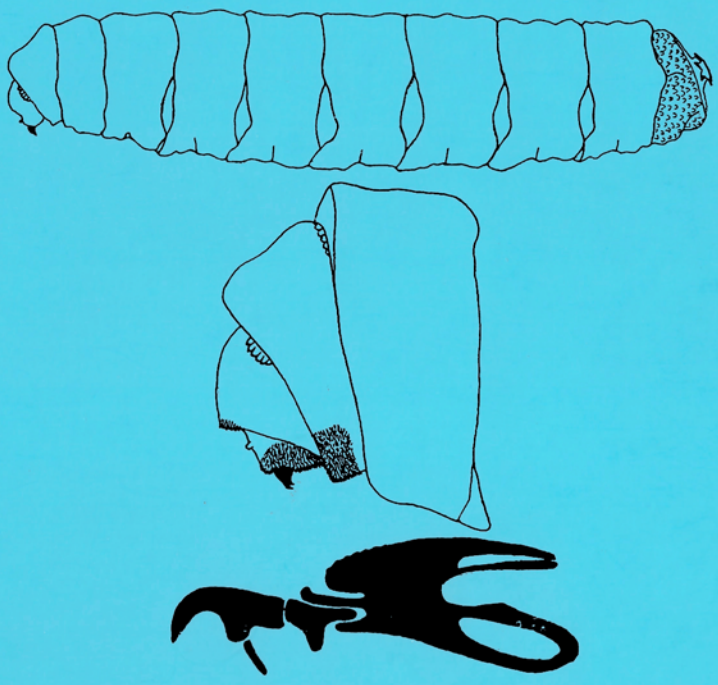
Dipterists Digest



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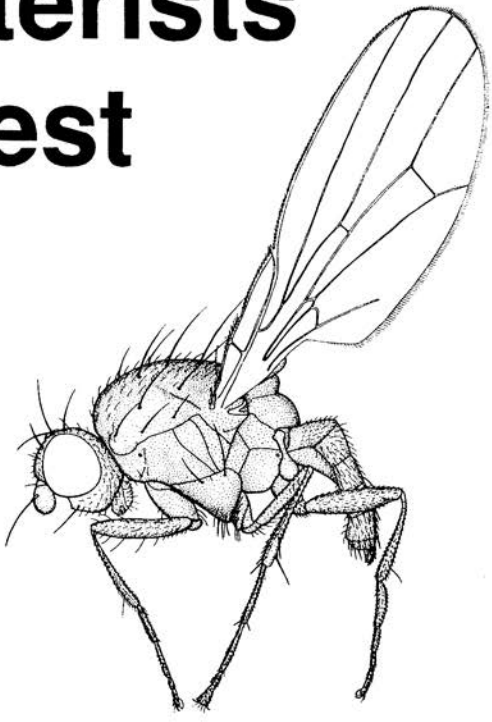

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Dipterists Digest is the journal of the **Dipterists Forum**. It is intended for amateur, semi-professional and professional field dipterists with interests in British and NW European flies. All notes and papers submitted to **Dipterists Digest** are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

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- provisional and interim reports from the Diptera Recording Schemes, including maps;
- records and assessments of rare and scarce species including those new to regions, countries, districts etc;
- local faunal accounts and field meeting results specially if accompanied with good ecological/natural history interpretion;
- descriptions of species new to science, and
- notes on identification including deletions, ammendments to standard key works and checklists.

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Dipterists Digest 1996 **3**, 1-4

The phytophagous larva of *Suillia laevifrons* (Diptera, Heleomyzidae)

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The known larvae of most Heleomyzidae are either saprophages associated with carrion, faeces, mammal burrows and bird nests, or mycophages feeding in fruiting bodies of fungi (Ferrar, 1987; Smith, 1989). However, a few members of the Suillinae are phytophages. Uffen and Chandler (1978) record *Suillia ustulata* (Meigen) and *Suillia variegata* (Loew) as being associated with stems of *Sambucus* (Sambucaceae) and roots of *Aster* (Compositae) respectively; but both species have also been bred from fungi (Chandler, 1978). *Suillia lurida* (Meigen) is a pest of onions and garlic (Liliaceae) (Smith, 1989) and is possibly strictly phytophagous.

We have discovered another phytophagous species in the same genus, *Suillia laevifrons* (Loew, H., 1862) which does not appear to have been reared previously. Aspects of the larval biology of this species and a description of the third stage larva are given in this paper.

Larval biology

While searching for leaf-mining larvae on the open, windswept moor of Auchencorth Moss (NT2056), Midlothian (V.c. 83) on 16 & 17 May 1993 we found a number of plants of *Luzula pilosa* (L.) Willd. (Juncaceae) in which the central shoot was starting to wither slightly and which came away easily when pulled. On investigation, a dipteran larva was found within the growing shoot of the plant. In each case the larva had hollowed out a cyclindrical chamber just above the point where the roots join the shoot, which is the tender growing bud. Larvae fed head downwards facing the growing bud while frass accumulated in the upper end of the chamber. Larvae left the chamber by making a circular hole, some 0.75mm diameter, at the basal end. The presence of a hole indicated that the shoot had been abandoned; occupied feeding chambers were always intact.

Of the 7 worked shoots that were collected on 16-17 May 1993, 4 had exit holes. Of the remaining 3, one larva was removed and preserved and the other two reared. One left the shoot on 21 May 1993 and pupated in the debris of dead leaves beneath the plant (no soil was available); the other pupated within the *Luzula* stem on 25 May 1993. One pupa died and one adult emerged, but it was mouldy and unidentifiable by the time it was discovered.

A further 4 occupied shoots of *L. pilosa* were collected at the same site on 5 May 1995. On 16 May 1995 one larva had left its feeding chamber and was active. When placed on damp sand it immediately burrowed to a depth of 1cm and, in due course, pupated. Altogether 2 puparia were obtained and these produced a male and a female on 7 and 10 June 1995 respectively. The species was identified using Collin (1943) with confirmation using characters of the male genitalia (Gorodkov, 1989).

Description of the third stage larva

Three larvae and two puparia examined

Overall appearance: a subcyclindrical larva in cross-section, between 4-5mm long with a pair of hooks protruding from the mouth and a nodulate end segment (Fig. 1); integument mostly smooth and shining with segment boundaries clearly defined.

Diagnosis: length between 4-5mm; width 0.8-1mm; subcyclindrical in cross-section, truncate posteriorly, tapering anteriorly; a pair of thin hooks protuding from the mouth; integument smooth and shining except for margin of the mouth, antero-dorsal margin of the prothorax and the antero-ventral margin of the mesothorax which are matt and coated in micro-setae (Fig. 4), and the end segment which is nodulate (Fig. 1); antero-dorsal margin of the prothorax with a pair of sensilla; anterior spiracles fan-shaped consisting of 6-8 lobes; end segment narrower and shorter than 7th abdominal segment; posterio-ventral margin of end segment with three pairs of poorly defined tuberacles and anal plate with two prominent lobes with a reticulate surface (Fig. 5); each of the first six abdominal segments with a locomotory welt consisting of numerous rows of round-tipped setae arranged round a transverse bar (Fig. 3); posterior spiracles mounted on a pair of short, lightly sclerotised papillae, each papilla with three spiracular openings and a rim of irregularly-shaped lightly sclerotised projections (Fig. 2). Cephalopharyngeal skeleton: mouth-hooks without accessory teeth, dental sclerite present; H-shaped intermediate sclerite separate from pharyngeal sclerite, pharyngeal sclerite with windows in dorsal and ventral corna (Fig. 6).

Discussion

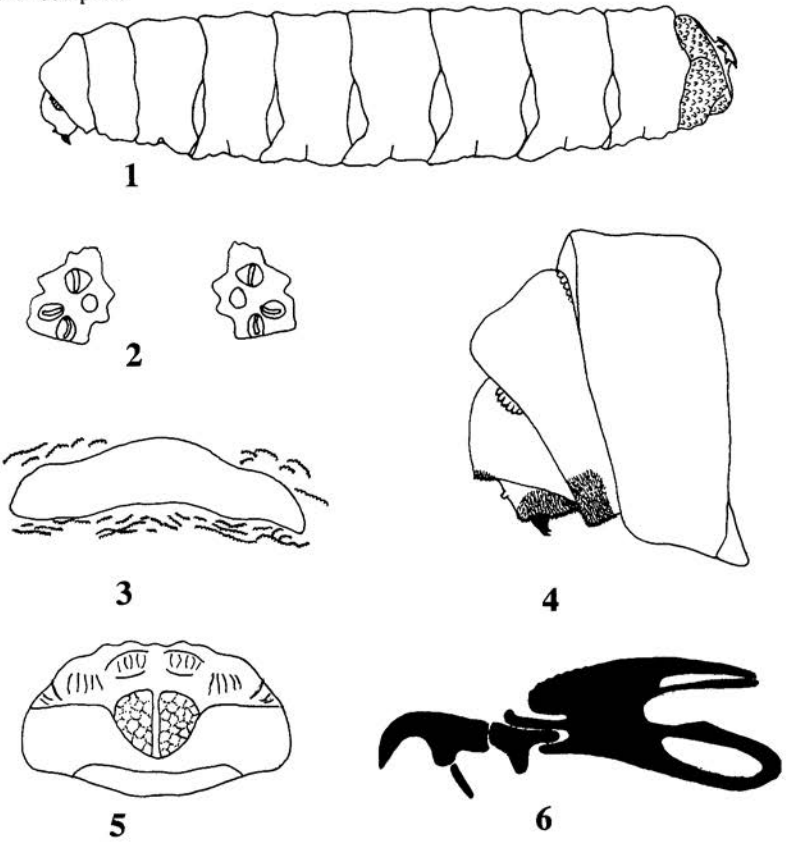
The larva of *S. laevifrons* appears to be very similiar to that of *S. lurida*, see figures and descriptions in Ferrar (1987) and Smith (1989). It seems to be distinguishable from that species by the larger size of the windows in the dorsal and ventral corna of the cephalopharyngeal skeleton; these are small in *S. lurida*.

Unlike the abdominal segments, the mesothorax and metathorax have infolded antero-dorsal margins (Fig. 4). This suggests that, as with many other dipteran larvae, the operational direction of movement in the mouthparts is up-and-down, because the infolded margins are the points where the segments fold into one another during muscular contraction of the thorax. The margin of the prothorax is coated in micro-setae, as is the margin of the mouth. Micro-setae do not appear to have been described previously for other heleomyzid larvae. In *S. laevifrons* they probably help protect these areas from wear and tear when loosening plant tissue.

Some heleomyzid larvae, such as *Pseudoleria* species, have large end segments in relation to those of the abdomen (Ferrar, 1987). In *S. laevifrons* the end segment is markedly smaller than the adbominal segments and has small poorly-defined posterio-ventral lobes. A reduced end segment may help protect the spiracular openings from becoming blocked in the feeding tunnel. In many dipteran larvae postero-ventral lobes provides necessary purchase during locomotion (Roberts, 1971). This requirement may explain the size of the

end segment in *Pseudoleria* larvae which occur in bird and mammal nests and in dung (Ferrar, 1987). In *S. laevifrons* the need may not be so great if the larva grips the sides of the tunnel when moving or uses the 6th or 7th segments to grip the substrate.

In captivity, a larva extracted from its feeding chamber could be induced to enter a new shoot simply by placing it in the centre of the shoot. It then went down between the rolled leaves and began feeding. Whether larvae require more than one shoot for development was not investigated, but it seems unlikely given the structure of the larva and its size in relation to the food plant.



Figs 1-6. Third stage larva of *Suillia laevifrons*. 1, whole larva, lateral view; 2, posterior spiracles, apical view; 3, ventral surface of second abdominal segment, locomotory welt; 4, head and thorax, lateral view; 5, end segment, ventral view; 6, cephalopharyngeal skeleton, lateral view.

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***Mallota cimbiciformis* (Diptera, Syrphidae) in Lanarkshire -** During a recent visit to the Clyde Valley, evidence of *Mallota cimbiciformis* (Fallén) as a resident breeding species was obtained in the form of a spent puparium. It was found on 8 August 1994 at Motherwell, Lanarkshire in a rot hole in *Aesculus*, some 4.7 metres above ground. The opening to the rot hole was in an approximate north-west direction with at least 50cm depth of water starting 5cm below the opening and estimated at 5 litres. Contents included dead and decaying leaves. The puparium was situated in the roof of the hole and would escape casual detection since it was concealed within dead wood. Many spent puparia of *Myathropa florea* were attached to, and surrounding the *M. cimbiciformis* puparium (>15), and many other *M. florea* (>40) were observed within the rot hole in a variety of situations. The puparia were identified using Rotheray, G.E. (1993. *Dipterists Digest* **9**: 1-155) who kindly confirmed the *M. cimbiciformis* identification. The puparium is located in the collections of the National Museums of Scotland.

According to Stubbs, A.E. & Falk, S.J. (1983. *British Hoverflies.* BENHS) *M. cimbiciformis* is widespread in the south and the Midlands and Falk, S.J. (1991. *A review of scarce and threatened flies.* NCC) states that it is known as far north as Cheshire. The present record therefore greatly extends the northern distribution of this species and is apparently the first time it has been found in Scotland. The Clyde valley woodlands within the Motherwell, Hamilton, Lanark areas appear to be relict remains of a formally more extensive woodland cover. *Mallota cimbiciformis* may be similarly part of a relict insect fauna associated with these woodlands rather than a newly colonising addition to the Scottish insect fauna. **BOYD BARR,** New Schoolhouse, Arinagour, Isle of Coll, Inner Hebrides.

