81 (80'). Wing never conspicuously patterned; if wing with slight marking, then never with dorsal setulae on vein R₁. Thorax with anepisternum (in red) with an irregular row of 1 long and some shorter setae along posterior margin. Head with inclinate ventral fronto-orbital setae (ic frorb s), together with 1 or more reclinate fronto-orbital setae (rc frorb s) (rarely absent). Female abdomen with conspicuously dark and hard conical oviscape (arrowed) (exceptionally yellowish).

**Agromyzidae** [in part] (Chapter 86)

81' (80'). EITHER wing membrane strongly patterned and fronto-orbital setae present, OR fronto-orbital setae absent, OR thorax with anepisternum (in red) without row of setae on posterior margin. Head usually with 2 or more pairs of fronto-orbital setae (frorb s). Female abdomen variable.

**Examples of Agromyzidae**

- *Napomyza* Westwood
- *Ophiomyia* Brazhnikov
- *Liriomyza* Mik
82 (81'). Scutellum (sctl) distinctively inflated, usually larger than scutum (sct) and often largely covering wings (creating beetle-like appearance); margin of scutellum smooth, not spinose.

**Celyphidae** (Chapter 75)

82' (81'). Scutellum (sctl) rarely greatly enlarged, but if so (Chloropidae genus *Nomba* Walker), then margin spinose rather than smooth.

83

83' (82'). Head with gena (gn) without prominent upcurved setae; frons rarely with series of laterocline fronto-orbital setae. Female abdomen variable.

**Canacidae** [in part] (Chapter 94)
84 (83'). Head with vibrissa (vb) (vibrissal angle or anterior angle of gena (gn) with 1, or occasionally 2, setae clearly larger and usually differently oriented than nearby setae).

85 (84). Posterior thoracic spiracle (spr) with at least 1 seta (s) near ventral margin (red circled). Palpus usually minute or absent. Form usually ant-like.

*Sepsidae* [in part] (Chapter 79)

85' (83'). Head without vibrissa (but gena (gn) sometimes densely setulose or with enlarged vibrissa-like setae).

86 (84). Posterior thoracic spiracle (spr) without seta near ventral margin. Palpus (plp) present. Form rarely ant-like.
86 (85'). Antennal pedicel (ped) with small lobe on outer distal margin, projecting into postpedicel (pped). Small (length usually 2–6 mm), slender flies, often brightly coloured and all or partly yellow or orange (sometimes brown or black). Wing membrane usually at least partly infuscate.

**Clusiidae** (Chapter 81)

86' (85'). Antennal pedicel (ped) without small lobe on outer distal margin. Size and colouration variable. Wing membrane usually hyaline, but sometimes maculate or partly infuscate.

87 (86'). Costal wing vein (C) not broken at end of subcostal vein (Sc) (i.e., without subcostal break; never spinose.)

87' (86'). Costal wing vein (C) broken at end of subcostal vein (Sc) (i.e., with subcostal break; sc brk); sometimes spinose.

88
88 (87). Wing vein $R_1$ and sometimes other veins, with small dorsal setae throughout length; costal vein (C) with humeral break (hum brk). Thorax with anepimeron and anepisternum setose.

**Platystomatidae** [in part] (Chapter 70)

88’ (87). Wing vein $R_1$ usually entirely bare dorsally, sometimes setose in basal 1/2 only; costal vein (C) without humeral break. Anepisternum (anepst) variable, anepimeron (anepm) bare.

89 (88’). Thorax with anepisternum (in red) setose. Head with 1–2 pairs of reclinate fronto-orbital setae (rc frorb s). Size, shape and colour variable.

**Lauxaniidae** [in part] (Chapter 74)

89’ (88’). Anepisternum (in red) bare. Head with fronto-orbital setae (frorb s) arranged in 3 or more differently oriented pairs. Elongate yellow to brown flies, ca 3–5 mm in length.

**Natalimyzidae** [in part] (Chapter 80)
90 (87°). At least one leg with strong preapical dorsal seta (s) on tibia (tb). Costal wing vein (C) often spinose (sp).

91

90' (87°). Tibiae without preapical dorsal setae. Costal vein (C) rarely spinose.

92
91 (90). Thorax with dorsum strongly arched; anterior ½ with uniformly small setae (without presutural dorsocentral setae). Anepisternum (anepst) setose. Arista (ar) almost invariably with long branches at least dorsally (dorsal and ventral branches rarely short). If 2 fronto-orbital setae present, then the anterior pair distinctly proclinate.

Curtonotidae (Chapter 103)

91’ (90). Thorax with dorsum not strongly arched. Anepisternum variable. Arista variable, but if plumose, then anterior ½ of thorax with dorsocentral setae (dc s) and with single reclinate fronto-orbital seta (Suillia Robineau-Desvoidy).

