0.87 - 1.07, top to bottom width ratio 1.2 - 1.31. Frontal triangle indistinct; ocellar triangle brown, about 45% frontal length. Frontal vittae with relatively long interfrontals. Frontorbital plates narrow, apically diverging from eye margin, about 70% frontal length. Mid orbital very near to and somewhat outside of anterior one, distance of posterior orbital to anterior one about half of that to inner vertical. Length ratio of mid to anterior orbital 0.55; poc 38% - 57%, oc 69% - 92% of frontal length; vibrissal index 0.3 - 0.5; vt index 1.1 - 1.15. Cheek index about 9 - 13. Eye index 1.22 - 1.26. First flagellomere short-haired; length to width ratio 1.4 - 1.75. Arista with 4 upper and 2 lower branches, plus terminal fork, inner branches relatively short. Proboscis and palpi yellow.

Thorax mainly yellow; length about 0.75 (♂) - 0.9 (♀) mm; h index 0.67 - 0.75; 6 rows of acrostichals. Transverse distance of dorsocentrals slightly more than 2x longitudinal distance; dc index 0.61 - 0.63. Scutellum brown, rounded; scut position index larger than 1.0, basal scut nearly parallel, scut index 0.68; sterno index 0.78 - 0.81; mid katepisternal about 93% - 100% of the anterior one. Halteres and legs yellow.

Wing clear; length 1.65 (♂) - 1.85 (♀) mm; length to width ratio 2.24. Indices: C, 1.56 - 1.76; ac, 2.43 - 3.2; hb, 0.62 - 0.65; 4c, 1.55 - 1.6; 4v, 2.6 - 2.64; 5x, 2.25; M, 0.82; prox. x, 0.7 - 0.73.

Terminalia ♂ (Fig. 123). Epandrium with about 7 lower and 2 upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 8 primary teeth, no secondary teeth and 3-4 marginal bristles. Decasternum as in fig. 123 B. Hypandrium shorter than epandrium; bow sclerotized; gonopod completely fused both to each other and to hypandrium, which bears 2 long, paramedian bristles; posterior region mostly micropubescent. Aedeagus apically pointed, submedially expanded upwards. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod absent. Paramere apically lobate, bearing 5-6 sensilla along its length; inner surface mostly micropubescent.

Note. According to BÄCHLI (1984a:244) three additional specimens from the original type-series are deposited in ZMB; they were not analyzed but are to be considered as paralectotypes.

Subgenus *Sophophora* STURTEVANT, 1939:139

Species included: 233. See WHEELER, 1981:59.

Diagnosis. See BOCK, 1976:12.

***obscura* species group STURTEVANT, 1940:347**

Species included: 35. See LAKOVAARA & SAURA, 1982:4; TSACAS et al., 1986:413 and TSACAS, 1988:331.

Diagnosis. See LAKOVAARA & SAURA, 1982:4.

Note. This is not a Neotropical but a Holarctic and Ethiopian group instead; some species, however, are distributed in Central America, and three are found in South America: *D. pseudoobscura* FROLOVA & ASTAUROV, *D. subobscura* COLLIN and *D. tolteca* PATTERSON & MAINLAND.

✓ *Drosophila tolteca* PATTERSON AND MAINLAND, 1944 (Figs. 124; 162; 169)

Drosophila (Sophophora) tolteca PATTERSON AND MAINLAND, 1944:32; SULERUD & MILLER, 1966:446; MILLER & SANGER, 1969:618.

Drosophila affinis, DUDA, 1927:176 (misidentification, not *D. affinis* STURTEVANT.).

Material examined. Two ♂ and 2 ♀ (dissected, right foreleg of 1 ♂ removed), one ♂ is labelled "Paraguay 28.IX.07 Hohenau 250 m / (illegible label) / (card with head glued) / *Drosophila affinis* St. ♂ d. Duda / Staatl. Museum für Tierkunde Dresden / *Drosophila tolteca* P. & M. G. Bächli det. 1988", the other 3 specimens were collected at the same locality on 6. X.07 (♂) and on 22.X.07 (both ♀), all deposited in SMTD.

Diagnosis. Body color mainly blackish brown; frons blackish, medially and laterally brown, diffusely yellowish along anterior margin; scutum subshiny, anteriorly yellowish, posteriorly brownish; males with a sexcomb of about 6 - 7 teeth on joint 1 of foreleg, no sexcomb on joint 2; abdomen shiny blackish brown, basally somewhat paler, apically glossy.

Redescription. Head brown. Frontal length 0.21 (♂) - 0.25 (♀) mm, frontal index 0.88 - 1.0, top to bottom width ratio 1.24 - 1.38. Frontal triangle brown, about 4/5 frontal length; ocellar triangle blackish, about 1/2 frontal length. Frontal vittae black. Frontorbital plates narrow, brown, apically diverging from eye margin, about 80% frontal length. Mid orbital very near to and outside of anterior one, distance of posterior orbital to anterior one 3/4 of that to inner vertical. Length ratio of anterior to posterior orbital 0.75 - 1.14, of mid to anterior orbital 0.56 - 0.63; poc 54% - 67%, oc 77% - 120% of frontal length; vibrissal index 0.33 - 0.5. Face dark brown. Facial carina narrow, sharp, not noselike. Check index about 8 - 11. Eye index 1.17 - 1.2. First flagellomere blackish; length to

width ratio 1.17 - 1.2. Arista with 3 upper and 2 lower branches, plus terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax brownish; length about 0.66 (♂) - 0.86 (♀) mm; h index 0.71 - 0.9; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.65. Scutellum brownish, apically round; scut nearly equidistant, basal scut convergent, scut index 0.89. Pleura brownish, subshiny; sterno index 0.5 - 0.67; mid katapisternal about 25% - 38% of the anterior one. Halteres and legs yellow.

Wing clear; length 1.45 (♂) - 1.91 (♀) mm; length to width ratio 2.1 - 2.23. Indices: C, 1.85 - 2.2; ac, 2.5 - 2.6; hb, 0.31 - 0.4; 4c, 1.15 - 1.44; 4v, 2.15 - 2.44; 5x, 2.5 - 3.0; M, 0.77 - 1.0; prox. x, 0.62 - 0.67.

Terminalia ♂ (Figs. 124 A-G; 162 K). Epandrium with 9-20 lower and 6-7 upper bristles. Cerci not fused to epandrium, bearing 3-5 sharply pointed teeth around tip. Surstylus broadly fused to epandrium, mostly corrugate, apparently micropubescent, with 6 primary teeth, no secondary teeth and 19-21 marginal bristles that come up to upper surface. Decasternum as in fig. 124 B. Hypandrium as long as epandrium; gonopods completely fused both to each other and to hypandrium, which bears 2 sensilla subapically. Aedeagus not fused to aedeagal apodeme, bilaminar, bent. Aedeagal apodeme longer than aedeagus, laterally flattened. Ventral rod absent. Two paired parameres linked to aedeagal apodeme by membranous tissue; anterior one with 9 sensilla along its length, posterior one bare, fused to a lateral stalk of hypandrium.

Terminalia ♀ (Figs. 124 H; 169 C). Ovipositor plate apically rounded, with 20-22 teeth. Spermatheca small, oval; tip everted (probably accidentally), sclerotized; duct medianly invaginated.

Note. This species is recorded for the first time from Paraguay.

saltans species group STURTEVANT, 1940:346

Species included: 21. See VAL et al. 1981:151.

Diagnosis. See STURTEVANT, 1942:29, and MAGALHÃES, 1956:273

♀ *Drosophila pulchella* STURTEVANT, 1916

(Figs. 125; 162)

Drosophila bellula WILLISTON, 1896:410, in part.

Drosophila pulchella STURTEVANT, 1916:327 (proposed new name for *Drosophila bellula* WILLISTON, 1896, not *Drosophila bellula* BERGROTH, 1894); STURTEVANT, 1921:88 (redescription).

Drosophila (Sophophora) pulchella STURTEVANT; WHEELER, 1957:81 (complementary description).

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "SYNTYPE / COTYPE / Windwardside St. Vincent, W.I. H.H. Smith / W. Indies 1907-66. / D. bellula Williston / LECTOTYPE ♂ *Drosophila pulchella* Sturtevant by Vilela & Bächli 1990"; 3 paralectotypes (1 ♂, dissected, and 2 ♀), same data as lectotype, the ♂ bears an additional label "1000 feet"; 2 additional paralectotypes (1 ♂, 1 ♀) belong to *Drosophila annularis* and are treated under that binomial, all deposited in BMNH. The AMNH has one additional syntype (not analyzed) which has to be considered also as paralectotype, although not labelled as such.

Diagnosis. Body color mainly brown; frons dull brownish yellow, laterally and anteriorly lighter; vibrissal index 0.8 - 1.0; facial carina relatively short and narrow, nearly noselike; scutum brownish yellow, darker posteriorly, with 4 brown longitudinal stripes, 2 inside dorsocentral lines and 2 lateral ones; wings clear, relatively short and apically roundish; abdomen mainly blackish brown, tergites lighter at anterior, darker at posterior margin.

Redescription. Head mainly yellow. Frontal length 0.3 (♂) - 0.32 (♀) mm, frontal index 0.9 - 0.95, top to bottom width ratio 1.15 - 1.2. Frontal triangle subshiny, about 2/3 frontal length; ocellar triangle brown, about 45% frontal length. Frontorbital plates subshiny, paler, diverging from eye margin, about 2/3 frontal length. Mid orbital nearer to and outside of anterior one, distance of posterior orbital to anterior one about 1/2 of that to inner vertical. Length ratio of anterior to posterior orbital 0.83 - 1.0, of mid to anterior orbital 0.5; poc 50% - 56%, oc 78% - 84% of frontal length; vt index 1.15 - 1.17. Cheek index about 14 - 16. Eye index 1.15 - 1.28. First flagellomere brown; length to width ratio 1.4 - 1.6. Arista with 4 upper and 2 lower branches, plus terminal fork, inner branches relatively long. Proboscis and palpi yellow.

Thorax mainly brown; length about 0.92 (♂) - 1.0 (♀) mm; h index 0.62 - 1.0; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.61 - 0.68. Scutellum brown, laterally paler, apically round; scut position index larger than 1.0, basal scut divergent, scut index 0.83 - 0.96; sterno index 0.45; mid katapisternal about 78% - 100% of the anterior one. Halteres and legs yellow.

Wing length 1.65 (♂) - 2.0 (♀) mm; length to width ratio 2.0 - 2.22. Indices: C, 2.0 - 2.2; ac, 2.5 - 2.8; hb, 0.36 - 0.47; 4c, 1.07 - 1.15; 4v, 1.77 - 1.86; 5x, 1.6 - 2.0; M, 0.54 - 0.62; prox. x, 0.5 - 0.54.

Terminalia ♂ (Figs. 125; 162 L). Epandrium with about 14 lower and 4 upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with about 8 dorsal and 10 ventral primary teeth, no secondary teeth and 4-5 marginal bristles. Decasternum as in fig. 125 B. Hypandrium much shorter than epandrium; bow absent; gonopods completely fused to each other and to hypandrium, which bears 2 bristles subapically. Aedeagus short, subapically membranous, deeply bifid at distal end; dorsal projection blunt, marginally serrated; ventral one sharply pointed; lateral surface subapically covered with tiny spines; anterior region dorso-ventrally flattened. Aedeagal apodeme linked to aedeagus by membranous tissue, rod-shaped, anteriorly expanded. Ventral rod apparently absent. Paramere fused to aedeagus, with 2 sensilla, linked to hypandrium by membranous tissue.

Note. This species is probably a synonym of *D. sturtevantii* DUDA (holotype ♀ not analyzed). It belongs therefore to the *sturtevantii* subgroup and not to the *parasaltans* subgroup as ascribed by MAGALHÃES (1962:137).

willistoni species group STURTEVANT, 1940:347.

Species included: 23. See VAL et al. 1981:153; EHRMAN & POWELL, 1982:194.

Diagnosis. See PATTERSON & STONE, 1952:15.

Drosophila abregolineata DUDA, 1925
(Figs. 126; 127; 163)

Drosophila abregolineata DUDA, 1925:214.

Drosophila (Sophophora) abregolineata DUDA; WHEELER, 1963:52 (complementary description); BÄCHLI, 1984a:230 (lectotype designation).

Material examined. Lectotype ♂ (improperly considered as holotype by WHEELER, 1963:52, dissected), labelled "COSTA RICA 1921. SUIZA DE TURRIALBA / D. abregolineata (sic) n. sp. DET. DR. O. DUDA / abregolineata n. sp. typus ♂ det. Duda / HOLOTYPUS (sic) / LECTOTYPUS ♂ abregolineata G. Bächli det. 1983", deposited in HHNM.

Diagnosis. Body color mainly yellow; mid orbital relatively short; facial carina narrow, short; scutum with contrasting pattern: 2 abbreviated paramedian longitudinal stripes and 2 marks on each side outside dc lines, a roundish one in front of the suture, a longish one near anterior dc; mid katapisternal short; wings with slightly clouded posterior crossvein; C index 2.73; hb index 0.53; 4c index 0.88; abdomen yellow, with relatively narrow marginal bands which are medially slightly extended and laterally reaching to anterior margin.

Redescription. Head yellowish brown. Frontal length 0.24 mm, frontal index 0.78, top to bottom width ratio 1.22. Frontal triangle indistinct; ocellar triangle about 1/3 frontal length. Frontorbital plates diverging from eye margin, about 70% frontal length. Mid orbital nearer to anterior one, in a line, distance of posterior orbital to anterior one about 40% of that to inner vertical. Length ratio of anterior to posterior orbital 0.82, of mid to anterior orbital 0.33; poc 71%, oc 86% of frontal length; vt index 1.25; vibrissal index 1.0. Cheek index about 14. Eye index 1.27. First flagellomere short-haired; length to width ratio 1.6. Arista with 5 upper and 2 lower branches, plus terminal fork, inner branches short. Proboscis and palpi yellow.

Thorax mainly yellowish; length about 1.0 mm; h index 0.64; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.6. Scutellum medially brown; scut nearly equidistant, basal scut convergent, scut index 1.14. Pleura yellowish brown; sterno index 0.35; mid katapisternal about 57% of the anterior one. Halteres brown. Legs yellowish brown.

Wing length 2.15 mm; length to width ratio 2.24. Indices: ac, 2.5; 4v, 1.88; 5x, 1.67; M, 0.59; prox. x, 0.47.

Terminalia ♂ (Figs. 126; 127; 163 A). Epandrium with about 32 lower and 5 upper bristles. Cerci not fused to epandrium. Surstylus elongated below into a hook, not micropubescent, with 13-16 primary teeth in a sinuate row, plus 1 larger tooth and 2 bristles on ventral hook, secondary teeth and marginal bristles absent. Hypandrium longer than epandrium; bow absent; gonopod fused both to each other and to hypandrium, bearing 2 paramedian bristles. Aedeagus rounded at tip, with 2 very short, lateral expansions, weakly linked to apodeme and to hypandrium by membranous tissue; bearing 1 serrated dorsal and 1 serrated ventral prominence on the median line, subapically with 4 sensilla on ventral surface; ventral region anteriorly bearing 2 backwards directed prolongations. Aedeagal apodeme longer than aedeagus, rod-shaped, anteriorly expanded. Ventral rod membranous. Paramere fused to apodeme, distally sinuate and sharply pointed, without sensilla, submedially bearing a pair of curved branches at ventral surface.

✓ *Drosophila fumipennis* DUDA, 1925
(Figs. 128; 129; 163)

Drosophila fumipennis DUDA, 1925:220.

Drosophila (Sophophora) fumipennis DUDA; DOBZHANSKY & PAVAN, 1943:12 (redescription); HSU, 1949:130 (♂ terminalia); MALOGOLOWIKIN, 1952:87, 89, 91 (♂ terminalia).

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "COSTA RICA 1921. SUIZA DE TURRIALBA / V. 15. / Dr. fumipennis (sic) ♂ n. sp. DET. DR. O. DUDA / Syn-Typus / Zool. Mus. Berlin / LECTOTYPE ♂ *Drosophila fumipennis* Duda by Vilela & Bächli 1990", deposited in ZMB; 1 paralectotype ♂ (dissected, right wing missing), same labels as lectotype, deposited in ZMB; 3 paralectotypes (2 ♂, 1 ♀), same data as lectotype, except for date of collection, deposited in HHNM.

Diagnosis. Body color mainly yellow; mid orbital relatively long; facial carina narrow, noselike; mid katapisternal longer than anterior; wings brownish, veins r_{4+5} and m convergent; C index 2.25 - 2.53; hb index 0.65 - 0.7; 4c index 0.9 - 1.05; abdomen yellow, with relatively broad marginal bands which are medially extended, mostly reaching to the anterior margin.

Redescription. Head brownish yellow; frontal length 0.32 (♂) - 0.35 (♀) mm, frontal index 0.79 - 0.91, top to bottom width ratio 1.15 - 1.23. Frontal triangle indistinct; ocellar triangle somewhat darker, about 40% frontal length. Frontorbital plates narrow, anteriorly diverging from eye margin, about 3/4 frontal length. Mid orbital slightly nearer to and somewhat outside of anterior one, distance of posterior orbital to anterior one 3/4 of that to inner vertical. Length ratio of anterior to posterior orbital 0.86 - 0.93, of mid to anterior orbital 0.46 - 0.58; poc 63% - 71%, oc 75% - 84% of frontal length; vt index 1.11 - 1.18; vibrissal index 0.92 - 1.0. Cheek index about 12 - 20. Eye index 1.19 - 1.23. First flagellomere brownish; length to width ratio 1.67 - 2.4. Arista with 6 upper and 3 - 4 lower long branches, plus terminal fork, inner branches relatively short. Proboscis and palpi yellow.

Thorax brownish yellow; length about 1.29 (♂) - 1.39 (♀) mm. Scutum pollinose; h index 0.55 - 0.65; 6 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.6 - 0.7; scut position index smaller than 1.0, basal scut divergent, scut index 0.93 - 1.07; sterno index 0.32 - 0.41; mid katapisternal about 118% - 155% of the anterior one. Halteres slightly brownish. Legs yellow; first joint of hind tarsus with 2 weak yellow basal-ventral bristles.

Wing length 2.51 (♂) - 2.71 (♀) mm; length to width ratio 2.3 - 2.38. Indices: ac, 2.57 - 3.33; 4v, 1.65 - 1.95; 5x, 1.5 - 2.0; M, 0.52 - 0.63; prox. x, 0.43 - 0.53.

Terminalia ♂ (Figs. 128; 129; 163 B). Epandrium with about 20 lower and 6 upper bristles. Cerci not fused to epandrium. Surstylus elongated below into a hook, not micropubescent, with about 12-13 primary teeth in a sinuate row, plus 1 larger tooth and 2 bristles on ventral hook, secondary teeth and marginal bristles absent. Decasternum as in fig. 128 B. Hypandrium longer than epandrium; bow absent; gonopod fused both to each other and to hypandrium, bearing 2 paramedian bristles, subapically somewhat micropubescent at the paramedian surface. Aedeagus humpbacked, rounded at tip, weakly linked to apodeme and to hypandrium by membranous tissue, with 2 short, latero-dorsal expansions; ventral region anteriorly bearing 2 backwards directed prolongations. Aedeagal apodeme longer than aedeagus, rod shaped, anteriorly expanded. Ventral rod absent. Paramere fused to apodeme, distally sharply pointed, with about 2 subapical

sensilla, ventrally linked by membranous tissue to a pair of triangle-shaped sclerites (anterior parameres?), which bear 2 sensilla, inner margin submedially serrated.

♂ *Drosophila subinfumata* DUDA, 1925

(Figs. 130; 131; 163)

Drosophila subinfumata DUDA, 1925:221.

Drosophila parabocainoides WHEELER & MAGALHÃES, 1962:167. NEW SYNONYM.

Material examined. Holotype ♂ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921. IV. 13. / Dr. subinfumata ♂ n. sp. DET. DR. O. DUDA / Syn-Typus (sic) / HOLOTYPE ♂ *Drosophila subinfumata* Duda Vilela & Bächli det. 1990", deposited in HHNM.

Diagnosis. Body color mainly yellow; mid orbital relatively short; facial carina very narrow, noselike; scutum brownish yellow, pollinose; wings broadly brownish along costal margin, fainter posteriorly, with distinct clouds along both crossveins; C index 2.76; hb index 0.71; 4c index 0.77; abdomen dull blackish brown.

Redescription. Head yellow, frontal length 0.27 mm, frontal index 0.73, top to bottom width ratio 1.23. Frontal triangle indistinct; ocellar triangle slightly darker, about 35% frontal length. Frontal vittae golden yellow. Frontorbital plates relatively narrow, diverging from eye margin, about 80% frontal length. Mid orbital nearer to and slightly outside of anterior one, distance of posterior orbital to anterior one about 40% of that to inner vertical. Length ratio of anterior to posterior orbital 0.83, of mid to anterior orbital 0.3; poc 81%, oc 94% of frontal length; vt index 1.11; vibrissal index 1.0. Cheek index about 16. Eye index 1.27. First flagellomere darker; length to width ratio 1.5. Arista with 6 upper and 3 lower relatively short branches, plus small terminal fork and inner branches. Proboscis and palpi yellow.

Thorax length about 1.19 mm; h index 0.81; dc index 0.72. Scutellum laterally paler; scut equidistant, basal scut divergent, scut index 1.11. Pleura yellowish. Halteres and legs yellow.

Wing length 2.48 mm; length to width ratio 2.42. Indices: ac, 3.4; 4v, 1.45; 5x, 1.25; M, 0.45; prox. x, 0.41.

Terminalia ♂ (Figs. 130; 131; 163 C). Epandrium with about 27 lower and 7 upper bristles. Cerci not fused to epandrium. Surstylus elongated below into a hook, not micropubescent, with 14 primary teeth in a sinuate row, plus 1 larger tooth and 1 bristle on ventral hook, secondary teeth and marginal bristles absent. Decasternum as in fig. 130 B. Hypandrium longer than epandrium; bow absent; gonopod fused both to each other and to hypandrium, bearing 2 paramedian bristles and 2 dorsally attached appendages, which are submedially serrated at outer margin. Aedeagus rounded at tip, weakly linked both to apodeme and to hypandrium by membranous tissue, with 2 long, directed backwards latero-dorsal spines in addition to 1 large, serrated dorsal and 1 smaller, serrated ventral prominence on median line, lateral surfaces medially covered with tiny spines; dorsal region subapically bearing one median spine; anterior ventral region anteriorly bearing 2 backwards directed prolongations. Aedeagal apodeme longer than aedeagus, rod-shaped, anteriorly expanded. Ventral rod membranous, as in fig. 131 C. Paramere fused to apodeme, submedially bifid, distally sinuate, bearing a pair of curved branches at the medio-ventral surface; inner margin bearing 4-5 tiny spines.

Note. We have not analyzed the type specimens of *D. parabocainoides* described by WHEELER & MAGALHÃES (op. cit.) as a probable synonym of *D. subinfumata*, but according to the illustration of the male terminalia of *D. parabocainoides* these two nominal species are to be considered conspecific.

✓ *Drosophila willistoni* STURTEVANT, 1916
(Figs. 132; 163)

Drosophila pallida WILLISTON, 1896:415 (in part).

Drosophila willistoni STURTEVANT, 1916:327 (proposed new name for *Drosophila pallida* WILLISTON, 1896, not *Drosophila pallida* ZETTERSTEDT, 1847); STURTEVANT, 1921:89 (redescription).

Drosophila (Sophophora) willistoni STURTEVANT; DOBZHANSKY & PAVAN, 1943:9 (redescription); PATTERSON & MAINLAND, 1944:30 (redescription); HSU, 1949:131 (♂ terminalia); MALOGLOWKIN, 1952:83, 85, 91 (♂ terminalia); NATER, 1955:444 (♂ terminalia); SPASSKY, 1957:51, 54 (♂ terminalia).

Drosophila (Sophophora) paulista DOBZHANSKY & PAVAN, 1943:10 (synonymized by BURLA et al. (1949)).

Drosophila (Sophophora) willistoni quechua AYALA, 1973:276.

Material examined. LECTOTYPE ♂ (by present designation, dissected, headless) of *D. willistoni*, labelled "SYNTYPE / det. C. Couch / COTYPE / 500 feet / (black label) / St. Vincent, W.I. H.H. Smith. / W. Indies 1907 - 66. / *Drosophila pallida* Will. / LECTOTYPE ♂ *Drosophila willistoni* Sturtevant by Vilela & Bächli 1990", deposited in BMNH; 4 paralectotypes (1 ♂, dissected, plus 3 ♀), all collected in St. Vincent Island (West Indies) by H.H. Smith, at different altitudes (not always stated), deposited in BMNH; 1 paralectotype ♀, labelled "(black label) / St. Vincent / COTYPE *Drosophila pallida* Will.", deposited in SEM. Nine additional paralectotypes (4 ♂, 3 ♀, in BMNH; 1 ♂, 1 ♀, in SEM) which belong to three different species, i.e., *Drosophila similis* (3 ♂, 4 ♀, treated under this binomial), *Drosophila cardini* (1 ♂, see remarks below), and *Diathoneura smithi*, sp. nov. (1 ♂).

Diagnosis. A species of the *willistoni* group with yellow body color; mid orbital relatively long; facial carina relatively narrow, flat, noselike; mid katepisternal mostly long; basal scut shorter than apicals; wings clear; C index 1.38 - 2.0; hb index 0.44 - 0.62; 4c index 1.17 - 1.75; abdomen yellow, with relatively narrow marginal bands which are medially somewhat broader.

Redescription. Head yellow, frontal length 0.23 - 0.3 mm, frontal index 0.78 - 0.94, top to bottom width ratio 1.13 - 1.25. Frontal triangle indistinct; ocellar triangle slightly darker, about 35% - 45% frontal length. Frontal vittae golden yellow. Frontorbital plates apically diverging from eye margin, about 3/4 frontal length. Mid orbital nearer to and slightly outside of anterior one, distance of posterior orbital to anterior one about 60% - 70% of that to inner vertical. Length ratio of anterior to posterior orbital 0.8 - 0.9, of mid to anterior orbital 0.44 - 0.56; poc 50% - 79%, oc 61% - 86% of frontal length; vt index 1.0 - 1.3; vibrissal index 0.88 - 0.9. Check index about 10 - 14. Eye index 1.2 - 1.25. First flagellomere short-haired; length to width ratio 1.2 - 1.5. Arista with 7 upper and 2 - 3 lower branches, plus terminal fork. Proboscis and palpi yellow.

Thorax yellow; length about 0.73 (♂) - 1.02 (♀) mm. Scutum subshining; h index 0.54 - 0.67; 6 - 8 rows of acrostichals. Transverse distance of dorsocentrals more than 2x longitudinal distance; dc index 0.55 - 0.61. Scutellum apically rounded, scut position index larger than 1.0, basal scut divergent, scut index 0.68 -

0.92; sterno index 0.37 - 0.59; mid katepisternal about 54% - 113% of the anterior one. Halteres and legs yellow; first joint of hind tarsus with 1 yellow basal-ventral bristle.

Wing length 1.52 (♂) - 1.98 (♀) mm; length to width ratio 2.09 - 2.27. Indices: ac, 2.67 - 3.5; 4v, 1.85 - 2.58; 5x, 1.6 - 2.67; M, 0.62 - 0.92; prox. x, 0.46 - 0.75.

Terminalia ♂ (Figs. 132; 163 D). Epandrium with about 12 lower and 3 upper bristles. Cerci not fused to epandrium. Surstylus elongated below into a hook, not micropubescent, with 15-16 primary teeth, plus 1 larger tooth and 1 bristle on ventral hook, secondary teeth and marginal bristles absent. Decasternum as in fig. 132 B. Hypandrium much smaller than epandrium; bow absent; gonopod fused both to each other and to hypandrium, which bears 1 pair of paramedian bristles on subapical regions of lobes and 1 pair of large and heavily sclerotized, median teeth. Aedeagus dorsally membranous and ventrally directed downwards as a finger-shaped protusion at distal end, with two lateral expansions at anterior half, which is covered with some tiny spines. Aedeagal apodeme as long as aedeagus, rod-shaped, apparently linked to aedeagus by membranous tissue. Ventral rod absent. Paramere bare, linked to apodeme by membranous tissue, distally expanded downwards into a finger-shaped protusion, ventrally linked by membranous tissue to a pair of triangle-shaped sclerites (anterior parameres?), which bear 2 sensilla.

Note. The ♂ paralectotype (head missing, dissected) which belongs to *D. cardini* STURTEVANT, is labelled "SYNTYPE / COTYPE / Windward side St. Vincent, W.I. H.H.Smith / W. Indies 1907-66. / *D. pallida* Williston / ♂ *Drosophila cardini* Sturtevant Vilela & Bächli det. 1990" belongs to *D. cardini* STURTEVANT.

Ungrouped *Drosophila* species

♂ *Drosophila fundomaculata* DUDA, 1925 (Figs. 133; 152; 163)

Drosophila fundomaculata DUDA, 1925:209.

Material examined. Holotype ♂ (dissected, right wing removed), labelled "COSTA RICA 1921 SUIZA DE TURRIALBA / V. 19./ Dr. baseoatra (sic) DET. DR. O. DUDA / Holotypus / fundomaculata baseoatra (sic) Duda", deposited in HHNM.

Diagnosis. Body color mainly blackish; frons velvety black but anteriorly and laterally yellow; facial carina very narrow, low, restricted to upper 2/3 of face; scutum pollinose, with 5 whitish longitudinal stripes: medially, in dc lines and laterally; pleura dark, with 3 diffuse blackish longitudinal stripes; wings brownish, darker along costal margin, with a large black basal spot reaching from c_{1+2} to anterior crossvein, and a dark cloud along posterior crossvein; veins r_{2+3} and r_{4+5} apically slightly clouded; abdomen generally blackish brown, darker in basal half, with a greyish pollinosity when seen from front.

Redescription. Head generally brown to black. Frontal length 0.25 mm, frontal index 0.79, top to bottom width ratio 1.26. Frontal triangle silvery brown, reaching to anterior margin; ocellar triangle about 45% frontal length. Frontorbital plates narrow, silvery yellow, apically diverging from eye margin,

about 60% frontal length. Orbitals equidistant, nearly in a line, distance of posterior orbital to anterior one 80% of that to inner vertical. Length ratio of anterior to posterior orbital 1.25, of mid to anterior orbital 0.3; poc 53%, oc 73% of frontal length; vt index 0.8. Gena blackish along mouth border, cheek index about 9. Eye index 1.17.

Thorax mainly blackish brown; length about 1.09 mm; 6 rows of acrostichals. dc index 0.57. Scutellum apically rounded, scut position index slightly smaller than 1.0, basal scut convergent, scut index 0.79; sterno index 0.41; mid katepisternal as long as the anterior one. Halteres brown. Legs yellow, femora, except knees, brown, tibiae with 2 brown rings; first joint of hind tarsus with 1 small basal-ventral bristle.

Wing (Fig. 152), length 2.08 mm; length to width ratio 2.25. Indices: C, 1.25; ac, 4.0; hb, 0.71; 4c, 1.5; 4v, 1.88; 5x, 1.67; M, 0.63; prox. x, 0.44.

Terminalia ♂ (Figs. 133; 163 E). Epandrium with about 14 lower and 3 upper bristles. Cerci not fused to epandrium, bearing 3-5 sharply pointed teeth at tip. Surstylus not micropubescent, with about 23 long and sharply pointed teeth, irregularly covering the upper surface. Decasternum as in fig. 133 B. Hypandrium longer than epandrium; subapical region medially membranous, covered with tiny spines, slightly expanded backwards; bow absent; gonopods completely fused both to each other and to hypandrium, which bears two lateral bristles subapically. Aedeagus short, almost spherical, partially covered with tiny spines distally, dorsal region medially bifid and bearing two short, lateral projections. Aedeagal apodeme longer than aedeagus, rod-shaped. Ventral rod absent. Paramere with 2 sensilla, apparently fused to hypandrium.

Note. We were unable to associate this species to any other described species belonging to the genus *Drosophila*.

Genus *Neotanygastrella* DUDA, 1925:206

Species included: 18. See WHEELER, 1981:71; BOCK, 1982:128; GRIMALDI, 1987a:14.

Diagnosis. See FROTA-PESSOA & WHEELER, 1951:146 and BOCK, 1982:127.

Neotanygastrella boliviensis DUDA, 1927

(Figs. 37 E; 169)

Neotanygastrella tricoloripes var. *boliviensis* DUDA, 1927:73.

Neotanygastrella boliviensis DUDA; FROTA-PESSOA & WHEELER, 1951:148.

Material examined. Holotype ♀ (dissected, wings damaged), labelled "Bolivia - Mapiri 25.III.03. S. Ernesto 800m / Vorderbeine schwarz / *Drosophila tricoloripes* var. *boliviensis* n. var. d. Duda / Typus *tricoloripes* v. *boliviensis* Duda / Staatl. Museum für Tierkunde Dresden / *Neotanygastr. boliviensis* D. Holotype ♀ G.Bächli det. 1988", deposited in SMTD.

Diagnosis. Body color brown to black; frons dull brownish black, strongly convex in profile, silvery when seen from an angle; mid orbital just outside of anterior one; face glossy blackish, bulbous above mouth border; facial carina

indistinct above, flat and broadening below; legs yellow except forelegs which are black with white coxae, base of femora and tarsal joints 2 - 5; abdomen pollinose brown, basal 1/3 of tergites shiny.

Redescription. Head black. Frontal length 0.25 mm, frontal index 0.71, top to bottom width ratio 1.19. Frontal triangle indistinct; ocellar triangle large, near mid of frons, far from pvt. Frontorbital plates not diverging from eye margin, about 3/4 frontal length. Distance of posterior orbital to anterior one about 35% of that to inner vertical. Length ratio of anterior to posterior orbital 0.71, of mid to anterior orbital 0.3; poc 67%, oc 87% of frontal length; vibrissal index 0.43; vt index 1.13. Cheek index about 7. Eye nude. Occiput black. Pedicel and first flagellomere whitish yellow, marginal hairs about 1/3 width; length to width ratio 1.4. Arista with 4 upper and 2 lower long branches, plus long terminal fork, inner branches short.

