PSYCHODIDAE (DIPTERA) OF THE CAPE VERDE ISLANDS, CAPTURED WITH A JOHNSON-TAYLOR SUCTION TRAP

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With 2 photographs and 95 figures

ABSTRACT. During a period of three years many thousands of specimens of moth flies, belonging to seven species, were collected on Santiago, Cape Verde Islands, by means of a Johnson-Taylor suction trap. Some additional specimens were collected at a light trap on Santo Antão. The species collected include: *Hemimormia acrostylis* (DUCKHOUSE, 1978), *Orgaoclogmia caboverdeana* gen. n., sp. n., *Clogmia albipunctata* (WILLISTON, 1893), *Tinearia acanthostyla* (TOKUNAGA, 1957) comb. n., *T. alternata* (SAY, 1824), *T. pseudoalternicula* (SALAMANNA, 1975) and *Falsologima savaiiensis* (EDWARDS, 1928) gen. n., comb. n. All species are diagnosed, described or redescribed and males and females are figured, with the exception of the well known species *C. albipunctata* and *T. alternata.*

Notes are included to distinguish *Orgaoclogmia* gen. n. (type species *O. caboverdeana* sp. n.) and *Falsologima* gen. n. (type species *Psychoda savaiiensis* EDWARDS, 1928) from *Clogmia* ENDERLEIN, 1936 and *Logima* EATON, 1904, respectively.

The following new combinations are suggested: *Orgaoclogmia aurigena* (QUATE & QUATE, 1967), *O. colobrina* (QUATE & QUATE, 1967), *O. consentanea* (QUATE & QUATE, 1967), *O. contortula* (QUATE & QUATE, 1967), *O. convolvula* (QUATE & QUATE, 1967), *O. falcata* (QUATE & QUATE, 1967), *O. grata* (QUATE & QUATE, 1967), *O. membraga* (QUATE & QUATE, 1967), *O. zeus* (QUATE & QUATE, 1967), all from *Clogmia*; *Falsologima guamensis* (QUATE, 1965), *F. quadrilosa* (QUATE & QUATE, 1967), *F. quadropsis* (QUATE & QUATE, 1967), *F. serpentina* (QUATE, 1965) and *Tinearia acanthostyla*, all from *Psychoda*. *Psychoda lebanica* VAILLANT & MOUBAYED, 1987 is synonymized with *Tinearia pseudoalternicula.*

All species reported are new to the fauna of the Cape Verde Islands. *Hemimormia acrostylis* and *Tinearia acanthostyla* are new to the Palaearctic region. Known data about the distribution of all species are summarized.

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RESUMO. Durante um período de 3 anos, milhares de especímenes de Psychodidae, pertencentes a 7 espécies, foram capturados na ilha de Santiago, Cabo Verde, com a ajuda de uma armadilha de sucção tipo Johnson-Taylor. Alguns specímenes adicionais foram colhidos numa armadilha de luz na ilha de Santo Antão. As espécies colhidas são: *Hemimormia acrostylis* (DUCKHOUSE, 1978), *Orgaoclogmia caboverdeana* gen. n., sp. n., *Clogmia albipunctata* (WILLISTON, 1893), *Tinearia acanthostyla* (TOKUNAGA, 1957) comb. n., *T. alternata* (SAY, 1824), *T. pseudoalternicula* (SALAMANNA, 1975) e *Falsologima savaiiensis* (EDWARDS, 1928) gen. n., comb. n. Todas as espécies, com a excepção das espécies bem conhecidas *C. albipunctata* e *T. alternata*, são aqui diagnosticadas, descritas ou redescritas. Além disso, apresentam-se desenhos dos machos bem como das fêmeas. Incluiam-se notas para poder distinguir os géneros novos *Orgaoclogmia* (espécie-tipo: *O. caboverdeana* sp. n.) e *Falsologima* (espécie-tipo: *Psychoda savaiiensis* EDWARDS, 1928) de *Clogmia* ENDERLEIN e *Logima* EATON, respectivamente. Sugeram-se várias combinações novas: *Orgaoclogmia aurigena* (QUATE & QUATE, 1967), *O. colobrina* (QUATE & QUATE, 1967), *O. consentanea* (QUATE & QUATE, 1967), *O. contortula* (QUATE & QUATE, 1967), *O. convolvula* (QUATE & QUATE, 1967), *O. falcata* (QUATE & QUATE, 1967), *O. grata* (QUATE & QUATE, 1967), *O. membraga* (QUATE & QUATE, 1967), *O. zeus* (QUATE & QUATE, 1967), todas de *Clogmia; Falsologima guamensis* (QUATE, 1965), *F. quadrilosa* (QUATE & QUATE, 1967), *F. quadropsis* (QUATE & QUATE, 1967), *F. serpentina* (QUATE, 1965) e *Tinearia acanthostyla*, todas de *Psychoda*. Sinonima-se *Psychoda lebanica* VAILLANT & MOUBAYED, 1987 com *Tinearia pseudoalternicula*.

Todas as espécies encontradas são novas para a fauna de Cabo Verde. *Hemimormia acrostylis* e *Tinearia acanthostyla* são novas para a região palaearctica. Incluiam-se dados sobre a distribuição de todas as espécies.

INTRODUCTION

The Cape Verde archipelago is of volcanic origin and consists of 18 islands and islets, of which 9 are inhabited. The archipelago is situated in the eastern part of the Atlantic Ocean, about 500 km off the coast of Senegal. Some of the islands are eroded and almost flat, whereas others have mountains and steep vallies and on one island (Fogo) an active volcano is present. Climatically, the islands are grouped with the Sahel countries, due to the low average rainfall and long periods of drought. However, the maximum temperatures are much milder than on the African Continent. The flora of the archipelago is rather poor, with only a small proportion of endemic species (LOBIN, 1982). A check-list of all recorded terrestrial arthropod species was given by VAN HARTEN (1993).

Moth flies (Diptera: Psychodidae) were collected by the junior author during 1988-1990, while employed by the Integrated Pest Management Project ('Projecto Luta Integrada') of the German Agency for Technical Cooperation (GTZ), at the Instituto Nacional de Investigação e Desenvolvimento Agrário (INIDA), São Jorge dos Orgãos, 30 km north of the capital Praia, at the centre of the island Santiago. São Jorge dos

Orgãos is situated in a relatively humid valley between the island's highest mountain, Pico da Antónia of 1392 m, and the Orgãos mountain range of about 700 m height (Photographs 1, 2). The main crops grown in the valley are maize, cowpea, pigeon pea, *Dolichos* beans, squash, cassava and sweet potato. In addition, trees and shrubs like mango, *Prosopis juliflora*, *Zizíphus mauritiana*, *Tamarindus indicus*, *Ficus gnaphalocarpa*, *Dichrostachys glomerata*, *Acacia* spp., *Agava sisalana*, *Jatropha curcas* and *Indigofera tinctoria* are quite abundant in the valley.

The moth flies were almost exclusively captured by a small Johnson-Taylor suction trap (see VAN EMDEN, 1972: 221), placed a few meters outside the insectary of INIDA. The present results reconfirm the usefulness of suction traps for faunistic studies, especially of smallbodied insects, already noted by ZUR STRASSEN & VAN HARTEN (1987). A few additional specimens were captured at a light-trap on the island of Santo Antão.

The captured moth flies were preserved in 70% ethanol and sent to the senior author in the Czech Republic, who mounted them on slides and studied them. In total, many thousands of specimens, belonging to seven species, were examined. Only selected material, mounted on slides in Canada balsam, is presented in this paper. The material is deposited in the Department of Entomology of the National Museum (Natural History), Prague (= NMP), Czech Republic. Each slide is numbered by an INS (Inventory Number of Slide).

ANNOTATED LIST OF SPECIES

Hemimormia acrostylis (DUCKHOUSE, 1978)
(Figs. 1 - 19)

Mormia acrostylis DUCKHOUSE, 1978: 346.
Mormia (Afromormia) acrostylis DUCKHOUSE; DUCKHOUSE, 1987: 268.
Hemimormia acrostylis (DUCKHOUSE); JEŽEK, 1984: 160; JEŽEK, 1994: 64.

Differential diagnosis. *H. acrostylis* has gonostyli longer than gonocoxites (Fig. 6), which are stout at base; sclerotized remainders of 10th tergite and sternite inside of epandrium T-shaped (composed of 3 parts), proximal part with several spine-shaped protuberances laterally (Figs. 8, 9). It thus differs from *H. dycei* (DUCKHOUSE) with gonostyli shorter than gonocoxites, which are slender at base; epandrial remainders 3-pronged posteriorly, proximal part without protuberances on both sides.

