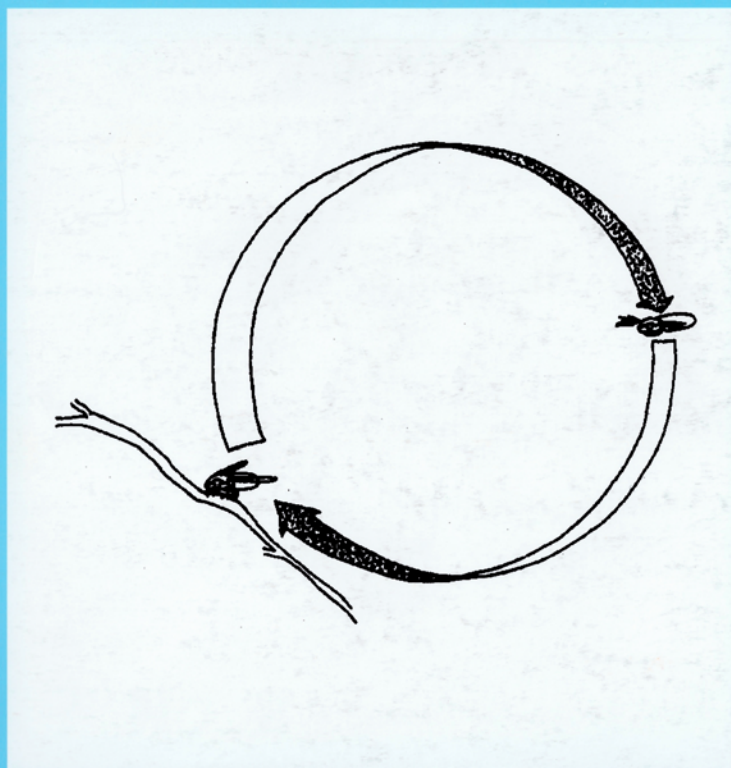
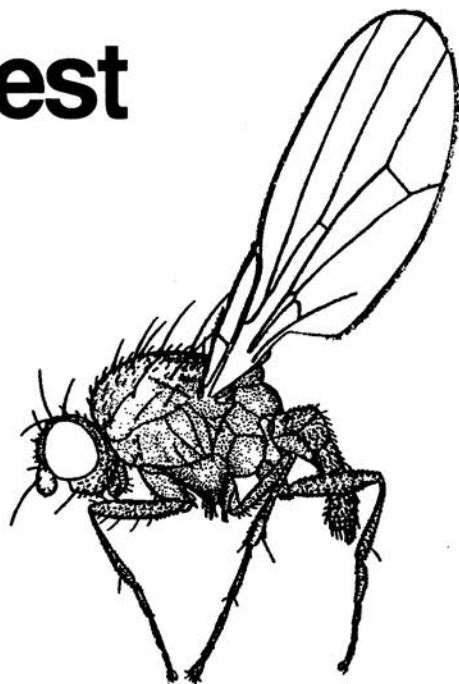


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Peter J. Chandler, 43 Eastfield Road,
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Dipterists Digest is the journal of the **Dipterists Forum**. It is intended for amateur, semi-professional and professional field dipterists with interests in British and NW European flies. All notes and papers submitted to **Dipterists Digest** are refereed. The scope of **Dipterists Digest** is:

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- new and improved techniques (e.g. collecting, rearing etc.);
- the conservation of flies;
- provisional and interim reports from the Diptera Recording Schemes, including maps;
- records and assessments of rare or scarce species including those new to regions, countries etc.;
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- descriptions of species new to science;
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The British species of *Lasiambia* Sabrosky (Diptera, Chloropidae)

J.W. ISMAY

Hope Entomological Collections, Oxford University Museum of Natural History, Parks Road,
Oxford, OX1 3PW

Summary

The British species of *Lasiambia* and *Polyodaspis* are keyed and the species of *Lasiambia* are discussed. Lectotypes and paralectotypes for *Lasiambia baliola* (Collin, 1946) are designated. *Lasiambia coxalis* (von Roser, 1840) is formally added to the British list.

The British species which have at one time been placed in the genera *Goniopsita* Duda, *Fiebrigella* Duda and *Lasiambia* Sabrosky are now placed in *Lasiambia* (Ismay 1998). They belong to a small group of genera of Oscinellinae in which the postocellar setae (and usually also the ocellar setae) are upright and parallel (Fig. 1) and the gena below the eye is obliquely divided into a rugose and shining posterior and ventral part, and a silver dusted anterior and dorsal part which is contiguous and similar to the face (Sabrosky 1987).

The postocellar setae are the pair of setae directly posterior to the ocellar tubercle and have been referred to as the postvertical setae in some publications (e.g. Colyer and Hammond 1968). Most setae are slightly thickened and may arise from small tubercles. The face has a facial carina separating the antennae, in some species extending to the mouthedge (Fig. 12). The group was considered as the *Polyodaspis* genus group in Andersson (1977) and Kanmiya (1983). In Britain the genus *Polyodaspis* Duda is the only other genus belonging to this genus group. In Chloropidae the scutellum has marginal setae, usually an apical pair and a varying number of subapical pairs. The number, size and relative separation of the setae offers good characters at the generic and specific level. *Polyodaspis* differs from *Lasiambia* in that most species have the apical scutellar setae approximated, the numerous subapical marginal setae small and even in size (Fig. 3) and the head is longer with the long axis of the eye more horizontal (Fig. 4), while in *Lasiambia* the apical scutellar setae are not strongly approximated (Fig. 6), the remaining setae are longer and the head is shorter with a more vertical long axis to the eye (Fig. 2). However, *Polyodaspis sulcicollis* (Meigen) has widely separated apical scutellar setae (Fig. 5).

There are considerable problems with the delimitation of genera in this group (Andersson 1977; von Tschirnhaus 1992) and in this paper existing combinations are used. Any further changes should be based on examination of the considerable world fauna of the genus group. A key to the British species of *Polyodaspis* and *Lasiambia* is included in this paper, since it is easier to produce a key to species of both genera than attempt to separate the genera. The British species of *Polyodaspis* are not considered in the body of the paper.

Collin (1946) included the species, here placed in *Lasiambia*, in *Goniopsita* with *Lasiambia* as a subgenus. In Ismay (1976), the two groups were treated as separate genera. Sabrosky (1970) considered that the correct name for *Goniopsita* was *Fiebrigella*. Tschirnhaus (1992) did not consider that the type species of *Fiebrigella*, *F. verrucosa* Duda was congeneric with the Palaearctic species placed in *Fiebrigella* and proposed that the latter should be placed in *Lasiambia*. *Lasiambia* should be attributed to Sabrosky (1941) since Enderlein (1936) did not select a type-species for the genus.

This paper has been written because *L. coxalis* (von Roser 1840), a further species related to *L. palposa* (Fallén), has been added to the British List and there has been difficulty in distinguishing between *L. brevibucca* (Duda) and *L. baliola* (Collin).

The abbreviation OXUM is used for the Oxford University Museum of Natural History.

Key to British species of *Polyodaspis* and *Lasiambia*

- 1 Scutellum (Fig. 3) with approximated apical setae and numerous subapical setae which are even in size; facial carina extending to mouth edge (Fig. 12); cell br greatly broadened at centre, greatest width at base of R_{2+3} nearly twice length of cross-vein r-m; halteres black. *Polyodaspis ruficornis* (Macquart)
- Scutellum without numerous subapical setae even in size 2
- 2 Some setae or setulae white; head elongate with more horizontal long axis of eye (Fig. 4); 1+1 notopleural setae; apical scutellar setae widely separated (Fig. 5) *Polyodaspis sulcicollis* (Meigen)
- All setae and setulae black; head less elongate with more vertical long axis of eye (Figs 2, 7, 13, 14) (*Lasiambia* Sabrosky) 3
- 3 Vibrissal angle (Figs 2, 7) produced anterior to anterior margin of eye 4
- Vibrissal angle (Fig. 13, 14) less produced, scarcely extending anterior to anterior margin of eye 6
- 4 Cell br (Fig. 9) greatly broadened at centre, greatest width at base of R_{2+3} nearly twice length of cross-vein r-m; frons narrower with few setulae (Fig. 8); 1+2 notopleural setae *L. parcepilosa* (Collin)
- Cell br (Fig. 11) scarcely broadened at centre; frons broader with very numerous setulae arising from small punctures (Fig. 10); 1+1 notopleural setae 5
- 5 Tip of male abdomen (Fig. 16) with two flange-like extensions to membrane anterior to synsternite 7+8 on either side of epandrium *L. coxalis* (von Roser)
- Tip of male abdomen (Fig. 15) lacking lateral extensions to membrane anterior to synsternite 7+8 *L. palposa* (Fallén)
- 6 Scutellum appearing more coarsely punctate and dull due to fine dusting over whole disc; tibiae distinctly pale at both ends; palpus yellow, not so greatly enlarged and with short setulae; gena with single row of setulae on narrowly darkened ventral margin (Fig. 13); tergite 5 1.5 times length of tergite 4 *L. brevibucca* (Duda)
- Scutellum appearing not so punctate and more shining, since the disc of scutellum without dusting; tibiae almost entirely black; palpus brownish and stouter, with more distinct, short setulae; gena with setulae in more than a single row (Fig. 14); tergite 5 twice length of tergite 4 *L. baliola* (Collin)

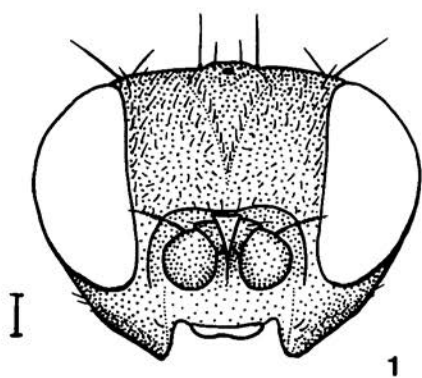
L. parcepilosa (Collin, 1946)

Goniopsita parcepilosa Collin; Collin 1946: 122.

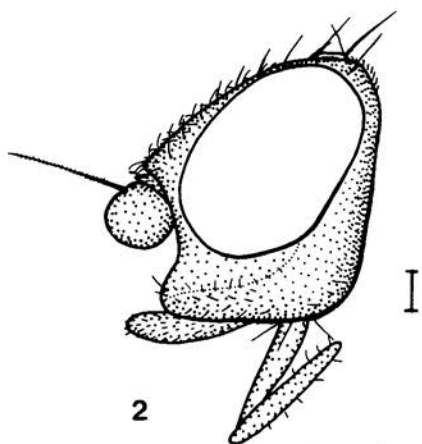
Fiebrigella (Fiebrigella) parcepilosa (Collin); Nartshuk 1984: 235.

Lasiambia parcepilosa (Collin); Ismay 1998: 147.

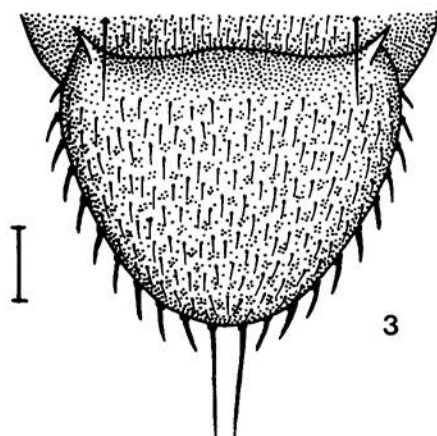
Figs 1-6. 1, *Lasiambia palposa*, head, anterior view; 2, *L. palposa*, head, lateral view; 3, *Polyodaspis ruficornis*, scutellum, dorsal view; 4, *P. sulcicollis*, head, lateral view; 5, *P. sulcicollis*, scutellum, dorsal view; 6, *L. palposa*, scutellum, dorsal view. Scale line 0.1mm.



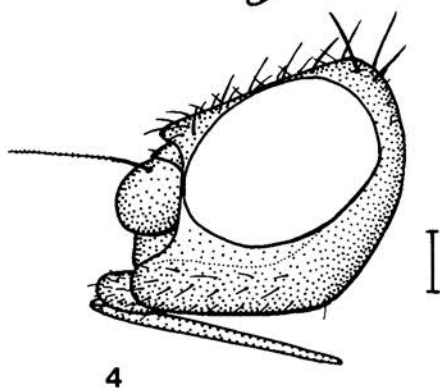
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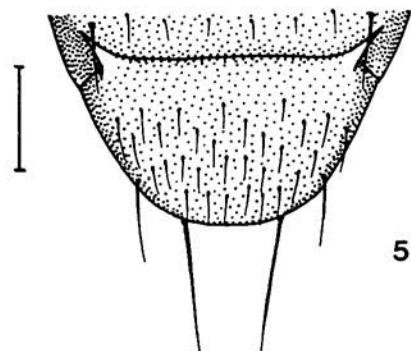
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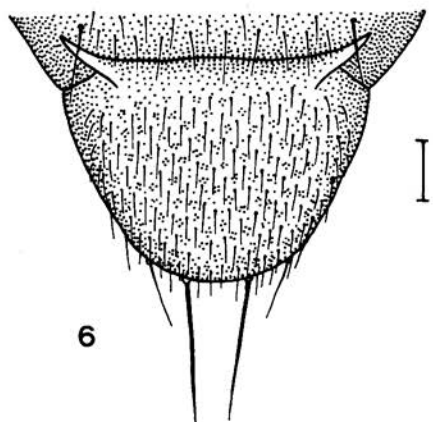
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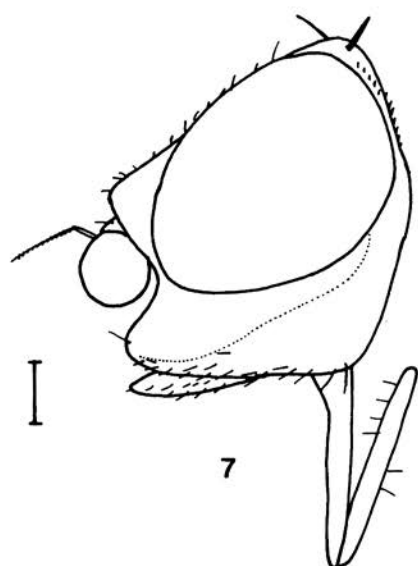
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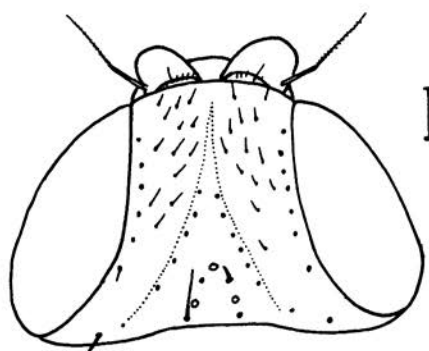
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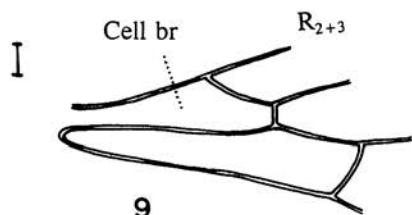
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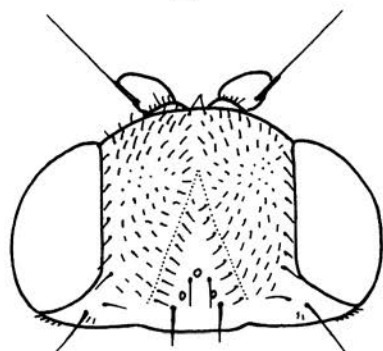
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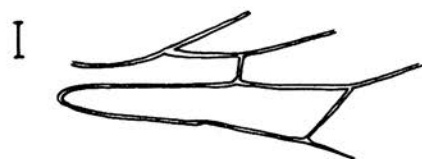
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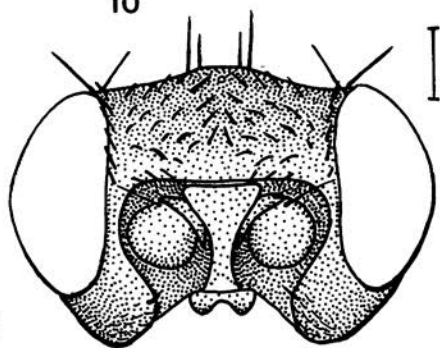
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12

L. parcepilosa differs from *L. palposa* and *L. coxalis* in the very produced vibrissal angle (Fig. 7) and the dorsal anterior part of the gena being less silver dusted than in the other two species. The difference in the density of setulae on the frons (Figs 7, 8) is also very striking. The halteres are yellow in *L. palposa* and *L. coxalis*, but darkened in *L. parcepilosa*. The species has many characters in common with *Polyodaspis ruficornis*; it has a deep facial carina, broadened cell br; 1+2 notopleural setae and darkened halteres. It is only known from the holotype, which was collected at Cambridge by F. Jenkinson in October 1920. The specimen may have been a casual introduction from abroad since the species has not been recorded again in the UK or abroad. There are over 30 described species of *Lasiambia* from all faunal Regions except Antarctica and many further undescribed species.

Material examined: Holotype, 1 female, Cambridge, x.1920, F. Jenkinson. In OXUM.

***L. palposa* (Fallén, 1820)**

Oscinis palposa Fallén; Fallén 1820: 6.

Goniopsita palposa (Fallén); Duda 1933: 109.

Goniopsita palposa (Fallén); Collin 1946: 122.

Goniopsita palposa (Fallén); Ismay 1976: 91.

Fiebrigella (Fiebrigella) palposa (Fallén); Nartshuk 1984: 235.

Lasiambia palposa (Fallén); Ismay 1998: 147.

