

Zeitschrift: Mitteilungen der Schweizerischen Entomologischen Gesellschaft =
Bulletin de la Société Entomologique Suisse = Journal of the Swiss
Entomological Society

Herausgeber: Schweizerische Entomologische Gesellschaft

Band: 63 (1990)

Heft: 1-2

Artikel: Revision of some type specimens of Drosophilidae (Diptera)

Autor: Bächli, Gerhard

DOI: <https://doi.org/10.5169/seals-402381>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 13.01.2026

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

Revision of some type specimens of Drosophilidae (Diptera)

GERHARD BÄCHLI

Zoological Museum, University of Zürich-Irchel, Winterthurerstrasse 190, CH-8057 Zürich, Switzerland

The type specimens of 8 nominal species of Drosophilidae, described in the 19th century, are revised.

INTRODUCTION

The specimens of Drosophilidae in the old Swedish collections have never been revised except in a few cases (e. g. CAIN *et al.*, 1952), but in the years 1954 to 1960 the late E. B. BASDEN checked more or less all specimens. During this study he made preparations and notes as well as drawings and photographs of certain specimens. Unfortunately the results of his revision have never been published, but Mr BASDEN entrusted me with his notes on which the following re-descriptions, including illustrations, of some type specimens are based. I fully acknowledge this help. In the descriptions the terminology proposed by MCALPINE (1981) was adopted where appropriate. The type specimens are identified by the codes used in BÄCHLI (in press).

My cordial thanks are due to Dr. PER INGE PERSSON, Stockholm, Dr. LARS WALLIN, Uppsala, and Dr. ROY DANIELSSON, Lund, for permission to work on the collections. The figures 3, 4 and 6 are redrawn by Mr U. ATTINGER from photographs taken by Mr E. B. BASDEN. The English text was checked by Mrs B. ANDREW.

RESULTS

Amiota albilabris (ROTH)

The holotype specimen (Ztt 324) was compared with the descriptions of ROTH in ZETTERSTEDT (1860), OKADA (1960) and MÁCA (1980). The following description of the holotype specimen is supplementary to that of MÁCA (1980).

General appearance. Whole thorax and abdomen chestnut-black. Abdomen a little more shiny than the thorax. Milky spots shiny or sub-glistening. Length 3 mm.

Head: The white face stripe is broad, the same width as the light brown flagellomere 1. The last is almost twice as long as wide (2.6:1.5), and short-haired. Arista above with 4–5 long hairs spaced out from base to near end, these hairs as long or longer than width of flagellomere 1. Arista below with about 4 shorter hairs, about ½ width of flagellomere 1, placed more distally. Cheeks light-brown and ½ width of flagellomere 1 and therefore ½ width face stripe. Frons greyish brown in front, blacker behind, slightly matt-shining. Width of

frons across line of mid orbital to width of whole head (viewed from the front) is 10 : 23; frons broadens backwards. The line of mid-orbitals runs just below lowest ocellus; that of uppermost orbitals is in line with top ocelli. 1st and 3rd orbitals equal in length; mid orbital $\frac{2}{3}$ these and placed nearer to lowest orbital.

Thorax: All 4 scutellars end in line; anteriors diverging, posteriors crossed just above half way. One long humeral (almost same length as notopleural) in middle of bottom edge of white patch.

Abdomen: thickened and somewhat clubbed at end.

Terminalia: Surstylus with 10 primary teeth.

Legs: All 3 pairs of femora and tibia dark brown, except front tibia lighter than rest. All tarsal joints light yellow-white, last joint darker. Hind femur at base posteriorly enlarged, knob-like, this swelling yellow. No fringe of long hairs anteriorly on inside of hind tibia at distal half (present in *A. alboguttata*).

Wings: Posterior crossvein slopes forwards towards the top. The stronger costal fringe extends about $\frac{5}{7}$ along the 3rd costal section. Indices: C 2.50, 4V 3.22, 4c 1.56, 5x 1.00.

Amiota variegata (FALLÉN)

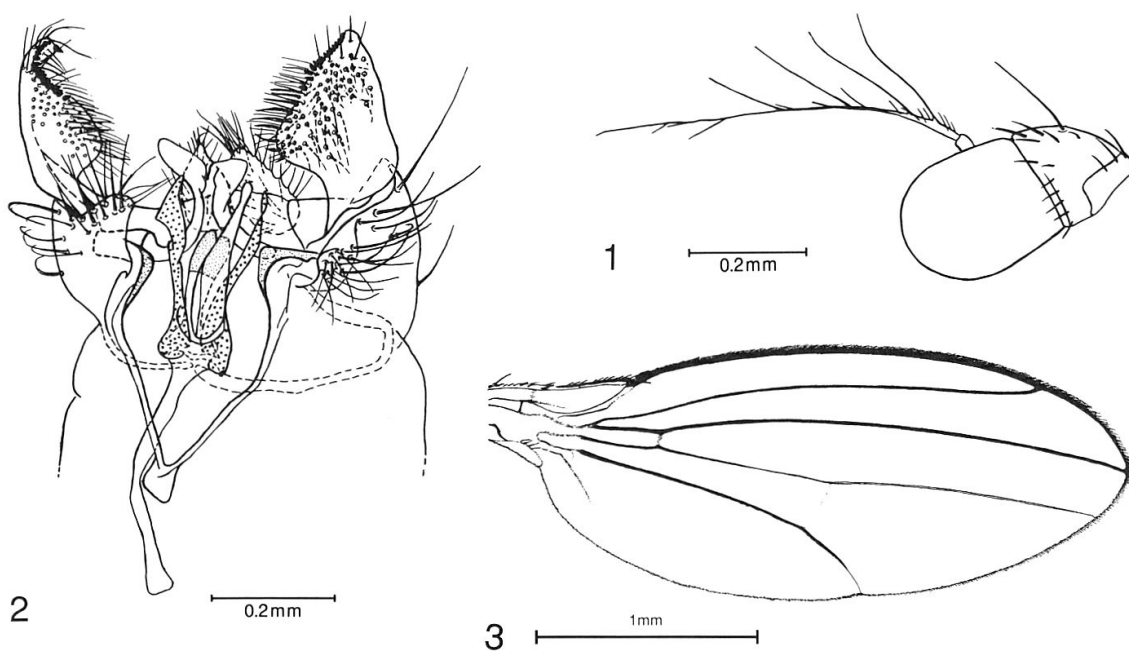
The lectotype specimen (Fin 8) was compared with the descriptions of FALLÉN (1823), ZETTERSTEDT (1847), DUDA (1934) and MÁCA (1977). The following description of the lectotype specimen is supplementary to that of MÁCA (1977).

Head: Arista (fig. 1): the 4 long dorsal rays are in basal $\frac{3}{5}$; basal $\frac{3}{5}$ below is bare, but distal $\frac{2}{5}$ has 2 very short hairs. Face and carina yellow brown, dusted white. Lower facial margin light yellow, not or scarcely dusted white. Frons orange yellow, darkened posteriorly, black on and around ocellar patch; frontorbital plates yellowish-white (silvery in some light) and extending up to top orbital. Eyes (viewed from side) straight-edged, slightly concave behind, semicircular in front. Cheeks orange-brown; below eyes to subvibrissals being half width of flagellomere 1, the mouth border still not as wide as flagellomere 1 which is sub-round (0.21 mm long, 0.18 mm wide).

