

Key for identification of European and Mediterranean
blowflies (Diptera, Calliphoridae) of forensic importance
Adult flies



Krzysztof Szpila
Nicolaus Copernicus University
Institute of Ecology and Environmental Protection
Department of Animal Ecology



The list of European and Mediterranean blowflies of forensic importance

- Calliphora loewi* Enderlein, 1903
Calliphora subalpina (Ringdahl, 1931)
Calliphora vicina Robineau-Desvoidy, 1830
Calliphora vomitoria (Linnaeus, 1758)
Cynomya mortuorum (Linnaeus, 1761)
Chrysomya albiceps (Wiedemann, 1819)
Chrysomya marginalis (Wiedemann, 1830)
Chrysomya megacephala (Fabricius, 1794)
Phormia regina (Meigen, 1826)
Protophormia terraenovae (Robineau-Desvoidy, 1830)
Lucilia ampullacea Villeneuve, 1922
Lucilia caesar (Linnaeus, 1758)
Lucilia illustris (Meigen, 1826)
Lucilia sericata (Meigen, 1826)
Lucilia silvarum (Meigen, 1826)



Key

1. – stem-vein (Fig. 4) bare above 2
 – stem-vein haired above (Fig. 4) 3 (**Chrysomyinae**)

2. – thorax non-metallic, dark (Figs 90-94); lower calypter with hairs above (Figs 7, 15) 7 (**Calliphorinae**)
 – thorax bright green metallic (Figs 100-104); lower calypter bare above (Figs 8, 13, 14) 11 (**Luciliinae**)

3. – genal dilation (Fig. 2) whitish or yellowish (Figs 10-11). 4 (**Chrysomya** spp.)
 – genal dilation (Fig. 2) dark (Fig. 12) 6

4. – anterior wing margin darkened (Fig. 9), male genitalia on figs 52-55 **Chrysomya marginalis**
 – anterior wing margin transparent (Fig. 1) 5

5. – anterior thoracic spiracle yellow (Fig. 10), male genitalia on figs 48-51 **Chrysomya albiceps**
 – anterior thoracic spiracle brown (Fig. 11), male genitalia on figs 56-59 **Chrysomya megacephala**

6. – upper and lower calypters bright (Fig. 13), basicosta yellow (Fig. 21) **Phormia regina**
 – upper and lower calypters dark brown (Fig. 14), basicosta black (Fig. 22) **Protophormia terraenovae**

7. – one pair of acrostichal bristles on postsutural area, abdomen shining blue without microtrichosity (Fig. 94) **Cynomya mortuorum**
 – three pairs of acrostichal bristles on postsutural area (Fig. 3), abdomen shining blue with weak microtrichosity (Fig. 90-93) 8 (**Calliphora** spp.)

8. – upper and lower calypters predominantly white-yellowish (Fig. 7), male genitalia on figs 32-35 **Calliphora subalpina**
 – upper and lower calypters predominantly black (Fig. 15) 9

9. – facial ridges, mouth edge, and anterior part of genal dilation orange (Fig. 18); basicosta yellow (Figs 16, 21), male genitalia on figs 36-39 **Calliphora vicina**
 – facial ridges, mouth edge, and anterior part of genal dilation dark (Figs 19-20); basicosta black 10

Key for identification of E&M blowflies, adults

10. – postgena and lower part of genal dilation with black hairs (Fig. 20), male genitalia on figs 28-31 ***Calliphora loewi***
 – postgena and lower part of genal dilation with orange hairs (Fig. 19), male genitalia on figs 40-43 ***Calliphora vomitoria***