Thorax blackish brown; length about 1.0 mm. Scutum centrally subshiny, laterally silvery pollinose; h index 0.27; 6 rows of acrostichals. Transverse distance of dorsocentrals about 170% of longitudinal distance; dc index 0.65; scut nearly equidistant, basal scut slightly divergent, scut index 0.54. Pleura dark brown, pollinose; sterno index 0.75; mid katepisternal about 17% of the anterior one. Halteres yellow.

Wing clear; prox. x index 1.2.

Terminalia ♀ (Figs. 37 E; 169 D). Ovipositor plate apically rounded, with about 18-19 marginal (4 being bristle-shaped) and 4 discal teeth. Spermatheca spherical, sclerotized; duct medially invaginated.

***Neotanygastrella chymomyzoides* DUDA, 1927**
(Figs. 137 A, B; 138; 163; 169)

Neotanygastrella chymomyzoides DUDA, 1927:71; FROTA-PESSOA & WHEELER, 1951:148; WHEELER & TAKADA, 1971:231 (♂ terminalia).

Material examined. LECTOTYPE ♂ (by present designation, dissected), labelled "Bolivia - Mapiri 6.III.03. Sarampioni 700m / chymomyzoidia (sic) / Cotypus chymomyzoides Duda / Staatl. Museum für Tierkunde Dresden / *Neotanygastrella chymomyzoides* D. Syntype ♂ G.Bächli det. 1988 / LECTOTYPE ♂ *Neotanygastrella chymomyzoides* Duda by Bächli & Vilela 1990"; 10 paralectotypes (8 ♂, 2 ♀; 1 ♀ dissected), 1 of the ♀ and 5 ♂ from same locality as lectotype, three of the latter also in the same date, 1 in "4.III.03, 1 in "10.III.03, the remaining ♀ from "Peru - Meshagua 9.10.03 Urubambaf. ". 3 ♂ were collected in "Peru Urubambaf. Umahuankilia" at different dates: 9., 12., and 19.9.03, respectively; all specimens but 1 ♂ ("4.III.03", in ZMB) deposited in SMTD.

Diagnosis. Body color mainly yellow; frons golden yellow, silvery when seen from an angle, convex in profile; mid orbital just outside of or slightly in front of anterior one; face white, bulbous above mouth border; facial carina very narrow and sharp above, flat and widened below; forelegs black except white coxae and tarsal joints 2 - 5; wings clear, anal vein and alula reduced; abdomen dark brown, pollinose, tergites with narrow greyish basal and marginal bands.

Redescription. Head yellow. Frontal length 0.23 - 0.25 mm, frontal index 0.7 - 0.79, top to bottom width ratio 1.1 - 1.21. Frontal triangle indistinct; ocellar triangle black, large, about 60% frontal length. Frontorbital plates subshiny, not diverging from eye margin, about 3/4 frontal length. Distance of posterior orbital

to anterior one 40% of that to inner vertical. Length ratio of anterior to posterior orbital 0.71 - 0.75, of mid to anterior orbital 0.3 - 0.33; poc 60% - 64%, oc 80% - 86% of frontal length; vibrissal index 0.44 - 0.7; vt index 1.0 - 1.14. Gena whitish, cheek index about 9. Eye nearly nude, index 1.18 - 1.27. First flagellomere with brown margin; length to width ratio 1.8. Arista with 4 upper and 2 lower long branches, plus terminal fork, inner branches short. Proboscis and palpi whitish.

Thorax brownish yellow; length about 0.89 - 0.92 mm. Scutum subshiny, posteriorly darker; h index 1.29 - 1.33; 6 rows of acrostichals. Transverse distance of dorsocentrals about 2x longitudinal distance; dc index 0.45 - 0.64; scut nearly equidistant, basal scut divergent, scut index 0.58 - 0.61; sterno index 0.68 - 0.76; mid katepisternal about 23% of the anterior one. Halteres and legs yellow.

Wing length 1.88 mm; length to width ratio 2.28. Indices: C, 1.4 - 1.45; ac, 3.33 - 4.0; hb, 0.75 - 0.8; 4c, 2.22; 4v, 3.22 - 3.33; 5x, 2.0 - 2.25; M, 1.0 - 1.11; prox x, 1.11.

Terminalia ♂ (Figs. 137 A, B; 138; 163 F). Epandrium with about 7 lower and 3 upper bristles. Cerci not fused to epandrium. Surstylus not micropubescent, with 13 primary teeth, the 2 lowermost being longer, sharply pointed and separated from each other by a gap, no secondary teeth and about 10 marginal bristles that come up to inner surface. Decasternum as in fig. 137 B. Hypandrium as long as epandrium; bow absent; gonopod completely fused both to each other and to hypandrium, laterally wrinkled at distal end, bearing 2 pairs of long, paramedian bristles. Aedeagus oval, ventrally bifid, ventro-laterally micropubescent, apparently fused through its dorsal margin to ventral margin of posterior parameres, linked to apodeme by membranous tissue. Aedeagal apodeme longer than aedeagus, laterally flattened. Two pairs of parameres, anterior ones with about 8 sensilla on outer and slightly micropubescent on inner surface; posterior parameres large, mostly micropubescent, both pairs linked to posterior margin of hypandrium by membranous tissue.

Terminalia ♀ (Figs. 137 C; 169 E). Ovipositor plate apically blunt, with about 18-19 marginal (5 being bristle-shaped) and 7 discal teeth. Spermatheca spherical, sclerotized; duct medially invaginated.

✓ *Neotanygastrella tricoloripes* DUDA, 1925

(Figs. 137 C, D; 139; 163)

Neotanygastrella tricoloripes DUDA, 1925:224; PROTA-PESSOA & WHEELER, 1951:147; WHEELER, 1963:57 (lectotype designation).

Bunostoma brasiliensis PROTA-PESSOA, 1946:175 (synonymized by WHEELER, 1963:57).

Material examined. Paralectotype ♂ (dissected; lectotype is a ♀ and was not checked), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.V.5. / D. tricoloripes n. sp. ♂ DET. DR. O. DUDA / Para LECTOTYPUS / Zool. Mus. Berlin / PARALECTOTYPE ♂ *Neotanygastrella tricoloripes* Duda by Bächli & Vilela 1990", 1 paralectotype ♂, same data as preceding specimen, except date "V.3."; former specimen in ZMB and latter in HHNM.

Diagnosis. Body color mainly yellow with brown pattern; frons convex in profile, dull blackish red, silvery when seen from an angle, yellowish along anterior margin; mid orbital slightly in front of and outside of anterior; face laterally shiny white, somewhat bulbous at mouth border; facial carina brown, narrow and sharp above, flat and widened below; scutum subshiny, brownish

yellow, with a median brown longitudinal stripe which is centrally narrow, anteriorly and posteriorly broad, and 2 large brown lateral spots behind suture; pleura mainly dark brown, whitish yellow above fore coxae and below wing base; legs brownish, foreleg black except white coxae, base of femora and tarsal joints 2 - 5; wings clear, veins r_{4+5} and m apically convergent, anal vein absent, alula reduced; abdomen dark brown to black, pollinose, basally paler, tergites with narrow white marginal bands.

Redescription. Head mainly yellow. Frontal length 0.22 - 0.24 mm, frontal index 0.62 - 0.64, top to bottom width ratio 1.14 - 1.18. Frontal triangle not very distinct, broadly reaching to anterior margin; ocellar triangle very large, about 70% frontal length. Frontorbital plates relatively broad, not diverging from eye margin, about 3/4 frontal length. Distance of posterior orbital to anterior one about 49% of that to inner vertical. Length ratio of anterior to posterior orbital 0.61 - 0.67, of mid to anterior orbital 0.4 - 0.45; poc 79% - 85%, oc 92% - 114% of frontal length; vibrissal index 0.55. Gena white, brown in rear part, cheek index about 6 - 7. Eye nearly nude, index 1.23 - 1.24. Occiput brown. Pedicel brownish. First flagellomere with darker margin; length to width ratio 1.17 - 1.5. Arista with 4 upper and 2 lower long branches, plus small terminal fork, inner branches very short. Proboscis brown. Palpi whitish yellow.

Thorax yellow with brown pattern; length about 0.89 - 0.96 mm; h index 2.75; 6 rows of acrostichals. Transverse distance of dorsocentrals about 1.5x longitudinal distance; dc index 0.67 - 0.76. Scutellum velvety black, apically white and rounded; scut nearly equidistant, basal scut parallel, scut index 0.63; sterno index 0.74 - 0.82; mid katepisternal about 21% - 29% of the anterior one. Halteres whitish yellow.

Wing length 1.85 - 2.01 mm; length to width ratio 2.15 - 2.26. Indices: C , 1.4 - 1.43; ac , 4.2 - 5.0; hb , 0.65 - 0.71; $4c$, 2.1 - 2.22; $4v$, 3.2 - 3.44; $5x$, 2.0 - 2.2; M , 1.1; $prox. x$, 1.0 - 1.11.

Terminalia ♂ (Figs. 137 C, D; 139; 163 G). Epandrium with 5 lower and 11 upper bristles. Cerci not fused to epandrium. Surstylus mostly fused to epandrium, slightly micropubescent, with 7-8 primary teeth, no secondary teeth and 12-13 marginal bristles that come up to upper surface. Decasternum as in fig. 137 E. Hypandrium as long as epandrium; bow absent; gonopods mostly micropubescent at subapical region, bearing 3 pairs of long, paramedian bristles, completely fused both to each other and to hypandrium. Aedeagus oval, ventrally bifid, ventrolaterally micropubescent, linked to apodeme by membranous tissue. Aedeagal apodeme longer than aedeagus, laterally flattened. Two pairs of parameres, anterior ones with 8-9 sensilla on outer and slightly micropubescent on inner surface; fused to posterior margin of hypandrium; posterior parameres small, mostly micropubescent.

Genus *Paramycodrosophila* DUDA, 1924:191

Species included: 13. See WHEELER, 1981:72; BOCK, 1982:137; MCEVEY & BOCK, 1982:701.

Diagnosis. See BOCK, 1982:134.

✓ *Paramycodrosophila costaricana* DUDA, 1925
(Figs. 140; 163)

Paramycodrosophila costaricana DUDA, 1925:225.

Material examined. Holotype ♂ (dissected), labelled "COSTA RICA 1921. SUIZA DE TURRIALBA / V.17. / Paramycodrosoph. Costa Ricana (sic) DET. DR. O. DUDA / Syn-Typus / Zool. Mus. Berlin ", deposited in ZMB.

Diagnosis. Body color mainly yellow; frons golden yellow, medially and laterally whitish shiny; mid orbital slightly in front of and outside of anterior one; facial carina white, narrow, sharp; gena brown around vibrissals; eyes roundish oblique; scutum subshiny, anteriorly yellow, posteriorly brownish, with 4 brown longitudinal stripes: 2 in dc lines and 2 shorter lateral ones; and 2 black spots behind postpronota; scutellum yellow, basal-medially brown, with 2 black brown spots around apical scutellars; pleura whitish yellow, shiny, with a narrow brown longitudinal stripe from postpronotum to base of halteres, and a large brown spot on katepisternum; wings with enlarged black, bent up, tip of c_1 , followed by a deep incision and a black spot on vein r_1 ; abdomen shiny yellow, with brown markings as follows: tergite 2 with 2 large paramedian areas, connected by a narrow marginal band, tergite 3 dorsally with a completely dark area laterally ending in a narrow band which is basally directed, tergite 4 with a medially and laterally extended marginal band, tergite 5 with a narrow median triangular spot, tergite 6 dark with a median interruption; all tergites with a dark spot along ventral side margins.

Redescription. Head yellow. Frontal length 0.29 mm, frontal index 0.89, top to bottom width ratio 1.32. Frontal triangle whitish shiny, about half frontal length; ocellar triangle black, about 40% frontal length. Frontorbital plates narrow, whitish shiny, apically somewhat diverging from eye margin, about 60% frontal length. Distance of posterior orbital to anterior one about 40% of that to inner vertical; poc 47% of frontal length; vibrissal index 0.18. Face greyish. Cheek index about 5. Eye index 1.17. Proboscis and palpi yellow.

Thorax mainly yellow; length about 0.86 mm. Transverse distance of dorsocentrals about 170% of longitudinal distance; scut position index distinctly larger than 1.0, basal scut convergent, scut index 0.71. Halteres and legs yellow, femora with a median brown ring.

Wing length 1.85 mm; length to width ratio 2.15. Indices: C, 1.76; ac, 3.4; hb, 0.59; 4c, 1.42; 4v, 2.42; 5x, 2.75; M, 0.92; prox. x, 0.58.

Terminalia ♂ (Figs. 140; 163 H). Epandrium with 3 lower and 5 upper bristles. Cerci not fused to epandrium; each plate bearing 1 large, wave-shaped fold in the median region that occupies half of the height; inner margin directed backwards. Surstylus slightly micropubescent, concave, distally wrinkled, with 3 primary teeth, 4 secondary teeth and 8-9 marginal bristles (some well developed and stronger than secondary teeth). Decasternum as in fig. 140 B. Hypandrium shorter than epandrium; bow absent; gonopod fused to paramere, bearing 1 long and several tiny bristles. Aedeagus apically rounded, submedially expanded downwards, dorso-lateral surface subapically mostly covered with tiny eyelid-shaped structures, dorsoventral surface mostly membranous. Aedeagal apodeme shorter than aedeagus, rod-shaped. Ventral rod as in fig. 140 F.

Genus *Zygothrica* WIEDEMANN, 1830:12

Species included: 121. See GRIMALDI, 1987b:108; 1990:2.

Diagnosis. See GRIMALDI, 1987b:148.

Zygothrica quinquelineata (DUDA, 1925), comb. nov.

(Figs. 141; 142; 163)

Neorhinoleucophenga quinquelineata DUDA, 1925:167.

Material examined. Holotype ♂ (dissected), labelled "COSTA RICA SUIZA DE TURRIALBA / 1921.V.6. / *Neorhinoleucophenga quinquelineata* (sic) DET. DR. O. DUDA n. sp. type / Holotypus / *N. quinquelineata* G. Bächli det. 19 (sic) / ♂ *Zygothrica quinquelineata* (Duda) Bächli & Vilela det. 1990", deposited in SMTD.

Diagnosis. Body color mainly yellow; frons relatively long, medially and laterally whitish shiny; facial carina noselike, high, sharp; scutum shiny yellow, with 5 longitudinal stripes: 2 dark brown ones in dorsocentral lines, 3 diffuse brown ones in midline and laterally, respectively; wings with a diffusely brownish tip, veins r_{4+5} and m apically convergent; length 2.84 mm; abdomen shiny yellowish, with diffuse large brown triangles on tergites 3 and 4.

Redescription. Head yellow. Frontal length 0.52 mm, frontal index 1.15, top to bottom width ratio 1.11. Frontal triangle shiny whitish, apically narrowed, about 4/4 frontal length; ocellar triangle blackish, about 30% frontal length. Frontorbital plates narrow, apically slightly diverging from eye margin, about 70% frontal length. Mid orbital somewhat nearer to anterior one, in a line, distance of posterior orbital to anterior one about 149% of that to inner vertical. Length ratio of anterior to posterior orbital 1.0, of mid to anterior orbital 0.75; poc and oc 45% of frontal length; vibrissal index 0.43. Face whitish yellow, shiny. Cheek index about 5. Eye index 1.24. First flagellomere short-haired; length to width ratio 1.88. Arista with 5 upper and 2 lower relatively short branches, plus terminal fork, inner branches relatively long. Proboscis yellow. Palpi yellow, flat, broadened.

Thorax mainly yellow; length about 1.55 mm; h index 1.67; 10 rows of acrostichals. Transverse distance of dorsocentrals 3x longitudinal distance; dc index 0.61. Scutellum yellow; scut position index distinctly smaller than 1.0, basal scut convergent; sterno index 0.42. Halteres and legs yellow.

Wing length to width ratio 2.32. Indices: C, 1.84; ac, 3.57; hb, 0.68; 4c, 1.0; 4v, 1.44; 5x, 1.29; M, 0.36; prox. x, 0.44.

Terminalia ♂ (Figs. 141; 142; 163 I). Epandrium with about 4 lower and 9 upper bristles. Cerci not fused to epandrium, tip slightly directed downwards. Surstylus not micropubescent, with 18-20 sharply pointed teeth, arranged in a somewhat ellipsoid row on the upper surface; marginal bristles absent. Decasternum as in fig. 141 B. Hypandrium as long as epandrium; bow absent; gonopod bearing 1 long bristle and 3 sensilla, fused both to paramere and hypandrium. Aedeagus long, distal end invaginated, submedian region partially membranous and expanded laterally, bearing a pair of spines, which are both preceded and followed by many smaller ones along lateral surface. Aedeagal apodeme shorter than aedeagus, laterally flattened. Ventral rod well developed, as in fig. 142.

Note. This species was found to be very close to *Zygothrica fuscina* BURLA (1956:257) and is therefore combined as given above. The aedeagus and associated structures (Fig. 163 J) of the holotype of the latter species (deposited in ZMZ) is included in the present paper for comparison purpose.

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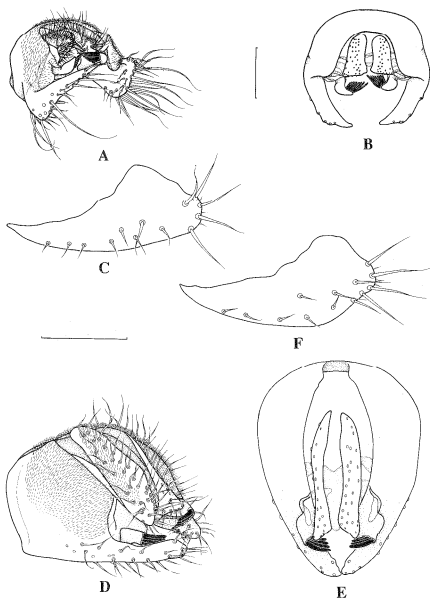


Fig. 1. *Chymomyza laevilimbata*, lectotype ♂ (A-B) and paralectotype ♀ (C); *Chymomyza pectinifemur*, lectotype ♂ (D-E) and paralectotype ♀ (F). A and D, epandrium, cerci, surstyli and decasternum; oblique posterior view. B and E, *idem*; posterior view. C and F, left ovipositor plate; lateral view. Bars = 100 μ m (A, B = vertical; C-E = horizontal).

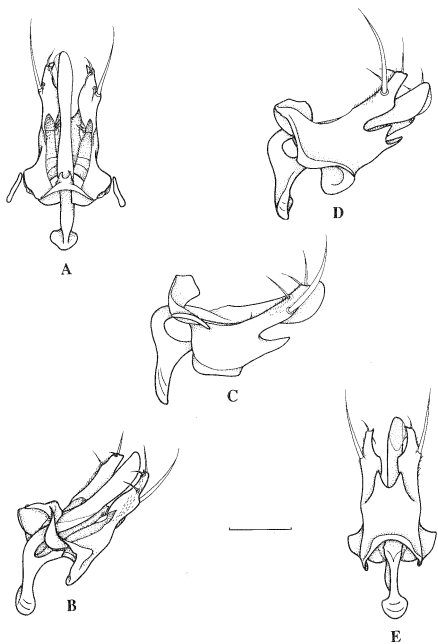


Fig. 2. *Chymomyza laevilimbata*, lectotype ♂. A-E, aedeagus, aedeagal apodeme and hypandrium; several views. Bar = 100 μ m.

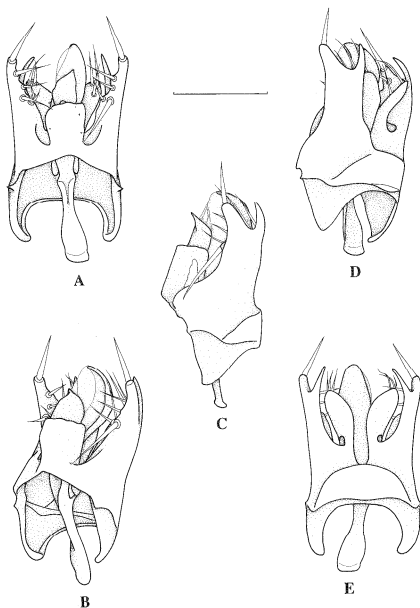


Fig. 3. *Chymomyza pectiniferum*, lectotype ♂. A-E, aedeagus, aedeagal apodeme and hypandrium; several views. Bar = 100 μ m.

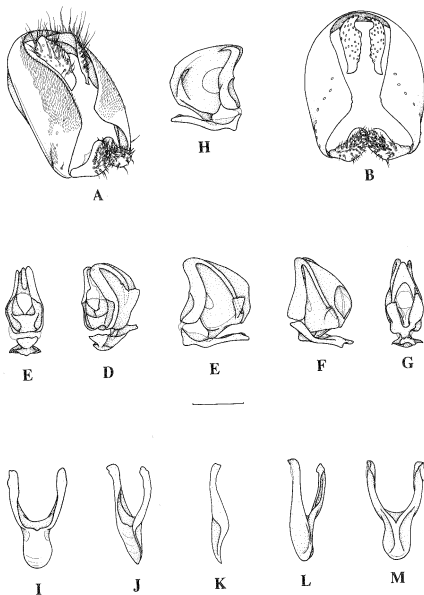


Fig. 4. *Cladochaeta adumbrata*, holotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B, *idem*, posterior view C-H, aedeagus, aedeagal apodeme and posterior parameres; several views. I-M, hypandrium; several views. Bar = 100 μ m.

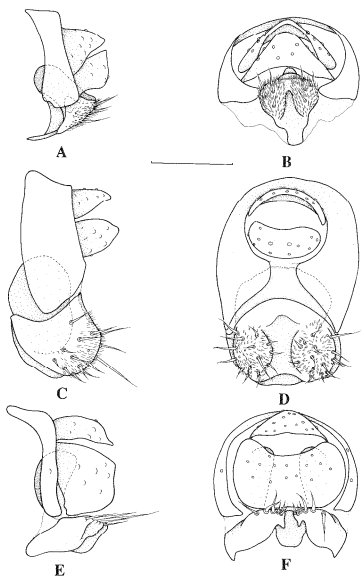


Fig. 5. *Cladochaeta bomplandi*, holotype ♀ (A and B); *Cladochaeta infumata*, holotype ♀ (C and D) and *Cladochaeta paradoxa*, paralectotype ♀ (E and F). A, C and E, tergite VIII, epiproct, hypoproct, heavily sclerotized plate and left ovipositor plate; lateral view. B, D and F, *idem*; posterior view, respectively. Bar = 100 µm.

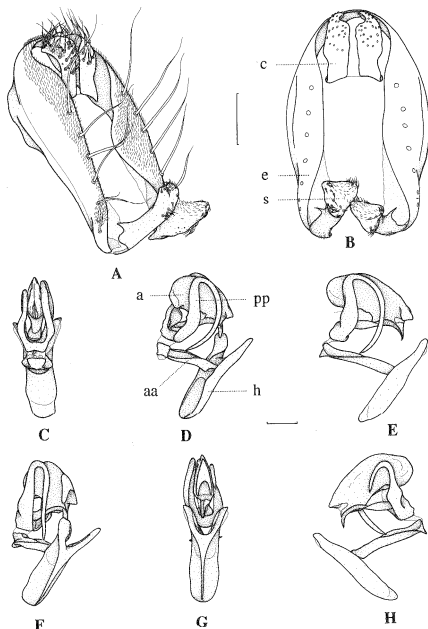


Fig. 6. *Cladochaeta floridana*, holotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B, *idem*; posterior view. C-H, aedeagus, aedeagal apodeme, posterior parameres and hypandrium; several views. Bars = 100 μ m (A, B = vertical; C-H = horizontal). Abbreviations: a = aedeagus, aa = aedeagal apodeme, c = cercus, e = epandrium, h = hypandrium, pp - posterior paramere, s = surstylus.

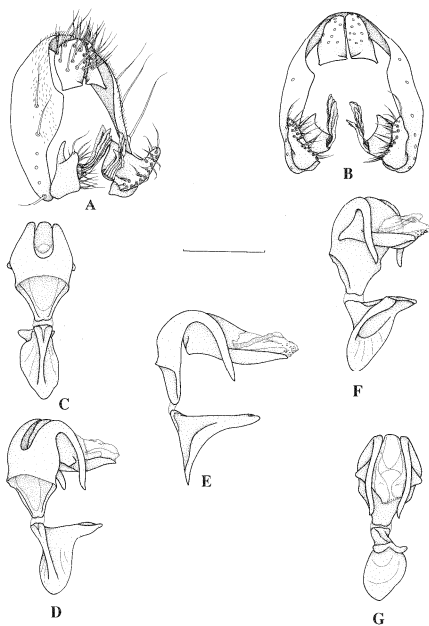


Fig. 7. *Cladochaeta minuta*, lectotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme and posterior parameres; several views. Bar = 100 μ m.

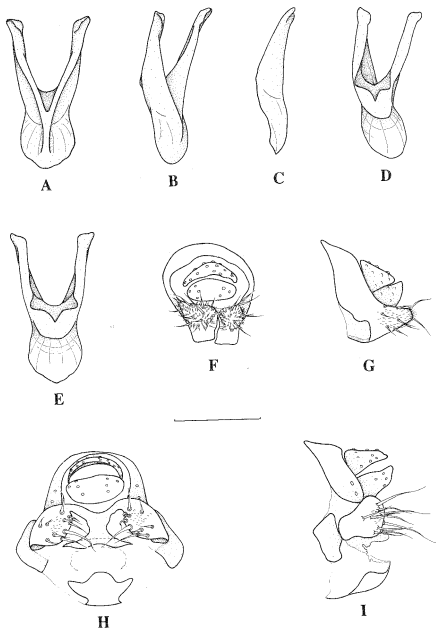


Fig. 8. *Cladochaeta minuta*, lectotype ♂ (A-E) and paralectotypes ♀ (F-I). A-E, hypandrium; several views. F (collection date "9.V.") and H (collection date "6.V.1921."), tergite VIII, epiproct, hypoproct and ovipositor plates; posterior view. G and I, *idem*, except right ovipositor plate; left lateral view, respectively. Bar = 100 μ m.

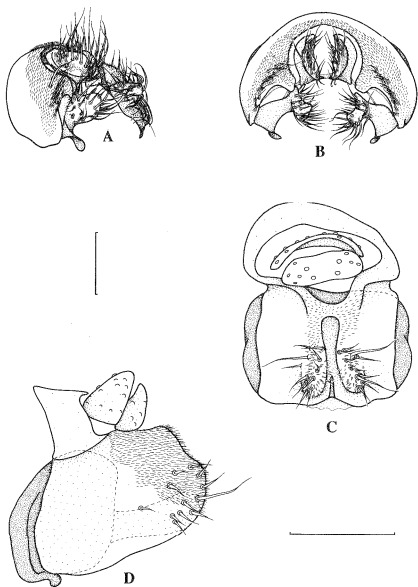


Fig. 9. *Cladochaeta sororia*, lectotype ♂ (A and B) and paralectotype ♀ (C and D). A, epandrium, cerci, surstyli and decastrum; oblique posterior view. B, *idem*; posterior view. C, tergite VIII, epiproct, hypoproct and ovipositor plates; posterior view. D, *idem*, except right ovipositor plate; lateral view. Bars = 100 μm (A-B = vertical; C-D = horizontal).

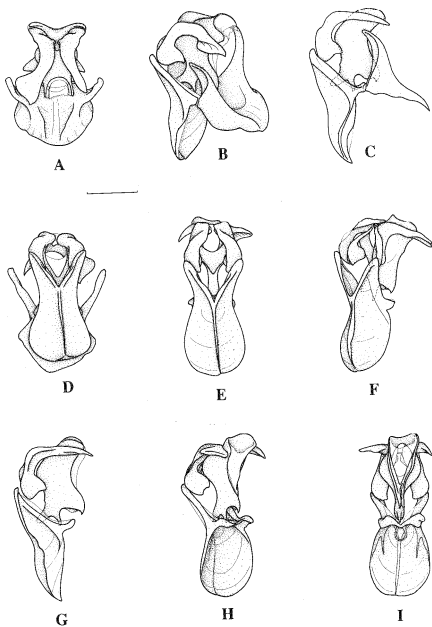


Fig. 10. *Cladochaeta sororia*, lectotype ♂. A-D, hypandrium, aedeagus, aedeagal apodeme and posterior parameres; several views. E-I, *idem*, except hypandrium: several views. Bar = 100 μ m.

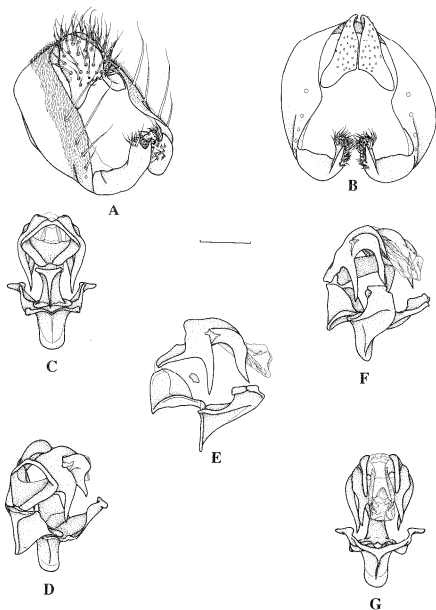


Fig. 11. *Cladochaeta sturtevantii*, topotype specimen collected at Arcadia, CA, USA, ♂. A, epandrium, cerci and surstyli; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme, anterior and posterior parameres and hypandrium; several views. Bar = 100 μ m.

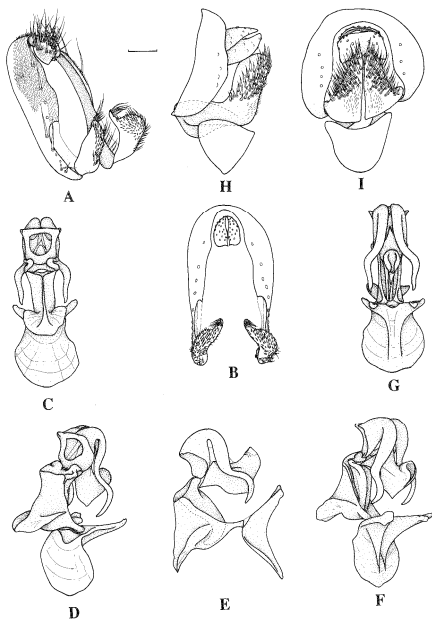


Fig. 12. *Cladochaeta uniradiata*, lectotype ♂ (A-G) and paralectotype ♀ (H, I). A, epandrium, cerci and surstyli; oblique posterior view. B, *idem*; posterior view. C-G, aedcagus, aedeagal apodeme, hypandrium, anterior and posterior parameres; several views. H, tergite VIII, epiproct, hypoproct, heavily sclerotized plate and left ovipositor plate; lateral view. I, *idem*, plus right ovipositor plate; posterior view. Bar = 100 μ m.

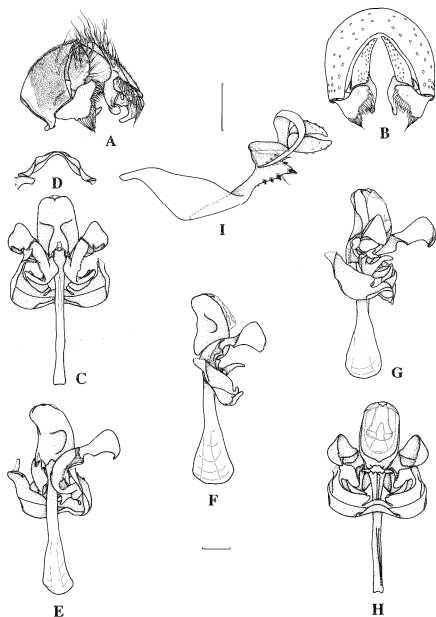


Fig. 13. *Diathoneura albifacies*, lectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci and surstyli; oblique posterior view. B, *idem*; posterior view. C-H, hypandrium, fused posterior parameres (accidentally broken and only illustrated in D), gonopods, aedeagus, aedeagal apodeme and anterior parameres; several views. I, tergite VIII, epiproct, hypoproct and left ovipositor plate; lateral view. Bars = 100 μ m (A-H = horizontal; I = vertical).

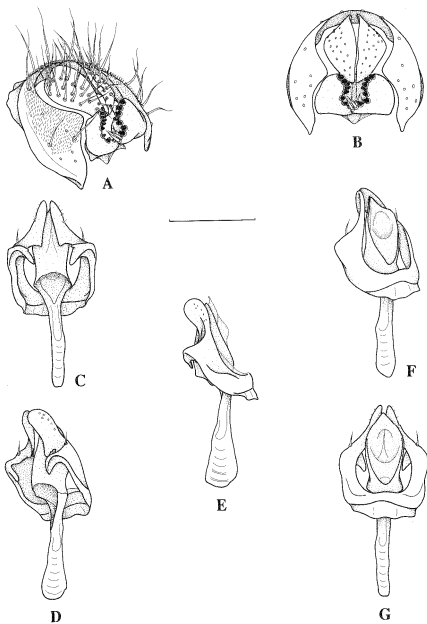


Fig. 14. *Diathoneura albinota*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme and hypandrium; several views. Bar = 100 μ m.