This species shows considerable variation in the colour of the trochanters and apices of the anterior and middle coxae, which may be little paler than the remainder of the legs to bright yellow and in the colour of the wing base, which may be almost unicolorous with the remainder of the wing or strikingly paler. *L. palposa* is found throughout Britain but is rarely recorded, usually from dry areas such as sand dunes and inland heaths. In Europe it has been reared from egg masses of Acrididae (Orthoptera) (Uvarov 1928). The records of this species below are confined to males, since the female apparently cannot be distinguished from *L. coxalis*. Andersson (1977) figured the postabdomen of the female of *L. palposa* but no females definitely associated with males of *L. coxalis* were available for study. The record from the Burren appears to be the first Irish record.

Material examined: ENGLAND, 1 male, Suffolk, Cavenham Heath NNR, 20.viii.1977, I.F.G. McLean; WALES, 1 male, 20.vi.1903 and 1 male, 30.vi.1906, Glamorgan, Porthcawl, J.W. Yerbury; 1 male, Merionethshire, Morfa Bychan, 16.vii.1976, J.H. Cole, SH 5436; 1 male, Merionethshire, Morfa Harlech, viii.1977, P. Skidmore; SCOTLAND, 1 male, Dumfries; Newbie, v.1993, J.W. Ismay, water trap; 1 male, Fife, Tentsmuir NNR, 3.vii.1977, I.F.G. McLean, slacks; 8 males, Nairnshire, Nairn, 26.vii.1905, J.W. Yerbury; 4 males, Nairnshire, Culbin Sands, 16.vii.1991, J.W. Ismay, coastal dunes, NH 898577; 1 male, Perthshire, Loch Aboyne, Aboyne, 30.viii.1999, A. Godfrey, in water trap by loch edge; IRELAND, 1 male, Clare, Burren, Glenisheen, 25.vii.1971, M.G. Morris, *Dryas* heath.

Figs 7-12. *Lasiambia parcepilosa*, head, lateral view; 8, *L. parcepilosa*, head, dorsal view; 9, *L. parcepilosa*, wings cells br and bm + dm; 10, *L. palposa*, head, dorsal view; 11, *L. palposa*, wings cells br and bm + dm; 12, *Polyodaspis sulcicollis*, head, anterior view. Scale line 0.1mm.

***L. coxalis* (von Roser, 1840)**

Chlorops coxalis von Roser; von Roser 1840: 62.

Goniopsita oophila Hennig; Hennig 1941: 198; Nartshuk 1994: 54.

Lasiambia coxalis (von Roser); Nartshuk 1994: 154.

The male of this species is easily distinguished from *L. palposa* by the abdomen, but no reliable characters common to both sexes have been found and records are therefore based on males. In *L. palposa* the male postabdomen has no processes lateral to synsternite 7+8 (Fig. 15), but in *L. coxalis* there are two pairs of black processes between tergite 5 and synsternite 7+8 (Fig. 16). These processes are separate from the synsternite and appear to be outgrowths of the intersegmental membrane. Both *L. palposa* and *L. coxalis* have a broadly triangular and pointed surstylus (Fig. 20). The epandrium is similar in both species, but the cerci are more rounded and less pointed in *L. coxalis* (Fig. 18), compared with *L. palposa* (Fig. 17). The hypandrium of *L. palposa* has a more angulate lateral arm (Fig. 19) than that of *L. coxalis* (Fig. 21). The differences in width of gena between *L. palposa* and *L. coxalis* (as *oophila*) illustrated in Hennig (1941) appear to vary within both species and are not reliable. The three males examined have bright yellow trochanters and anterior coxae but similar coloration may occur in *L. palposa*.

Hennig (1941) recorded the species (as *oophila*) from the egg masses of *Chrysoschraon dispar* Germar (Acrididae). The British records are from dry grassland areas which probably favour Orthoptera, but neither this nor the last species have been reared in Britain.

In Duda (1933) and Nartshuk (1984), *L. coxalis* was considered a synonym of *L. palposa*, but Nartshuk (1994) examined von Roser's type material and considered *L. coxalis* a senior synonym of *L. oophila* Hennig.

Material examined: ENGLAND: 1 male, Suffolk, RAF Barnham, 12.viii.1995, I. Perry; 1 male, same locality and date, J.H. Cole, heath with trees and bushes, TL 855800 - TL 857804; 1 male, Wiltshire, Porton Down, 7.viii.1998, J.W. Ismay, chalk grassland.

***L. brevibucca* (Duda)**

Goniopsita brevibucca Duda; Duda 1933: 107.

Goniopsita (Lasiambia) brevibucca Duda; Collin 1946: 123.

Lasiambia brevibucca (Duda); Ismay 1976: 91.

Lasiambia (Lasiambia) brevibucca (Duda); Nartshuk 1984: 235.

Lasiambia brevibucca (Duda); Ismay 1998: 147.

L. brevibucca has a more vertical long axis to the eye (Fig. 13) than *L. baliola* (Fig. 14). There is slight sexual dimorphism in this species, in that the gena is slightly broader in the female and females of *L. brevibucca* may have more than uniserial setulae on the gena. Both species have 1+1 notopleural setae subequal in size, but there is a much smaller second posterior notopleural seta dorsal to the larger one. In the male genitalia the epandrium of both *L. brevibucca* and *L. baliola* have the cerci fused at the base but separated apically, but the space between them is U-shaped and rounded in *L. brevibucca* (Fig. 24) and V-shaped and more square in *L. baliola* (Fig. 25). The surstylus of *L. brevibucca* is short and more strongly and abruptly curved towards the cerci (Fig. 24), while in *L. baliola* it is a little longer but more gently curved (Fig. 25). In both species the hypandrium has a broad ventral margin, more deeply incised in *L. baliola* (Fig. 27). In *L. brevibucca* the apex of the lateral arm of the hypandrium has a more strongly developed flange (Fig. 26) than in *L. baliola* (Fig. 27). The female postabdomen of *L.*

brevibucca was figured by Andersson (1977) and no differences in the postabdomen between *L. brevibucca* and *L. baliola* were found.

This species was reared from sappy horse chestnut (*Aesculus hippocastanum*) bark at Moccas Park, Herefordshire in 1997 (Godfrey 1998) and the specimens collected by T.R.E. Southwood were from knockdown samples from oak (*Quercus* spp.). Robertson (1999) recorded *L. brevibucca* from exposed heartwood of a sycamore (*Acer pseudoplatanus*) with heartrot and small sap runs on 18.vii and 3.viii.1998 in Leith, Midlothian, Scotland. Godfrey (*in litt.*) states: "I have taken both *Lasiambia baliola* and *L. brevibucca* from Moccas Park. Collection methods have been by direct collecting on fallen branches and trunks, in a water trap placed in the bole of a veteran oak, by interception trap and by rearing from sappy *Aesculus* bark". Both species seem to be associated with sap flows, damaged trees or rotholes, but the exact nature of the association is unclear. The adults may visit sap flows for feeding but develop in dead wood or may live in sap flows as larvae. There is certainly an association with veteran or damaged trees.

Material examined: ENGLAND: 1 male, Berkshire, Bucklebury Common, 17.vii.1994, P.J. Chandler; 1 female, Berkshire (now Oxfordshire), Bagley Wood, *Q. petraea*, 5.vii.1984, T.R.E. Southwood; 1 female, 19.vii.1984 and 1 male, *Q. robur*, 18.vi.1984, same locality and collector; 1 female, Berkshire (now Oxfordshire) near Cothill, 9.vii.1991, J.W. Ismay; 1 female, Berkshire, Silwood Park, 15-17.vi.1962, O.W. Richards; 1 male, 22-24.vi.1962; 1 male, 7.vii.1962; 1 female, 31.vii.1962; 1 female, Berkshire (now Oxfordshire), Wytham Wood, *Q. cerris*, 18.vi.1981, T.R.E. Southwood; 1 female, 11.viii.1981; 1 female, 14.vi.1982; 1 male, 25.vi.1983; 1 female, 19.vi.1984; 1 male, 2 females, 17.viii.1984; 1 male, *Q. ilex*, 11.vii.1980; 1 female, 25.vi.1983; 1 female, 6.ix.1983; 1 male, 1 female, 19.vi.1984; 1 female, 17.viii.1984; 1?, *Q. robur*, 11.vii.1980; 1 male, 7.viii.1983; 1 male, 19.vi.1984; 1 female, Cambridgeshire, Chippenham Fen, 20.vii.1941, J.E. Collin; 2 males, 17.vii.1944; 1 female, Cambridgeshire, Snailwell, 18.vi.1908, J.E. Collin; 1 female, Gloucestershire, Bristol, 4-17.viii.1962, E.A. Fonseca; 1 female, 20.vi.1970; 1 female, 12-16.vii.1979; 1 female, 25-31.vii.1982; 1 female, 24-30.vi.1983; 1 female, 10-17.vii.1983; 1 female, 22-30.vi.1984; 1 male, 2 females, 1-10.vii.1984; 1 female, 22-31.vii.1984; 1 female, 8-20.vi.1985; 1 female, 21-30.vi.1985; 5 males, 2 females, 1-10.vii.1985; 1 female, 11-20.vii.1985; 1 female, 16-30.vi.1986; 1 female, Hampshire, Brockenhurst, 20.viii.1907, J.J.F.X. King; 1 male, Hampshire, Denny Wood, 4.vi.1939, J.E. Collin; 1 male, Hampshire, New Forest, 4.vii.1907, J.J.F.X. King; 1 male, Hampshire, New Forest, Mark Ash Wood, 24.vi.1989, P.J. Chandler; 1 male, 1 female, 17.vi.1990; 1 female, Hampshire, New Forest, R. Beaulieu, 13.vii.1990, J.W. Ismay, SU 380068; 1 female, Herefordshire, Bromyard, 21.vii.1944, L.W. Grensted; 1 male, 1 female, Herefordshire, Moccas Park, 6.viii.1934, J.E. Collin; 1 female, Herefordshire, Moccas Park, 31.vi.1994, A. Godfrey, SO 3442, water trap in ash (*Fraxinus*); 1 female, ash and oak; 1 female, Hertfordshire, Letchworth, 18.vii.1926, F.W. Edwards; 1 male, Huntingdonshire, Woodwalton Fen, 9.vi.1995, J.W. Ismay; 1 female, Kent, Blackheath, 8.vii.1970, A.A. Allen, elm (*Ulmus*) sap; 1 male, Kent, Larkey Valley, 31.v.1989, L. Clemons, TR 1265; 1 female, Kent, Lympne, 17.vi.1973, P.J. Chandler; 1 male, Kent, Wenderton, 15.vii.1989, L. Clemons, TR 2359; 1 female, Lincolnshire, Hagnaby, Spilsby, emerged 22.vii.1996, reared from rothole debris, A. Godfrey; 3 specimens, from water trap placed in oak rothole, trap emptied 22.vii.1996; further uncounted material, trap emptied 18.vii.1998; 1 female, Suffolk, Monk Soham, 19.vii.1924, C. Morley; 1 female, 1.vi.1925; 1 female, 6.viii.1929, window; 2 males, 1 female, 1?, Suffolk, Raylands, Newmarket, 1.vii.1931, J.E. Collin, window; 1 male, 3 females, 2.vii.1931; 1 male, 4 females, 3.vii.1931; 3 males, 8.vii.1931; 1 female, 8.vii.1931; 1 female, 11.vi.1940; 1 male, 1 female, Suffolk, Sussex Lodge, 5.vii.1906, J.E. Collin, stable window; uncounted specimens, Yorkshire (North), Brayton Barff, Selby, on sap flows on mature oaks, 1996-1998, A. Godfrey.

***L. baliola* (Collin, 1946)**

Goniopsita baliola Collin; Collin 1946: 123.

Lasiambia baliola (Collin); Ismay 1976: 91.

Fiebrigella (Lasiambia) baliola (Collin); Nartshuk 1984: 235.

Lasiambia baliola (Collin); Ismay 1998: 147.

There has been some confusion in the past concerning this species and *L. brevibuca*. The most reliable character is the degree of dusting on the scutellum. In *L. baliola* the scutellum is undusted on the disc, with thin, fine, hair-like dusting only on the ventral surface and the lateral margins at the base. In *L. brevibuca* the scutellum is entirely covered in thin, fine, hair-like dusting and is slightly more rugose. Under poor illumination or with an inadequate microscope this gives the impression that *L. brevibuca* has a more rugose scutellum than *L. baliola*. The tibiae of *L. brevibuca* vary considerably in colour and this is not a wholly reliable character for separation. The size and colour of the palpi of the two species is a good character, but needs both species available for comparison. The character of the length of tergite 5 is a good character but the abdominal tergites are slightly telescopic. The apex of tergite 5 has some longer and stronger setulae in *L. baliola*; these are not developed in *L. brevibuca*. In *L. baliola* synsternite 7+8 is produced to a point in the mid-line (Fig. 23) and the membrane between tergite 5 and the postabdomen is greatly expanded, as in *Thaumatomyia* species, and is coarsely granulated. In *L. brevibuca* the synsternite 7+8 is not produced to a point but is of equal length across the abdomen (Fig. 22) and the postabdominal membrane is not expanded.

Collin (1946) referred to two pairs reared in May and June 1908 from an ulcerous elm tree at Chippenham Fen, Cambridgeshire. This species was also reared from sappy horse chestnut bark at Moccas Park, Herefordshire in 1997 (Godfrey 1998) and recorded from Grimsthorpe Park, Lincolnshire on 19.vii.1972 by Chandler (1983). It was recorded from a sappy excrescence on the trunk of a wych elm (*Ulmus glabra*) at Blackheath by Allen (1983).

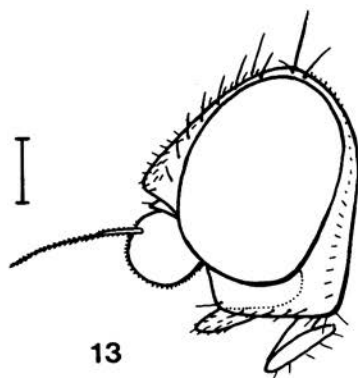
Pont (1995) listed nine syntypes of this species. One male from Moccas Park, Herefordshire is hereby designated lectotype and has been so labelled and the remaining eight specimens are paralectotypes (all types are in OXUM).

Material examined: ENGLAND: Lectotype male, Herefordshire, Moccas Park, 6.viii.1934, J.E. Collin. Paralectotypes: 2 males, data as lectotype; 1 male 9.viii.1934; 1 male, Berkshire (now Oxfordshire), Cothill, 27.vii.1939, J.E. Collin; 1 male, Cambridgeshire, Chippenham, v.1908, J.E. Collin, bred sappy tree; 1 male, 1.vi.1908; 1 female 14.vi.1908; 1 female, 27.v.1909. Other material: 1 female, Kent, Blackheath, 21.vi.1974, A.A. Allen, on elm canker.

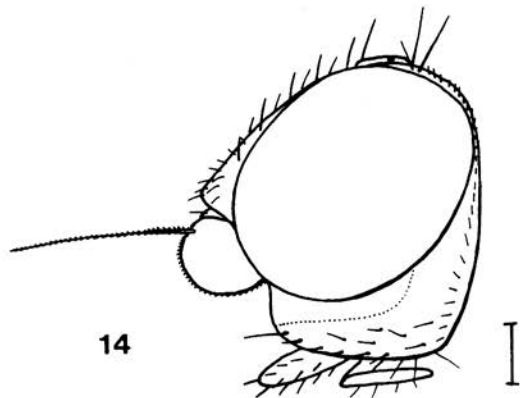
Acknowledgements

I thank Professor S.J. Simpson, Curator, Hope Entomological Collections, Oxford University Museum of Natural History for access to collections and research facilities and Ms S. Brecknell, Hope Librarian for bibliographic assistance. Part of this work was included in a PhD thesis at Royal Holloway College, University of London accepted in September 1978, under the supervision of Dr A.J. Pontin. Thanks are also due to the many curators and private collectors responsible for making the material listed above available for study.

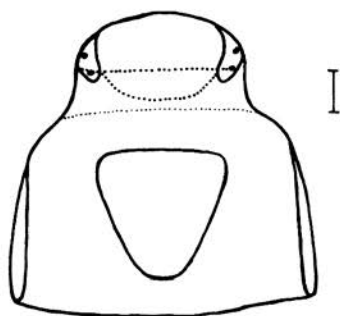
Figs 13-18. 13, *Lasiambia brevibuca*, head, lateral view; 14, *L. baliola*, head, lateral view; 15, *L. palposa*, tergite and sternite 5 and basal part of male postabdomen, epandrium and hypandrium omitted, oriented with head downwards; 16, *L. coxalis*, ditto; 17, *L. palposa*, epandrium, apical view; 18, *L. coxalis*, ditto. Scale line 0.1mm.



