Australian signal flies of the *Euprosopia megastigma* group (Diptera: Platystomatidae)

David K. McAlpine

The *megastigma* group of *Euprosopia* is expanded to include the *maculipennis* and *scatophaga* groups as previously delimited. Keys to the eight Australian species groups of *Euprosopia* and to the 17 species of the redefined *megastigma* group are given. The following new species are described: *Euprosopia tomareae*, *E. danielsi*, and *E. holmesi*. Habitat and distributional data are provided for all known species. The aedeagus of most species is illustrated.

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**Introduction**

This paper is intended as one of a series supplementing and updating previous systematic work on Australian Platystomatidae or signal flies (see McAlpine 2001, for a guide to earlier literature).

**Methods and terminology**

Morphological study for this paper has been performed using a stereo light microscope (SLM), compound light microscope (CLM), and scanning electron microscope (SEM).

Descriptive terminology is that used by me previously (D. McAlpine 1973a), with some terms further explained by D. McAlpine (2007). Most terms are also defined or illustrated by Harrison (1959) and Crosskey (1973). The antenna is treated as a six-segmented appendage and the segments are numbered consecutively from the base. Segments 4 to 6 constitute the arista, but segments 5 and 6 are fused in the megastigma group. Length of face (where considered in relation to length of antenna) is measured from the level of the upper margin of the antennal sockets to the level of the centre of the lower margin of the face. Length of antenna in this context excludes the arista. Nomenclature used for the dark transverse bands on the wing (Fig. 1) is that previously used for platystomatids. Because of some diversity of terminology table 1 presents alternative terms used in the Manual of Nearctic Diptera (J. McAlpine 1981, with some particular terms for Platystomatidae by Steyskal 1987).

Details regarding type specimens and lists of material have already been given for previously described species (McAlpine 1973a). Such information is here given only for new species.

The following abbreviations refer to institutions housing specimens:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Location</th>
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<tbody>
<tr>
<td>AM</td>
<td>Australian Museum, Sydney</td>
</tr>
<tr>
<td>ANIC</td>
<td>Australian National Insect Collection, CSIRO, Canberra</td>
</tr>
<tr>
<td>BM</td>
<td>The Natural History Museum, London</td>
</tr>
<tr>
<td>QM</td>
<td>Queensland Museum, Brisbane</td>
</tr>
<tr>
<td>UQ</td>
<td>Department of Zoology and Entomology, University of Queensland, Brisbane</td>
</tr>
<tr>
<td>USNM</td>
<td>National Museum of Natural History, Washington, D.C.</td>
</tr>
</tbody>
</table>

**Taxonomic part**

*Euprosopia* Macquart

Type species: *Euprosopia tenuicornis* Macquart.

For full synonymy and references see McAlpine (1973a).

The genus *Euprosopia* is one of the largest in the Platystomatidae or signal flies, and has a preponderantly Oriental-Australasian distribution (McAlpine, 2001). The world total of species is estimated at c. 150,
including named species plus additional undescribed species sighted in collections. In Australia there are 39 previously named species (McAlpine 1973a), and I have seen at least 15 undescribed species. Adults are identifiable to genus by means of the keys in the above-cited publications, and the earlier publication (McAlpine 1973a) includes a key to Australian species. No larva of the genus has yet been identified.

Adults of *Euprosopia* species are commonly taken at fresh mammal dung in most suitable Australian habitats. It is apparent that dung is not usually, if ever, the larval substrate, and the little available information (McAlpine 1973a) suggests that immature stages live mainly in soil. The adults are of fairly strictly summer occurrence (December to March) in temperate Australia, and have not been found at dung baits set for other Diptera in autumn and spring. This suggests that the populations are mainly univoltine. Courtship and mating for a few species have been described (McAlpine 1973b). These observations are interesting in that they reveal how some of the highly specific secondary sexual modifications of both sexes are utilised.

**Infrageneric classification**

Division of *Euprosopia* into species groups has been attempted by Malloch (1931), mainly for Oriental species, and McAlpine (1973a) for Australian species. The many species inhabiting New Guinea-Melanesia have not yet received such treatment, but some appear to fit into Australian groups. The groups were set up to aid identification rather than accurately to reflect phylogenetic relationships.

The key to Australian groups given below uses the previously established groups with some modifications due to increase in knowledge of the fauna since 1973. The sp. 12 group includes two undescribed species in New Guinea and one in Queensland (sp. 12 in ANIC).

**Key to Australian species groups in Euprosopia**

1. Inner vertical bristle well developed; abdominal tergites scaleless .................................. 2
   - Inner vertical bristle absent or minute; abdominal tergites 3 and 4 often with scales .......................... 4

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**Fig. 1.** *Euprosopia monodon* McAlpine. Wing of out-group example to show terminology used for transverse bands.

**Fig. 2.** Reference map for distribution of *Euprosopia megastigma* group in eastern Australia. Numbers in each rectangle (2° longitude by 2° latitude) are numbers of recorded species. Map references are given under Distribution for each species.
2. A distinct black pteropleural bristle present (rarely duplicated); arista bare or almost so; face often with brown mark on each side connecting antennal groove to epistomal margin .......................... remota group

- Pteropleural bristle absent (fine black pteropleural setulae often present in addition to coarser whitish ones); arista noticeably haired near base; facial markings variable but generally not as above ........................................ 3

3. Mesopleuron with broad golden-pruinescent stripe just below middle, extending on to pteropleuron; two pairs of scutellar bristles; posterior notopleural callus with more than one bristle, at least in female ........ miliaria group

- Mesopleuron and sternopleuron without golden-pruinescent band; three pairs of scutellar bristles; posterior notopleural callus with one bristle and few small setulae ........................................ ventralis group

4. Tarsi entirely yellow; supra-alar bristle (between postalar and posterior notopleural bristle) absent; mid femur with a series of strong, black posteroventral bristles; microtrichia of wing membrane, particularly those in zone behind discal cell, forming long, dense, decumbent pubescence; size small, wing generally less than 5.4 mm long .......... 5

- Tarsi, beyond basal segment, largely dark brown to black; supra-alar bristle present; mid femur with posteroventral bristles very weakly developed or absent; microtrichia of wing membrane short and inconspicuous; size often larger ........................................ sp. 12 group