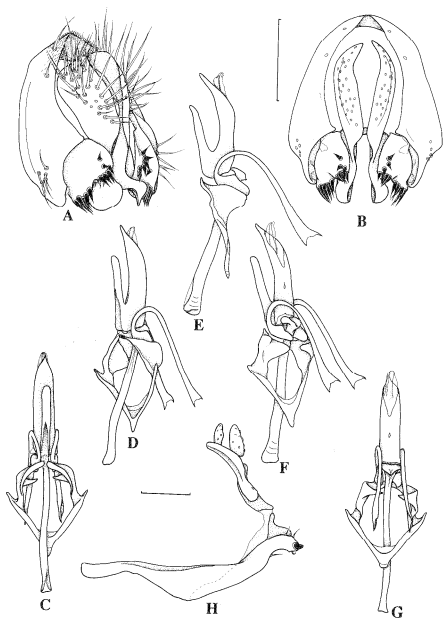


Fig. 15. *Diathoneura brasiliensis*, lectotype ♂ (A-G) and paralectotype ♀ (H). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme, anterior parameres and hypandrium; several views. H, tergite VIII, epiproct, hypoproct and left ovipositor plate; lateral view. Bars = 100 μ m (A-H = horizontal; I = vertical).

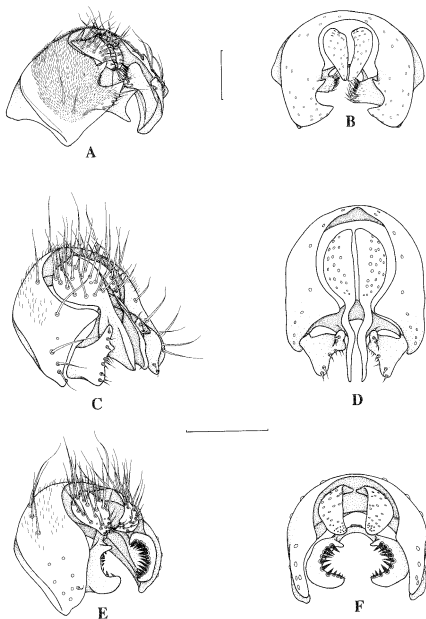


Fig. 16. *Diathoneura cruciata*, paralectotype ♂ (A and B); *Diathoneura guttipennis*, lectotype ♂ (C and D) and *Diathoneura euryopa*, lectotype ♂ (E and F). A, C and E, epandrium, cerci, surstyli and decastemum; oblique posterior view. B, D and F, *idem*; posterior view. Bars = 100 μ m (A and B = vertical; C-F = horizontal).

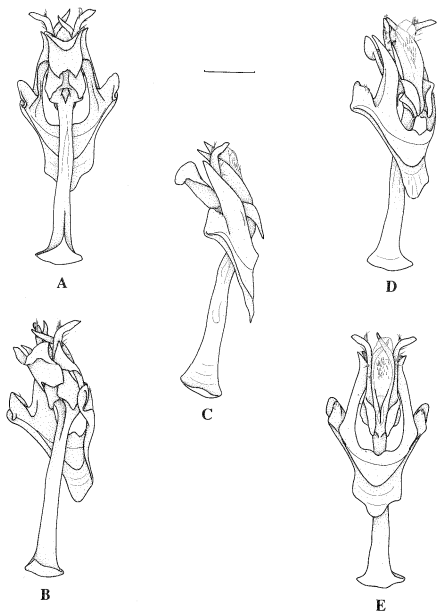


Fig. 17. *Diathoneura cruciata*, paralectotype ♂. A-E, aedeagus, anterior parameres, fused posterior parameres, aedeagal apodeme and hypandrium; several views. Bar = 100 μ m.

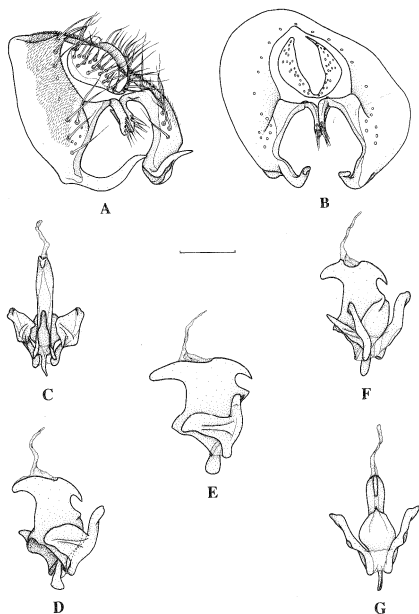


Fig. 18. *Diathoneura dudai*, holotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme and hypandrium; several views. Bar = 100 μ m.

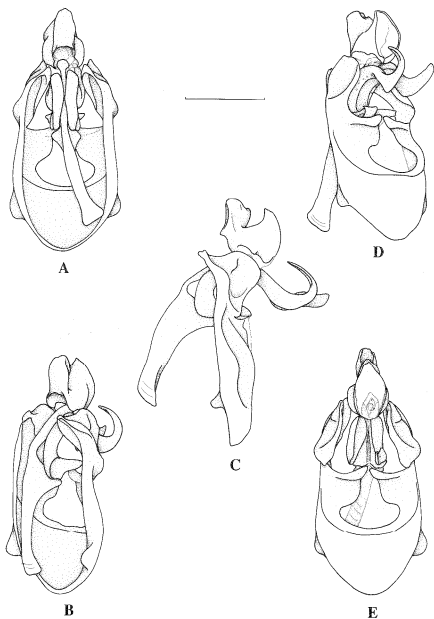


Fig. 19. *Diathoneura euryopa*, lectotype ♂. A-E, aedeagus, anterior parameres, aedeagal apodeme and hypandrium; several views. Bar = 100 μ m.

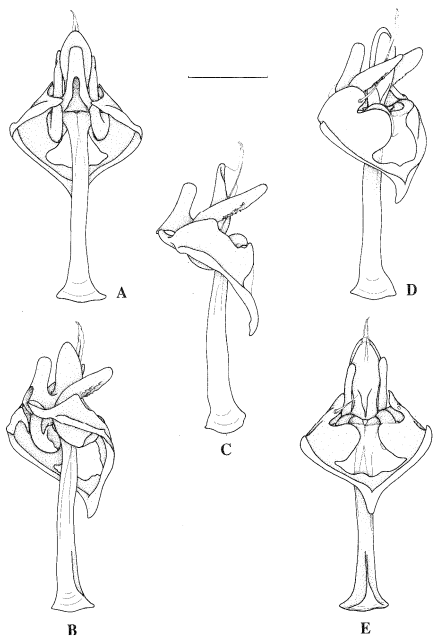


Fig. 70. *Diathoneura guttipennis*, lectotype ♂. A-E, aedeagus, anterior parameres, aedeagal apodeme and hypandrium; several views. Bar = 100 μ m.

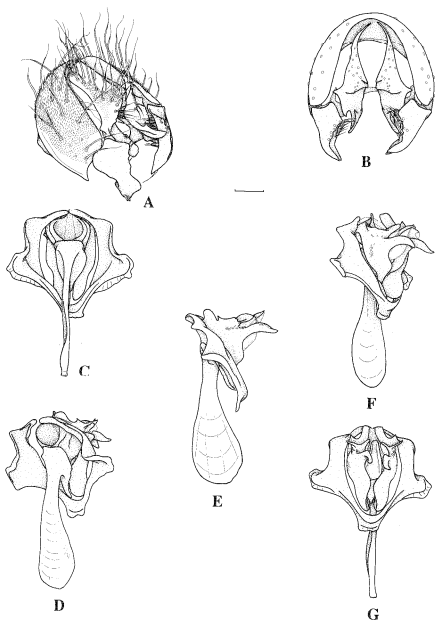


Fig. 21. *Diathoneura longipennis*, holotype ♂. A, epandrium, cerci, surstyli and decastrum; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme, anterior parameres and hypandrium; several views. Bar = 100 μ m.

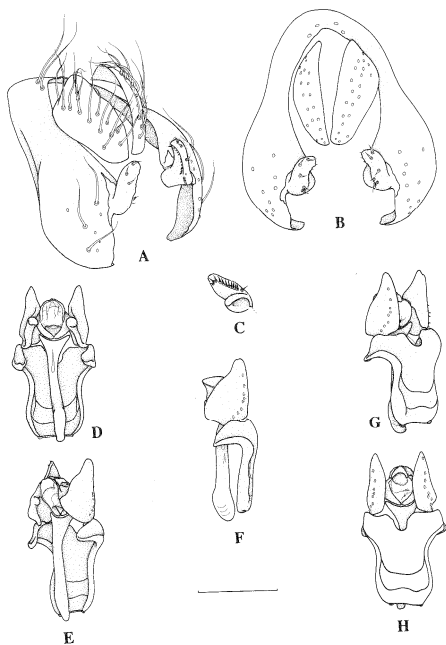


Fig. 22. *Diathoneura magnipennis*, holotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B, *idem*; posterior view. C, left surstylus; anterior view. D-H, aedeagus, aedeagal apodeme, parameres and hypandrium; several views. Bar = 100 μ m.

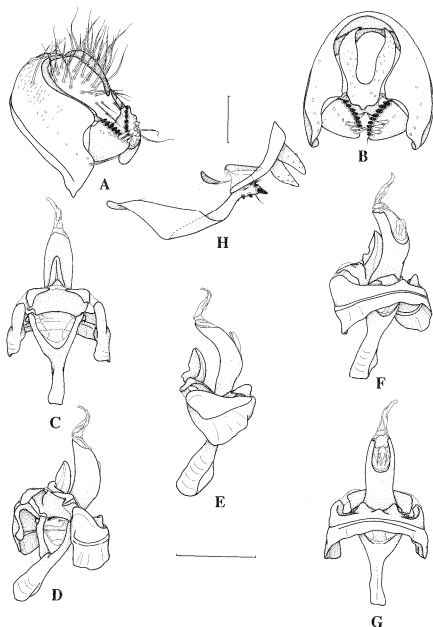


Fig. 23. *Diathoneura nana*, lectotype ♂ (A-G) and paralectotype ♀ (H). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme, hypandrium, anterior and posterior parameres (fused); several views. H, tergite VIII, epiproct, hypoproct and left ovipositor plate; lateral view. Bars = 100 μ m (A-G = horizontal; H = vertical).

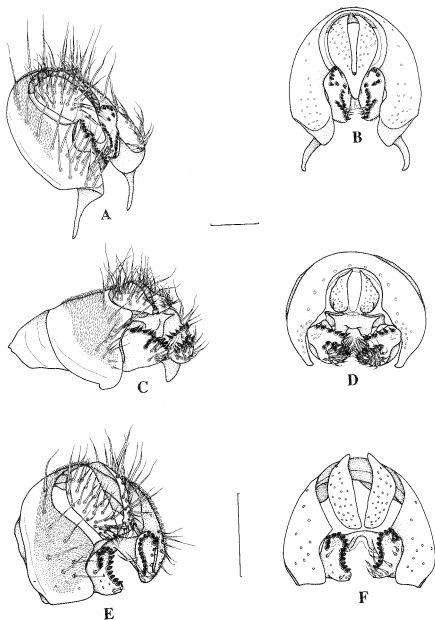


Fig. 24. *Diathoneura nigrescens*, lectotype ♂ (A and B); *Diathoneura nigrifrons*, lectotype ♂ (C and D) and *Diathoneura opaca*, lectotype ♂ (E and F). A, C and E, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, D and F, *idem*; posterior view. Bars = 100 μ m (A-D = horizontal; E and F = vertical).

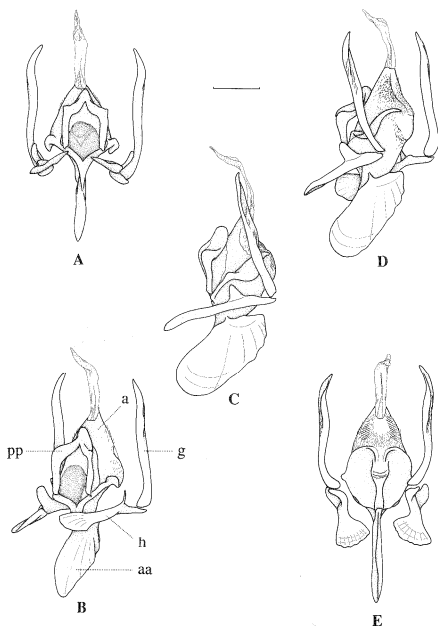


Fig. 25. *Diathoneura nigrescens*, lectotype ♂. A-E, aedeagus, fused posterior parameres, aedeagal apodeme, hypandrium and gonopods; several views. Bar = 100 μ m. Abbreviations: a = aedeagus, aa = aedeagal apodeme, g = gonopod, h = hypandrium, pp = posterior parameres (fused).

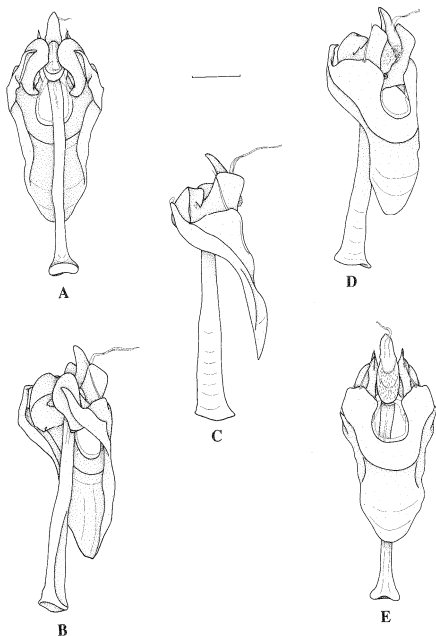


Fig. 26. *Diathoneura nigrifrons*, lectotype ♂. A-E, aedeagus, anterior parameres, aedeagal apodeme and hypandrium; several views. Bar = 100 µm.

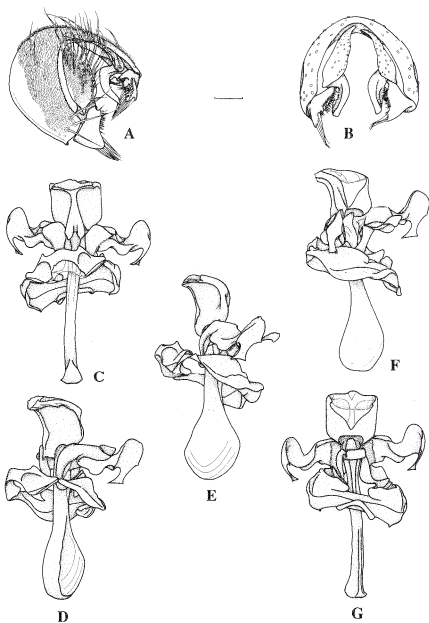


Fig. 27. *Diathoneura nubeculosa*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*, posterior view. C-G, aedeagus, aedeagal apodeme, anterior parameres, fused posterior parameres and hypandrium; several views. Bar = 100 μ m.

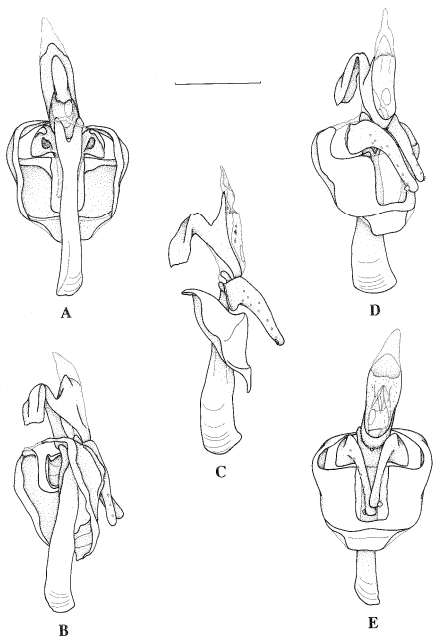


Fig. 28. *Diathoneura opaca*, lectotype ♂. A-E, aedeagus, anterior parameres, aedeagal apodeme and hypandrium; several views. Bar = 100 μm.

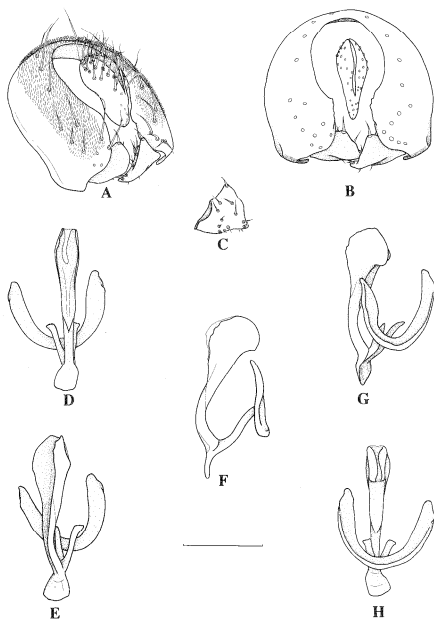


Fig. 29. *Diathoneura peruviana*, holotype ♂. A, epandrium, cerci and surstyli; oblique posterior view, B, *idem*; posterior view. C, right surstylus, anterior view. D-H, aedeagus, aedeagal apodeme, anterior parameres and hypandrium; several views. Bar = 100 μ m.

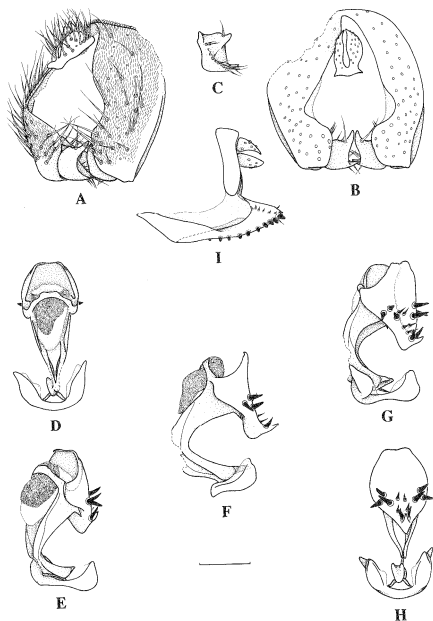


Fig. 30. *Diathoneura pleurolineata*, paralectotype ♂ (A-H) and lectotype ♀ (I). A, epandrium, cerci and surstyli; oblique posterior view. B, *idem*; posterior view. C, right surstylus; anterior view. D-H, aedeagus, hypandrium and anterior parameres; several views. I, tergite VIII, epiproct, hypoproct and left ovipositor plate; lateral view. Bar = 100 μ m.

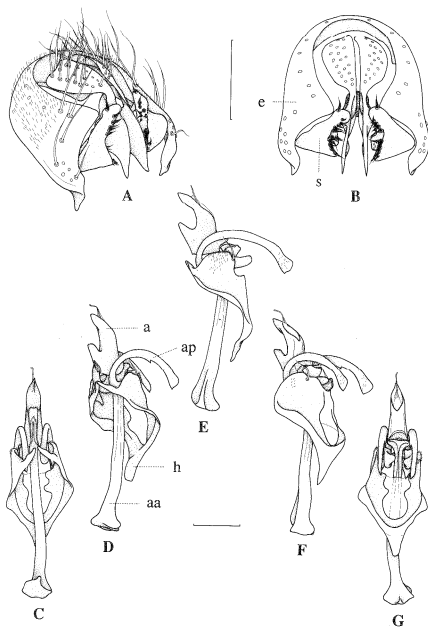


Fig. 31. *Diathoneura quadrivittata*, lectotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme, anterior parameres and hypandrium; several views. Bars = 100 μ m (A and B = vertical; C-G = horizontal). Abbreviations: a = aedeagus, aa = aedeagal apodeme, ap = anterior paramere, e = epandrium, h = hypandrium, s = surstylus.

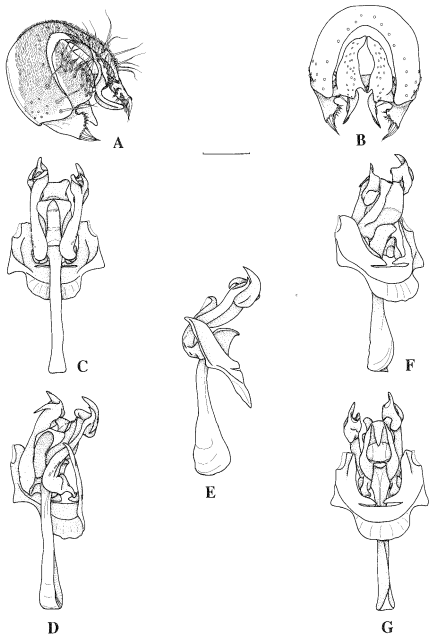


Fig. 32. *Diathoneura smithi*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme, anterior parameres and hypandrium; several views. Bar = 100 μ m.

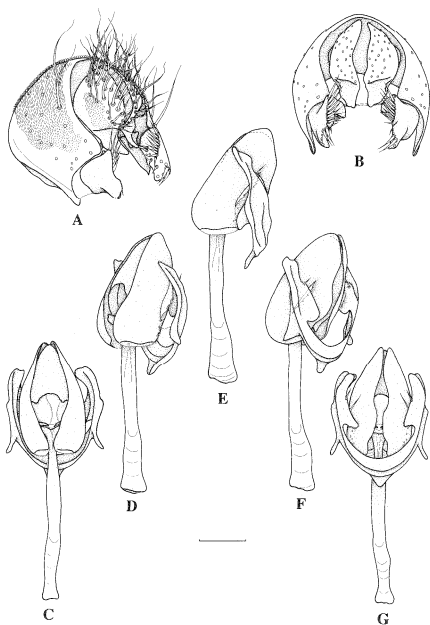


Fig. 33. *Diathoneura tanypiera*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apophysis, anterior parameres and hypandrium; several views. Bar = 100 μ m.

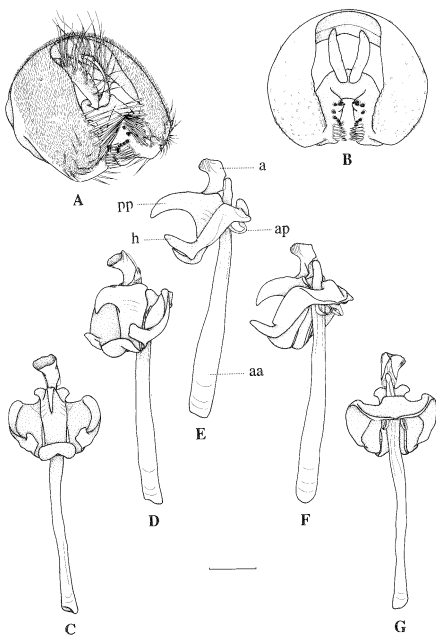


Fig. 34. *Diathoneura tessellata*, paralectotype ♂. A, epandrium, cerci, surstyli and decaestemum; oblique posterior view. B, *idem*; posterior view. C-G, aedeagus, aedeagal apodeme, anterior parameres, fused posterior parameres and hypandrium; several views. Bar = 100 μ m. Abbreviations: a = aedeagus, aa = aedeagal apodeme, ap = anterior paramere, bh = bow of hypandrium, h = hypandrium, pp = posterior parameres (fused).

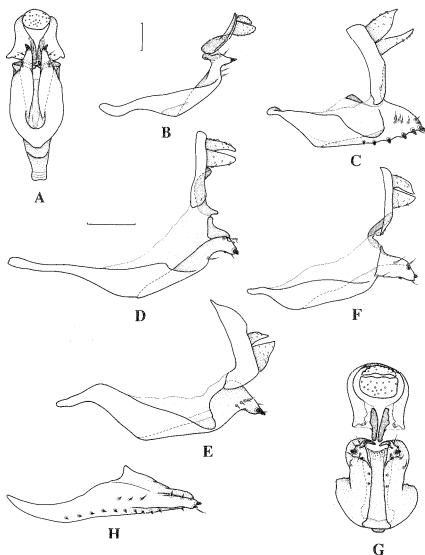


Fig. 35. Tergite VIII, epiproct, hypoproct and left ovipositor plates of *Diathoneura* species: *D. trisetata*, holotype ♀ (A and B); *D. plumata*, holotype ♀ (C); *D. borgmeleri*, holotype ♀ (D); *D. laticeps*, holotype ♀ (E); *D. maculipennis*, holotype ♀ (F and G) and left ovipositor plate of *D. flavolineata*, holotype ♀ (H). A and G: posterior view. B-F and H: lateral view. Bars = 100 μ m (A-C = vertical; D-G = horizontal).

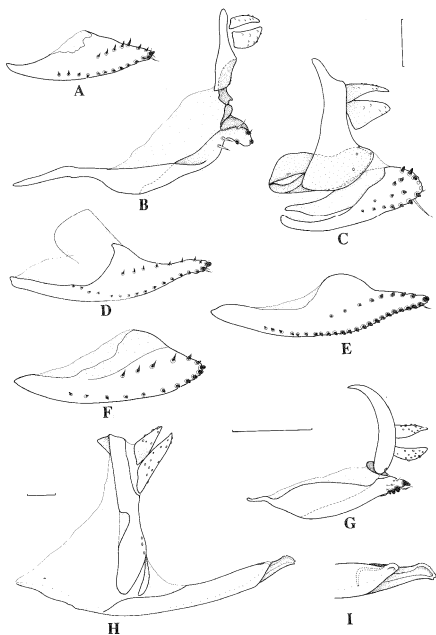


Fig. 36. Lateral views of left ovipositor plates of 7 species of *Diathoneura*: *D. nigrescens*, collected in "5.V.1921", paralectotype ♀ (A); *D. guttipennis*, paralectotype ♀ (B); *D. cruciata*, lectotype ♀ (C); *D. nigrescens*, collected in "26.VI.1921", paralectotype ♀ (D); *D. nigrifrons*, paralectotype ♀ (E); *D. opaca*, paralectotype ♀ (F); *D. euryopa*, paralectotype ♀ (G) and *D. tessellata*, holotype ♀ (H and I); I, detail of tip. Figures B, C, G, and H also include tergite VIII, epiproct and hypoproct. Bars = 100 μ m (A-G and I = vertical; F = longer horizontal and H = shorter horizontal).

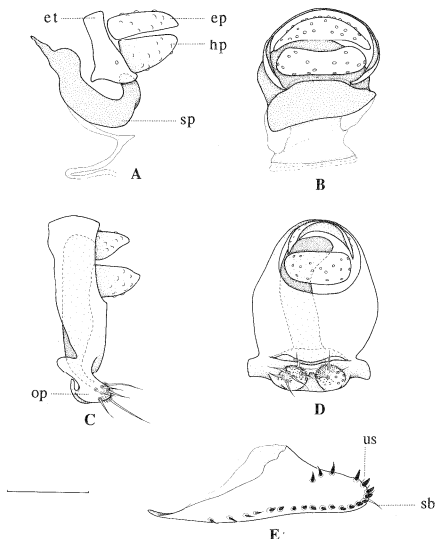


Fig. 37. *Diathoneura taeniatipennis*, lectotype ♀ (A and B); *Cladochaeta nebulosa*, holotype ♀ (C and D) and *Neotanygastrella boliviensis*, holotype ♀ (E). A and C, tergite VIII, epiproct, hypoproct, heavily sclerotized plate and left ovipositor plate, but the latter for the former species only; lateral view. B and D, *idem*; posterior view, respectively. E, left ovipositor plate; lateral view. Bar = 100 μ m. Abbreviations: ep = epiproct, et = tergite VIII, hp = hypoproct, sh = subterminal bristle, sp = sclerotized plate, op = ovipositor plate, us = uppermost sensillum.

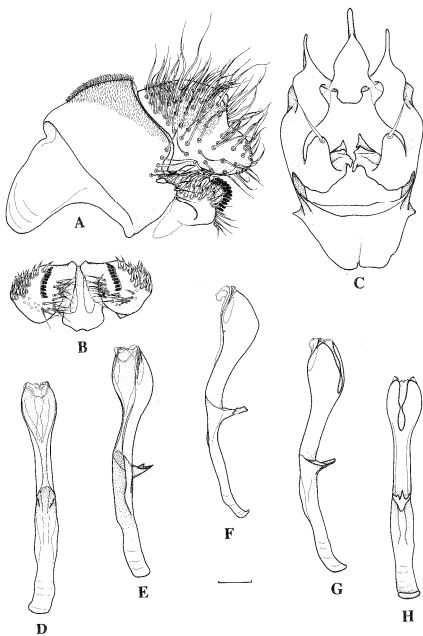


Fig. 38. *Drosophila appendiculata*, holotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

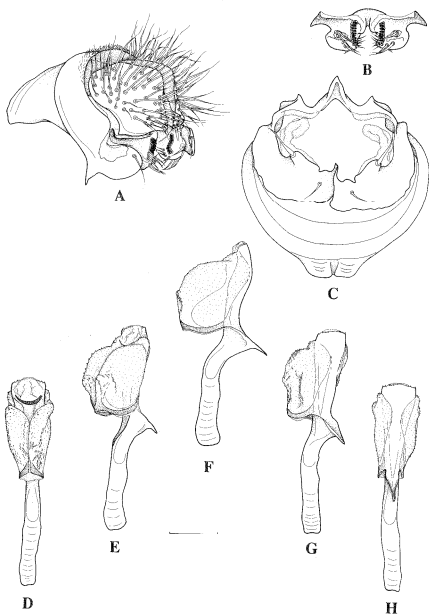


Fig. 39. *Drosophila atrata*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

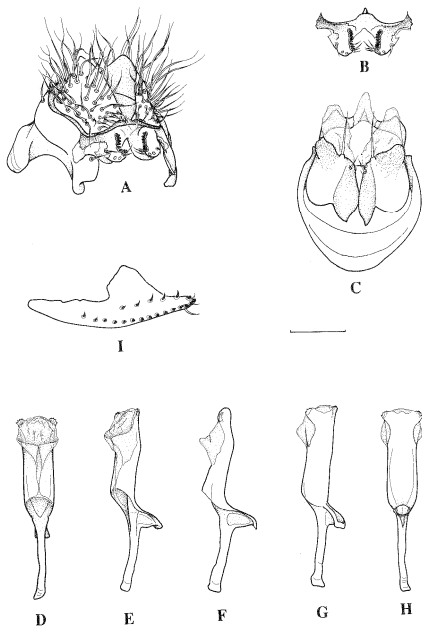


Fig. 40. *Drosophila calloptera*, lectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

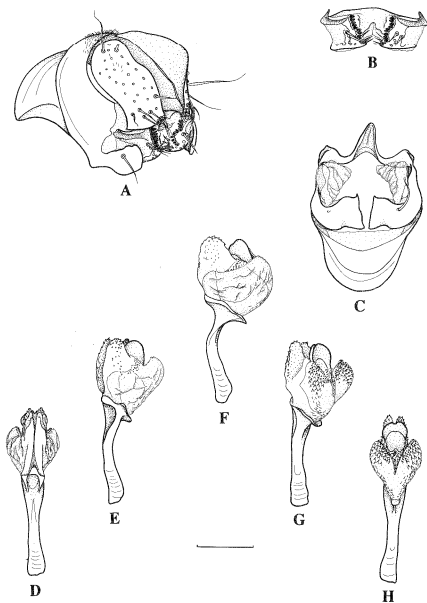


Fig. 41. *Drosophila kallima*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

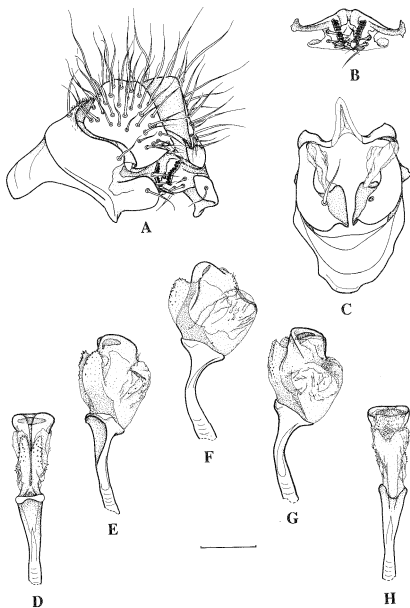


Fig. 42. *Drosophila lindae*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme (anterior region missing, accidentally broken); several views. Bar = 100 μ m.

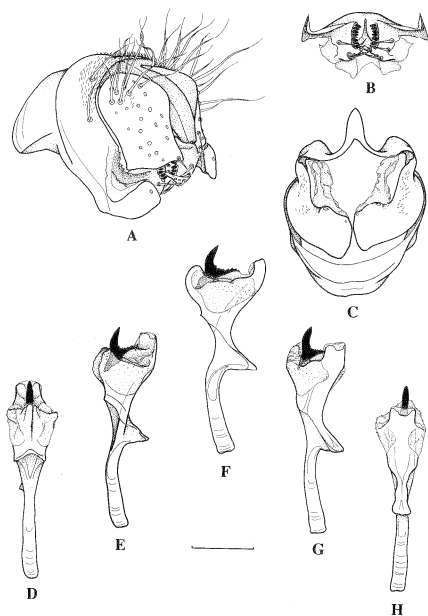


Fig. 43. *Drosophila maracaya*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

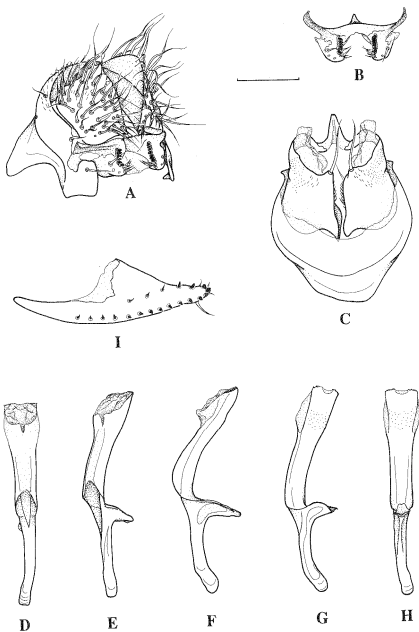


Fig. 44. *Drosophila ornatiipennis*, lectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

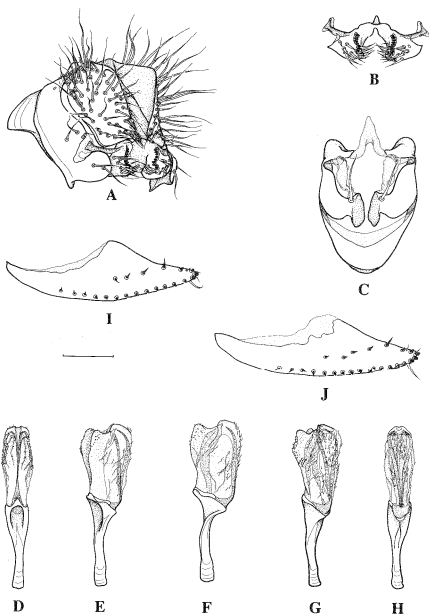


Fig. 45. *Drosophila quadrum*, ordinary ♂ (A-H), and ♀ (I), March 1952, Rio de Janeiro, Brazil, and lectotype ♀ (J). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. J, *idem* (lectotype); lateral view. Bar = 100 μ m.