Head bristles: Orbitals (0.35 : 0.15 : 0.40 mm) high up on head, at same level as ocellar patch, with lowest orbital (0.40) slightly below patch. Ocellars (0.43 mm) widespreading, almost at right angles to mid line of frons. Anterior jowlar (0.30 mm) strong, nearly as long as vibrissa, with a much weaker one (0.17 mm) posterior to it. No distinct occipital, but 2 or 3 equally sized hairs just posterior to verticals (inner 0.43 mm, outer 0.44 mm). Vibrissa 0.34 mm. Orals ca. 0.18 mm. Verticals 0.43 (inner), 0.44 mm. Postvertical 0.15 mm.

Thorax: Anterior spiracles elongate, brown rimmed, with dense, even fringe of light brown hairs; posterior ones rounded, with paler, less dense fringe. Prosternal plates grey, brown rimmed, matt, not bristly. Just beyond tegula and wing base and below end of notopleural callus is a small but distinct brown up-standing pteropleural knob.

Thorax bristles: Posterior dorsocentral (0.64 mm, tip broken) nearer to anterior one (0.42 mm) than to prescutellars (0.41 mm). Anterior to prescutellars is a pair of enlarged acrostichal hairs. One strong humeral (0.44 mm) with 2 small bristles ($\frac{1}{2}$ length or less) below it and 2–5 short hairs anteriorly above it. Anterior supraalar (0.25 mm) not very evident, it barely reaching bristle status; posterior one 0.47 mm. Notopleural callus directed backwards, the anterior noto-



Figs. 1–3: 1. *Amiota variegata* (FALLÉN) (= *Drosophila variegata* FALLÉN): Right antenna of the lectotype (Fln 8). – 2. *Drosophila fenestrarum* FALLÉN: Male terminalia of the lectotype (Fln 17), ventral aspect. The inner surface of the surstyli is hairy, as shown broken (right side) or by rings (left side). – 3. *Drosophila fenestrarum*: Right wing of the lectotype (Fln 17), redrawn from a photograph.

pleural 0.55 mm, the posterior one (0.33 mm) placed anterior to the posterior tip of the callus. Anterior postalar 0.61 mm, posterior one (0.17 mm), the most posteriorly placed of all bristles or hairs on scutum. Lateral scutellars (0.74 mm) strongly divergent, apicals (0.70 mm) crossed. Two about equally strong sternopleurals (0.50 : 0.53 mm) at same level near top of sternopleura, with 7–8 small hairs between and 2 smaller hairs just anterior to anterior sternopleural. A continuous line of finer and slightly longer hairs leads down to the loose cluster at the rather strong sternal bristle (0.25 mm). No discal sternopleural hairs evident.

Abdomen: Tergites 3–5 each with dark central and hind bands, or dark with 2 more or less semicircular large yellow spots dorsally, and a whitish-yellow mark obliquely enclosed in the dark lateral edges. Tergite 6 narrow, similarly coloured but without yellow laterally, not well exposed. Sternites yellow, last one brown.

Legs: 1st coxa grey, anterior surface with 2–4 bristly hairs across end (decreasing in size towards centre) and about 15 fine hairs within a line from distal inner corner to $\frac{2}{3}$ up outer edge, the inner part of coxa bare. 1st femur with postero-ventral row 6–7 strong bristles (longer than femur diameter) on distal $\frac{3}{4}$, the row completed basally by 2–3 very fine long hairs. There are 2 other rows of longish bristly hairs on posterior surface, one bristle near apex of upper row being the strongest. All tarsal joints whitish-yellow, joints of 2nd and 3rd legs ventrally flattened, broadened, and spinulose, not slender. Metatarsus (0.46 mm) of foreleg longer than the following 3 joints together.

Wing: Stronger costal fringe extends $\frac{5}{7}$ of the 3rd costal section. Last section of m plainly curves gently upwards. Basicosta of irregular shape, the posterior edge $\frac{2}{3}$ length of anterior. Second basal crossvein present. Indices: C 2.87, 4V 3.00, 4c 1.43, 5x 0.85. Wing length 4.22 mm, breadth 1.62 mm.

The lectotype specimen (Fln 17) was compared with the descriptions of FALLÉN (1823), ZETTERSTEDT (1840, 1847), DUDA (1935) and LAŠTOVKA & MÁČA (1978). The following description of the lectotype specimen is supplementary to that of DUDA (1935) and LAŠTOVKA & MÁČA (1978).

Head: Face shiny, pale whitish yellow. Frons widening a little towards vertex, with some white frosting, sub-shining, lowest part matt. Width across centre (at about top orbital) to middle length (base of frons to bases of postverticals): 0.39 : 0.32 mm. Frontorbital plates not narrowing in front. Ocelli set somewhat in an isosceles triangle. Ocellar patch rather dark. Eyes with fairly dense, short pile, bare along fore edge. Cheeks at narrowest (from lowest point of eye to mouth border) just over half the width of flagellomere 1. Palpi slender, yellow, 1 terminal bristle, directed downwards. Antenna: 3rd joint pale yellow, about 1.5 times longer than width at base, but is shrunk and curved inwards and thus looks short. Pedicel yellow to brownish yellow, with 2 strong bristles (0.12 mm), one above the other, and a much weaker one between; lowest directed forwards, uppermost slightly diverging. Arista twice length of (extended) flagellomere 1, with short end fork. Of the 2 ventral rays one is in basal and one in distal half.

Head bristles: Ocellars (0.27 mm) diverging at about 45°. Orbitals: lowest (0.18 mm) just below middle of frons, mid 0.05 mm, uppermost (0.25 mm) the longest. Inner vertical (0.29 mm) longest on head; outer vertical (0.26 mm) definitely shorter. About 6 very fine frontal hairs at bottom centre of frons (immediately above antennal bases). Vibrissa 0.17 mm; next subvibrissal 0.11 mm.

Thorax: Scutum and scutellum unicolorous yellow brown. Pleura brown, but hypopleura somewhat darker. Sternopleura a little lighter in colour than scutum. Whole thorax with a slight whitish dusting. Scutellum slightly broader at base than long (ca. 4 : 3). The descending row of sternopleural hairs is short (only 3–4 hairs). Sternal surface of sternopleura mainly bare, a longish (ca. 0.20 mm) hairlike sternal bristle in rear corner. No microscopic hairs just above front coxa. Prosternal plates yellow, almost completely matt.