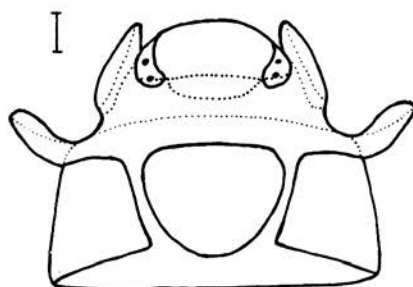
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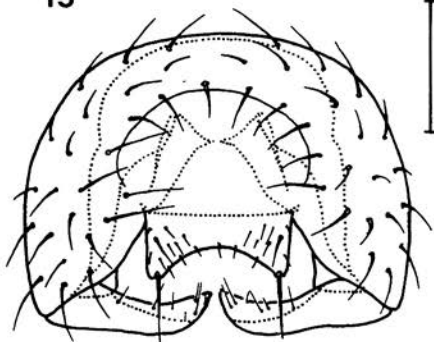
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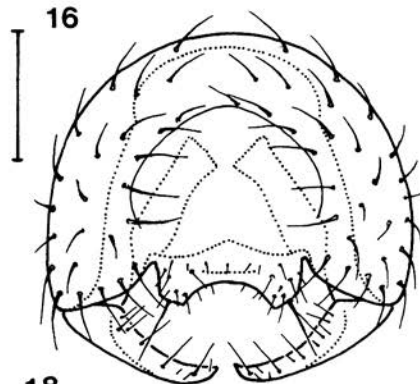
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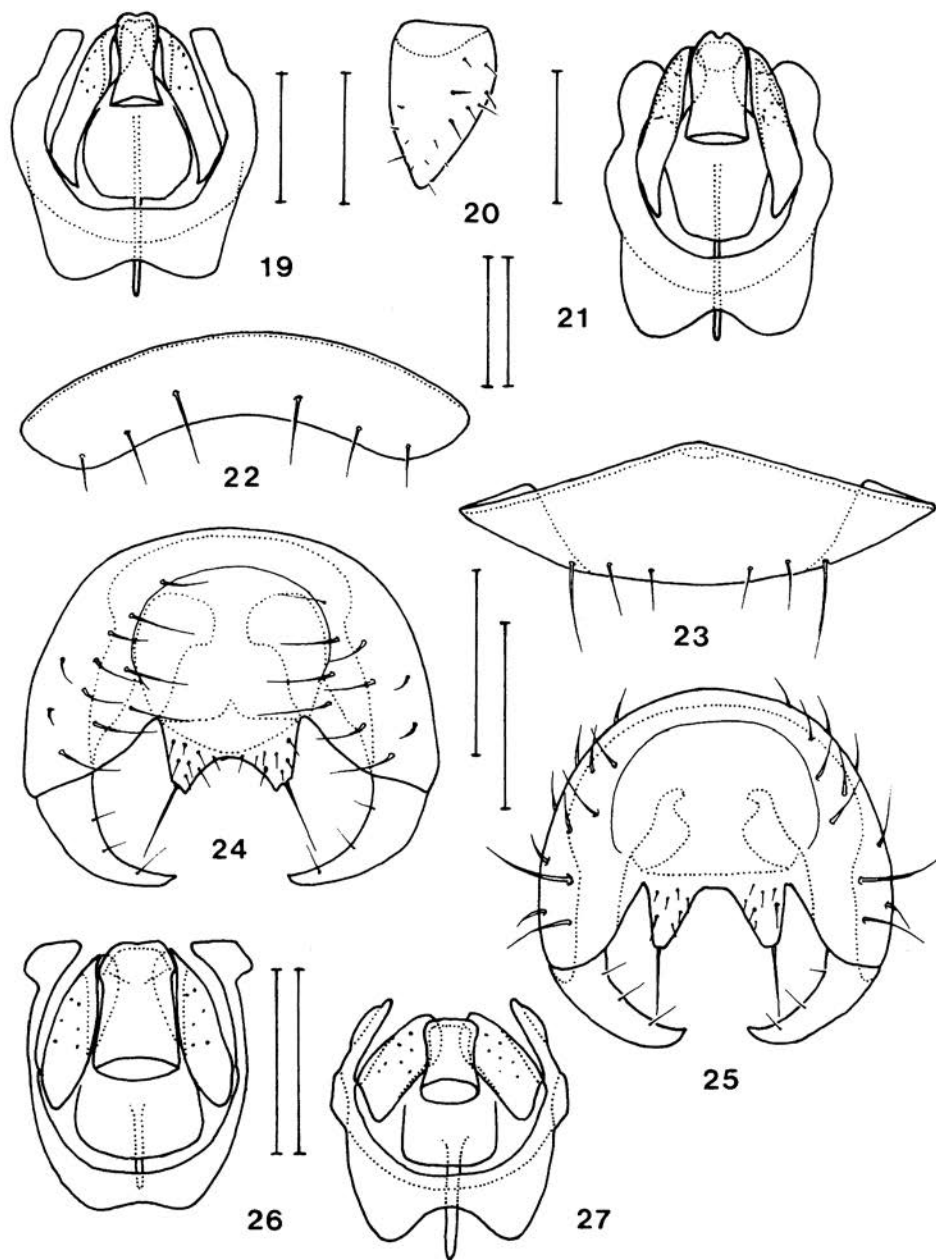
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17



18



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Figs 19-27. 19, *L. palposa*, hypandrium, ventral view; 20, *L. palposa*, surstylus, inner view; 21, *L. coxalis*, hypandrium, ventral view; 22, *L. brevibucca*, synsternite 7+8, oriented with head upwards; 23, *L. baliola*, ditto; 24, *L. brevibucca*, epandrium, apical view; 25, *L. baliola*, ditto; 26, *L. brevibucca*, hypandrium, ventral view; 27, *L. baliola*, ditto. Scale line 0.1mm.

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***Callicera aurata* (Rossi, 1790) (Diptera, Syrphidae) new to Cornwall**

- On 30 September 2000, at Penlee Battery Cornwall Wildlife Trust Reserve, I was visually checking the Syrphidae on a patch of ivy (*Hedera helix*), when I noticed an unfamiliar fly feeding on the flowers. As I had camera in hand, I started taking photographs during which process I noted that it was a female syrphid, but despite its rather spectacular appearance, could not name it. Suddenly it flew off, never to be seen again. Pending the processing of my film, I consulted A.E. Stubbs and S.J. Falk (1983. *British Hoverflies*. BENHS, London) which confirmed it as a *Callicera* species. I initially considered it may well be *C. spinolae* Rondani, 1844 because of the late date. However, return of the photographs showed it to have dark femora, indicating *C. aurata*. To be absolutely sure, I sought further advice by forwarding copies of the photographs to more competent dipterists, who confirmed the identity as *C. aurata*. Although a rare (RDB3) species, records are widespread but there are no previous records for Cornwall.

Penlee Battery CWT Reserve (SX 438492) consists mainly of coastal scrub, but is bounded on the east by deciduous woodland.

My thanks to Stuart Ball, Martin Drake, David Iliff, Roger Morris, Martin Speight and Alan Stubbs, all of whom contributed to the identification of the specimen – **LEON TRUSCOTT**, 59 Cremyll Road, Torpoint, Cornwall PL11 2DZ

The Scottish Moth Flies (Diptera, Psychodidae)

PETER J. CHANDLER

43 Eastfield Road, Burnham, Slough, Berks SL1 7EL

Summary

The species of Psychodidae confirmed to occur in Scotland are discussed and 39 species are accepted to be Scottish; 7 of them are published from Scotland for the first time. Attention is drawn to the details of type localities given for species newly described by Eaton (1893-1894); most are in Somerset but that of *Boreoclytocyrtus dalii* (Eaton) was in Dorset and one of the type localities of *Pericoma trivialis* Eaton was "Loch Maree", Wester Ross.

Introduction

Following examination of the Psychodidae in the collection of the National Museums of Scotland (NMS) it was thought desirable to update knowledge of the Scottish distribution of this family, as several of the species identified were not indicated to be Scottish in recent key works. Most specimens in the NMS collection were dry pinned and were collected by P.H. Grimshaw and J.R. Malloch in the last decade of the 19th century and first decade of the 20th. These specimens have been macerated and mounted in DMHF (dimethyl hydantoin formaldehyde) to facilitate identification. Some Scottish specimens in the Natural History Museum, London (BMNH) have also been examined to check the validity of some of the older records.

Walker (1853), with a significant contribution by A.H. Haliday, gave the first account of British Psychodidae (as Phlebotomidae), including 14 species of which four were recorded from Scotland without further details, all since confirmed except *Tinearia alternata* (Say) (as *Psychoda sexpunctata* Curtis and recorded from England, Scotland and Ireland). The male and three females under *sexpunctata* in Haliday's collection (National Museum, Dublin) have been confirmed to be *T. alternata*; three are labelled "Ireland" and one female is labelled "British". *T. alternata* has been recorded from close to the Scottish border by Laurence (1997a), so it was probably correctly recorded from Scotland.

The Psychodidae have remarkably been the subject of four major revisions covering all the British species as then known. The pioneering work of the Reverend A.E. Eaton (1893-1898), who recognised 41 species, was first superseded by Tonnoir (1940) who brought the British list to 70 species. Then followed the Handbooks by Freeman (1950, 73 species) and Withers (1989, 89 species). Currently 94 species are recognised to be British, but few Scottish records were cited by these revisionary works.

Freeman (1950) cited only eight species from Scotland and Withers (1989) gave records for 18 species, including all those mentioned by Freeman except *Pericoma palustris* (Meigen). These were given as county records based on material examined by the authors and did not include previously published records for which no specimens had been seen. However, some of these records were based on dry specimens in BMNH and examination of these specimens has shown the unreliability of such records. *P. palustris* is not accepted as Scottish here because both Scottish males under this name in BMNH proved to be *P. mutua* Eaton; *P. fallax* Eaton must also be doubted as the Scottish male in BMNH is *Szaboiella hibernica* (Tonnoir). The Scottish specimen under *P. exquisita* Eaton in BMNH was *pseudoexquisita* Tonnoir. *Pericoma canescens* (Meigen) is excluded as Scottish, since the record from Banffshire (Withers 1989) was based on females in BMNH, which appear not to be *canescens* as they lack the recurrent vein at the base of the posterior wing fork.

Eaton (1893) included only one Scottish record (Loch Maree), under *Pericoma trivialis* Eaton and this should therefore be regarded as one of the type localities of this species. Wagner (1991) indicated that no type localities were given for the species described by Eaton (1893), only suggesting Somerset for *Boreoelytrocerus dalii* (Eaton) and the three *Mormia* species involved. However, very precise details of localities were given in the concluding part of this paper (Eaton 1894) and these too should be regarded as type localities for the species concerned. For example, it is stated that the only locality for *Pericoma dalii* was on Mr Dale's Estate at Glanville's Wootton; hence its type locality was in Dorset, not Somerset as stated by Wagner.

Eaton (1895-1898), in his serialised supplementary paper, added Scottish records for a further five species (*Pericoma exquisita* Eaton, *P. fallax* Eaton, *P. gracilis* Eaton, *Psychoda albipennis* Zetterstedt and *P. phalaenoides* (Linnaeus)), all based on collecting by J.J.F.X. King. The records of *exquisita* and *fallax* were based on the specimens in BMNH indicated above to have been misdetermined, the specimens in both cases belonging to species unrecognised at the time and subsequently described by Tonnoir. *P. gracilis* has not otherwise been cited from Scotland and was considered doubtfully distinct from *P. palustris* (Meigen) by Withers (1989); although Duckhouse (1962) was confident of separating the larvae of these species, *gracilis* is excluded from the list here because no specimen related to this record has been seen.

Malloch (1907) gave records of 20 species collected in Dunbartonshire in 1906. This was based on identifications by Eaton and was directed towards improving knowledge of the Scottish Psychodidae. It was of particular interest to check specimens published by Malloch as most are in NMS. There were specimens collected in 1906 under 19 of the 20 names and 15 of these were correctly determined. The other four were based on misidentifications but two of them, *Pericoma exquisita* and *P. trifasciata* Eaton were collected by Malloch in other years. Apart from *trifasciata*, eight other species listed by Malloch (1907) were additional to those recorded from Scotland in the above mentioned publications: *B. ocellaris*, *Pericoma blandula* Eaton, *Mormia caliginosa* (Eaton), *Panimerus notabilis* (Eaton), *Peripsychoda auriculata* (Haliday in Curtis), *Telmatoscopus advenus* (Eaton), *T. soleatus* (Haliday in Walker) and *Trichomyia urbana* Haliday in Curtis. All specimens are labelled simply "Bonhill" and the date, but the paper indicates that some species were collected at Murroch Glen and *T. urbana* was said to be from Strathleven, evidently a more precise location in the Bonhill district.

Shaw (1968) added *Psychoda surcoufi* Tonnoir. Cole (1994) added *Szaboiella hibernica* (Tonnoir). Laurence (1997a) recorded ten species from the Northern Isles (*Psychoda severini* Tonnoir recorded by him is here regarded as a synonym of *albipennis* following Withers 1989), of which *Telmatoscopus labeculosus* (Eaton), *Panimerus maynei* (Tonnoir), *Psychoda grisescens* Tonnoir and *P. lobata* Tonnoir were new records for Scotland although the three latter had been collected by Malloch, based on material in NMS recorded here. Robertson (1999) recorded *Telmatoscopus rothschildii* Eaton.

Philosepedon humeralis (Meigen) was recorded by Ritchie (1914) and Bertram (1939). *Pericoma fallax*, discussed above, was also recorded by Disney (1987). However, no Scottish specimens have been examined of these species and both are considered to require confirmation.

Scottish records of Psychodidae were also provided by Grimshaw (1903), Yerbury (1912), Edwards (1921), Salmond (1956), Waterston (1981), Plant (1995) and Dobson (1995) which are cited under the relevant species below.

Seven species are newly recorded from Scotland in the present paper, three of them first collected by Malloch and one by Grimshaw. Consequently, 39 species can now be confirmed to occur in Scotland. Of these 32 were represented by Scottish specimens in NMS and 18 species have been collected in Scotland by the author. While this confirms a better representation than previously realised, this is based on a relatively small amount of material and more intensive collecting should result in an increase in the total of Scottish species.

Species requiring confirmation from Scotland

Pericoma (sensu stricto) *fallax* Eaton

The material recorded by Malloch (1907) comprised *P. pseudoexquisita* and *P. pilularia*. The record from Wester Ross, Loch Maree by Eaton (1896), also cited as a county record by Freeman (1950) and Withers (1989), was based on a male of *Szaboella hibernica*. The record from Kindrogan, Perthshire by Disney (1987) is not supported by specimens and should be discounted as this species is usually a calcicole (Withers *pers. comm.*). Material relating to the "Loch Lomond" record (Eaton 1896) has not been examined, but this too must be considered doubtful.

Philosepedon humeralis (Meigen)

This was recorded on damaged specimens from a deep-mine coalfield at Niddrie, Midlothian by Ritchie (1914), who stated that it was easily recognised from the venation. Bertram (1939) recorded it as swept from grassland on Canna, Inner Hebrides. As no Scottish specimens have been examined it is not accepted as Scottish here. However, Laurence (1997b) recorded *P. humeralis* from Berwick-upon-Tweed and informs me that it is common there on windows and in water traps in his garden, so it certainly must also occur on the Scottish side of the border.

The Scottish species of Psychodidae

Records are summarised for the better recorded species and counties only given for most records in Freeman (1950) or Withers (1989); otherwise localities and dates are cited for previously unpublished material examined by myself or Phil Withers (det. PW). Collectors' names are abbreviated as follows: ECPC, E.C. Pelham Clinton; JRM, J.R. Malloch; PHG, P.H. Grimshaw; PJC, the author. Species new to Scotland are marked *.

Bazarella neglecta (Eaton)

Lothian, Blackford Hill, 21.iv.1894 (Grimshaw 1903, as *Pericoma canescens* (Meigen)); Dunbartonshire, Bonhill, iv-vi.1906-1907 (Malloch 1907, correctly determined); Kincardine (Freeman 1950, Withers 1989); Sutherland, Inchnadamph, 1.vi.1963 (ECPC) (all NMS).

Boreoclytocyclus ocellaris (Meigen)

Dunbartonshire, Bonhill, v-vi, viii-ix.1906-1908 (JRM, NMS) (Malloch 1907, correctly determined; "very common everywhere"); Dumfries-shire, Lochmaben, 14.vii.1979 (PJC); Orkney (Laurence 1997a).

Pericoma (sensu stricto) *blandula* Eaton

Adults cannot be separated from *P. neoblandula* Duckhouse, which has not been recorded since its description from Leicestershire; records based on adults are thus provisional.

Dunbartonshire, Bonhill, v-vi.1906-1907 (JRM, NMS) (Malloch 1907, males collected 17.v and 30.vi.1906 correctly determined); Inverness-shire, near Glachbea (NH 5420), beech wood, 23.vi.1999 (PJC); Lanark, Falls of Clyde, 16.iii.1997 (larva det. PW).

Pericoma (sensu stricto) *diversa* Tonnoir

Midlothian, Glencorse, 8.ix.1898 (PHG, NMS); Ayrshire, Dean Castle Country Park, 26.v.1987 (PJC, Withers 1989); Inverness-shire, Inchnacardoch Forest, 21.vii.1997 (PJC).

Pericoma (sensu stricto) *exquisita* Eaton

The record from Wester Ross, Loch Maree by Eaton (1896), repeated by Freeman (1950) and Withers (1989) was based on a male of *P. pseudoexquisita* (21.vii.1890, J.J.F.X. King, Verrall bequest, BMNH), while that from Arran (Edwards 1921) was based on a female, which cannot

be determined; surviving 1906 material recorded by Malloch (1907), who referred to *exquisita* as “very common in many different places”....“especially in Murroch Glen”, was *P. pseudoexquisita* and *P. rivularis*.

Dunbartonshire, Bonhill, 9.v.1908 (JRM, NMS).

Pericoma (sensu stricto) pseudoexquisita Tonnoir

Dunbartonshire, Bonhill, iv-v.1906-1907 (JRM, NMS, 1906 material recorded by Malloch 1907 as *exquisita* or *fallax*); Dunbartonshire, Cardross, 15.iii.1907 (JRM, NMS); Barra (Waterston 1981 as the synonym *avicularia* Tonnoir, slide in BMNH); Inverness-shire, Perthshire, Sutherland (Withers 1989); Benbecula and Lanarkshire (det. PW); Shetland (Laurence 1997a).

Pericoma (sensu stricto) rivularis Berdén

Easternness (Withers 1989); Dunbartonshire, Bonhill, 14.vii.1906 (determined as *exquisita*), 6.vii.1907 (JRM, NMS); Perthshire, Aberfoyle, Craigmore Wood (NN 5101), 25-27.vi.1999 (PJC).

Pericoma (sensu stricto) trifasciata (Meigen)

Dunbartonshire, Bonhill, 15.v.1908 (JRM, NMS; the record by Malloch 1907 was based on *Tonnoiriella pulchra*); Dunbartonshire, Cardross, 15.vii.1907 (JRM, NMS); Lanarkshire, Cartland Craig, 14.iii.1997 (larva det. PW).