5. Abdominal sternite 1 entirely densely pale grey-pruinescent; arista three-segmented (segments 4 and 5 very short); fore tarsus entirely black; male: humeral bristle absent or minute; female: tegula very long, reaching to middle of humeral cal lus .......................................................... macrotegularia group

- Abdominal sternite 1 densely pale-pruinescent at sides, with large shining almost smooth median zone; arista two-segmented (segments 5 and 6 fused); fore tarsus with segment 1 largely pale yellowish (darker in E. alpina and E. celsa); male: humeral bristle present; female: tegula variably developed, but not reaching to humeral cal lus .................. 6

6. Scutellum with slight median groove at apex separating a pair of blackish shining swellings .......... separata group

- Scutellum neither blackish nor shining at apex, median groove usually indistinct or absent .......................................................... 7

7. Wing with discal band irregularly incised and often connected posteriorly with preapical band or part thereof, or completely broken into spots (e.g. Figs 10, 21, 26); preapical band, if distinct, irregular or broken into spots; female: surface of tergites 4 and 5 with numerous scales ................................ megastigma group

- Discal band (see Fig. 1) rather regular, neither incised nor fenestrated, quite separate from preapical band, which is simple, unbroken, transverse and sometimes connected to apical mark on costal margin; female: tergite 4 scaled at most only on posterior margin, tergite 5 scaleless ............ tenuicornis group

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**Table 1. Comparison of some morphological terms**

<table>
<thead>
<tr>
<th>Present term</th>
<th>Term in J.F. McAlpine 1981 (see also Steyskal 1987)</th>
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<tbody>
<tr>
<td>Antennal segment 3</td>
<td>First flagellomere</td>
</tr>
<tr>
<td>Cheek</td>
<td>Not defined (lateral area of head capsule below eye, including gena)</td>
</tr>
<tr>
<td>Epistomal margin</td>
<td>Lower facial margin</td>
</tr>
<tr>
<td>Humeral bristle</td>
<td>Postpronotal seta</td>
</tr>
<tr>
<td>Humeral cal lus</td>
<td>Postpronotum (doubtful homology)</td>
</tr>
<tr>
<td>Mesoscutum</td>
<td>Scutum (not as in Crosskey 1973)</td>
</tr>
<tr>
<td>Posterior cheek bristle</td>
<td>Clypeus (in error, see D. McAlpine 2007)</td>
</tr>
<tr>
<td>Vein 2</td>
<td>Vein R_{2+3}</td>
</tr>
<tr>
<td>Vein 3</td>
<td>Vein R_{4+5}</td>
</tr>
<tr>
<td>Vein 4</td>
<td>Vein M</td>
</tr>
<tr>
<td>Vein 5</td>
<td>Vein Cu1</td>
</tr>
<tr>
<td>Vein 6 (distal section)</td>
<td>Vein A_{1+CuA2}</td>
</tr>
</tbody>
</table>
The **megastigma** group

**Diagnostic description**
Inner vertical bristle absent or minute; face with or without pair of brown to blackish marks connecting inner margins of antennal grooves to epistomal margin, but without general irregular spotting; arista two-segmented through complete fusion of antennal segments 5 and 6; upper part of propleuron with glossy zone in front of spiracle, separating pruinose zone on humeral callus from that on lower propleuron, or almost so; humeral bristle present in both sexes; scutellum without pair of black, shining posterior swellings; three pairs of scutellar bristles present; usually all tarsi with segment 1 predominantly pale yellowish, browned apically, more extensively browned in *E. alpina* and *E. celsa*; wing with discal band irregularly incised and connected posteriorly with preapical band, or completely broken into spots; preapical band usually with separate piece behind vein 4, or extensively fused (e.g. *E. hollowayi*), or broken into spots; apical wing mark often enclosing a paler dot; abdominal tergites 4 and 5 scaled in both sexes, scales not restricted to posterior margins of these tergites; abdominal sternite 1 with large median shining zone separating lateral densely pruinose zones; male postabdomen typical (see McAlpine 1973a: Fig. 2), but details of aedeagus often providing specific characters.

My original separation of the **megastigma**, **maculipennis** and **scatophaga** groups was proposed as a step towards identification of the included species. Further study shows the defining group characters to be unreliable in some cases. For example, *Euprosopia maculipennis* of the ‘**maculipennis** group’ sometimes has a reasonably distinct discal wing band; *E. crispa* of the ‘**megastigma** group’ produces a few individuals with distinct paired dark facial spots below the antennal grooves. Various cross-resemblances between species of these groups further indicate their morphological inconsistency. I therefore unite them into one species group, termed the **megastigma** group.


The species of this group live in eastern Australia from the Daintree district, Queensland, to Tasmania, and westwards to the Adelaide district, South Australia (see map, Fig. 2). The first six species in the above list live mainly in cool highland habitats, at least in New South Wales, but two of them (*E. vitrea* and *E. maculipennis*) are also found in some coastal habitats. Except for a single Victorian record of *E. megastigma* only species in this first sub-group have been found in Victoria and Tasmania, where their distributions are inadequately known. *Euprosopia maculipennis* is the only species recorded for South Australia (Adelaide district). *Euprosopia tomaeaeae*, *E. danielsi*, and *E. filicornis* are apparently restricted to sandy areas near the seacoast of southern Queensland and New South Wales. Two species, *E. scatophaga* and *E. ramosa* live in the tropical zone of Queensland, mainly in hill forests. The remaining species, *E. hypostigma*, *E. subacuta*, *E. holmesi*, *E. hollowayi*, *E. crispa*, and *E. megastigma* live in hill forest (usually below 600 m altitude in New South Wales), but the last two also live in some coastal habitats.