Thorax bristles: Acrostichals irregularly 4-rowed next to dorsocentrals, they could be reckoned as imperfectly 6-rowed more anteriorly. Humerals: upper 0.21 mm, lower 0.23 mm. Scutellars: laterals (0.53 mm) slightly diverging, apicals (0.34 mm) crossed; tips of apicals do not reach back as far as tips of laterals; apicals and laterals equidistant. Sternopleurals equidistant, the anterior (0.13 mm) and mid (0.18 mm) at about same level, the posterior (0.34 mm) below mid or only a little posterior to it.

Abdomen: The dark brown colour of this old specimen was probably originally black. Tergites 1–4 shining-matt, tergite 5 not or barely micro-striate, but micro-hairy and though matt-shining to more glossy at sides. Tergite 6 glossy, smooth. Sternites brown, basal one yellow.

Terminalia: Epandrium (fig. 2) black brown, glossy, smooth, micro-hairy and ending in a broadly rounded ventral lobe bearing a patch of longish dark hairs; a few longish hairs are scattered over dorsal surface. Cerci flattened, pointed, directed downwards, pale, hairy. Surstylus at base nearly same width as hind femur (as 14 : 16).

Legs: Unicolorous yellow. Dorsal preapicals on all tibiae (mid one strongest); definite ventral apical only on mid tibia (and this one strong). 1st coxa on distal half of outer edge with 2–3 short fine hairs, below with 2 strong

(0.18–0.21 mm) downcurved hairs; anterior surface at distal third with 4–6 fine hairs towards outer edge, and a terminal fringe of 3–4 longish hairs, basal half quite bare. 1st femur: The very fine straight hair below at base is about same length as widest diameter of femur. Ventrally there are 3–4 strong bristles (ca. 0.17 mm) and more posteriorly some weaker hairs. Dorso-laterally at nearly $\frac{2}{3}$ from base is a strong bristle (0.19 mm) and even more apically near end is a weaker one (0.14 mm). Fore metatarsus ventrally with fairly dense short hairs, with tuft of longer whitish hairs at distal $\frac{1}{4}$ placed antero-ventrally (best seen from above) and a thinner tuft similarly on 2nd joint; with a few long, curved, dark hairs placed anterodorsally along all joints from distal half of metatarsus. Fore tarsus measurements: 0.21 (metatarsus), 0.12, 0.07, 0.06, 0.07 mm. Hind metatarsus ventrally at base with 2 distinct sub-equal bristles placed obliquely.

Wings: Clear, unmarked, yellow tinged (fig. 3). Costa extends weakly to m. The stronger costal fringe extends to halfway of the 3rd costal section. Anterior crossvein just beyond end of r_1 . Centre of posterior crossvein is just anterior to central point of 2nd costal section (ca. 27 : 33). Anal lobe of wing gently curving up. Alula elongate, about 5 times as long as widest part, broadly rounded distally. The small knobbed squamal organ lying against base of basicosta is light yellow and indistinct. Below is the anterior squama, dark haired (as upper pteropleural knob) and more or less constricted into 2 rounded regions, the upper the more elongate and the lower the more globular and darker. Posterior squama long fringed. Indices: C 3.23, 4V 1.65, 4c 0.76, 5x 1.94. Wing length 2.82 mm, breadth 1.00 mm.

Drosophila obscura FALLÉN

The lectotype specimen (Fln 31) was compared with the descriptions of FALLÉN (1823), ZETTERSTEDT (1840, 1847), DUDA (1935), POMINI (1940), BURLA (1951), and CAIN *et al.* (1952) who illustrated the male terminalia of the lectotype specimen. The following description of the lectotype specimen is supplementary to that of BURLA (1951).

General appearance: The body colour is paler than in recent specimens.

Head: Face sub-shining, brownish-grey. Carina prominent, rather thin, broadening below, sloping to lower facial margin at bottom and not undercut nose-like. Lower facial margin darkened. Clypeus black. Frons grey-brown instead of blackish as in recent specimens; at front broader than medially long (0.35 : 0.28 mm); across middle practically half the head width. Ocelli equidistant. Ocellar patch, ocellar triangle, and vertical stripes sub-shiny. Ocellar triangle equilateral and reaching almost half-way between lowest ocellus and antennae. Frontorbital plates extend a little beyond half-way of frons, their ends diverging about their own width from eye border. Parafacialia very narrow, barely 1 eye-facet wide. Eyes roundish, narrowing at bottom, longer than wide (0.46 : 0.41 mm), the longest diameter practically vertical. Occiput sub-concave, with a single row of postoculars, these becoming irregularly 4–5 rowed on rear of cheek. The 2 uppermost erect and converging, stronger than the others, the top one (0.11 mm) shorter than the next to top (0.14 mm), and directly behind outer vertical. Cheeks anteriorly shiny, light brown, smooth, distinctly black-edged below in vibrissal region, darker and duller posteriorly. At narrowest (lowest point of eye to mouth border), about $\frac{2}{3}$ width of flagellomere 1. About 8 frontal hairs, incurved, in 2 ascending, diverging lines on lower half of frons; with a clus-

ter of 2–4 smaller hairs on extreme edge of frons at base of each line. Palpi with 1 strong (ca. 0.13 mm) subterminal hair and a much weaker one ventrally at half way. Antennae: Scape and pedicel light brown; flagellomere 1 black-brown, yellow-haired inside at base in certain lights; pedicel, besides some fine hairs on inner face, with 2 equally strong bristles (0.13 mm), one above the other, and with 2 fine hairs placed transversely between them. Arista black; rays equally long above and below, the longest about as long (0.14 mm) as width of flagellomere 1 (0.13 mm). Arista to tip of fork about twice the length of this joint, the basal third below bare.

Head bristles: Ocellars (0.24 mm) diverging 50° – 60° C, with about 10 very fine hairs on ocellar patch behind. Orbitals: the mid inserted close beside bottom one, and the bottom (0.18 mm) placed a little from end of vertical stripe. 1 strong vibrissa. Orals in 2 rows, the lower row the stronger (ca. 0.10 mm) and directed downwards, the upper row fine and weak and directed outwards or upwards. Three jowlars (ca. 0.13 mm), rather weak straight bristles on lower edge at rear of cheek.

Thorax: Scutum, rather shiny, and scutellum, matt-shiny, dark brownish grey with bronzy micropubescence; humeral and lateral areas reddish brown. A dark longitudinal streak either side of acrostichal region, each about 3 hair-rows wide; and a lateral, less regular streak interrupted by the transverse suture, the anterior portion more broadened. Scutellum with a fairly dense transverse micro-striae, the central disc unicolorous, with lighter-brown marks in upper and lower basal corner. Pleura without golden dusting and thus greyer. Prosternal plates grey, matt, narrowly shiny-brown rimmed.

Thorax bristles: Acrostichals in 8 rows next to dorsocentrals. Two humerals and several fine humeral hairs. Scutellars set equidistant, almost equal in length, apicals (0.46 mm) crossed, laterals (0.43 mm) slightly converging with their tips not nearly reaching back as far as those of apicals. Two sternopleurals, the posterior placed much lower than anterior. The mid bristle is absent and is represented by 1 or 2 very fine hairs (ca. 0.07 mm) at about same level as anterior. These fine hairs are the uppermost of a line of 9–12 fine hairs descending to sternal bristle (ca. 0.16 mm). No prescutellars and no fine propleural hair above front coxa. Presutural 0.29 mm. Notopleurals 0.28 mm (anterior), 0.18 mm. Supraalars 0.18 mm (anterior), 0.32 mm.