Dipterists Digest 1996 **3**, 5-23

The distribution of *Aedes*: subgenus *Ochlerotatus* in Britain

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This publication completes the distribution maps for the British mosquitoes. The genera *Anopheles*, *Culex*, *Coquillettidia*, *Culiseta*, *Orthopodomyia* and the subgenera *Aedes*, *Aedimorphus* and *Finlaya* of the genus *Aedes* were the subject of earlier papers in this series (Rees & Snow 1990, 1992, 1994, 1995).

The maps were produced from a database (dBASEII) and analyzed by a BASIC program developed on an IBM-compatible PC. As in the earlier publications, the records prior to 1940 are primarily those from Marshall (1938). In all cases the original references to the distributions cited by Marshall were examined and, where they were quoted in sufficient detail, they appear as records in the accompanying maps.

Data for 1940-1969 have been gleaned from the literature, while the most recent group (1970 to date) are primarily those received directly by the British Mosquito Recording Scheme (BMRS), together with a small number of published records.

Fig. 1 shows that there are a total of 1725 sites in Britain from which mosquitoes have been reported. These range over 859 10Km squares and 101 Vice Counties. The maps show that there are many areas including 11 Vice Counties in which no species have been recorded. Whether this truly shows an absence of mosquitoes or whether species await recording remains to be seen.

The species will now be considered in turn with a brief description of the larvae and adults, an outline of their ecology and life histories, and a commentary on their known distributions. Further information on identification and biology may be found in Cranston *et al.* (1987) and Snow (1990).

Aedes annulipes (Fig. 2)

This large mosquito is similar in most respects to *A. cantans* from which it is distinguished with difficulty. These two species differ only in details of male genitalia and coloration, the black and white of *A. cantans* being replaced by dark brown and yellowish-white. At present there is no way of separating larvae and pupae of the two species.

A. annulipes has a 1-year life cycle and eggs are laid in depressions in open or partially shaded situations subject to flooding by autumn and winter rain, differing markedly from the densely shaded situations selected by *A. cantans* (Marshall, 1938). In all other respects the ecology and life cycles of these two species are similar. The eggs are laid in the summer and hatch early in the year. Larval development is normally completed by April or May, adults appearing shortly after and found until October. Females feed principally on mammals (Service, 1971) and bite people by day as well as in the evening, *A. annulipes* is recorded

from England, as far north as Ashington (Northumberland). Because of its great similarity to *A. cantans* it may have been overlooked in some areas.

***Aedes cantans* (Fig. 3)**

As indicated above, this species is very similar to *A. annulipes* morphologically. *Aedes cantans* is a univoltine species (Marshall, 1938). Eggs, laid in soil or amongst leaf litter during the summer, hatch early in January (Service, 1977). The aquatic stages are found in densely shaded, freshwater pools, and seldom open, sunlit waters. Larval development is normally completed by June (Service, 1977), when pools are rapidly drying out.

Adult *A. cantans* first appear during April (Marshall, 1938). Biting females are most numerous during July and may be encountered until September (Service, 1977) or October (Muirhead-Thompson, 1956). The usual hosts are woodland mammals (Service, 1971), but man is readily attacked.

In England, *A. cantans* has been found as far north as Gosforth Park and Bywell (Northumberland) (Varley, 1951). In Wales, the only record is from Llay Bog (Burke, 1978), near Wrexham (Clwyd) but the species presumably is more widespread. Specimens of adult *A. cantans* from Scotland (Aberfoyle [1897 and 1949] and Gordonston [1949]) are held by the National Museums of Scotland (P.S. Corbet, *pers. comm.*). Published records to date are Dingwall (Lang, 1920 as *Ochlerotatus waterhousei*; Richter, 1950) and Paddockmuir Wood (Perthshire), Powmyre (Angus) and Tentsmuir Forest (Fife) (Packer & Corbet, 1987).

***Aedes caspius* (Fig. 4)**

Aedes caspius is an ornate mosquito with its mainly fawn scutum divided into thirds by two parallel white stripes, its broad pale abdominal bands and its pale leg rings which embrace both ends of the tarsal segments. Larvae have extremely short anal papillae in common with *A. detritus* and several other species.

Again the egg is the overwintering stage and hatching occurs after flooding in the spring. The egg-laying sites are usually coastal marshes, although there are many records of *A. caspius* from inland, non-saline waters (Marshall, 1938; Classey, 1944). The first adults often appear in April, within a month of hatching, and there may be several generations each year (Marshall, 1938). Adults may still be present in October. Females bite man viciously mainly out-of-doors but they sometimes enter houses to feed (Mattingly, 1950).

Older records indicate that *A. caspius* was more prevalent than *A. detritus* on the east coast of England and rather less so on the south coast (Marshall, 1938). More recently, there is evidence of the replacement of *A. caspius* by *A. flavescens* in the north Kent marshes (Service & Smith, 1972), but at the same time, *A. caspius* remains abundant at Hayling Island, on the south coast (C.D. Ramsdale, unpublished).

According to Marshall (1938) *A. caspius* is widespread in British coastal districts, with a

number of inland records in southern England including Droitwich (Worcs.). However, the detailed records in our possession indicate a more restricted distribution.

Aedes communis (Fig. 5)

Although widely distributed in many other parts of Europe, *A. communis* has been recorded only from Oldmoor Wood, near Strelley (Nottinghamshire) (Marshall, 1938), Samares, Jersey (Lane, 1965) and, in 1944 and 1945, from Monk Soham (Suffolk) (Morley, 1945). The Jersey records are not shown on the accompanying map and are not included in the summary of records. Adults of this species closely resemble *A. detritus*, *A. sticticus* and *A. leucomelas* and larvae are similar to those of *A. annulipes* and *A. cantans*.

In northern Europe, where it is widely distributed, larvae are found in shaded waters. There it is a univoltine species, biting man and domestic animals. In most details of its ecology and life history it appears to resemble *A. punctor*.

Aedes detritus (Fig. 6)

This is a small brown species with a banded abdomen and a peppering of white scales over the body, wings and legs but which lacks pale leg rings. Larvae have a very large number of comb scales and, in common with several other species including *A. caspius*, extremely short anal papillae.

Aedes detritus oviposits in salty ground prone to periodic flooding by both rain and sea water, and usually a generation follows each immersion (Marshall, 1938). Some eggs laid in dry areas in the summer and autumn may hatch in the winter and so both eggs and larvae may overwinter. The overwintering larvae develop to adults in March and there are successive generations throughout the summer and autumn (Service, 1968), with a small number of adults surviving the winter. Females bite man persistently chiefly out-of-doors but will also enter buildings to feed. In many coastal areas this salt-marsh species creates a greater nuisance than any other British mosquito.

Aedes detritus has a wide but patchy distribution on British and Irish coasts and estuaries, with most northerly records from Nairn (Richter, 1950). There are inland records from brackish water at Droitwich (Worcs.) (Marshall, 1933) and in an extensive area around Northwich and Crewe (Cheshire) (Burke, 1946) and freshwater at Wood Walton Fen (Hunts.) (Service, 1972) and Oulton, near Leeds (W. Yorks.) (Service, 1973).

Aedes dorsalis (Fig. 7)

This species resembles *A. caspius* but differs in coloration in several respects: the scutum is ashy-white with a dark brown central area and the abdomen is black and ashy-white. As in *A. caspius* the anal papillae of the larvae are extremely short.

The life cycle of *A. dorsalis* is essentially similar to that of *A. caspius*, although the adult season is restricted from May to September. Larval sites are sunlit, or partially shaded,

temporary collections of fresh or brackish water in ditches and pools (Marshall, 1938). Females feed on a variety of mammals including man and bite during the daytime and evening in open areas (Service, 1969b).

In Britain *A. dorsalis* is known only from England, from Dorset to Cumbria. The record for Foulshaw Moss (Cumbria) (Marshall, 1938) is not shown on the map as we are unable to identify the site accurately.

***Aedes flavescens* (Fig. 8)**

Aedes flavescens has a golden-brown scutum, a yellow abdomen with dark lines in the centre and down the sides and broad pale bands on the legs. Larvae belong to the "short anal papillae" group and have distinctively pointed comb scales.

Aedes flavescens has been investigated in detail by Service & Smith (1972) who found the species to be predominantly univoltine in this country. Eggs are laid on mud or in plant debris in situations which normally remain dry until flooded by late autumn or winter rains. Larval sites are always open, sunlit and never shaded, but may be fresh or brackish. These include ditches, marshes and flooded meadows.

Adult emergence begins in April and adults are rarely encountered after July, although there are records for August and September. Females feed on larger mammals including cattle, horses, sheep and man, and may be troublesome locally.

Aedes flavescens, long thought to be restricted to coastal Essex and North Kent, has subsequently been found to be abundant at Barton on Humber, some 200 km further north (Service & Smith, 1972). *A. flavescens* has also been recorded from Isle of Sheppey (Kent); Walton on the Naze (Essex) (both Marshall, 1938); Barking (London) (Nye, 1955); Somerset and Northants (Osborn, 1980).

***Aedes leucomelas* (Fig. 9)**

Adults of this rare species resemble *A. detritus* closely but lack the scattered pale scales on the abdomen.

In continental Europe larvae are found in unshaded and partially shaded fresh and brackish water pools and ditches, both on coasts and inland. The life cycle resembles that of *A. caspius*.

The only authenticated record of this species in Britain is from Widmerpool (Nottinghamshire) in 1919 (Marshall, 1938), and old German literature contains a record from Dartford (Kent) (Martini, 1920) (not shown on the map).

***Aedes punctor* (Fig. 10)**

This small, dark-legged woodland mosquito has pale abdominal bands which

characteristically narrow in the centre. The mature larvae differ from all other British *Aedes* as the saddle completely surrounds the anal segments. Eggs are laid in dried-up hollows and ditches or above the level of standing water during the summer months (Marshall, 1938). Such sites are often lined with dead leaves, in open heath or in woodland where birch and pine predominate (Marshall, 1938). However, this species is abundant on clay soils amongst beech trees in Epping Forest (Essex) and in oak woodlands at Paddockmuir (East Perthshire). The eggs are flooded in autumn and winter and hatch from December onwards, the first adults emerging in April or May. Adult numbers decline markedly after July (Service, 1969a) although a few may survive to October.

Females feed on a range of mammals including humans (Service, 1971) and bite readily, especially at dusk (Marshall, 1938). There are some records of *A. punctor* biting in houses (Harold, 1926).

Aedes punctor is widely distributed in Britain with northerly records from Dornoch (East Sutherland). Offshore island records include Rhum (Steel & Woodroffe, 1969) and Lundy (Lane, 1977).

***Aedes rusticus* (Fig. 11)**

Like *A. punctor* it is a dark-legged species with a banded abdomen. However, the abdominal pale bands widen centrally rather than narrowing as they do in *A. punctor*. In the later larval stages there are 3-4 pairs of hairs on the dorsal surface of the siphon and the pecten overlaps the siphonal hair, both characters being diagnostic.

This species has a very similar life cycle to that of *A. punctor* and *A. cantans* and often shares similar woodland aquatic sites (Marshall, 1938). Like these other two species, *A. rusticus* is a troublesome biter during the summer in the open near its aquatic sites. However, *A. rusticus* appears to have a shorter adult season, being seen only rarely in July and August.

Aedes rusticus is widely distributed in Britain, with a most northerly record from Dingwall (Highland) (Marshall, 1938).

***Aedes sticticus* (Fig. 12)**

Aedes sticticus is dark-legged with parallel pale bands on the abdomen and a white scutum with a broad dark brown central stripe. Larvae, like those of *A. cinereus*, have extremely long anal papillae.

From observations elsewhere in the world it appears that *A. sticticus* overwinters in the egg stage and that the larvae develop in open and partly shaded temporary waters. Females bite people readily in open situations (Mattingly, 1950).

There are no recent reports of this species, past records being from only four widely separated areas: the New Forest (Hants.), Wray (Cumbria), Aberfoyle (Central Scotland)

(Marshall, 1938) and Heverthwaite [sic] - probably Haverthwaite (Cumbria) (Macan, 1951).

Acknowledgements

We wish to thank the many collectors who have provided records upon which this paper is based.