Heleomyzidae [in part; most] (Chapter 98)

EXAMPLES OF HELEOMYZIDAE

Suillia Robineau-Desvoidy

Trixoscels Robineau-Desvoidy
92 (90'). Head with postocellar setae (poc s) divergent (very rarely parallel; absent in *Ophiomyia arabica* (Deeming) (Agromyzidae)).

92' (90'). Head with postocellar setae (poc s) convergent, parallel or absent.

**EXAMPLES OF CURTONOTIDAE**

- *Axinota* Wulp
- *Curtonotum* Macquart
- *Tigrisomyia* Kirk-Spriggs
- *Cyrtona* Séguy
93 (92). Subcostal wing vein (Sc) indistinct apically or ending close to end of vein R1. Head with 2–8 pairs of fronto-orbital setae (frorb s), ventral pairs inclinate. Female abdomen with conspicuously dark and hard conical oviscape (exceptionally yellowish). Female cerci at tip of ovipositor, obtuse and separated. Body usually 2–4 mm in length. 

**Agromyzidae** [in part] (Chapter 86)

93′ (92). Subcostal wing vein (Sc) distinct, apex separate from vein R1. Head with 0–4 pairs of fronto-orbital setae (frorb s), ventral pairs rarely inclinate. Female abdomen with telescoping apex, without hard tubular oviscape. Female cerci forming the tip of eversible piercing-type ovipositor, fused. Body usually 3–6 mm in length. 

**Piophilidae** (Chapter 68)

94 (92′). Wing veins R2+3 and R4+5 converging slightly towards wing tip. Small (usually 0.5–3.0 mm in length), usually all or partly pale yellowish, with pale setae and metallic green or red eyes (may be faded in dry specimens). Wing membrane hyaline and subcostal vein (Sc) distally weak. Head with vibrissa (vb) small and inconspicuous.

**Chyromyidae** [in part] (Chapter 97)

94′ (92′). Wing veins R2+3 and R4+5, not converging towards wing tip. Eye not metallic (sometimes reddish), rarely yellow. Size and wing variable. Head usually with distinct setae on vibrissal angle.
95 (94'). Costal wing vein (C) without humeral break (with a weakening beyond humeral crossvein (h), that could be interpreted as a break in *Suffomyia* Freidberg); subcostal vein (Sc) joining vein $R_1$ just before C. Ventral fronto-orbital setae (frorb s) reclinate to lateroclinate (not inclinate). Area just above vibrissa-like seta (s) (true vibrissa in *Dasyrhicnoessa* Hendel) usually with small shiny knob (arrowed) (if absent then disc of scutellum bare, or anterior cubital cell (cua) of wing open distally and/or alula (al) strongly reduced). Body often silvery pruinose. Associated with saline environments.

*Canacidae* [in part] (Chapter 94)

95' (94'). Costal wing vein (C) with distinct humeral break (hum brk); subcostal vein (Sc) variable. Head with ventral fronto-orbital setae (frorb s) inclinate (incurved). Area just above vibrissa-like seta (s) usually without small shiny knob. Body rarely silvery pruinose. Associated with various habitats.

96 (95'). Head with area immediately above vibrissa-like seta (s) with small shiny knob (arrowed). Thorax with postpronotal lobe (in red) with 3 differently oriented setae. Costal vein (C) with robust, long spine-like setae (s). Associated with coastal habitats.

*Canacidae* [in part] (Chapter 94)

96' (95'). Head with area immediately above vibrissa-like seta unmodified, lacking small shiny knob. Thorax with postpronotal lobe (pprm lb) variable, but not with 3 distinct, differently oriented setae. Costal vein (C) without spine-like setae. Associated with various habitats, but not coastal.

97
97 (96'). Proboscis (prbs) short, not geniculate (not bent medially). Anepisternum (in red) with setulae or setae. Vibrissa inserted below ventral margin of compound eye. Subcostal break (sc brk) without costal lappet. Antennae inserted in deep, distinct depressions; virbrial angle of gena (gn) never prolonged into elongated triangle. Body length: 1–3 mm.

**Carnidae** [in part] (Chapter 93)

98 (84'). Head without ocelli. Wing membrane usually patterned, never uniformly black. Uncommon crepuscular or nocturnal flies.

**Pyrgotidae** [in part] (Chapter 72)

97' (96'). Proboscis (prbs) geniculate (bent medially). Anepisternum (in red) bare, or head with vibrissa inserted well above ventral margin of compound eye; if anepisternum setose and vibrissa below margin of eye, then lunule (lun) and lunular setae (lun s) obvious. Wing with subcostal break (sc brk) sometimes very large and flanked by costal lappet (co lap). Antennae not usually inserted in deep depressions, if in deep depressions, then vibrissal angle of gena (gn) prolonged into elongated triangle. Body length: 1–7 mm.