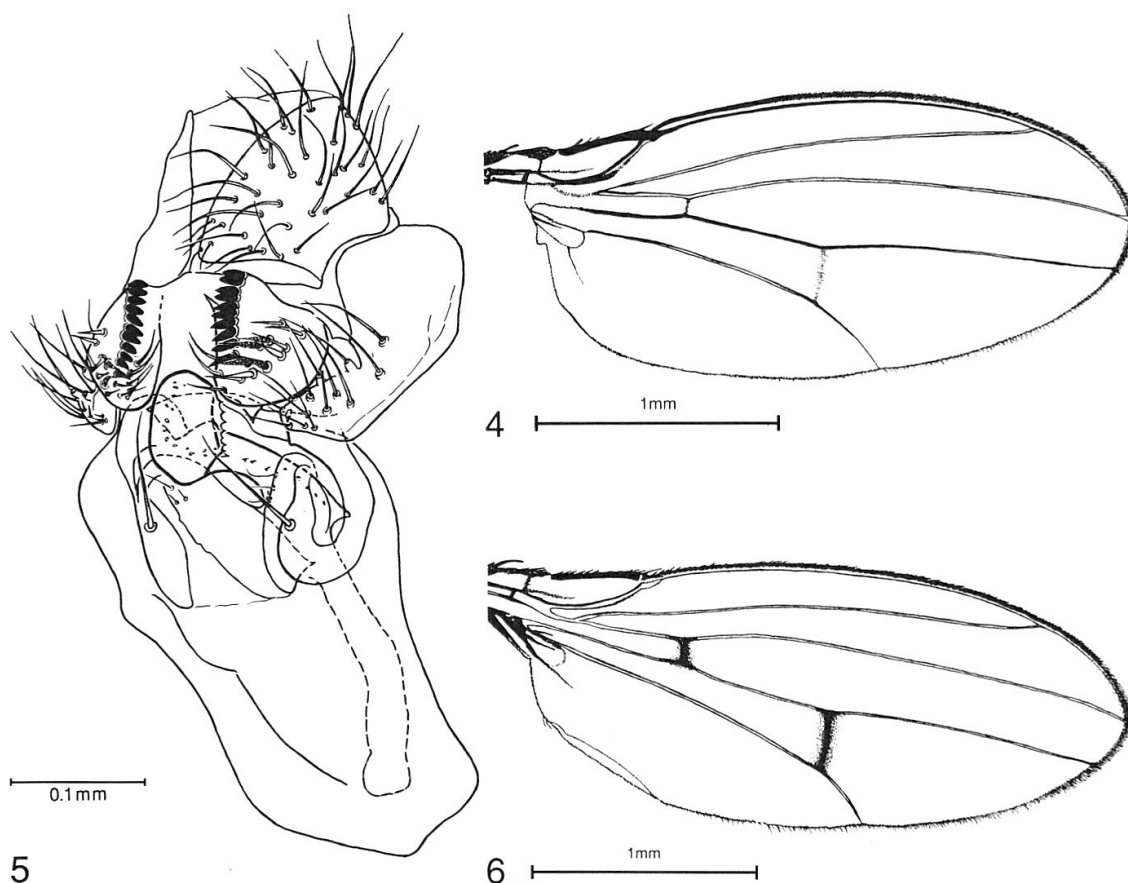
Abdomen: Tergites 1–5 quite shiny though dusted with micro-pubescence; tergite 6 glossy, not dusted, with barely engraved micro-striae. The hairs on tergites are much less dense than on scutum.

Terminalia: The slide preparation by CAIN (CAIN *et al.*, 1952) is now very dark and does not show the parameres and the top of the aedeagus clearly. The characteristic shape of the gonopods is not visible. However, the short hypan-drium, the longer and large-ended aedeagal apodome, the aedeagus and the shape of the cerci, are characteristic.

Legs: Yellow-brown, with only 1st coxa and 1st femur darkened grey and last joint of tarsus darkened. 1st coxa with 2 strong (0.14 mm) down-curved bristles in distal $\frac{1}{4}$ of anterior (upper) edge, with 2 or 3 fine hairs above them and about 6 fine hairs inside them; and with a terminal fringe of 2 or 3 fine, curved longish hairs. 2nd coxa with a strong upper bristle (0.17 mm) and 3 weaker, more curved ones placed more ventrally. 3rd coxa with one rather weak, nearly straight bristle (0.13 mm) on outside and a similar one in ventral corner. 3rd trochanter with only fine hairs. 1st femur: below in distal $\frac{3}{5}$ is a row of 4 or 5 long (ca. 0.16 mm) bristly

hairs, longer than femur diameter (ca. 0.13 mm). Close to base are 3 hairs, forming an irregular triangle; ventrally is a very fine long hair (0.13 mm); a little above it on posterior side are 2 other hairs, a similarly very fine straight one (0.12 mm) slightly nearer to base of femur, and a bristly one laterodorsally (0.13 mm) placed a little more distally (at basal fifth) than ventral one. Dorsally, $\frac{1}{5}$ from end is a bristly hair (0.16 mm), and not quite the same distance from it towards base, slightly posteriorly, is a similar bristle. These two bristles are shorter than the longest ventral bristles. 2nd and 3rd femora regularly short-haired anteriorly (the hairs becoming longer apically), more or less bare posteriorly. 1st and 3rd tibiae with a preapical, but no definite apical, except an enlarged hair of terminal fringe on 1st. 2nd tibia with a preapical and a strong apical. All 3 preapicals subequal in length (ca. 0.10 mm), the mid just the stoutest, the 3rd the weakest. 1st tarsus regularly short-haired, hairs shorter and thicker below; tarsal measurements: 0.17 (metatarsus), 0.12, 0.11, 0.06 mm, last joint missing. Tarsal combs on 1st leg placed fairly obliquely to long axis (more obliquely on metatarsus), at extreme ends of metatarsus and 2nd joint. The angle of the teeth to base of comb is about 60° , that of comb to long axis of joint: about 20° . Number of teeth in each comb: metatarsus: 8, 2nd joint: 7 (left), 8 (right).