**Key to species of the megastigma group**

1. Hind femur with broad, rounded basal ventral tubercle; arista with apical palette in both sexes; stigmatal and usually discal wing bands broken into spots; tergite 5 of female not more than half as long as tergite 4 ............... *maculipennis*

   - Hind femur without basal ventral tubercle; arista of female generally without apical palette; other characters variable ............... 2

2. Discal wing band broken into spots; face with pair of dark spots connecting inner margins of antennal grooves to epistomal margin ............... 3

   - Discal band completely crossing wing, but sometimes incised on costal margin or partly fused with other bands; facial markings variable ............... 7

3. Wing with irregular stigmatal band from costa to vein 4; central region of mesopleuron with predominantly white setulae; male: length of antenna at least 0.8 of length of face; arista without apical palette; paired terminal filaments of aedeagus equal in length ............... *albipila*

   - Stigmatal band represented only by a black blotch in subcostal and marginal cells; setulae on central region of mesopleuron black; male: length of antenna at most 0.6 of length of face; arista often without apical palette; terminal filaments of aedeagus at least slightly unequal in length ............... 4

4. Anterior carina of cheek with two or more
short transverse grooves at lower end; segment 1 of fore tarsus largely reddish brown to black, sometimes yellowish dorsally on c. basal half

Anterior carina of cheek without transverse grooves; segment 1 of fore tarsus pale yellowish with blackish apex

5. Male: preglans elongate, c. twice as long as its greatest diameter; terminal filaments of aedeagus very unequal in length, shorter one less than 2.5 × as long as glans............ celsa

Male: preglans smaller, less than twice as long as its greatest diameter; terminal filaments subequal in length, both c. 4 × as long as glans........................ alpina

6. Fore femur with only short, fine setulae on posteroverentral surface, or a few longer ones distally; fore tibia usually with a light brown zone near middle, which extends towards base dorsally; male: arista with broad, usually rounded, at least partly transparent apical palette; terminal filaments of aedeagus unequal, shorter one at least three times as long as glans; female: abdominal spiracle 5 located near posterior margin of tergite 5, above its posteroverentral angle........................ vitrea

Fore femur with a posteroverentral series of long whitish bristles for most of length; fore tibia entirely dark brown to black; male: arista with narrow black apical palette or none; terminal filaments subequal in length, up to c. twice as long as glans; female: abdominal spiracle 5 situated below lateral margin of tergite 5.................................. fimbripes

7. Two or three posterior notopleural bristles present; postfrons dark brown; lower lateral angles of face very broadly brown-black........ ramosa

Only one posterior notopleural bristle present; postfrons light yellow-brown, often with darker median patch; face with comparatively small dark mark on each lower lateral angle..................................................... 8

8. Palpus yellowish tawny; wing with discl band very broad and irregular, broadly fused with preapical band around vein 4, filling c. distal two fifths of discl cell; antenna short, less than half as long as face .......... hollowayi

Palpus at least partly dark brown with grey pruinescence; discl band narrower, covering much less of discl cell; antenna generally longer................................. 9

9. Tergite 3 with scales restricted to extreme posterior and lateral margins, at least in female (usually so in male); face usually without pair of dark marks connecting lower end of antennal grooves to epistomal margin; male: arista with small black obtuse terminal palette; female: basalar process erect basally, strongly curved forward distally; pleural membrane of abdomen scaleless........ crispa

Tergite 3 with both central and marginal scales; face usually with such pair of dark marks (except in E. megastigma); male: arista often apically filiform or with subterminal or finely acuminate palette; female: basalar process either undeveloped or not abruptly curved (gently curved forward in E. danielsi); pleural membrane of abdomen with variable vestiture.................................................. 10

10. Face without pair of dark marks connecting lower ends of antennal grooves to epistomal margin; median dark stripe of anterior part of mesoscutum discontinued at transverse suture; male: arista finely filiform distally, neither compressed nor with palette; abdominal spiracle 5 enlarged; female: pleural membrane of abdominal segment 5 with numerous scales........................ megastigma

Face generally with pair of dark marks connecting antennal grooves to epistomal margin; pleural membrane of abdominal segment 5 scaleless in both sexes; other characters variable........................................ 11

11. Vein 6 becoming unpigmented and desclerotised halfway between anal cell and wing margin, thereafter represented by a crease in membrane only.......................... filicornis

Vein 6 well developed for much more than half distance from anal cell to margin...... 12

12. Median brownish stripe on anterior part of mesoscutum extending far behind transverse suture; posterior outline of scutellum evenly rounded (viewed from above); median dorsal brown blotch of scutellum small or indistinct; female: tergite 3 with scales concentrated on median third and on posterior margin; basalar process elongate.......................... 13

Median brownish stripe on anterior part of mesoscutum abruptly interrupted at transverse suture; scutellum subtruncate, its outline nearly straight between apical bristles, with well developed median brown spot; female: tergite 3 with scales not markedly concentrated on median third, sometimes sparse; basalar process very short or undeveloped.......................... 14

13. Female: tegula short, its ventral hollow reaching approximately to its anterior margin; tergite 4 on median line only slightly longer than tergite 3, c. twice as long as tergite 5;
habitat: NSW, coast between 32°S and 33°S...
tomareae

- Female (male unknown): tegula slightly prolonged and thickened anteriorly beyond ventral hollow; tergite 4 c. 1.6× as long as tergite 3, much more than twice as long as tergite 5; habitat: Qld, coast between 25 and 28°S, danielsi

14. Males .................................................. 15

- Females .................................................. 18

15. Abdominal tergite 5 on median line much shorter than combined lengths of tergites 3 and 4 ................................................................. 16

- Abdominal tergite 5 at least as long as combined lengths of tergites 3 and 4 .................................................. 17

16. Arista with lanceolate preapical expansion; one of paired terminal filaments of aedeagus markedly shorter and thicker than other, apically expanded ............................................ scatophaga

- Arista compressed but not noticeably expanded just before the very fine apex; paired terminal filaments of similar length and thickness, both slightly contracted apically ......................... holmesi sp. n.

17. Habitat: S of Tweed River (Nimbin district to Dungog district) .......................................................... hypostigma

- Habitat: N of Tweed River (McPherson Range system); (male morphology inadequately known) .............................................................. subacuta

18. Abdominal tergite 5 very deeply V-cleft on centre of posterior margin, the closely approximated spiracles inserted in cleft; arista yellow-brown, becoming black only on distal third ................................................................. holmesi sp. n.