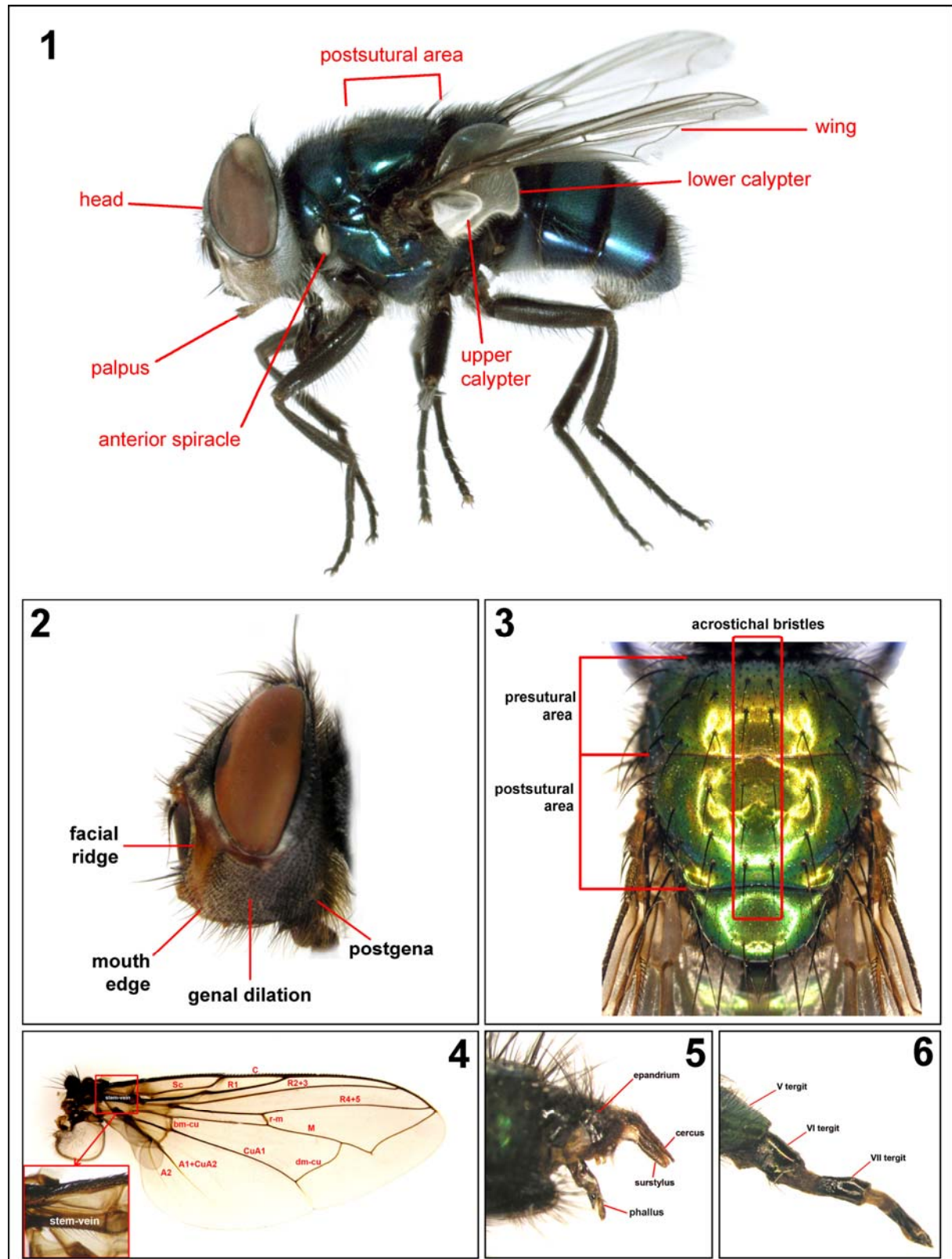
11. – basicosta bright yellow (Figs 16, 21), male genitalia on figs 82-85 ***Lucilia sericata***
 – basicosta brown or black (Fig. 22) 12

12. – three pairs of acrostichal bristles on postsutural area (Fig. 3), palpus brown to black (Fig. 24) ***Lucilia silvarum***
 – two pairs of acrostichal bristles on postsutural area, palpus yellow (Figs 25-26) 13

13. – coxopleural streak absent, male genitalia on figs 68-71 ***Lucilia ampullacea***
 – coxopleural streak present (Fig. 27) 14