Male. Eyes contiguous, touching for hardly more than 4 times diameter of one facet (Figs. 1, 2). Antennae 16-segmented. Scape almost cylindrical (Fig. 12), somewhat widened in the middle, almost twice as long as pedicel, which is rather globular. Flagellar

segments bottle-shaped, basal segments conspicuously asymmetrical. The last 3 segments gradually reduced (Fig. 3), in contrast to segment 13. Both 14th and 15th segments almost globular, with very short necks. Apical antennal segment with a long, finger-like protuberance. Sensory filaments paired, well visible, conspicuous, each with about 8 branches arranged in a fan (Fig. 12). Ratios of lengths of segments of maxillary palps 1 : 1.3 : 1.4 : 2. Last segment of maxillary palpus annulate (Fig. 14), connected basally with apical end of foregoing segment. Terminal lobe of labium as in Fig. 13. Ratio of maximum length of cibarium to length of epipharynx 1.6 : 1. Thoracic sclerites as in Fig. 15. Wings (Fig. 4) narrowly lancet-shaped, clear, approximately 1.8 mm long, cubital area reduced, wing membrane bare. Strengthened parts of veins: Sc basally, most of distal part of R_1, R_5 and M_4. Basal costal nodes distinct, well visible, Sc uninterrupted. M_3 and Cu without a connection on M_4. R_5 extends distally to reach wing margin a little behind the apex of the wing. Medial wing angle 155° (BCD). Indices of wing AB : AC : AD = 4.9 : 5.1 : 5.2; BC : CD : BD = 1 : 1.2 : 2.2 (A = end of R_5, B = radial fork, C = medial fork, D = end of Cu). Index of base of M_{1+2}, A to maximum width of wing 2.6. Ratio of maximum length of halter to its maximum width 3.5 : 1. Ratios of lengths of femora, tibiae and first tarsal segments (P = pedes): P_1 = 1.9 : 2.2 : 1; P_2 = 2.2 : 2.8 : 1.4; P_3 = 2.2 : 3.2 : 1.3. Paired tarsal claws of P_1 as in Fig. 5. Basal apodeme of male genitalia (Figs. 16, 17) in dorsal view pointed proximally, in lateral view bilobed. Paired protuberances originating from distal end of basal apodeme conspicuous and characteristic, pointed and bent backwards at right angle to basal apodeme. Lateral view of copulatory organ as in Fig. 17. Gonocoxites (Fig. 6) rather long, widened at base, arched in lateral view. Gonostyli with long thin pointed tips (Fig. 16), in lateral view longer than gonocoxites (Fig. 6). Epandrium (Figs. 7, 8) almost bare, only central aperture developed. Sclerotized remainders of 10th tergite and sternite inside of epandrium conspicuously developed, of characteristic shape (Fig. 9). Index of length of surstylus to length of epandrium approximately 2.3 (lateral view). Hypandrium narrow (Fig. 16), without swollen parts. Epiproct small, hypoproct large, triangular, both parts haired. Surstyli (Figs. 7, 8) rather long, almost C-shaped, with non-bifurcated top, subapically mostly with 5 long retinaculi.

Female. Subgenital plate (Fig. 18) semicircular, two small caudal lobes quite fused, with a shallow incision between them. Subgenital plate with a great quantity of long setae and hairs. The genital chamber with complicated sclerotized forms (Figs. 11, 18, 19); meshlike-structures, however, not developed. Cercus almost straight (Fig. 10).

Distribution. South Africa. New to the Cape Verde Islands (occurrence January - December). New to the fauna of the Palaearctic region.

Material examined. Cape Verde Islands, Santiago: São Jorge dos Orgãos, in Johnson-Taylor suction trap, all A. VAN HARTEN leg., 18 males, 4 females. January 1990: INS 4258, 5261, 5262 (males), 5257, 5258 (females); February 1990: INS 5265

(male); March 1990: INS 4252, 5268, 5270 (males), 5266 (female); April 1990: INS 5273 (male); May 1990: INS 5274 (male); July 1988: INS 5278 (male); 25 August - 4 September 1989: INS 5281 (male); October 1989: INS 3257, 5254, 5255, 5256, 5296 (males); November 1989: INS 5299 (male); December 1989: INS 5301 (male), 5300 (female).

Taxonomic discussion. DUCKHOUSE (1978) described *acrostylis* in the genus *Mormia* ENDERLEIN, 1935. He overlooked the valid name *Hemimormia* KREK, 1971 (type species *Pericoma albicornis* TONNOIR, 1919 by mon.) used for *acrostylis* by JEŽEK (1984). Nine years later, DUCKHOUSE erected the new subgenus *Afromormia* DUCKHOUSE, 1987 (type species *Mormia dycei* DUCKHOUSE, 1978 by orig. des.), later synonymized with *Hemimormia* by JEŽEK (1994).

Orgaoclogmia gen. n.

Clogmia sensu DUCKHOUSE, 1989 (nec ENDERLEIN, 1936): 172, partim.
Type species: *Orgaoclogmia çaboverdeana* sp.n.

Distinguishing notes. The new genus is erected because of the unique combination of following characters: sensory filaments (ascoids) of flagellum multibranched; radial fork of wing at or near level of medial one, apex of Cu at or near level of medial fork (BCD more or less in a straight line); r-r, r-m missing. In comparison, *Clogmia* ENDERLEIN, 1936 (type species *Psychoda albipunctata* WILLISTON, 1893 - by orig. des.) is characterized by U-shaped sensory filaments of flagellar segments; radial fork conspicuously distad of medial; apex of Cu well beyond level of medial fork; BCD not at the same level; r-r and r-m outstandingly developed.

Extent of the genus. *Orgaoclogmia* includes several known species, all from Papua New Guinea and Indonesia, apparently the cradle of the genus: *O. aurigenea* (QUATE & QUATE, 1967) comb. n.; *O. colobrina* (QUATE & QUATE, 1967) comb. n.; *O. consentanea* (QUATE & QUATE, 1967) comb. n.; *O. contortula* (QUATE & QUATE, 1967) comb. n.; *O. convolvula* (QUATE & QUATE, 1967) comb. n.; *O falcata* (QUATE & QUATE, 1967) comb. n.; *O. grata* (QUATE & QUATE, 1967) comb. n.; *O. membraga* (QUATE & QUATE, 1967) comb. n. and *O. zeus* (QUATE & QUATE, 1967) comb. n.

Remarks. DUCKHOUSE (1989) shifted all above mentioned species into the genus *Clogmia* (from *Telmatoscopus* EATON). JEŽEK (1990) published notes to distinguish *Clogmia* from *Lepiseodina* ENDERLEIN. These notes are not in contradiction to the erection of *Orgaoclogmia*. The broader extent of the genus *Clogmia* in JEŽEK (1984) has historical value only.

Etymology. Derived from the Portuguese word 'orgão' (= organ), as in São Jorge dos Orgãos, Orgãos mountain range (mountains that resemble organ-pipes), and *Clogmia* (old taxon of moth flies - feminine gender).

Biology. Species have been captured by suction, Malaise and light traps; otherwise nothing is known.

Orgaoclogmia caboverdeana sp. n.
(Figs. 20 - 38)

Differential diagnosis. The below described species has M_2 without a spur (Fig. 25); surstyli not inflated distad; aedeagal complex symmetrical, with the presence of two small caudal lobulae (Figs. 26, 27). *O. colobrina* (QUATE & QUATE) differs by having a small spur at base of M_2; surstyli inflated distally; aedeagal complex asymmetrical and the two caudal lobulae missing.