**Milichiidae** [in part] (Chapter 95)

98' (84'). Head normally with ocelli (oc) (often absent in *Bromophila* Loew (Platystomatidae), with wing membrane entirely black). Common, normally diurnal flies.
99 (98'). Wing veins $R_{2+3}$ and $R_{4+5}$ converging slightly towards wing tip. Small (usually body length: 0.5–3.0 mm), usually all or partly pale yellowish, with pale setae and metallic green or red eyes (may be faded on dry specimens). Wing membrane hyaline and subcostal vein (Sc) weak distally. Head with small and inconspicuous vibrissa (vb).

**Chyromyidae** [in part] (Chapter 97)

99' (98'). Wing veins $R_{2+3}$ and $R_{4+5}$ not converging towards wing tip. Size and appearance variable, but never pale yellow with metallic eyes. Wing membrane variable, subcostal vein (Sc) usually distinct distally. Head without vibrissa, but gena (gn) sometimes with multiple long setulae.
100 (99'). Posterior thoracic spiracle (spr) with at least 1 seta (s) along ventral margin (red circled). Ant-like flies, with spherical head and reduced palpus. 

**Sepsidae** [in part] (Chapter 79)

101 (99'). Posterior thoracic spiracle (spr) without setae along ventral margin. Rarely ant-like flies, head not spherical, palpus usually well-developed.

100' (99'). Costal wing vein (C) broken, or discontinuous near apex of subcostal vein (Sc) (subcostal break (sc brk) often indistinct, best viewed with transmitted light); anterior cubital cell (cua) usually with pointed posterior angle.

**Ulidiidae** [in part] (Chapter 69)

101 (100'). Costal wing vein (C) unbroken (without distinct subcostal break or fracture near end of subcostal vein (Sc)); anterior cubital cell (cua) variable.
102 (101'). All tibiae without preapical dorsal seta.

103 (102). Wing vein $R_1$, and sometimes other veins, with dorsal setae throughout length. Thorax with anepimeron (anepm) and anepisternum (anepst) with setae. Anterior cubital wing cell (cua) never posterodistally extended.

**Platystomatidae** [in part] (Chapter 70)

102' (101'). Some or all tibiae (tb) with preapical dorsal seta (s).

106 103' (102). Wing vein $R_1$ usually bare dorsally, if partially setulose, then anepimeron without setae. Anepisternum variable. Anterior cubital cell (cua) sometimes posterodistally extended.
104 (103'). Postocellar setae (poc s) divergent. EITHER wing with distal part of vein $R_1$ spinulose dorsally, OR anterior cubital cell (cua) with distal point; membrane usually strongly patterned.

**Ulidiidae** [in part] (Chapter 69)

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104' (103'). Postocellar setae (poc s) usually convergent or absent, sometimes parallel or slightly divergent. Wing vein $R_1$ bare; anterior cubital cell (cua) without point; membrane usually hyaline, without conspicuous markings or pattern.

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105 (104'). Hind femur (fem) not swollen, lacking ventral rows of spines. Wing vein $R_1$ with slight bend before meeting costal vein (C). Postocellar setae (poc s) absent or convergent.

**Chamaemyiidae** (Chapter 76)

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105' (104'). Hind femur (fem) thicker than mid femur, usually with ventral rows of spines. Wing vein $R_1$ evenly curved to costal vein (C). Head with postocellar setae parallel or slightly divergent.

**Sciomyzidae** [in part] (Chapter 78)
Species in which preapical tibial seta inconspicuous.
106 (102'). Katepisternum (katepst) with large anteriorly
directed seta (s) in posterodorsal corner. All legs with
last tarsal segment (terminal tarsomere) triangular,
flattened, wider than other segments, with 2–3
setiferous tubercles on distal margin above claws
(arrowed). Marine coastal flies, usually dorsoventrally
flattened, with densely setose gena and legs.

**Coelopidae** (Chapter 77)

106' (102'). Katepisternal seta, if present, directed dorsally
or posteriorly. Fore leg with terminal tarsomere
similar to penultimate tarsomere, without enlarged
apical setae. Habitat and appearance variable.
None-marine coastal flies (although Sciomyzidae
may occur in coastal habitats); body shape normal,
gena and legs not densely setose.

107 (106'). Wing vein **CuA+CuP** (from posterior angle
of anterior cubital cell (**cua**)) usually extending to
or almost to wing margin. Postocellar setae (**poc s**)
divergent or parallel, rarely absent, but if so, then
scutellum with 1 pair of setae.