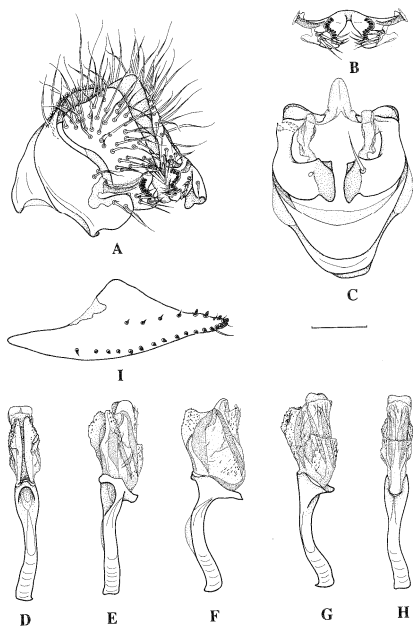


Fig. 46. *Drosophila schildi*: paralectotype ♂ (A-H) and paralectotype ♀ (I), both of junior synonym *D. poeciloptera*. A, epandrium, cerci, surstyli and decastemum; oblique posterior view. B, surstyli and decastemum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

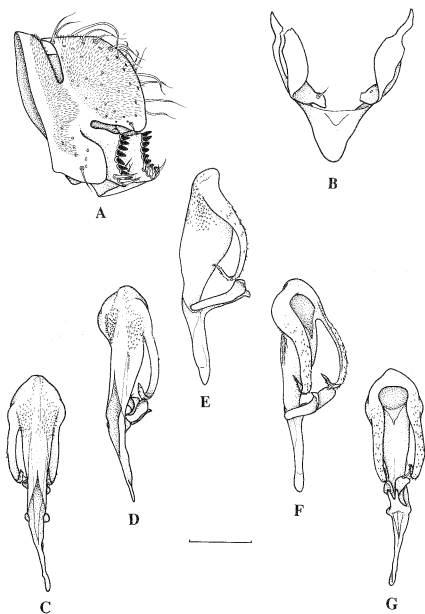


Fig. 47. *Drosophila albomarginata*, holotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B, hypandrium and gonopods; posterior view. C-G, aedeagus, aedeagal apodeme and parameres; several views. Structures in figs. A and B were accidentally slightly deformed. Bar = 100 μ m.

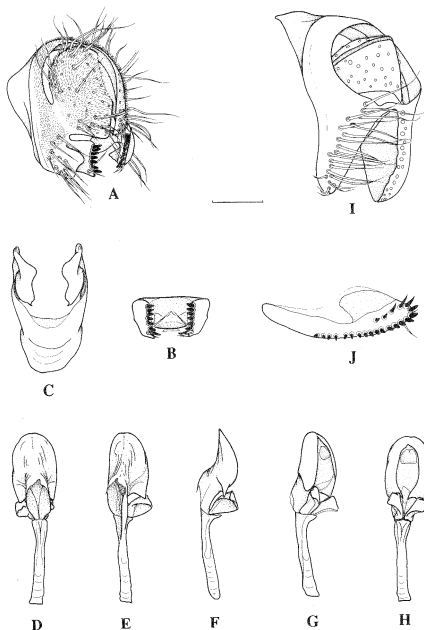


Fig. 48. *Drosophila annularis*, lectotype ♂ (A-H) and paralectotype ♀ (I, J). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. I, tergite VIII, epiproct and hypoproct; oblique posterior view. J, left ovipositor plate; lateral view. Bar = 100 μ m.

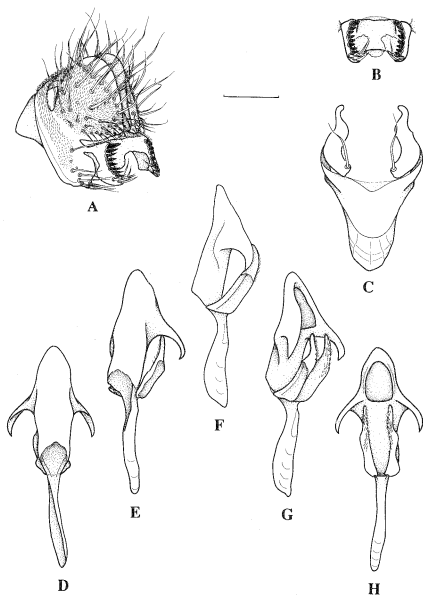


Fig. 49. *Drosophila annulosa*, sp. nov., holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

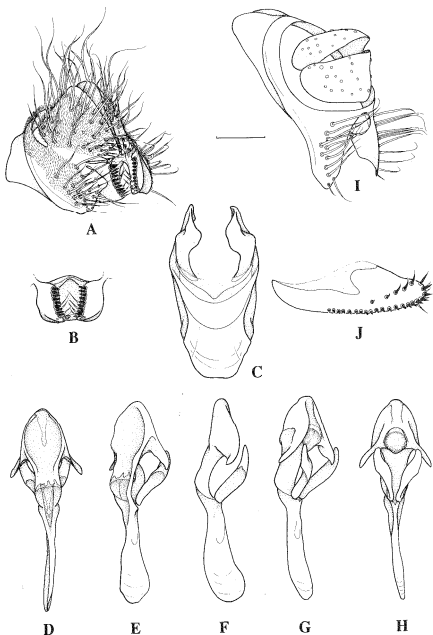


Fig. 50. *Drosophila canalinea*, ordinary ♂ (A-H) and ordinary ♀ (I, J), both from strain 1201.0 (NDSRC). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. I, tergite VIII, epiproct and hypoproct; oblique posterior view. J, left ovipositor plate; lateral view. Bar = 100 μ m.

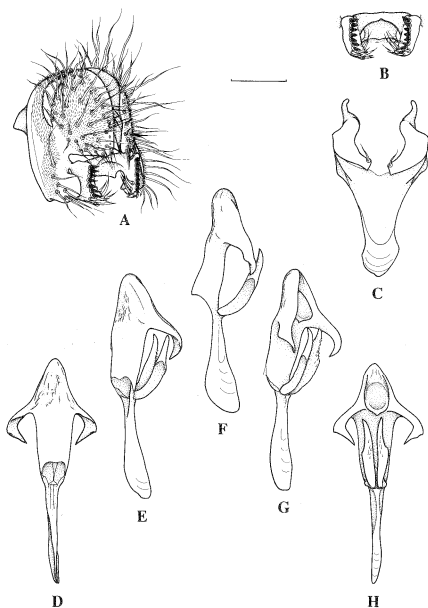


Fig. 51. *Drosophila davidgrimaldii*, sp. nov., holotype ♂. A, epandrium, cerci, surstyli and decastemum; oblique posterior view. B, surstyli and decastemum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

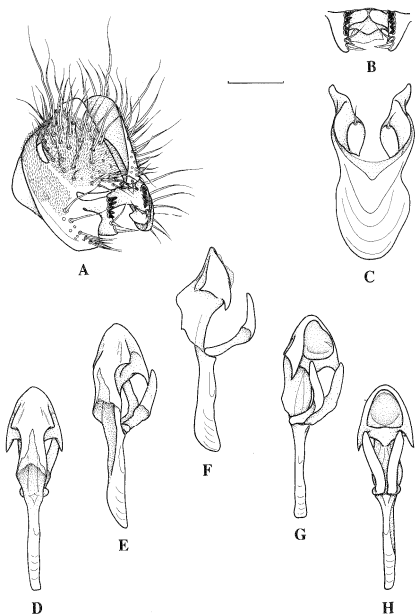


Fig. 52. *Drosophila hendeli*, sp. nov., holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

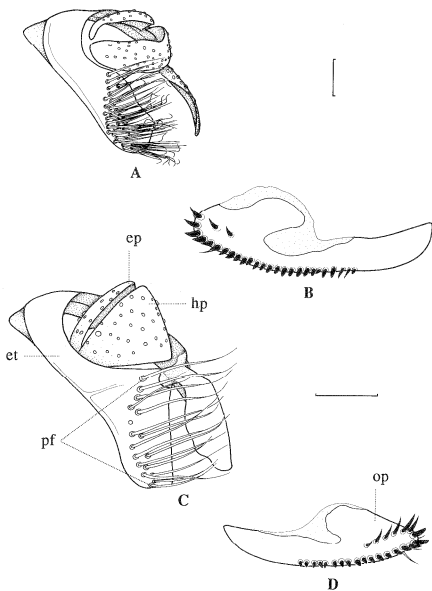


Fig. 53. Tergite VIII, epiproct, hypoproct and ovipositor plate of *Drosophila melanoptera*, holotype ♀ (A and B) and *Drosophila* undet. sp. a, from Santarém, Brazil, ♀ (C and D). A and C oblique posterior view. B (right plate) and D (left plate); lateral view. Bar = 100 μ m. Abbreviations: ep = epiproct, et = tergite VIII, hp = hypoproct, op = ovipositor plate, pf = paragenital fringe.

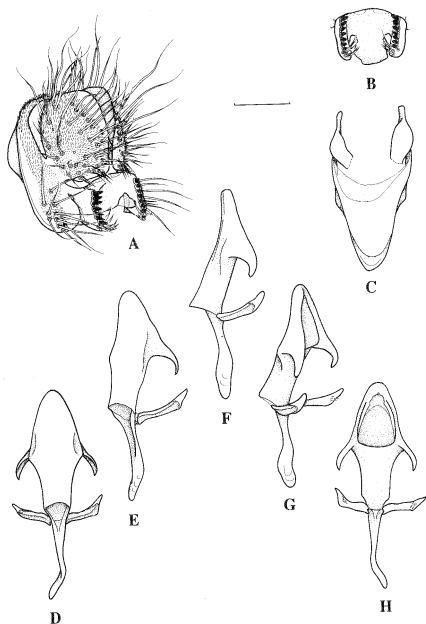


Fig. 54. *Drosophila parannularis*, sp. nov., holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods (accidentally broken; anterior region is missing); posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

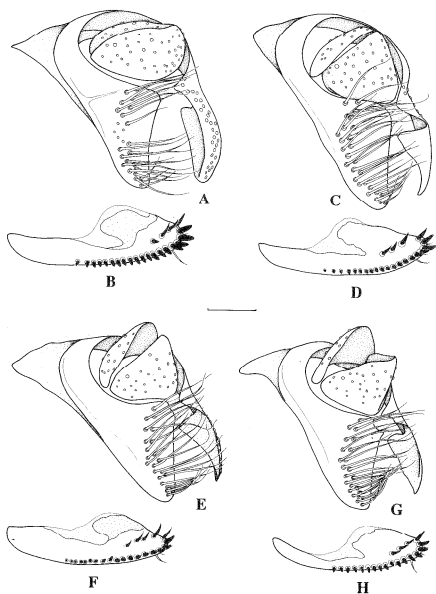


Fig. 55. Tergite VIII, epiproct, hypoproct and left ovipositor plate of four species of *Drosophila*; all collected at Suiza de Turrialba, Costa Rica: undet. sp. b ("6.V.1921"), ♀ (A and B); undet. sp. c ("13.IV.1921") ♀ (C and D); undet. sp. d (13.V.1921"), ♀ (E and F) and undet. sp. e ("23.IV.1921"), ♀ (G and H). A, C, E and G: oblique posterior view. B, D, F and H: lateral view. Bar = 100 μ m.

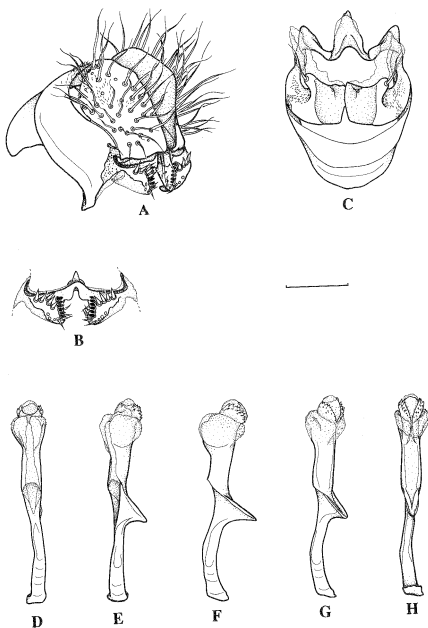


Fig. 56. *Drosophila similis*, paralectotype ♂ of *Drosophila willistoni* (see comments under Material & Methods). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

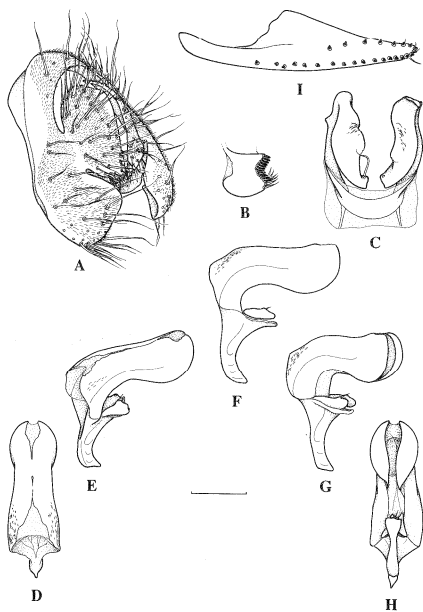


Fig. 57. *Drosophila fuscolineata*, lectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci and surstyli (hidden); oblique posterior view. B, left surstylus; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

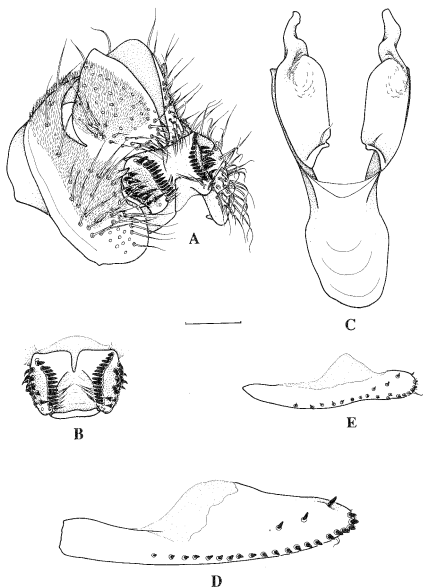


Fig. 58. *Drosophila boliviana*, lectotype ♂ (A-C), paralectotype ♀ from "Sarampioni", Bolivia (D) and paralectotype ♀ from "Yungas von Coroico", Bolivia (E). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-E, left ovipositor plate; lateral view. Bar = 100 μ m.

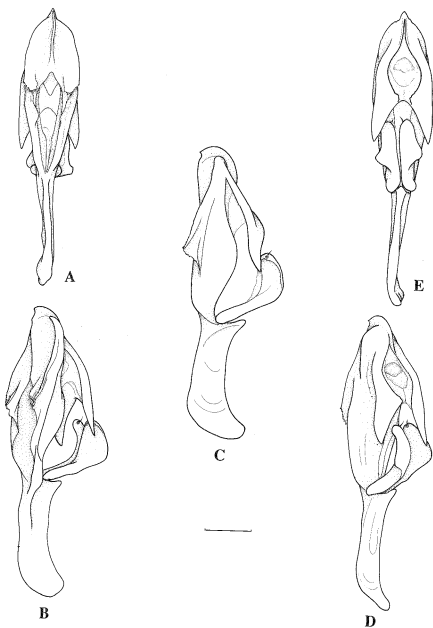


Fig. 59. *Drosophila boliviiana*, lectotype ♂. A-E, aedeagus, parameres, and aedeagal apodeme; several views. Bar = 100 μ m.

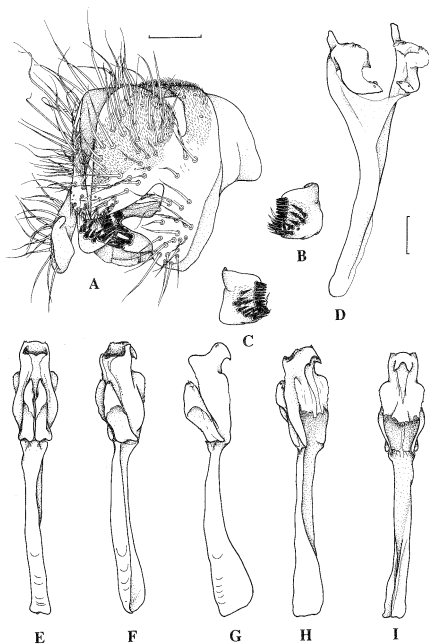


Fig. 60. *Drosophila decemseriata*, lectotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B (right) and C (left), surstyli; posterior view. D, hypandrium and gonopods; oblique posterior view. E-I, aedeagus, aedeagal apodeme and parameres; several views. Bars = 100 μ m (A-C = horizontal; D-I = vertical).

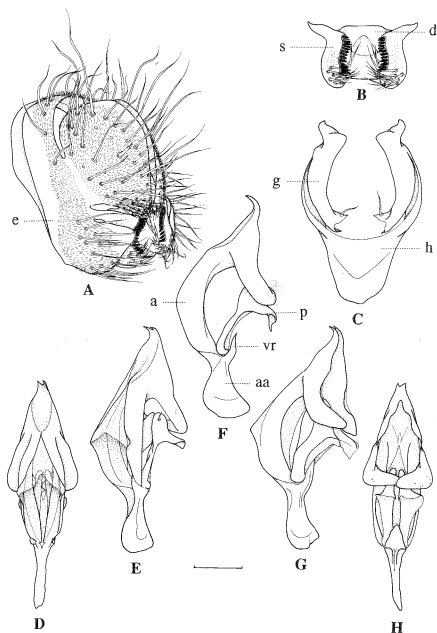


Fig. 61. *Drosophila lugubripennis*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m. Abbreviations: a = aedeagus, aa = aedeagal apodeme, d = decasternum, e = epandrium, g = gonopod, h = hypandrium, p = paramere, s = surstylus, vr = ventral rod.

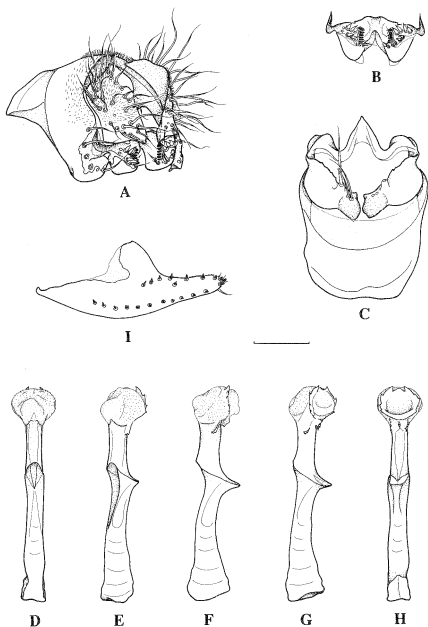


Fig. 62. *Drosophila griseolineata*, lectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

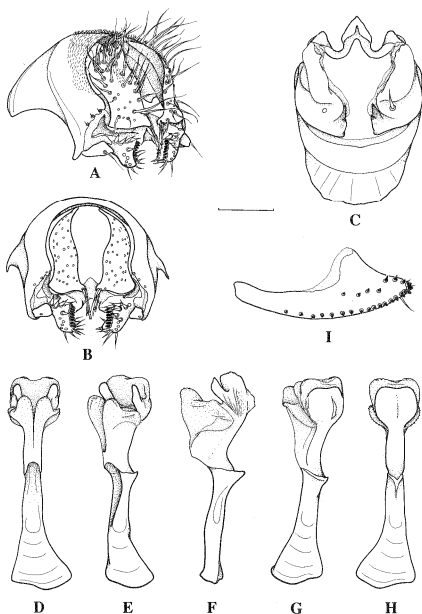


Fig. 63. *Drosophila guaraja*, lectotype ♂ (A-H) and paralectotype ♀ (I), both of junior synonym *D. pulla*. A. epandrium, cerci, surstyli and decasternum; oblique posterior view. B. *idem*; posterior view. C. hypandrium, bow of hypandrium and gonopods; posterior view. D-H. aedeagus, aedeagal apodeme and parameres; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

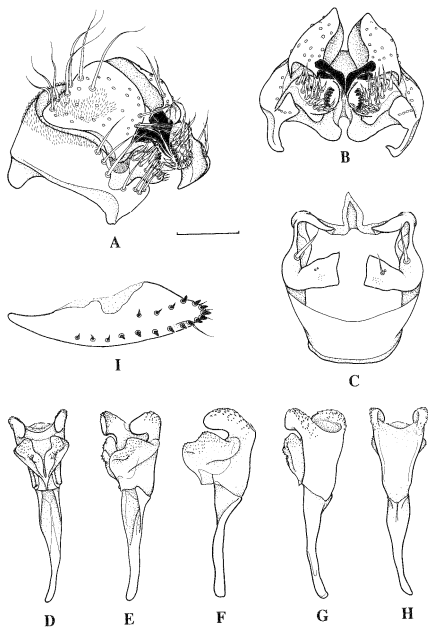


Fig. 64. *Drosophila guaru*, holotype ♂ (A-H) and paratype ♀ (I). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

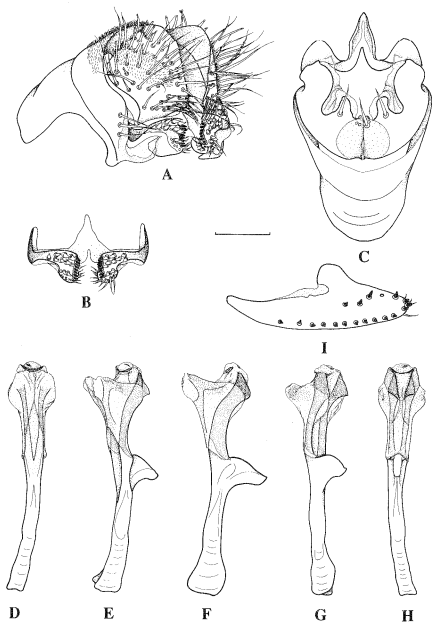


Fig. 65. *Drosophila limbinervis*, lectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

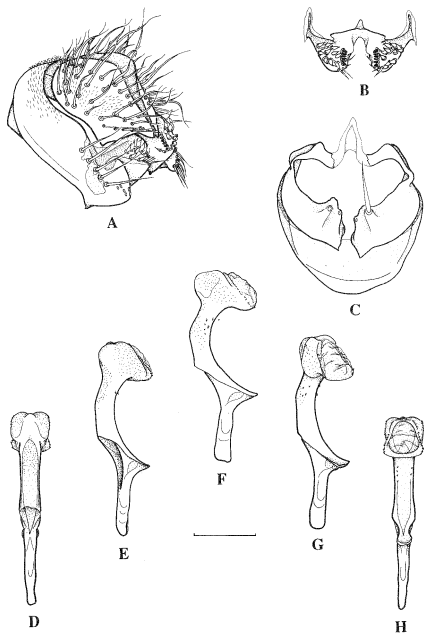


Fig. 66. *Drosophila maculifrons*, lectotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

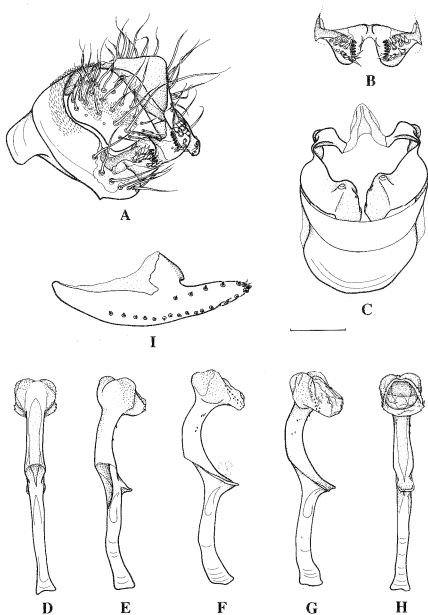


Fig. 67. *Drosophila maculifrons*, holotype ♂ (A-H) and paratype ♀ (I), both of junior synonym *D. guaramunu*. A, epandrium, cerci, surstyli and decastemum; oblique posterior view. B, surstyli and decastemum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

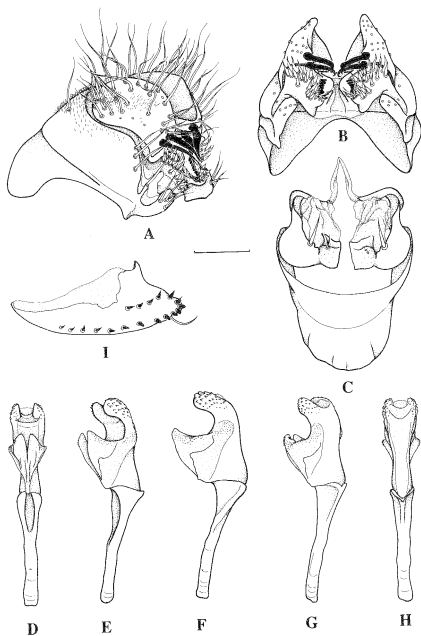


Fig. 68. *Drosophila ornatifrons*, lectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

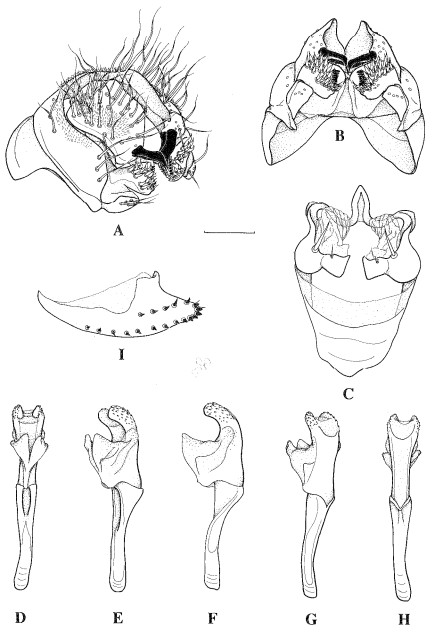


Fig. 69. *Drosophila ornatifrons*, holotype ♂ (A-H) and paratype ♀ (I), both of junior synonym *D. guarani*. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

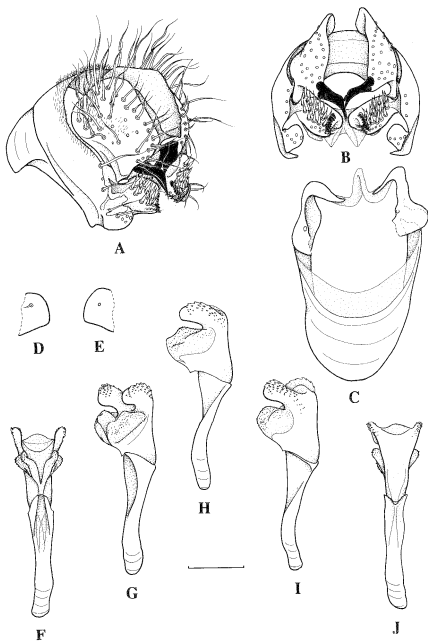


Fig. 70. *Drosophila subbadia*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium, bow of hypandrium and gonopods (accidentally broken; anterior regions are figs. D and E); posterior view. D-E, details of parameres (fused to gonopods); posterior view. F-I, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

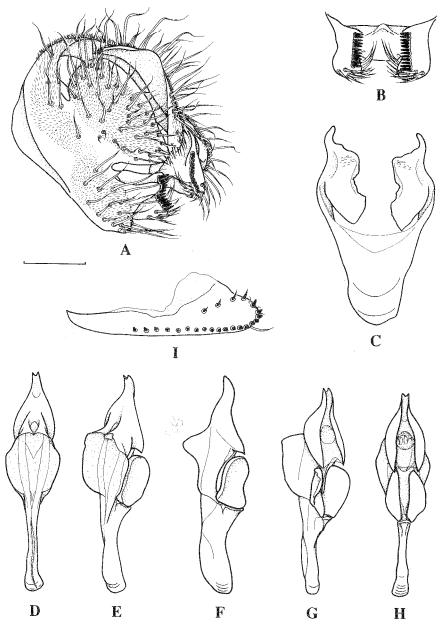


Fig. 71. *Drosophila mesophragmatica*, lectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

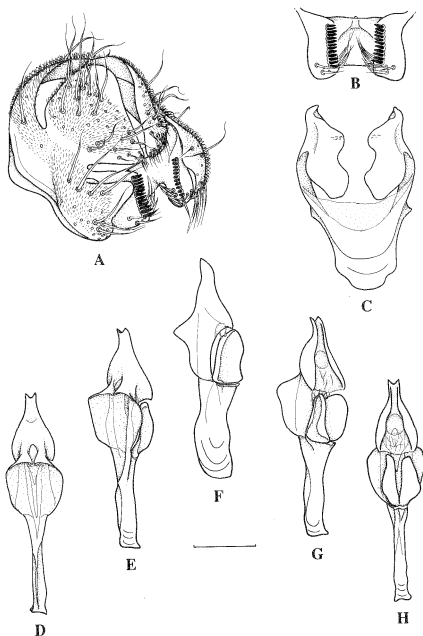


Fig. 72. *Drosophila mesophragmatica*, holotype ♂ of junior synonym *D. andina*. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

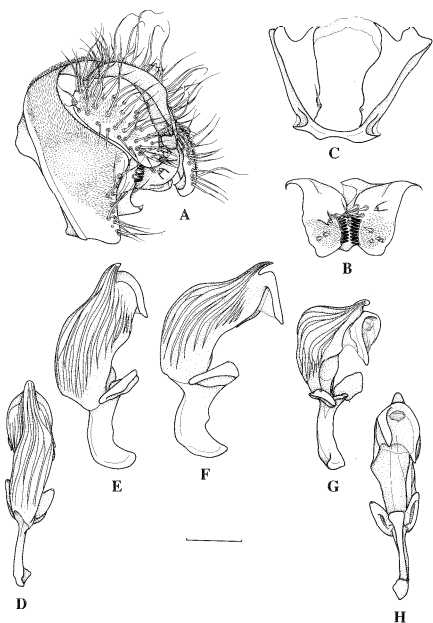


Fig. 73. *Drosophila acanthoptera*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

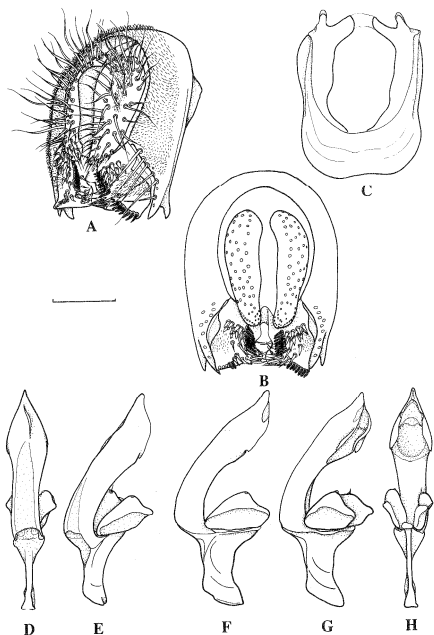


Fig. 74. *Drosophila nannoptera*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

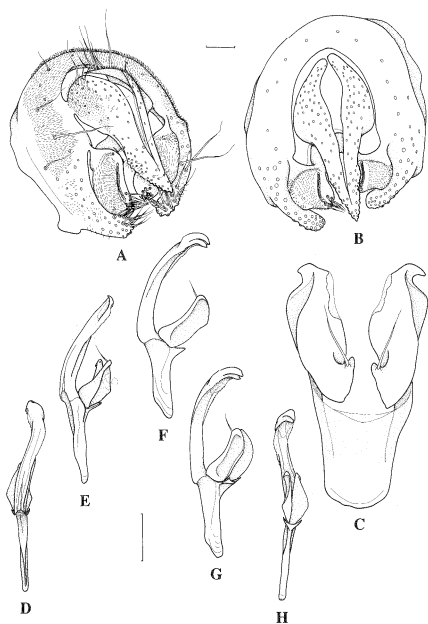


Fig. 75. *Drosophila acuminatus*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bars = 100 μ m (A-C = horizontal; D-H = vertical).

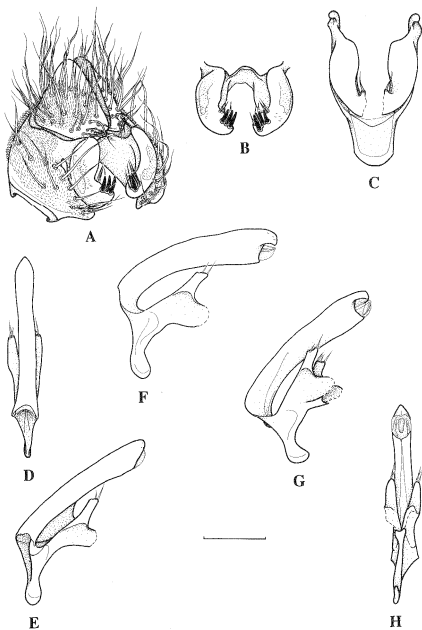


Fig. 76. *Drosophila arboloco*, ordinary ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods (intentionally broken at anterior region); posterior view. D-H, aedeagus, aedeagal apodeme and parameres (dashed lines represent regions where they are fused to gonopods); several views. Bar = 100 μ m.