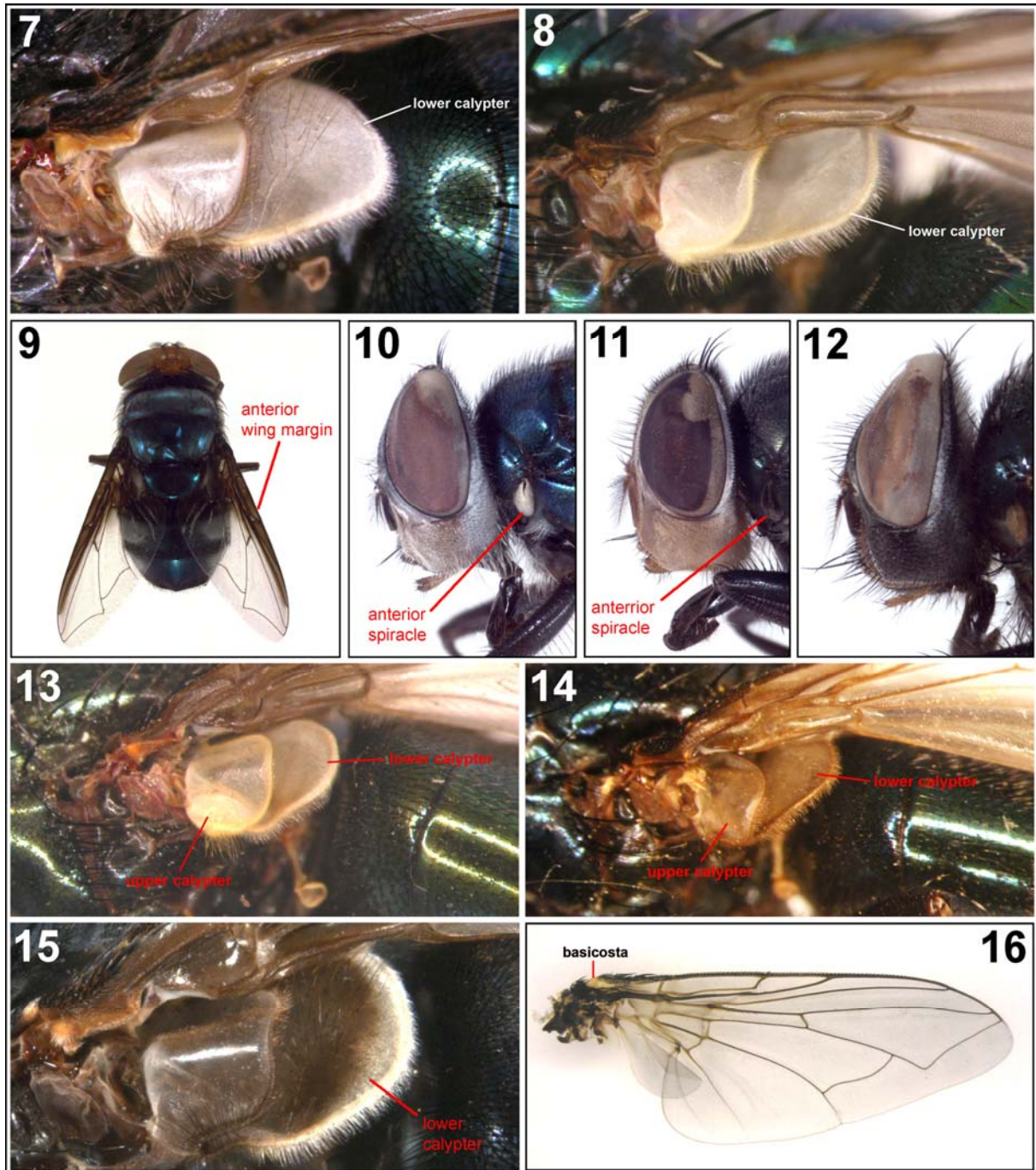
14. – male: surstyli slender, gradually tapered to sharp tip (Figs 77, 78); female: tergite VI straight in lateral view (Figs 6, 80) ***Lucilia illustris***
 – male: surstyli stout, abruptly narrowed at tip (Figs 72, 73); female: tergite VI convex in lateral view (Fig. 75) ***Lucilia caesar***

Figs 1-6. General morphology of blowflies. 1 – habitus, *Chrysomya albiceps*, male; 2 – head profile, *Calliphora uralensis*; 3 – thorax, dorsal view, *Lucilia sericata*; 4 – wing, *Protophormia terraenovae*; 5 – male terminalia, *Lucilia bufonivora*; 6 – ovipositor, *Lucilia illustris*.