Male. Eyes separated, the lower part of frons with irregularly arranged dorso-ventral set of hairs (Fig. 20). Eye's bridge formed by 4 lines of facets. The distance between eyes below frontal suture is equivalent approximately to twofold of facet diameter (Fig. 21). Index of distance of eye's apices to minimum width of frons mostly 7.2, to facet diameter 12. Antennae 16-segmented (Figs. 22, 29). Scape very short, almost cylindrical, a little narrowed in the middle, its length mostly 1.6 times greater than width at base. Pedicel almost ball-shaped. Flagellar segments pitcher-shaped, asymmetrical, with long necks. Apical antennal segment with a very long finger-like protuberance. Sensory filaments conspicuous, paired, with 6 branches arranged in a fan. Ratios of lengths of segments of maxillary palps 1 : 2.6 : 2.6 : 3.2. Last segment of maxillary palpus annulate (Fig. 30), connected basally with the top of the preceding segment. Terminal lobe of labium as in Fig. 23. Ratio of maximum length of cibarium to length of epipharynx 1.8 : 1. Thoracic sclerites as in Fig. 24. Wings (Fig. 25) widely lanceolate, clear, 2.0 (holotype), 1.9-2.1 (paratypes) mm long, cubital area conspicuously developed, wing membrane bare. Strengthened veins or parts of veins: Sc, R_1, R_{2+3} and R_2, basis only of R_4, R_5, M_{1+2} and Cu. Basal costal nodes distinct, well visible, Sc uninterrupted. M_3 and Cu without a connection on M_4. R_5 ending on apex of wing. Medial wing angle 161°. Indices of wing AB : AC : AD = 4.1 : 4.1 : 4.2; BC : CD : BD = 1 : 1.8 : 2.7. Index of base M_{1+2},A to maximum width of wing 1.8. Ratio of maximum length of halter to its maximum width 2.5 : 1. Ratios of lengths of femora, tibiae and first tarsal segments: P_1 = 2.1 : 2.1 : 1; P_2 = 2.3 : 2.9 : 1.2; P_3 = 2.3 : 3.1 : 1.2. Paired tarsal claws of P_1 pointed and bent distad, with additional ventral spine (Fig. 31). Basal apodeme of male genitalia (Fig. 26) long and wide, narrowed and rounded proximally, very narrow in lateral aspect (Fig. 27). Aedeagal complex sack-shaped (Figs. 26, 27), with two characteristic small lobulae caudally. Gonocoxites (Fig. 26) very short, thick, widened basally, arched in dorsal view, with a protuberance laterally. Gonostyli somewhat longer than gonocoxites, thin, pointed, with rugose surface (Fig. 32). Epandrium almost bare (Figs. 33, 34), only central aperture developed. Sclerotized remainders of 10th tergite and sternite inside of epandrium reduced to two stripes widened caudally. Hypandrium narrow with two small wide lobes. Epiproct

small, tongue-like, the width of epiproct a little greater than its length, a little narrowed distad. Hairs of epiproct more widely spaced and minute than hairs of hypoproct, which is of the same shape, but larger. Surstyli inconspicuously S-shaped in ventral view (almost twice as long as epandrium), with non-bifurcated top, subapically with 7 long retinaculi.

Female. The subgenital plate covered with many hairs and setae (Fig. 28). The basis of subgenital plate wide, oblong, caudal part narrowed with almost parallel sides, bilobed, with shallow incision between the lobes. Sensory organ developed, stick-like, somewhat widened basally and subapically. Complicated genital chamber as in Figs. 36-38. Cercus a little bent (Fig. 35).

Distribution. Cape Verde Islands (occurrence January - December).

Material examined. Holotype: male, Cape Verde Islands, Santiago, São Jorge dos Orgãos, in Johnson-Taylor suction trap, A. VAN HARTEN leg., March 1990: INS 5206 - Cat. No. 33629. Paratypes: 10 males, 6 females, same data as holotype. January 1990: INS 5210 (male) - Cat. No. 33633, INS 5211 (male) - Cat. No. 33634, INS 5221 (female) - Cat. No. 33644; February 1990: INS 5209 (male) - Cat. No. 33632; March 1990: INS 5208 (male) - Cat. No. 33631, INS 5220 (female) - Cat. No. 33643; April 1990: INS 5207 (male) - Cat. No. 33630, INS 5217 (female) - Cat. No. 33640 (allotype), INS 5219 (female) - Cat. No. 33642; May 1990: INS 5212 (male) - Cat. No. 33635, INS 5218 (female) - Cat. No. 33641; July 1988: INS 5213 (male) - Cat. No. 33636; August 1988: INS 5214 (male) - Cat. No. 33637; September 1989: INS 5222 (female) - Cat. No. 33645; November 1989: INS 5216 (male) - Cat. No. 33639; December 1989: INS 5215 (male) - Cat. No. 33638. Type-material deposited in the Department of Entomology of the National Museum (Nat. Hist.), Prague, Czech Republic.

Etymology. The species name is derived from the Cape Verde Islands (in Portuguese Cabo Verde).

Clogmia albipunctata (WILLISTON, 1893)

Full synonymy has been published by e.g. QUATE (1955) and VAILLANT (1972). The species has been redescribed and figured by e.g. PELLERANO (1967) and VAILLANT (1971).

Distribution. Tropical and subtropical areas of the world. New to the Cape Verde Islands (occurrence January - December).

Material examined. Cape Verde Islands, Santiago: São Jorge dos Orgãos, in Johnson-Taylor suction trap, all A. VAN HARTEN leg., 13 males, 3 females. January 1990: INS 4259, 5225 (males); February 1990: INS 4245 (male); March 1990: INS 4254 (male); April 1990: INS 4257 (male); May 1990: INS 4242 (male); July 1988: INS 5227 (male); August 1988: INS 5230 (male); 25 August - 4 September 1989: INS 5237, 5241 (females); September 1988: INS 5228 (male); September 1989: INS 5235 (male); October

1989: INS 3256 (male); November 1989: INS 4247 (male); December 1989: INS 4250 (male). Santo Antão, Chã de Arroz, Ribeira da Torre, in light trap, A. VAN HARTEN leg., 8-10 August 1989: INS 5231 (female).

Tinearia acanthostyla (TOKUNAGA, 1957) comb. n.
(Figs. 39-57)

Psychoda acanthostyla QUATE (MS); TOKUNAGA, 1957: 53.

Differential diagnosis. Male of *T. acanthostyla* has gonostylus bulbose basally (Figs. 45, 46), with a large sharp tooth apically (ending like an opener of tin cans). Subgenital plate of female formed by two divergent pointed teeth (Fig. 48) connected basally only by a very narrow bridge. The species differs thus from *T. lativentris* (BERDÉN), the male of which has gonostylus narrowed and pointed apically and the subgenital plate of the female is formed by two parallel rounded protuberances connected basally by a broad bridge.

Male. Head as in Fig. 39, eyes separated, frons with dorsoventral set of hairs. The minimum distance between eyes corresponds to a little more than one facet diameter (1.3). Index of distance of eye's apices to minimum width of frons 7, to facet diameter (Fig. 40) 10.5. Antennae with 15 segments (Figs. 41, 50). Scape almost cylindrical, short, its length 1.8 times its width at base. Pedicel very short, the length somewhat greater than the maximum width apically (1.1 : 1). Flagellar segments flask-shaped, symmetrical. The three apical segments fused, reduced upwardly in comparison with foregoing one. Sensory filaments short, with 3 branches. Ratios of lengths of segments of maxillary palps 1 : 1 : 1.1 : 1. Last segment of maxillary palpus not annulate (Fig. 51), connected basally with apical end of the foregoing segment. Terminal lobe of labium as in Fig. 42. Ratio of maximum length of cibarium to length of epipharynx 1 : 1.1. Thoracic sclerites as in Fig. 52. Wings (Fig. 43) clear, lanceolate, approximately 1.3 mm long, cubital area inconspicuous, wing membrane bare. Strengthened veins: Sc, R_1, R_{2+3} and R_2, basis of R_4, R_5, M_{1+2} and M_1, M_4 and Cu. Basal costal nodes distinct, Sc uninterrupted. M_3 and Cu with a connection on M_4. R_5 ending in apex of wing. Index of base of M_{1+2}, A to maximum width of wing 1.9. Ratio of maximum length of halter to its maximum width 2.4 : 1. Ratios of lengths of femora, tibiae and first tarsal segments: P_1 = 3.4 : 2.9 : 1; P_2 = 3.5 : 4.0 : 1.3; P_3 = 3.7 : 4.4 : 1.3. Paired tarsal claws of P_1 as in Fig. 44. Basal apodeme of male genitalia (Figs. 46, 54) a little bent with a bifurcation proximally in lateral view. Phallobasis of irregular shape, gonoporus with three phallomeres around. Two jointed dorsal phallomeres arched, with rounded top, single ventral phallomere pointed. Gonopods as in Figs. 45 and 46. Gonocoxites 1.4 times longer than gonostyli. Gonocoxites with lateral protuberances (in dorsal view). Gonostylus bulbose basally with a large sharp tooth apically (ending like opener of tin cans), many sensory setae present. Epandrium (Figs. 53, 55)

haired, only central aperture developed. Sclerotized remainders of 10th tergite and sternite very reduced. Paired sclerotized protuberances inside of epandrium long, pointed. Hypandrium narrow (Fig. 46). Epiproct inconspicuous, with rather long hairs, hypoproct small, tongue-shaped, covered with minute hairs (Fig. 55). Surstyli (Figs. 53, 55) long, C-shaped in ventral view, 1.6 times as long as epandrium, subapically with 1 retinaculum.