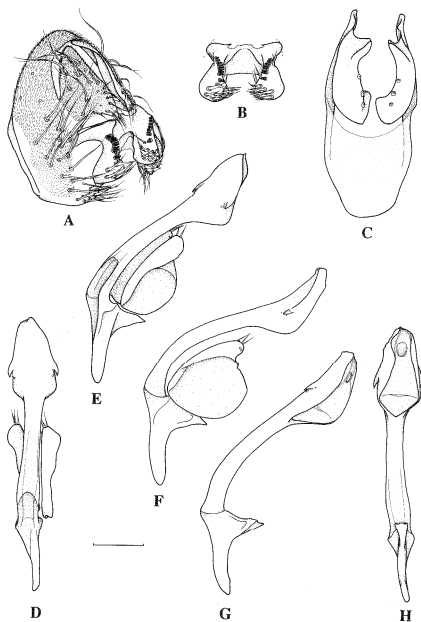


Fig. 77. *Drosophila bomarea*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views; parameres were not illustrated in figs. G and H. Bar = 100 μ m.

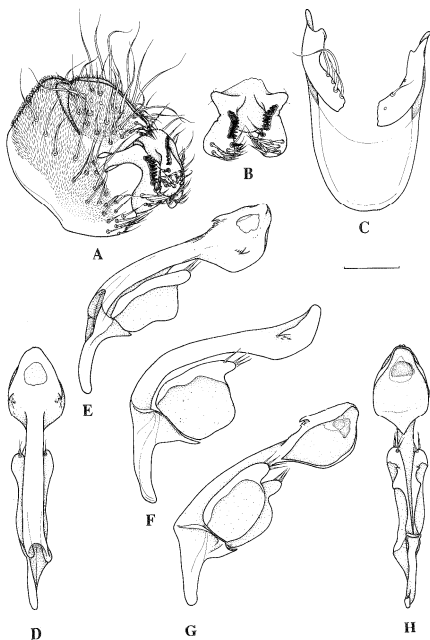


Fig. 78. *Drosophila carablanca*, holotype ♂. A, epandrium, cerci, surstyli and decastemum; oblique posterior view. B, surstyli and decastemum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar - 100 μ m.

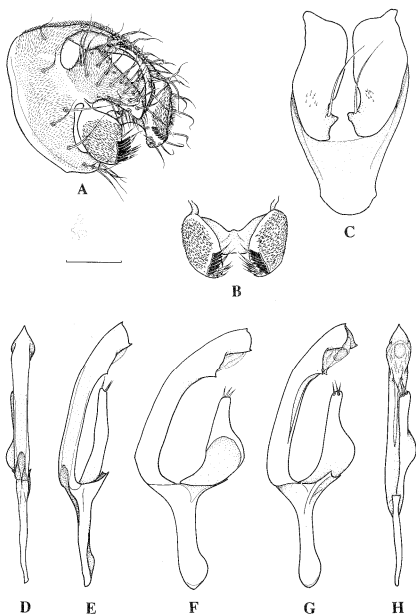


Fig. 79. *Drosophila chisaca*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views; only right paramere was illustrated in figs. D, E, G, H. Bar = 100 μ m.

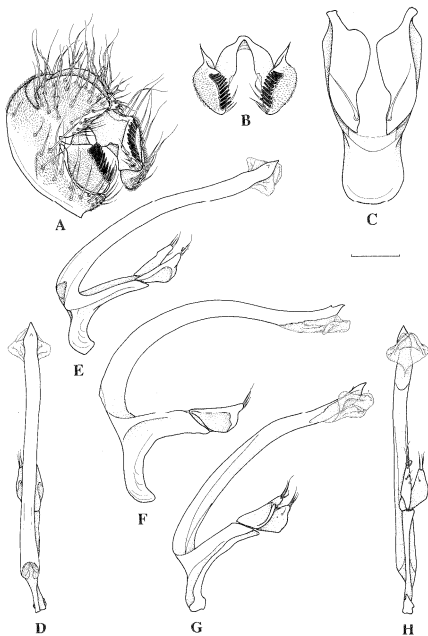


Fig. 80. *Drosophila colmenares*, paratype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

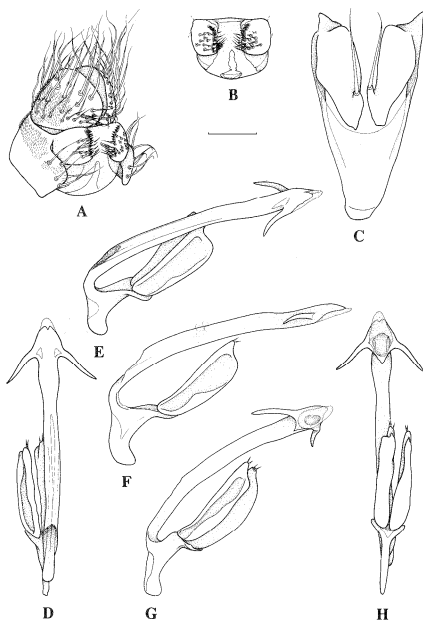


Fig. 81. *Drosophila desbaratabaile*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

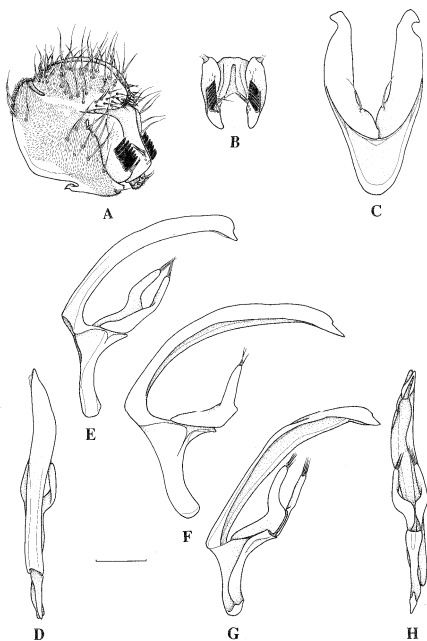


Fig. 82. *Drosophila freilejoni*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

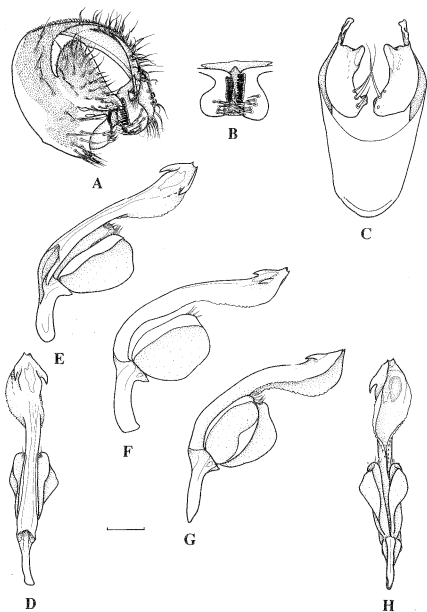


Fig. 83. *Drosophila hyalipennis*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

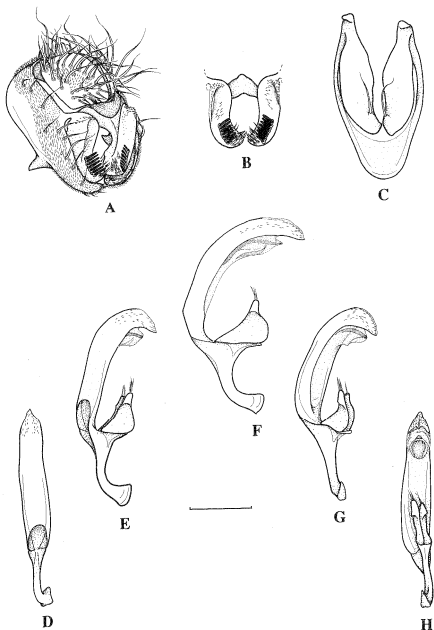


Fig. 84. *Drosophila margarita*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

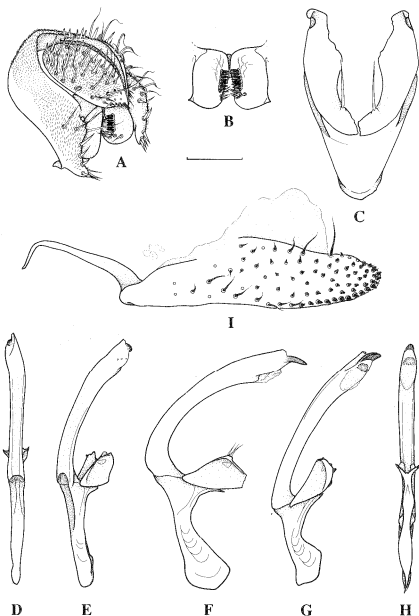


Fig. 85. *Drosophila onychophora*, lectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci and surstyli; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

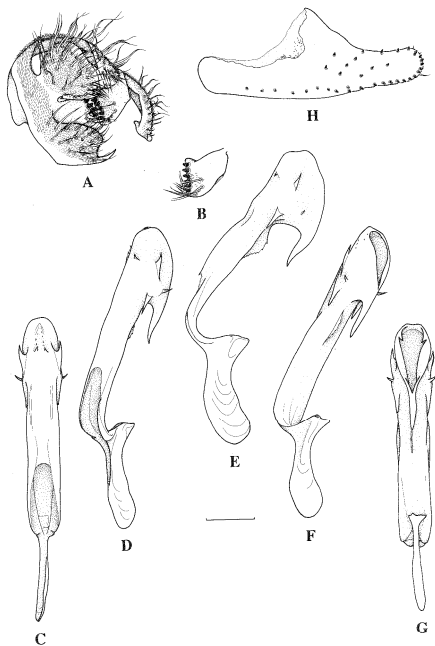


Fig. 86. *Drosophila impudica*, lectotype ♂ (A-G) and paralectotype ♀ (H). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, right surstylus; posterior view. C-G, aedeagus and aedeagal apodeme; several views. H, left ovipositor plate; lateral view. Bar = 100 μ m.

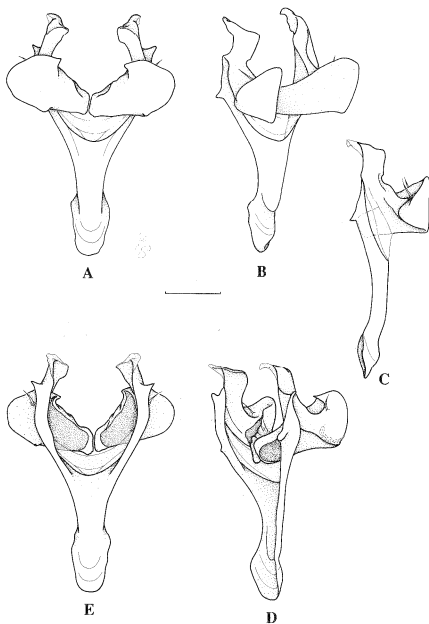


Fig. 87. *Drosophila impudica*, lectotype ♂. A-E, hypandrium and gonopods; several views. Bar = 100 μ m.

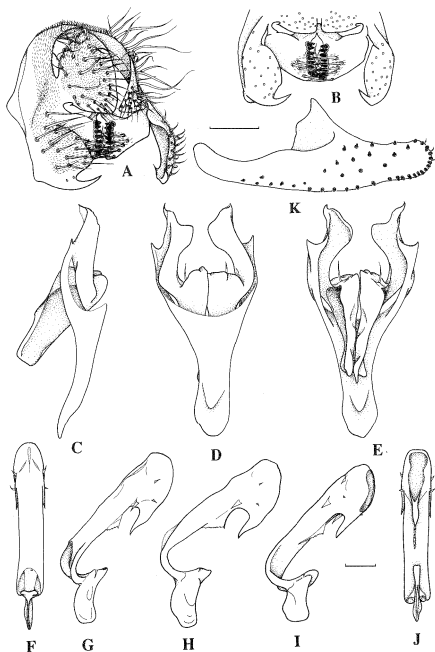


Fig. 88. *Drosophila impudica*, lectotype ♂ (A-J) and paralectotype ♀ (K), both of junior synonym *D. para.* A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli, decasternum, lower part of epandrium and cerci; posterior view. C-E, hypandrium, and gonopods; several views. F-J, aedeagus and aedeagal apodeme; several views. K, left ovipositor plate; lateral view. Bars = 100 μ m (A-E, K = long horizontal; F-J = short horizontal).

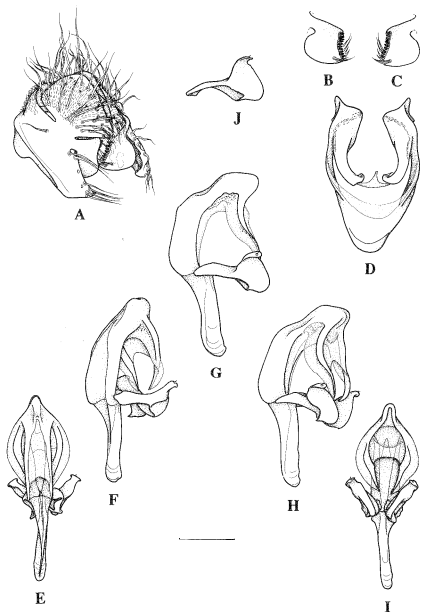


Fig. 89. *Drosophila fasciola*, holotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B-C, surstyli (decasternum intentionally omitted); posterior view. D, hypandrium and gonopods; posterior view. E-I, aedeagus, aedeagal apodeme and parameres; several views. J, left paramere; lateral view. Bar = 100 μ m.

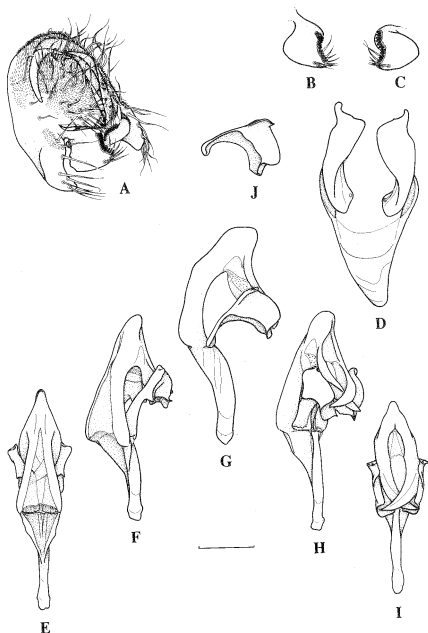


Fig. 90. *Drosophila mapiriensis*, sp. nov., holotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B-C, surstyli (decasternum intentionally omitted); posterior view. D, hypandrium and gonopods; posterior view. E-I, aedeagus, aedeagal apodeme and parameres; several views. J, left paramere; lateral view. Bar = 100 μ m.

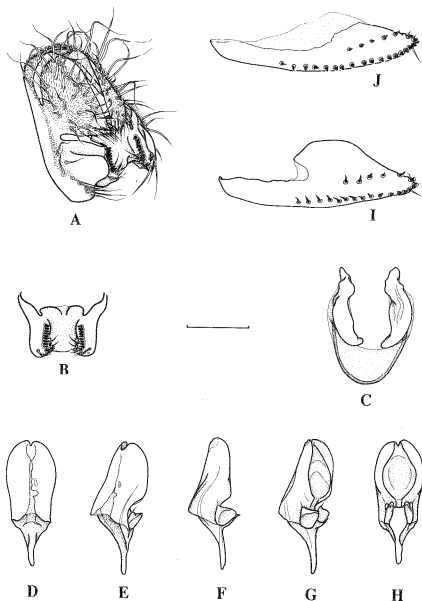


Fig. 91. *Drosophila pseudorepleta*, sp. nov., holotype ♂ (A-H), paratype ♀ (I) and *Drosophila repleta* Wollaston, Biel, Switzerland, ♀ (J). A, surstyli and decasternum; oblique posterior view. B., cerci and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. I, left ovipositor plate; lateral view. J, *idem*, (*D. repleta*). Bar = 100 μ m.

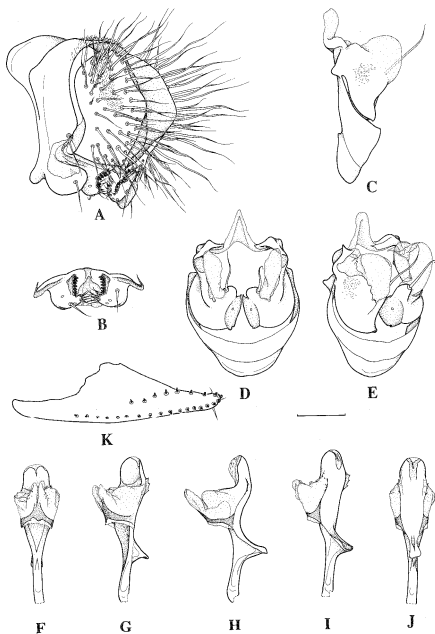


Fig. 92. *Drosophila angustibucca*, paralectotype ♂ (A-J) and paralectotype ♀ (K). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C-E, hypandrium, bow of hypandrium and gonopods; several views. F-J, aedeagus and aedeagal apodeme; several views. K, left ovipositor plate; lateral view. Bar = 100 μ m.

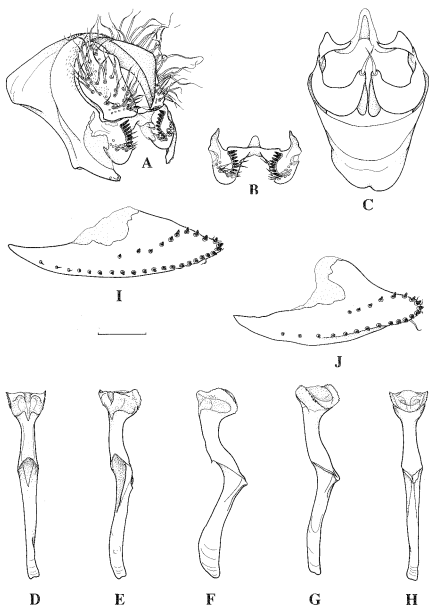


Fig. 93. *Drosophila divisa*, lectotype ♂ (A-H), paralectotype ♀ from "Laristhal", Peru, (I) and paralectotype ♀ from "Yungasweg", Bolivia (J). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme: several views. I, left ovipositor plate; lateral view. J, *idem* (specimen from Bolivia). Bar = 100 μ m.

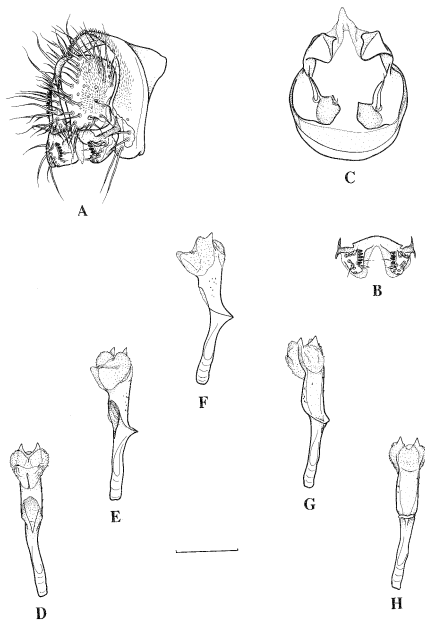


Fig. 94. *Drosophila frotaressoai*, sp. nov., holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

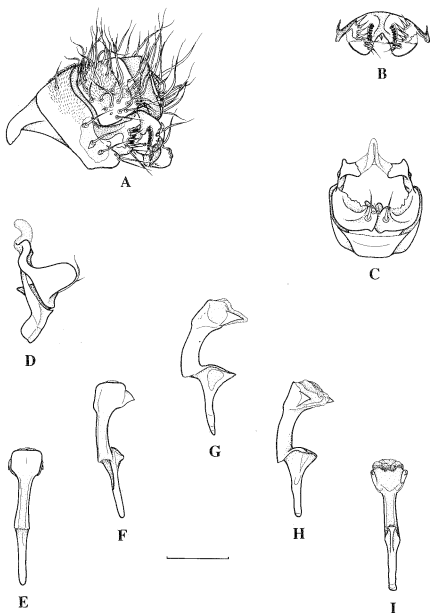


Fig. 95. *Drosophila mediotriata*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D, *idem*; lateral view. E-I, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

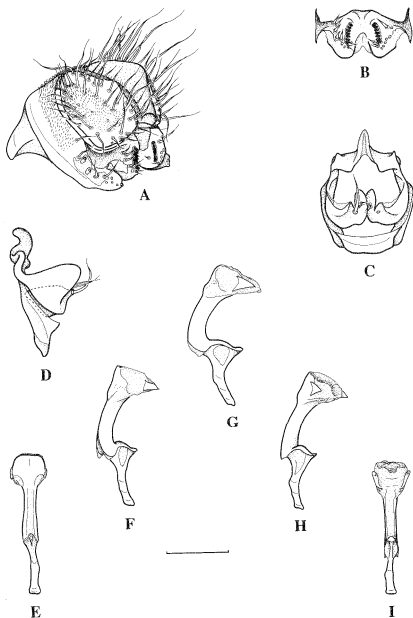


Fig. 96. *Drosophila mediotriata*, holotype ♂ of junior synonym *D. crocina*. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D, *idem*, lateral view. E-I, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

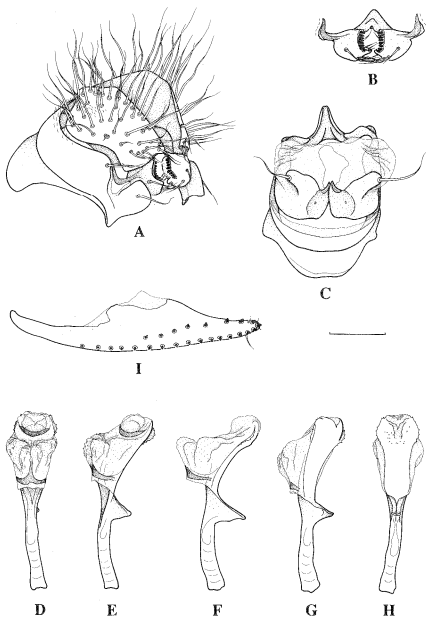


Fig. 97. *Drosophila neoguaramunu*, holotype ♂ (A-H) and paratype ♀ (I). A, epandrium, cerci, surstyli and decastemum; oblique posterior view. B, surstyli and decastemum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

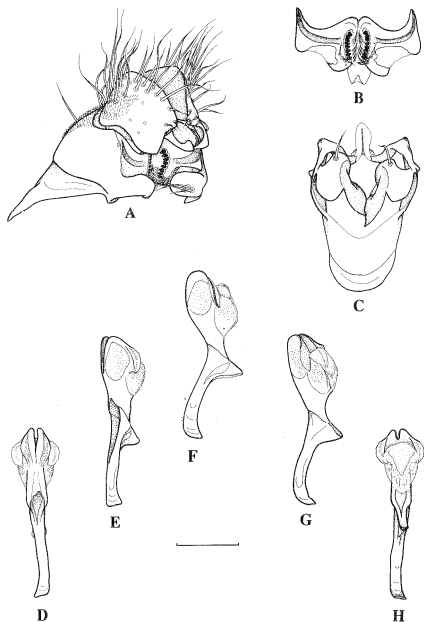


Fig. 98. *Drosophila paraguayensis*, lectotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

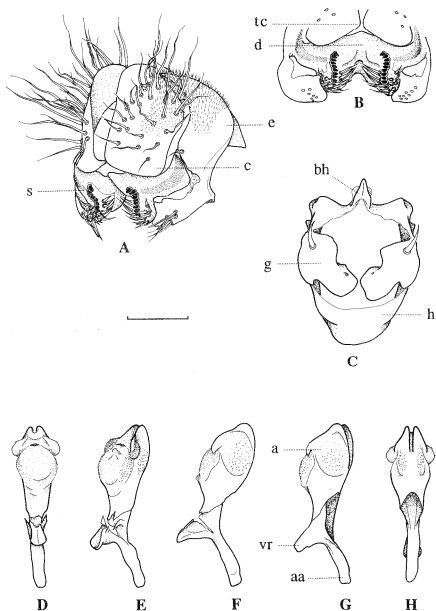


Fig. 99. *Drosophila paraguayensis*, paratype ♂ of junior synonym *D. mediosignata*. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, , surstyli, decasternum and lower region of epandrium and cerci; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme (ventral rod accidentally broken); several views. Bar = 100 μ m. Abbreviations: a = aedeagus, ap = aedeagal apodeme, bh = bow of hypandrium, c = cercus, d = decasternum, e = epandrium, g = gonopod (fused to paramere), h = hypandrium, s = surstylus, tc = tip of cercus, vr = ventral rod.

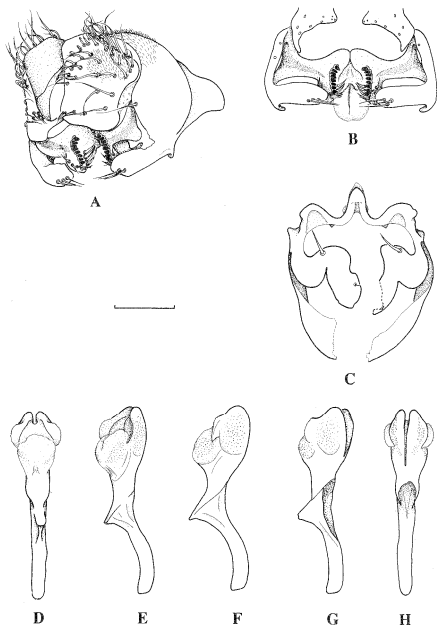


Fig. 100. *Drosophila paraguayensis*, paratype ♂ of junior synonym *D. medionotata*. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli, decasternum and lower regions of epandrium and cerci; posterior view. C, hypandrium (accidentally broken), bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

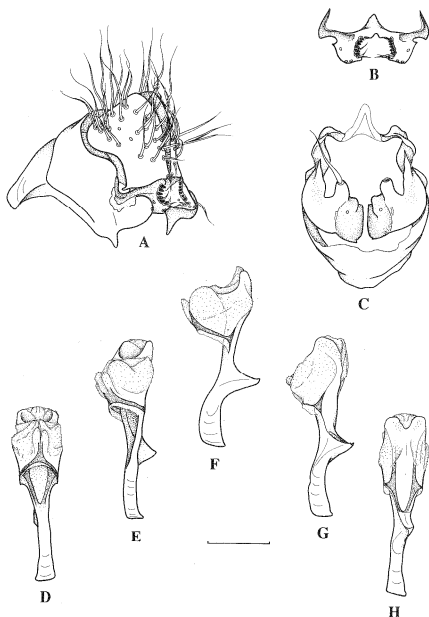


Fig. 101. *Drosophila rostrata*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

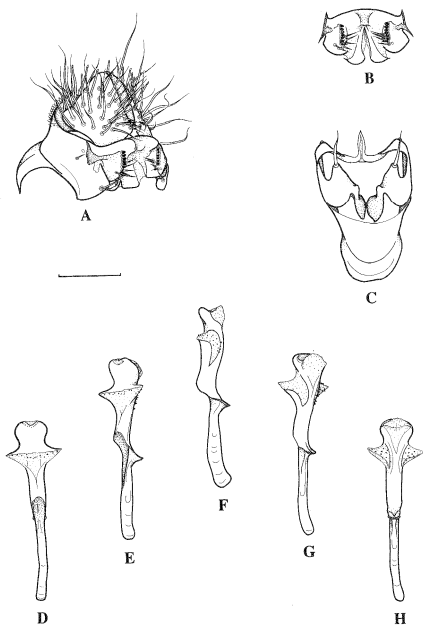


Fig. 102. *Drosophila semialba*, lectotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

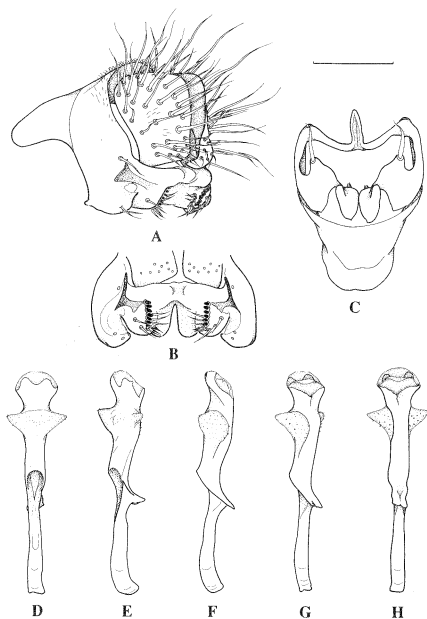


Fig. 103. *Drosophila semialba*, holotype ♂ of junior synonym *D. sucheae*. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli, decasternum and lower region of epandrium, and cerci; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

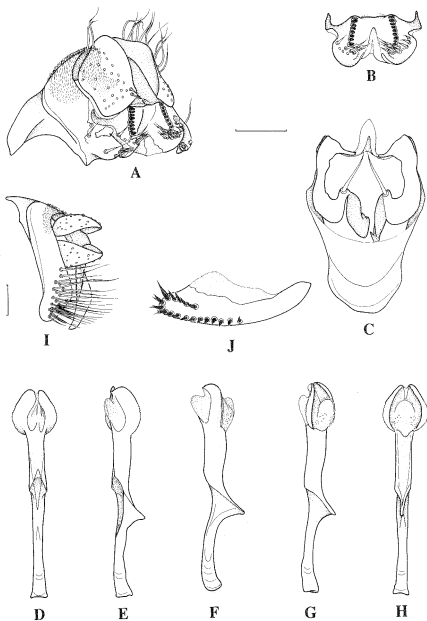


Fig. 104. *Drosophila triangulina*, lectotype ♂ (A-H) and paralectotype ♀ (I, J). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. I, tergite VIII, epiproct and hypoproct, oblique posterior view. J, left ovipositor plate; lateral view. Bars = 100 μ m (A-J = horizontal; I = vertical).

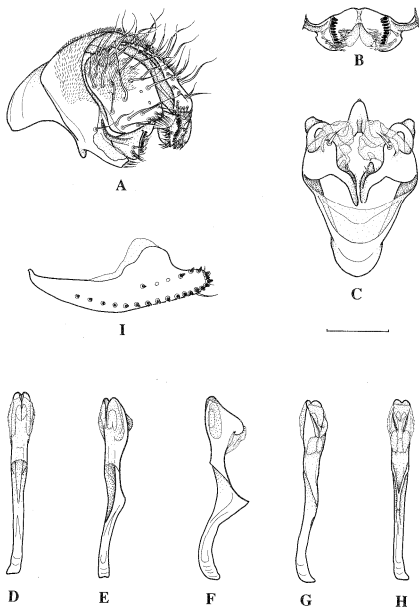


Fig. 105. *Drosophila tripunctata*, ordinary ♂ (A-H) and ordinary ♀ (I), both from strain 2401.0 (NDSRC). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

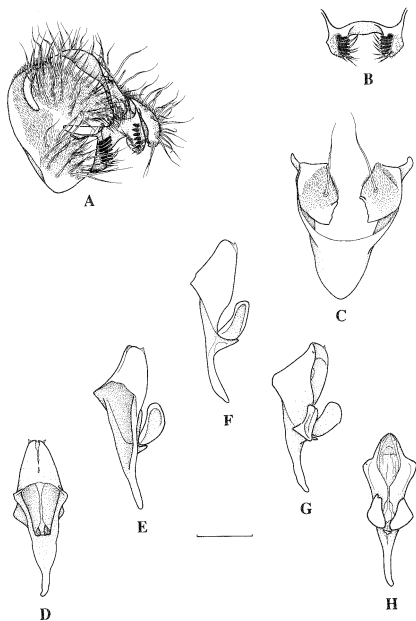


Fig. 106. *Drosophila virilis*, paratype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres, several views. Bar = 100 μ m.

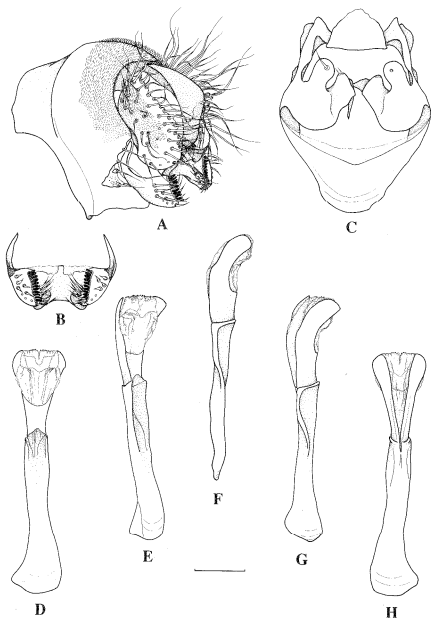


Fig. 107. *Drosophila amplipennis*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

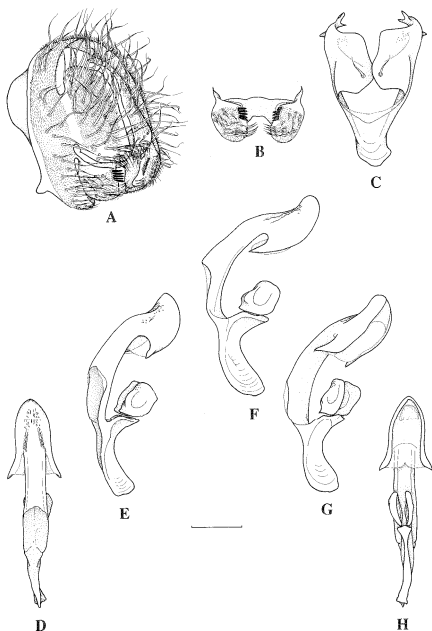


Fig. 108. *Drosophila crassa*, holotype ♂. A. epandrium, cerci, surstyli and decasternum; oblique posterior view. B. surstyli and decasternum; posterior view. C. hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

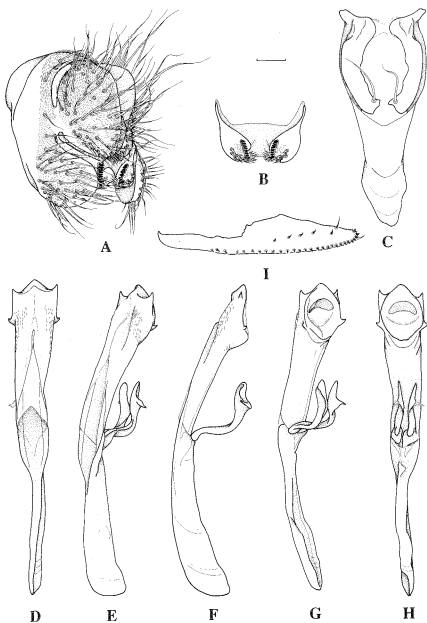


Fig. 109. *Drosophila gigas*, paralectotype ♂ (A-H) and paralectotype ♀ (I). A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. I, left ovipositor plate; lateral view. Bar = 100 μ m.