- Abdominal tergite 5 not medially cleft, though centre of posterior margin sometimes weakly sclerotised; arista variable in colour ................................ 19

19. Wing with preapical band broad, entire, and not much incised between veins 2 and 4, forming a complete V with discal band; arista usually yellow-brown on c. basal half, black distally .................................................... scatophaga

- Wing with preapical band broken or very deeply incised at vein 4; arista yellowish brown only on c. basal quarter, black or dark brown beyond .......................................................... 20

20. Abdominal spiracles 4 and 5 situated near posterolateral corners of tergites ......................................................... hypostigma

- Spiracle 4 situated between tergites 4 and 5, well above their lateral margins; spiracle 5 situated close behind tergite 5, rather close to median dorsal line .............................................................. subacuta

Figs 3–4. Euprosopia, distal parts of aedeagus. – 3, E. albipila (Buddingaroo Creek, N.S.W.); 4, E. vitrea (Boyd River, N.S.W.). Scale = 0.5 mm (both Figs).

Euprosopia albipila McAlpine
Fig. 3
Euprosopia albipila McAlpine, 1973a: 161–162, Fig. 56 (wing).

Distribution
New South Wales, Australian Capital Territory, and Victoria – highlands. Tasmania – various altitudes. Map references 5L, 5O, 6K, 6L, 7J, 8I (Fig. 2).

Notes
Euprosopia albipila is identifiable from the more or less complete stigmatal wing band from costa to vein 4, in combination with the fragmented discal band, mainly pale hairs or setulae of the mesopleuron, and the relatively long antenna, particularly of the male. The aedeagus has the terminal filaments of equal length, each slightly thickened near the apex and having the fine, dense transverse ridges and part of the apical surface with numerous minute denticles.

Euprosopia vitrea McAlpine
Fig. 4
Euprosopia vitrea McAlpine, 1973a: 165–166, Figs 57, 91, 94.

Distribution
Queensland. – Southeastern border district. New South Wales. – Mainly highlands, but reaching coastal lowlands at some localities. Australian Capital Territory. – Canberra district and adjacent highlands. Victoria. – Probably mainly highlands or hilly country. This species is abundant in many parts of New South Wales and in Australian Capital
Territory. Map references 3L, 5L, 5M, 6J, 6K, 6L, 7I, 7J, 7K, 8H, 8I (Fig. 2).

Notes
Among the species with the wing pattern completely broken into spots, *E. fimbripes* is distinguished by the combination of mainly black hairs on the mesopleuron, well-developed pale seriate posteroventral bristles on the fore femur, and absence of horizontal grooving on the anterior ridge of the cheek. From *E. maculipennis* it is further distinguished by the lack of a basal ventral tubercle on the hind femur and the broad, usually at least partly transparent apical palette of the arista in the male, which is absent in the female.

**Euprosopia fimbripes** McAlpine

Fig. 5


**Distribution**
New South Wales. – Southern highlands (few records). Australian Capital Territory. – Sometimes numerous near Canberra. Victoria. – Southeast, including Mornington Peninsula. Map references 4M, 5L, 5M, 6K (Fig. 2).

Notes
Among the species with the wing pattern completely broken into spots, *E. fimbripes* is distinguished by the combination of mainly black hairs on the mesopleuron, well-developed pale seriate posteroventral bristles on the fore femur, and absence of horizontal grooving on the anterior ridge of the cheek. From *E. maculipennis* it is further distinguished by the lack of a basal ventral tubercle on the hind femur and the broad, usually at least partly transparent apical palette of the arista in the male, which is absent in the female.

**Euprosopia alpina** McAlpine

Fig. 6


**Distribution**
New South Wales. – Highlands of far south, including summit vicinity of Mount Kosciuszko. Australian Capital Territory. – Various altitudes. Victoria. – Widely distributed in east but probably mainly highlands; also Grampians Range in west. Map references 3L, 4L, 6K, 6L (Fig. 2).

Notes
*Euprosopia alpina* is distinguished from other species with the wing marking completely broken into spots (except *E. celsa*), by the grooving on the lower part of the carina of the cheek and the darker first segment of the fore tarsus. The differences from *E. celsa* are slight, and the relative lengths of fore tarsus and tibia do not seem to provide a reliable separation. The characters of the aedeagus seem to provide strong differences between these supposed species,
but males of *E. alpina* are not available from some populations. A male from Hall’s Gap, western Victoria, has the aedeagus typical of *E. alpina*. At present it appears that *E. alpina* lives from the Canberra district southwards, whereas *E. celsa* lives on highlands to the north of the Hunter River. No population of this complex is known from intermediate highland localities such as the Blue Mountains and Boyd Tableland.

**Euprosopia celsa** McAlpine


**Distribution**

New South Wales. – Northern highlands from New England National Park to Barrington Tops district. Map references 7I, 7J, 8I (Fig. 2).

**Notes**

This species is very similar to *E. alpina* as noted under that species. It should be possible to distinguish between these two species by the male genitalia characters given in the key and their separate distributions.

**Euprosopia maculipennis** (Guérin-Méneville)

*Euprosopia maculipennis* Guérin-Méneville, 1831: pl. 21, Fig. 8.

*Platystoma australis* Macquart, 1846: 205, pl. 18, Fig. 5.

*Euprosopia maculipennis* Hendel, 1914: 149.

**Distribution**

Queensland. – South-eastern districts from Maroochydore southwards. New South Wales. – Highlands generally, extending to coast in some districts. Victoria. – Perhaps widely distributed. Tasmania. – North coast and Hobart district. South Australia. – Hills near Adelaide. Map references 1K, 3M, 4L, 4M, 4N, 5L, 5M, 5N, 5O, 6K, 6L, 7G, 7H, 7I, 7J, 7K, 8G, 8H, 8I (Fig. 2).

**Notes**

The ventral tubercle at the basal extremity of the hind femur distinguishes this species from all others of the *megastigma* group. Generally the wing pattern consists only of spots without transverse bands but occasional specimens have indications of a disca band. The mesopleuron has mainly white setulae near the centre as in *Euprosopia albipila*, but the antenna is not as long as in that species, particularly in males, and the size is usually larger.

**Euprosopia tomareae** sp. n.

*Fig. 9–13*

**Type material.** Holotype ♀: New South Wales: 4 km W of Anna Bay, near Port Stephens, 9–10.i.2005, D.K. McAlpine (AM, K227377). Paratypes: New South Wales: 2♂, 32♀, same data as holotype (AM, ANIC); 1♀, Shoal Bay, near Port Stephens, Jan. 1971, D.P. Sands (AM). The holotype was collected into ethanol and later micro-pinned, hardened in acetone, and dried. Consequently the thoracic colour pattern is more contrasted than in most paratypes and the preabdominal segments are less contracted, so that the spiracles are fully exposed.