Pericoma (Pneumia) crispis Freeman

This is a little known species, otherwise known from Ireland and the Leeds district of Yorkshire. In NMS is material from a second Yorkshire site: Burley-in-Wharfedale, viii.1897 two males, one female and vii.1899 one female (PHG).

Perthshire, Pass of Killiecrankie, 20.vii.1986, 1.vii.1987 (PJC, Withers 1989)

Pericoma (Pneumia) extricata Eaton

Moray (Freeman 1950); Ayrshire, Dean Castle Country Park, 2.ix.1987 (PJC, Withers 1989); Midlothian, Glencorse, 8.ix.1898 (PHG, NMS).

Pericoma (Pneumia) mutua Eaton

Evidently a common species in Scotland. Malloch (1907) said “not rare on tree trunks at Bonhill”, Dunbartonshire. Yerbury (1912) recorded it from Sutherland, Loch Assynt. Freeman (1950) added Moray and Withers (1989) Inverness-shire and Aberdeenshire. Material has been examined from the above counties, Fife and several sites in Perthshire; Freeman’s record of *palustris* from Perthshire was based on *mutua* (males under *palustris* from Perthshire, Rannoch, 29.vi.1876 and Sutherland, Inveran, 15.vii.1886, both G.H. Verrall, in BMNH were *mutua*).

Pericoma (Pneumia) nubila (Meigen)

Scotland (Walker 1856); Ayrshire, Dumfries-shire, Perthshire (Withers 1989); Isle of Muck (Dobson 1995); Orkney and Shetland (Laurence 1997a); material of this common species has been examined from Midlothian, Dumfries-shire, Dunbartonshire and Inverness-shire.

Pericoma (Pneumia) pilularia Tonnoir*

Dunbartonshire, Bonhill, iv-v, ix.1906-1907 (JRM, NMS, including some specimens placed under *trivialis* and *fallax* by Malloch 1907).

Pericoma (Pneumia) trivialis Eaton

A very common species. Most material included under *trivialis* by Malloch (1907) was correctly determined. Material has been examined from Fife, Midlothian, Dumfries-shire, Ayrshire, Dunbartonshire, Perthshire and Inverness-shire. Eaton (1895), Freeman (1950) and Withers (1989) also included Sutherland and Stirlingshire.

Pericoma (Ulomyia) cognata Eaton

Banffshire (Withers 1989); Dunbartonshire, Bonhill, v.vii.1906-1908 (JRM, NMS) (Malloch 1907, some specimens correctly determined but others named as *palustris*); Argyllshire, Dunoon, vi.1898 (PHG, NMS); Perthshire, Aberfoyle, Craigmore Wood (NN 5101), 27.vi.1999 (PJC).

Pericoma (Ulomyia) fuliginosa (Meigen)

A common species, recorded from Scotland by Walker (1856), Dunbartonshire by Malloch (1907), Perthshire and Inverness-shire by Withers (1989). Material has also been examined from East Lothian, Midlothian and Lanarkshire.

Szaboiella hibernica (Tonnoir)

This was recorded from a cliff seepage on Skye by Cole (1994) and according to Withers (1989) develops in calcareous water bodies; Withers (*pers. comm.*) suggests a preference for tufa sites. Larvae (det. PW) were found in 1997 at three Lanarkshire sites: Falls of Clyde, Cartland Craig and Fiddler's Gill. Examination of the specimen recorded as *Pericoma fallax* from Wester Ross, Loch Maree by Eaton (1896), cited as a county record by Freeman (1950) and Withers (1989), showed it to be a male of *S. hibernica* (26.vi.1890, J.J.F.X. King, Verrall bequest, BMNH). Inverness-shire, Glen Coiltie (NH 4927), wet deciduous woods, 21.vii.1997; Perthshire, Struan Wood, 20.vii.1997; Perthshire, Inversnaid, woods by Loch Lomond (NN 3309), 21.vii.1999 (PJC).

Tonnoiriella pulchra (Eaton)*

This is the most widespread species of a genus which requires unpolluted springs and streams (Withers 1989).

Dunbartonshire, Bonhill, 12.v.1906 (Malloch 1907 as *Pericoma trifasciata*), 18.v.1908, 27.v.1908 (JRM, NMS); Inverness-shire, Glen Coiltie (NH 4927), wet deciduous woods below Divach Falls, 21.x.1999 (PJC).

Psychoda albipennis Zetterstedt

This is a common synanthropic species and it is probably much commoner in Scotland than records suggest. Eaton (1898) and Freeman (1950) recorded it from Sutherland. Malloch (1907) correctly recorded it from Dunbartonshire. Salmond (1956) recorded it from a Scottish flour mill of undisclosed location. Shaw (1968) recorded it from decaying potatoes in Kincardine. Plant (1995) recorded it from Sule Skerry and Laurence (1997a) recorded it from several sites in Orkney and Shetland. Material has also been examined (in NMS) from the Flannan Isles, the Isle of Mull and house windows in Edinburgh.

Psychoda brevicornis Tonnoir*

Perthshire, Birks of Aberfeldy, 23.vi.1999 (PJC).

Psychoda grisescens Tonnoir

Dunbartonshire, Bonhill, 1.vi.1909 (JRM); Arran, Whiting Bay, 6.iv.1955 (R. Waterston); Mull, Loch Ba, 3-5.x.1907 (N. Annandale) (NMS); Orkney and Shetland (Laurence 1997a).

Psychoda lobata Tonnoir

Dunbartonshire, Bonhill, 6.viii.1906, one female (JRM, NMS, previously undetermined); Orkney (Laurence 1997a).

Psychoda phalaenoides (Linnaeus)

This is evidently common in Scotland (first recorded by Walker 1856) as suggested by Malloch (1907), who correctly recorded it from Bonhill. It was recorded from Wester Ross by Eaton (1898) and Freeman (1950), Arran by Edwards (1921), Dumfries-shire and Sutherland by Withers (1989), Orkney and Shetland by Laurence (1997a). Material has been examined from Fife (NMS) and in x.1999 I found it at Culbin Forest, Nairn (both in pine forest and on mud in a nearby duneslack) and five sites in Inverness-shire, including deciduous woods and conifer plantations.

Psychoda surcoufi Tonnoir

Another synanthropic species, which appears to have expanded its range recently. Laurence (1999) found it around garden compost at Berwick-upon-Tweed, but there are only two Scottish records. Shaw (1968) recorded it from a potato store in Kincardine. In NMS there are specimens from a water-filled filing cabinet (allegedly a modern art sculpture) at Glasgow (det. PW).

Psychoda trinodulosa Tonnoir

Waterston (1981) recorded this on windows at Craigston, Isle of Barra (slide in BMNH). Withers (1989) recorded it from Sutherland, based on a record from Skelpick, 31.viii.1988 (Withers *pers. comm.*). Laurence (1997a) recorded it from Orkney and Shetland.

Mormia caliginosa (Eaton)

Dunbartonshire, Bonhill, 9.vi.1906 three males (Malloch 1907, "common in one part of Murroch Glen", correctly determined), 22.vi.1907 two males (JRM, NMS).

Mormia revisenda (Eaton)*

Species of *Mormia* are localised to sites with wet woodland soils, in which they develop and most are rarely recorded, so it is probable that other species will be found to occur in Scotland. Dunbartonshire, Bonhill, 15.vi.1906 male (JRM, NMS).

Panimerus maynei (Tonnoir)

Dunbartonshire, Bonhill, 18.vi.1906 male (JRM, NMS; mixed with series of *P. notabilis*); Perthshire, Inchtute, 1955, "bred from saltmarsh mud" (? collector, NMS); Shetland (Laurence 1997a).

Panimerus notabilis (Eaton)

Dunbartonshire, Bonhill, 30.vi.1906 (Malloch 1907, "fairly common in many parts of the district"), 13.vi.1908, 25.vi.1908 (JRM, NMS).

Peripsychoda auriculata (Haliday)

Dunbartonshire, Bonhill, 28.v.1906 (Malloch 1907, "very common throughout the district", correctly determined), 29.vi.1907 (JRM, NMS).

Telmatoscopus advenus (Eaton)

Dunbartonshire, Bonhill, vi-vii.1906 (Malloch 1907; two males, 26.vi and 7.vii.1906, NMS, correctly determined).

Telmatoscopus ambiguus (Eaton)*

Inverness-shire, Glen Coiltie (NH 4927), vii.1997, vi.1998; Perthshire, Aberfoyle, Craigmare Wood (NN 5101), 21.vi.1999; Perthshire, Inversnaid, woods by Loch Lomond (NN 3309), 21.vi.1999 (PJC).

Telmatoscopus labeculosus (Eaton)

This was recorded from Shetland by Laurence (1997a).

Telmatoscopus morulus (Eaton)

The record by Malloch (1907) from Dunbartonshire cannot be confirmed. Ayrshire, Dean Castle Country Park, 26.v.1987 (PJC, Withers 1989).

Telmatoscopus rothschildii Eaton

This was reared from a sap run at Leith, Midlothian by Robertson (1999). Dunbartonshire, Bonhill, 22.vi.1907 male (JRM, NMS, previously undetermined).

Telmatoscopus similis Tonnoir*

Withers (1989) cited this species only from Kent, but noted that it developed in saltmarsh mud. Perthshire, Inchtute, 1955 male reared from saltmarsh mud (? collector, NMS).

Telmatoscopus soleatus (Haliday)

Dunbartonshire, Bonhill, 16.vi.1906, 22.vi.1906, 27.vi.1907 (JRM, NMS) (Malloch 1907, "common where it occurs" as *Pericoma sulcata*, an erroneous spelling of the specific name).

Threticus lucifugus (Haliday)*

Midlothian, Glencorse, 8.ix.1898 male (PHG, NMS).

Trichomyia urbica Haliday

Dunbartonshire, Bonhill, 7.vii.1906 male, 9.vii.1906 male (JRM, NMS) (Malloch 1907, "three specimens at Strathleven"); Ayrshire, Culzean Castle Park, 16.vii.1995 male on log pile (PJC).

Acknowledgements

I am especially grateful to Phil Withers for having accepted material for determination over many years and for advice during the preparation of this paper. I also thank Brian Laurence for comments on the manuscript and useful information. The authorities of the National Museums of Scotland kindly facilitated examination of material and the Scottish insect records index maintained by them was invaluable in tracking down the earlier publications. Loan of relevant specimens from the Natural History Museum, London, enabled revision of some records.

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***Psychoda surcoufi* Tonnoir (Diptera, Psychodidae) on Fair Isle, Shetland** - On 17 February 2000, Pat Thomson of Lower Stoneybreck croft, Fair Isle, gave NR three psychodids collected from her garden (HZ 205709; V.C. 112). These were sent to BRL, who identified them from their subgenital plates as *Psychoda surcoufi* Tonnoir. All three were females. The finding details were as follows: the specimens were taken from "dozens" in a compost bin which had been constructed from slatted pieces of 1 inch timber. Some of the pieces had collapsed and the assembly of psychodids was discovered underneath when the slats were lifted in order to replace them on the compost. The compost contained any materials that would readily decompose and no compost accelerators were used. Bags of compost imported to the isle are used at Lower Stoneybreck for pot plants and small amounts of this make their way eventually into the compost heap, for example after indoor annuals finish flowering. A male and further females of *P. surcoufi* were collected at Schoolton, Fair Isle in September 2000. This is the most northerly British record (Laurence, B.R. 1999. *Entomologist's monthly Magazine* **135**, 176) and certainly the most far-flung; Fair Isle is 42km from the nearest land, making it the most remote inhabited island in the British Isles. Fair Islanders have long been enthusiastic gardeners, but imported horticultural materials have increased markedly in range, frequency and quantity in the last ten to fifteen years - **NICK RIDDIFORD**, Schoolton, Fair Isle, Shetland ZE2 9JH and **BRIAN R. LAURENCE**, 32 Low Greens, Berwick-upon-Tweed, TD15 1LZ

***Trichocera regelationis* (Linnaeus) (Diptera, Trichoceridae) found in July** - Winter gnats (Trichoceridae) are rarely found outside of Autumn, Winter or early Spring, so I was surprised to record a single male *Trichocera regelationis* (Linnaeus) on 30 July 2000. The insect was found beside a shaded small river, Abhainn Fionain, at Inverinan Bridge, Argyll (VC 98) (NM 996174) during a late afternoon visit. The fly was not recognised in the field among numerous other small Nematocera and Empidoidea, which dominated the Diptera fauna swept from low vegetation on the banks and from alder foliage overhanging the water, and so the behaviour at time of capture was not observed. No other winter gnats were found beside other rivers and streams investigated during my two week holiday in Argyll, nor were any found by sweeping at dusk in the garden of the nearby April Cottage (NM 999177) during the evenings of 1-3 August inclusive, when a special search was made for Trichoceridae. At dusk in the garden, the most numerous larger Nematocera were Anisopodidae (mainly *Sylvicola cinctus* (Fabricius) together with some *S. punctatus* (Fabricius)), although these were far outnumbered by plentiful, hungry female *Culicoides*! - **I.F.G. McLEAN**, 109 Miller Way, Brampton, Huntingdon, PE28 4TZ

***Paraclusia tigrina* (Fallén, 1820) (Diptera, Clusiidae) in Caernarvonshire and Anglesey** - This fly was recorded from two woodland

localities on the south shore of the Menai Strait in Caernarvonshire (V.C. 49) between 1997 and 2000. A mating pair was collected from a healed scar on the trunk of a mature horse-chestnut (*Aesculus hippocastanum*) in an area of open parkland on Vaynol Estate (SH 535695) on 4.ix.1997, although further visits have failed to locate additional specimens. At Treborth Botanic Gardens (SH 549712), singleton adults were recorded on a recently fallen mature beech (*Fagus sylvatica*) in broad-leaved woodland on 13.vii.1998 and 5.viii.1998. The same tree has proved attractive in subsequent years and adults were recorded from 31.viii to 2.ix.1999 and from 8.viii to 13.ix.2000, with numbers peaking at five on 31.viii.1999 and six on 20.viii.2000. Mating pairs were seen on 10.viii.1999 and on three occasions in August 2000. Males have been observed engaged in wing waving behaviour and on 31.viii.1999 a female was apparently ovipositing in cracks in the trunk. On 9.x.2000, a male and female were found caught on a yellow sticky trap in one of the greenhouses at Treborth Botanic Gardens (SH 550710), some 200m from the fallen beech.

Three adults, including a mating pair, were discovered on a recently fallen beech tree in a row of mature beeches in sheep pasture near Dinas, Menai Bridge (SH 551736) on Anglesey (V.C. 52) on 19.viii.2000.

These are the first records for this RDB 2 fly for Anglesey and Caernarvonshire, although it has been previously recorded in Wales from Breconshire (V.C. 42) and Glamorgan (V.C. 41), with a recent record from a parkland in Monmouthshire (V.C. 35; B. Levey and P.M. Pavett, *pers. comm.*). Once regarded as a rarity, there has been a spate of recent records, particularly from south-east England (A.E. Stubbs, 1982. An identification guide to British Clusiidae. *Proceedings and Transactions of the British Entomological and Natural History Society* 15, 89-93; P.J.Chandler, *pers. comm.*; see also Note by R.A. Jones on page 108 below).

We thank Dr B. Levey, P.M. Pavett and P.J. Chandler for allowing us to refer to their unpublished information - **E.A. HOWE, M.A. HOWE and J.H. BRATTON**, Countryside Council for Wales, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ

More of *Phasia hemiptera* (Fabricius) (Diptera, Tachinidae) in 1999 -

Stimulated by Ken and Rita Merrifield's note on this handsome insect (2000. *Dipterists Digest* (Second Series) 7, 14) I recalled also finding it myself during 1999. I had previously considered this very characteristic fly to be common. It was not until last year that I recognised this to be down to the fact that I used to live in East Sussex where it is, indeed, often common in the wonderfully rich woods of the Sussex Weald. There, it sometimes occurred in profusion on the hogweed (*Heracleum sphondylium*) umbels during warm July and August afternoons. But since moving to London 20 years ago I had not seen the beast once, until last year. It was with some pleasure, therefore, that I swept a moderate-sized female from a sparsely vegetated railway embankment at High Barnet (TQ 254956) on 26.vii.1999 - **RICHARD A. JONES**, 135 Friern Road, East Dulwich, London SE22 0AZ, email: bugmanjones@hotmail.com

Corrections and changes to the Diptera Checklist (4) - Editor

It is intended to publish here any corrections to the text of the recently published Diptera checklist (publication date was 13 November 1998; the final 'cut-off' date for included information was 17 June 1998) and to draw attention to any subsequent changes. All readers are therefore asked to inform me of any errors or changes and I would like to thank all those who have already brought these to my attention.

In the notes below where names of genera and species are given as in the Checklist, authorship is not stated here. Corrections are in page order; changes are listed under families; names new to the British list are given in bold type.

The notes below refer to the loss of no names due to synonymy and addition of 3 species, resulting in a new total of 6702 species.

Corrections

- p. 12 The original generic name was omitted for *Ectrepesthoneura pubescens*, which should read (Zetterstedt, 1860 - *Sciophila*)
- p. 21 Under *Corynoptera furcata*, the synonymy should be *parvula*: (Freeman, 1983 - *Corynoptera*), misident. Winnertz was the author of the name *Sciara parvula*.
- p. 35 Under *Mayetiola poae*, the original generic name was omitted for the synonym *graminicola*; this should be (Winnertz, 1853 - *Hormomyia*)

Changes

Mycetophilidae. The subgenera of ALLODIOPSIS - MYROSIA and NOTOLOPHA, are raised to generic rank by G.E.E. SØLI, J.R. VOCKEROTH and L. MATILE (2000. Families of Sciarioidea. pp. 49-92. In Papp, L. and Darvas, B. Contributions to a Manual of Palearctic Diptera. Appendix. 604 pp.).

Chironomidae. *Telmatogeton japonicus* Tokunaga, 1933 was added by D.A. MURRAY (2000. *Entomologist's monthly Magazine* **136**, 157-159).