Female. Subgenital plate (Fig. 48) formed by two divergent teeth, pointed, connected only by a very narrow bridge basally. Cercus straight, as in Fig. 47. Complicated forms of genital chamber as in Figs. 49, 56 and 57.

Distribution. Formosa, Ryukyu Islands, Micronesian Islands, New Guinea, New Ireland, Philippines, Borneo, Malaya, India, Sri Lanka. New to the Cape Verde Islands (occurrence: March, July - November). New to the fauna of the Palaearctic region.

Material examined. Cape Verde Islands, Santiago: São Jorge dos Orgãos, in Johnson-Taylor suction trap, all A. VAN HARTEN leg., 5 males, 10 females. March 1990: INS 5271 (female); July 1988: INS 5277 (female); 25 August - 4 September 1989: INS 5247, 5284, 5289 (males), 5246, 5282, 5286, 5306 (females); September 1988: INS 5291 (female); September 1989: INS 5245, 5248 (males), 5293 (female); October 1989: INS 3260 (female); November 1989: INS 5297 (female).

Taxonomic discussion. The generic name *Tinearia* SCHELLENBERG, 1803 was revived by JEŽEK (1977). TOKUNAGA (1957) validated QUATE's manuscript name by redescribing (incl. figures) *Psychoda acanthostyla* and thereby became the author of the name. QUATE's manuscript was printed in 1959 by the Bernice P. Bishop Museum, Honolulu, Hawaii (QUATE, 1959). In it, QUATE recognized and commented this fact and quoted the species as *P. acanthostyla* TOKUNAGA, 1957.

Comment. The pair of spine-shaped protuberances inside of the epandrium also occurs in *Psycha grisescens* (TONNOIR, 1922).

Tinearia alternata (SAY, 1824)

Full synonymy has been published by e.g. QUATE (1955). The species was redescribed and figured by e.g. PELLERANO (1967) and JEŽEK (1977).

Distribution. Cosmopolitan species. New to the Cape Verde Islands (occurrence January - December).

Material examined. Cape Verde Islands, Santiago: São Jorge dos Orgãos, in Johnson-Taylor suction trap, all A. VAN HARTEN leg., 17 females. January 1990: INS 4260, 5224; February 1990: INS 4244; April 1990: INS 4253, 4256; May 1990: INS 4243; July 1988: INS 5226; 24-25 August 1989: INS 5236; 25 August - 4 September 1989: INS 5238, 5240, 5242; September 1988: INS 5229; September 1989: INS 5234; October 1989: INS 3258; November 1989: INS 4248; December 1989: INS 4251. Santo Antão, Chã de Arroz, Ribeira da Torre, in light trap, A. VAN HARTEN leg., 8-10 August 1989: INS 5232.

Tinearia pseudoalternicula (SALAMANNA, 1975)
(Figs. 58 - 76)

Psychoda pseudoalternicula SALAMANNA, 1975: 84.
Psychoda lebanica VAILLANT & MOUBAYED, 1987: 125. syn. n.
Tinearia pseudalternicula; WAGNER, 1990: 46 (lapsus)

Differential diagnosis. Male of *T. pseudoalternicula* has hypandrium very broad in the middle (Figs. 73, 74) and the Y-shaped subgenital plate of female on both sides inconspicuously widened basally in a patch (Figs. 63, 64). Male of *T. alternicula* (QUATE) has hypandrium very narrow and female subgenital plate, which is also Y-shaped, with a prominent basal band.

Male. Head as in Fig. 58. The lower part of frons with irregularly arranged dorsoventral set of hairs. The minimum distance between eyes is approximately equivalent to the diameter of one facet (Fig. 66). Index of distance of eye's apices to minimum width of frons as well as to facet diameter 8.8. Antennae 15-segmented (Figs. 59, 67). Scape almost cylindrical, a little widened distad, its length mostly 3 times greater than width at base. Pedicel almost globular. Flagellar segments flask-shaped, symmetrical. The last three flagellar segments gradually reduced and fused. Sensory filaments short, with 3 branches. Ratios of lengths of segments of maxillary palps (Fig. 68) 1.1 : 1.2 : 1 : 1. Last segment of maxillary palpus not annulate, connected basally with apical end of foregoing segment. Terminal lobe of labium as in Fig. 60. Ratio of maximum length of cibarium to length of epipharynx 1 : 1. Thoracic sclerites as in Fig. 61. Wings (Fig. 69) narrow, lancet-like, clear, approximately 1.3 mm long, cubital area not conspicuously developed, wing membrane bare. Strengthened parts of veins: Sc, R_1, basis of R_4, R_5, basis of M_{1+2}, M_4 and Cu. Basal costal nodes conspicuous, Sc uninterrupted. M_3 and Cu without a connection on M_4. R_5 extends distally to reach wing margin in apex of wing. Median wing angle 137°. Indices of wing AB : AC : AD = 3.8 : 3.9 : 3.5; BC : CD : BD = 1 : 1.5 : 2.4. Index of base of M_{1+2}, A to maximum width of wing 2.0. Ratio of maximum length of halter toits maximum width 2.1 : 1. Ratios of lengths of femora, tibiae and first tarsal segments: P_1 = 2.6 : 2.3 : 1; P_2 = 2.7 : 3.1 : 1.2; P_3 = 2.9 : 3.3 : 1.2. Paired tarsal claws of P_1 as in Fig. 70. Basal apodeme of male genitalia (Figs. 73, 74) conspicuously widened proximally in lateral view, rounded, straight. Phallobasis with three phallomeres. Dorsal phallomeres partially jointed at the apex (see in lateral view), ventral phallomere needle-shaped, with a decline of the apex from the dorsal phallomeres. Gonocoxites long, with well visible protuberances laterad (Figs. 71, 73). Gonostyli also long, thin, somewhat distorted. Length of gonostyli equals length of gonocoxites. Epandrium (Figs. 62, 72) haired, with a large notch proximally and caudally (see in dorsal view). Basal paired apertures very small, circular. Sclerotized remainders of 10th tergite and sternite inside of epandrium reduced. Index of length of surstylus to length of epandrium approximately

1.9. Hypandrium very broad in the middle (Figs. 73, 74). Epiproct inconspicuous, haired, hypoproct tongue-shaped, covered with minute hairs. Surstyli long, S-shaped in dorsal view (Fig. 62), inconspicuously bent in lateral view (Fig. 72), subapically with one retinaculum.

Female. Subgenital plate Y-shaped, a little widened basally in a patch on both sides (Figs. 63, 64), haired, both lobulae with several sensory setae. Cercus (Fig. 63) bent. The complicated structures of genital chamber as in Figs. 65, 75 and 76.

Distribution. Italy, Lebanon. New to the Cape Verde Islands (occurrence January - December).

Material examined. Cape Verde Islands, Santiago: São Jorge dos Orgãos, in Johnson-Taylor suction trap, all A. VAN HARTEN leg., 5 males, 12 females. January 1990: INS 5223 (female); February 1990: INS 5264 (male); April 1990: INS 4261 (female); May 1990: INS 5249 (male), 4255 (female); 25 August - 4 Sepember 1989: INS 5290 (male), 5239, 5251, 5252, 5253, 5288 (females); September 1989: INS 5233 (female); October 1989: INS 3259 (female); November 1989: INS 5250 (male), 4246 (female); December 1989: INS 5303 (male), 4249 (female).

Taxonomic discussion. At first, we recognized *T. pseudoalternicula* and *Psychoda lebanica* VAILLANT & MOUBAYED, 1987 as two valid species, with slight differences in the shape of the female subgenital plate. However, precise examination of numerous females of *T. pseudoalternicula* showed that the shape of the genital plate is quite identical to that in *P. lebanica*, which therefore becomes a new synonym.

Falsologima gen. n.