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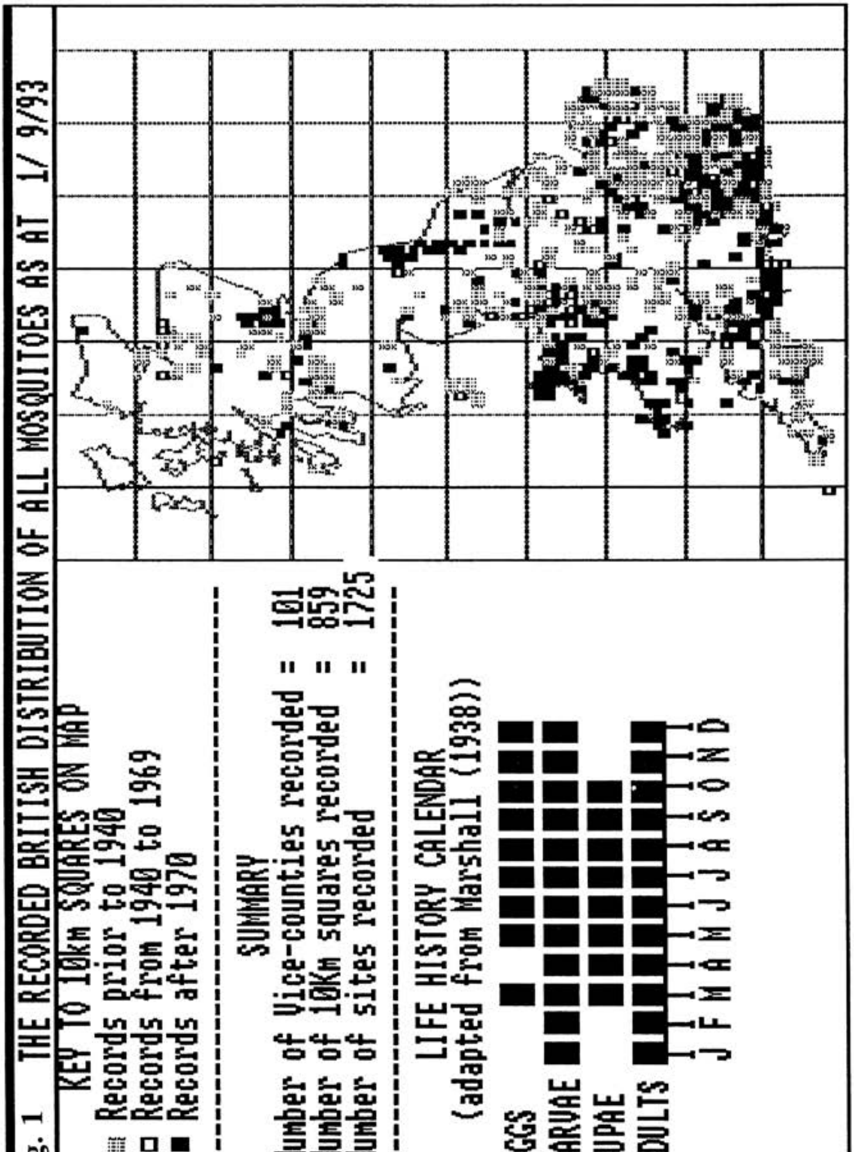


Fig. 1
THE RECORDED BRITISH DISTRIBUTION OF ALL MOSQUITOES AS AT 1/ 9/93
KEY TO 10Km SQUARES ON MAP
Records prior to 1940
Records from 1940 to 1969
Records after 1970
SUMMARY
Number of Vice-counties recorded = 101
Number of 10Km squares recorded = 859
Number of sites recorded = 1725
LIFE HISTORY CALENDAR
(adapted from Marshall (1938))
STAGE
EGGS
LARVAE
PUPAE
ADULTS
J F M A M J J A S O N D

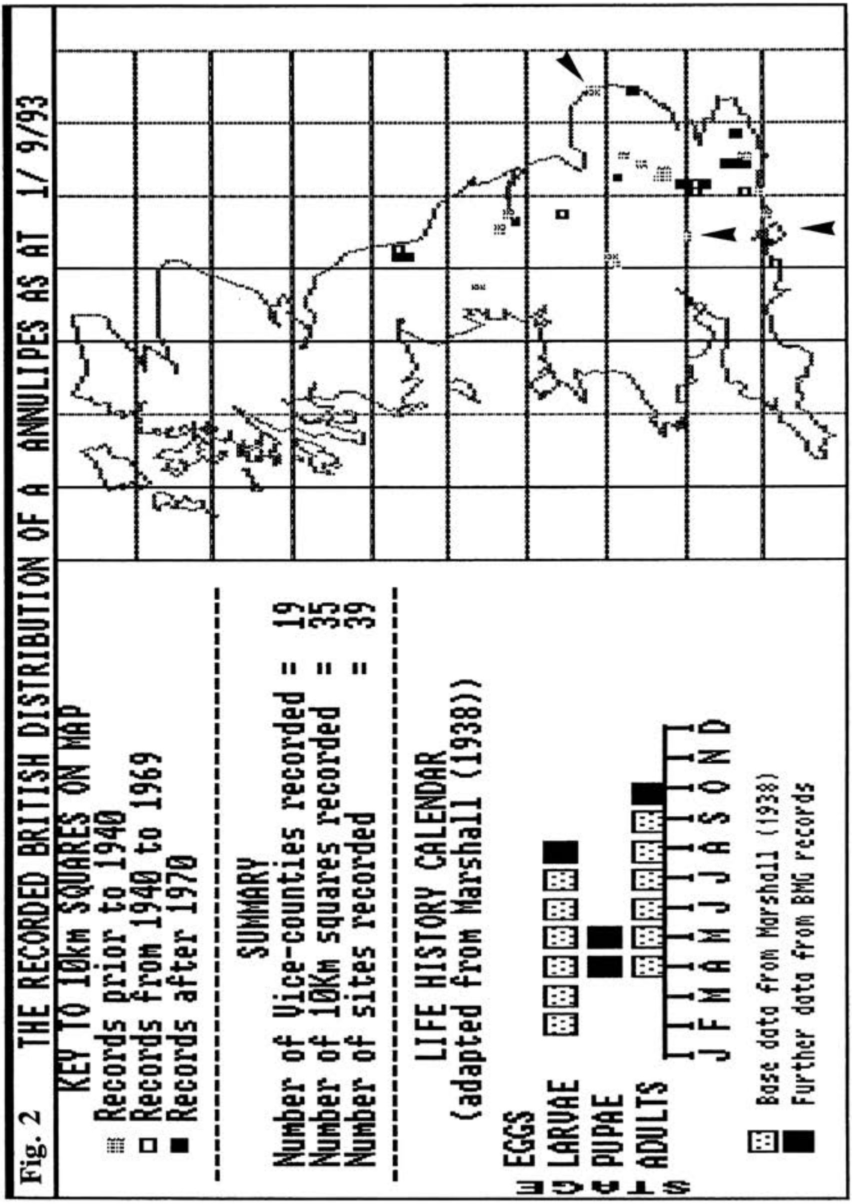

THE RECORDED BRITISH DISTRIBUTION OF A ANNULIPES AS AT 1/ 9/93
KEY TO 10km SQUARES ON MAP
Records prior to 1940
Records from 1940 to 1969
Records after 1970
SUMMARY
Number of Vice-counties recorded = 19
Number of 10Km squares recorded = 35
Number of sites recorded = 39
LIFE HISTORY CALENDAR
(adapted from Marshall (1938))
STAGE
EGGS
LARVAE
PUPAE
ADULTS
J F M A M J J A S O N D
Base data from Marshall (1938)
Further data from BMG records

Fig. 2

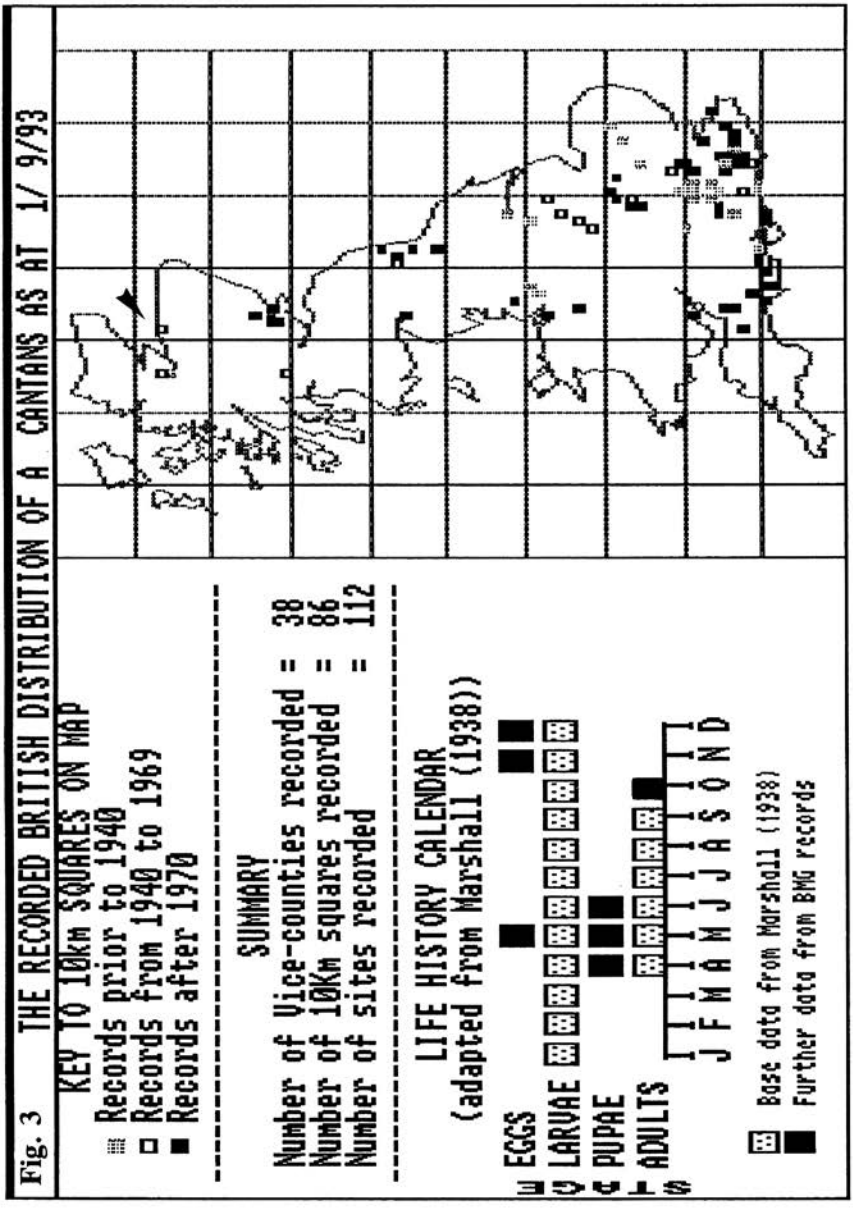
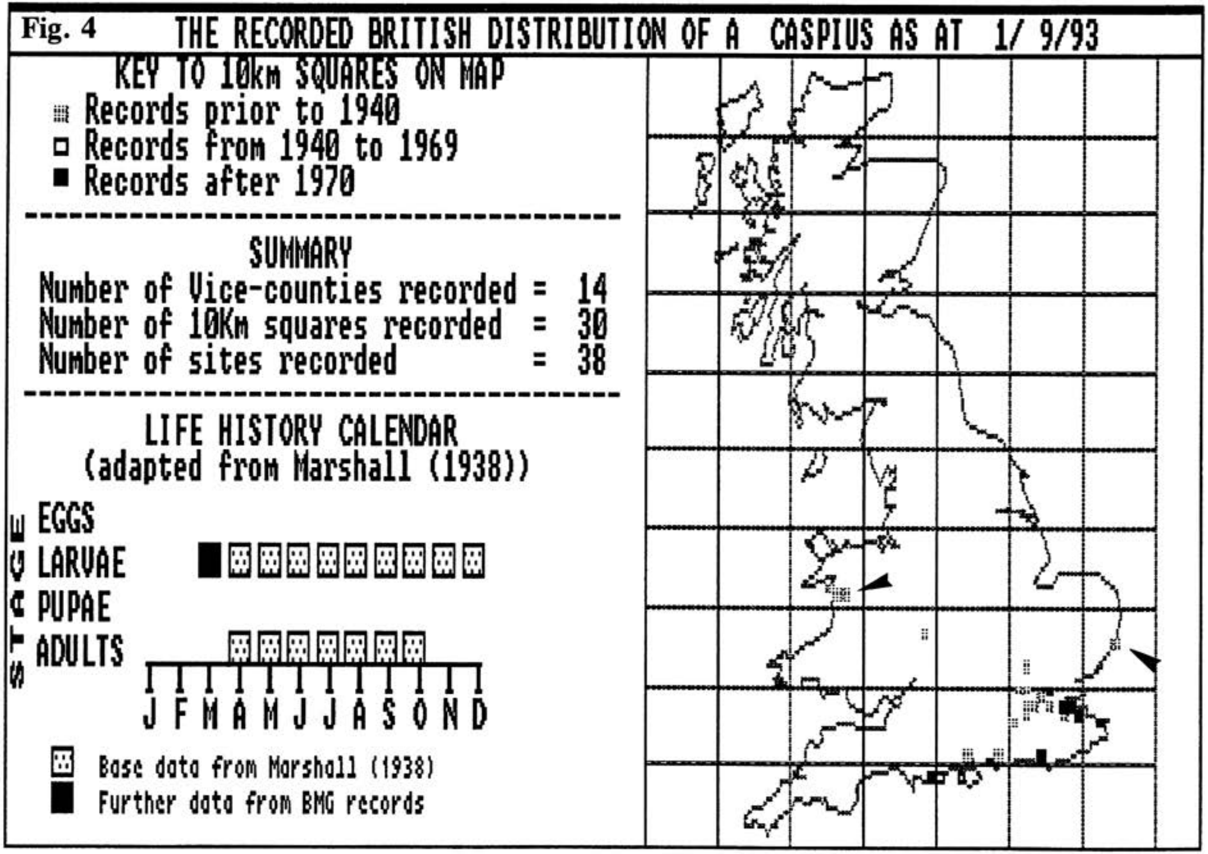


Fig. 3 THE RECORDED BRITISH DISTRIBUTION OF A CANTANS AS AT 1/ 9/93
KEY TO 10km SQUARES ON MAP
Records prior to 1940
Records from 1940 to 1969
Records after 1970
SUMMARY
Number of Vice-counties recorded = 38
Number of 10Km squares recorded = 86
Number of sites recorded = 112
LIFE HISTORY CALENDAR
(adapted from Marshall (1938))
EGGS
LARVAE
PUPAE
ADULTS
J F M A M J J A S O N D
Base data from Marshall (1938)
Further data from BMG records