Wings: Clear (fig. 4), tinged yellowish, with a colourless area between bases of r_1 and r_{2+3} . Veins yellow-brown. r_{4+5} ends at wing tip, which is broadly rounded



Figs. 4–6: 4. *Drosophila obscura* FALLÉN Right wing of the lectotype (Fln 31) redrawn from a photograph. – 5. *Drosophila transversa* FALLÉN: Male terminalia of the lectotype (Fln 28), lateroventral aspect. – 6. *Drosophila transversa*: Right wing of the lectotype (Fln 28), redrawn from a photograph.

so that it is difficult to place the tip. Costa extends weakly to m, 2 subequal bristles at 2nd costal break, the posterior (inner or upper) one slightly stronger (as 6:5). Posterior crossvein placed just before midpoint of 2nd costal section (as 7:15). Anal vein reaches $\frac{1}{3}$ way to wing margin. Anal lobe of wing rather steeply rounded. Alula round-pointed distally, rather broad ($\frac{1}{3}$ its length), deeply emarginate distally, the emargination equal to widest part of alula. Squamal organ (just at end of tegula) very small, apex bright-yellow. Anterior squama placed just below squamal organ, thick-edged, obviously dark and micro-pubescent. Posterior squama dark-edged, with long fringe. Halteres yellow or yellow-brown. Indices: C 2.98, 4V 2.06, 4c 0.90, 5x 1.78. Wing length 2.63 mm, breadth 1.04 mm.

Drosophila transversa FALLÉN

The lectotype specimen (Fln 28) was compared with the descriptions of FALLÉN (1823), ZETTERSTEDT (1840, 1847), DUDA (1935) and BURLA (1951). The following description of the holotype specimen is supplementary to that of DUDA (1935).

Head: Same width as thorax. Face yellow, a little longer than width between vibrissae (0.37:0.32 mm). Carina noselike (smoothly rounded at bottom), broader below, dull (duller than face), its bottom in line with bottoms of eyes. Clypeus yellow, not much wider than broadened end of carina. Eyes almost round (0.43:0.39 mm), the longest diameter vertical, thickly covered with short dark hairs (though reflecting light in some directions), with usually 1 hair between every facet. Frons matt, sometimes sub-shiny above towards sides, at centre half the width of head (0.41:0.21 mm) and wider than long. Ocellar triangle imperfectly defined. Ocellar patch brown to unicolorous with frons and vertex, roundish. Ocelli equidistant. Frontorbital plates brownish, slightly shining, diverging from eye border so that the end is about its own width distant from eye, reaching $\frac{3}{4}$ way down frons. The uppermost 1 or 2 of the descending row of 4–6 frontorbitals are situated on bottom of frontorbital plate, just below and outside lowest orbital. 10–15 dark frontal hairs, at middle and at lowest part of frons up to line of lowest orbitals. Parafacialia at narrowest 1 eye-facet wide. Cheeks, below eyes to mouth border, wider (0.11 mm) than flagellomere 1 (0.09 mm). Palpi with 2 weak bristles (apical and preapical), about same length and stoutness as orals, covered with quite long very fine hairs giving a very hairy appearance. Antennae: Pedicel dorso-laterally with 3 bristles, their bases in line vertically and equidistant, but extending at different angles, the top one definitely out-turned, mid one proclined and slightly in-turned, lowest one proclined and slightly out-turned. The mid about half length of the 2 others, of which the upper is, if anything, very slightly the longer (0.10:0.09 mm). Inside there are 8–12 short hairs, the 2 or 3 in inner, lower corner somewhat finer, and 1 inside lowest bristle rather strong. Flagellomere 1 1.5 times longer than wide, narrowing to rounded apex, with the hairs longer than eye-pilosity (as mentioned by DUDA). Arista a little more than twice length of flagellomere 1; rays long (the longest 0.17 mm), above 4, below 2.

Head bristles: Ocellars (0.22 mm) at an angle of about 50°. Postverticals (0.17 mm) slightly converging. Orbitals: Bottom (0.15 mm) near end of vertical plate and at half way along frons; mid (0.06 mm) slightly nearer to bottom than to top orbital (0.24 mm); 2 vibrissae, the upper 0.20 mm, the lower (0.13 mm) being obviously weaker. In side view the vibrissae appear less stout than the head bris-

gles; 4–6 orals (ca. 0.06–0.11 mm), with a few extra, finer ones near vibrissa. Jowlers: an anterior and a posterior one (0.11 mm) on hinder part of cheek at bottom near edge, stronger and longer than mouth hairs. Verticals 0.29 mm (inner), 0.22 mm. Occipital 0.10 mm.

Thorax: Scutum and scutellum unicolorous yellow-brown. Pleura somewhat darker, dusted brownish-grey. All shining, scutellum less so. Anterior thoracic spiracle elongate, with short, very close-set hairs; posterior one more rounded, with longer, less dense hairs. Prosternal plates yellow, pale dusted, matt, subshining on outer edge, bare.

Thorax bristles: Two humerals: upper 0.13 mm, lower 0.21 mm. Scutellars equidistant or apicals slightly nearer to laterals than to each other; laterals diverging; apicals crossed, slightly elevated; laterals and apicals the same length (0.43), i. e. tips of apicals project further back than laterals. There is a transverse row of 3 or so slightly longer sutural hairs inside of presutural bristle (0.27 mm) just in front of transverse suture. Sternopleurals equidistant, or mid slightly nearer to posterior. The mid (0.11 mm) is weak, hair-like, and slightly lower (farther from edge of sternopleura) than the anterior (0.21 mm) one. The posterior (0.40 mm) is below mid and a little posterior to it. A row of 4–8 fine hairs leads down to ventral sternal bristle (ca. 0.18 mm) near which is a much finer hair. No propleural hair above front coxa. Anterior notopleural 0.26 mm. Supraalar 0.16 mm (anterior), 0.32 mm. Postalar 0.37 mm (anterior), 0.18 mm.

Abdomen: Before boiling in potash: yellow with 4 dark brown spots on tergites 2–4, the laterals spots appearing to link up with central ones by brown hind-margins of tergites. No dark hind-margin down mid-line. The 2 central rows of spots reach halfway to fore edge of tergites 2–4, but on tergite 5 they are large and reach three quarters forwards. Tergite 6 brown in middle, with a yellow spot posteriorly, yellow laterally. Tergites 5 and 6 are longer than 1–4 and glossy smooth; 1–4 less shiny because of dusting.

Terminalia: Number of primary teeth of surstylus (fig. 5): 11 (left), 10 (right). The gonopod seta is practically the same length as the surstylus.

Legs: All unicolorous yellow, whit last tarsal joint brownish. 1st coxa with 2 strong (0.16 mm) downcurved bristles in distal $\frac{1}{4}$ of outer edge; 2 slightly shorter, curved, strong hairs and 2 weaker ones across end of coxa. In addition there are about 6 fine hairs in distal half on or towards outer edge. 2nd coxa with 2 strong (ca. 0.18 mm) bristles on upper outer edge, and with some thinner shorter hairs. 3rd coxa – on outer edge 1 strong bristle (0.13 mm), and a thinner one of same length or slightly shorter on inner corner, as well as a few short hairs. Hind trochanter with a longish hair (0.12 mm) and some shorter ones. Trochanters 1 and 2 with a short weak spine at upper corner. 1st femur: the 3 very fine hairs near base ventrally and postero-laterally are same length as or slightly shorter than widest femoral diameter (0.13 mm). The 2 dorso-lateral bristles in distal half weaker (0.13 mm) than the 3 or 4 strong postero-ventral bristles (longest about 0.16 mm) along distal $\frac{3}{5}$. 2nd and 3rd femur: short-haired, bare posteriorly, the hairs longer on the more ventral rows of 2nd. Dorsal preapicals on all tibiae (shortest on 1st, stoutest on 2nd, 3rd weak but as long as 2nd). Definite ventral apicals on only mid-tibia, where it is strong; a weak one on 1st tibia. 1st tarsus: uniformly short, bristly below, with few rather longer and more widespreading hairs dorsally. Tarsal measurements: 0.25 (metatarsus), 0.13, 0.07, 0.06, 0.09 mm. 2nd and 3rd tarsus with short hairs, which are more bristly below. 2nd and 3rd metatarsi as long as last 4 joints of the respective legs.