**Description**

Moderately small fly for genus, with characters for *Euprosopia* as given by McAlpine (1973a) and for *megastigma* group as given above; general appearance much resembling that of *E. filicornis* McAlpine.

**Coloration.** Head predominantly yellowish buff; postfrons suffused with yellowish brown centrally
and posteriorly; face unspotted centrally or almost so, with slightly diffuse brown spot (rarely indistinct) between end of each antennal groove and epistomal margin; occiput mostly pale to darker brownish grey-pruinescent. Antenna tawny-brown, with yellowish brown base. Prelabrum tawny, with blackish zone on each side; palpus tawny-yellow only near base, dark brown with grey pruinescence beyond. Mesoscutum with largely dark brown ground colour, partly tawny yellow at sides, the whole covered by thick grey to brownish pruinescence and with dark brown markings including well developed median stripe from near anterior extremity to about level of prescutellar acrostichal bristles; scutellum greyish tawny, with only very indistinct dorsal blotching, tinged with brown at lateral extremity, more distinctly so in dorsal view; mesopleuron with tawny-brown to dark brown ground colour, covered with pale grey to brownish pruinescence and some golden pruinescence on upper margin; setulae on mesopleuron mostly black, sometimes some yellow ones near upper margin, posterior margin with some long whitish compressed setulae; sternopleuron with ground colour tawny above, dark brown below, covered with yellowish to greyish pruinescence. Fore coxa dark grey-brown; other coxae brown; femora dark brown with predominantly grey pruinescence; fore tibia brown with predominantly brown pruinescence; other tibiae tawny-brown, becoming darker grey-brown apically; basitarsi creamy yellow, very slightly browned apically; other tarsal segments brown. Wing markings, with a little variation, as in Figure 10; stigmatal band broad and dark, extending from costa to vein 5 or slightly beyond, generally somewhat incised or fenestrated; discal band broad and complete but irregular in outline, incised anteriorly, more or less separate from preapical band, which is largely broken into blotches; apical dark mark usually enclosing paler spot, which may be indistinct or occasionally absent; squama pale greyish brown, with whitish margin; halter pale yellowish. Abdomen largely grey-brown, with pale yellowish scales on tergites; tergites 3 and 4 without median grey-pruinescent zone.

Head. Very slightly higher than wide; height of cheek 0.27–0.31 of height of eye; outer vertical and posterior cheek bristle present; other cephalic bristles absent or undifferentiated. Antenna extending 0.67–0.87 (males), 0.65–0.72 (females) of distance from its basal insertion to epistomal margin on median line; segment 3 elongate (more so than in E. vitrea McAlpine and allied species); arista simple, segment 5 + 6 with minute pubescence near base only, attenuated and filiform distally in both sexes. Prelabrum moderately large and prominent; palpus moderately narrow, but slightly broadened apically.

Thorax. Humeral callus with rather long hairs in both sexes; scutellum rounded in outline; basalar in female with small but distinct suberect tapered process; process minute in male; tegula with normal degree of dorsal convexity and ventral concavity in both sexes; the following thoracic bristles well developed: prescutellar acrostichal, dorsocentral, humeral, 1 + 1 notopleurals, supra-alar, postalar, posterior intrala-alar, three pairs of scutellars, those of apical pair more widely separated than in E. vitrea, more as in E. filicornis.
Wing. Distal section of vein 4 very slightly converging with vein 3, slightly curved forwards at extreme apex; anterior crosseeve meeting vein 4 slightly before mid-length of discal cell; distal section of vein 6 sclerotised for most of length, only attenuated and fading close to margin. 

Abdomen. Tergite 2 with scales of various shapes restricted to posterior margin; tergite 3 with scales on central part and on posterior margin; tergites 4 and 5 with numerous elongate-oval, acuminate scales on surface; in male, tergite 5 on median line slightly shorter than combined lengths of tergites 3 and 4; spiracles in pleural membrane, progressively increasing in size from segment 1 to segment 5; in female, tergite 4 distinctly longer than tergite 3; tergite 5 c. 0.6 of length of tergite 4 on median line, quadrate, with posterior margin almost straight; spiral 4 situated in membrane very near posterolateral angle of tergite 4; spiral 5 situated in intersegmental membrane near posterior margin of tergite 5 and generally much closer to level of lateral margin of tergite than to median line (somewhat more dorsally placed in two of the 34 available females).

Male postabdomen. Aedeagus with preglans large and well defined; glans ovoid-cylindrical; terminal filaments of equal length, each c. as long as glans, moderately stout, slightly expanded apically, without trace of denticles.

Dimensions. Total length: ♂: 3.9–5.5 mm, ♀: 4.6–6.9 mm; length of thorax: ♂: 1.9–2.4 mm, ♀: 2.0–3.4 mm; length of wing: ♂: 4.2–5.3 mm, ♀: 4.6–6.7 mm; length of glans of aedeagus: 0.43–0.44 mm.

Distribution

New South Wales. – Only known from the Tomaree Peninsula or Nelson Bay district, between Newcastle Bight and Port Stephens Bay. Map reference 8J (Fig. 2).

The type locality, on the southwest part of this peninsula, is on stunted sclerophyll forest on sand adjacent to dunes. The further locality, Shoal Bay, is near the northeastern extremity of the peninsula. Lack of records from elsewhere does not prove that E. tomareae is endemic to the Tomaree Peninsula, but the extent of platystomatid collections in coastal New South Wales is sufficient to show this to be a species of rather limited distribution. Other Euprosopia species known from Tomaree Peninsula include E. filicornis McAlpine, 1973, E. remota McAlpine, 1973, E. tenuicornis Macquart, 1847, and E. anostigma McAlpine, 1973 (material in AM).