Psychoda auct. (nec LATREILLE, 1796), partim.
Type species: *Psychoda savaiiensis* EDWARDS, 1928

Distinguishing notes. The new genus is erected because of the following unique combination of characters: sensory filaments or ascoids of males 4-branched; big difference in size of two dorsal and one ventral phallomeres; ventral phallomere conspicuously narrow; gonocoxites very short, with prominent protuberances laterally; sensory seta of gonostylus developed. The new genus seems to be close to *Logima* EATON, 1904 (type species *Psychoda erminea* EATON, 1893 - by orig. des.), but this genus differs in the following characters: ascoids of male flagellum 3 branched; all phallomeres equal in size; ventral phallomere rather broad; gonocoxites mostly very long (if the antennal segment 14 between segments 13 and 15 almost reduced, then the gonocoxites shorter); without protuberances laterad; sensory seta of gonostylus not developed.

Extent of the genus. *Falsologima* comprises following known species: *F. savaiiensis* (EDWARDS, 1928) comb. n., a mainly tropicopolitan species; *F. guamensis* (QUATE, 1965) comb. n., from Guam, Philippines, New Guinea, New Britain and New

Ireland; *F. quadrilosa* (QUATE & QUATE, 1967) comb. n., from New Guinea; *F. quadropsis* (QUATE & QUATE, 1967) comb. n., from New Guinea and *F. serpentina* (QUATE, 1965) comb. n., from Philippines and New Guinea, all formerly in *Psychoda*.

Remarks. Probably some additional species belong in *Falsologima*, but are not included here because of the absence of thorough morphological analyses and suitable figures in the original papers. The taxonomy of the genus *Logima* was discussed by JEŽEK (1983).

Etymology. Name contrived from falsus - false, incorrect and *Logima*, old taxon of moth flies (feminine gender).

Biology. Not yet known; adults mostly captured by suction, Malaise and light traps.

Falsologima savaiiensis (EDWARDS, 1928) comb. n.
(Figs. 77 - 95)

Psychoda savaiiensis EDWARDS, 1928: 74.
Psychoda rarotongensis SATCHELL, 1953: 183.
Psychoda lucia QUATE, 1954: 349.

Differential diagnosis. *F. savaiiensis* has antennal segment 14 quite reduced, without bulbose part (Fig. 79); ventral phallomere shorter than dorsal ones (Figs. 83, 92); subgenital plate of female with a pair of rosette-like structures (Figs. 84, 94). It thus differs from *F. quadrilosa* (QUATE & QUATE), which has antennal segment 14 not quite reduced and with a bulbose part; ventral phallomere longer than dorsal ones; female subgenital plate without a pair of rosette-like structures.

Male. Head as in Fig. 77. Eyes separated, frons haired. Facets as in Fig. 78. Eye's apices formed by a group of 4 facets. The distance between eyes correspond to diameter of one facet. Index of distance of tangential points of eye's ends to minimum width of frons and to facet diameter 7.4. Antennae 14-segmented (Figs 79, 87), a hardly bulbose part between last two segments not regarded as segment. Scape cylindrical, short, its length 2.4 times greater than width at base. Length of pedicel only a little greater than maximum width in the middle. Flagellar segments rather symmetrical, flask-shaped, distal segments with long necks. Segments 13 and 14 fused and the coupling between them with one conspicuous spine. 13th segment with one subapical spine. Apical antennal segment with a long conical protuberance. Sensory filaments long, paired, with 4 branches. Ratios of lengths of segments of maxillary palps 1 : 1.1 : 1.3 : 1.5. Last segment of maxillary palpus not annulate (Fig. 80), connected basally with apical end of the foregoing segment. Terminal lobe of labium as in Fig. 88. Ratio of maximum length of cibarium to length of epipharynx 1.2 : 1. Thoracic sclerites as in Fig. 89. Wings (Fig. 81) approximately 1.3 mm long, clear, cubital area not conspicuously developed, wing membrane bare. Strengthened veins or part of veins: Sc, R_1, basis of R_4, R_5, basis of M_{1+2}, M_4 and Cu.

Basal costal nodes conspicuously visible. Sc uninterrupted. M_3 and Cu without a connection on M_4. R_5 ending in apex of wing. Medial wing angle 124°. Indices of wing AB : AC : AD = 3.7 : 3.9 : 3.2; BC : CD : BD = 1 : 1.7 : 2.4. Index of base of M_{1+2},A to maximum width of wing 1.9. Ratio of maximum length of halter to its maximum width 2.9 : 1. Ratios of lengths of femora, tibiae and first tarsal segments: P_1 = 2.8 : 2.6 : 1; P_2 = 2.9 : 3.5 : 1.3; P_3 = 3.2 : 3.8 : 1.4. Claw of P_1 as in Fig. 82. Copulatory organ as in Figs. 83 and 92. Gonocoxites short with bulbose protuberances laterad, gonostyli with rather long thin pointed tips, somewhat bent. Epandrium (Figs. 91, 93) haired, only central aperture developed. Sclerotized remainders of 10th tergite and sternite inside of epandrium missing. Hypandrium narrow, without swollen parts. Epiproct and hypoproct very reduced, haired. Surstyli long, C-shaped in dorsal view (Fig. 93), a little bent in lateral view (Fig. 91), with single long retinaculum subapically. Bases of surstyli bulbose.

Female. Subgenital plate (Figs. 84, 94) of characteristic shape, semicircular, with shallow and rather wide incision distad. A pair of rosette-like structures present on subgenital plate. Subgenital plate with many setae caudad, haired. Cercus as in Fig. 84. Complicated structures of genital chamber as in Figs. 85, 86 and 95.

Distribution. Polynesian Islands, Micronesian Islands, Melanesian Islands, New Guinea, Borneo, Philippines, Japan, Formosa, India, Africa (North, Central, South), U.S.A., Central America, Antilles, Tobago Island. New to the Cape Verde Islands (occurrence January - December).

Material examined. Cape Verde Islands, Santiago: São Jorge dos Orgãos, in Johnson-Taylor suction trap, all A. VAN HARTEN leg., 9 males, 14 females. January 1990: INS 5259, 5260 (males); February 1990: INS 5263 (female); March 1990: INS 5269 (male), 5267 (female); April 1990: INS 5272 (male), 5244 (female); May 1990: INS 5275 (female); July 1988: INS 5276 (female); August 1988: INS 5279 (female); 24-25 August 1989: INS 5280 (female); 25 August - 4 September 1989: INS 5243, 5285, 5287 (males), 5283 (female); September 1988: INS 5292 (female); September 1989: INS 5294 (male); October 1989: INS 3261 (male), 5295 (female); November 1989: INS 5298 (female); December 1989: INS 5302 (female). Santo Antão, Chã de Arroz, Ribeira da Torre, in light trap, A. VAN HARTEN leg., 8-10 August 1989: INS 5304, 5305 (females).

Taxonomic discussion. QUATE (1955) published following comments when synonymizing his species *lucia*: "It was realized that *Psychoda lucia* was a synonym of *P. rarotongensis* before publication, but the definitive bibliographic reference to the latter was received too late to make a change in the MS describing *P. lucia*."

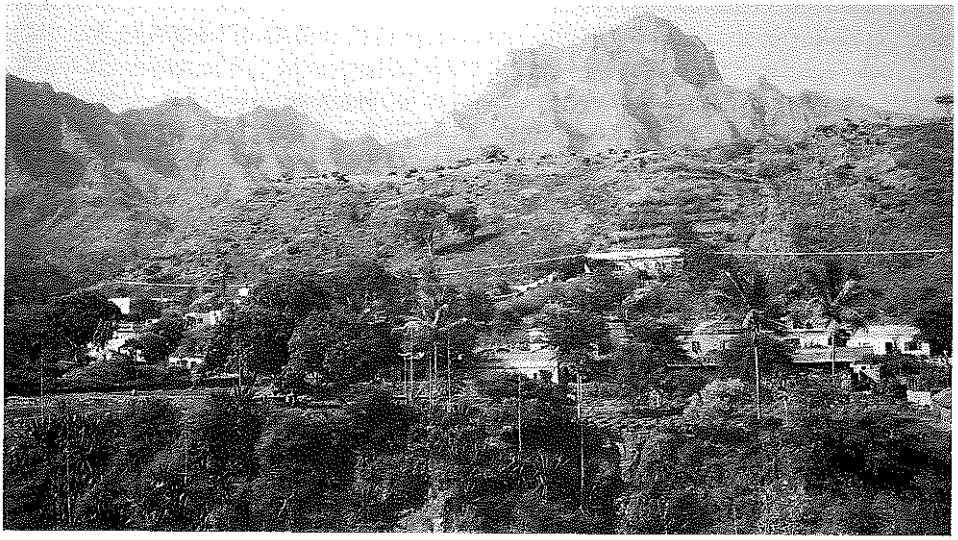


Photo 1 - Aspect of the valley of São Jorge dos Orgãos (type locality of *Orgaoclogmia caboverdeana* sp. n.), with in the background the Pico da Antónia.