Tephritidae. *Tephritis matricariae* (Loew, 1844) was added by L. CLEMONS (2000. *Entomologist's Record and Journal of Variation* **112**, 225-230).

Lauxaniidae. A.I. SHATALKIN (2000. [Keys to the Palearctic flies of the family Lauxaniidae (Diptera)]. *Zoologicheskie Issledovania* **5**, 101 pp.; in Russian, with an English summary) provided keys to the 32 genera and 343 species of this family in the Palearctic Region (reviewed in the current issue). The following changes in this work affect the British list, including as predicted in the checklist the replacement of *Lyciella* at least in part by *Meiosimyza*. Discussion with the author has suggested that the name *Lyciella* may, however, be resurrected subsequently for the species group including its type-species, *L. rorida*.

Minettia filia (Becker, 1895 - *Sapromyza*) (= *dissimilis* Collin). This synonymy is queried in the text because the author had not then seen material of *dissimilis*, but has since proved correct (Anatole Shatalkin and Andrew Godfrey pers. comms).

Subgenus **PLESIOMINETTIA** Shatalkin, 2000 is proposed to include *M. filia* and 13 other species (none British); the remaining British species are assigned to subgenera as in the checklist.

MEIOSIMYZA Hendel, 1925 (= *Lyciella* Collin, 1948) (including *affinis*, *decempunctata*, *decipiens*, *illota*, *laeta*, *mihalyii*, *platycephala*, *rorida* and *subfasciata*).

PSEUDOLYCIELLA Shatalkin, 2000 is proposed to include *Lyciella pallidiventris*, *L. stylata* and *L. subpallidiventris* and two other species.

Subgenus **NANNOMYZA** Frey 1941 is recognised in *Sapromyza* to include *S. basalis* and one other species; the remaining British species are assigned to subgenera as in the checklist.

Sapromyza halidayi Shatalkin, 2000 (= *sordida* Haliday, 1833, preocc. by *sordida* Wiedemann, 1830, a North American species)

Agromyzidae. *Chromatomyia fuscula* (Zetterstedt, [1838] - *Phytomyza*), listed under Excluded species in the checklist, is reinstated in the present issue.

Chloropidae. *Lasiambia coxalis*, introduced in the checklist, is formally added in the present issue.

***Aspistes berolinensis* Meigen (Diptera, Scatopsidae) in Wales** - On 23 May 1997 I took a male of the above species at Kinmel Dunes, Kinmel Bay, Conwy, Wales. Kinmel Dunes consists of an area of fixed coastal sand dunes, which, unfortunately, is partly adjacent to a holiday camp with caravans and has suffered from much dog fouling, litter and trampling from holidaymakers. Much flotsam and jetsam is apt to be thrown up on part of this site. Efforts have been made to clean the dunes and this has met with some success and steps have been taken to afford some sort of protection to the area but I doubt if it will ever achieve SSSI status as the site is too popular with locals and visitors.

According to P. Freeman (In Freeman, P. and Lane, R. 1985. Bibionid and Scatopsid Flies. *Handbooks for the Identification of British Insects* 9(7). Royal Entomological Society, London), this species is rare and has been recorded from Cornwall, Devon and Mid Glamorgan. It has also been recorded from Ireland by S. D'Arcy-Burt and P.J. Chandler (1987. Irish Bibionidae and Scatopsidae (Diptera: Nematocera). *Irish Naturalists' Journal* 22, 224-23), based on unlocalised material, in the collection of A.H. Haliday, but probably from dunes on the east coast. The Kinmel Dunes record may be a new one and the most northern to date.

Other specialities of Kinmel Dunes include *Villa modesta* (Meigen) (Bombyliidae) and *Merodon equestris* (Fabricius) (Syrphidae), which is usually quite frequent in May and June. A "popular" or more likely "unpopular" name for *Merodon equestris* could be the "Hay Fever Fly" as it always seems to be on the wing when hay fever sufferers (including myself) are out and about - **M.O. HUGHES**, 1 Woodside Avenue, Kinmel Bay, Conwy LL18 5ND

Another specimen of *Leptarthrus vitripennis* (Meigen) (Diptera, Asilidae) from the North Downs - On 15 June 1999, I swept a single *Leptarthrus* from scrubbed up chalk downland, part of the Saltbox Hill SSSI (TQ 407307, near Biggin Hill, vice-county 16, West Kent.). It proved to be a female *Leptarthrus vitripennis* (Meigen). This species was first recognised as British in 1994, from a specimen taken at Riddlesdown, Surrey (R.D. Hawkins 1998, *British Journal of Entomology and Natural History* 11, 12-14), and to date only a handful of British specimens are known (Stubbs *et al.* in preparation. British soldierflies and their allies). It is not a recent arrival, since there is a specimen in the Natural History Museum collections taken at Box Hill in 1948. All the known British specimens (except one from Oxfordshire, P. Chandler 1999, *Dipterists Digest (Second Series)* 6, 117) have been found on the North Downs in Surrey and Kent.

The site at Saltbox Hill is just inside the West Kent boundary, and like the original Riddlesdown locality, is a remnant of chalk downland now heavily invaded by scrub, mainly hawthorn (*Crataegus*) and dogwood (*Cornus*), but with a few small open areas between the bushes. It is one of three parcels of land which make up the SSSI, some less invaded by scrub and with delightful chalk downland still present. There were a number of uncommon and chalk grassland species, including the robberfly *Leptogaster cylindrica* (De Geer), the chloropid *Camarota curvipennis* Latreille, the conopid *Thecophora atra* (Fabricius), the ephydrid *Discomyza incurva* (Fallén), the sciomyzids *Dichetophora oblitterata* (Fabricius) and *Trypetoptera punctulata* (Scopoli), the hoverflies *Volucella inanis* (Linnaeus) and *Xanthogramma citrofasciatum* (De Geer), the tephritid *Dithryca guttularis* (Meigen) and the ulidiids *Herina germinationis* (Rossi) and *Physiphora alceae* (Preysler).

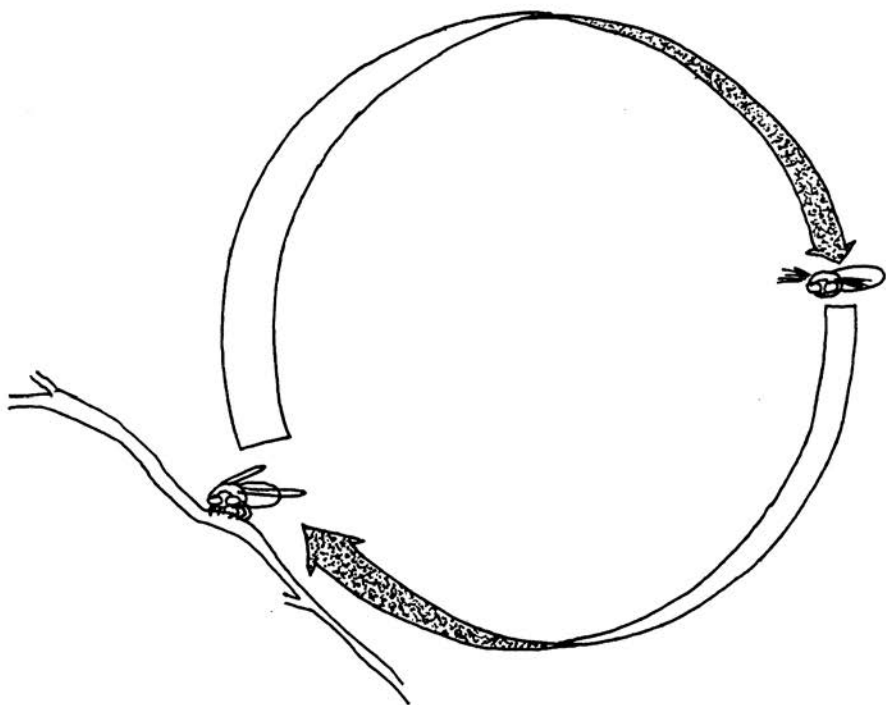
The site at Saltbox Hill was recently bought by the London Wildlife Trust who are already doing some scrub clearance work there and are negotiating with landowners to acquire the other two SSSI parcels - **RICHARD A. JONES**, 135 Friern Road, East Dulwich, London SE22 0AZ, email: bugmanjones@hotmail.com

Courtship behaviour in *Leptarthrus brevirostris* (Meigen) (Diptera, Asilidae) - I recently came across a partial description of courtship in *Leptarthrus* (Morgan, 1995, Larger Brachycera Recording Scheme Newsletter 13: 5-6, cited by Stubbs *et al.*, in preparation, British soldierflies and their allies). Unfortunately, the reported observations ended prematurely when some sheep disturbed the flies! However, the description immediately struck a chord; I had seen exactly similar behaviour many years before.

It was on the chalk downs behind Falmer, East Sussex, on 30.v.1988, that I noticed a grey fly seeming to bob up and down in the herbage. Closer inspection showed it to be the characteristic hunch-backed asilid *Leptarthrus brevirostris* (Meigen). The bobbing insect was a male and the target of its bobs was a female perched on a stem below it. In fact, it was not bobbing up and down, but circling up and down, forwards and backwards (see figure); the circular trajectory was about 150 mm in diameter. Each cycle, took about 1-1.5 seconds.

At each forward and upward sweep, the male appeared to make gentle contact with the female, brushing against her as he passed, pausing for just a fraction of a second at each contact, but not actually stopping. After I had watched about 10 or 15 cycles, the male suddenly landed on the female and they were quickly coupled. The male did not grasp onto the larger female, rather he leaned out at an angle and gripped the same stem upon which she was perched. After a

few more seconds they flew off in copulatory tandem and landed on another twig a short distance away. It was not sheep which disturbed this pair, but me, leaning in too close with a camera. They were startled, flew to another twig, and separated. I swept them up in the net. I still have both specimens in my collection.



The male of this species has peculiar elongated hind tarsi, appearing rather hook-like in set specimens. It is tempting to conjecture whether this odd structure is used to grapple the female during the circular passes and assaults made during courtship - **RICHARD A. JONES**, 135 Friern Road, East Dulwich, London SE22 0AZ, email: bugmanjones@hotmail.com

A new species of *Lonchaea* (Diptera, Lonchaeidae) from Spain

IAIN MacGOWAN

Scottish Natural Heritage, Battleby, Redgorton, Perth, Scotland. PH1 3EW

Summary

A new species of the genus *Lonchaea*, *L. iberica* sp. n. is described from northern Spain.

Amongst a selection of Lonchaeidae from Spain kindly sent to me by Dr Miguel Carles-Tolra there were six specimens belonging to the genus *Lonchaea* which I could not identify by using the existing European keys. The specimens, one male and five females, belong to the *laticornis* group within the genus *Lonchaea* which is characterised by bare eyes, hairs in a single row along the mouth edge, partly yellow tarsi, a single stigmatal bristle and scutellum without hairs on the disc. The *laticornis* group has recently been reviewed by MacGowan and Rotheray (2000) and has been found to include several species which were previously combined under the name *L. laticornis* Meigen. This new species represents yet another taxon within this group.

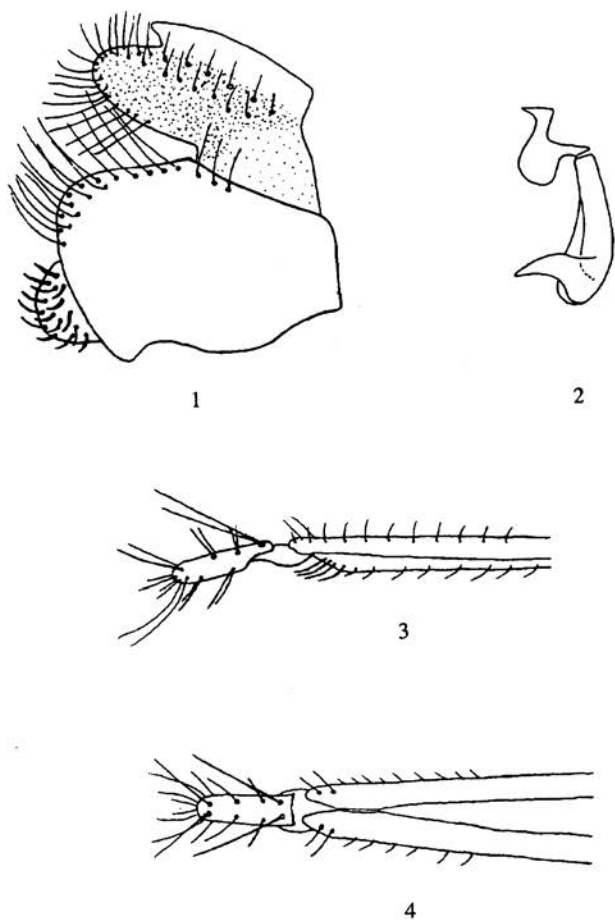
Lonchaea iberica sp. n

Description: Male (holotype): Eyes bare, frons with rather numerous long black bristles, the longest being half as long as the orbital bristle, orbital plates bare, ocellar triangle with several long black hairs, more than half as long as ocellar bristles. Jowls with a single row of about six hairs along mouth edge. Palpi black haired with two stronger bristles at the tip more than the width of the palp. Face with a distinct median keel. Antennae with segment three 2.5 times as long as wide and entirely black, rather concave on the dorsal surface and rounded at the tip, covered in minute white hairs, segment two with numerous short black bristles over the surface. Arista almost 1.5 times as long as antennal segment three, finely setulose, rather yellowish at the base.

Thorax with one propleural and one stigmatal bristle, both rather long, as long as bristle on katepisternum. No hairs posterior to the single strong bristle on katepisternum. Hairs on disc of thorax black and rather long, more than half as long as the notopleural bristles. No hairs in the notopleural depression. Prosternum bare. Scutellum bare on the disc. No hairs apparent between apical scutellar bristles but two on each side between the apical and lateral bristles. No hairs on scutellar margin anterior to lateral bristles. Anepimeron bare, anepisternum with 4-6 strong hairs posteriorly, 4 anteriorly. Squamae with a dark fringe. Stigmal section of wing rather short, only about one and a half times as long as crossvein r-m. Abdominal sternite 1 bare, others setulose

Legs with metatarsus, all of tarsomere 2 and base of tarsomere 3 yellow, on all except ventral surface covered in short black hairs. Anterior and mid femora rather strongly bristled posteroventrally, bristles longer than the width of the femora.

Male terminalia: Epandrium (Fig 1) wider than high, cerci relatively large with long hairs on the rounded tip. Surstylus extending as a rounded process beyond edge of epandrium, this process covered in small curved black spines. Aedeagus two segmented, apical section rather short and bulbous (Fig 2).



Figs 1-4. *Lonchaea iberica* sp.n. 1-2, male genitalia. 1, right lateral view of epandrium and associated structures; 2, lateral view of aedeagus. 3-4, female ovipositor. 3, right lateral view; 4, dorsal view.

Female: In main characters similar to male; basal third of arista yellow, hairs on frons below orbital bristle all rather short, only about one third length of orbital bristle. Antennal segment three almost three times as long as wide, parallel sided with rounded tip, entirely black. Coxae with long spine at lower, outer angle, this spine as long as half the depth of the coxae, prosternum bare. Front femora with about ten strong hairs posteriorly, these hairs as long as the width of the femur, four strong bristles posteroventrally, mid femora with fringe of strong hairs anteriorly and posteriorly all about as long as width of femora, hind femora with only a row of shorter hairs anteroventrally. Middle tibiae with a rather blunt spine at tip ventrally, this about as long as tarsal segment two. Metatarsus, second and third tarsomeres of tarsi yellow, hind tarsi with golden hairs ventrally on metatarsus and second tarsomere. Wings with all veins whitish yellow except the costa. Two short hairs between apical bristles on scutellum, two pairs on each side between apical and lateral bristles, these hairs less than half the length of the main scutellar bristles, no hairs anterior of lateral bristles. No hairs posterior to the single strong bristle on katepisternum.

Ovipositor: Apical segment long, three times as long as wide, connected to sternite and tergite 9 by a short section of connective tissue, sternite 9 with four rather long hairs at apex, these much longer than hairs along length of sternite (Figs 3 and 4). Apical section dorsally with two long basal hairs, these as long as apical segment, shorter pairs one third and two thirds of the way along dorsal length, apical dorsal pair about half length of segment, two shorter pairs at apex. Ventrally one longer apical pair, almost as long as segment, two shorter pairs about half as long as apical pair situated on ventral surface. All these hairs yellowish.

Type material: **Holotype** male SPAIN: Prov. Zaragoza, Pina de Ebro, Retuerta de Pina, 10.v.1992, Wilkening trap, leg. J. Blasco-Zumeta (4721 on label). Specimen in the National Museums of Scotland.

Paratypes. SPAIN: 1 female, Prov. Barcelona, Sant Llorenç de Morunys, 22.vii.1995, leg. J. Pujade, on *Foeniculum vulgare* (labelled 5622), specimen in NMS; 1 female, Prov. Zaragoza, Pina de Ebro, Retuerta de Pina, 2.v.1989, J. Blasco-Zumeta leg., on *Carduus bourgeanus* (labelled 454); 1 female, Prov. Zaragoza, Pina de Ebro, Retuerta de Pina, 25.v.1992, J. Blasco-Zumeta leg., on *Onopordum corymbosum* (labelled 1516); 1 female, Prov. Zaragoza, Pina de Ebro, Retuerta de Pina, 25.v.1992, Wilkening trap, leg. J. Blasco-Zumeta (labelled 4800). Other paratypes deposited in the Carles-Tolra collection.