Fig. 4


THE RECORDED BRITISH DISTRIBUTION OF A CASPIUS AS AT 1/ 9/93
KEY TO 10km SQUARES ON MAP
Records prior to 1940
Records from 1940 to 1969
Records after 1970
SUMMARY
Number of Vice-counties recorded = 14
Number of 10Km squares recorded = 30
Number of sites recorded = 38
LIFE HISTORY CALENDAR
(adapted from Marshall (1938))
STAGE
EGGS
LARVAE
PUPAE
ADULTS
J F M A M J J A S O N D
Base data from Marshall (1938)
Further data from BMG records

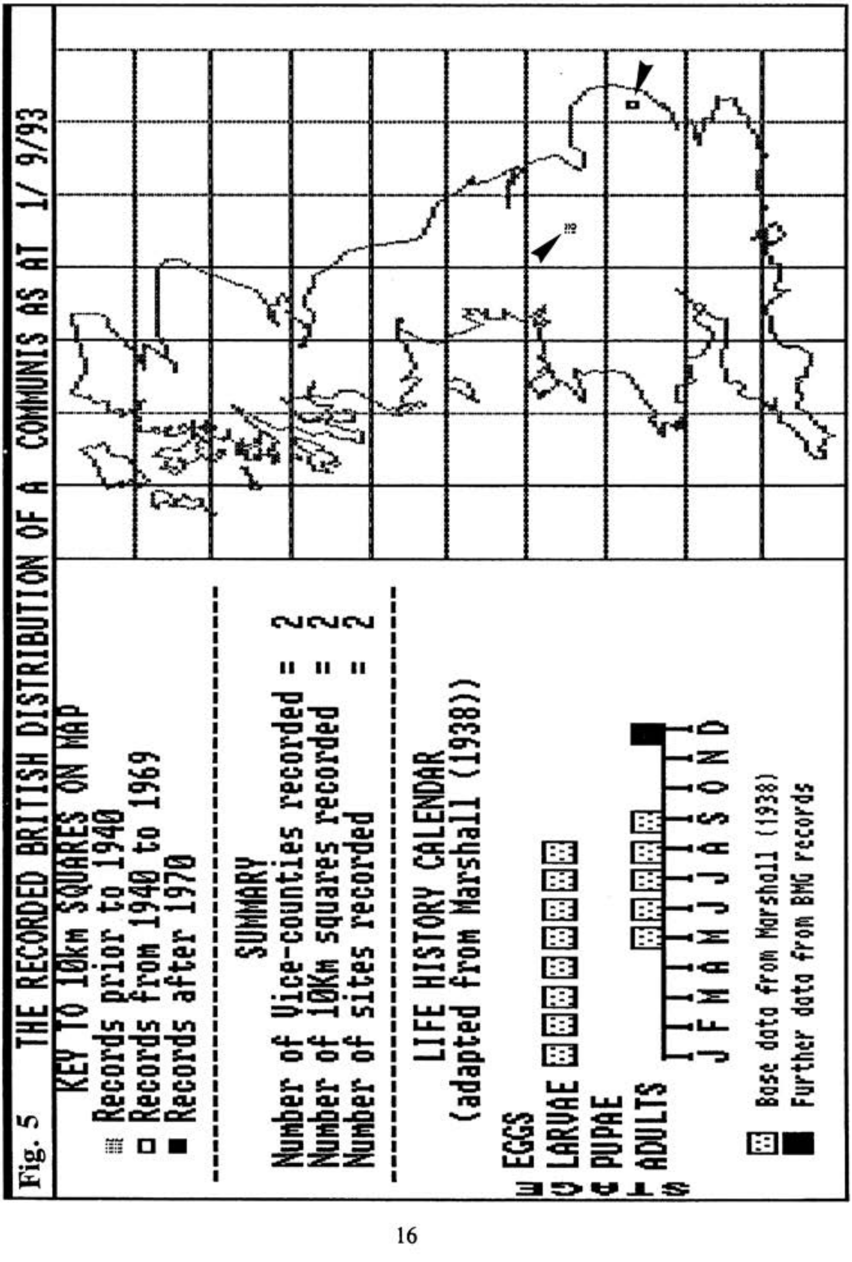


Fig. 5 THE RECORDED BRITISH DISTRIBUTION OF A COMMUNIS AS AT 1/ 9/93
KEY TO 10km SQUARES ON MAP
Records prior to 1940
Records from 1940 to 1969
Records after 1970
SUMMARY
Number of Vice-counties recorded = 2
Number of 10Km squares recorded = 2
Number of sites recorded = 2
LIFE HISTORY CALENDAR
(adapted from Marshall (1938))
STAGE
EGGS
LARVAE
PUPAE
ADULTS
J F M A M J J A S O N D
Base data from Marshall (1938)
Further data from BMG records

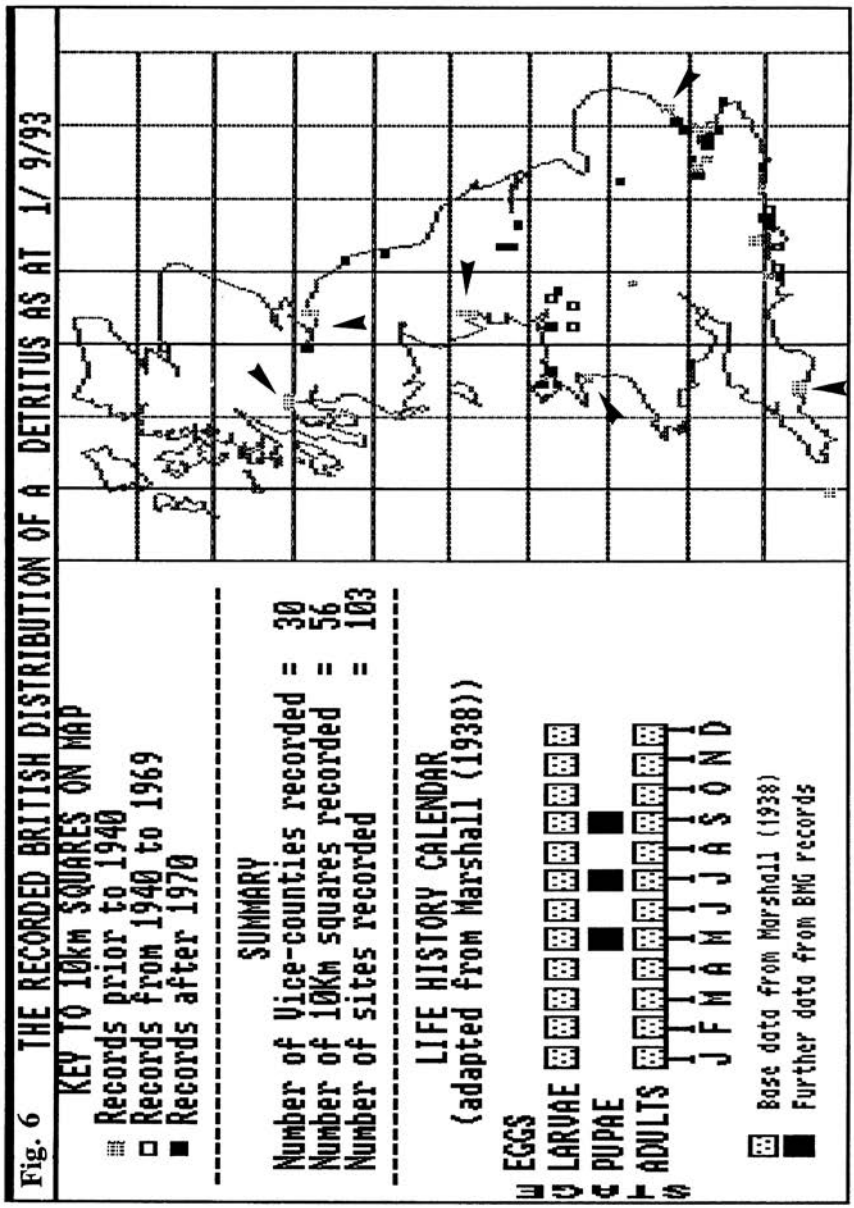
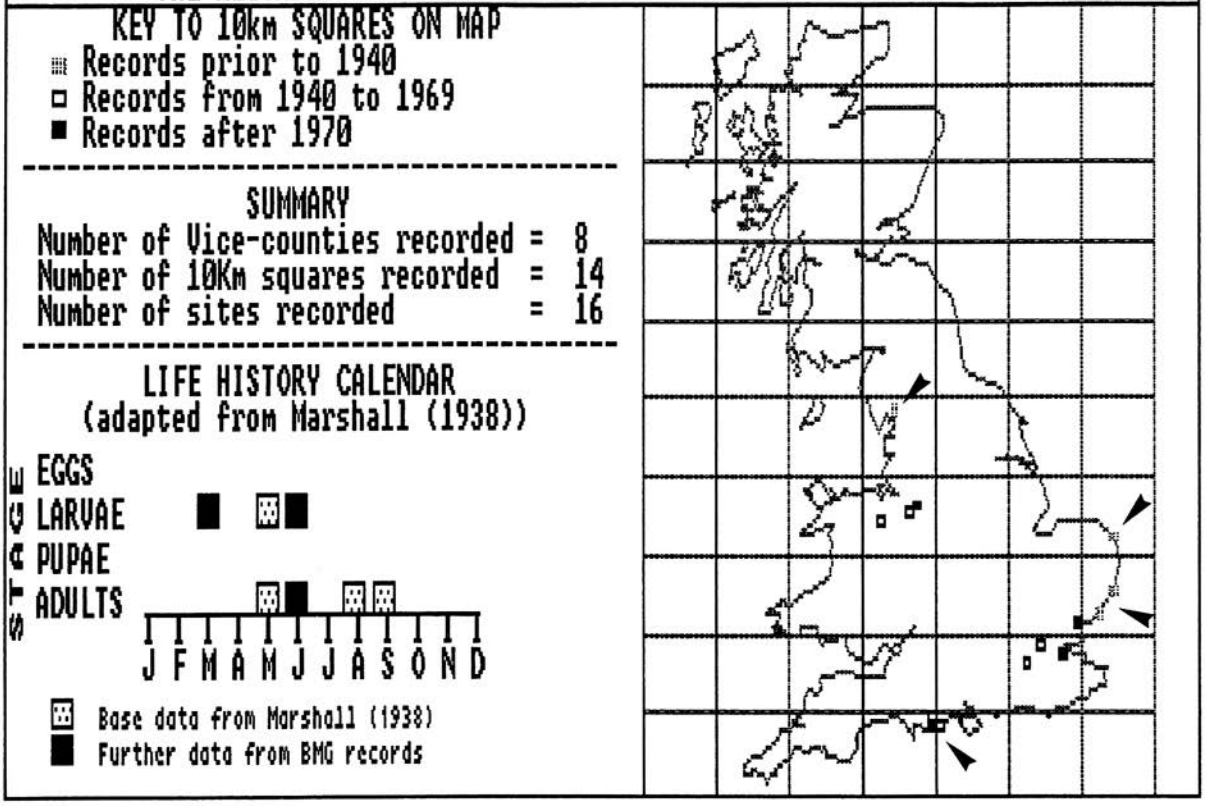


Fig. 6 THE RECORDED BRITISH DISTRIBUTION OF A DETRITUS AS AT 1/ 9/93
KEY TO 10km SQUARES ON MAP
Records prior to 1940
Records from 1940 to 1969
Records after 1970
SUMMARY
Number of Vice-counties recorded = 30
Number of 10Km squares recorded = 56
Number of sites recorded = 103
LIFE HISTORY CALENDAR
(adapted from Marshall (1938))
EGGS
LARVAE
PUPAE
ADULTS
J F M A M J J A S O N D
Base data from Marshall (1938)
Further data from BMG records