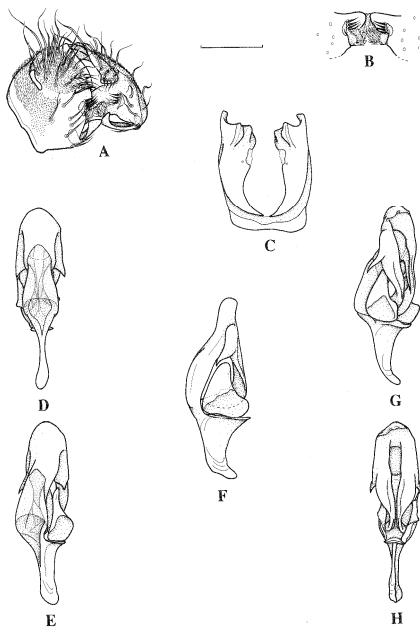


Fig. 110. *Drosophila neochracea*, holotype ♂. A, epandrium, cerci, surstyli and decastemum; oblique posterior view. B, surstyli and decastemum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

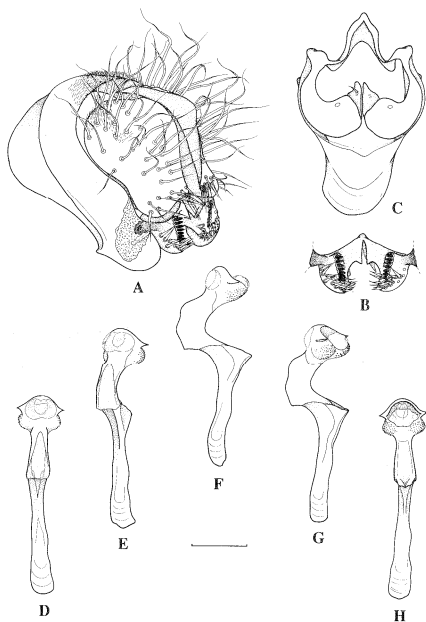


Fig. 111. *Drosophila pallidipennis*, lectotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

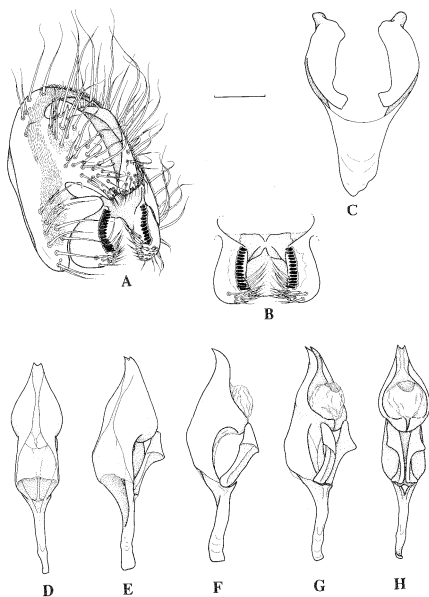


Fig. 112. *Drosophila ponderosa*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

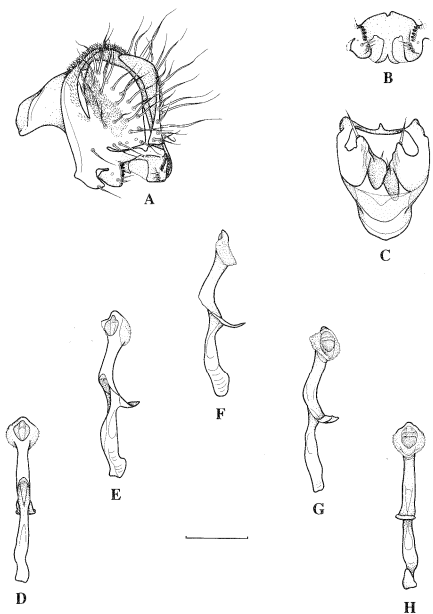


Fig. 113. *Drosophila reticulata*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

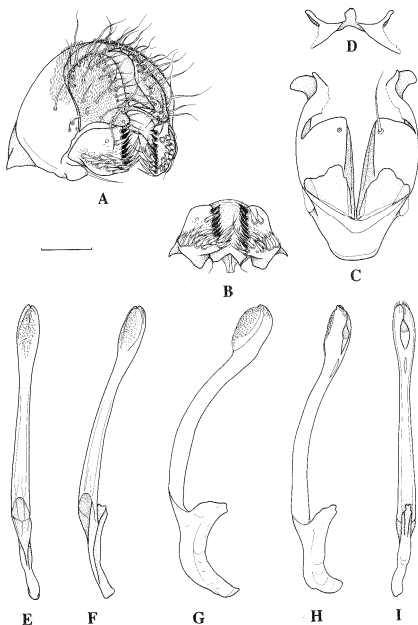


Fig. 114. *Drosophila suturalis*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium and gonopods; posterior view. D, bow of hypandrium (accidentally broken); posterior view. E-I, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

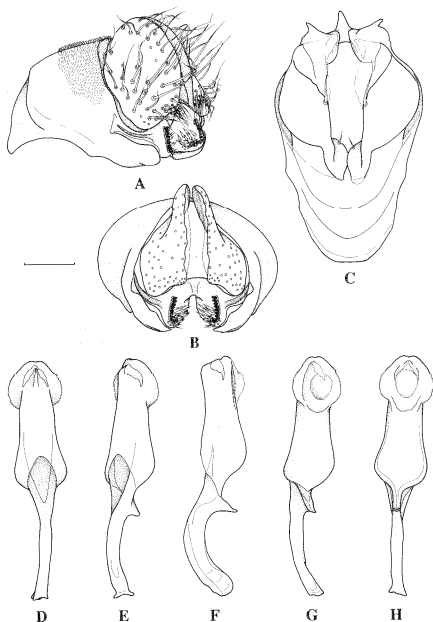


Fig. 115. *Drosophila tibialis*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

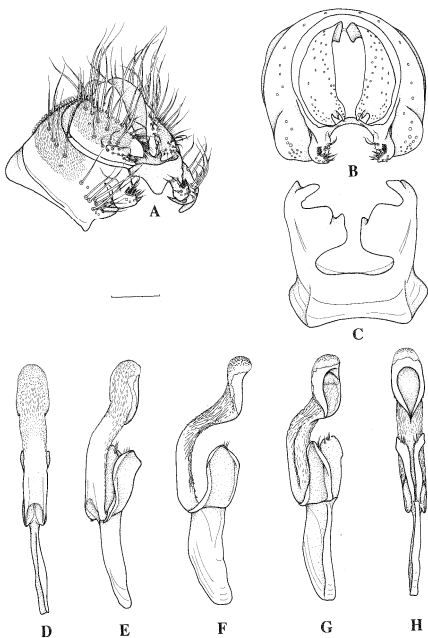


Fig. 116. *Drosophila chypeata*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

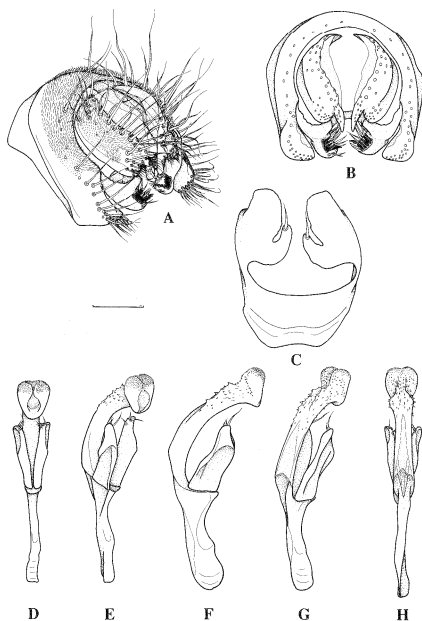


Fig. 117. *Drosophila clypeora*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

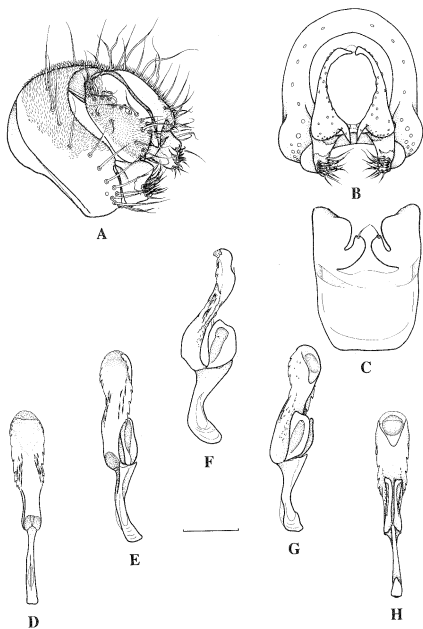


Fig. 118. *Drosophila mexicoa*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

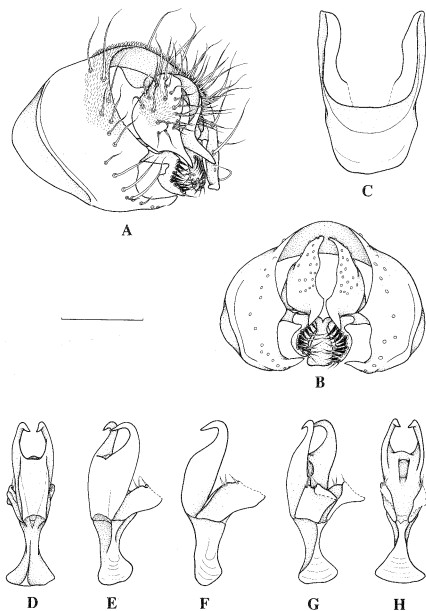


Fig. 119. *Drosophila glabrifrons*, lectotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods (intentionally broken at anterior region); posterior view. D-H, aedeagus, aedeagal apodeme and parameres (dashed lines represent regions where they were fused to gonopods); several views. Bar = 100 μ m.

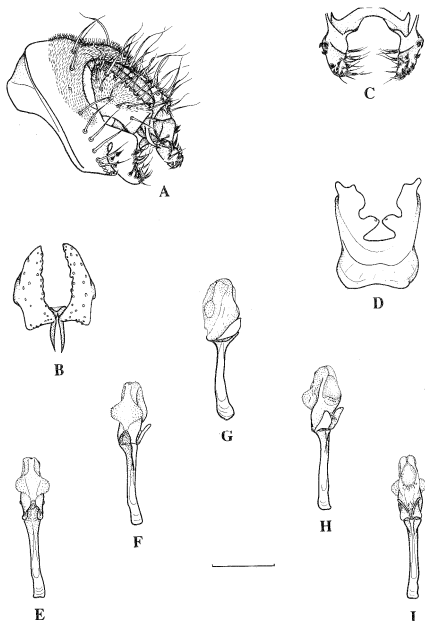


Fig. 120. *Drosophila narinosa*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, cerci; posterior view. C, surstyli and decasternum; posterior view. D, hypandrium and gonopods; posterior view. E-I, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

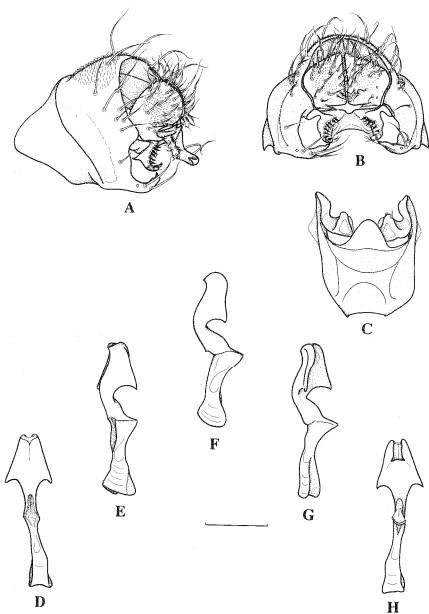


Fig. 121. *Drosophila pichis*, sp. nov., holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

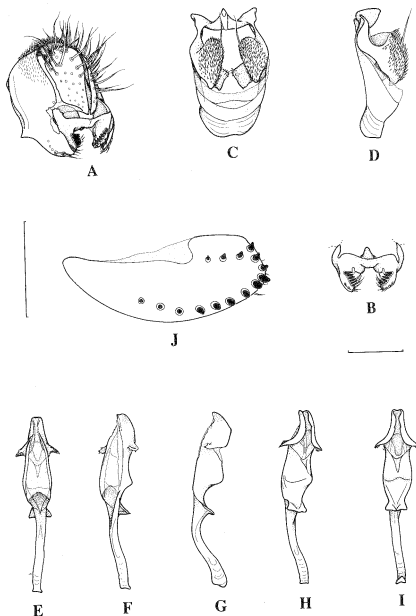


Fig. 122. *Drosophila lutzii*, ordinary ♂ (A-I) and ordinary ♀ (J), both of *Drosophila floricola*, collected from *Datura*, in October 1941 at Pasadena CA, USA. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C, hypandrium, bow of hypandrium and gonopods; posterior view. D, *idem*; left view. E-I, aedeagus and aedeagal apodeme; several views. J, left ovipositor plate; lateral view. Bars = 100 μm (A-I = horizontal; J = vertical).

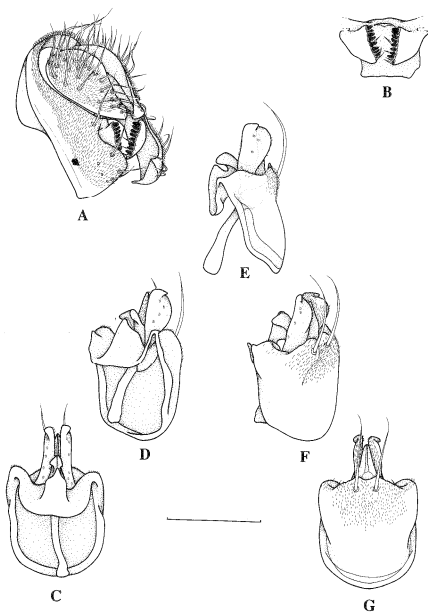


Fig. 123. *Drosophila latifasciaeformis*, lectotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C-G, aedeagus, aedeagal apodeme, parameres, hypandrium and bow of hypandrium; several views. Bar = 100 μ m.

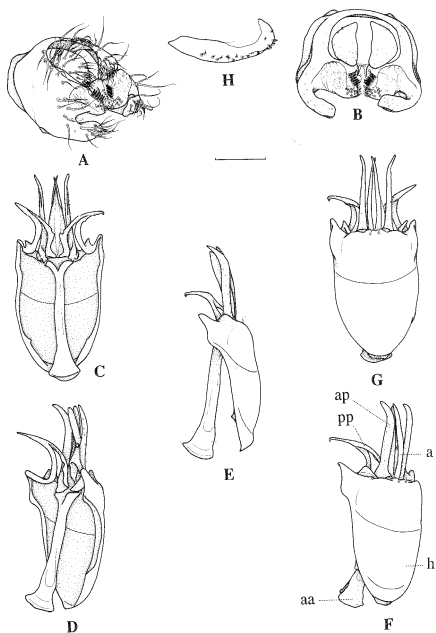


Fig. 124. *Drosophila tolteca*, ordinary ♂ (A-H) and ordinary ♀ (H) both collected at "Hohenau", Paraguay, in 28.IX.07 and 22.X.07, respectively. A, epandrium, cerci, surstyli and decastemum; oblique posterior view. B, *idem*; posterior view. C-G, hypandrium, aedeagus, aedeagal apodeme and parameres: several views. H, left ovipositor plate; lateral view. Bar = 100 μ m. Abbreviations: a = aedeagus, aa = aedeagal apodeme, ap = anterior paramere, h = hypandrium, pp = posterior paramere.

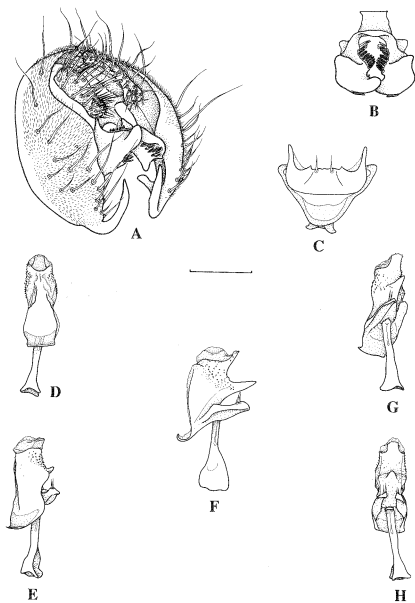


Fig. 125. *Drosophila pulchella*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; dorsal view. C, hypandrium and gonopods; posterior view. D-H, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

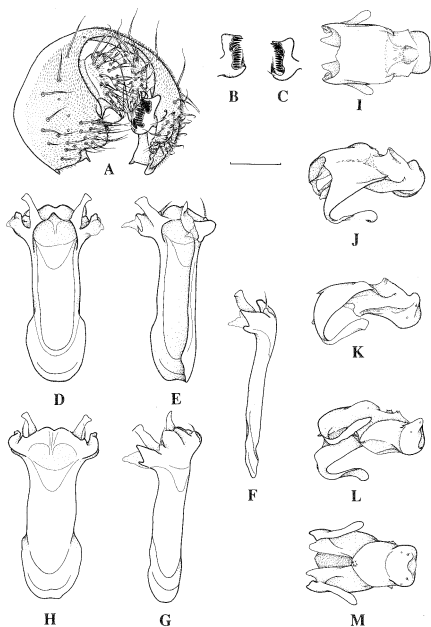


Fig. 126. *Drosophila abregolineata*, lectotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B (left) and C (right) surstyli; posterior view. D-H, hypandrium; several views. I-M, aedeagus; several views. Bar = 100 μ m.

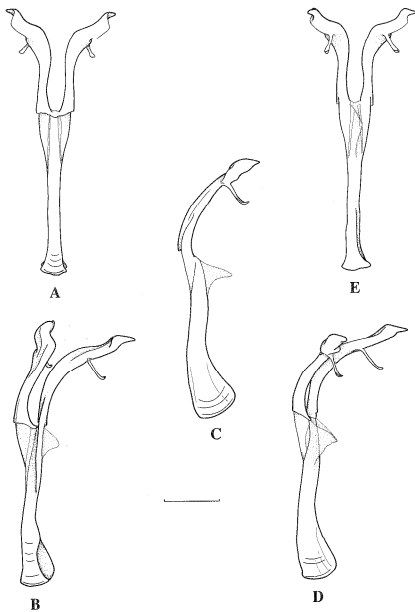


Fig. 127. *Drosophila abregolineata*, lectotype ♂. A-E, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

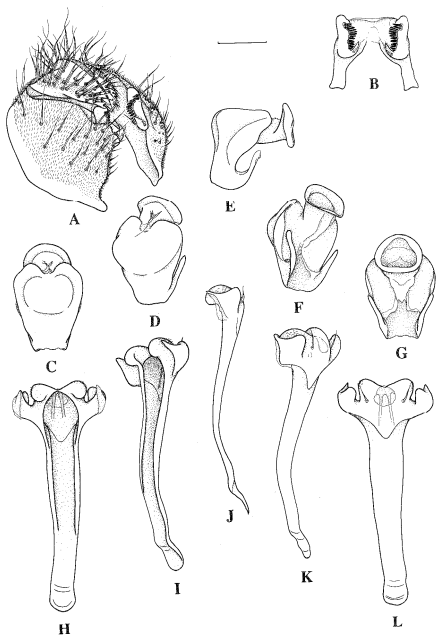


Fig. 128. *Drosophila fumipennis*, lectotype ♂. A, epandrium, cerci and surstyli; oblique posterior view. B, surstyli and decasternum; posterior view. C-G, aedeagus; several views. H-L, hypandrium; several views. Bar = 100 μ m.

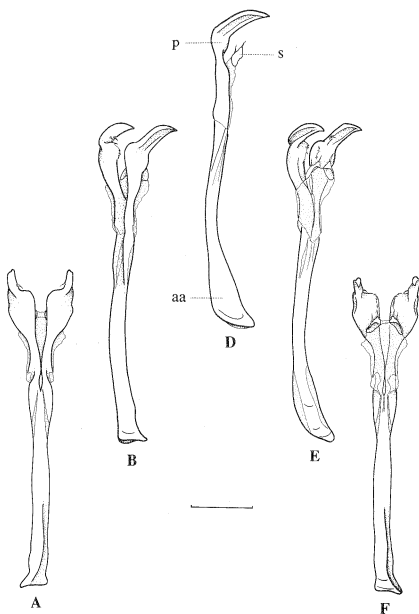


Fig. 129. *Drosophila funipennis*, lectotype ♂. A-E, aedeagal apodeme and parameres; several views. Bar = 100 μ m. Abbreviations: aa = aedeagal apodeme, p = paramere (posterior?), s = sclerite (ant. paramere?).

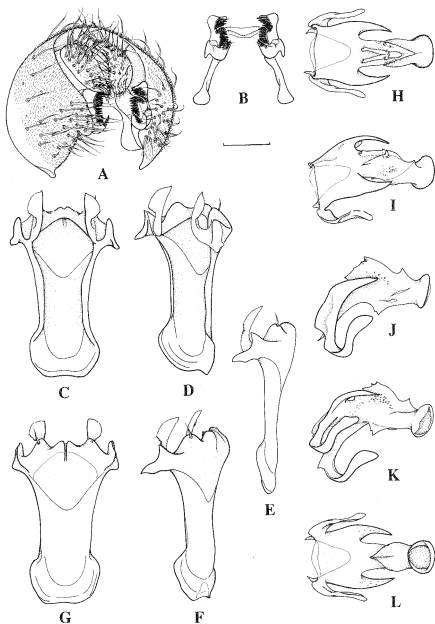


Fig. 130. *Drosophila subinfumata*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, surstyli and decasternum; posterior view. C-G, hypandrium; several views. H-L, aedeagus; several views. Bar = 100 μ m.

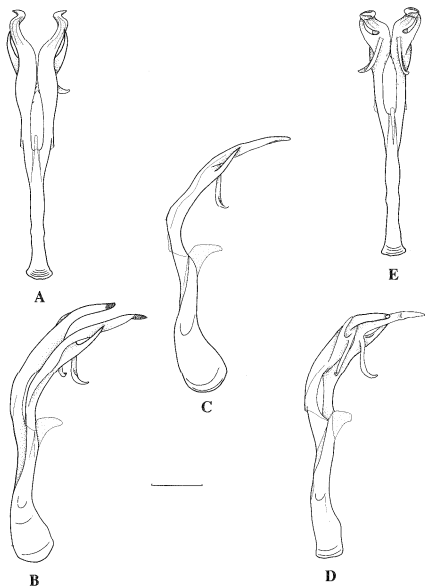


Fig. 131. *Drosophila subinfulmata*, holotype ♂. A-E, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

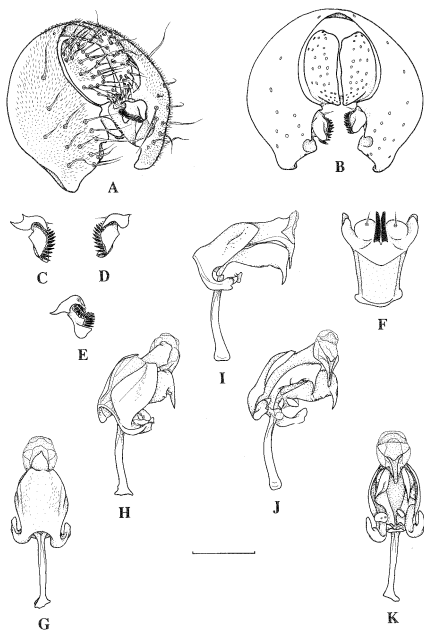


Fig. 132. *Drosophila willistoni*, lectotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view (surstyli apparently turned upside down). C-E, surstyli; several views. F, hypandrium; posterior view. G-K, aedeagus, aedeagal apodeme and parameres; several views. Bar = 100 μ m.

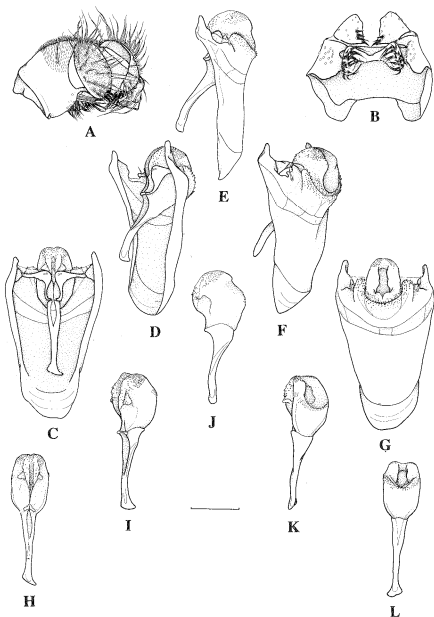


Fig. 133. *Drosophila fundomaculata*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; ventral view. C-G, hypandrium, aedeagus, aedeagal apodeme and parameres; several views. H-L, aedeagus and aedeagal apodeme several views. Bar = 100 μ m.

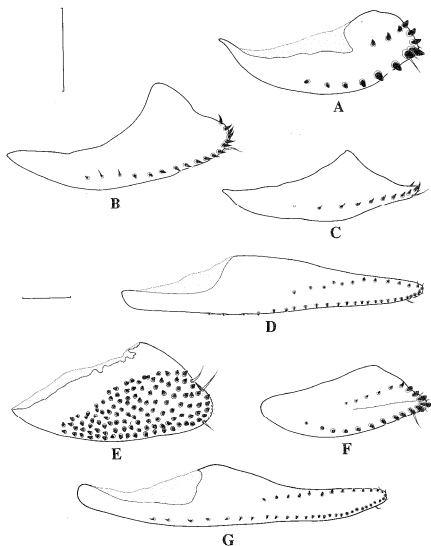


Fig. 134. Lateral views of left ovipositor plates of seven species of *Drosophila*: *D. cuzcoica*, holotype ♀ (A); *D. obscuricolor*, paralectotype ♀ (B) and lectotype ♀ (C); *D. coffeata*, paralectotype ♀ of junior synonym *D. umbripennis* (D); *D. pulvereana*, holotype ♀ (E); *D. prosimilis*, holotype ♀ (F) and *D. coffeata*, holotype ♀ of junior synonym *D. flavolineata* (G). Bars = 100 µm (A-C = vertical; D-G = horizontal).

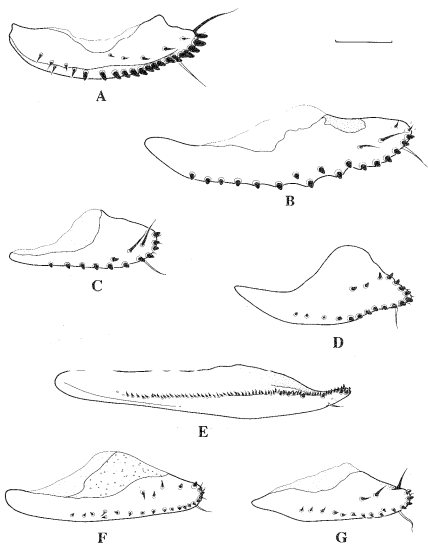


Fig. 135. Lateral views of left ovipositor plates of seven species of *Drosophila*: *D. latecarinata*, holotype ♀ (A); *D. latebuccata*, lectotype ♀ (B); *D. pictifrons*, holotype ♀ (C); *D. strigiventris*, lectotype ♀ (D); *D. fuscipennis*, holotype ♀ (E); *D. marmoria* (= *D. hydei*), holotype ♀ (F) and *D. peruensis*, holotype ♀ (G). Bar = 100 µm.

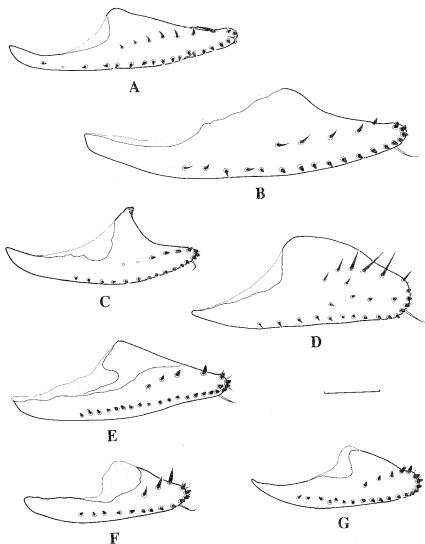


Fig. 136. Lateral views of left ovipositor plates of seven species of *Drosophila*: *D. peruviana*, holotype ♀ (A); *D. annulimana*, lectotype ♀ (B); *D. nigrifemur*, holotype ♀ (C); *D. scioptera*, lectotype ♀ (D); *D. pollinospadix*, holotype ♀ (E); *D. canescens*, holotype ♀ (F) and *D. macropolia*, holotype ♀ (G). Bar = 100 μ m.

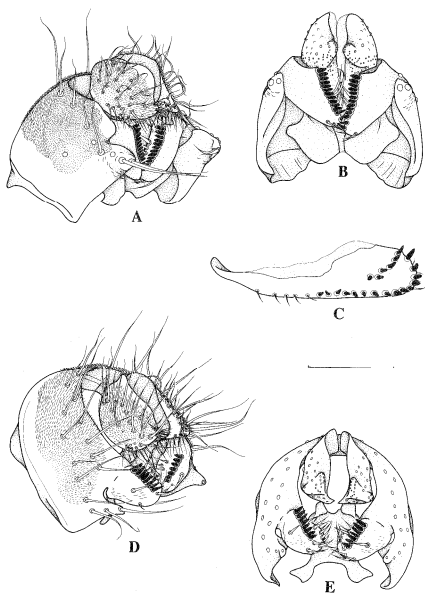


Fig. 137. *Neotanygastrella chymomyzoides*, lectotype ♂ (A and B), paralectotype ♀ (C); *Neotanygastrella tricoloripes*, paralectotype ♂ (D and E). A and D, epandrium, cerci, surstyli and decastemum; oblique posterior view. B and E, *idem*; posterior view, respectively. I, left ovipositor plate; lateral view. Bar = 100 μ m.

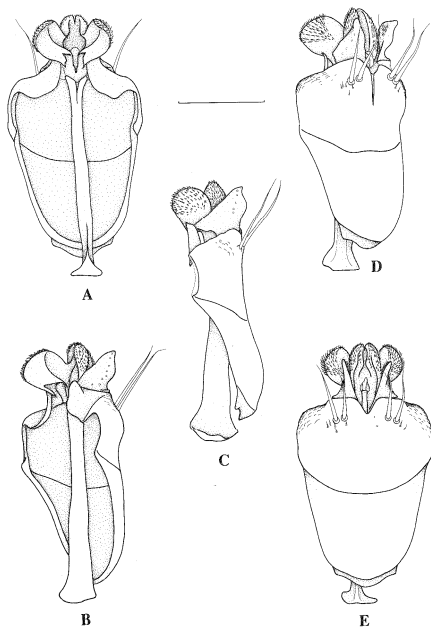


Fig. 138. *Neotanygastrella chymomyzoides*, lectotype ♂. A-E, aedeagus, parameres, aedeagal apodeme and hypandrium; several views. Bar = 100 μ m.

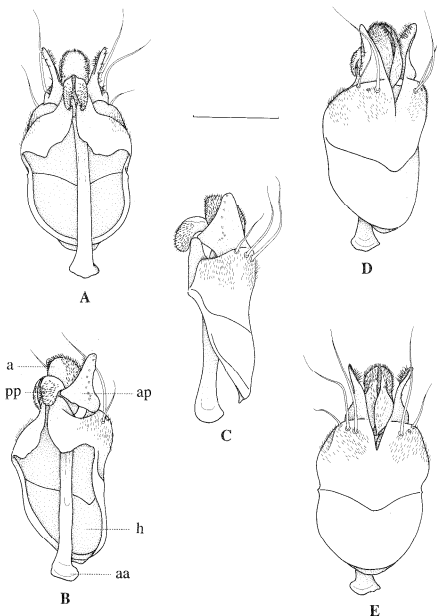


Fig. 139. *Neotanygastrella tricoloripes*, lectotype ♂. A-E, aedeagus, parameres, aedeagal apodeme and hypandrium; several views. Bar = 100 μ m. Abbreviations: a = aedeagus, aa = aedeagal apodeme, ap = anterior paramere, h = hypandrium, pp = posterior paramere.

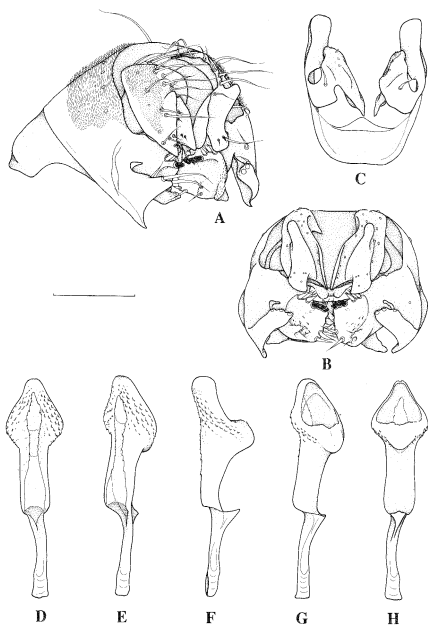


Fig. 140. *Paramycodrosophila costaricana*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods; posterior view. D-H, aedeagus and aedeagal apodeme; several views. Bar = 100 μ m.