Notes

Within the megastigma group, E. tomareae agrees with E. danielsi and E. ramosa in having the discal wing band complete and the median dark stripe of the mesoscutum extending for most of the length of the mesoscutum without interruption at transverse suture. Like E. danielsi, it has the scutellum evenly rounded posteriorly and neither extensively browned dorsally nor with well marked median dorsal brown blotch, and the posterior notopleural callus with a single bristle. Unlike E. filicornis, E. holmesi, and E. scatophaga, these two species have no distinct apical yellow margin on the palpus, the distal part having dark brown ground colour obscured by dense pale grey pruinescence. Euprosopia tomareae has the markings of the mesoscutum heavier and darker than in E. danielsi, but otherwise separation from that species must depend for the present on secondary sexual characters of the female and on geographic provenance (between 32°40’S and 32°50’S for E. tomareae; between 25°50’S and 27°50’S for E. danielsi). In the female of E. tomareae the basalar process is distinct, but suberect and relatively small, and the tegula lacks the anterior pouch-like modification of E. danielsi, being without sexual dimorphism. In the female of E. tomareae abdominal spiral 4 is situated close to the posterolateral angle of tergite 4, instead of much higher in the intersegmental membrane, and the spiracles of segment 5 are much less dorsally approximated than in E. danielsi. Also tergite 4 of E. tomareae is less enlarged and convex than in E. danielsi, and tergite 5 is differently shaped.

Etymology

The specific epithet refers to the habitat on the Tomaree Peninsula, and is treated as a Latin feminine noun in the genitive case.

Euprosopia danielsi sp. n.

Figs 14–18


Other material examined. Queensland: 2 ♀, Rainbow Beach, E of Tin Can Bay, Nov. 1979, G. Daniels (AM).

Description

The male of this is as yet unknown. Very similar to E. tomareae, though averaging slightly larger, agreeing with description of that species except as indicated below.

Coloration. Generally as given for E. tomareae, but averaging slightly paler. Fore femur with trace only
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of yellowish ground colour. Markings on mesoscutum greyish and more diffuse than in *E. tomareae*, but median stripe not interrupted at transverse suture. Abdominal tergite 3 brownish, with grey-pruinescent median zone; tergite 4 brown, partly diffusely grey-pruinescent.

**Head.** Height of cheek 0.27–0.32 of height of eye.

**Thorax.** Basalare with slender, anteriorly curved, apically tapered process, distinctly longer than in *E. tomareae*; tegula anteriorly forming a compressed pouch, but not extending in front of transverse suture; humeral bristle often smaller or more slender than in *E. tomareae*, but variable. Distal section of vein 6 sclerotised for at least 0.7 of length.

**Abdomen.** Tergites 2 to 5 scaled as given for *E. tomareae*; tergite 4 conspicuously large, convex on posterior part, c. 1.6 × as long as tergite 3 on median line; tergite 5 short, not quadrate, its posterior margin with concave curvature and each lateral extremity very narrowly rounded compared to that of *E. tomareae*, spiracle 4 situated in pleural membrane c. as close to median line as to level of lateral margin.

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**Fig. 14.** *Euprosopia danielsi* (female), head.

**Fig. 15.** *Euprosopia danielsi* (female), right arista and associated parts. a4–a6, antennal segments 4 to 6.

**Fig. 16.** *Euprosopia danielsi* (female), part of thorax in front of right wing base, reversed to facilitate comparison with Fig. 11; 17, abdominal tergites 4 and 5, right posterolateral view; 18, tergite 5, posterodorsal view; spiracles of tergite indicated. bp, basalar process; t, tegula.

**Figs 16–18.** *Euprosopia danielsi* (female). – 16, part of thorax in front of right wing base, reversed to facilitate comparison with Fig. 11; 17, abdominal tergites 4 and 5, right posterolateral view; 18, tergite 5, posterodorsal view; spiracles of tergite indicated. bp, basalar process; t, tegula.
of tergite 4; spiracles of segment 5 moderately dorsally approximated on posterior margin of tergite 5 (somewhat as in *E. scatophaga*).

**Dimensions.** Total length: 7.1–7.8 mm; length of thorax: 3.1–4.0 mm; length of wing: 6.4–7.7 mm.

**Distribution**
Coastal southern Queensland, from Cooloola district to North Stradbroke Island. Map references 8F, 8G (Fig. 2).

**Notes**
*Euprosopia danielsi* is very similar to *E. tomareae* and distinguishable as noted under that species. The distinctive features of the tegula and abdomen are likely to be female-restricted (as deduced from study of both sexes of many other *Euprosopia* spp.), but the male, when discovered, may prove to have distinctive features of the aedeagus.

**Etymology**
The specific epithet refers to Greg Daniels, who has made significant collections of Australian platystomatids, including all available specimens of this species.

**Euprosopia filicornis** McAlpine

Fig. 19

*Euprosopia filicornis* McAlpine, 1973a: 170–171, Fig. 82.

**Distribution**
New South Wales. – Sandy coastal areas from Urun-ga district to Port Hacking district. Map references 7J, 7K, 8I, 8J (Fig. 2).
The species has been occasionally found in coastal suburbs of Sydney, including Rose Bay, Bronte, Centennial Park, Coogee, and Eastlakes. Loss of vegetated open space at Bronte and Coogee may perhaps have eliminated the local populations.

**Notes**
*Euprosopia filicornis* differs from other species of the *megastigma* group in the reduction of vein 6, which is sclerotised at most on half the distance from the anal crosvein to the wing margin. It resembles *E. tomareae, E. hypostigma, E. holmesi* and related species in the dark facial mark below the lower end of each antennal groove and the complete but irregular discal wing band, but differs from *E. holmesi* and *E. scatophaga* in the quite filiform arista of both sexes, and agrees only with *E. holmesi* in having tergite 5 of the female with deep posterior median incision into which the closely approximated spiracles are inserted. The anterior section of the median mesoscutal band is abruptly discontinued or attenuated at the transverse suture, unlike that of *E. tomareae* and *E. danielsi*, and the posterior outline of the scutellum is quite rounded, unlike that of *E. hypostigma, E. subacuta, E. holmesi, E. scatophaga* and *E. ramosa*. In the male, the long, approximately equal aedeagal filaments differ from those of related species in having the aperture (gonopore) preterminal and the long strip of cuticle extending far beyond on one side only. The section of the filament immediately before the aperture has very many minute external denticles giving a file-like appearance under high magnification.
**Euprosopia hypostigma** McAlpine


**Supplementary description**

**Male preabdomen.** Tergite 5 nearly twice as long as combined length of tergites 3 and 4; tergite 2 with median posterior zone of dense black setulae, contrasting with finer mostly pale setulae of rest of tergite; tergite 3 with relatively few or no scales except for posterior marginal ones.