**Sciomyzidae** [in part] (Chapter 78)

107' (106'). Wing vein **CuA+CuP** (from posterior angle of
anterior cubital cell (**cua**)) short, ending well before
wing margin. Postocellar setae (**poc s**) convergent;
rarely absent or parallel, but if so, then scutellum
with 2 pairs of setae.
108 (107'). Wing vein CuA+CuP sclerotised beyond apex of anterior cubital cell (cua). Head usually with 1–2 fronto-orbital setae (frorb s). Thorax with prosternum broad; anepisternum (anepst) with setae.
   **Lauxaniidae** (in part; most) (Chapter 74)

108’ (107’). Wing vein CuA+CuP not sclerotised beyond apex of anterior cubital cell (cua). Head usually with more than 3 fronto-orbital setae (frorb s), angled in different directions. Thorax with prosternum narrow-oval; anepisternum (in red) without setae.
   **Natalimyzidae** (in part) (Chapter 80)
109 (58'). Ocelli absent. Wing vein R, usually setulose dorsally (not visible in wing above).

109' (58'). Ocelli (oc) present. Wing vein R, usually bare dorsally.

110 (109). Head strikingly large (almost as large as thorax); proboscis small to absent. Female antenna with arista (ar) multi-branched, highly distinctive. Rarely collected, usually at lights.

Ctenostylidae (Chapter 73)

110 (109). Head not unusually large; proboscis (prbs) well-developed. Female antenna with arista (ar) not multi-branched. Common, usually collected at lights.

Pyrgotidae [in part] (Chapter 72)
Species for which wing vein Sc may be interpreted as incomplete.
111 (109'). Thorax with propleuron with a raised vertical ridge (propleural carina; prpl car); in some cases obscured by head, usually sharp but sometimes indistinct; see below). Head with ocellar triangle (oc tr) often large, prominent and shiny (in ca 50% of species; may be obscured if frons pruinescent). Wing with anterior cubital cell (cua) absent; vein M₄ usually with characteristic kink.

**Chloropidae** [in part; most] (Chapter 96)

111' (109'). Thorax without propleural carina (if apparently present, then anterior cubital cell (cua) complete). Head with ocellar triangle usually smaller; wing cell (cua) open or closed, but vein M₄ without kink.

**FEATURE OF CHLOROPIDAE:** propleural carina (prpl car)
112 (111'). Hind tarsomere 1 (tsm 1) conspicuously short, swollen (in red), broader than distal tarsomeres (sometimes with multiple tarsomeres swollen and short).

*Sphaeroceridae* [in part; most] (Chapter 99)

112' (111'). Hind tarsomere 1 (tsm 1) not swollen, usually slender and longer than tarsomere 2.

113 (112'). Antennal arista (ar) rarely absent or reduced, but if so, then body neither stout nor black with blue metallic sheen. Antennal postpedicel variable. Subcostal wing vein (Sc) complete, but may be difficult to discern.

*Cryptochetidae* [in part] (Chapter 107)

Specimens misinterpreted as having subcostal vein incomplete.

113' (112'). Antennal arista (ar) rarely absent or reduced, but if so, then body neither stout nor black with blue metallic sheen. Antennal postpedicel variable. Subcostal wing vein (Sc) complete or incomplete, usually distinct.
114 (113'). Antennal arista (ar) with long dorsal branches only, anterior cubital wing cell (cua) absent and subcostal break (sc brk) present. Face (fc) often prominent.

_Ephydridae_ [in part] (Chapter 100)

115 (114'). Wing vein $R_{2+3}$ very short, ending much closer to apex of vein $R_1$ than to wing tip.

114' (113'). Antennal arista (ar) bare, pubescent or with branches both above and below; rarely with long dorsal branches only, but if so, then EITHER anterior cubital wing cell (cua) complete, OR subcostal break (sc brk) absent. Face (fc) variable.

115

115' (114'). Wing vein $R_{2+3}$ long, ending much closer to wing tip than to apex of vein $R_1$. 

117
116 (115). Anterior cubital wing cell (cua) absent or indistinct; veins $R_{4+5}$ and $M_1$ distally convergent, often with setula near apex of vein $M_1$. Antennal arista (ar) sometimes with zigzagging branches (alternating dorsal and ventral branches) in apical $\frac{2}{3}$.

*Asteiidae* (Chapter 92)

116’ (115). Anterior cubital wing cell (cua) complete; veins $R_{4+5}$ and $M_1$ not converging, without setula near apex of vein $M_1$. Antennal arista (ar) evenly pubescent.