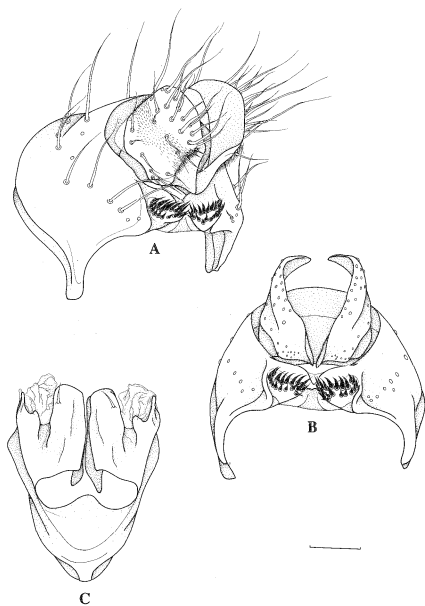


Fig. 141. *Zygothrica quinquelineata*, holotype ♂. A, epandrium, cerci, surstyli and decasternum; oblique posterior view. B, *idem*; posterior view. C, hypandrium and gonopods; posterior view. Bar = 100 μ m.

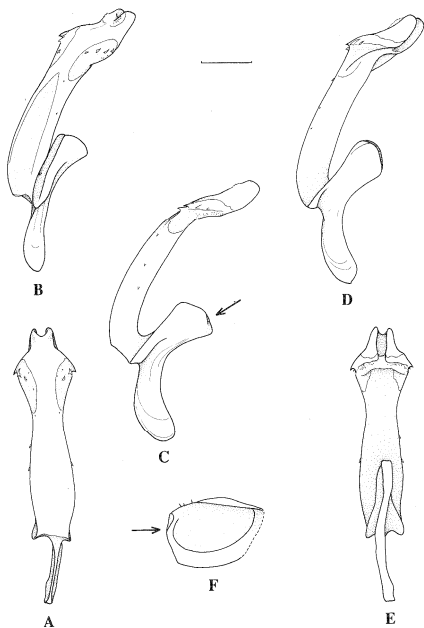


Fig. 142. *Zygothrica quinquelineata*, holotype ♂. A-E, aedeagus and aedeagal apodeme several views. F, left paramere (fused to gonopods as indicated by the dashed line, and linked to ventral rod as indicated by the arrows in figs. C and F); lateral view. Bar = 100 μ m.

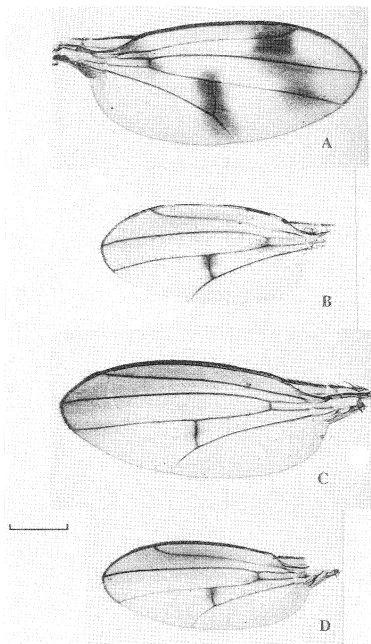


Fig. 143. Wings of: A, *Cladochaeta bomplandi* (paratype ♀); B, *Cladochaeta floridana* (holotype ♂); C, *Cladochaeta infumata* (holotype ♀); D, *Cladochaeta nebulosa* (holotype ♀). Bar = 0.5 mm.

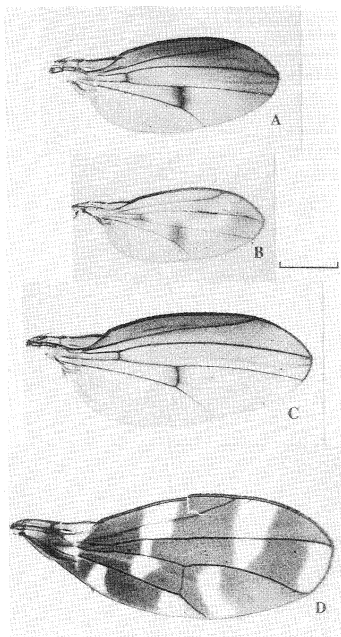


Fig. 144. Wings of: A, *Cladochaeta paradoxa* (paralectotype ♀); B, *Cladochaeta sororia* (paralectotype ♂); C, *Cladochaeta sturtevantii* (♂, "Arcadia, CA, USA, 15.10.1949"); D, *Diathoneura borgmeieri* (holotype ♀). Bar = 0.5 mm.

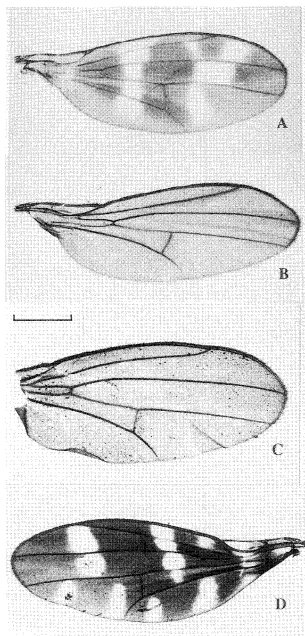


Fig. 145. Wings of: A, *Diathoneura brasiliensis* (lectotype ♂); B, *Diathoneura dudai*, sp. nov. (holotype ♂); C, *Diathoneura flavolineata* (holotype ♀); D, *Diathoneura guttipennis* (lectotype ♂). Bar = 0.5 mm.

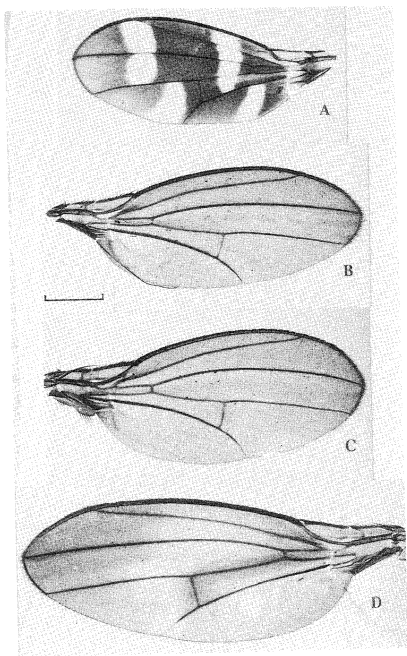


Fig. 146. Wings of: A, *Diathoneura maculipennis* (holotype ♀); B, *Diathoneura nigrescens* (lectotype ♂); C, *Diathoneura nigrifrons* (lectotype ♂); D, *Diathoneura nubeculosa* (holotype ♂). Bar = 0.5 mm.

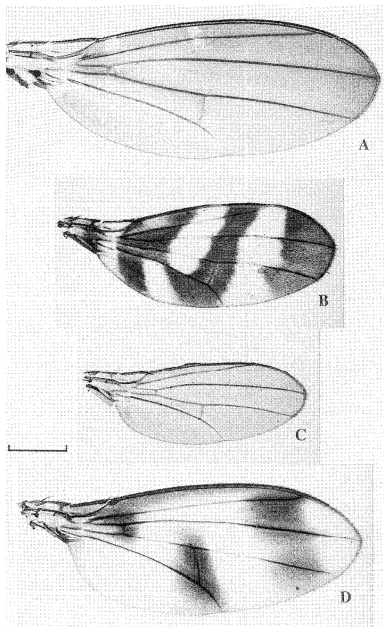


Fig. 147. Wings of: A, *Diathoneura plumata* (holotype ♀); B, *Diathoneura quadrivittata* (lectotype ♂); C, *Diathoneura smithi*, sp. nov. (holotype ♂); D, *Diathoneura taeniatipennis* (paralectotype ♀). Bar = 0.5 mm.

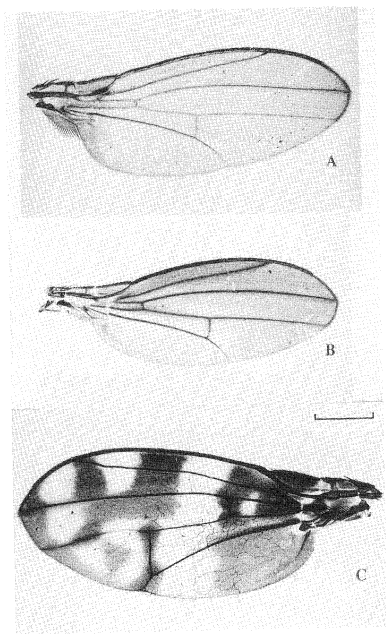


Fig. 148. Wings of: A, *Diathoneura tessellata* (paralectotype ♀, "16.V.1921"); B, *Diathoneura trisetata* (holotype ♀); C, *Drosophila atrata* (holotype ♂). Bar = 0.5 mm.

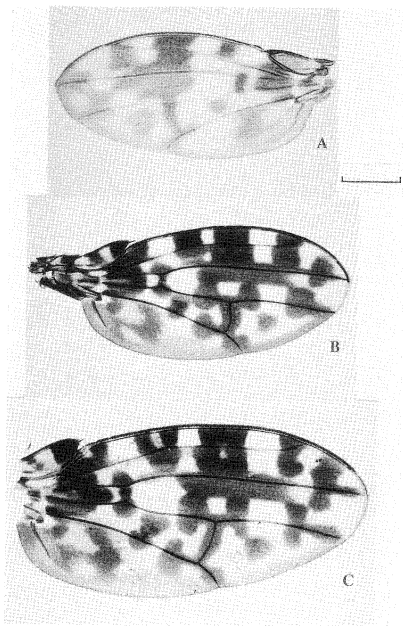


Fig. 149. Wings of: A, *Drosophila calloptera* (lectotype ♂); B, *Drosophila kallima* (holotype ♂); C, *Drosophila lindae* (holotype ♂). Bar = 0.5 mm.

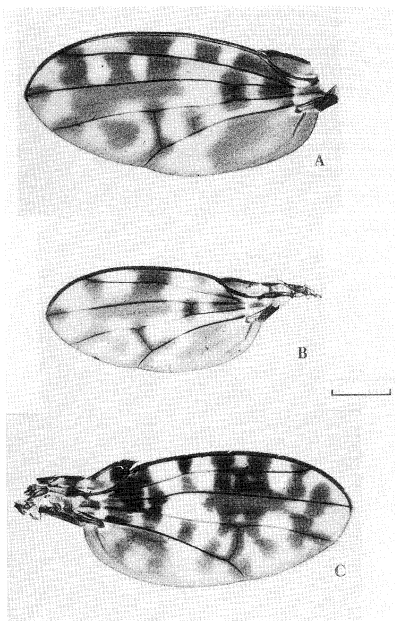


Fig. 150. Wings of: A, *Drosophila maracaya* (holotype ♂); B, *Drosophila ornatipennis* (lectotype ♂); C, *Drosophila schildi* (lectotype ♂ of junior synonym *D. poeciloptera*). Bar = 0.5 mm.

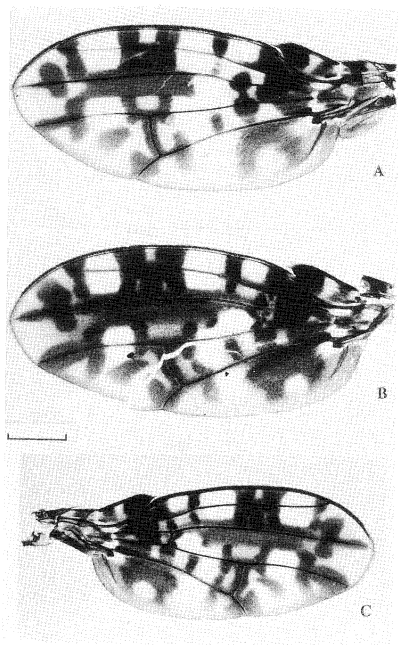


Fig. 151. Wings of: A, *Drosophila schildi* (holotype ♀); B, *Drosophila quadrum* (holotype ♀); C, *Drosophila quadrum* (♂, "Rio de Janeiro, Brazil, III. 1952"). Bar = 0.5 mm.

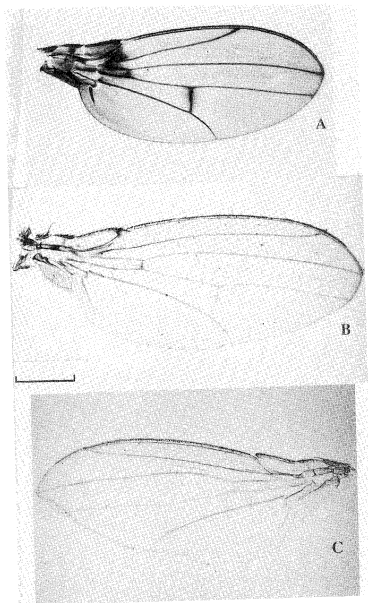


Fig. 152. Wings of: A, *Drosophila fundomaculata* (holotype ♂); B, *Drosophila nigrifemur* (holotype ♀); C, *Drosophila peruviana* (holotype ♀). Bar = 0.5 mm.

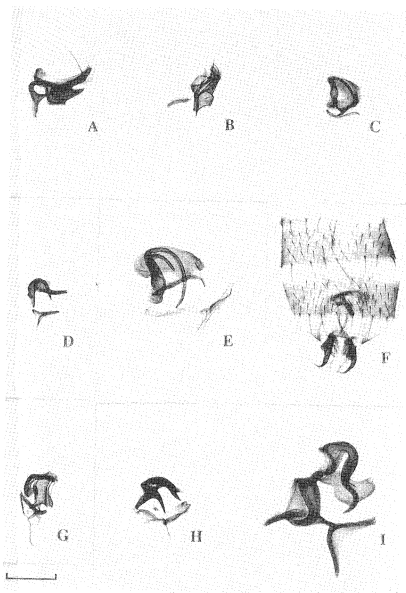


Fig. 153. Lateral view of aedeagus and associated structures of: A, *Chymomyza laevilimbata* (lectotype); B, *Chymomyza pectinifemur* (lectotype); C, *Cladochaeta adumbrata* (holotype); D, *Cladochaeta minuta* (lectotype); E, *Cladochaeta floridana* (holotype); F, *Cladochaeta paradoxa* (lectotype); G, *Cladochaeta sororia* (lectotype); H, *Cladochaeta sturtevantii* ("Arcadia CA, USA, 15 X. 1949"); I, *Cladochaeta uniradiata* (lectotype). Bar = 200 μ m.

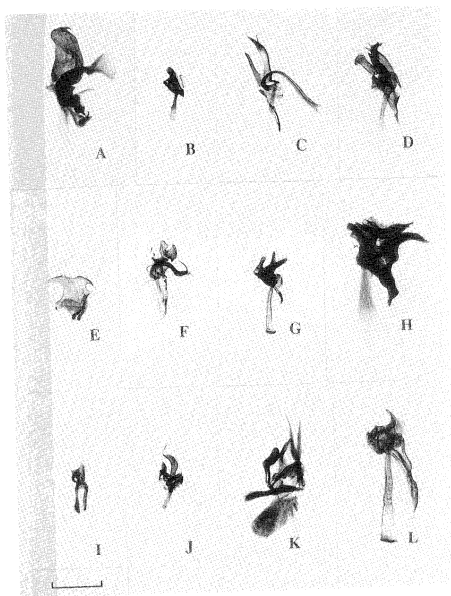


Fig. 154. Lateral view of aedeagus and associated structures of: A, *Diathoneura albifacies* (lectotype); B, *Diathoneura albinota* (holotype); C, *Diathoneura brasiliensis* (lectotype); D, *Diathoneura cruciata* (paralectotype, "5.IV.1921"); E, *Diathoneura dudai*, sp. nov. (holotype); F, *Diathoneura euryopa* (lectotype); G, *Diathoneura guttipennis* (lectotype); H, *Diathoneura longipennis* (holotype); I, *Diathoneura magnipennis* (holotype); J, *Diathoneura nana* (lectotype); K, *Diathoneura nigrescens* (lectotype); L, *Diathoneura nigrifrons* (lectotype). Bar = 200 μ m.

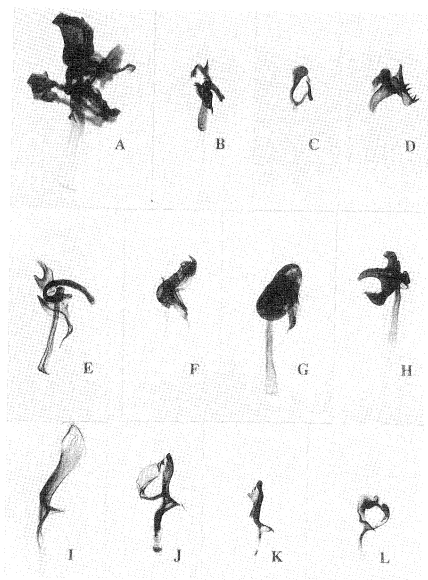


Fig. 155. Lateral view of aedeagus and associated structures of: A, *Diathoneura nubeculosa* (holotype); B, *Diathoneura opaca* (lectotype); C, *Diathoneura peruviana* (holotype); D, *Diathoneura pleurolineata* (paralectotype); E, *Diathoneura quadrivittata* (lectotype); F, *Diathoneura smithi*, sp. nov. (holotype); G, *Diathoneura tanyptera* (holotype); H, *Diathoneura tessellata* (paralectotype, "15.V.1921"); I, *Drosophila appendiculata* (holotype); J, *Drosophila atrata* (holotype); K, *Drosophila calloptera* (lectotype); L, *Drosophila kallima* (holotype). Bar = 200 μ m.

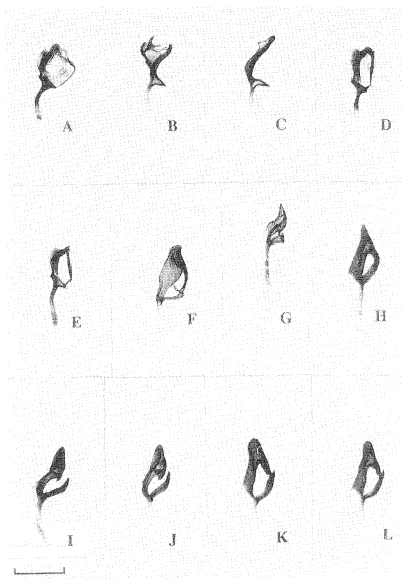


Fig. 156. Lateral view of aedeagus and associated structures of: A, *Drosophila lindae* (holotype); B, *Drosophila maracaya* (holotype); C, *Drosophila ornatipennis* (lectotype); D, *Drosophila quadrum* ("Rio de Janeiro, Brazil, III.1952"); E, *Drosophila schildi* (lectotype of junior synonym *D. poeciloptera*); F, *Drosophila albomarginata* (holotype); G, *Drosophila annularis* (lectotype); H, *Drosophila annulosa*, sp. nov., (holotype); I, *Drosophila canalinea* ("Huichihuayan, Mexico"); J, *Drosophila canalinea* ("Minatitlan, Mexico"); K, *Drosophila davidgrimaldii*, sp. nov., (paratype); L, *Drosophila davidgrimaldii*, sp. nov., (holotype). Bar = 200 μ m.

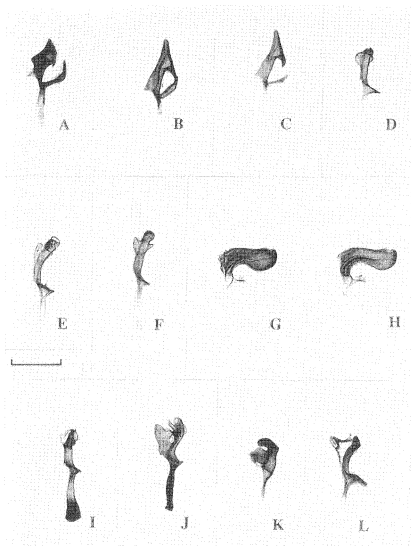


Fig. 157. Lateral view of aedeagus and associated structures of: A, *Drosophila hendeli*, sp. nov., (holotype); B, *Drosophila parannularis*, sp. nov., (paratype); C, *Drosophila parannularis*, sp. nov., (holotype); D, *Drosophila similis* (paralectotype of *D. willistoni*, misidentification, SEM); E, *Drosophila cardinoides* ("Umahuankilia, Peru, 11.IX.1903"); F, *Drosophila* undet. sp., *cardini* group, ("Meshagua, Peru, 8.X.1903"); G, *Drosophila fuscilineata* (lectotype); H, *Drosophila fuscilineata* (paralectotype); I, *Drosophila griseolineata* (lectotype); J, *Drosophila guaraja* (lectotype of junior synonym *D. pulla*); K, *Drosophila guaru* (paratype); L, *Drosophila limbinervis* (lectotype). Bar = 200 μ m.

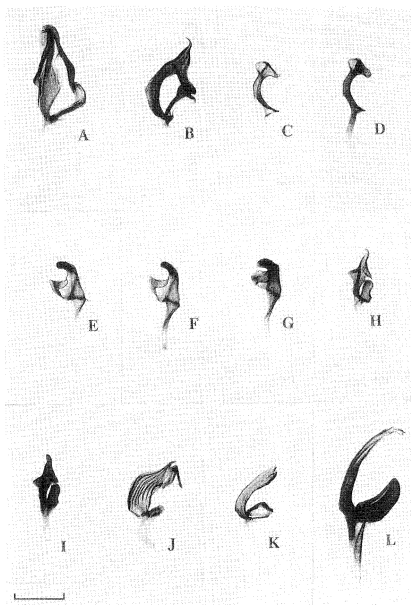


Fig. 158. Lateral view of aedeagus and associated structures of: A, *Drosophila boliviana* (lectotype); B, *Drosophila lugubripennis* (holotype); C, *Drosophila maculifrons* (lectotype); D, *Drosophila maculifrons* (holotype of junior synonym *D. guaranina*); E, *Drosophila ornatifrons* (lectotype); F, *Drosophila ornatifrons* (holotype of junior synonym *D. guarani*); G, *Drosophila subbadia* (holotype); H, *Drosophila mesophragmatica* (lectotype); I, *Drosophila mesophragmatica* (holotype of junior synonym *D. andina*); J, *Drosophila acanthoptera* (holotype); K, *Drosophila nannoptera* (holotype); L, *Drosophila acuminatus* (holotype). Bar = 200 μ m.

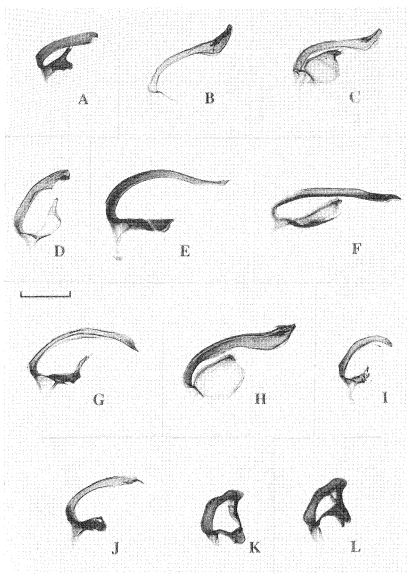


Fig. 159. Lateral view of aedeagus and associated structures of: A, *Drosophila arboloco* ("near Bogota, Colombia, 13.VIII.1980"); B, *Drosophila bomarea* (holotype); C, *Drosophila carablanca* (holotype); D, *Drosophila chisaca* (holotype); E, *Drosophila colmenares* (paratype); F, *Drosophila desbaratabaile* (holotype); G, *Drosophila freilejoni* (holotype); H, *Drosophila hyalipennis* (holotype); I, *Drosophila margarita* (holotype); J, *Drosophila onychophora* (lectotype); K, *Drosophila fasciola* (lectotype); L, *Drosophila mapiriensis*, sp. nov. (holotype). Bar = 200 μ m.

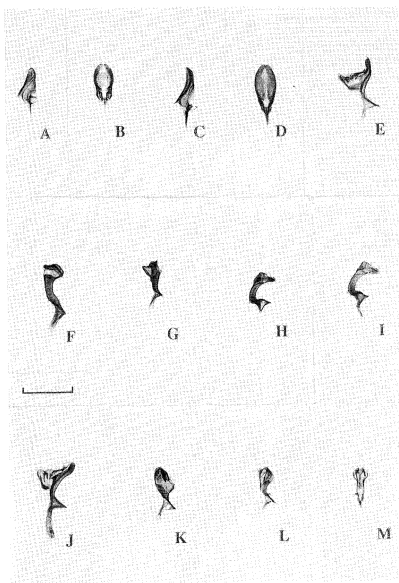


Fig. 160. Lateral view (except B and D = dorsal view) of aedeagus and associated structures of: A and B, *Drosophila pseudorepleta* (holotype); C and D, *Drosophila repleta* ("Varna, Bulgaria, 25.IX.1985"); E, *Drosophila angustibucca* (paralectotype); F, *Drosophila divisa* (lectotype); G, *Drosophila frotapessoai*, sp. nov. (holotype); H, *Drosophila mediotriata* (holotype); I, *Drosophila mediotriata* (holotype of junior synonym *D. crocina*); J, *Drosophila neoguaramunu* (holotype); K, *Drosophila paraguayensis* (lectotype); L and M, *Drosophila paramediotriata* ("Sarampioni, Bolivia, 1.III.1903). Bar = 200 μ m.

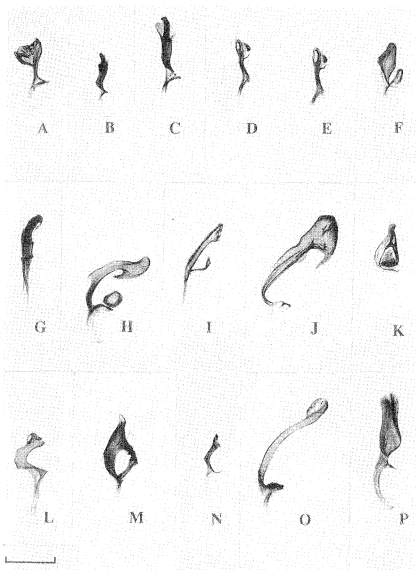


Fig. 161. Lateral view of aedeagus and associated structures of: A, *Drosophila rostrata* (holotype); B, *Drosophila senialba* (lectotype); C, *Drosophila triangulina* (lectotype); D, *Drosophila tripunctata* ("Morrow Mt. State Park, USA"); E, *Drosophila tripunctata* ("Dexter, USA"); F, *Drosophila virilis* (paratype); G, *Drosophila amphipennis* (holotype); H, *Drosophila crassa* (holotype); I, *Drosophila gigas* (lectotype); J, *Drosophila impudica* (lectotype); K, *Drosophila neochracea* (lectotype); L, *Drosophila pallidipennis* (lectotype); M, *Drosophila ponderosa* (holotype); N, *Drosophila reticulata* (holotype); O, *Drosophila suturalis* (holotype); P, *Drosophila tibialis* (holotype). Bar = 200 μ m.

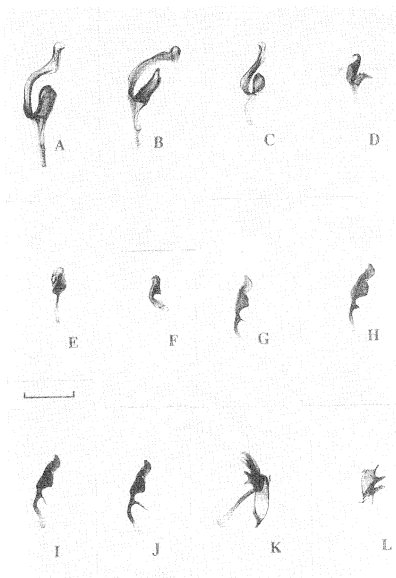


Fig. 162. Lateral view of aedeagus and associated structures of: A, *Drosophila clypeata* (holotype); B, *Drosophila clypeora* (holotype); C, *Drosophila mexicoa* (holotype); D, *Drosophila glabrifrons* (lectotype); E, *Drosophila narinosa* (holotype); F, *Drosophila pichis*, sp. nov. (holotype); G-J, *Drosophila lutzi*, specimens of junior synonym *D. floricola*; G = "Pasadena, USA, X.1941"; H = "Fulleston, USA, 14.XI.1963"; I = "Lilac, USA, 19.XI.1970"; J = "Carrizo, USA, 26.V.1954"; K, *Drosophila tolteca* ("Hohenau, Paraguay, 6.X.1907"); L, *Drosophila pulchella* (lectotype). Bar = 200 μ m.

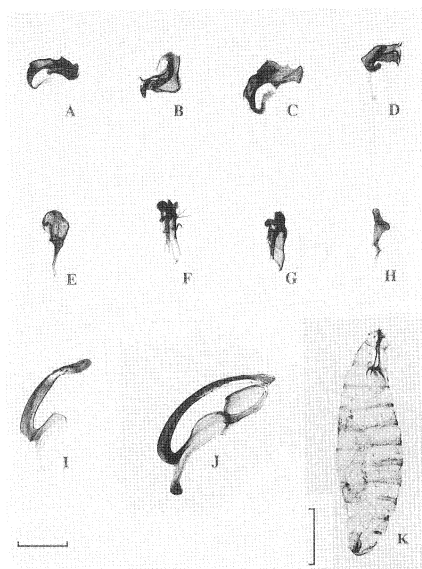


Fig. 163. Lateral view of: A-J, male genitalia, K, larva, of: A, *Drosophila abregolineata* (lectotype); B, *Drosophila fumipennis* (lectotype); C, *Drosophila subinfumata* (holotype); D, *Drosophila willistoni* (lectotype); E, *Drosophila fundomaculata* (holotype); F, *Neotanygastrella chymomyzoides* (lectotype); G, *Neotanygastrella tricoloripes* (paralectotype, "S.V.1921"); H, *Paramycodrosophila costaricana* (lectotype); I, *Zygothrica quinquelineata* (holotype); J, *Zygothrica fuscina* (holotype); K, *Diathoneura cruciata* (from the lectotype). Bars = 200 μ m (A-J = horizontal; K = vertical).

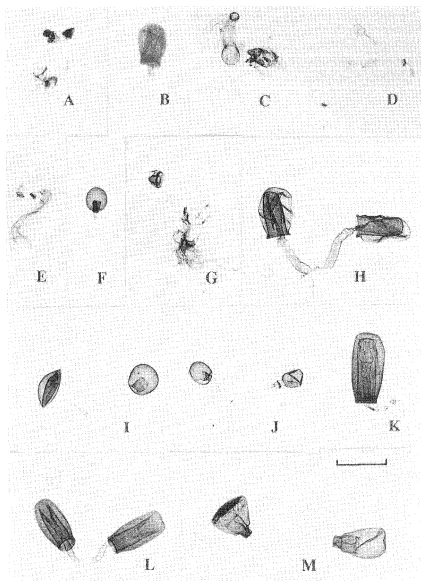


Fig. 164. Spermathecae (except C and G = ventral receptacle) of: A, *Chymomyza laevilimbata* (paralectotype, "20.XI.1903"); B, *Chymomyza pectinifemur* (paralectotype); C, *Cladochaeta infumata* (holotype); D, *Diathoneura borgmeieri* (holotype); E, *Diathoneura brasiliensis* (paralectotype); F, *Diathoneura cruciata* (lectotype); G, *Diathoneura euryopa* (paralectotype); H, *Drosophila annulimana* (lectotype); I, *Drosophila calloptera* (paralectotype); J, *Drosophila ornatipennis* (paralectotype); K, *Drosophila quadrum* (holotype); L, *Drosophila quadrum* ("Rio de Janeiro, Brazil, III.1952"); M, *Drosophila schildi* (paralectotype of junior synonym *D. poeciloptera*, "25.IV.1921"). Bar = 200 μ m.

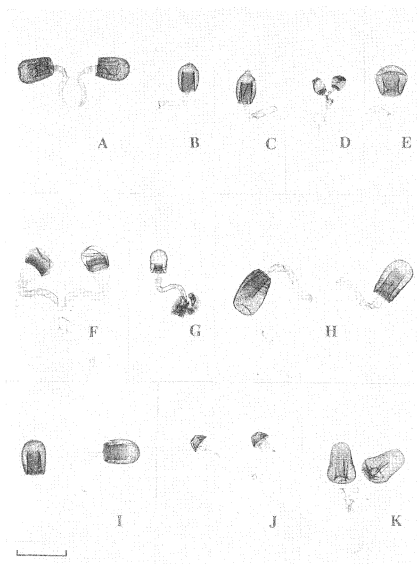


Fig. 165. Spermathecae of: A, *Drosophila annularis* (paralectotype); B, *Drosophila canalinea* ("Minatitlán, Mexico"); C, *Drosophila canalinea* ("Huichihuayan, Mexico"); D, *Drosophila melanoptera* (holotype); E, *Drosophila* undet. sp. a ("Santarem, Brazil, 11-20.VI.1927"); F, *Drosophila* undet. sp. b ("Suiza de Turrialba, Costa Rica, 11.V.1921"); G, *Drosophila* undet. sp. c (*idem*, "13.IV.1921"); H, *Drosophila* undet. sp. d (*idem*, "13.V.1921"); I, *Drosophila* undet. sp. e (*idem*, "23.IV.1921"); J, *Drosophila coffeata* (holotype of junior synonym *D. flavolineata*); K, *Drosophila fuscocollineata* (paralectotype). Bar = 200 μ m.