**Male postabdomen.** Aedeagus with elongate, subcylindrical glans; terminal filaments apparently subequal, slender, gradually becoming finely attenuated distally, without apical modification or file-like denticles, each c. 20 × as long as glans.

**Dimensions.** Male: total length: 6.8–7.7 mm; length of thorax: 4.2–4.5 mm; length of wing: 8.6–9.0 mm; length of glans of aedeagus: 0.67–0.73 mm.

**Distribution**

New South Wales. – Hill rainforest localities from Richmond River district to Allyn River, S of Barrington Tops. Map references 7J, 8H, 8I (Fig. 2).

**Notes**

*Euprosopia hypostigma* belongs among the species with paired dark facial marks below the antennal grooves and the wing with complete, irregular discal band and fragmented preapical band. Unlike *E. tomareae* and *E. danielsi*, the median dark stripe of the mesoscutum is interrupted at the transverse suture and the three brown marks on the scutellum are very distinct and dark. The female is distinguishable from that of *E. subacuta*, *E. holmesi*, and *E. scatophaga* by having the spiracles of segment 5 separated by about the full width of the tergite. The male (previously undescribed) has tergite 5 longer in relation to tergites 3 and 4 than in other species, apparently excepting the little known *E. subacuta*, and the terminal filaments of the aedeagus are longer and more attenuated than in all other investigated species, but the aedeagus of *E. subacuta* remains undescribed.

**Euprosopia subacuta** McAlpine

*Euprosopia subacuta* McAlpine, 1973a: 169, Fig. 81.

**Distribution**

McPherson Range on border of Queensland and New South Wales. Map reference 8H (Fig. 2).

**Notes**

*Euprosopia subacuta* is still known from very few specimens and the aedeagus has not been examined. It is very similar to *E. hypostigma* but the position of the fifth pair of abdominal spiracles in the female is markedly different (see McAlpine 1973a: Figs 81, 84).

**Euprosopia holmesi** sp. n.

Figs 21, 22


**Other material examined** (localities only given). New South Wales: Mount Warning, near Murwillumbah (AM); Terania Creek and vicinity, via The Channon, Lismore district (AM). Queensland: Bulburin (Austral Forest), Monto district (AM, QM, UQ, USNM).

**Description**

Resembling *E. tomareae* and agreeing with description of that species except as indicated below.

**Coloration.** Postfrons yellow with slight brownish suffusions posteriorly and laterally, with whitish-pruinose orbital margins; pair of brown lower facial spots distinct; anterior yellowish brown region of cheek appearing sharply darker than whitish buff posterior region in side view. Arista yellowish brown on more than basal half; black on c. apical third. Palpus largely with dark brown ground colour obscured by pale grey pruinosence, at apex and to some extent on subapical upper and lower margins yellow with pale pruinosence. Thorax slightly darker than in *E. tomareae*, median dark brown stripe of mesoscutum present anteriorly, discontinued at level of transverse suture, reforming posteriorly; scutellum with three dark brown dorsal blotches, not reaching...
apical part, and variable, often diffuse brown zone on each lateral extremity; mesepimera with variable number of yellow mixed with black surface setulae, yellow ones predominating towards upper margin. Femora and tibia generally with some tawny areas; basitarsi creamy, more strongly browned apically than in *E. tomareae*. Wing markings approximately as in *E. tomareae*; preapical band very irregular and incised or broken, tending to join discal band near base of distal section of vein 4, but generally not forming such a definite V-shaped mark with discal band as in *E. scatophaga*; halter tawny-yellow.

Abdominal tergite 3 generally entirely brown; tergite 4 brown, with median anterior greyish zone.

**Head.** Nearly or quite as high as wide; height of cheek 0.30–0.33 of height of eye. Length of antenna 0.62–0.66 (males), 0.57–0.63 (females) of length of face; arista (segment 5 + 6) not sexually dimorphic, beyond mid-length compressed but neither tapered nor markedly expanded, only becoming finely filiform on c. apical sixth of length.

**Thorax.** Scutellum not evenly rounded, its apical margin in dorsal view almost straight or slightly impressed in centre; basalar in both sexes without process, or with very slight pubescent anterodorsal prominence in some females; tegula simple in both sexes as in *E. tomareae*; humeral bristle large in both sexes.

**Wing.** Vein 6 well sclerotised as in *E. tomareae*.

**Abdomen.** In male, tergite 5 longer than tergite 4, but much shorter than combined length of tergites 3 + 4; in female, tergite 4 slightly longer than tergite 3; tergite 5 shorter, somewhat boomerang-shaped, its posterior margin narrowly, deeply incised medially and each lateral extremity narrowly rounded; spiracle 4 in intersegmental membrane, much closer to median line than to level of lateral margin of tergite 4; spiracles of segment 5 approximated in median incision of tergite 5.

**Male postabdomen.** Aedeagus with preglans sharply defined, somewhat elongate; glans ovoid-cylindrical; terminal filaments of only slightly unequal length, c. 7.5–8.0 × as long as glans, thick walled, of moderate and almost uniform thickness, but each contracted on very short apical section, with external dense minute denticles only on this apical section.

**Dimensions.** Total length: ♂: 7.0–7.7 mm, ♀: 5.6–8.3 mm; length of thorax: ♂: 3.6–4.0 mm, ♀: 3.0–4.2 mm; length of wing: ♂: 6.9–7.7 mm, ♀: 6.1–8.1 mm; length of glans of aedeagus: 0.53–0.55 mm.

**Distribution**

New South Wales. – Widely distributed in rainforests on the eastern edge of the Great Dividing Range,
from Mount Warning, Murwillumbah district, in north, to Wattagan Range, W of Lake Macquarie, in south; also in relic patches of littoral rainforest at Camden Head and Harrington. Queensland. – Only known from Monto district, west of Bundaberg. Map references 7F, 7J, 8H, 8I (Fig. 2).