Wings: Yellowish tinged (fig. 6), with a small colourless area at bases of r_1 and r_{2+3} . Veins brownish-yellow. Shading of crossveins now faded but still evident; that of posterior crossvein narrow (0.06 mm across centre), more or less linear though slightly widening to m and slightly overtopping it. Shading of anterior crossvein slightly broader (0.11 mm), broadening below and protruding slightly below m. Stronger costal fringe extends about $\frac{1}{2}$ way of 3rd costal section. r_{4+5} ends at wing tip; costa extends weakly to m. Posterior crossvein placed below half-way of 2nd section of costa; anal vein extends $\frac{1}{3}$ way to wing margin. Alula elongate, usually round-pointed distally, 3.5 times longer than wide, long fringed. Squama long fringed. Indices: C 2.93, 4V 1.77, 4c 0.87, 5x 1.25. Wing length 2.63 mm, breadth 0.99 mm.

Drosophila tristis FALLÉN

The lectotype specimen (Ztt 92) was compared with the descriptions of FALLÉN (1823), ZETTERSTEDT (1847), POMINI (1940) and BURLA (1951). The following description of the lectotype specimen is supplementary to that of BURLA (1951).

General appearance: Body chestnut-brown with pale legs, the abdomen showing darker patches.

Head: Width of frons (at front) to median length: 0.35 : 0.28 mm. Eyes roundish, 0.50 mm high x 0.46 mm across. Palpi with a stronger bristle (0.14 mm) subterminally, and a weaker one (0.12 mm) ventrally at about $\frac{1}{2}$ way. Arista with 3 rays above and 2 below, longer than width of flagellomere 1 (ca. 0.12 mm); rays equally long (the longest ca. 0.15 mm). Ocellar 0.27 mm. Orbitals 0.27 (top), 0.09, 0.23 mm. Postvertical 0.21 mm. Verticals 0.27 (inner), 0.28 mm. Vibrissa 0.21 mm. Orals 0.09 mm.

Thorax: Scutum with 2 long faint acrostichal stripes and the 2 interrupted lateral ones. Scutellum unicolorous dark, with a well-defined lighter rim. Prosternal plates matt, with slight shine, yellow. Halteres yellow-brown. Acrostichals rather irregularly 6–8 rowed. Apical scutellars (0.50 mm) crossed, laterals (0.47 mm) slightly converging, the apicals are closer together than to the laterals. Humerals 0.28 mm. Dorsocentrals 0.33 (anterior), 0.46 mm. Sternopleurals 0.25 (anterior), 0.39 mm. Presutural 0.30 mm. Notopleural 0.30 (anterior), 0.19 mm. Supraalar 0.19 (anterior), 0.36 mm. Postalar 0.46 (anterior), 0.19 mm.

Abdomen: Tergites 1–5 matt-shiny and dusted with micro-pilosity.

Terminalia: Being well exposed they had been damaged in the dry specimen (end of parameres and combs of primary teeth of surstyli broken). Surstylus with 8 or 9 primary teeth.

Legs: Unicolorous yellow-brown, femora somewhat darkened, the last tarsal joint of all legs nearly always darkened. Coxal chaetotaxy as in *D. obscura*, except 3rd coxa with 2 or 3 rather strong bristles on outer edge (the top one strongest, 0.14 mm), instead of only one as in *D. obscura*, i. e. the 2 weak hairs below the bristle in *D. obscura* are here stronger. Preapicals of the 3 tibiae subequal, the mid stoutest and shortest (0.07 mm), the 1st slightly longer (0.12 mm) than the 3rd (0.10 mm). Foreleg tarsal measurements: 0.16 (metatarsus), 0.15, 0.13, 0.08, 0.09 mm. Number of teeth in tarsal combs: metatarsus: 9 (left), 10; 2nd joint: 8 (left), 10. Angle of comb to long axis of joint: about 17° on metatarsus, about 12° on 2nd joint.

Wings: Although the anterior darkening is most intense towards the costal tip is not quite as shown in POMINI (1940) and BURLA (1951). It extends to the base of the wing, though the costal cell and proximal part of marginal cell are less deeply infusate. Also the darkening seems to be confined above the longitudinal crease in marginal cell until about $\frac{2}{3}$ last section of r_{4+5} , from where the shading extends down to m at tip of wing, and tends to spread narrowly along r_{4+5} and m . The posterior crossvein is also lightly infusate. Rest of wing is slightly dingy. Veins brown. The wing-darkening is brown and not smoky-black as in recent specimens. Posterior crossvein is placed just before midway of 2nd costal section. Anal vein reaches $\frac{1}{3}$ to wing margin. r_{4+5} ends just about at wing tip. The 2 bristles at 2nd costal break seem to be more equal in length than in *D. obscura*. Indices: C 2.92, 4V 1.81, 4c 0.85, 5x 1.80. Wing length 2.74 mm, breadth 1.10 mm.

Stegana furta (LINNÉ)

The lectotype specimen of *Musca furta* LINNÉ (*furta* X) and *Drosophila curvipennis* FALLÉN (Fln 2) were compared with the descriptions of LINNÉ (1767), FALLÉN (1823), ZETTERSTEDT (1847), DUDA (1934) and LAŠTOVKA & MÁČA (1982). The following description of both ♂♂ lectotypes is supplementary to that of DUDA (1934) and LAŠTOVKA & MÁČA (1982). The lectotype specimens share the mentioned characteristics unless otherwise stated; measurements are taken on the lectotype specimen of *Musca furta*, except for wing indices.

General appearance: Black; wings dark brown and bent down; frons and legs mainly yellow. All bristles and hairs dark unless otherwise described. Body length (frons to tip of abdomen) 3.4 mm, head and thorax 1.9 mm.