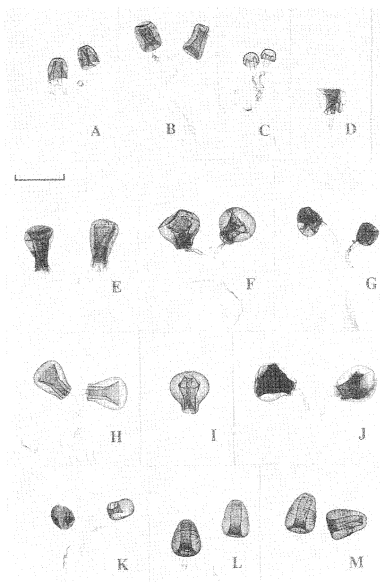


Fig. 166. Spermathecae of: A, *Drosophila boliviana* (paralectotype, "Mapiri, Bolivia"); B, *Drosophila boliviana* (paralectotype, "Yungas von Coroico, Bolivia"); C, *Drosophila fuscipennis* (holotype); D, *Drosophila grisolineata* (paralectotype); E, *Drosophila guaraja* (paralectotype of junior synonym *D. pulla*); F, *Drosophila guaru* (paratype); G, *Drosophila limbinervis* (paralectotype); H, *Drosophila maculifrons* (paratype of junior synonym *D. guaranini*); I, *Drosophila ornatifrons* (paralectotype); J, *Drosophila ornatifrons* (paratype of junior synonym *D. guarani*); K, *Drosophila peruensis* (holotype); L, *Drosophila canescens* (holotype); M, *Drosophila mesophragmatica* (paralectotype). Bar = 200 μ m.

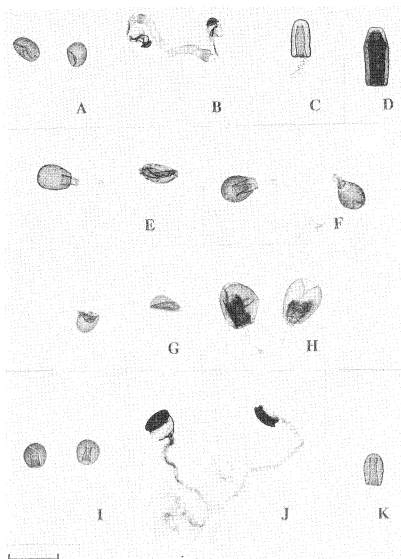


Fig. 167. Spermathecae of: A, *Drosophila pulverea* (lectotype); B, *Drosophila hydei* (holotype of senior synonym *D. marmorata*); C, *Drosophila pseudorepleta* (paratype); D, *Drosophila repleta* ("Biel, Switzerland, 27.-31.7.1973"); E, *Drosophila angustibucca* (paralectotype, "6.IV.1921"); F, *Drosophila divisa* (paralectotype, "Laristhal, Peru, 10.VIII.1903"); G, *Drosophila divisa* (paralectotype, "Yungasweg, Bolivia, 11.X.1906"); H, *Drosophila neoguaramunu* (paratype); I, *Drosophila prosimilis* (holotype); J, *Drosophila triangulina* (paralectotype); K, *Drosophila tripunctata* ("Morrow Mt. State Park, USA"). Bar = 200 μ m.

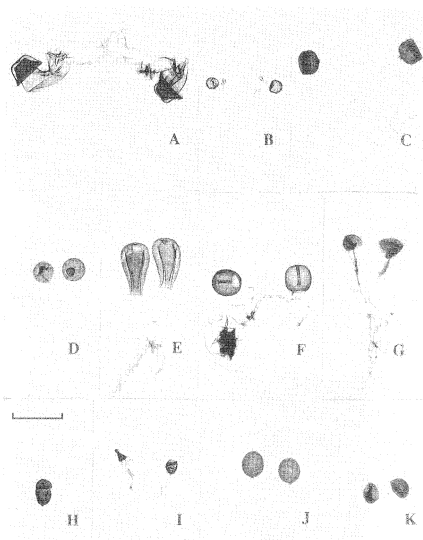


Fig. 168. Spermathecae of: A, *Drosophila gigas* (paralectotype, "12.V.1921"); B, *Drosophila impudica* (paralectotype, "19.IX.1903"); C, *Drosophila latebuccata* (lectotype); D, *Drosophila macropolia* (holotype); E, *Drosophila nigrifemur* (holotype); F, *Drosophila obscuricolor* (lectotype); G, *Drosophila obscuricolor* (paralectotype); H, *Drosophila pictifrons* (holotype); I, *Drosophila pollinospadix* (holotype); J, *Drosophila scioptera* (lectotype); K, *Drosophila strigiventris* (lectotype). Bar = 200 μ m.

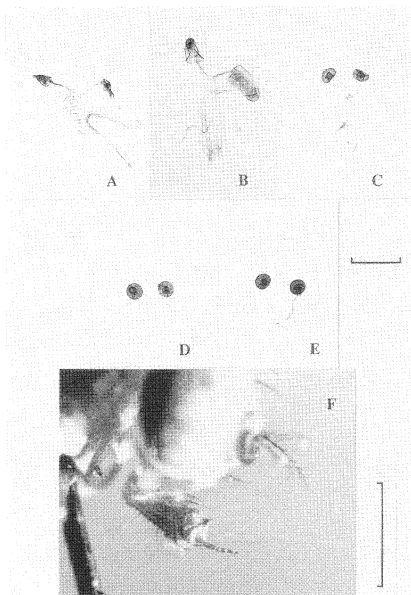


Fig. 169. A-E: Spermathecae of: A, *Drosophila cuzcoica* (holotype); B, *Drosophila lutzii* ("Pasadena, USA, X.1941"); C, *Drosophila tolteca* ("Hohenau, Paraguay, 22.X.1907"); D, *Neotanygastrella boliviensis* (holotype); E, *Neotanygastrella chymomyzoides* (paralectotype, "14.III.1903"). F, head of *Drosophila rostrata* (holotype), bearing a thorn-like structure on proboscis, lateral view. Bar = 200 μ m for spermathecae (horizontal) and 0.5 mm for head (vertical).

INDEX

Genera and subgenera

<i>Chusqueophila</i> BRNCIC, 1957:100	44
<i>Chymomyza</i> CZERNY, 1903:199	5
<i>Cladochaeta</i> COQUILLETT, 1900:263	7
<i>Diathoneura</i> DUDA, 1924:180	7, 16
<i>Drosophila</i> FALLÉN, 1823:4	44, 45
<i>Hirtodrosophila</i> DUDA, 1923:41	125
<i>Neotanygastrella</i> DUDA, 1925:206	143
<i>Paramycodrosophila</i> DUDA, 1924:191	146
<i>Phloridosa</i> STURTEVANT, 1942:28	131
<i>Scaptodrosophila</i> DUDA, 1923:37	133
<i>Sophophora</i> STURTEVANT, 1939:139	135
<i>Zygothrica</i> WIEDEMANN, 1830:12	148

Species groups (synonyms included)

<i>annulimana</i> group PAVAN & CUNHA, 1947:57	45
<i>anthophilic</i> group HUNTER, 1979:382	83
<i>calloptera</i> group FREIRE-MAIA & PAVAN, 1950:23	46
<i>canalina</i> group WHEELER, 1957:90	54
<i>cardini</i> group STURTEVANT, 1942:31	62
<i>castanea</i> group THROCKMORTON, 1975:445	64
<i>coffeata</i> group	64
<i>dreyfusi</i> group PATTERSON & STONE, 1952:43	66
<i>guarani</i> group DOBZHANSKY & PAVAN, 1943:66	70
<i>mesophragmatica</i> group BRNCIC & KOREF, 1957:64	79
<i>nannoptera</i> group WHEELER, 1949:177	81
<i>obscura</i> group STURTEVANT, 1940:347	135
<i>onychophora</i> group	83
<i>peruviana</i> group THROCKMORTON, 1975:426	90
<i>repleta</i> group STURTEVANT, 1942:31	91
<i>saltans</i> group STURTEVANT, 1940:346	136
<i>tripunctata</i> group STURTEVANT, 1942:30	97
<i>virilis</i> group STURTEVANT, 1942:30	108
<i>willistoni</i> group STURTEVANT, 1940:347	137

Species (synonyms included)

<i>aberrans</i> WHEELER, 1957:207 (<i>Drosophila</i>).....	17
<i>abregolineata</i> DUDA, 1925:214 (<i>Drosophila</i>).....	138, 283, 284, 320
<i>acanthoptera</i> WHEELER, 1949:171 (<i>Drosophila</i>).....	81, 230, 315
<i>acuminatus</i> HUNTER, 1988:302 (<i>Drosophila</i>).....	84, 232, 315
<i>adumbrata</i> (DUDA, 1925:178) (<i>Cladochaeta</i>)	8, 161, 310
<i>affinis</i> STURTEVANT, 1916:334 (<i>Drosophila</i>).....	135
<i>albifacies</i> DUDA, 1925:181 (<i>Diathoneura</i>).....	17, 170, 311
<i>albinota</i> (WHEELER, 1957:108) (<i>Diathoneura</i>)	18, 171, 311

<i>albomarginata</i> DUDA, 1927:173 (<i>Drosophila</i>).....	54, 204, 313
<i>alei</i> BRNCIC, 1962:4 (<i>Drosophila</i>).....	131
<i>alexandrei</i> CORDEIRO, 1951:1 (<i>Drosophila</i>).....	70
<i>alfari</i> STURTEVANT, 1921:75 (<i>Drosophila</i>).....	131
<i>amplipennis</i> MALLOCH, 1934:442 (<i>Drosophila</i>).....	109, 264, 318
<i>andina</i> DOBZHANSKY & PAVAN, 1943:59 (<i>Drosophila</i>).....	80
<i>angustibucca</i> DUDA, 1925:218 (<i>Drosophila</i>).....	97, 249, 317, 324
<i>annularis</i> STURTEVANT, 1916:327 (<i>Drosophila</i>).....	55, 205, 313, 322
<i>annulata</i> WILLISTON, 1896:409 (<i>Drosophila</i>).....	55
<i>annulosa</i> , sp. nov. (<i>Drosophila</i>).....	57, 206, 313
<i>annulimana</i> DUDA, 1927:117 (<i>Drosophila</i>).....	45, 293, 321
<i>appendiculata</i> MALLOCH, 1934:441 (<i>Drosophila</i>).....	44, 195, 312
<i>arboloco</i> HUNTER, 1979:376 (<i>Drosophila</i>).....	84, 233, 316
<i>armata</i> (FROTA-PESSOA, 1947:195) (<i>Cladochaeta</i>).....	7
<i>atalaia</i> VILELA & SENE, 1982:343 (<i>Drosophila</i>).....	116
<i>atrata</i> BURLA & PAVAN, 1953:307 (<i>Drosophila</i>).....	46, 196, 305, 312
<i>bellula</i> WILLISTON, 1896:410 (<i>Drosophila</i>).....	136
<i>bicolor</i> (FROTA-PESSOA, 1947:211) (<i>Drosophila</i>).....	16
<i>boliviana</i> DUDA, 1927:198 (<i>Drosophila</i>).....	67, 215, 216, 315, 323
<i>boliviensis</i> DUDA, 1927:73 (<i>Neotanygastrella</i>).....	143, 194, 326
<i>bomarea</i> HUNTER, 1979:379 (<i>Drosophila</i>).....	85, 234, 316
<i>bomplandi</i> (MALLOCH, 1934:438) (<i>Cladochaeta</i>).....	8, 162, 300
<i>borgmeieri</i> DUDA, 1927:92 (<i>Diathoneura</i>).....	19, 192, 301, 321
<i>brasilensis</i> DUDA, 1927:93 (<i>Diathoneura</i>).....	20, 172, 302, 311, 321
<i>brasilensis</i> FROTA-PESSOA, 1946:175 (<i>Neotanygastrella</i>).....	145
<i>briegeri</i> PAVAN & BREUER, 1954:954 (<i>Drosophila</i>).....	66
<i>calloptera</i> SCHNER, 1868:239 (<i>Drosophila</i>).....	47, 197, 306, 312, 321
<i>camargoi</i> DOBZHANSKY & PAVAN, 1950:6 (<i>Drosophila</i>).....	66, 68
<i>campestris</i> BURLA, in PAVAN, 1950:9 (<i>Drosophila</i>).....	100
<i>canalina</i> PATTERSON & MAINLAND, 1944:50 (<i>Drosophila</i>)..	57, 207, 313, 322
<i>canalinoides</i> WHEELER, 1957:92 (<i>Drosophila</i>).....	54
<i>canescens</i> DUDA, 1927:210 (<i>Drosophila</i>).....	79, 293, 323
<i>caponei</i> PAVAN & CUNHA, 1947:4 (<i>Drosophila</i>).....	116
<i>carablanca</i> HUNTER, 1979:376 (<i>Drosophila</i>).....	85, 235, 316
<i>cardini</i> STURTEVANT, 1916:336 (<i>Drosophila</i>).....	62
<i>cardinoides</i> DOBZHANSKY & PAVAN, 1943:21 (<i>Drosophila</i>).....	62, 314
<i>carrerae</i> (FROTA-PESSOA, 1947:200) (<i>Diathoneura</i>).....	16
<i>castanea</i> PATTERSON & MAINLAND, 1944:51 (<i>Drosophila</i>).....	65
<i>cavalcantii</i> (FROTA-PESSOA, 1947:204) (<i>Diathoneura</i>).....	16
<i>chisaca</i> HUNTER, 1988:299 (<i>Drosophila</i>).....	86, 236, 316
<i>chymomyzoides</i> DUDA, 1927:71 (<i>Neotanygastrella</i>).....	144, 294, 295, 320, 326
<i>clypeata</i> WHEELER, 1968:432 (<i>Drosophila</i>).....	126, 273, 319
<i>clypeora</i> WHEELER, 1968:433 (<i>Drosophila</i>).....	126, 274, 319
<i>coffeata</i> WILLISTON, 1896:409 (<i>Drosophila</i>).....	64, 291, 322
<i>colmenares</i> HUNTER, 1988:305 (<i>Drosophila</i>).....	86, 237, 316
<i>costaricana</i> DUDA, 1925:225 (<i>Paramycodrosophila</i>).....	147, 297, 320
<i>crassa</i> PATTERSON & MAINLAND, 1944:52 (<i>Drosophila</i>).....	110, 265, 318
<i>crocina</i> PATTERSON & MAINLAND, 1944:34 (<i>Drosophila</i>).....	100
<i>cruciata</i> DUDA, 1925:177 (<i>Diathoneura</i>).....	21, 173, 174, 193, 311, 320, 321
<i>cuzcoica</i> DUDA, 1927:120 (<i>Drosophila</i>).....	131, 291, 326
<i>davidgrimaldii</i> , sp. nov. (<i>Drosophila</i>).....	58, 208, 313

<i>decemseriata</i> HENDEL, 1936:98 (<i>Drosophila</i>).....	68, 217
<i>denieri</i> BLANCHARD, 1938:362 (<i>Drosophila</i>).....	131, 132
<i>desbaratabaile</i> HUNTER, 1979:374 (<i>Drosophila</i>)	86, 238, 316
<i>divisa</i> DUDA, 1927:187 (<i>Drosophila</i>).....	98, 250, 317, 324
<i>dreyfusi</i> DOBZHANSKY & PAVAN, 1943:61 (<i>Drosophila</i>).....	66
<i>dudai</i> , sp. nov. (<i>Diathoneura</i>).....	22, 174, 302, 311
<i>eleonora</i> TOSI et al., 1990:21 (<i>Drosophila</i>).....	96
<i>ellisoni</i> VILELA, 1983:7 (<i>Drosophila</i>).....	91
<i>euryopa</i> DUDA, 1925:179 (<i>Diathoneura</i>).....	23, 173, 176, 193, 311, 321
<i>fasciola</i> WILLISTON, 1896:410 (<i>Drosophila</i>)	92, 94, 246, 316
<i>flavolineata</i> DUDA, 1927:97 (<i>Diathoneura</i>)	24, 192, 302
<i>flavolineata</i> DUDA, 1927:157 (<i>Drosophila</i>)	64
<i>floricola</i> STURTEVANT, 1942:42 (<i>Drosophila</i>)	132
<i>floridana</i> (MALLOCH, 1924:10) (<i>Cladochaeta</i>)	9, 163, 300, 310
<i>franji</i> HUNTER, 1979:373 (<i>Drosophila</i>)	84
<i>freilejoni</i> HUNTER, 1979:373 (<i>Drosophila</i>).....	87, 239, 316
<i>frotapessoai</i> , sp. nov. (<i>Drosophila</i>).....	99, 251, 317
<i>fulvimaculoides</i> WASSERMAN & WILSON, 1957:137 (<i>Drosophila</i>).....	91
<i>fumipennis</i> DUDA, 1925:220 (<i>Drosophila</i>)	139, 285, 286, 320
<i>fumosa</i> PAVAN & CUNHA, 1947:14 (<i>Drosophila</i>).....	65
<i>fundomaculata</i> DUDA, 1925:209 (<i>Drosophila</i>).....	142, 290, 309, 320
<i>fuscina</i> BURLA, 1956:257 (<i>Zygothrica</i>)	149, 320
<i>fuscipennis</i> DUDA, 1927:198 (<i>Drosophila</i>)	69, 292, 323
<i>fuscolineata</i> DUDA, 1925:213 (<i>Drosophila</i>)	65, 214, 314, 322
<i>gigas</i> DUDA, 1925:216 (<i>Drosophila</i>).....	111, 266, 318, 325
<i>glabrifrons</i> DUDA, 1925:196 (<i>Drosophila</i>)	128, 130, 276, 319
<i>griseolineata</i> DUDA, 1927:161 (<i>Drosophila</i>)	71, 219, 314, 323
<i>guaraja</i> KING, 1947:48 (<i>Drosophila</i>).....	72, 220, 314, 323
<i>guaramunu</i> DOBZHANSKY & PAVAN, 1943:39 (<i>Drosophila</i>).....	75
<i>guarani</i> DOBZHANSKY & PAVAN, 1943:36 (<i>Drosophila</i>).....	76
<i>guaru</i> DOBZHANSKY & PAVAN, 1943:37 (<i>Drosophila</i>).....	73, 221, 314, 323
<i>guttipennis</i> DUDA, 1925:171 (<i>Diathoneura</i>).....	25, 173, 177, 193, 302, 311
<i>hendeli</i> sp. nov. (<i>Drosophila</i>).....	59, 209, 314
<i>hyalipennis</i> DUDA, 1927:119 (<i>Drosophila</i>)	87, 240, 316
<i>hydei</i> STURTEVANT, 1921:101 (<i>Drosophila</i>)	93, 292, 324
<i>iheringi</i> (FROTA-PESSOA, 1947:206) (<i>Diathoneura</i>)	16
<i>impudica</i> DUDA, 1927:196 (<i>Drosophila</i>).....	112, 243, 244, 245, 318, 325
<i>infumata</i> (DUDA, 1925:179) (<i>Cladochaeta</i>).....	10, 162, 300, 321
<i>inversa</i> (WALKER, 1861:331) (<i>Cladochaeta</i>)	7
<i>ivai</i> VILELA, 1983:14 (<i>Drosophila</i>).....	91
<i>kallima</i> WHEELER, 1957:87 (<i>Drosophila</i>).....	48, 198, 306, 312
<i>krugi</i> PAVAN & BREUER, 1954:462 (<i>Drosophila</i>).....	66
<i>laevilimbata</i> DUDA, 1927:65 (<i>Chymomyza</i>).....	5, 158, 159, 310, 321
<i>latebuccata</i> DUDA, 1927:203 (<i>Drosophila</i>).....	113, 292, 325
<i>latecarinata</i> DUDA, 1927:170 (<i>Drosophila</i>).....	114, 292
<i>laticeps</i> DUDA, 1925:175 (<i>Diathoneura</i>).....	26, 192
<i>latifasciaeformis</i> DUDA, 1940:22 (<i>Drosophila</i>)	134, 280
<i>limbinervis</i> DUDA, 1925:215 (<i>Drosophila</i>).....	74, 222, 314, 323
<i>lindae</i> WHEELER, 1968:431 (<i>Drosophila</i>).....	49, 199, 306, 313
<i>longipennis</i> (MALLOCH, 1926:34) (<i>Diathoneura</i>).....	27, 178, 311
<i>lopesi</i> (FROTA-PESSOA, 1947:213) (<i>Diathoneura</i>)	17

<i>lugubripennis</i> DUDA, 1927:199 (<i>Drosophila</i>).....	69, 218, 315
<i>lutzii</i> STURTEVANT, 1916:340 (<i>Drosophila</i>).....	132, 279, 319, 326
<i>macropolia</i> PATTERSON & MAINLAND, 1944:54 (<i>Drosophila</i>).....	115, 293, 325
<i>maculifrons</i> DUDA, 1927:122 (<i>Drosophila</i>).....	75, 223, 224, 315, 323
<i>maculipennis</i> (MALLOCH, 1926:33) (<i>Diathoneura</i>).....	28, 192, 303
<i>maculipennis</i> DUDA, 1927:167 (<i>Drosophila</i>).....	77
<i>magnipennis</i> DUDA, 1927:100 (<i>Diathoneura</i>).....	29, 179, 311
<i>mapiriensis</i> , sp. nov. (<i>Drosophila</i>).....	93, 247, 316
<i>maracaya</i> WHEELER, 1957:88 (<i>Drosophila</i>).....	50, 200, 307, 313
<i>margarita</i> HUNTER, 1979:379 (<i>Drosophila</i>).....	88, 241, 316
<i>marmorata</i> HUTTON, 1901:91 (<i>Drosophila</i>).....	93, 292, 324
<i>medionotata</i> FROTA-PESSOA, 1954:288 (<i>Drosophila</i>).....	102
<i>medioobscurata</i> DUDA, 1925:217 (<i>Drosophila</i>).....	104
<i>mediosignata</i> DOBZHANSKY & PAVAN, 1943:24 (<i>Drosophila</i>).....	102
<i>mediostriata</i> DUDA, 1925:223 (<i>Drosophila</i>).....	99, 100, 252, 253, 317
<i>melanoptera</i> DUDA, 1927:158 (<i>Drosophila</i>).....	59, 322
<i>mercatorum</i> PATTERSON & WHEELER, 1942:93 (<i>Drosophila</i>).....	91
<i>mesophragmatica</i> DUDA, 1927:205 (<i>Drosophila</i>).....	80, 228, 229, 315, 323
<i>mexicana</i> WHEELER, 1949:164 (<i>Drosophila</i>).....	127
<i>mexicoa</i> WHEELER, 1954:54 (<i>Drosophila</i>).....	127, 275, 319
<i>minuta</i> (DUDA, 1925:182) (<i>Cladochaeta</i>).....	11, 164, 165, 310
<i>montei</i> (FROTA-PESSOA, 1947:210) (<i>Diathoneura</i>).....	17
<i>nana</i> (WILLISTON, 1896:416) (<i>Diathoneura</i>).....	29, 180, 311
<i>nannoptera</i> WHEELER, 1949:177 (<i>Drosophila</i>).....	65, 82, 231, 315
<i>narinosa</i> FROTA-PESSOA, 1945:476 (<i>Drosophila</i>).....	129, 277, 319
<i>nasalis</i> DUDA, 1925:194 (<i>Drosophila</i>).....	129
<i>nebulosa</i> COQUILLET, 1900:263 (<i>Cladochaeta</i>).....	12, 194, 300
<i>neochiracea</i> WHEELER, 1959:183 (<i>Drosophila</i>).....	115, 267, 318
<i>neoguaranumu</i> FRYDENBERG, 1956:57 (<i>Drosophila</i>).....	70, 101, 254, 317, 324
<i>nigrescens</i> DUDA, 1925:184 (<i>Diathoneura</i>).....	31, 181, 182, 193, 303, 311
<i>nigrifemur</i> DUDA, 1927:192 (<i>Drosophila</i>).....	116, 293, 309, 325
<i>nigrifrons</i> DUDA, 1925:184 (<i>Diathoneura</i>).....	32, 181, 183, 193, 303, 311
<i>nubeculosa</i> DUDA, 1925:180 (<i>Diathoneura</i>).....	33, 184, 303, 312
<i>obscuricolor</i> DUDA, 1927:100 (<i>Drosophila</i>).....	117, 291, 325
<i>ochracea</i> DUDA, 1927:195 (<i>Drosophila</i>).....	115
<i>onychophora</i> DUDA, 1927:208 (<i>Drosophila</i>).....	88, 242, 316
<i>opaca</i> (WILLISTON, 1896:411) (<i>Diathoneura</i>).....	34, 181, 185, 193, 312
<i>ornatifrons</i> DUDA, 1927:162 (<i>Drosophila</i>).....	76, 225, 226, 315, 323
<i>ornatipennis</i> WILLISTON, 1896:407 (<i>Drosophila</i>).....	51, 201, 307, 313, 321
<i>pachea</i> PATTERSON & WHEELER, 1942:87 (<i>Drosophila</i>).....	81
<i>paglioli</i> CORDEIRO, 1963:401 (<i>Drosophila</i>).....	64
<i>pallida</i> WILLISTON, 1896:415 (<i>Drosophila</i>).....	62, 141
<i>pallidipennis</i> DOBZHANSKY & PAVAN, 1943:32 (<i>Drosophila</i>).....	118, 268, 318
<i>pallidipennis centralis</i> PATTERSON & MAINLAND, 1944:57 (<i>Drosophila</i>).....	118
<i>panamensis</i> MALLOCH, 1926:28 (<i>Drosophila</i>).....	54
<i>para</i> PAVAN & BURLA, in PAVAN, 1950:22 (<i>Drosophila</i>).....	112
<i>parabocainoides</i> WHEELER & MAGALHÃES, 1962:167 (<i>Drosophila</i>).....	140
<i>paracanalinea</i> WHEELER, 1957:93 (<i>Drosophila</i>).....	54
<i>paradoxa</i> (LAMB, 1918:159) (<i>Cladochaeta</i>).....	12, 162, 301, 310
<i>paraguayensis</i> DUDA, 1927:185 (<i>Drosophila</i>).....	102, 255, 256, 257, 317
<i>paramediotriata</i> TOWNSEND & WHEELER, 1957:62 (<i>Drosophila</i>).....	62, 101, 317

<i>parannularis</i> , sp. nov. (<i>Drosophila</i>)	60, 211, 314
<i>paulista</i> DOBZHANSKY & PAVAN, 1943:10 (<i>Drosophila</i>)	141
<i>pectinifemur</i> DUDA, 1927:66 (<i>Chymomyza</i>).....	6, 158, 160, 310, 321
<i>pedroi</i> VILELA, 1984:63 (<i>Drosophila</i>).....	64
<i>peruensis</i> WHEELER, 1959:183 (<i>Drosophila</i>).....	77, 292, 323
<i>peruviana</i> DUDA, 1927:96 (<i>Diathoneura</i>)	35, 186, 312
<i>peruviana</i> (DUDA, 1927:204) (<i>Drosophila</i>)	91, 293, 309
<i>pichis</i> sp. nov. (<i>Drosophila</i>)	130, 278, 319
<i>pictifrons</i> DUDA, 1927:182 (<i>Drosophila</i>)	119, 292, 325
<i>pilifrons</i> (FROTA-PESSOA, 1947:208) (<i>Diathoneura</i>)	17
<i>pleurolineata</i> DUDA, 1925:183 (<i>Diathoneura</i>).....	36, 187, 312
<i>plumata</i> DUDA, 1927:99 (<i>Diathoneura</i>).....	37, 192, 304
<i>poecila</i> BURLA & PAVAN, 1953:311 (<i>Drosophila</i>)	53
<i>poeciloptera</i> (DUDA, 1925:226) (<i>Drosophila</i>)	53
<i>pollinospadix</i> PATTERSON & MAINLAND, 1944:55 (<i>Drosophila</i>) ..	120, 293, 325
<i>polymorpha</i> DOBZHANSKY & PAVAN, 1943:19 (<i>Drosophila</i>)	62
<i>ponderosa</i> PATTERSON & MAINLAND, 1943:198 (<i>Drosophila</i>).....	120, 269, 318
<i>prorepleta</i> DUDA, 1925:210 (<i>Drosophila</i>)	94
<i>prosimilis</i> DUDA, 1927:194 (<i>Drosophila</i>).....	103, 291, 324
<i>pseudoobscura</i> FROLOVA, 1929:212 (<i>Drosophila</i>).....	135
<i>pseudorepleta</i> , sp. nov. (<i>Drosophila</i>).....	95, 248, 317, 324
<i>pulchella</i> STURTEVANT, 1916:327 (<i>Drosophila</i>)	55, 136, 282, 319
<i>pulla</i> PAVAN & CUNHA, 1947:10 (<i>Drosophila</i>)	72
<i>pulvera</i> DUDA, 1927:181 (<i>Drosophila</i>).....	89
<i>pulvereae</i> DUDA, 1927:136, 181 (<i>Drosophila</i>).....	89, 291, 324
<i>quadrivittata</i> DUDA, 1925:172 (<i>Diathoneura</i>).....	38, 188, 304, 312
<i>quadrum</i> (WIEDEMANN, 1830:507) (<i>Drosophila</i>).....	52, 202, 308, 313, 321
<i>quinquelineata</i> (DUDA, 1925:167) (<i>Zygothrica</i>).....	148, 298, 299, 320
<i>repleta</i> WOLLASTON, 1858:117 (<i>Drosophila</i>).....	91, 96, 317, 324
<i>reticulata</i> WHEELER, 1957:101 (<i>Drosophila</i>).....	121, 270, 318
<i>rostrata</i> DUDA, 1925:219 (<i>Drosophila</i>)	104, 258, 318, 326
<i>schildi</i> MALLOCH, 1924:10 (<i>Drosophila</i>)	53, 203, 307, 308, 313, 321
<i>scioptera</i> DUDA, 1927:179 (<i>Drosophila</i>)	122, 293, 325
<i>semialba</i> DUDA, 1925:208 (<i>Drosophila</i>).....	105, 259, 260, 318
<i>similis</i> WILLISTON, 1896:415 (<i>Drosophila</i>).....	62, 213, 314
<i>similis grenadensis</i> HEED, 1962:178 (<i>Drosophila</i>).....	62
<i>smithi</i> , sp. nov. (<i>Diathoneura</i>).....	39, 189, 304, 312
<i>strigiventris</i> DUDA, 1927:184 (<i>Drosophila</i>).....	123, 292, 325
<i>sororia</i> (WILLISTON, 1896:408) (<i>Cladochaeta</i>).....	14, 166, 167, 301, 310
<i>sturtevanti</i> DUDA, 1927:167 (<i>Drosophila</i>)	137
<i>sturtevanti</i> WHEELER & TAKADA, 1971:234 (<i>Cladochaeta</i>)	15, 168, 301, 310
<i>subbadia</i> PATTERSON & MAINLAND, 1943:198 (<i>Drosophila</i>).....	78, 227, 315
<i>subinfumata</i> DUDA, 1925:221 (<i>Drosophila</i>).....	140, 287, 288, 320
<i>subobscura</i> COLLIN, 1936:60 (<i>Drosophila</i>).....	135
<i>sucheae</i> PIPKIN & HEED, 1964:262 (<i>Drosophila</i>).....	105
<i>superba</i> (STURTEVANT, 1916:342) (<i>Diathoneura</i>).....	17
<i>suturalis</i> WHEELER, 1957:100 (<i>Drosophila</i>).....	124, 271, 318
<i>taeniatipennis</i> DUDA, 1925:172 (<i>Diathoneura</i>).....	40, 194, 304
<i>tanyptera</i> DUDA, 1925:170 (<i>Diathoneura</i>).....	41, 190, 312
<i>tephritoptera</i> HENDEL, 1936:95 (<i>Drosophila</i>)	47
<i>tessellata</i> DUDA, 1925:174 (<i>Diathoneura</i>).....	42, 191, 193, 305, 312

<i>tibialis</i> WHEELER, 1957:100 (<i>Drosophila</i>)	125, 272, 318
<i>tolteca</i> PATTERSON & MAINLAND, 1944:32 (<i>Drosophila</i>)....	135, 281, 319, 326
<i>travassosi</i> (FROTA-PESSOA, 1947:214) (<i>Cladochaeta</i>)	7
<i>triangulina</i> DUDA, 1927:186 (<i>Drosophila</i>).....	106, 261, 318, 324
<i>tricoloripes</i> DUDA, 1925:224 (<i>Neotanygastrella</i>).....	145, 294, 296, 320
<i>tripunctata</i> LOEW, 1862:231 (<i>Drosophila</i>).....	107, 262, 318, 324
<i>triseta</i> (MALLOCH, 1924:10) (<i>Diathoneura</i>)	43, 192, 305
<i>tristani</i> STURTEVANT, 1921:75 (<i>Drosophila</i>).....	131
<i>umbripennis</i> HENDEL, 1936:99 (<i>Drosophila</i>).....	64
<i>uniradiata</i> (DUDA, 1925:181) (<i>Cladochaeta</i>)	15, 169, 310
<i>vicentinae</i> VILELA, 1983:100 (<i>Drosophila</i>).....	91
<i>virilis</i> STURTEVANT, 1916:330 (<i>Drosophila</i>)	108, 263, 318
<i>willistoni</i> STURTEVANT, 1916:327 (<i>Drosophila</i>).....	141, 289, 314, 320
<i>willistoni quechua</i> AYALA, 1973:276 (<i>Drosophila</i>).....	141
<i>wingei</i> CORDEIRO, 1964:1 (<i>Drosophila</i>)	66
undet. sp. a (<i>Drosophila</i>)	61, 210, 322
undet. sp. b (<i>Drosophila</i>).....	61, 212, 322
undet. sp. c (<i>Drosophila</i>).....	61, 212, 322
undet. sp. d (<i>Drosophila</i>).....	62, 212, 322
undet. sp. e (<i>Drosophila</i>)	62, 212, 322
undet. sp. <i>cardini</i> group (<i>Drosophila</i>)	62, 314

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