Notes

*Euprosopia holmesi* agrees with those species of the *megastigma* group that have a complete discal wing band and paired dark facial marks below the antennal grooves. It differs from *E. tomareae* and *E. danielsi* in its apically subtruncate scutellum with heavy dark brown markings, the interrupted median stripe on the mesoscutum, and the slightly but distinctively modified arista in both sexes. It differs from *E. ramosa* in the much paler postfrons and single posterior notopleural bristle, from *E. filicornis* in the extensively sclerotised vein 6 and modified arista, and from *E. hypostigma* and *E. subacuta* in the modified arista and posteriorly cleft female tergite 5. The most closely related species is apparently *E. scatophaga*, with which I formerly doubtfully included *E. holmesi* (McAlpine 1973a, specimens from Upper Allyn). *Euprosopia holmesi* differs from *E. scatophaga* in the more irregularly and deeply incised preapical wing band, in the male by the lack of a definite preapical lanceolate palette on the arista and in the aedeagus, which has two long but unequal terminal filaments, the longer one markedly more slender than the other on c. its distal half.

*Euprosopia ramosa* McAlpine


Distribution

Northern Queensland, from Daintree district to southern end of Atherton Tableland; near sea level near Daintree and in the higher rainforests of the tableland. Map reference 4B (Fig. 2).

The range lies to the north of that of all other recognised species of this group.

Notes

*Euprosopia ramosa* somewhat resembles *E. hypostigma*, *E. scatophaga*, and related species, but differs in having the postfrons almost entirely brown (instead of yellowish-tawny in large part), the dark facial mark below each antennal groove extending to and filling lower lateral angle of face (instead of being quite isolated), the prelabrum dark brown with a yellowish median anterior zone, the extensive brown dorsal zone of the scutellum undivided, and the stigmatic band of the wing broadened anteriorly and divided in marginal and submarginal cells by a clear zone (appearing anteriorly forked). In all six available specimens (including one male) there are two or occasionally three bristles on the posterior notopleural callus (only one such bristle present in other species). Because of the shortage of specimens, I have not examined the aedeagus.

*Euprosopia crispa* McAlpine

(Fig. 24)

*Euprosopia crispa* McAlpine, 1973a: 160–161, Fig. 66.

Distribution

New South Wales. – Coast and highlands, latter mainly in northern half of state where it extends inland to Mount Kaputar National Park and Warrumbungle Range. Map references 6I, 6K, 7I, 7J, 7K, 8H (Fig. 2).

Common in some forested localities.
Euprosopia crispa is among the species with the stigmatal wing band largely broken into spots in combination with the complete, though very irregular and incised, discal band. It can usually be distinguished from E. megastigma at low magnification by having the discal band narrower anteriorly and somewhat curved, rather than dilated towards the costa. The posteroventral series of bristles on the distal half of the fore femur is much more developed than in E. megastigma. Usually the face lacks the dark mark below each antennal groove, as in E. megastigma and E. hollowayi, but in a very few specimens, evidently belonging in populations of E. crispa, such marks are visible. The male has a minute but distinct dark apical palette on the arista and the aedeagus has a large stout preglans, not very sharply set off from the stipe, membranous on one side and thus tending to collapse; the terminal filaments are longer and more slender than in E. megastigma, each densely, minutely denticulate towards apex. The female has the basalar process well developed, erect basally and strongly curved forward distally; the abdominal pleural membrane lacks scales.

Euprosopia megastigma McAlpine

Fig. 25


Distribution
Queensland. – Far southeast only. New South Wales. – Widely distributed, mainly in areas of higher rainfall and lower altitude; often common in rainforests. Victoria. – Single available record, Healesville district (ANIC). Map references 4L, 6L, 7I, 7J, 7K, 8G, 8H, 8I, 8J (Fig. 2).

Notes
Euprosopia megastigma belongs with E. crispa and E. hollowayi in the small group of species with a complete discal wing band and no dark facial mark below each antennal groove. It differs from E. crispa in the anteriorly broadened but fenestrated discal band, narrower palpus, and presence of three distinct brown dorsal marks on the scutellum. The male lacks the apical palette of the arista present in that species, the preglans of the aedeagus is smaller than in E. crispa. The female differs from that of other species of the group in the presence of lanceolate scales on the pleural membrane of abdominal segment 5 (not always visible in dried specimens), and from that of E. crispa in the absence of a distinct basalar process. Euprosopia megastigma differs from E. hollowayi in the longer antenna (particularly in the male), the largely dark brown palpus with grey pruinescence (tawny-yellow in E. hollowayi), and the distally less extensively infuscated wing (see details under latter species).

Kathleen M.I. English provided a reared male specimen of E. megastigma (now paratype, K69746, in AM) with puparium and the following label data:
McAlpine: Australian signal flies – *Euprosopia megastigma* group


*Euprosopia hollowayi* McAlpine

Fig. 26

*Euprosopia hollowayi* McAlpine, 1973a: 158, Fig. 54.

**Distribution**

Queensland. – Southeast; records from Gympie-Imbil district, Bunya Mountains, Toowoomba (escarpment), and D’Aguilar Range (NW of Brisbane). New South Wales. – Grafton (Clarence River district, single record, 1926, in ANIC). Map references 7G, 8G, 8H (Fig. 2).

The species appears to be of restricted distribution and localised within its range, living mainly in rainforest and dry vine forest. Further investigation is needed to determine if or where it still survives in New South Wales.

**Notes**

*Euprosopia hollowayi* is readily distinguished from other Australian *Euprosopia* species by the wing pattern (Fig. 26). The discal and preapical bands are broadly fused to form an irregular blackish field that occupies a large part of the first posterior and discal cells. The stigmatal band is also very broad where it crosses the discal cell and towards the posterior margin. It further differs from related species in the short antenna (less than half as long as face in both sexes) and the yellowish-tawny palpus (much darker, at least in part, in other species of the *megastigma* group). Only a single damaged preparation of the aedeagus is available: the glans is short ovoid and the terminal filaments apparently at least eleven times as long as the glans, moderately slender and gradually tapered, but both are broken.

**Acknowledgments**

I am indebted to Helen M. Smith for drawing some of the illustrations and for electronic processing of the manuscript. Suzanne M. Lindsay performed the electron microscopy. Greg Daniels and Barry J. Day collected much material for this study.

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Received: 16 November 2006

Accepted: 18 January 2007