*Neminidae* (Chapter 89)

117 (115'). Head without vibrissa and facial setae at anteroventral angle of head, although sometimes with vibrissa-like setae (s) (*Geomyza* Fallén (Opomyzidae)), but then with 1 fronto-orbital seta (frorb s) and usually apical wing macula.

118

117’ (115’). Head with vibrissa (vb) or other enlarged setae at anteroventral angle, or lower face bulging, with vibrissa-like setae. If wing with apical macula, then head with more than 1 fronto-orbital seta (frorb s).

123
118 (117). Wing membrane markings usually including apical macula; vein $R_1$ with apical kink. Katepisternum with 1 seta. Head with 1 pair of fronto-orbital setae (frorb s).

**Opomyzidae** (Chapter 84)

119 (118'). Wing vein $R_1$ (and sometimes other veins) with dorsal setae throughout its length (not clearly visible on wing above). Anterior cubital cell (cua) never posterodistally extended (PLASTOTEPHRITINAE).

**Platystomatidae** [in part] (Chapter 70)

119' (118'). Wing vein $R_1$ bare throughout its length. Anterior cubital cell (cua) variable, sometimes posterodistally extended (inset), or absent.
120 (119'). Head with postocellar setae (poc s) convergent; area immediately above apparent vibrissa (vibrissa-like setae (s)) with small shiny tubercle (arrowed).

**Canacidae** [in part] (Chapter 94)

120' (119'). Head with postocellar setae (poc s) divergent or absent; area immediately above apparent vibrissa (vibrissa-like setae (s)) without small shiny tubercle.

121 (120'). Thorax with anepisternum (in red) with fine setulae only. Costal wing vein (C) with subcostal break (sc brk) positioned well before end of vein $R_1$ (dorsal to end of subcostal vein (Sc)).

**Psilidae** (Chapter 65)

121' (120'). Thorax with anepisternum (in red) with 1 or more setae. Costal wing vein (C) with subcostal break (sc brk) positioned near end of vein $R_1$. 

122
122 (121'). Wing with anterior cubital cell (cua) incomplete (or absent); costal vein (C) with humeral break (hum brk). Head with face (fc) usually bulging (although an elongate knob between and below antennal scapes may be present in Ophiomyia Braschnikov (Agromyzidae)).

**Agromyzidae** [in part] (Chapter 86)

Atypical species without distinct vibrissa.

123 (117'). If antennal arista (ar) with long branches, then EITHER postocellar setae (poc s) divergent or absent, head without proclinate and reclinate fronto-orbital setae (frorb s), body metallic and fore femur with ventral spine and costal vein (C) without conspicuous breaks, OR costal vein (C) with spines. Anepisternum (in red) with or without setae.

**Drosophilidae** [in part; most] (Chapter 106)

Ephydridae [in part] (Chapter 100)

Atypical species without distinct vibrissa.
124 (123'). Head with 1 pair of procinate fronto-orbital setae (pc frorb s) (may be reduced or scale-like; absent in females of 1 species with long plumose antennal arista (ar)) and 1 or 2 pairs of reclinate fronto-orbital setae.

125 (124). Costal wing vein (C) relatively stout, with erect spinules (sp) amongst the usual small setae. Head with strong procinate fronto-orbital seta (pc frorb s) inserted dorsolaterally to strong reclinate fronto-orbital seta (rc frorb s). Wing membrane often infuscate basally and over dm–m crossvein, sometimes more extensively patterned or banded (as above); unpatterned in Campichoeta Macquart. **Diastatidae** (incl. Campichoetidae) (Chapter 104)

125' (124'). Costal wing vein (C) with setae uniformly small, reclinate. Head without procinate fronto-orbital seta (pc frorb s), or arising anteriorly to reclinate fronto-orbital seta (rc frorb s). Wing membrane variable, usually hyaline.

126

124' (123'). Head with fronto-orbital setae all similarly oriented, reclinate (rc frorb s) or lateroclinate, OR with anterior seta inclinate and posterior seta medial to and almost horizontally alighted with anterior seta (except in Xenasteiidae, but then tiny flies (1.3–1.7 mm) confined to Indian Ocean islands with reduced wing venation; vein M largely evanescent). Antennal arista (ar) bare to plumose.

127
126 (125'). Thorax with anepisternum (in red) setulose. Antennal arista with long branches above, short branches below. Wing with anterior cubital cell (cua) open. Fore femur with anteroventral spine near apex. Mostly dark flies with metallic lustre (Katacamilla Papp entirely pale).

Drosophilidae (Chapter 102)

126' (125'). Thorax with anepisternum (anepst) bare. Antennal arista variable. Wing with anterior cubital cell (cua) usually closed. Fore femur rarely with ventral spine. Colour variable, rarely metallic.