Fig. 7 THE RECORDED BRITISH DISTRIBUTION OF A DORSALIS AS AT 1/ 9/93



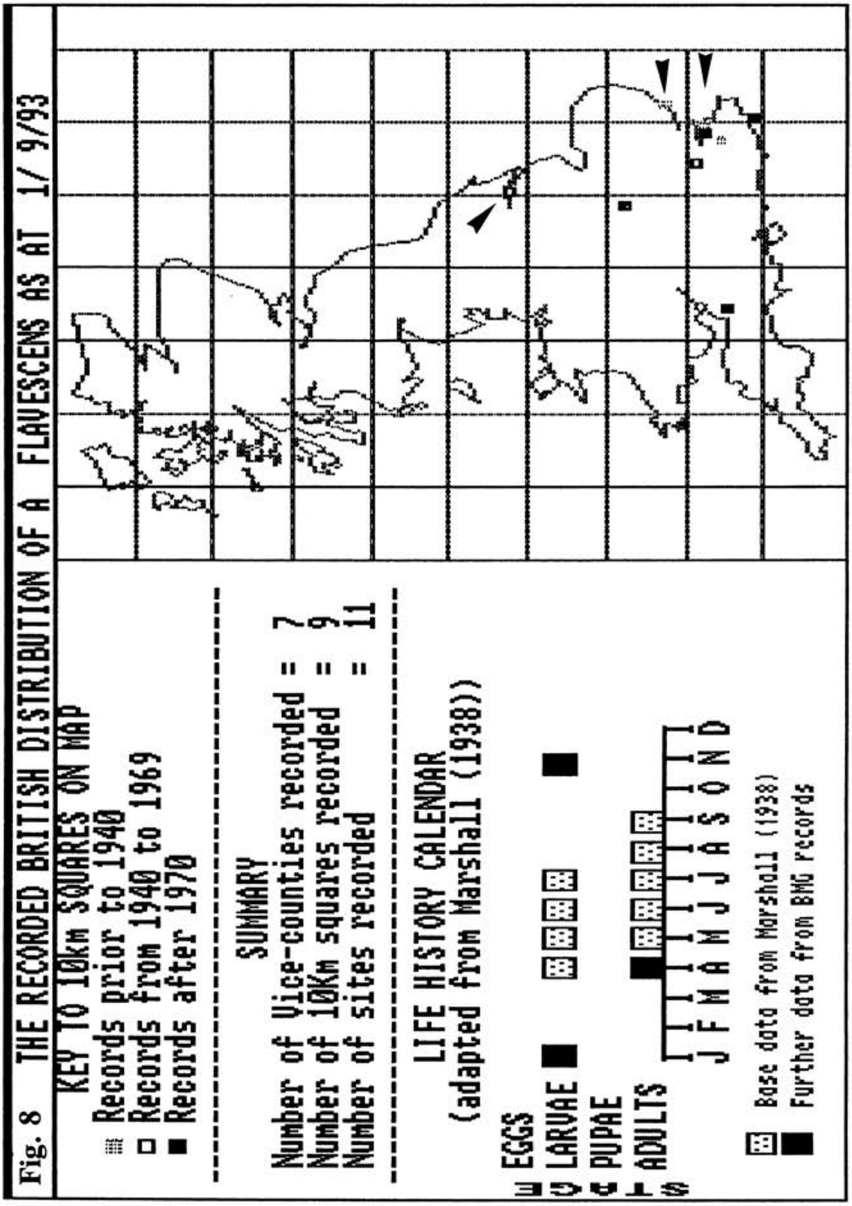


Fig. 8 THE RECORDED BRITISH DISTRIBUTION OF A FLAVESCENS AS AT 1/ 9/93

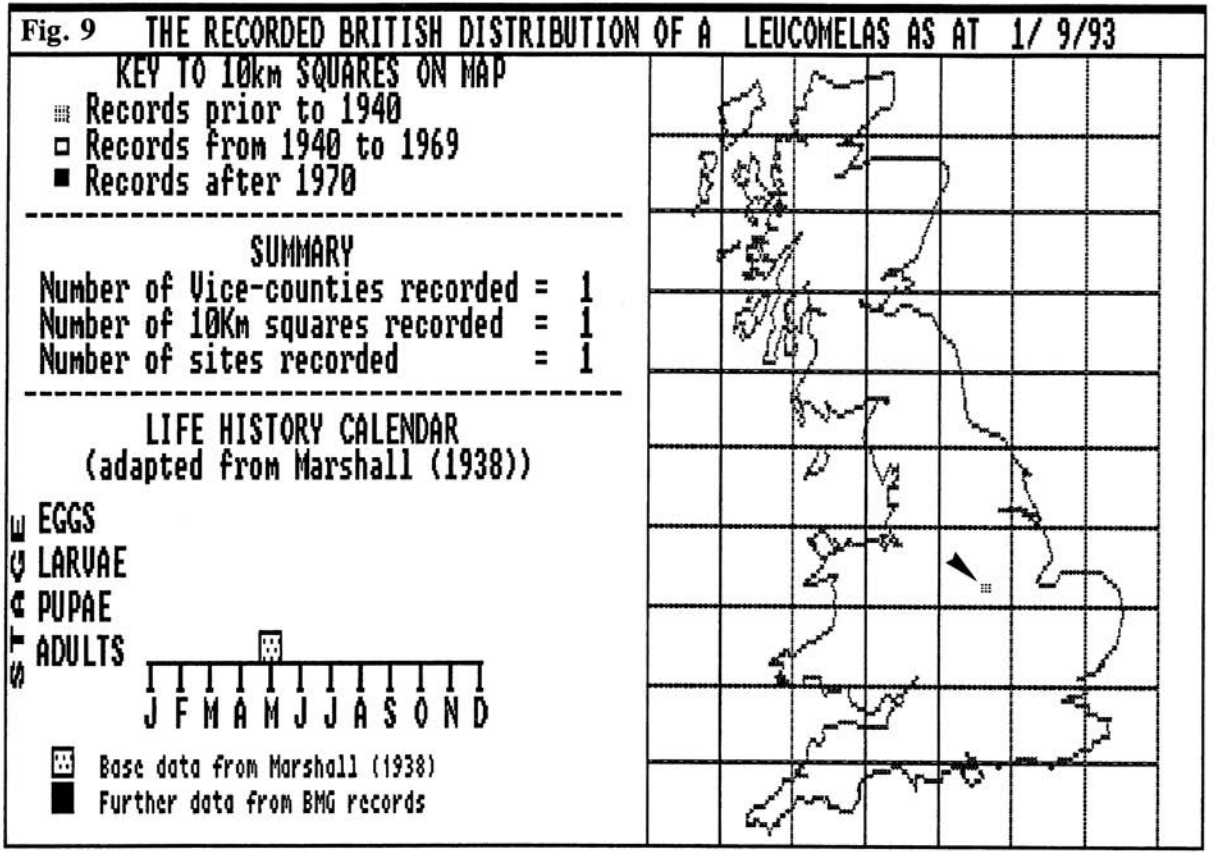


Fig. 9 THE RECORDED BRITISH DISTRIBUTION OF A LEUCOMELAS AS AT 1/ 9/93
KEY TO 10km SQUARES ON MAP
Records prior to 1940
Records from 1940 to 1969
Records after 1970
SUMMARY
Number of Vice-counties recorded = 1
Number of 10Km squares recorded = 1
Number of sites recorded = 1
LIFE HISTORY CALENDAR
(adapted from Marshall (1938))
STAGE
EGGS
LARVAE
PUPAE
ADULTS
J F M A M J J A S O N D
Base data from Marshall (1938)
Further data from BMG records

Fig. 10 THE RECORDED BRITISH DISTRIBUTION OF A PUNCTOR AS AT 1/ 9/93

KEY TO 10km SQUARES ON MAP

- Records prior to 1940 (stippled square)
- □ Records from 1940 to 1969
- ■ Records after 1970

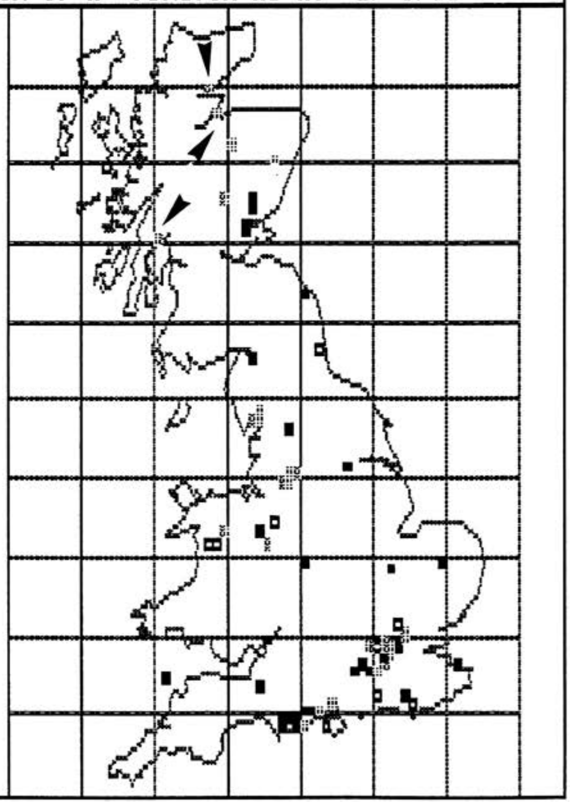
SUMMARY

Number of Vice-counties recorded = 38
Number of 10Km squares recorded = 68
Number of sites recorded = 113

LIFE HISTORY CALENDAR
(adapted from Marshall (1938))

STAGE	J	F	M	A	M	J	J	A	S	O	N	D
EGGS					■	■					■	
LARVAE	⊡	⊡	⊡	⊡	⊡	⊡	⊡	⊡			⊡	⊡
PUPAE				■	■	■						
ADULTS				⊡	⊡	⊡	⊡	⊡	⊡	⊡		

⊡ Base data from Marshall (1938)
■ Further data from BMG records



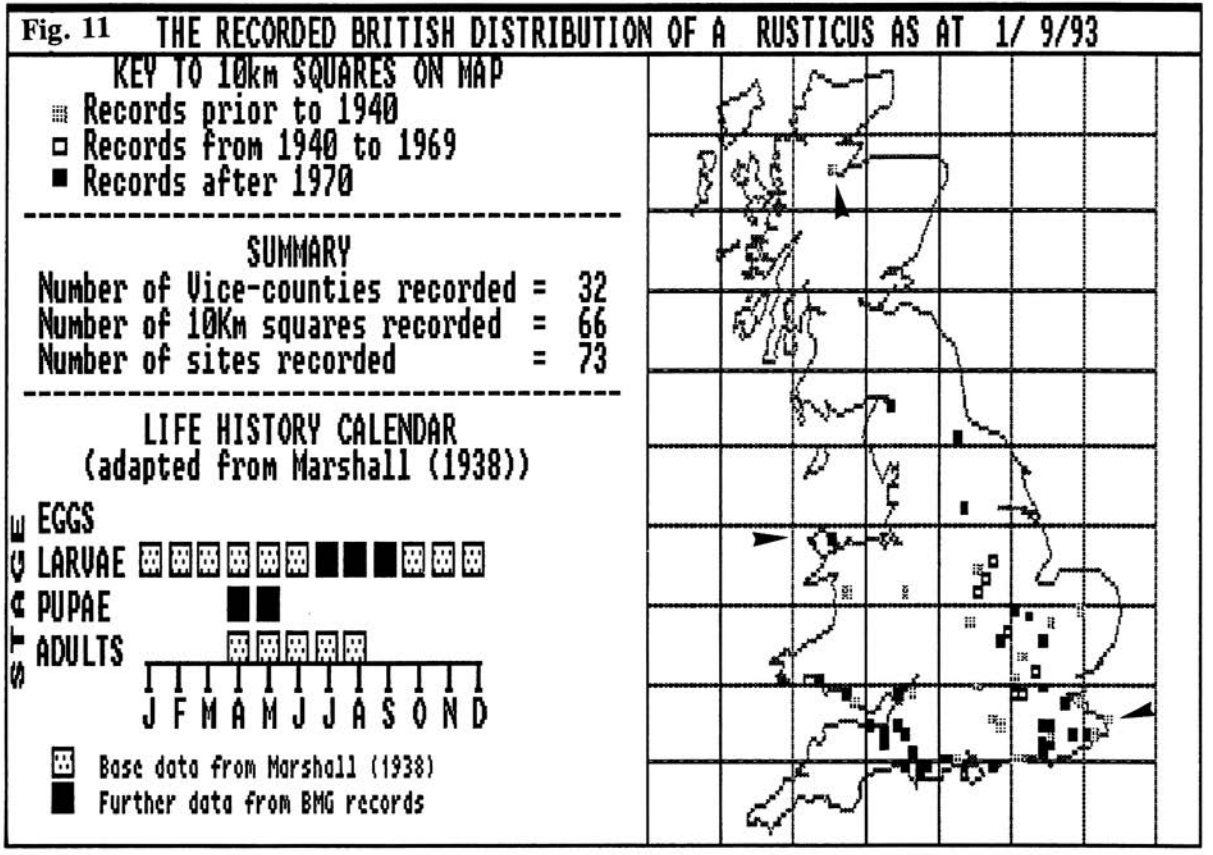


Fig. 11 THE RECORDED BRITISH DISTRIBUTION OF A RUSTICUS AS AT 1/ 9/93
KEY TO 10km SQUARES ON MAP
Records prior to 1940
Records from 1940 to 1969
Records after 1970
SUMMARY
Number of Vice-counties recorded = 32
Number of 10Km squares recorded = 66
Number of sites recorded = 73
LIFE HISTORY CALENDAR
(adapted from Marshall (1938))
STAGE
EGGS
LARVAE
PUPAE
ADULTS
J F M A M J J A S O N D
Base data from Marshall (1938)
Further data from BMG records