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REVIEW

Keys to the Palaearctic Flies of the Family Lauxaniidae (Diptera) by A.I. Shatalkin (2000) *Zoologicheskie Issledovaniya* No. 5, pp 102, Moscow. ISSN 1025-532X

This monograph is a compilation of the valuable work Dr Shatalkin has undertaken over the years on the Lauxaniidae. According to the summary it provides a complete review of the 32 genera and 343 species that make up the Palaearctic fauna of lauxaniid flies. Many of the 211 (mostly genitalia) figures have appeared in his earlier papers on the family but these are scattered throughout Russian entomological journals, which may not be readily available to many readers and it is very useful to have these in a single publication. Many of the Lauxaniidae (at least in the males) are identifiable on the male genitalia so that this publication is certainly worth obtaining for the figures of these. The Russian text will mean that this is less understandable to most of us, although there is an English summary which includes descriptions of new taxa.

As regards the British fauna *Sapromyza sordida* Wiedemann, 1830 is found to be a senior homonym of *Sapromyza halidayi*. The European species *Sapromyza tuberculosa* Becker, 1895 seems to be a synonym of *Sapromyza halidayi*. Some of the other changes have appeared in Dr Shatalkin's other recent papers. These include the resurrection from synonymy of Loew's *Minettia subvittata* from *Minettia rivos*a. J.E. Collin added *Minettia subvittata* to the British list in 1910 but later decided that his specimens were *M. rivos*a (see Collin, J.E. 1948. *Transactions of the Royal Entomological Society of London* 99(5), 225-242). *Minettia dissimilis* Collin is treated as a synonym of *Minettia filia* Becker (although a question mark is attached to this synonymy on page 48), which is placed in the new subgenus *Plesiominettia*. The generic name *Lyciella* has been sunk in favour of *Meiosimyza* Hendel, 1925 and *Pseudolyciella* gen. n. has been split from it for the *pallidiventr*is group. A new subgenus *Nannomyza* is recognised in *Sapromyza* to include *S. basalis*. The changes affecting the British list are also listed in the section on changes to the checklist in the present issue.

The publication is attractively bound and although the paper used throughout is thin, the text and figures are generally sharp. This will be an invaluable publication to those working on lauxaniids and can be well recommended.

Further European lauxaniids await description by other workers and Dr Shatalkin and a revision of the Palaearctic Lauxaniidae will follow. Dr Shatalkin is now working on African, Nearctic and Eurasian Psilidae and we can look forward to similar high quality publications in the future - **ANDY GODFREY**, 90 Bence Lane, Darton, Barnsley, South Yorks S75 5DA

The syrphid fauna of western temperate Europe revisited (Diptera, Syrphidae)

MARTIN C.D. SPEIGHT

Research Branch, National Parks and Wildlife, 7 Ely Place, Dublin 2

Summary

Additions to the British syrphid list since publication of the first issue of *Dipterists Digest*, in 1988, are reviewed. The list of potential additions to the British syrphid list is updated, and recent literature that might be used to identify the species is indicated. It is suggested that regional monographs might usefully include potential additions to the fauna in future, rather than covering only those species that are already recorded.

Introduction

In the first issue of *Dipterists Digest* the syrphid fauna of the Atlantic seaboard countries from Denmark south to N. France (inclusive) was reviewed (Speight 1988), with a view to highlighting species which might be expected to occur in Britain, but were then not known so to do. More than 10 years have now passed and we are, indeed, approaching the beginning of a new millennium (I'm one of those old-fashioned people who believe that the new millennium begins with the year 2001, not the year 2000). So it seemed potentially interesting to look at what additions have been made to the British syrphid fauna in the intervening period, and what additions might be expected over the next years, using the same approach as previously, as a basis for prediction.

Since publication of the first issue of *Dipterists Digest*, 12 additional syrphid species have been recorded from the island of Great Britain (Chandler 1998), plus one, *Helophilus affinis* Wahlberg, 1844 (Stuke 1996) from offshore islands:

Epistrophe melanostoma (Zetterstedt, 1843)

Epistrophe ochrostoma (Zetterstedt, 1849)

Eristalis similis (Fallén, 1817)

Eupeodes lundbecki (Soot Ryen, 1946)

Platycheirus amplius Curran, 1927

Platycheirus europaeus Goeldlin, Maibach and Speight, 1990

Platycheirus occultus Goeldlin, Maibach and Speight, 1990

Platycheirus ramsarensis Goeldlin, Maibach and Speight, 1990

Platycheirus splendidus Rotheray, 1998

Sphaerophoria bankowskiae Goeldlin, 1989

Sphaerophoria potentillae Claussen, 1984

Sphegina sibirica Stackelberg, 1953

The identity of one of those 13, *Epistrophe ochrostoma*, remains questionable, since the record was published (Heaver 1990) prior to the revision of European *Epistrophe* by Doczkal and Schmid (1994), in which it was established that *E. ochrostoma* of authors included two different species, neither of which was *E. ochrostoma* of Zetterstedt. My own attempts to resolve this issue have been unsuccessful. I can, however, confirm Chandler's (1998) observation that *E. ochrostoma* has not been recorded from Ireland, despite the title of Heaver's note. Four of the remaining 12 additions were undescribed when the first issue of *Dipterists Digest* appeared.

Three were, in fact, described in a subsequent issue of *Dipterists Digest* (Goeldlin *et al.* 1990). The fourth was described more recently (Rotheray 1998). With one exception, the remaining eight additions were all referred to in Speight (1998). The exception was *Platycheirus amplus* Curran, a species added to the European list that same year, from Ireland and Iceland (Speight and Vockeroth 1988).

Interestingly enough, three other syrphids known from Ireland are yet to be recorded from Britain. *Cheilosia ahenea* (von Roser) occurs in karst limestone grassland and machair in western Ireland. It might be expected from limestone areas of Britain. *Cheilosia psilophthalma* Becker is extremely similar to *C. urbana* (*C. praecox* of British authors), from which it may be distinguished using the key provided by Claussen and Kassebeer (1993). In Ireland it has been found in fixed dunes, humid, unimproved grassland and karst limestone grassland. In the Alps it occurs to above the tree-line into alpine pasture. Its presence might be expected in Scotland. *Paragus constrictus* Simic is another karst limestone species, occurring on almost bare rock in western Ireland. It is easily confused with *P. tibialis* and records of the latter species from Great Britain, away from heathland in southern England, are more likely to refer to *P. constrictus*. A key to separate males of *P. constrictus* from males of *P. tibialis* is provided by Speight and Chandler (1995). Both *Cheilosia ahenea* and *Paragus constrictus* have been found in N. Ireland, but *Cheilosia psilophthalma* has not.

Finally, some mention should be made of the enigmatic taxon "*Syrphus rectus*". Whether the specimens consigned to *S. rectus* (Osten-Sacken) in Europe represent a distinct species (as in N America), or a phenotypic variant of *S. vitripennis* Meigen, one of them has been found in Ireland and they must surely occur in Britain. The potential significance of this taxon was reviewed in this journal recently (Speight 1999a).

Species predicted to occur in Britain

Given that more than 50% of the syrphid species added to the British list since 1988 could have been predicted from the fauna of adjacent parts of the continent, it seems worthwhile to try to predict species a little more precisely this time. So, in the present text the predicted species are listed, divided into two sub-groups: species whose occurrence would be expected (i.e. extremely probable) and species whose occurrence would be probable.

Given that all of the additions to the British syrphid list are species which also occur in Norway (Nielsen 1999), some predicted species have been included here on the basis of a wider geographic coverage than that considered in Speight (1988). Finally, in Appendix 1, the species not recorded from western temperate Europe in 1998 but known there now (exclusive of species mentioned elsewhere in the present text) are listed. Most of the latter group of species could possibly occur in Great Britain, but there does not seem to be any basis upon which to single out any of them as probable additions. The species on that list deemed unlikely to occur in Great Britain are indicated.

Putting these various predictions together, the species reviewed are effectively consigned to four categories, based on perceived likelihood of occurrence. Rated on a scale of 3 to 0, these categories could be visualised as having the following values:

- 3 = species occurrence expected
- 2 = species occurrence probable
- 1 = species occurrence possible
- 0 = species unlikely to occur

Main literature sources used in revising the list for the Atlantic seaboard from N France to Denmark are as follows: Cadou (1993), NJN (1998), Torp (1994), Verlinden (1991).

Species expected to occur in Britain

Brachyopa testacea (Fallén, 1817)

Helophilus affinis Wahlberg, 1844

Parasyrphus macularis (Zetterstedt, 1843)

Platycheirus parvatus Rondani, 1857

Most of the species in this small group (the exception being *H. affinis*) have the following characteristics and are inhabitants of conifer forest that have expanded their range into conifer plantations of *Abies*, *Picea*, *Pinus* or related genera:

- range expansion has been noted elsewhere in/into western temperate Europe, recently
- habitat is apparently readily available in Britain now
- habitat was much less available in Britain in the recent past

Both *Brachyopa testacea* and *Parasyrphus macularis* were covered by Speight (1988). *P. macularis* builds up enormous populations in fir and spruce forest and it seems inconceivable that the species will not reach Britain soon. It may be distinguished from other *Parasyrphus* species known in Britain using the key by Speight (1991). *Brachyopa testacea* has to await the availability of cut stumps in the right conditions, and it may not arrive in the short term. *Platycheirus parvatus* is now known from both Belgium and the Netherlands. It is a *peltatus* group species. The males can be identified using Verlinden (1991). For the females, the key by Van Steenis and Goeldlin (1998) is more comprehensive. The potential for syrphids to colonise the conifer plantations of western Europe is considered in more detail in Speight (in press).

The occurrence of the wetland species *Helophilus affinis* would be expected, because its range is expanding - it has expanded southwards from Scandinavia to as far as the Alps (Switzerland: Maibach *et al.* 1992) in the last 25 years - its habitat is available in Britain and it has virtually reached the shores of Scotland already. It may be determined using the key in Speight (1988).

Species whose occurrence in Britain is probable

Epistrophe flava Doczkal and Schmid, 1994

Eristalis piceus (Fallén, 1817)

Eumerus sogdianus Stackelberg, 1952

Melanogaster parumplicata (Loew, 1840)

Meligramma cingulata (Egger, 1860)

Microdon miki Doczkal and Schmid, 1999

Neoscia annexa (Müller, 1776)

Paragus majoranae Rondani, 1857

Pipizella annulata (Macquart, 1829)

Platycheirus immaculatus Ohara, 1980

Rhingia borealis Ringdahl, 1928

Syrphus nitidifrons Becker, 1921

These species would be predicted to occur on the basis that:

- habitat is apparently available in Britain
- and either:
- presence would probably be overlooked using recent British identification keys
- or:
- range expansion has been noted elsewhere in/into western temperate Europe recently.

Comment on the species in this group will here be focused primarily on those not considered in Speight (1988). *Epistrophe flava* could occur in association with riverine gallery forest along major rivers in southern England. It may be determined using Doczkal and Schmid (1994). *Eristalis piceus* is a univoltine, spring-flying species associated with temporary, ground-water streams and shallow pools. It might occur in wooded situations from the Midlands northwards. This species is extremely easy to confuse with *E. horticola* or *E. rupium* and its presence would probably not be recognised using existing British literature. There is considerable need for a revised key to European *Eristalis* species and a comprehensive revision of the species has been underway for some time. However, the product is still not available and I have attempted to produce an interim key for those who need one, because identification of *Eristalis* species is causing considerable difficulty. This key has undergone progressive modification itself, the last version appearing in Speight (1999b). That key, further modified, is reproduced here, in Appendix II. *Meligramma cingulata* was considered in Speight (1988). It has since been found in western France, considerably extending its known range away from the Alps, but is as yet unknown in either Atlantic seaboard countries further north, or in Scandinavia. *Microdon miki* could occur in Caledonian pine forest. It is closely similar to, but somewhat larger than, *M. analis* (Macquart) and may be determined using Doczkal and Schmid (1999). *Neoascia annexa* might occur in woodland from Wales to southern Scotland. It is reasonably distinctive but specimens could be taken for *N. tenur* (Harris) with unusually well developed pale abdominal markings. It may be determined using the key provided by Barkemeyer and Claussen (1986), which would also serve to distinguish *N. unifasciata*, were that species to occur in Britain. *Rhingia borealis* is extremely similar to *R. campestris*. It is not an exclusively high altitude or northern latitude species as is generally indicated in literature and might occur in humid woodland in either Wales or Scotland. A key for the determination of *Rhingia* species is given here, in Appendix II.

Among this group of species, *Eumerus sogdianus* and *Syrphus nitidifrons* are perhaps the most likely to be recorded. One might expect *E. sogdianus* to be restricted to south-east England, because summer temperatures are higher there than elsewhere in the island. *S. nitidifrons* is another conifer species which seems to be expanding its range, but is less consistently found than, for instance, *P. parvulus*. It may have more specialist requirements in respect of the aphids used by its larvae, than *P. parvulus*.

Melanogaster parumplicata was re-instated as a separate species by Maibach *et al.* (1994). It is only reliably distinguished from *M. aerea* using features of the male terminalia and could be confused with that species in British material (in older collections under the name *Chrysogaster macquarti* Loew). It is not so characteristically a wetland insect as *M. aerea* and might occur along boggy, partially-wooded, small stream margins where the water is to some extent mineral-rich, in Wales or Scotland. At present, it is known from northern Norway south to central Europe (Swiss Jura), but not from Atlantic seaboard states from N. France to Denmark. *Platycheirus immaculatus* is a delicate species, in either sex easily mistaken for a small, melanic specimen of *Melanostoma*. This species is not as yet included in any European key. Doczkal (1996) refers to European *Platycheirus* species with which it may be confused, pointing out that the male could be confused with *P. ambiguus* and the female with *P. sticticus*. *P. immaculatus* might occur in association with *Abies*, *Picea* or *Pinus* plantations, in humid/montane locations. The closest European records of this species to Britain are probably those from the Vosges (eastern France).

Discussion

It is tempting to explore the potential implications of the attributes of the species which have been added to the British syrphid fauna since 1988 and of the others now predicted for addition

over the next years - together they total 29 species (excluding those known in Ireland but not from Great Britain). Considering one single attribute, trophic status, it is noticeable that not one of the species added since 1988, and only one of those predicted to occur, *Eumerus sogdianus*, has phytophagous larvae (larvae of *Eumerus* and *Merodon* are treated here as primarily phytophagous, though they can validly be regarded as to a significant extent microphagous/saprophagous). And *E. sogdianus* is not associated with natural habitat in the part of Europe considered here, but with root-crop production/horticulture. Would this be predictable? Not on a basis of numbers alone: even though only 20% of the nearly 350 syrphid species known from the Atlantic region of Europe have plant-feeding larvae, that would imply there should be five or six plant-feeding species among these 29. On a similar basis, 5-7 saproxylics would be expected among these 29 species, but there are only two, while for microphages/saprophages the figures would be 7-8 expected and six of the 29 fall into this category. Essentially, then, these 29 species include a higher proportion of species with predatory larvae than might be anticipated, and fewer phytophages and saproxylics than might be expected. There are many potential explanations for this situation, but the number of species involved is too small to justify much further exploration.

The species added since 1988 provide food for thought in another direction. Since the occurrence of more than half of them could have been predicted, it would have been useful to have them included in keys, such that they might be recognised if they were found. Excluding the recently-described species, syrphid species which could have been included in British keys have been added to the British list at a rate of almost one per year since 1988, so it could not realistically be claimed that the fauna is sufficiently well known that inclusion of any non-British species in keys is pointless. But institutions that have been most active in publishing monographic keys for the identification of British insects, like the Royal Entomological Society, the FBA and the Field Studies Council (Aidgap series) have adopted the principle of including in keys only those species that are already recorded on British lists. British entomological literature is by no means alone in suffering from this type of limitation - it has characterised most national monographs produced in western Europe. And until as recently as perhaps even only 25 years ago it was probably justified, because little was known about the species. But today we know at least something of the species, and one way we could perhaps put that knowledge to good use would be by including potential additions to the fauna in keys. Given the infrequency with which monographs appear and the expense and inconvenience of publishing supplements to cater for additional species, this approach should also serve to increase the "shelf-life" of the literature itself. Alternatively, it could be said that because the constitution of local faunas is ever changing, the use of traditional methods of publishing for production of regional taxonomic keys should now be reconsidered, to see if producing them electronically in future might be preferable. Certainly, to make keys available on the internet would make regular up-dating much easier and production costs minimal.

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Appendix I: species not recorded from western temperate Europe in 1988, but known there now (excluding species mentioned above).

The names of species which, for one reason or another, might be regarded as unlikely to occur in Britain, are suffixed by this symbol: • The remaining (eleven) species could be regarded as possible, but not probable, additions to the British list.

- Callicera macquarti* Rondani, 1844
Cheilosia caerulea (Meigen, 1822)
Cheilosia orthotricha Vujic and Claussen, 1994 •
Cheilosia rufimana Becker, 1894 •
Chrysogaster rondanii Maibach and Goeldlin, 1995
Dasyrphus paucillius (Williston, 1887)
Epistrophe cryptica Doczkal and Schmid, 1994
Epistrophe leiophthalma (Schiner and Egger, 1853) •
Epistrophe obscuripes (Strobl, 1910)
Eumerus tarsalis Loew, 1848 •
Leucozona nigripila Mik, 1888
Orthonerva erythrogonia (Malm, 1863)
Paragus flammeus Goeldlin, 1971 •
Paragus quadrifasciatus Meigen, 1822
Sphaerophoria shirchan Violovitsh, 1957
Trichopsomyia joratensis Goeldlin, 1997

Appendix II: keys.

Interim key for the determination of western European *Eristalis* species.