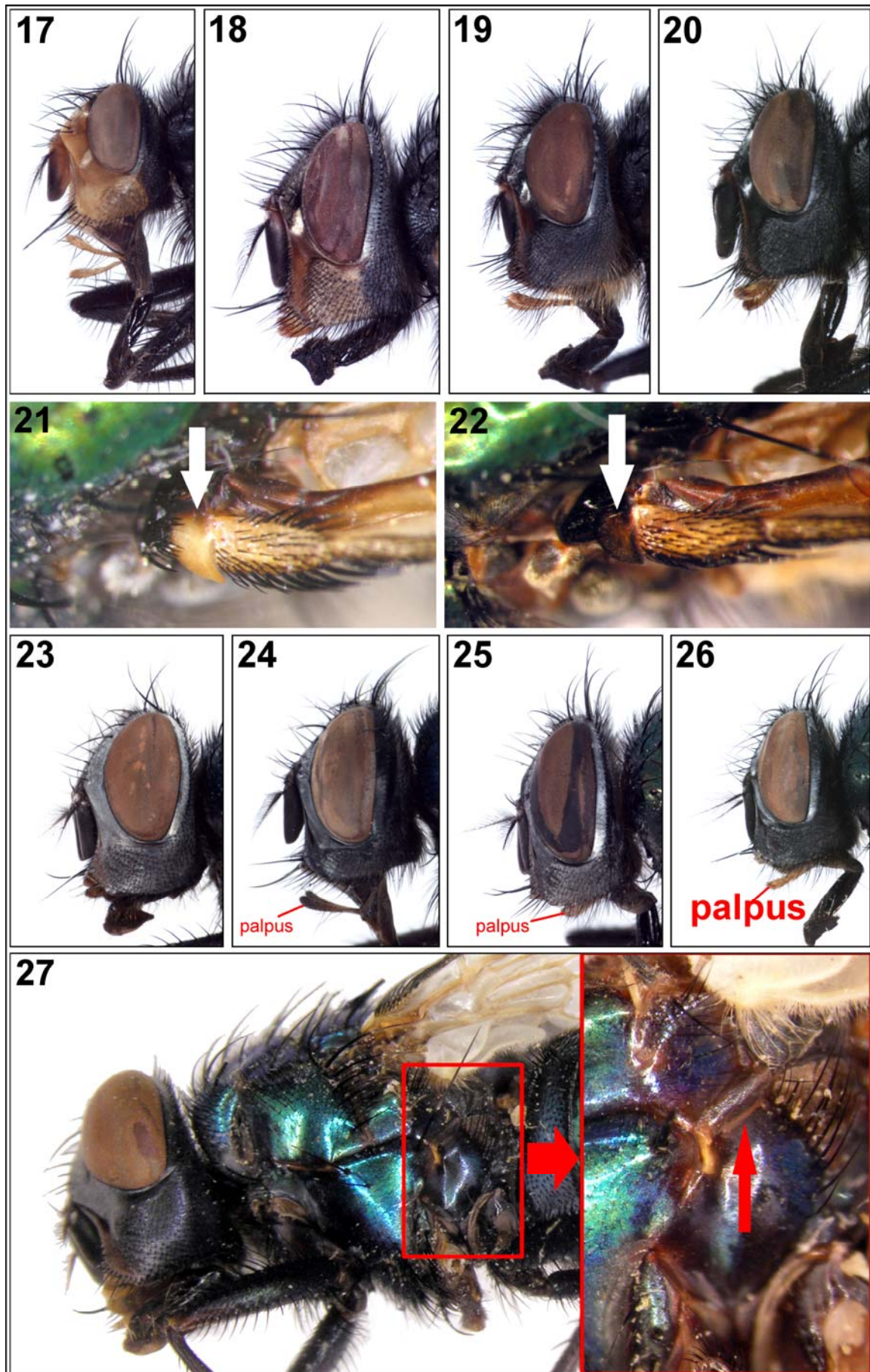


Figs 7-16. Details of morphology of blowflies. 7 – calypters, *Cynomya mortuorum*; 8 – calypters, *Lucilia caesar*; 9 – habitus, dorsal view, *Chrysomya marginalis*; 10 – head profile, *Chrysomya albiceps*; 11 – head profile, *Chrysomya megacephala*; 12 – head profile, *Phormia regina*; 13 – calypters, *Phormia regina*; 14 – calypters, *Protophormia terraenovae*; 15 – calypters, *Calliphora vomitoria*; 16 – wing, *Lucilia sericata*.