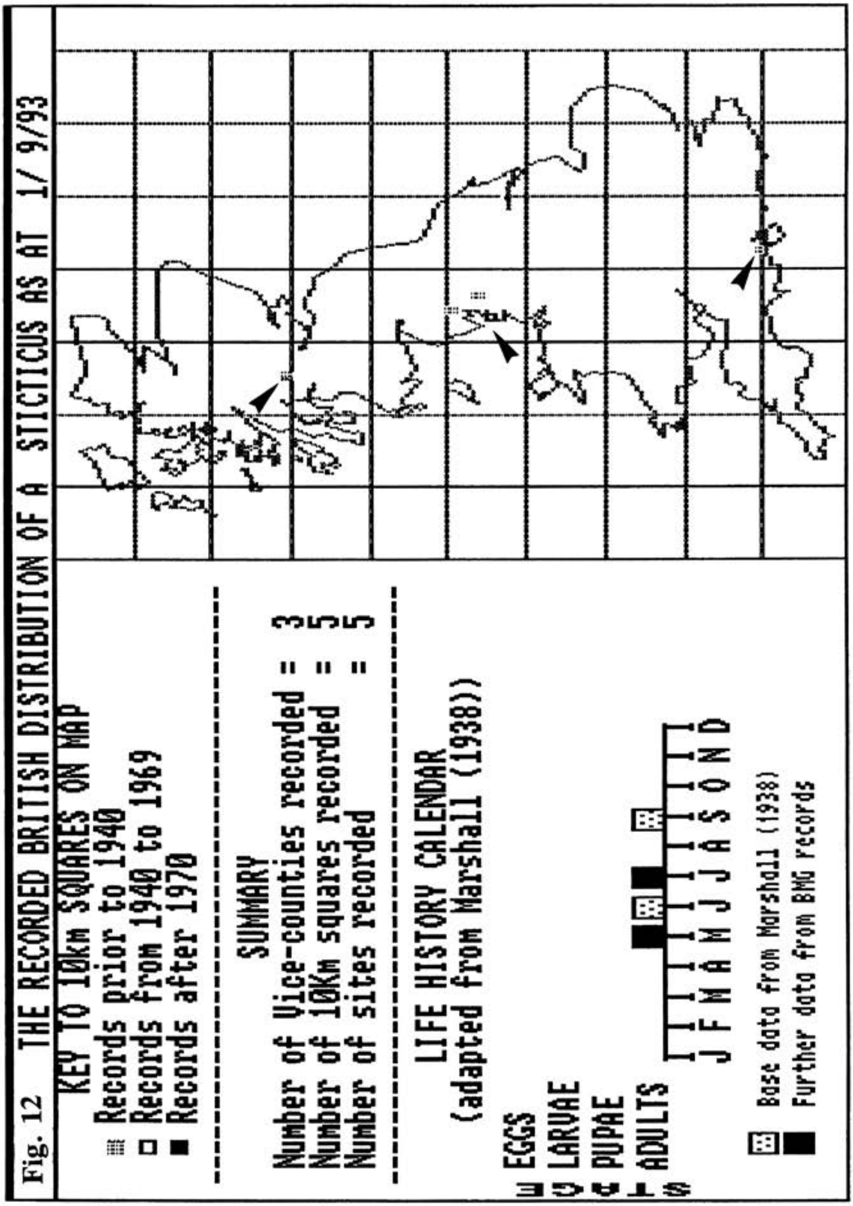


Fig. 12 THE RECORDED BRITISH DISTRIBUTION OF A STICTICUS AS AT 1/ 9/93

Dipterists Digest 1996 **3**, 24-27

Eutaenionotum guttipennis (Stenh.) var.? *olivaceum* Oldenberg (Dipt., Ephydridae) in Britain

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During recent survey work carried out by the author on Hatfield and Thorne Moors in South Yorkshire, many specimens of this fly were collected. The species is an addition to the British list.

The identification of *E. guttipennis* will pose no problems for those who use Séguy (1934), where it keys down easily on page 425 to *Pelina guttipennis*. It differs however from other *Pelina* species in many respects, including larger oral opening, and hence the more produced mouth-edge, the narrower jowls (Figs. 1b,c) and the flattened scutellar disc.

It is possible that specimens of this fly may exist unrecognised in collections, mixed with *Parydra pusilla* or *Scatella* species, which are about the same size and dark colouration, and have dark wings with paler spots. These however differ greatly in all but the most superficial respects, having strong orbital bristles, more pale wing-spots, dorsally gibbous scutellum and very different facial profile (Fig. 1b). In *Scatella* the face is much more produced than in *Eutaenionotum*, and in *Parydra* slightly more.

The most characteristic features of *E. guttipennis* are the distinctive wing markings, the patterning of the head (Figs. 1c,d) and thorax, and the male genitalia. The wings are distinctly brownish with the cross-veins faintly clouded. The shading on the posterior cross-vein (*dm-cu*) is peculiar in that a slight undulation of the membrane traverses the vein across the shaded portion which thus appears in diagonal view at low magnification, as a distinct dark transverse line. The wing membrane has three very ill-defined paler patches (one in cell r4+5 midway between the cross-veins, the others in cell *dm* and *m* basad and distad of the dark suffusion on cross-vein *dm-cu* as shown in Figure 1a.

In colouration the British specimens agree perfectly with the original description of *E. olivaceum* Oldenberg, differing from that of *E. guttipennis* given by Claussen & Cook (1971) as follows based on 5♂ and 8♀:-

Head Completely clothed in dense pruinosity so that the integument is totally hidden. In anterior view (Fig. 1c) the face and eye-margins are dull grey, the latter somewhat paler. The frons is blackish brown on the outer margins of the median frontal stripe and on the orbits, whilst the central part of the median frontal stripe and the lateral stripes are pale ochreous. In dorsal view (Fig. 1d) the frons appears sooty blackish brown, with the outer margins of the median frontal stripe ochreous and strongly contrasting. Some faint greyish reflections may be discerned from some angles on the dark lateral stripes. From this aspect also, the eye margins are decidedly more whitish than the face. According to Claussen & Cook (1971) the face and frons in *guttipennis* are shining black with dark coppery to black pruinosity.

Thorax Heavily and uniformally clothed with dark brownish pruinosity except sometimes in notopleural region and towards scutellar margins and its truncate apex, where the rugose, dark coppery integument shows through. Dorsum with two rather conspicuous pale stripes between the acrostichal and dorsocentral rows which widen in the prescutellar region to form an extensive golden suffusion, most strongly seen when viewed tangentially from in front. According to Claussen and Cook (1971) the thorax in *guttipennis* is shining black with dark coppery to black pruinosity and faintly lighter and duller stripes along the *dc* setal rows and between these and the *acr* rows.

Abdomen Rugose, shining black, sometimes with greenish reflections. Male genitalia (Fig. 1e-g) indistinguishable from *guttipennis* as figured by Claussen & Cook (1971). Length 2.40-2.60mm.

Claussen and Cook (1971) follow Wirth (1965) in assuming that *olivaceum* and *guttipennis* are conspecific, and this is probably the case. The British specimens are of a paler colouring than *guttipennis* and in all respects agree with the original description of *olivaceum* (Oldenberg 1923). They are therefore tentatively referred to *olivaceum*, which is taken to be a pale form of *guttipennis*. It is of course quite normal for insects to have darker forms in more northerly localities, and this is probably the case with regard to these two taxa. *E. olivaceum* appears only to be known from the type specimen, a female, taken on a verandah window at Pickelswerder near Berlin on 21 June 1906 (Oldenberg, 1923). Unfortunately, this unique specimen has not been traced, so direct comparison with the British specimens is not possible. Thorne and Hatfield Moors and Berlin are over 1500 miles to the south of the only known European localities for *guttipennis*, namely Abisko (Sweden) and Finland (Muonio), both in Lapland. In the Nearctic, *olivaceum* is unknown, but *guttipennis* is recorded from Bethel. Matanuska (Alaska, U.S.A.) and Aklavik (N.W.T., Canada) (Claussen and Cook (1971)), and from St Martin's Falls (Hudson Bay, Canada) (Claussen 1983). *E. guttipennis sensu stricto* appears therefore to be restricted to the Subarctic, and *olivaceum* is perhaps a southern form restricted to the peatland of temperate northern Europe.

Nothing appears to be known of the ecology of this species. The British specimens were collected from pitfall, water and malaise traps, and by sweeping, amongst birches on lowland peat-moor, as follows:-

Hatfield Moor 1♂ C (SE 708068), swept on 23 June 1992 (P.S.), 1♂ E3 (Se 708059), in water trap 23 June 1992 (P.S.), 2♀ E (SE 708059), swept on 11 Sept. 1991 (P.S.), 1♀ A3 (SE 707068), in water trap 23 april 1992 (P.S.), 2♀ E2 (SE 708059), in pitfall trap 13 May 1992 (P.S.). I♀ A9 (SE 707068), in pitfall trap 23 April 1992 (P.S.), 1♂ A6 (SE 707068), in water trap, 1992 (P.S.), 1♀ A (SE 707068), swept 1992 (P.S.).

Thorne Moor 1♂ Site 3 (SE 721142), swept on 15 July 1995 (P.S.), 1♀ Site 5 (SE 744144), swept on 20 July 1995 (P.S.), 1♂ National nature Reserve, in Malaise trap, 29 June-14 July 1987 (W.A. Taylor, det. P.S.). The specimens from Thorne Moor collected in 1995 are in the collection of the author. The remainder are in the Doncaster Museum collection. A further pair from Hatfield Moor were presented to Dr. A. G. Irwin of Norwich Castle Museum, who kindly confirmed my identification of the species.

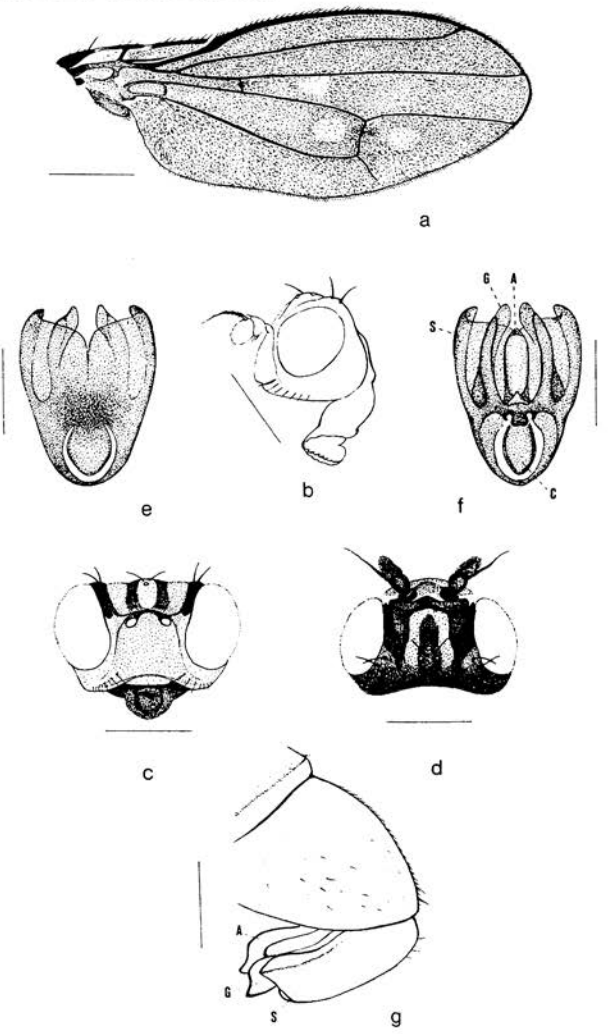

Fig. 1 *Eutaenionotum guttipennis* v. ? *olivaceum* Oldenberg. a, wing, showing markings somewhat exaggerated for purpose of clarity, b, head, lateral view, c, head, anterior view, showing pollinose markings (antennae not shown), d, head, dorsal view, showing pollinose markings, e, male genital capsule in dorsal view, f, same in ventral view (showing a, aedeagus, c, cerci, g, gonite, s, tergite 9 + surstyli), g, end of male abdomen in lateral view (showing aedeagus, gonites and tergite 9 + surstyli (as in fig. 1 f). (Scales - a 0.4mm, rest 0.20 mm).

All of the sites where the flies were taken are on peat with birch cover, but those on Hatfield Moor were all rather dry. All sites had some *Molinia coerulea*, suggesting a possible association with this plant. The Thorne Moor sites had some wet peat with *Sphagnum* but such conditions were absent from the Hatfield Moor stations.

E. guttipennis was originally placed in *Notiphila* by Stenhammar (1843), but was transferred to *Pelina* by Becker (1896). Oldenberg (1923) accorded generic rank to his new taxon *olivaceum*. Becker (126) included both taxa in different subfamilies (i.e. *Pelina guttipennis* in the Hydrelliinae, and *Eutaenionotum olivaceum* in the Ephydrinae). Sturtevant and Wheeler (1954) transferred *guttipennis* to the genus *Eutaeniotum*, mis-spelling that name.

Acknowledgements

Thanks are offered to Mr J. Preece, Curator of Doncaster Museum and Art Gallery, for loan of the specimens of *E. guttipennis* housed in their collections, and for the opportunity to undertake the surveys of local sites whilst in the employ of that institution. Also to Mr R. Lyon of Lindholme Hall for permission to carry out researches on those parts of Hatfield Moor under his ownership. Finally to Dr A. G. Irwin for confirming my original identification of the species.

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Dipterists Digest 1996 **3**, 28-31

The larva and habitat of *Lonchoptera nigrociliata* (Diptera: Lonchopteridae)

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Lonchoptera nigrociliata Duda is a small, dark brown fly which is regarded as nationally scarce (Falk, 1991). Published records suggest that it is a river-side species. Collin (1938) caught it by the banks of the River Monnow, and Richards (1939) found it at two places on shingle by flowing water. On the continent, Bährmann & Bellstedt (1988) trapped it from bank sides next to flowing water in Germany, and Andersson's (1966) two captures from Sweden were from "nice ravines and small streams". My own captures, from a dozen English localities, were made by sweeping over the exposed gravel shores of streams or small rivers within woodland or in partial shade. The records I have gathered show a distribution predominantly on hard rock geology in the north and west of Britain. Richard's (op. cit.) record from the River Mole in Surrey appears to be an exception.

During the dipterists' summer meeting based in Shropshire in late May 1994, I found large numbers of adults on the stony shore of a stream running through Bannister's Coppice, near the village of Homer, Shropshire (grid reference SJ 614023). This is a mixed deciduous oak-ash woodland with calcareous ground flora. The stream is a tributary of the River Severn and drains the Caradoc Hills and Wenlock Edge. By the time it reaches the wood, it is about 5m wide and mostly only about 10cm deep although some spectacular log jams suggested that it floods frequently. The current was about $1 m.s^{-1}$. The most profitable shore for *L. nigrociliata* was a strip about 20m long and up to 4m wide, composed of flattish stones up to about 15cm long set in a matrix of finer pebbles and sand. The banks were steep and sandy.