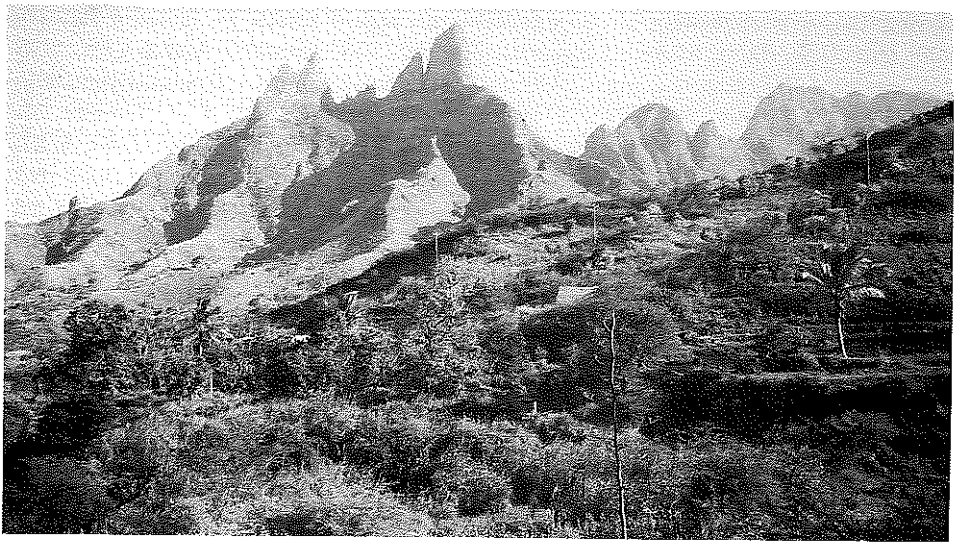
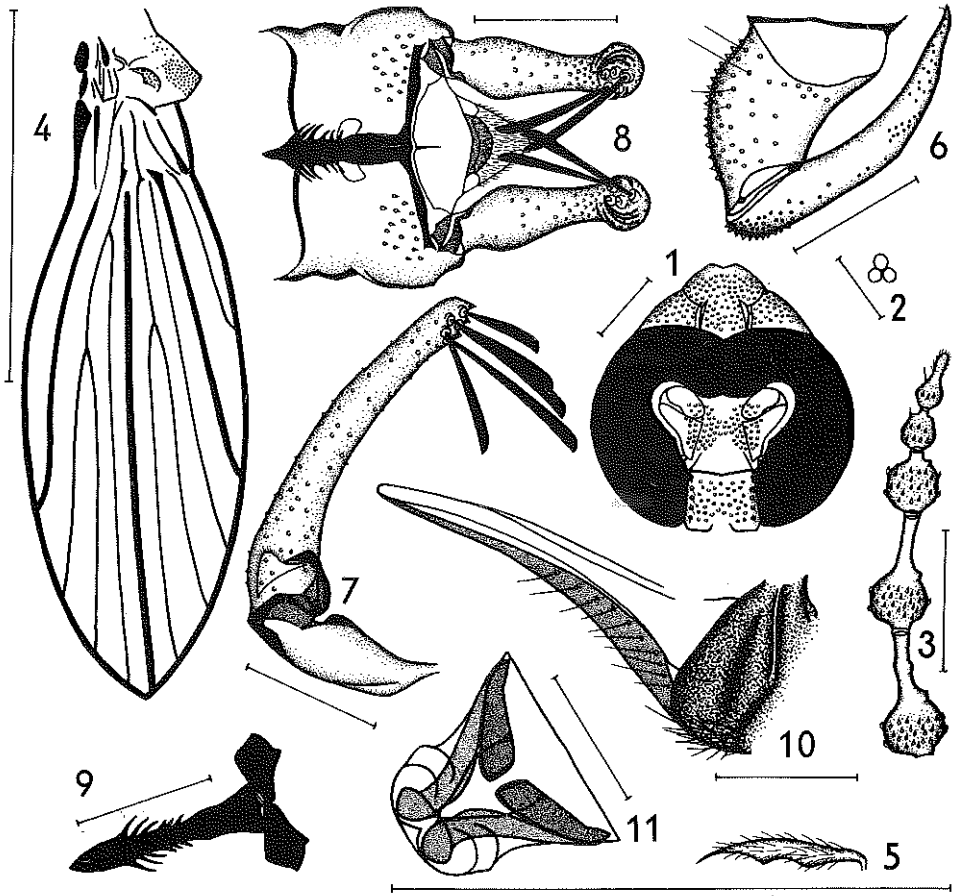
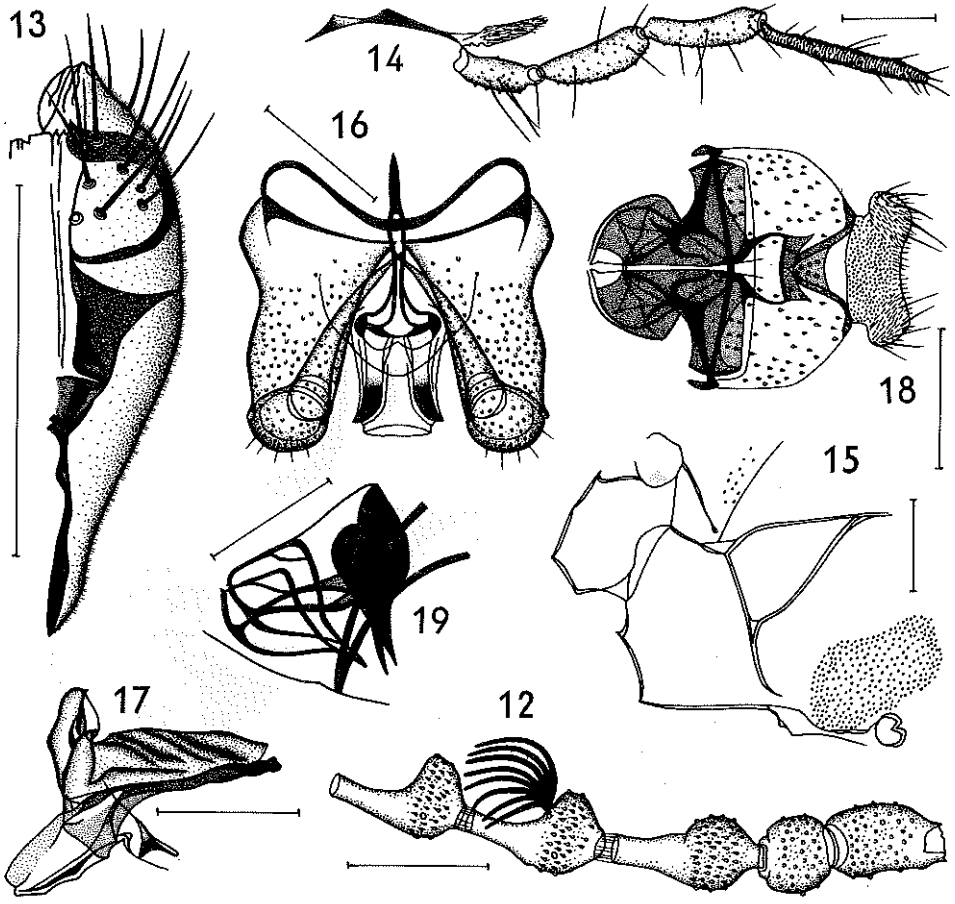