Head: Practically same width as thorax (1.10 : 1.07 mm). In side view narrow, horizontal length (0.50 mm) being half the height. In front view almost round (1.10 mm wide x 1.01 mm high); the facial-frontal region narrow between eyes, broadening fairly equally above and below the base of antennae. Vertex sharply rimmed, straight. Head sitting close against thorax. Occiput concave, almost hollow; upper half yellowish above with sometimes a dark central spot against rim, black-brown below; lower half (below neck) pale brown. Frons smooth, yet microscopically granular (micro-striate, the striae above running parallel with sides of ocellar patch); slightly convex, strongly arched above antennae to accomodate frontal lunule; broadening posteriorly; at centre about as wide as long (0.45 : 0.45 mm), slightly less than head width. No ocellar triangle, though ocellar patch dark, sharply defined. Ocelli equilaterally placed at edge of patch. Frontorbital plates close to and not diverging from the eye border, extending just half way down frons, slightly more shining than frons, upper part dark and well defined. Lunule well defined, pale yellow, microscopically pubescent, with a smoother, more shiny, darkened area occupying most of centre. Carina continued to upper half of face, fairly prominent, broad, not undercut nose-like at bottom but gently sloping to lower facial margin and spreading out either side to vibrissal corners; generally paler than face, barely shining. Antennae clear yellow, flagellomere 1 almost twice as long as wide (0.19 : 0.11 mm), straight and thin-edged anteriorly; thick-edged below and curving up to a rounded, slightly upturned point at end, slightly concave on inner surface, short-haired. Arista (0.42 mm) 2.25 times length of flagellomere 1, yellow at the slightly thickened base, darker distally, rays dark, above fairly evenly spaced out to tip, longest up to 0.21 mm long, below shorter (up to 0.18 mm), none in basal quarter. Number of rays excluding

end fork (which is very small, ca. 0.03 mm long): right: above 6, below 4, left: above 5, below 6. Clypeus small, narrow, black, about one-third as wide as bottom of face. Palpi black, yellowish at base, spatulate, flattened, straight-edged above, curved below, somewhat truncate at end, 2 long thin hairs at end, the upper the longer (0.21 : 0.15 mm), with about 8 shorter hairs on lower surface. Proboscis brownish, labellum with longish, pale hairs. Eyes elongate oval, with fine facets, apparently quite bare, longest diameter (0.80 mm) almost perpendicular to head height. Cheeks very broad (0.16 mm), somewhat semicircular, anterior half yellowish-brown, hairless, shining smooth, posteriorly matt, broadly reddish brown, the two areas distinct and more or less divided by the descending postoculars. Parafacialia bare, narrow, subshiny, yellow-brownish at bottom.

Head bristles: Ocellars (0.37 mm) strongly diverging, set in anterior half of ocellar patch, their basal distance distinctly less than distance between individual ocelli. 2 pairs of thin ocellar hairs at top of patch. Verticals set same distance apart as the ocellars and in line on vertex rim, the inner (0.43 mm) converging, the outer (0.42 mm) diverging. Orbitals in straight line with inner vertical; the lowest (0.39 mm) proclined and converging, at extreme end of vertical plate, slightly nearer level of lowest ocellus than to top of frontal arch, just below transverse midline of frons; mid orbital (0.26 mm) reclined, diverging, slightly nearer lowest orbital and just above transverse midline of frons; upper orbital (left 0.28 mm, right 0.32 mm) reclined, diverging, at same level as lowest ocellus. Fronto-orbital hairs (0.03 mm) in a straight row, below orbitals along eye border to half-way down eye. About 25 very fine frontal hairs (0.04 mm), scattered over lower half of frons. Postoculars single-rowed, becoming two- or three-rowed in lower part. Vibrissa (0.21 mm) rather weak. 8 to 10 orals (0.11–0.14 mm) in a single row, curved forwards. Occipitals 0.14 mm.

Thorax: Scutum as broad as long, faded black-brown, slightly lighter anteriorly. Scutellum broad, at widest wider than long (as 7 : 5), almost half as long as scutum, very slightly convex, with a slight but definite keel basally at upper side, only slightly shining, covered with brownish micro-pubescence. Pleura and postscutellum generally dark tan brown, subshining, heavily grey dusted. A broad, sooty stripe across upper pleura, wing base area yellow-brown. Prothoracic spiracle elongate, fringed by silky golden hairs, metathoracic one almost round, with short whitish hairs.

Thorax bristles: Only 1 humeral (0.36 mm), with about 12 hairs above and in front of it. Anterior (0.39 mm) and posterior (0.26 mm) notopleurals upturned, on anterior tip of callus. Presutural (0.37 mm) strong, with 1 or 2 hairs outside it. Anterior dorsocentral (0.37 mm) close to posterior one (0.62 mm), lateral to forward distance about 3 : 1. Three prescutellars on either side, more or less in line with the posterior dorsocentral, increasing in length from outside to central (0.18 : 0.27 : 0.41 mm). Lateral scutellars (0.73 mm) divergent, apicals (0.51 mm) a little risen, crossing at half to $\frac{3}{5}$ their length, tips of apicals in line with tip of laterals; posteriors closer together than to anteriors (as 2 : 3). Acrostichals and other hairs on dorsum fairly long (0.11–0.16 mm), arranged in 10–12 irregular rows, spaced laterally about 0.04 mm apart. Two sternopleurals, anterior (0.39 mm), slightly shorter than posterior (0.44 mm), with 4–5 fine hairs between. A microscopic prothoracic hair (0.02 mm) above front coxa. Posterior supraalar 0.58 mm. Postalars 0.74 mm (anterior), 0.36 mm.

Abdomen: (Before boiling in potash:.) Uniformly black-brown; quite as shining as dorsum though with more evident greyish micropubescence. Narrower

than thorax at widest (at base 0.76:1.07 mm), tapering evenly posteriorly. Length of tergites decreasing posteriorly. Tip of abdomen more obtuse with dense soft hairs on tergites, slightly denser than on scutum (as 14 : 10) and almost as long; the marginal hairs longer, in particular laterally, where they become longest (0.28 mm) on tergite 4, then decreasing on tergites 5 and 6; and becoming shorter dorsally (ca. 0.18 mm on tergites 2 and 3, slightly shorter on 4–6). Sternites: 1st to 4th broad, squarish (3rd slightly the broadest: 0.49 mm wide, 0.39 mm long), evenly covered with short hairs (those on 4th slightly tending to 2 groups), which become stronger posteriorly on each sternite and from sternite to sternite; the hairs closer but much weaker than on tergites; sternites 3 and 4 laterally with 2 or 3 strong bristly hairs (strongest on 4th, 0.20 mm). Sternites and lateral membrane brown, the former matt-shiny, grey dusted. No spiracles visible in the lateral membrane.

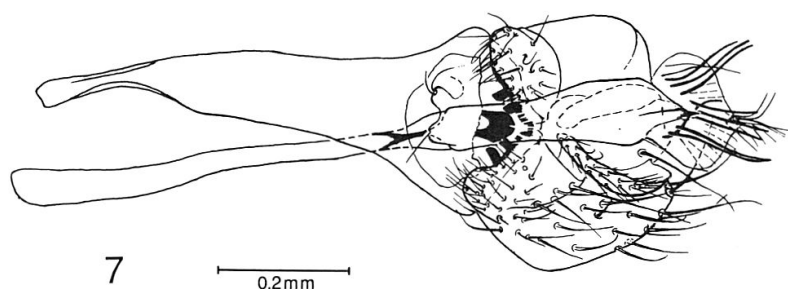


Fig. 7: *Stegana furta* (LINNÉ) (= *Drosophila curvipennis* FALLÉN): Male terminalia of the lectotype (Fln 2), ventral view.