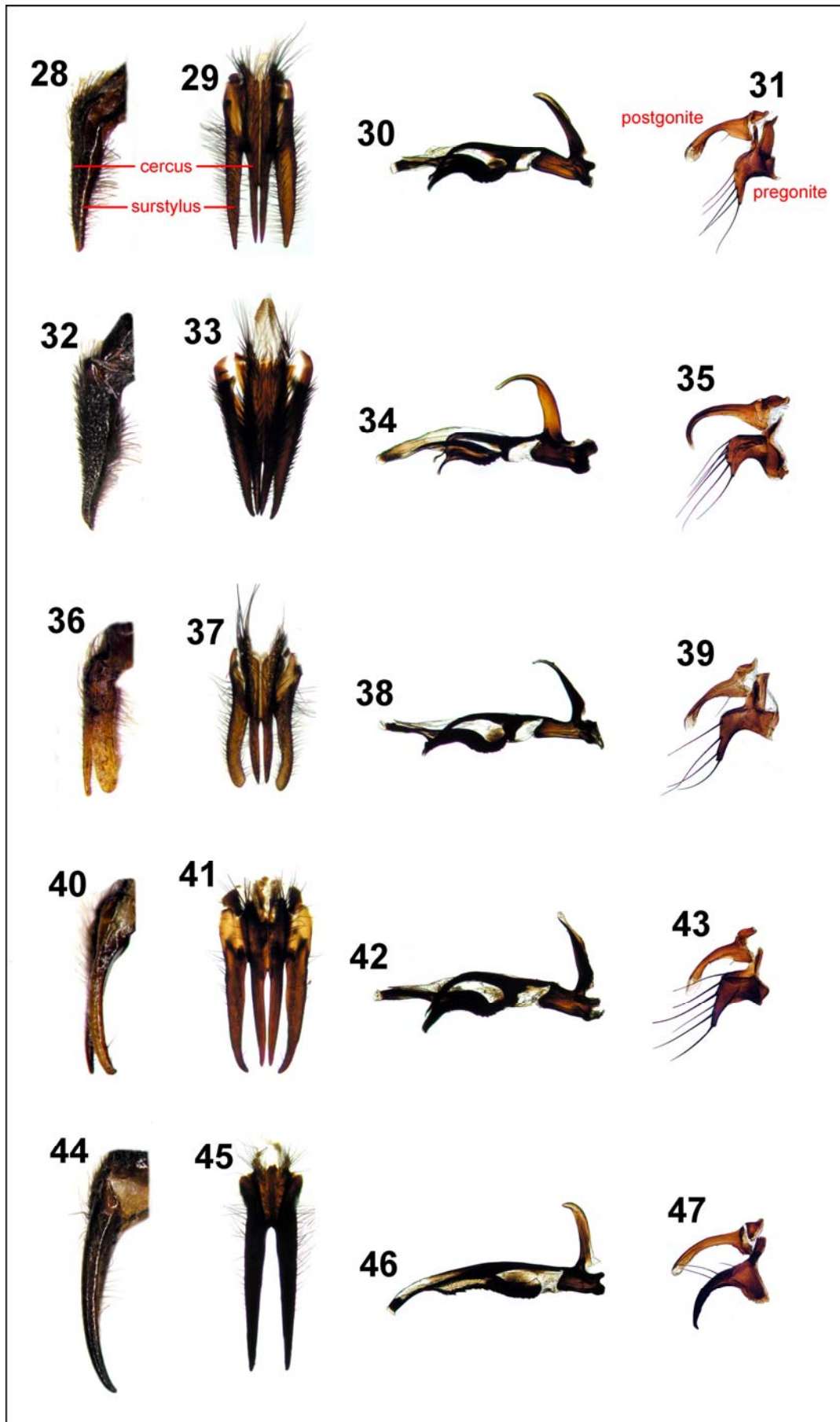
Key for identification of E&M blowflies, adults