The adults were resting on the stones so it seemed probable that the larvae were nearby. Turning over the stones, I found the characteristic larvae of *Lonchoptera* (Smith, 1989) crawling on the undersides. They were present only on stones longer than about 5cm and which were dry or only slightly moist. None were found on completely wet stones, on small pebbles, or on stones covered with adhering silt or grit close to the bank where they were presumably less frequently washed by the stream. Some larvae were found on the dry parts of stones sitting in water at the stream's edge. Most of the larvae were in their final instar and a few were in the penultimate instar; others had pupated and were stuck firmly to the stone. One or two larvae were found on most stones, giving an estimated density of about one larva per $100cm^2$, and many hundred altogether on this shore.

I kept some of the larvae which pupated after a few days. Adults emerged within 10 days. The larvae were particularly active and crawled surprisingly fast (about 10mm in 3 seconds). The head and the completely soft prothorax can be retracted beneath the sclerotised mesothorax but, when moving, these segments are extended and probe from side to side reminiscent of a pig rooting. Presumably they are detritivore collectors and this is how they feed. Exactly what there is to eat on the underside of frequently washed but dry stones is

hard to imagine. Equally perplexing is how they survive inundation and how they hold on without any clear adaptations. Their form is similar to that of marine loricate molluscs

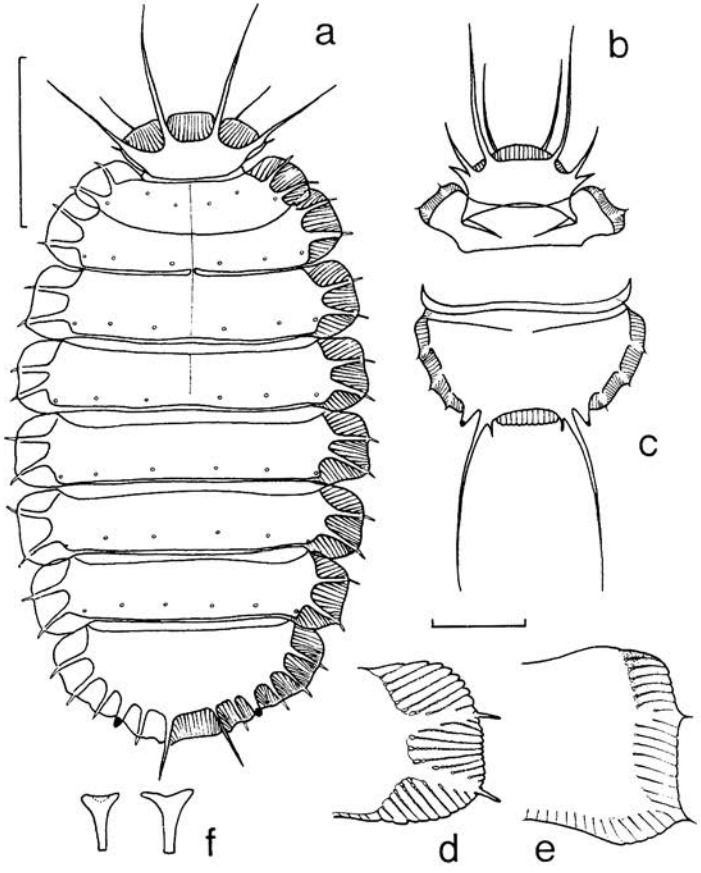

Fig.1. Larvae of *Lonchoptera nigrociliata* and *L. lutea*. a) dorsal view of *nigrociliata*. The striae are shown on the lateral flanges of one side only; b) mesothorax and metathorax in front of the suture of *lutea*; c) last tergite of *lutea*; d) lateral flange of *nigrociliata*; e) lateral flange of *lutea*; f) dorsal hairs of *nigrociliata*. Vertical scale bar = 1mm (for Figs. a-c); horizontal scale bar = 0.25mm (for Figs. d and e).

(chitons) which are shaped to withstand wave-washing, but this is unlikely to be an adaptation by *Lonchoptera* to life at a stream margin because the common terrestrial species *L. lutea*

Panzer and *L. furcata* (Fallén) have the same shape.

The larva of *L. lutea* has been illustrated by De Meijere (1900), Czerny (1934), Smith (1989) and Lubbock (1862) who was uncertain of the identity of the reared adult. *L. furcata* has been illustrated by De Meijere (1906) who was uncertain of the identity and Nielson et al (1945) (reproduced in Smith, 1969). Baud (1973) illustrated both these species, the non-British *fallax* De Meijere and the second instar of *tristis* Meigen which he was unable to rear beyond this stage. Although Baud described differences between the three species that he had as final instars, he found that the only reliable character for separating *lutea* from *furcata* is the relative lengths of the posterior tails which are longer than the last two tergites together in *lutea* (usually nearly as long as the last three tergites) and shorter than these tergites in *furcata*. The shape of the spines on the lateral flanges in Baud's drawing are markedly different from those of reared *lutea* from my garden in Lincolnshire (Figure 1, e).

Several morphological features distinguish the larvae of *nigrociliata* from *lutea* (Fig. 1). The posterior tails of *nigrociliata* are shorter than the last tergite and are about half the length of the processes on the mesothorax whereas the tails of *lutea* are about the same length as the anterior processes. The transverse row of hairs near the hind margin of the tergites are dark and toadstool-shaped in *nigrociliata* (Fig. 1f) but are inconspicuous, short, slightly dilated cylinders in *lutea*. The striated flanges of the tergites are differently shaped in the two species and cells that compose the striae are clearly distinguishable in *nigrociliata* but visible only at x100 magnification in *lutea* (Fig. 1, d & e). *L. nigrociliata* is dark brown, *lutea* is pale yellow.

Lonchoptera nigrociliata clearly belongs not only to the stream-margin fauna but to the more specialised group associated with shingle shores. I have not found the larvae of two other stream-associated species, *tristis* and *meijeri* Collin. It is more unlikely that *tristis* is associated with shingle shores although it is most frequently found by woodland streams. Adults of *meijeri* are found at the margins of northern and western stony rivers and streams but I have found it only outside woods. I predict that its larva will have a similar ecology to that of *nigrociliata* but perhaps living at the bases of emegent plants such as *Phalaris arundinacea* L.

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The tephritid fly, *Trupanea stellata*, resident in south-east Scotland

The distribution of *Trupanea stellata* (Fuessly, 1775), a tephritid with a characteristic apical star-shaped mark on each forewing, is reported as southern and eastern countries of England (I.M. White 1988. *Handbooks for the Identification of British Insects* **10**, part 5a). There are however old records of it from the west of Scotland. As early as 1853, F. Walker (*Insecta Britannica: Diptera* **2**: 204) associated it with Scotland and in the early part of this century it was recorded from Dumbartonshire (J.R. Malloch 1906. *Entomologist's monthly Magazine 17*: 41) and the Isle of Lewis (P.H. Grimshaw 1916. *Scottish Naturalist* **1916**: 115-119; also quoted by A.R. Waterston 1981. *Proceedings of the Royal Society of Edinburgh* **79B**: 215-321). I was however rather surprised when a small collection of flowerheads of *Tripleurospermum martimum* (Scentless Mayweed) from the east coast of Scotland produced this species. The flowerheads were collected at St Abbs (O.S. Grid ref. NT 9167), Berwickshire (V.c. 81) on 20.viii.94 and produced three imagines some three days later (22-23.viii.94). Another collection of flowerheads from the same site this year produced a further series of the fly (collected 22.viii.95; emerged 1-3.ix.95), this time accompanied by several *Napomyza lateralis* (Fallén, 1823) (Diptera: Agromyzidae). The tephritid appears to be quite local as a similar collection of *Tripleurospermum* flowerheads from a site 2km south of the one above only yielded *Napomyza lateralis*. Likewise collections from East Lothian (2 sites) and Fife (1 site) also only produced the agromyzid. The above record greatly extends the distribution of *Trupanea stellata* in Britain. - **K P BLAND**, National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF.

Dipterists Digest 1996 **3**, 32-35

Saproxylic Diptera in Scotland 1. Additions to the British fauna of *Mycetobia* (Diptera; Mycetobiidae)

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Members of the Malloch Society have in the past few years in Scotland reared a range of flies from several microhabitats associated with decaying sap and heart wood including sap-runs, under bark, rot holes and decaying roots. Many of these flies have not been reared previously.

During the work we reared the notable mycetobiid, *Mycetobia pallipes* Meigen from exuded sap occurring on several tree species. Until Ashe (1988) reared *Mycetobia obscura* Mamaev from Ireland, this had been the only mycetobiid known from the British Isles.

In addition to *M. pallipes*, we reared two further mycetobiid species: *M. obscura* which is here recorded from mainland Britain apparently for the first time, and *Mycetobia gemella* Mamaev which is new to the British Isles.

Mycetobia gemella was taken as larvae on 3 May 1994 in Abernethy Forest (NJ0416) from material in a piny water run, mostly under loose bark on a dead standing Scots pine (*Pinus sylvestris*). Several males and females emerged over the period 23 May to 18 June 1994. Previously, on 28 June 1991, *M. gemella* pupae had been collected from a rot hole on a live Scots pine at Rothiemurchus (NH9207) from which adults emerged from 30 June to 6 July 1991. *Mycetobia obscura* was reared from larvae taken from a sap-run on an aspen (*Populus tremula*) at Kinnord (NJ4400), two males and two females emerging in May 1995.

Mamaev (1968) was the first to rear *M. gemella*, from larvae collected in the fermenting mass around a wound in the trunk of an unspecified coniferous tree in the European part of the former USSR. Mamaev (1968) reared *M. obscura* from one larva in a rotting tree stump and some larvae from tunnels in lime tree (*Tilia*) stumps caused by *Temnostoma* larvae (Syrphidae). Pedersen (1971) reared both these *Mycetobia* species from water-filled holes in the stumps of unidentified tree species: *M. gemella* in Denmark and *M. obscura* in both Sweden and Denmark. Ashe (1988) reared *M. obscura* in Ireland from rot-holes in an oak tree (*Quercus*). Soli (1992) has found *M. gemella* in Norway in Malaise trap samples.

Since *M. obscura* is associated with at least three different deciduous trees, it seems clear that the stage in the cycle of decay is more important than the actual tree species. *Mycetobia gemella* has so far only been associated with coniferous trees suggesting that it might be restricted to them.

Mamaev (1968) gave a key to the then five known palaearctic species, four of which he described for the first time. Later he added two others (Mamaev, 1971) and then (Mamaev, 1987) referred two of the known species to a new genus *Trichomycetobia* at the same time describing a further seven species in *Mycetobia* sensu stricto and an eighth new species in

a new monospecific genus *Xeromycetobia*, thus recognising 15 species of the family in the territory of the former USSR. The male genitalia of *M. gemella* and of the eight new species are figured in the last paper and those of the three British species in the paper by Pedersen (1971). To assist recognition of the three currently known British species the male genitalia are illustrated here (Fig. 1).

Mamaev (1968; 1971; 1987) relies almost exclusively on male hypopygial characters. Since a means of distinguishing females has not been investigated, the opportunity to figure *M. pallipes, M. gemella* and *M. obscura* is taken. This should be useful when only females are available for study. The character found to be of value is the genital fork, a term adopted from Macalpine (1981), and this structure has been used previously to provide a key to females of British species of the genus *Sylvicola*, Anisopodidae (Hancock, 1989). The genital fork is regarded as the 9th sternite and forms part of the dorsal wall or lid of the genital chamber and is sometimes referred to as the furca or vaginal apodeme (Tuxen, 1970). The illustrations (Fig. 1) show the genital fork attached to the hypogynial valve as they are revealed upon dissection. In a cleared whole preparation the structure can be seen without dissection. Being a small internal sclerotisation it is of no practical use as a field character. In fresh specimens it may be possible to see the characters by squeezing the end of the abdomen. This can be done with *Sylvicola* spp. which are larger and yet still requires the use of a microscope and a little experience. It has not been possible to test this with fresh *Mycetobia* females as yet. Dried specimens need to to be softened and at least partially cleared in order to bring the genital fork into view.

Mamaev (1968) includes in his key the presence or absence of stouter setae on the tips of the sternal valves of the female ovipositor to distinguish the groups to which *M. gemella* and *M. obscura* belong respectively. Whereas there does appear to be this slight difference in the material available to us the feature appears to be of little value for specific determination.

Key to female *Mycetobia*

1 Proximal tip of genital fork broad (Fig. 1g) . . . . . *pallipes*

\- Proximal tip of genital fork slender and more heavily chitinised **2**

2 Genital fork more heavily chitinised, especially the lateral extensions which form points of attachment. The plate between the apical arms of the hypogynial valves almost as long as broad (Fig. 1a) . . . . . *gemella*

\- Genital fork almost transparent. Plate between arms of hypogynial valves much broader than long. The valves themselves are darker and more densely hairy (Fig. 1d) . . . . . *obscura*

Specimens of both species have been deposited in the Royal Museum of Scotland, Edinburgh and Glasgow Museums, Kelvingrove. The slide preparations from which the figures were drawn are in Glasgow Museums.