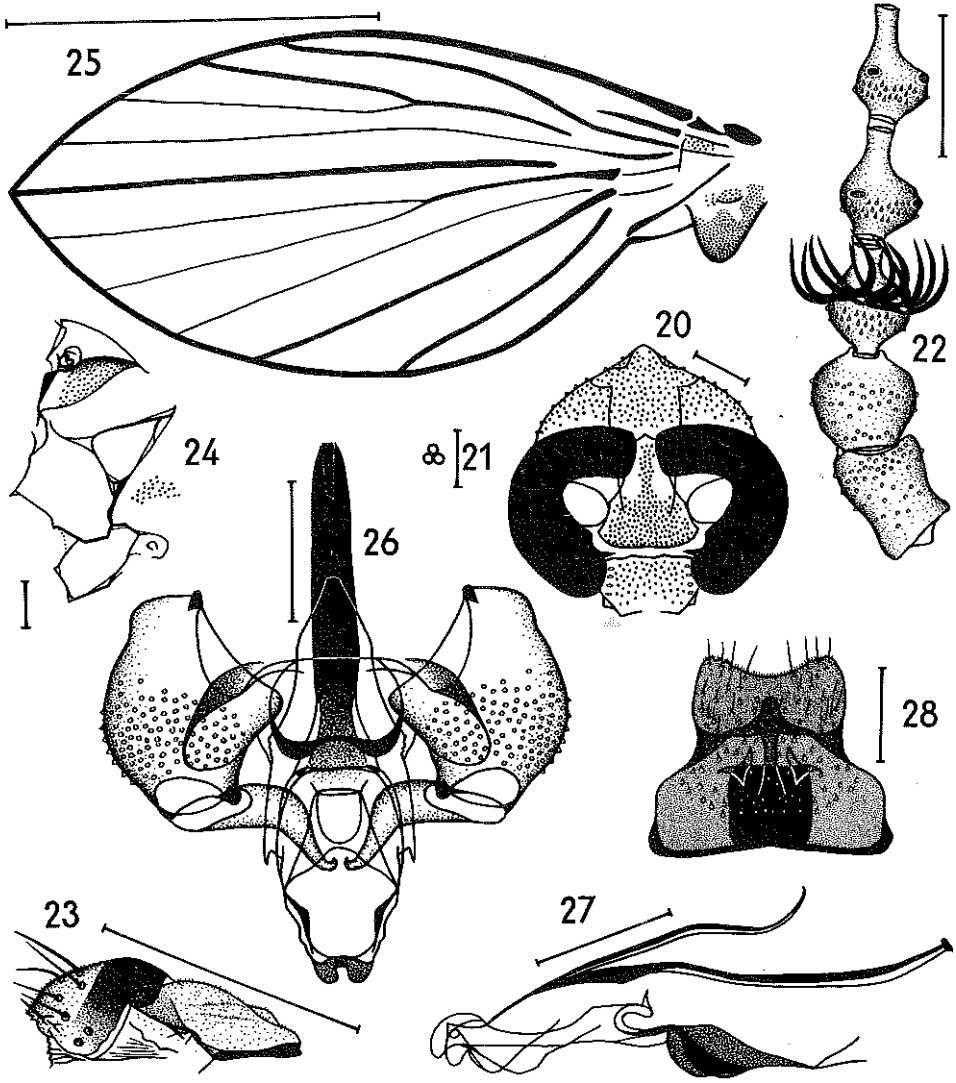
Photo 2 - Another aspect of the valley of São Jorge dos Orgãos, with in the background the Orgãos mountain range.



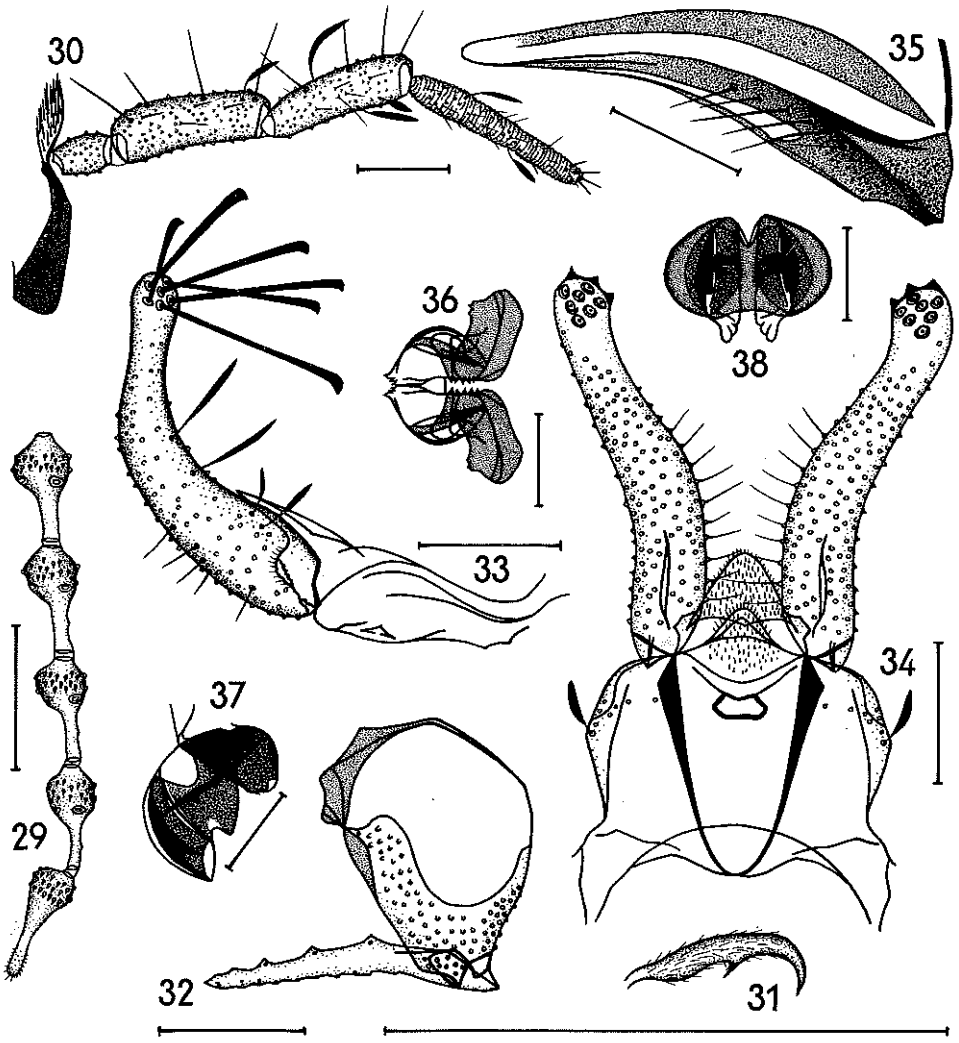
Figs. 1-11 - *Hemimormia acrostylis* (DUCKHOUSE). 1 - head (male); 2 - facets (male); 3 - apical antennal segments (male); 4 - wing (male); 5 - claw of P_1 (male); 6 - lateral view of gonocoxite and gonostyle (male); 7 - lateral view of epandrium and surstylus (male); 8 - dorsal view of epandrium and surstyli (male), some retinaculi omitted; 9 - sclerotized remainders of 10th tergite and sternite inside of epandrium, in a little moved view (male); 10 - lateral view of cercus (female); 11 - genital chamber anteriorly (female). Scales 0.1 mm, 1 mm in Fig. 4.



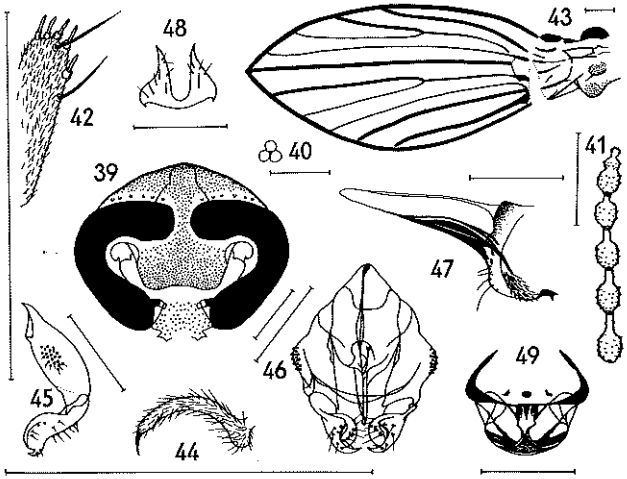
Figs. 12-19 - *Hemimormia acrostylis* (DUCKHOUSE). 12 - basal antennal segments (male); 13 - terminal lobe of labium (male); 14 - maxilla and palpus maxillaris (male); 15 - lateral view of thoracic sclerites (male); 16 - dorsal view of aedeagal complex and gonopods (male); 17 - lateral view of aedeagal complex (male); 18 - subgenital plate and genital chamber ventrad (female); 19 - lateral view of genital chamber (female). Scales 0.1 mm.