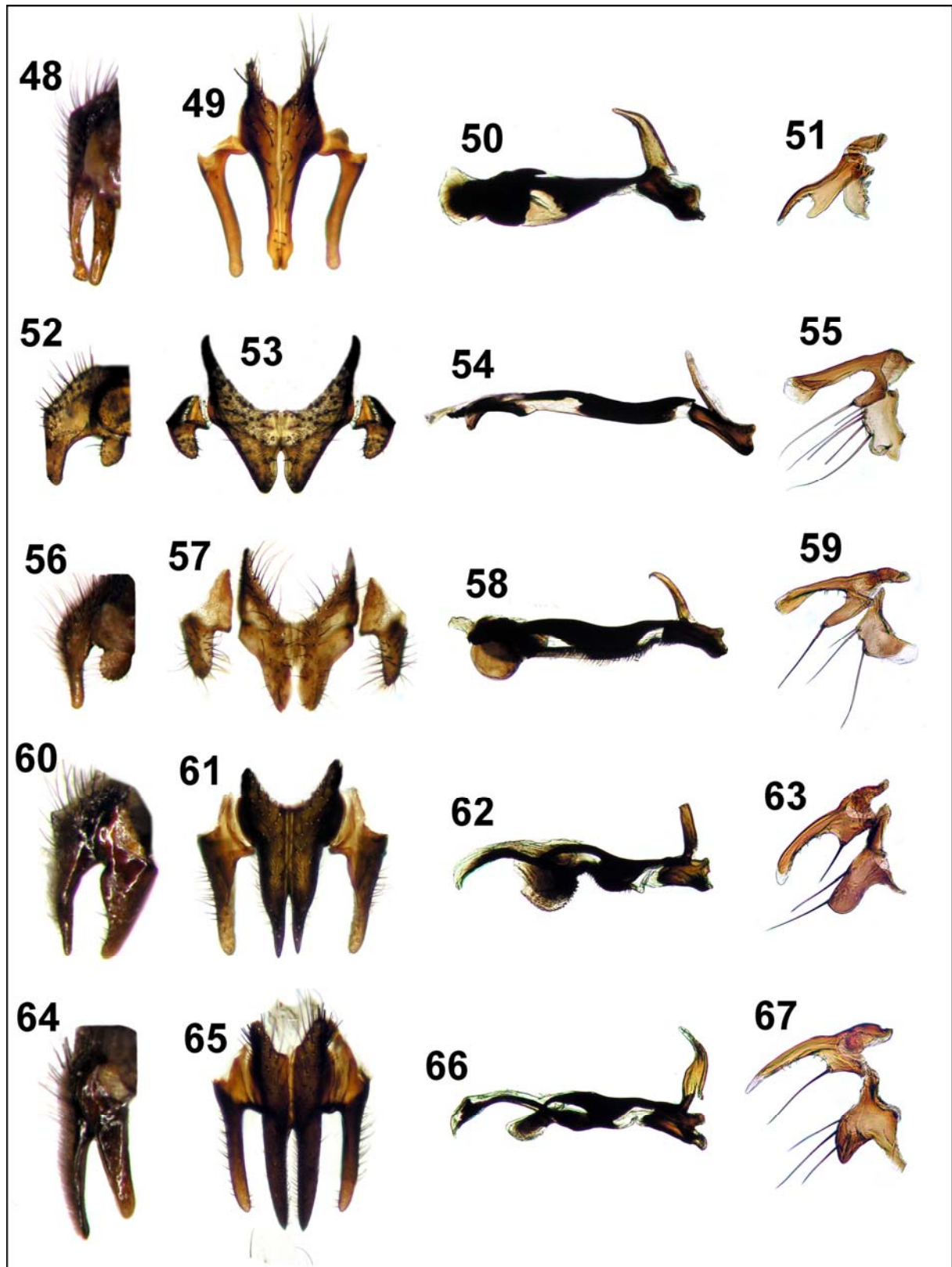
Figs 17-27. Details of morphology of blowflies. 17 – head profile, *Cynomya mortuorum*; 18 – head profile, *Calliphora vicina*; 19 – head profile, *Calliphora vomitoria*; 20 – head profile, *Calliphora loewi*; 21 – basicosta, *Lucilia sericata*; 22 – basicosta, *Lucilia caesar*; 23 – head profile, *Lucilia sericata*; 24 – head profile, *Lucilia silvarum*; 25 – head profile, *Lucilia caesar*; 26 – head profile, *Lucilia illustris*; 27 – coxopleural streak, *Lucilia caesar*.