Drosophilidae [in part] (Chapter 106)
127 (124'). At least 1 tibia (tb) with dorsal preapical seta (s). Costal vein (C) with subcostal break (sc brk) (except in Marginidae, but then small flies (1.7–3.0 mm) with wing membrane often darkly pigmented marginally).

127' (124'). Tibiae (tb) without dorsal preapical seta (although sometimes with scattered anterodorsal or posterodorsal setae). Costal vein (C) with or without subcostal break (sc brk).
128 (127). Postocellar setae (poc s) convergent.

Heleomyzidae [in part] (Chapter 98)
Atypical forms with indistinct subcostal vein.

128' (127). Postocellar setae (poc s) divergent, parallel or absent.

129 (128'). Subscutellum (sbsctl) bulging below scutellum; anepisternum (anepst) bare or with 1 minute seta. Wing membrane often with marginal pigmentation. Antennal arista (ar) inserted apically or pre-apically.

Marginidae (Chapter 82)

129' (128'). Subscutellum inconspicuous, not bulging below scutellum; anepisternum (anepst) usually with setae (except in some Odiniidae). Wing membrane hyaline or with pigmentation other than marginal band. Antennal arista (ar) inserted dorsobasally.
130 (129'). Anterior cubital wing cell (cua) open or absent. Face (fc) usually bulging; often with vibrissa-like setae (s), but without distinct vibrissa.

**Ephydridae** [in part] (Chapter 100)

130' (129'). Anterior cubital wing cell (cua) closed. Face (fc) flat. Strongly setose flies with distinct vibrissa (vb).

**Odiniidae** (Chapter 83)

131 (127'). Antennal arista (ar) distally zigzagging with alternating dorsal and ventral branches; frons (fr) distinctly bicoloured, with lower part forming a bright transverse band.

**Aulacigastridae** (Chapter 88)

131' (127'). Antennal arista (ar) straight; ventral and dorsal branches present or absent; frons (fr) without bright transverse band.
132 (131'). Fore femur (fem) with stout ventral spine (sp) in distal \( \frac{1}{2} \) (Scelomyza Séguy) and/or wing vein \( R_1 \) with distinct preapical kink. Antenna decumbent (postpedicel (пед) below pedicel (пед)), but porrect in Amnonthomyza Roháček and Barbarista Roháček. Usually elongate, slender flies with narrow wings.

*Anthomyzidae* [in part; most] (Chapter 87)

132' (131'). Fore femur without stout ventral spine. Wing vein \( R_1 \) with preapical kink present (Agromyzidae), indistinct or absent. Body shape, antenna and wings variable.

133 (132'). Antennal arista (ar) usually with long branches above and below, sometimes short plumose; antennal pedicel (пед) with dorsal slit or notch.

133' (132'). Antennal arista (ар) bare or pubescent; antennal pedicel (пед) usually without dorsal slit or notch.
134 (133). Head without ocellar setae.

*Periscelididae* [in part] (Chapter 91)

Most Afrotropical *Periscelididae* in subfamily STENOMICRINAE; sometimes treated as family Stenomicridae.

134' (133). Head with ocellar setae (oc s).

135 (134'). Head with at least 2 fronto-orbital setae (frorb s).

Subcostal break (sc brk) present.

*Neurochaetidae* (Chapter 90)

135' (134'). Head with 1 pair of fronto-orbital setae (frorb s).

Subcostal break absent.

*Periscelididae* [in part] (Chapter 91)

*Periscelis* Loew (uncommon in Afrotropics).
136 (133'). Wing vein $R_{2+3}$ reaching at most to $\frac{2}{3}$ wing length. Minute flies (< 1.8 mm in length), usually associated with seashores or other saline habitats. 

*Xenasteiidae* (Chapter 85)

136' (133'). Wing vein $R_{2+3}$ ending well beyond $\frac{2}{3}$ wing length. Size and habitat variable.

137 (136'). Anterior cubital wing cell (cua) open or absent. Proboscis short.

138

137' (136'). Anterior cubital wing cell (cua) closed. Proboscis (prbs) sometimes long and geniculate (bent medially).
138 (137). Head with 4 fronto-orbital setae (frorb s), the lower 2 inclinate. Crossveins positioned near wing base; halter usually pale. Body usually 1–2 mm in length.

**Carnidae** [in part] (Chapter 93)

139 (137’). Costal wing vein (C) without humeral break (near humeral crossvein (h)). Head with fronto-orbital setae (frorb s) variable, but if numerous and inclinate, then female terminalia with conical, non-retractile oviscape (ovscp).