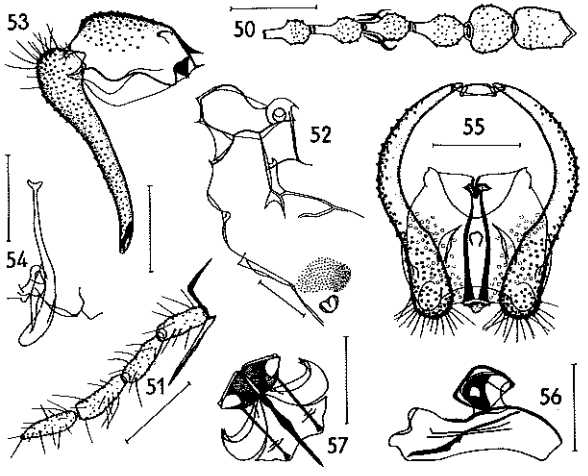
Figs. 20-28 - *Orgaoclogmia caboverdeana* sp. n. 20 - head (male); 21 - facets (male); 22 - basal antennal segments (male); 23 - terminal lobe of labium (male); 24 - lateral view of thoracic sclerites (male); 25 - wing (male); 26 - dorsal view of aedeagal complex and gonopods (male); 27 - lateral view of aedeagal complex (male); 28 - subgenital plate ventrad (female). Scales 0.1 mm, 1 mm in Fig. 25.



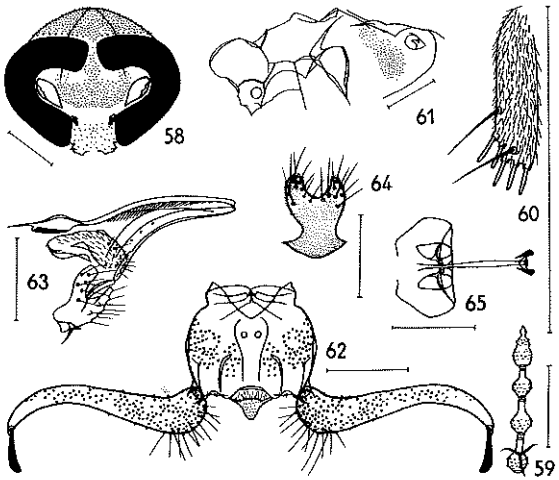
Figs. 29-38 - *Orgaoclogmia caboverdeana* sp. n. 29 - apical antennal segments (male); 30 - maxilla and palpus maxillaris (male); 31 - claw of P_1 (male); 32 - lateral view of gonocoxite and gonostyle (male); 33 - lateral view of epandrium and surstylus (male); 34 - dorsal view of epandrium and surstyli (male), retinaculi omitted; 35 - lateral view of cercus (female); 36 - genital chamber anteriorly (female); 37 - lateral view of genital chamber (female); 38 - genital chamber ventrad (female). Scales 0.1 mm.



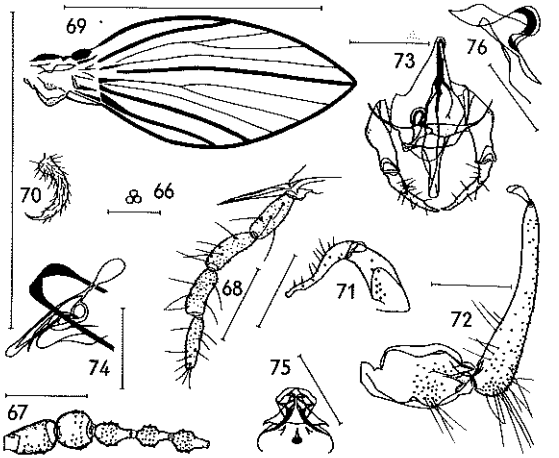
Figs. 39-49 - *Tinearia acanthostyla* (TOKUNAGA). 39 - head (male); 40 - facets (male); 41 - apical antennal segments (male); 42 - terminal lobe of labium (male); 43 - wing (male); 44 - claw of P_1 (male); 45 - lateral view of gonocoxite and gonostyle (male); 46 - dorsal view of aedeagal complex and gonopods (male); 47 - lateral view of cercus (female); 48 - subgenital plate ventrad (female); 49 - genital chamber anteriorly (female). Scales 0.1 mm.



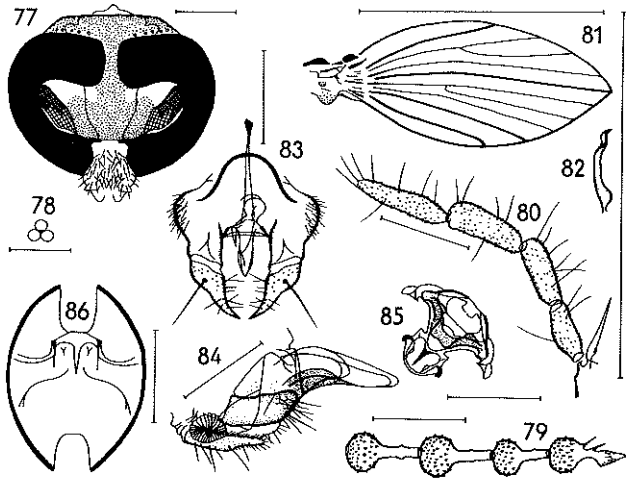
Figs. 50-57 - *Tinearia acanthostyla* (TOKUNAGA). 50 - basal antennal segments (male); 51 - maxilla and palpus maxillaris (male); 52 - lateral view of thoracic sclerites (male); 53 - lateral view of epandrium and surstylus (male); 54 - lateral view of aedeagal complex (male); 55 - dorsal view of epandrium and surstyli (male); 56 - lateral view of genital chamber (female); 57 - genital chamber ventrad (female). Scales 0.1 mm.



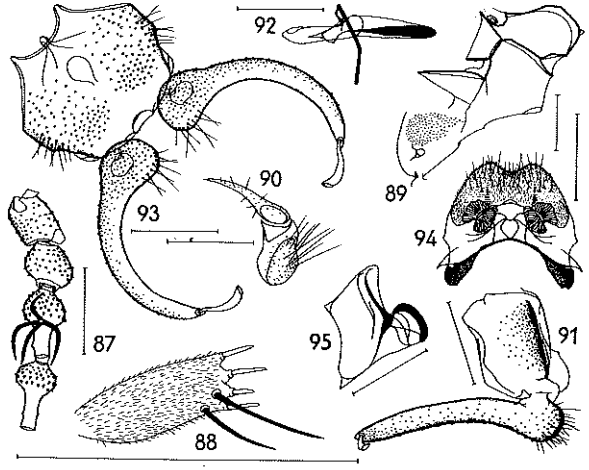
Figs. 58-65 - *Tinearia pseudoalternicula* (SALAMANNA). 58 - head (male); 59 - apical antennal segments (male); 60 - terminal lobe of labium (male); 61 - lateral view of thoracic sclerites (male); 62 - dorsal view of epandrium and surstyli (male); 63 - lateral view of cercus (female); 64 - subgenital plate ventrad (female); 65 - genital chamber ventrad (female). Scales 0.1 mm.



Figs. 66-76 - *Tinearia pseudoalternicula* (SALAMANNA). 66 - facets (male); 67 - basal antennal segments (male); 68 - maxilla and palpus maxillaris (male); 69 - wing (male); 70 - claw of P_1 (male); 71 - lateral view of gonocoxite and gonostyle (male); 72 - lateral view of epandrium and surstylus (male); 73 - dorsal view of aedeagal complex and gonopods (male); 74 - lateral view of aedeagal complex (male); 75 - genital chamber anteriorly (female); 76 - lateral view of genital chamber (female). Scales 0.1 mm, 1 mm in Fig. 69.



Figs. 77-86 - *Falsologima savaiiensis* (EDWARDS). 77 - head (male); 78 - facets (male); 79 - apical antennal segments (male); 80 - maxilla and palpus maxillaris (male); 81 - wing (male); 82 - claw of P_1 (male); 83 - dorsal view of aedeagal complex and gonopods (male); 84 - lateral view of cercus (female); 85 - genital chamber anteriorly (female); 86 - genital chamber ventrad (female). Scales 0.1 mm, 1 mm in Fig. 81.



Figs. 87-95 - *Falsologima savaiiensis* (EDWARDS). 87 - basal antennal segments (male); 88 - terminal lobe of labium (male); 89 - lateral view of thoracic sclerites (male); 90 - lateral view of gonocoxite and gonostyle (male); 91 - lateral view of epandrium and surstylus (male); 92 - lateral view of aedeagal complex (male); 93 - dorsal view of epandrium and surstyli (male); 94 - subgenital plate ventrad (female); 95 - lateral view of genital chamber (female). Scales 0.1 mm.

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