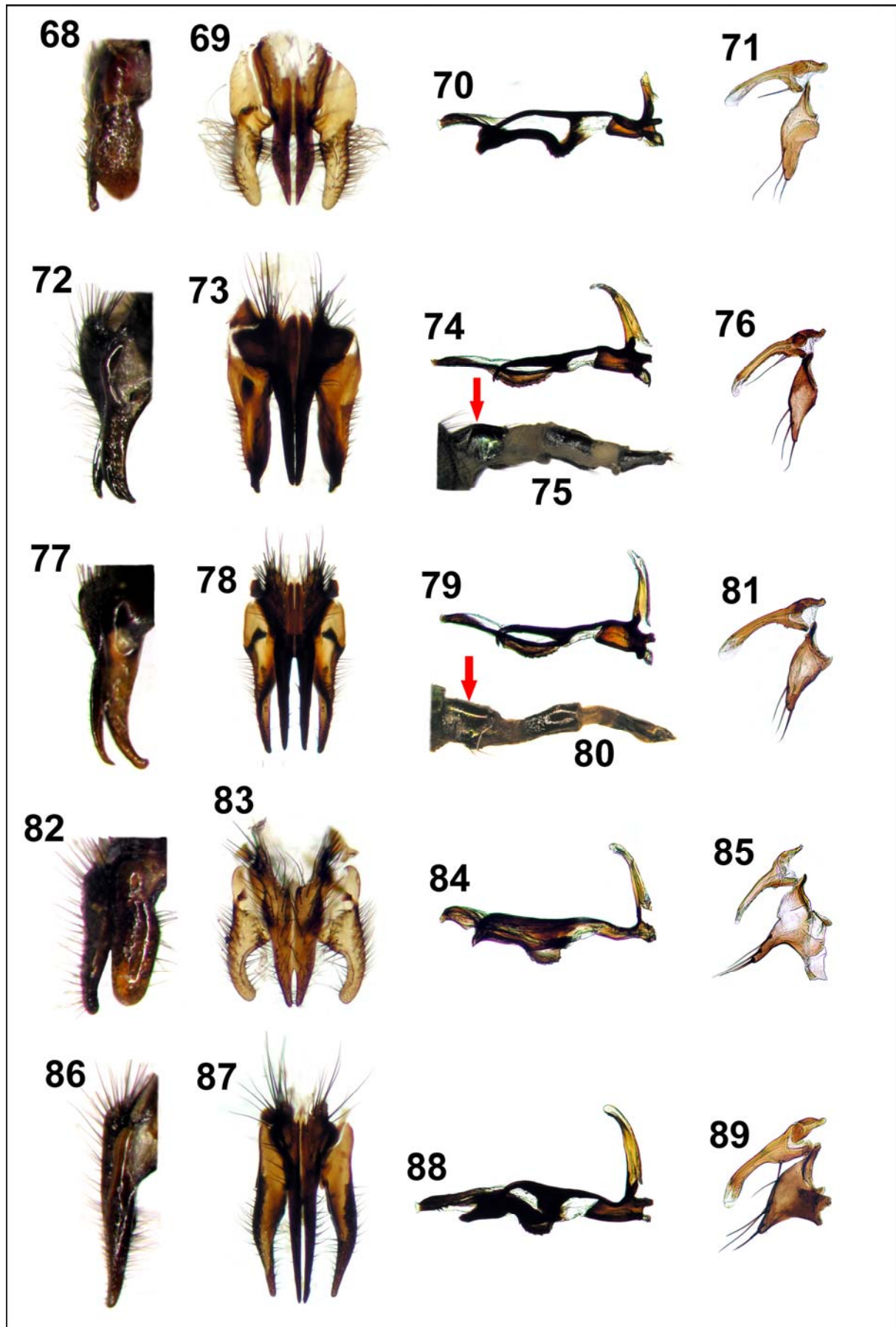
Figs 28-47. Male genitalia of Calliphorinae. *Calliphora loewi*: 28 – cerci and surstyli, lateral view; 29 – cerci and surstyli, dorsal view; 30 – phallus, lateral view; 31 – pregonite and postgonite, lateral view. *Calliphora subalpina*: 32 – cerci and surstyli, lateral view; 33 – cerci and surstyli, dorsal view; 34 – phallus, lateral view; 35 – pregonite and postgonite, lateral view. *Calliphora vicina*: 36 – cerci and surstyli, lateral view; 37 – cerci and surstyli, dorsal view; 38 – phallus, lateral view; 39 – pregonite and postgonite, lateral view. *Calliphora vomitoria*: 40 – cerci and surstyli, lateral view; 41 – cerci and surstyli, dorsal view; 42 – phallus, lateral view; 43 – pregonite and postgonite, lateral view. *Cynomya mortuorum*: 44 – cerci and surstyli, lateral view; 45 – cerci and surstyli, dorsal view; 46 – phallus, lateral view; 47 – pregonite and postgonite, lateral view.