138’ (137). Head with 0–4 fronto-orbital setae (frorb s), the lower 2 if present not inclinate. Wing with crossveins positioned at or beyond middle of wing; halter usually dark. Body variable, but often larger than 2 mm in length.

**Ephydridae** [in part] (Chapter 100)

139’ (137’). Costal wing vein (C) with humeral break (hum brk) near humeral crossvein (h). Head with at least 3 (usually 4 or more) fronto-orbital setae (frorb s), some usually inclinate. Female terminalia without conical, non-retractile oviscape.
140 (139). Head without upturned setae below compound eye; fronto-orbital setae (frorb s) never laterocline. Female terminalia with stout, tubular non-retractile oviscape (ovscp). Usually not associated with seashores.

**Agromyzidae** [in part] (Chapter 86)

140′ (139). Head with 1 to several upturned setae (s) below compound eye; fronto-orbital setae (frorb s) usually laterocline. Female terminalia without tubular oviscape, often with upcurved, spinose cercus. Associated with seashores.

**Canacidae** [in part] (Chapter 94)

141 (139′). Head with area immediately above apparent vibrissa (vibrissa-like seta (s)), with small shiny process (arrowed). Postpronotal lobe (pprn lb) of thorax with 3 differently oriented setae.

**Canacidae** [in part] (Chapter 94)

141′ (139′). Head with area immediately above apparent vibrissa (vibrissa-like seta), unmodified, without small shiny process. Postpronotal lobe (pprn lb) of thorax variable, but not with 3 distinct, differently oriented setae.
142 (141'). Proboscis (prbs) short and straight; vibrissa-like setae (s) inserted below ventral margin of compound eye; antenna often in subantennal depression (sant dp) separated by sharp ridge. Wing with subcostal break (sc brk) small, without costal lappet. Thorax with anepisternum with setulae or setae. Body length: 1–3 mm.

Carnidae [in part] (Chapter 93)

142' (141'). Proboscis (prbs) geniculate (bent medially), EITHER thorax with anepisternum bare, OR head with vibrissa-like setae (s) inserted well above ventral margin of compound eye. Head usually without subantennal depression, if present, then shallow. Wing with subcostal break (sc brk) sometimes very large and flanked by costal lappet (co lap). Body length: 1–6 mm.

Milichiidae [in part] (Chapter 95)

143 (1'). Antenna with 6 or more (usually many more) distinct flagellomeres (at least 4 distal flagellomeres (flgm), plus basal scape (scp) and pedicel (ped)), flagellomeres similar, but clearly separated from one another.

143' (1'). Antenna with fewer than 6 distinctly separated flagellomeres; postpedicel (pped) often with hair-like antennal arista (ar), or tapered stylus, sometimes thin and annulated.

144
144 (143). Ocelli (oc) present. 

**Sciariidae** [in part] (Chapter 21)
(epidapus Haliday (4 spp., Seychelles & South Africa; females of some species unknown, but likely micropterus or brachypterus) & Physia Johannsen (1 sp., Madagascar).

145 (144'). Thorax without complete V-shaped transverse suture across scutum (sct); subscutellum (sbsctl) with distinctive longitudinal groove.

**Chironomidae** [in part] (Chapter 35)
Clunio Haliday [in part] (3 coastal spp., C. africanus Hesse, 1937 (South Africa), C. gerlachi Sæther, 2004 (Seychelles) & C. Jonesi Sæther & Andersen, 2011 (Gough Is.).

145' (144'). Thorax with complete V-shaped transverse suture (tm sut) across scutum; subscutellum without distinctive longitudinal groove.

**Limoniidae** & **Tipulidae** [in part] (Chapter 14)
Austrolimnophila (Austrolimnophila) hustoni Alexander (Ruwenzori Mountains), Quathlambia stuckenbergi Alexander (South Africa), Symplecta (Symplecta) hodgneri (Freeman) (Gough Is.), Platylimnobia Alexander (South Africa), Leptotarsus (Longurio Loew) (South Africa), Tipula (Tipula L.) (Bale Mountains & Mt Kilimanjaro).
146 (143'). Scutellum (sctl) with 2 distinct, spine-like or tubular apical projections (sp), ending in setae. Head distinctly “stalk-eyed”.

**Diopsidae** [in part] (Chapter 64)
One species, **Diopsina draconigena** Feijen (Lesotho & South Africa).

146’ (143’). Scutellum (sctl) without distinct, spine-like or tubular apical projections. Head normal, not “stalk-eyed”.

147 (146’). Hind coxae (cx) widely separated; tarsal claws stout, strongly recurved, sometimes bifid. Ectoparasites of birds, bats and other mammals.