This key includes all the generally recognised European *Eristalis* species. *E. stackelbergi* Doležal and Rozkošný is omitted. The status of that taxon is at present uncertain. Resolution of such issues must await the outcome of the revision of European *Eristalis* being undertaken (Nielsen pers. comm.) by Hippa, Nielsen and van Steenis. The species referred to here as *Eristalis pseudorupium* Kanervo is *E. vitripennis* of Strobl, sensu auctt. The key characters used here to distinguish the males of *E. piceus*, *E. rupium* and *E. pseudorupium* should be treated with caution. The identity of males of these species should be confirmed using features of the male terminalia. The male terminalia of *E. rupium* and *E. piceus* are figured by various recent authors but, with the exception of Verlinden (1991), the figures used are those of Kanervo (1938), which are confusing. Essentially, the aedeagi of these two species may be distinguished in that the distal end is evenly rounded in *E. rupium* but distinctly and sharply pointed in *E. piceus*. The male terminalia of *E. pseudorupium* are figured by Kanervo (1938), van der Goot (1981) and in the Internet key (in Dutch) by van Veen (http://mk.trw.ruu.nl/homepages/aat/Entomology/eristalis/erist_ws.htm). *E. pseudorupium* is primarily from northern Europe, but is apparently known from as far south as the Netherlands and represents a further possible (though improbable) addition to the British fauna.

- | | | |
|---|--|---------------------------------|
| 1 | Arista almost bare, none of the hairs more than 2 x as long as the maximum diameter of the arista | 2 |
| - | Arista hairy, hairs more than 3 x as long as the maximum diameter of the arista | 12 |
| 2 | Eye hairs unevenly distributed, each eye with two distinct, vertical bands (coalescing dorsally) of longer, more densely packed hairs | <i>tenax</i> Linnaeus |
| - | Eye hairs more or less evenly distributed, not forming bands | 3 |
| 3 | Tibiae entirely orange (face beneath eyes black-haired or white and black-haired; thoracic pleura and coxae of all legs almost entirely black-haired; antennae pale orange brown; arista bare; femora black basally but otherwise orange, with abundant black hairs and some pale hairs) | <i>cryptarum</i> Fabricius |
| - | At least the hind tibiae black for more than half their length, and all tibiae normally partly black | 4 |
| 4 | Face beneath eyes black-haired (flies with general body hair long and dense, closely resembling <i>Bombus</i> species) | 5 |
| - | Face beneath eyes pale-haired (flies may vaguely resemble <i>Bombus</i> species) | 6 |
| 5 | Tarsomeres of hind legs yellow; pale marks on abdominal tergite 2 dull | <i>oestraceus</i> (Linnaeus) |
| - | Tarsomeres of hind legs black; pale marks on abdominal tergite 2 shining | <i>fraterculus</i> Zetterstedt |
| 6 | Mesoscutum dull, dusted grey-brown (abdominal tergites entirely, or almost entirely pale haired in the female) | 7 |
| - | Mesoscutum undusted, shining, no longitudinal dust stripes visible (pale, lateral marks on abdominal tergite 2 shining in both sexes; male eyes meeting on frons; abdominal tergites with transverse bands of black/dark grey hairs in the female) | <i>tundrarum</i> Frey pro parte |
| 7 | Males | 8 |
| - | Females | 10 |

- 8 Mid tibiae entirely pale, except for a blackish streak (which may be absent) on the anterolateral surface, in the apical third of the length of the tibia *abusivus* Collin (male)
- Mid tibiae blackish over the entire surface, in at least the apical third of their length 9
- 9 Abdominal tergite 3 entirely dull, in a wide band across the complete width of the tergite, anteriorly, that reaches the anterior margin of the tergite (abdominal tergites entirely pale-haired) *anthophorinus* Fallén (male)
- Abdominal tergite 3 with a pair of large, entirely undusted, brightly shining areas that occupy more than two thirds of the width of the tergite and reach the basal margin of the tergite (abdominal tergites normally with bands of blackish hairs within the otherwise pale hair covering) *gomojunovae* Violovitsh
- 10 Posterior margin of abdominal tergites 2-4 with a distinct, matt, white band across the entire width; all tarsomeres pale-haired dorsally *abusivus* Collin (female)
- Abdominal tergites 2-4 without a matt, white band across the entire width of the tergite; tarsomeres entirely, or predominantly, black-haired dorsally 11
- 11 Arista unicolorous pale brown throughout its length; stigma less than 2 x as long as deep *anthophorinus* Fallén (female)
- Arista distinctly dark brown for the basal third of its length, otherwise pale brown; stigma more than 2 x as long as deep *gomojunovae* Violovitsh (female)
- 12 Abdominal tergites 2-4 (males) or 4 (females) densely covered in thick hair that is almost as long as the scutellum is broad; fly *Bombus*-like *intricarius* (Linnaeus)
- Length of hairs on abdominal tergites less than half the width of the scutellum; fly not noticeably *Bombus*-like 13
- 13 All tarsomeres of fore and mid legs entirely yellow/orange *pertinax* Scopoli
- At least the two apical tarsomeres of both fore and mid legs black (the basitarsus may be obscurely orange) 14
- 14 Mesopleuron and usually pteropleuron dull, entirely dusted greyish 15
- Mesopleuron and pteropleuron with some shining areas, the thin dusting making the shining surface of the pleura visible 18
- 15 Stigma 4 x as wide as deep *similis* (Fallén)
- Stigma 2 x as wide as deep 16
- 16 Ventral surface of hind femora bare for most of their length, some short, black bristly hairs present on the apical quarter *alpinus* Panzer pro parte
- Ventral surface of hind femora long-haired from the base almost to the apex 17
- 17 Tarsomeres 4 + 5 of all legs black-haired dorsally; the shortest distance from the ventral rim of the eyes to the ventral head margin, immediately posterior to the anterior tentorial pits, is greater than the maximum length of antennal segment 3 *piceus* Fallén (female, pro parte)
- Tarsomeres 4 + 5 of all legs pale-haired dorsally; the shortest distance from the ventral rim of the eyes to the ventral head margin, immediately posterior to the anterior tentorial pits, is less than, or equal to the maximum length of antennal segment 3 *pseudorupium* Kanervo (female)
- 18 Face dusted in mid-line, so that the median, black stripe on the face is absent, or almost absent *arbustorum* (Linnaeus)
- Face shining black in mid-line, from the facial tubercle to beneath antennae, so that the median, black stripe on the face is broad and distinct 19
- 19 Mesoscutum dull anterior to the transverse suture (where its dullness contrasts markedly with the shining surface posterior to the suture), or entirely dull 20

-	Mesoscutum shining over entire disc, no marked contrast between reflectiveness of area anterior to transverse suture and area posterior to transverse suture	27
20	Eyes meeting above antennae (males)	21
-	Eyes separate (females)	25
21	Posterolateral fringe of hairs (usually black, but sometimes partly, or predominantly yellowish) on anterior femora noticeably more dense than the posterolateral fringe on the hind femora	<i>jugorum</i> Egger (male)
-	Posterolateral fringes of hair on front and hind femora of equal density	22
22	Posterolateral hair fringe on anterior femora yellowish	23
-	Posterolateral hair fringe on anterior femora all, or mostly, black	30
23	Pale hairs on thoracic pleura and abdomen greyish white	<i>alpinus</i> Panzer (male)
-	Pale hairs on thoracic pleura and abdomen yellowish	24
24	Orange anterolateral markings on abdominal tergite 2 shining	<i>interruptus</i> (Poda) (male, pro parte)
-	Orange markings on abdominal tergite 2 dull	<i>horticola</i> De Geer (male, pro parte)
25	All femora broadly yellow at the base	<i>alpinus</i> Panzer (female, pro parte)
-	Only the hind femora yellow at the base, or all femora black at the base	26
26	Eyes meeting above antennae (males)	27
-	Eyes separate (females)	32
27	Posterolateral fringe of hairs on the front femora noticeably more dense than the posterolateral fringe on the hind femora	<i>jugorum</i> Egger (male)
-	Posterolateral fringes of hair on the front and hind femora of equal density	28
28	Orange anterolateral markings on abdominal tergite 2 dull; posterolateral fringe of hairs on the front femora yellowish	<i>horticola</i> De Geer (male)
-	Pale, anterolateral markings on abdominal tergite 2 shining; posterolateral fringe of hairs on the front femora mostly black	29
29	Arista around 3 x as long as the depth of antennal segment 3; stigma around 1.5 x as wide as deep	<i>tundrarum</i> Frey (male)
-	Arista around 4 x as long as antennal segment 3 is deep; stigma greater than 2 x as wide as deep	30
30	Abdominal sternites 2 and 3 brightly shining, undusted, as abdominal sternite 4 (abdominal tergite 2 entirely dull, from anterior margin to posterior margin, across the median quarter of the width of the tergite)	<i>rupium</i> Fabricius (male)
-	Abdominal sternite 2 + 3 grey dusted, dull or only vaguely shining, contrasting with the brightly shining abdominal sternite 4	31
31	Abdominal tergite 2 entirely dull, from anterior margin to posterior margin, across the median quarter of the width of the tergite	<i>pseudorupium</i> Kanervo (male)
-	Abdominal tergite 2 with an uninterrupted, shining transverse band across the median quarter of the width of the tergite, occupying approximately one third of the length of the tergite and distant from both anterior and posterior margins of the tergite	<i>piceus</i> Fallén (male)
32	Pale anterolateral markings on abdominal tergite 2 dull (viewed from above)	33
-	Pale anterolateral markings on abdominal tergite 2 shining	34
33	In anterior view, face projecting below the ventral extremity of the eyes for a distance only just half (and much less than two thirds) of the distance between the eyes at that level	<i>horticola</i> De Geer (female)
-	In anterior view, face projecting below the ventral extremity of the eyes for a distance greater than two thirds of the distance between the eyes at that level	<i>jugorum</i> Egger (female)

- 34 Arista around 3 x as long as antennal segment 3 is deep *tundrarum* Frey (female)
 - Arista around 4 x as long as antennal segment 3 is deep 35
- 35 Abdominal tergites 2-4 without matt, black bands along their posterior margins
rupium Fabricius (female) 36
 Abdominal tergites 2-4 with matt, black bands along their posterior margins 36
- 36 All femora broadly yellow at the base *alpinus* Panzer (female, pro parte)
 Only the hind femora yellow at the base, or all femora black at the base 37
- 37 Tarsomeres 4 + 5 of all legs black-haired dorsally; the shortest distance from the ventral rim of the eyes to the ventral head margin, immediately posterior to the anterior tentorial pits, is greater than the maximum length of antennal segment 3
piceus Fallén (female, pro parte)
- Tarsomeres 4 + 5 of all legs pale-haired dorsally; the shortest distance from the ventral rim of the eyes to the ventral head margin, immediately posterior to the anterior tentorial pits, is less than, or equal to the maximum length of antennal segment 3
interruptus (Poda) (female)

Key for the determination of *Rhingia* species

Three *Rhingia* species are recognised as occurring in Europe. These three species may be distinguished using the key provided below, which also includes the eastern Palearctic species *R. laevigata* Loew and the N. American species *R. nasata* Say.

- 1 Abdominal tergite 4 entirely black and shining (occasionally, a small, brownish patch may be present each side of the mid-line, along the anterior margin) 2
 - Abdominal tergite 4 mostly or almost entirely yellow-brown 3
- 2 Scutellum entirely black and shining; hind femora yellow-brown for half or more of their length *laevigata* Loew (male and female)
 - Scutellum black and shining with a distinct, yellow-brown patch medially, on the posterior margin; hind femora black for approximately three quarters of their length
nasata Say (male and female)
- 3 Arista short-haired (on apical two thirds of the length of the arista the hairs are almost as long as the arista is thick at its maximum diameter) *borealis* Ringdahl (male and female)
 - Arista almost bare (no arisal hairs are longer than half the maximum thickness of the arista) 4
- 4 Abdominal tergites 3 + 4 with their lateral margins yellow-brown (post-mortem darkening may produce irregular, asymmetrical, dark marks over parts of these tergites) and with significant areas of black hairs on the disc (these tergites may be almost entirely black-haired); hind tibiae entirely yellow-brown (may be vaguely darkened medially) *rostrata* (Linnaeus)
 - Abdominal tergites 3 + 4 with lateral margins continuously black; abdominal tergites (especially abdominal tergite 4) normally entirely pale (whitish-yellow) haired, though a small, median patch of black hairs may be present (black hairs may occasionally be extensive on abdominal tergite 3); hind tibiae with a distinct black mark just apical to the middle *campestris* Meigen

REVIEW

Moccas: an English deer park. The history, wildlife and management of the first parkland National Nature Reserve. Edited by Paul Harding and Tom Wall. 348 pp. English Nature, Peterborough.

This is a very full account of the history, topography, fauna and flora of a pasture woodland site. Moccas Park is well known as a rich site for saproxylic insects, associated with its veteran trees; it is an SSSI and became a NNR in 1978. It is situated in the Wye Valley to the west of Hereford.

The site first became known for rare Coleoptera in the 1930s and one species first found there in 1934 - *Hypeboeus flavipes* (Fabricius) (Melyridae) - is still known nowhere else in Britain. The chapter on saproxylic invertebrates by Roger Key draws attention to the high ranking of Moccas as a site for saproxylic Coleoptera in comparison to other parkland sites. The Coleoptera are dealt with in more detail by Colin Welch and other invertebrates by Paul Harding.

It was known earlier to dipterists, being frequented by J.H. Wood and J.E. Collin in the early years of the 20th century. However, the main attraction then was the Lawn Pool, known to them as Moccas Pool, which was a site for a number of rarely recorded wetland species. Although this pool had been enlarged in the 19th century, the pollen analysis of its sediments, drawn on in this work to determine the past changes in surrounding vegetation, suggests that it has existed since the retreat of glaciation.

The chapter on Diptera by Andrew Godfrey discusses these early records but shows a gap in visits by dipterists until 1959, since when there have been occasional visits by individuals and survey groups. This more recent activity has shown that this is a good site for saproxylic Diptera, but less important than for Coleoptera and in comparison with the classic sites for flies with these habits. The lack of shelter, paucity of nectar sources and the dominance of oak (*Quercus*) rather than beech (*Fagus*) are noted as the principal factors limiting the diversity of saproxylic Diptera on the site.

The park has been pasture woodland at least since the 17th century and probably in part for several centuries before that. The chapters on the history of the site, however, describe several periods of intensive management. For example many younger oaks had been planted by 1820, following a large fall of trees in 1808-1809, but most of these had been cleared before 1932. Losses of mature trees have continued due to felling throughout the 20th century. However, many ancient trees remain; records of some particular trees exist for over 200 years and some are estimated at up to 600 years in age. There is a serious gap in age structure because no significant planting or natural regeneration took place between 1840 and 1970 and survival of older trees to enable this gap to be bridged in the future will be a particularly important aspect of management. It is also noted that there is less dead wood in the park now than formerly and the retention of fallen wood is another matter that needs to be urgently addressed.

In general, this is a story of what has survived in spite of unfavourable management regimes, in which grazing and forestry have had priority. It is to be hoped that future conservation of the site will be enhanced by implementation of the measures considered necessary in the chapter on this subject.

There is an Appendix including a checklist of the groups of plants and animals discussed in the text. The Diptera list compiled by Andrew Godfrey includes 610 species, 51 of them listed as having some actual or proposed conservation status - **EDITOR**

***Chromatomyia fuscula* (Zetterstedt, [1838]) (Diptera, Agromyzidae) is definitely a British species**

K.P. BLAND

National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF

Summary

Chromatomyia fuscula (Zetterstedt, [1838]) (Diptera, Agromyzidae) is confirmed as a British species from material reared from Scotland.

Recently while checking some agromyzid names against the recent Diptera Checklist (Chandler 1998) I was surprised to find that *Chromatomyia fuscula* (Zetterstedt, [1838]), was relegated to a footnote describing it as unlikely to occur in Britain. The species has had an erratic history in the British Isles. Spencer (1972) failed to find any British material of *C. fuscula* and so deleted it from the British list. The inclusion of Great Britain in the distribution tables of this species in his monograph on the Agromyzidae of Fennoscandia and Denmark (Spencer 1976) appears to be in error, for in 1990, Spencer again states that it is absent from Britain! Robbins (1989, 1991) recorded it from Warwickshire on the basis of reared material. In spite of the difficulty of separating the adults of *C. fuscula* and *C. nigra* (Meigen, 1830), other than by recourse to the male genitalia, the puparia of the two species are easily differentiated on the shape of the anterior spiracles (Spencer 1976). The dark band along the ventrum of the puparium of *C. fuscula* is not a totally reliable separation feature as it may also occur, albeit more weakly, in *C. nigra*. As Robbins (*loc. cit.*) based the identification of the Warwickshire material on the presence of this dark band, its identity requires rechecking.

I have reared *C. fuscula* from three sites in Scotland, namely:

KINNOULL HILL (NO 1322), Perthshire (V.C. 89), mines in 'grass' collected 9.vi.1990, emerged 20-22.vi.1990; also (NO 1423) collected 4.vi.1995, emerged 19.vi.1995.

THE SCORRIE (NO 2775), Glen Clova, Angus (V.C. 90), mines in 'grass' collected 20.vi.1992, emerged 26.vi.1992.

FEALAR GORGE (NN 9979), Perthshire (V.C. 89), mines in *Anthoxanthum odoratum* collected 25.vi.1999, emerged 3.viii.1999.

In all cases the identification was verified on the shape of the anterior spiracles of the puparium and, in the case of the Kinnoull Hill (1990) and Fealar material, checked by examination of the male genitalia (see Spencer 1976, Griffiths 1980). The asymmetry of the ejaculatory apodeme illustrated for *C. fuscula* in Spencer (1976) cannot be used for diagnosis as it approximates to symmetrical in both my preparations of *C. fuscula*.

In addition I have reared material of *C. nigra* from the following Scottish localities:

TRAPRAIN LAW (NT 5874) East Lothian (V.C. 82), mines in *Holcus lanatus* collected 9.xii.1989, emerged 27.i.1990.

KINKELL BRAES (NO 5215), St. Andrews, Fife (V.C. 85), mines in 'grass' collected 16.xi.1991, emerged 10.iv.1992.