Figs 48-67. Male genitalia of Chrysomyinae. *Chrysomya albiceps*: 48 – cerci and surstyli, lateral view; 49 – cerci and surstyli, dorsal view; 50 – phallus, lateral view; 51 – pregonite and postgonite, lateral view. *Chrysomya marginalis*: 52 – cerci and surstyli, lateral view; 53 – cerci and surstyli, dorsal view; 54 – phallus, lateral view; 55 – pregonite and postgonite, lateral view. *Chrysomya megacephala*: 56 – cerci and surstyli, lateral view; 57 – cerci and surstyli, dorsal view; 58 – phallus, lateral view; 59 – pregonite and postgonite, lateral view. *Phormia regina*: 60 – cerci and surstyli, lateral view; 61 – cerci and surstyli, dorsal view; 62 – phallus, lateral view; 63 – pregonite and postgonite, lateral view. *Protophormia terraenova*: 64 – cerci and surstyli, lateral view; 65 – cerci and surstyli, dorsal view; 66 – phallus, lateral view; 67 – pregonite and postgonite, lateral view.



Figs 69-89. Terminalia of Luciliinae. *Lucilia ampullacea*: 68 – cerci and surstyli, lateral view; 69 – cerci and surstyli, dorsal view; 70 – phallus, lateral view; 71 – pregonite and postgonite, lateral view. *Lucilia caesar*: 72 – cerci and surstyli, lateral view; 73 – cerci and surstyli, dorsal view; 74 – phallus, lateral view; 75 – ovipositor, lateral view; 76 – pregonite and postgonite, lateral view. *Lucilia illustris*: 77 – cerci and surstyli, lateral view; 78 – cerci and surstyli, dorsal view; 79 – phallus, lateral view; 80 – ovipositor, lateral view; 81 – pregonite and postgonite, lateral view. *Lucilia sericata*: 82 – cerci and surstyli, lateral view; 83 – cerci and surstyli, dorsal view; 84 – phallus, lateral view; 85 – pregonite and postgonite, lateral view. *Lucilia silvarum*: 86 – cerci and surstyli, lateral view; 87 – cerci and surstyli, dorsal view; 88 – phallus, lateral view; 89 – pregonite and postgonite, lateral view.



Figs 90-104. European and Mediterranean blowflies of forensic importance, general appearance. 90 – *Calliphora loewi*, 91 – *Calliphora vicina*, 92 – *Calliphora vomitoria*, 93 – *Calliphora subalpina*, 94 – *Cynomya mortuorum*, 95 – *Chrysomya albiceps*, 96 – *Chrysomya marginalis*, 97 – *Chrysomya megacephala*, 98 – *Phormia regina*, 99 – *Protophormia terraenovae*, 100 – *Lucilia ampullacea*, 101 – *Lucilia caesar*, 102 – *Lucilia illustris*, 103 – *Lucilia sericata*, 104 – *Lucilia silvarum*.