**Hippoboscidae** [in part, incl. Nycteribiinae & strebline grade] (Chapter 109)

147’ (146’). Hind coxae (cx) closely approximated; tarsal claws variable, but rarely conspicuously enlarged. Usually free-living, sometimes associated with nestling birds (Carnidae), honey bees (Braulidae) or bat roosts (Mormotomyiidae).
148 (147'). Ptilinal fissure absent.

149 (148). Antenna apparently 2-segmented plus arista; antennal pedicel concealed within postpedicel (pped). Hind tarsus with 1–4 longitudinal rows of stout setae (s).

Phoridae [in part] (Chapter 59)
16 widespread genera, incl. all TERMITOXENINAE females that shed outer part of wings.

148’ (147’). Ptilinal fissure (ptil fis) present (in red).

149’ (148). Antenna with more than 3 “segments”; antennal pedicel (ped) distinct, not concealed within postpedicel (pped). Hind tarsus without longitudinal rows of stout setae.
150 (149'). Antenna with short stylus (styl) bearing recessed apical bristle-like receptor (arrowed); postpedicel (pped) as long or longer than head.

*Therevidae* [in part] (Chapter 49)
Lyneborgia Irwin (South Africa).

151 (150'). Wing strap-like.

*Empididae* [in part] (Chapter 51)
Dolichocephala Macquart [in part] & Wiedemannia Zetterstedt (Ruwenzori mountains, Uganda).

150' (149'). Antenna with stylus or arista-like stylus (ar styl) arising from apex of postpedicel (pped), without recessed apical bristle-like receptor; postpedicel shorter than head.

151 (150'). Wing relatively broad.

*Hybotidae* [in part] (Chapter 52)
Stilpno Loew [in part] (South Africa).
152 (148'). Scutellum absent or greatly reduced. Thorax foreshortened, less than \( \frac{3}{2} \) length of head (viewed from above), closely adjoined by abdominal syntergite 1+2 (syntg 1+2). Tarsi without claws, but with broad inflexed comb (arrowed) of numerous microscopic teeth. Specifically associated with honey bees.

**Braulidae** (Chapter 105)

* Braula Nitzsch (widespread)

153 (152'). Head, body, legs and strap-like wings clothed in long brown setulae. Eyes greatly reduced, lozenge-shaped. Halter greatly reduced. Associated with bats in horizontal rock fissures.

**Mormotomyiidae** (Chapter 101)

*Mormotomyia hirsuta* Austen (Kenya)

152' (148'). Scutellum (sctl) conspicuous. Thorax at least as long as head and clearly separated from abdominal tergites (tg). Tarsi with claws, comb absent. Not associated with honey bees.

153 (152'). Head, body and legs not excessively setulose. Wings absent or reduced. Halteres present or absent. Eyes not greatly reduced. Not associated with bats in horizontal rock fissures.
154 (153'). Hind tarsomere 1 (tsm 1) swollen, at most as long as tarsomere 2.

Sphaeroceridae [in part] (Chapter 99)
14 genera (Central, East and Southern Africa, St. Helena Is. & Réunion Is.).

155 (154'). Thorax with sometimes sharp propleural vertical ridge (propleural carina; prpl car). Head without fronto-orbital setae (small setulae may be present).

Chloropidae [in part] (Chapter 96)
Alombus Becker (Central and East Africa), Conioscinella Duda [in part] (Ruwenzori Mts, Kenya), Elachiptera Macquart [in part] (Mt. Kilimanjaro, Tanzania); Myrmecosepsis Becker (Nigeria).

155' (154'). Thorax without propleural carina. Head with at least 1 well-developed pair of fronto-orbital setae (frorb s).
156 (155'). Thorax with anepisternum (anepst) setose. Head with 2 inclinate (ic frorb s) and 2 laterocline (lc frorb s) fronto-orbital setae. Associated with nestling birds and birds’ nests.

Carnidae [in part] (Chapter 93)
Carnus Nitzsch [in part] (potentially widespread).

156' (155'). Thorax with anepisternum (anepst) bare. Head with reclinate fronto-orbital setae (rc frorb s). Not associated with nestling birds and birds’ nests.

157 (156'). Antennal arista (ar) pubescent. Fore femur with stout ventral spine (ctenidial spine; cten sp). Ocelli (oc) greatly reduced.

Anthomyzidae [in part] (Chapter 87)
Apterosepsis basilewskyi Richards (Tanzania).

157' (156'). Antennal arista (ar) with long dorsal branches. Fore femur without stout ventral spine (ctenidial spine). Ocelli (oc) distinct, well-developed.

Drosophilidae [in part] (Chapter 106)
Scaptomyza (Parascaptomyza Duda) [in part] (3 spp., Tristan da Cunha Is. group).