LUFFNESS LINKS (NT 4781), East Lothian (V.C. 82), mines in *Holcus mollis* collected 13.iv.1992, emerged 20.iv.1992; further mines in *Holcus mollis* collected 3.v.1992, emerged 15.v.1992; mines in 'grass' collected 12.iv.1993, emerged 22.vi.1993.
 LINKIM SHORE (NT 9265), Berwickshire (V.C. 81), mines in 'grass' collected 19.iv.1992, emerged 5.v.1992.
 TOBERMORY (NM 5055), Isle of Mull (V.C. 103), mines in *Anthoxanthum odoratum* collected 29.vi.1999, emerged 3.viii.1999.

From the above localities, there is a suggestion that in Scotland *C. nigra* is coastal whereas *C. fuscula* is more characteristic of inland areas. It will be interesting to see if this distribution is confirmed by future records.

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***Merzomyia westermanni* (Meigen) (Diptera, Tephritidae) new to Yorkshire** - Whilst searching for Diptera on the afternoon of 11 August, 2000 around the main pond at Gypsy Marsh, a local authority reserve between Barnsley and Rotherham, South Yorkshire, a large and beautifully wing-marked tephritid was swept and quickly tubed. Although its identity was unknown to me at that moment, the specimen was readily determined by reference to the wing-plates in White (1988). Tephritid Flies. Royal Entomological Society, London) as *Merzomyia westermanni* (Meigen).

The available literature suggested that this species had not previously been recorded north of Cambridgeshire and this fact was kindly confirmed by Laurence Clemons (*in litt.*), to whom I had swiftly communicated news of this exciting find. However, a specimen taken by Austin Brackenbury in North Derbyshire in 1999 has recently come to the author's attention.

The host plant, *Senecio erucifolius*, although scarce in the district, does occur sparingly on Gypsy Marsh (J. Lunn, *pers. comm.*) and sweeping over a small patch of this a few days later produced a second specimen, suggesting the presence of a small breeding population. This rather small remnant marsh, dominated by *Juncus effusus* but comprising a surprisingly varied botanical profile, has produced a number of Yorkshire rarities in recent times including *Neoscias interrupta* (Meigen), *Tabanus bromius* Linnaeus, *Hercostomus chalybeus* (Wiedemann), *Tomosvaryella palliditarsis* (Collin) and *Pteromicra angustipennis* (Staeger) - **J.D. COLDWELL**, 16 Railway Cottages, Dodworth, Barnsley, S. Yorkshire

Shifts in the phenology of hoverflies in Surrey: do these reflect the effects of global warming?

ROGER K.A. MORRIS

c/o 241 Commonside East, Mitcham, Surrey

Summary

Sixteen years of data from 1985 to 1999 are evaluated for shifts in phenology of some commoner spring hoverflies, which were formerly regarded as occurring between late April and June. Evidence for shifts in, and compression of, the emergence period is presented. This study highlights the importance of collecting extensive data on relatively common species if further changes in the phenology of invertebrates is to be detected.

Introduction

The effects of global warming enter the public arena on a regular basis, but are possibly most widely considered in the spring when unusual emergence events are publicised. Widely cited examples include those of first frog spawning dates or the first oak leaves (e.g. Sparks *et al.* 1998). In themselves, such individual occurrences are not of great significance if the bulk of a species' emergence remains consistent over a particular time-frame. If, however, there are clear alterations in the pattern of emergence and breeding activity, such changes are likely to be indicative of changing environmental parameters.

For a number of years I have had the impression that some spring hoverflies which I always associated with late April and May were emerging earlier each year. Initially this was indicated by unusual records of *Epistrophe eligans* (Harris) in March, but the discovery of *Brachyopa* spp. in April seemed to confirm that there were shifting patterns of emergence in some spring hoverflies. I was thus stimulated to review my data-set after noting a specimen of *E. eligans* at plum (*Prunus domestica*) blossom in my garden in Mitcham on 18 March and again on 21 March (2000).

Choice of records and species

Ball and Morris (1992) showed that large data-sets could be used to examine phenological changes across the UK, using the example of *Epistrophe eligans*. This analysis demonstrated that there were discernible shifts in phenology, from both east to west and north to south. This means that any localised changes may be masked if the study area is too large and, thus, detection of changes in phenology can really only be undertaken using a large number of records from a specific area or location. Detailed recording on a yearly basis from a single site, perhaps using the garden hoverfly transect (Stubbs 1991), would be an ideal way of securing data, but hoverflies have yet to be that well recorded over a sufficiently long period. As an alternative, the Surrey data-set, which comprises the data from most of the active recorders in the county, provides a sufficient concentration of records from the same latitude and longitude over a meaningful period of time.

Leaving aside species such as *Episyrphus balteatus* (De Geer), *Eristalis* spp., *Syrphus* spp. and common *Euepodes* spp which form the bulk of early spring records and may be seen throughout the winter months, there are a small number of spring species which are recorded in sufficient numbers to produce statistically meaningful data. *Epistrophe eligans* is a good example; others include *Leucozona lucorum* (Linnaeus), *Cheilosia variabilis* (Panzer) and *C. albitarsis* (Meigen).

There are also a number of species which might jointly demonstrate changing phenology, especially the *Brachyopa* spp. (*B. insensilis* Collin, *B. pilosa* Collin and *B. scutellaris* Robineau-Desvoidy). As an additional measure, the records for the bee-fly *Bombylius major* Linnaeus were also evaluated as a control to establish whether the phenology of one of the earliest commoner spring flies had changed markedly.

The data-set and treatment of records for phenological investigation

The Surrey data-set was largely collected between 1985 and 1997, but has been added to in subsequent years. This comprises complete data which includes a full date, site name and a four-figure grid reference, and some data which are incomplete in such a way as to be unusable in this analysis: these incomplete data were excluded from the analysis.

All records for the chosen species from 1985 to 1999 were sub-divided in seven day units from mid-March to mid-September (see Graphs on pages 105-107). Apart from *Epistrophe eligans*, it was found that even with a relatively large data-set there were insufficient data to evaluate yearly trends and so the data were sub-divided into blocks (1985-1989, 1990-1994, 1995-1999).

Discussion

The graphical presentation of each species' phenology suggests that a number of species have responded to changing weather conditions over the past sixteen years. These effects are most pronounced in *Epistrophe eligans*, but are also apparent in *Cheilosia variabilis*. Furthermore, there would appear to be compression of the flight period of *C. variabilis*. The reasons for such a compression of flight period are unclear, but anecdotally it appears to me that vegetation is dying off earlier and daytime temperatures are hotter earlier in the summer. Responses of the other hoverfly species (*L. lucorum*, *C. albitalis* and *Brachyopa* spp.) to the exceptionally early springs of the period 1990 to 1994 are similar to those of *E. eligans* and *C. variabilis*, but there has been a slight readjustment over the period 1995 to 1999. Even so, these species show clear evidence of compression of phenology and much lower incidence of occurrence in July and August.

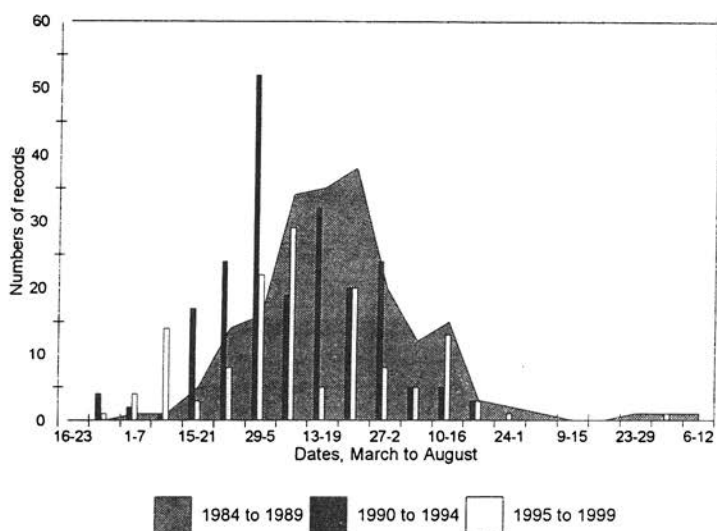
Unlike the hoverflies which formerly occurred in late April/May, *Bombylius major*, whose flight period is quoted as mid-March to early May by Colyer and Hammond (1968), shows few signs of a significant shift in flight period although numbers in March may be rising as a result of better recording conditions. The likelihood is that this species responds to both warmer weather and perhaps also day length, for it coincides with a range of solitary bees which emerge in early spring. This usefully illustrates that not all species are responding uniformly to warmer and earlier springs by changing their emergence patterns.

Concluding comments

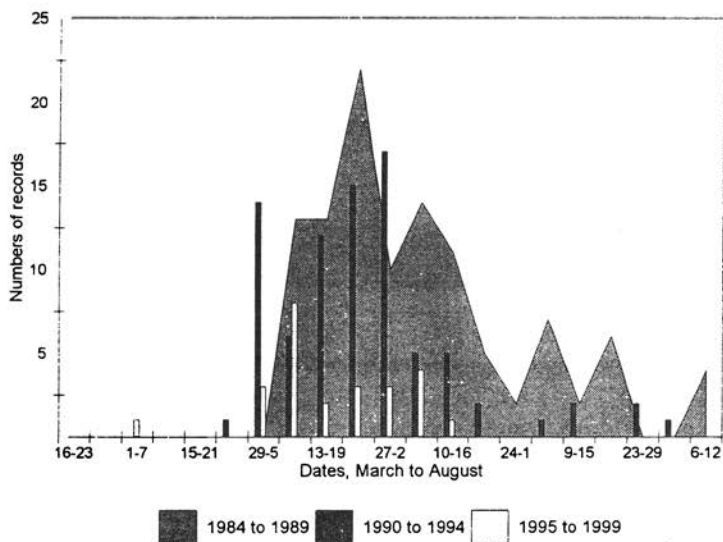
It is still debatable whether these results are indicative of global warming, but there is clear evidence that the UK has experienced some of the warmest years since records began; it would also seem that some hoverflies have adjusted their phenology as a direct response. Evaluation of changing patterns in phenology across the country would be a useful way of establishing whether the results discussed here are more widely exhibited by the hoverfly fauna as a whole. Unfortunately, there are few areas which are sufficiently intensively recorded to allow the exercise to be repeated in relation to a relatively small area.

These analyses are based on readily recognisable, and largely common species, which many recorders may have previously felt were not worth recording on a regular basis. The data clearly suggest that there is a small suite of species which might be used to form the foundation of a long-term project to monitor responses to climate change.

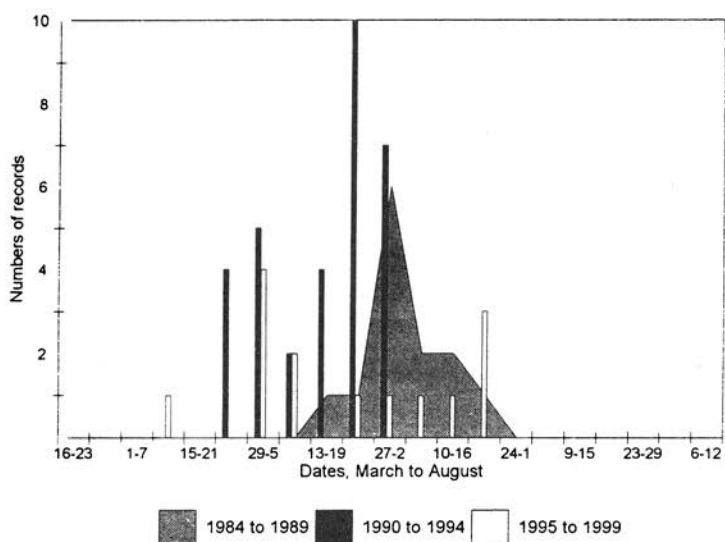
Phenology of *Epistrophe eligans*



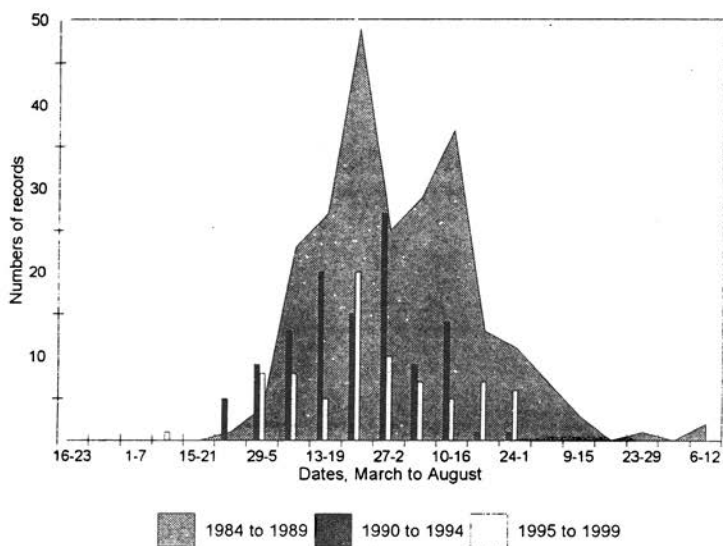
Phenology of *Cheilosia variabilis*



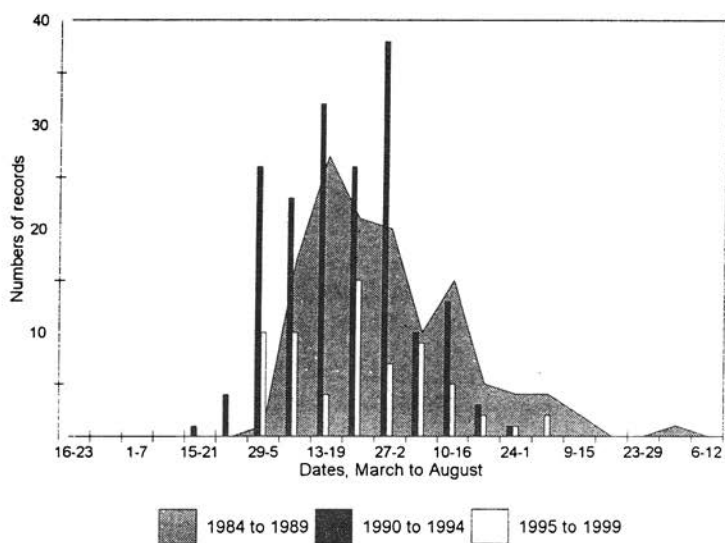
Phenology of *Brachyopa* spp.



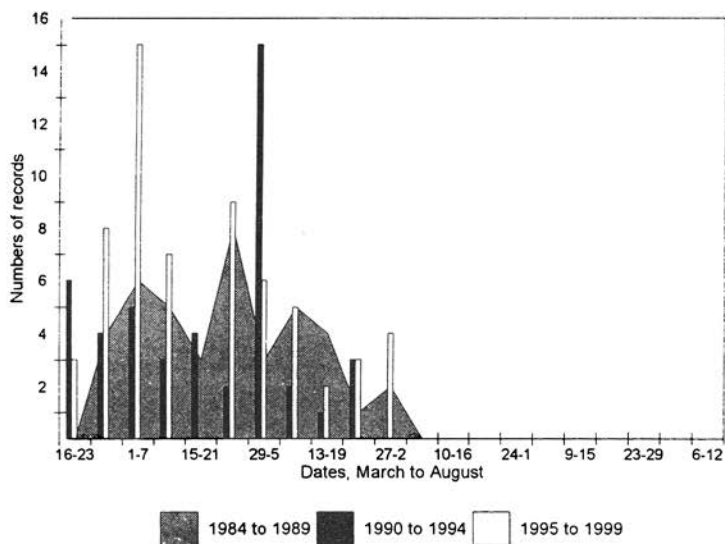
Phenology of *Cheilosia albitarsis*



Phenology of *Leucozona lucorum*



Phenology of *Bombylius major*



Acknowledgements

The data used in these analyses have been supplied by a wide variety of recorders who are too numerous to list individually; I would like to thank them all for their valuable contributions.

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***Callicera aurata* (Rossi) (Diptera, Syrphidae) and *Paraclusia tigrina* (Fallén) (Diptera, Clusiidae) in south-east London** - An invertebrate survey of Woodlands Farm, Bexley, in south-east London (TQ 4476, vice-county 16, West Kent) produced an interesting list of species, the result of the farm having lain derelict and therefore fallow for about 10 years. Amongst the most interesting were these two flies.

A single specimen of *Callicera aurata* (Rossi) was found sitting on a bramble leaf near the derelict farm buildings on 3.viii.1998. Although originally listed as vulnerable, Red Data Book status 2, by D.B. Shirt (1987. *British Red Data Books: 2. Insects*. Peterborough: Nature Conservancy Council), its status was revised to nationally rare, RDB3 by S. Falk (1991. *A review of the scarce and threatened flies of Great Britain. Part 1*. Peterborough: Nature Conservancy Council). Little is known of its habitat preferences, but old trees appear to be a requirement and larvae have recently been found developing in a rot hole in a beech tree. There is an old record for this area: one was found in viii.1959 adjacent to a south-east London garden (Chandler, P.J. 1969. The Hover-flies of Kent (Diptera, Aschiza-Syrphidae and Pipunculidae). *The Transactions of the Kent Field Club* 3(3), 139-202).

A single specimen of *Paraclusia tigrina* (Fallén) was taken by sweeping, in woodland at the north end of the farm on 7.vii.1998. This species is accorded vulnerable, RDB2, status by Shirt (1987) and Falk (1991), although recent records suggest that such a high status is not warranted. It is associated with old trees in copses, woods and ancient parkland and develops in moist rotten wood; this was until recently unconfirmed but puparia were found in rotten beech (*Fagus*) wood at Windsor Forest, Berkshire in 1999 (P.J. Chandler, *pers. comm.*).

The occurrence of two species associated with old trees or ancient woodland on a derelict farm is, in fact, not too surprising. There are several old trees in the fields, along some of the old hedgerows (one of which is an obviously ancient parish boundary) and the famous Oxleas Wood SSSI is nearby - **RICHARD A. JONES**, 135 Friern Road, East Dulwich, London SE22 0AZ, email: bugmanjones@hotmail.com

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