Terminalia: The epandrium (fig. 7) showing only as a narrow ring, with 6 long, thin marginal hairs above (0.16 mm), with 4–5 shorter finer hairs (ca. 0.13 mm) at sides. Distal end of aedeagus long, very broadened (spatulate) at end, which is pale (membranous) except for dark centre. A tuft of about 6 fine, white, down-curved hairs arise dorsally near rear edge at centre with about 6 hairs from along outer central part of membrane at lower surface of spatulate end on the pale area, but away from the edge arise some thick hairs. The brown central portion is healed ventrally and produced into a sharp dark hard point. The aedeagus issues ventrally a little before apex of abdomen and immediately below 6th tergite. Aedeagal apodome extends back to tergite 3; so it is necessary to remove most of abdomen.

Legs: Foreleg wholly yellow, femur barely darker in some lights, mid- and hindlegs each with a broad band at basal quarter of tibia, rest of tibia yellow, femora brown, tarsus whitish-yellow. 1st coxa bare except for a very small hair on outer surface, 4–5 hairs (0.18 mm) on inner surface and 4 short hairs just inside them. 1st femur: laterally along whole length a row of longish hairs (0.17 mm), slightly longer than widest diameter (0.14 mm) of femur. 1st tibia: a little shorter than femur (0.68 : 0.59 mm) and about half as thick, apical bristle 0.10 mm. Tarsus short-haired, the hairs shorter and denser ventrally, metatarsus (0.25 mm) slightly longer than next 3 joints together, with 2 longer, spinose hairs ventrally. 2nd femur ventrally broad, flat, quite bare except for a very small hair at base, concave in distal half, with a row of fine hairs along postero-ventral edge and a

row of short hairs which are longer on anterior side (ca. 0.12 mm) and a fringe of about 10 curved hairs at end. 2nd tibia with a distinct preapical (0.11 mm) and a ventral apical (0.15 mm) bristle, postero-ventrally at basal half (within the brown ring) with a line of 3–4 erect sharp dark spines (0.14 mm) shorter than widest diameter of tibia. The line is continued to apex of tibia as 10–12 short hairs. Mid-leg tarsal joints broad, flattened, soft and densely haired, metatarsus (0.34 mm) and following 3 joints (together 0.28 mm) ventrally on both edges with a close-set row of microscopic dark cuneiform spinules. 3rd tibia with a dorsal, rather weak preapical (0.06 mm), otherwise uniformly haired. 3rd tarsus: Metatarsus (0.39 mm) shorter than the rest of tarsus (0.44 mm), with one row of spinules on anterior edge of all joints.

Wings: Brown, darkest anteriorly in marginal cell, gradually becoming paler posteriorly, though the minute subcostal cell and a small area behind anal crossvein and a small spot a little beyond posterior crossvein are almost hyaline. A lighter brown stripe runs along discal cell against cu. Veins dark brown. No outstanding longer bristles at 2nd costal break. About 4 minute black warts on lower surface of distal $\frac{2}{5}$ of 3rd costal section, the last one against end of 3rd vein. The stronger costal fringe extends about $\frac{3}{4}$ along this 3rd costal section. The last section of m appears straight but is almost imperceptibly sinuous. 2nd basal and discal cells divided by obvious crossvein. Humeral crossvein incomplete, not reaching costa. sc curves down to r_1 , partly enclosing a minute subcostal cell. 2nd longitudinal vein gently undulating up to costa. Anal vein strong, straight, reaching ca. $\frac{3}{4}$ to wing margin. r_{4+5} gently bowed, ending at tip of wing, and converging with last segment of m, the enclosed 1st posterior cell being almost equally narrow either end and widest immediately above posterior crossvein. Costa weakly continued to m. cu just reaches margin but last section weak and curved down to margin. Indices: C 1.94, 4V 1.98, 4c 1.24, 5x 1.15.

REFERENCES

- BÄCHLI, G., (in press). – Type specimens of Drosophilidae (Diptera) described by LINNAEUS, FALLÉN, WAHLBERG and ZETTERSTEDT.
- BURLA, H., 1951. – Systematik, Verbreitung und Ökologie der *Drosophila*-Arten der Schweiz. – *Revue Suisse Zool.* 58:23–175.
- CAIN, A. J., COLLIN, J. E., & DEMEREC, V. R., 1952. – Correct application of the name *Drosophila obscura* FALLÉN and notes on the type of *D. tristis* FALLÉN (Dipt., Drosophilidae). – *Ent. mon. Mag.* 88: 193–196.
- DUDA, O., 1934/35. – 58g. Drosophilidae. – In: E. LINDNER, *Die Fliegen der paläarktischen Region*, 118 pp. – Stuttgart.
- FALLÉN, C. F., 1823. – Diptera Sveciae. Geomyzides. – Lundae, Berling, 8 pp.
- LAŠTOVKA, P., & MÁČA, J., 1978. – European species of the *Drosophila* subgenus *Lordiphosa* (Diptera, Drosophilidae). – *Acta ent. bohemoslov.* 75:404–420.
- LAŠTOVKA, P., & MÁČA, J., 1982. – European and North American species of the genus *Stegana* (Diptera, Drosophilidae). – *Annotnes zool. bot. Bratislava* 149:1–38.
- LINNÉ, C., 1967. – *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis*. Edit. 12. Tomus I, Pars II. – Holmiae, Laurentius Salvius, pp. 533–1327.
- MÁČA, J., 1977. – Revision of Palaearctic species of *Amiota* subg. *Phortica* (Diptera, Drosophilidae). – *Acta ent. bohemoslov.* 74:115–130.
- MÁČA, J., 1980. – European species of the subgenus *Amiota* s. str. (Diptera, Drosophilidae). – *Acta ent. bohemoslov.* 77:328–346.
- MCALPINE, J. F., 1981. – Morphology and terminology – adults. – In: J. F. MCALPINE *et al.*, *Manual of Nearctic Diptera*, vol. 1, pp. 9–63. – *Agric. Can., Monograph No. 27*. – Ottawa.

- OKADA, T., 1960. – On the Japanese species of the genus *Amiota* Loew (Diptera, Drosophilidae). – *Mushi* 34:89–102.
- POMINI, F. P., 1940. – Contributi alla conoscenza delle *Drosophila* (Diptera, Acalyptera) europee. – Boll. Ist. Ent. Univ. Bologna 12:145–164.
- ZETTERSTEDT, J. W., 1838–40. – *Insecta lapponica*. – Voss, Lipsiae, 1139 pp.
- ZETTERSTEDT, J. W., 1847. – *Diptera Scandinaviae disposita et descripta*. Tomus sextus. – Lundae, Lundberg, pp. 2163–2580.
- ZETTERSTEDT, J. W., 1860. – *Diptera Scandinaviae disposita et descripta*. Tomus decimus quartus. – Lundae, Lundberg, pp. 6191–6609.

(received November 17, 1989)