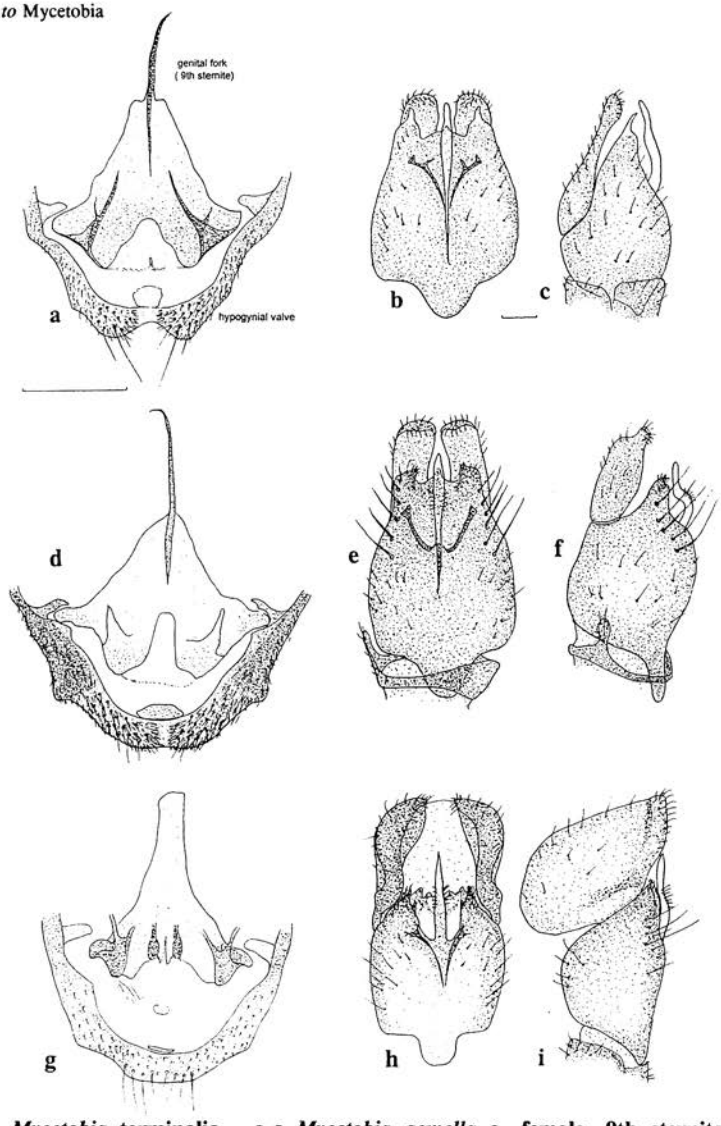

Fig. 1. ***Mycetobia*** **terminalia. a-c** ***Mycetobia gemella*** **a, female, 9th sternite and hypogynial valve; b, male, ventral view; c, male, lateral view; d-f** ***Mycetobia obscura*** **d, female, 9th sternite and hypogynial valve; e, male, ventral view; f, male, lateral view; g-i** ***Mycetobia pallipes*** **g, female, 9th sternite and hypogynial valve; h, male, ventral view; i, male, lateral view; scale line = 0.1mm**

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Dipterists Digest 1996 **3**, 36-37

Haematopota subcylindrica (Diptera, Tabanidae) New to Britain

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On the basis of its known distribution, Alan Stubbs has suggested that *Haematopota subcylindrica* Pandellé could possibly occur in Britain. We have now confirmed that this species is present in East Sussex and North Essex, and is likely to have been overlooked in the past, both in the field, and in collections. It is a rather robust light-grey species with very pale wing markings, and should be searched for in coastal regions, at least those in South-east England.

Whilst carrying out an entomological survey of part of Rye Harbour LNR on 28 June 1994, one of us, (PH), spent a short time sampling a dyke south-west of Camber Castle, East Sussex (TQ 920183), and swept a large female *Haematopota* from lush emergent or marginal vegetation. Even in the field it looked somewhat different to the usual *Haematopota pluvialis* (L.) or *Haematopota crassicornis* Wahlberg, and therefore it was taken home for closer examination. The specimen could not be identified using Oldroyd (1969) but it matched a previously collected female *Haematopota* specimen, which had not been fully identified. This specimen was swept from the margin of the central of the three Colonel Body Memorial Lakes on Pett Level, East Sussex (TQ 901144), during an entomological survey for the Nature Conservancy Council (now English Nature) on 6 July 1987. Using Chvála *et al.* (1972), both females keyed out to *H. subcylindrica*. The identification was kindly confirmed by Alan Stubbs and John Chainey.

On 16 July 1995, AG visited Fingringhoe Wick LNR, North Essex (TM 0420), and removed, by pooter, three female *Haematopota* which were trapped in the window of the visitor centre shop. Two of these had very pale wing markings and a darker ventral stripe, the other was *H. pluvialis*. On 17 July 1995, AG returned to the same site at around 17.00 hours. The weather was dull and overcast, but moderately warm, and about fifty female *Haematopota* were encountered on the walk from the visitor centre to North Saltmarsh (TM 0520). Two of these flies had very pale wing markings and a darker ventral stripe; the smaller was caught in flight and the larger, more robust specimen, was swept from tall vegetation growing in a dried-up pool beside the main path. All the other *Haematopota* present were *H. pluvialis*.

When the four specimens with pale wing markings were critically examined, three proved to be *Haematopota bigoti* Gobert. However, the more robust specimen taken on 17 July 1995 was clearly a different species, as it was of a light-greyish, not yellowish-grey hue, had black, not yellowish femora, a narrower frons, smaller tergite spots, and very indistinct eye hairs compared with those of female *H. bigoti*. Realising the specimen was not one of the four recognised British *Haematopota*, it was checked with Chvála *et al.*, (1972), and Alan Stubbs' Tabanidae Test Key of March 1995, both of which indicated that the specimen was a female *H. subcylindrica*.

The discovery of *H. subcylindrica* in Britain brings into question the dark-legged form of *H. bigoti* first mentioned by Entwistle (1952), but it would appear that Entwistle's Lancashire specimens, and others from Yorkshire are indeed merely dark-legged *H. bigoti*. Three dark-legged males from Spurn, Yorkshire, agree with the detailed description of the Lancashire males, given by Entwistle (1952), and the Lancashire specimens have been examined by specialists who agree that they are a dark-legged form of *H. bigoti*. Alan Stubbs (*pers. comm.*) noted that in the Lancashire females, the yellowish ground colour of the femora was partly visible from beneath the greyish tomentum. The Yorkshire males have the antennal scape of the more oval *H. bigoti* type, not the more elongated type of male *H. subcylindrica*, as described and illustrated in Chvála *et al.* (1972).

Identification

Our understanding of British *Haematopota* is changing. *Haematopota pluvialis* and *H. crassicornis* are both more or less common and generally distributed in Britain, but there are now at least three rare coastal species: *H. bigoti*, *H. grandis* and (almost certainly rare and coastal) *H. subcylindrica*. There is also an apparently undescribed species from Norfolk. *Heamatopota italica* Meigen must also be considered as a potential British species. As we have seen only three females and no males of *H. subcylindrica*, it would be premature to rewrite keys, particularly in view of the above complications. Most British dipterists probably use Oldroyd (1969) for the identification of *Haematopota*. Female *H. subcylindrica* will not satisfactorily pass through this key because the femoral, antennal and abdominal characters will cause confusion in both couplets 2 and 3. Those who possess either Chvála *et al.* (1972), or Alan Stubb's Test Key of March 1995 (issued to those who submit records to the Larger Brachycera Recording Scheme), should find that female *H. subcylindrica* will easily key out correctly using these works. Alan Stubbs' forthcoming book on British Tabanoidea and Asiloidea will contain up-to-date keys to *Haematopota*. In the meantime, it is worth collecting and retaining voucher specimens of *Haematopota*, particularly from coastal regions.

Acknowledgements

Our thanks are due to Alan Stubbs for his helpful advice, and for examining a specimen of *H. subcylindrica*; to John Chainey and Martin Drake for examining the same specimen; to Martin Jenner for allowing Peter Hodge access to his copy of Chvála *et al.* (1972); and to Mike Edwards for the loan of a female *H. bigoti*.

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Dipterists Digest 1996 **3**, 38-43

Nuptial insect prey of the *Rhamphomyia sulcata*-group (Diptera, Empididae) in South-West Norway

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Empidid flies of the genera *Empis*, *Hilara* and *Rhamphomyia* frequently use insects as nuptial gifts during mating (Downes 1970, Alcock 1973). The evolutionary aspects of this habit have been discussed by several authors (Kessel 1955, McAlpine and Munroe 1968, Downes 1969, 1970, Alcock 1973, Chvála 1976, 1990). During a field study of bibionid flies in South-West Norway in May 1993, empidid flies were found to be very abundant at the study site. Considerable numbers of single males and mating pairs with prey were seen in the air and on vegetation.

Material and methods

The study site was situated in South-West Norway, RY, Finnøy (European Invertebrate Survey (EIS) square 14), UTM reference 32 VLL 167625. The site consisted of several relatively small fields of grass grown for silage, each field surrounded by various deciduous trees. In 1993 most specimens were collected from a crack willow (*Salix fragilis*) tree at the field edge, at which the flies were found to be particularly abundant. By the time of the 1994 sampling, this tree had been cut down and the flies were collected over a larger area. One of the fields was adjacent to a marshy area with a small stream and several waterholes.

Samples were collected on 10-12 May 1993 (181 prey insects) and on 10-22 May 1994 (575 prey insects). The weather during the sampling period was generally sunny with a high insect activity. Mating pairs were collected with an insect net. Most flies were collected after they had settled on vegetation. Every fly or pair of flies were observed before being netted and those which habitus or size did not fit well with *Rhamphomyia sulcata* were not netted. Most of the empidid flies were released after the prey insect was collected, but one specimen in 1993 and twenty-five specimens in 1994 were kept for species identification. Prey insects were preserved in 70 % ethanol except a few that were pinned. Prey insects were identified to species if possible, otherwise to family. In some groups, the sex of the prey insect was also recorded.

Results

All of the mating flies that were kept for species identification were found to be *Rhamphomyia sulcata* Meigen. Pairs usually uncoupled and lost the prey insect when they were netted. All prey insects were dead, and no non-insect objects were seen among the nuptial gifts. All mating pairs observed carried prey. The proportions of dominant groups of prey are shown in Fig 1.

Prey insects collected

Diptera:
Bibionidae:
Dilophus febrilis (L.) 1993: 90 ♂♂ 26 ♀♀, 1994: 13 ♂♂ 3 ♀♀.
Bibio johannis (L.) 1994: 52 ♂♂ 2 ♀♀.
Bibio nigriventris Haliday 1994: 2 ♂♂ 1 ♀ .
Bibio varipes Meigen 1993: 2 ♂♂, 1994: 41 ♂♂.
Anisopodidae:
Sylvicola punctatus (Fabricius) 1993: 11 ♂♂ 2 ♀♀, 1994: 37 ♂♂ 57 ♀♀.
Sciaridae: 1994: 12 specimens.
Chironomidae: 1993: 13 specimens, 1994: 128 specimens.
Culicidae: 1994: 1 specimen.
Limoniidae:
Tricyphona immaculata (Meigen) 1993: 1 ♂.
Erioconopa trivialis (Meigen) 1993: 2 ♀♀.
Gen. et. sp. indet 1994: 7 specimens.
Cecidomyiidae: 1993: 2 specimens, 1994: 14 specimens.
Psychodidae: 1994: 1 specimen.
Scatopsidae:
Scatopse notata (L.) 1993: 1 ♂, 1994: 6 ♂♂ 2 ♀♀.
Empididae:
Empis (s.str.) *nigripes* Fabricius 1994: 1 ♂ 1 ♀ .
Hilara nitidula Zetterstedt 1994: 4 ♂♂ 4 ♀♀.
Rhamphomyia (s.str.) *sulcata* Meigen 1994: 4 ♂♂ 2 ♀♀.
Rhamphomyia (Megacyttarus) crassirostris (Fallèn) 1993: 2 ♂♂ 1 ♀ , 1994: 14 ♂♂ 13 ♀♀.
Rhamphomyia (Pararhamphomyia) caesia Meigen 1993: 2 ♂♂, 1994: 2 ♂♂ 3 ♀♀.
Rhamphomyia (s.str.) *nitidula* Zetterstedt 1994: 1 ♂.
Hybotidae:
Platypalpus agilis (Meigen) 1994: 1 ♀ .
Platypalpus verralli (Collin) 1994: 1 ♂.
Pipunculidae:
Cephalops obtusinervis Zetterstedt 1994: 1 ♂.
Syrphidae:
Melanostoma sp. 1994: 1 ♀.
Phoridae:
Diploneura nitidula (Meigen) 1994: 1 ♂ 1 ♀ .
Triphleba lugubris (Meigen) 1994: 2 ♀♀.
Gen. et. spec. indet 1994: 1 specimen.
Sphaeroceridae:
Borborillus uncinatus (Duda) 1994: 1 ♂.
Coproica lugubris (Haliday) 1993: 1 ♀ .
Copronyza equina Fallèn 1993: 1 ♀ , 1994: 3 ♀♀.
Copromyza stercoraria (Meigen) 1994: 2 ♀♀.
Crumomyia nitida (Meigen) 1994: 2 ♀♀.
Halidayina spinipennis (Haliday) 1994: 1 ♂.
Ischiolepta denticulata (Meigen) 1994: 1 ♂.
Ischiolepta pusilla Fallèn 1993: 1 ♀ , 1994: 1 ♀ .
Leptocera fontinalis Fallèn 1993: 1 ♂ 6 ♀♀, 1994: 1 ♂ 4 ♀♀.
Lotophila atra (Meigen) 1994: 5 ♀♀.
Opacifrons coxata (Stenhammar) 1994: 1 ♀ .
Opacifrons humida (Haliday) 1993: 2 ♀♀.
Pteremis fenestralis (Fallèn) 1994: 1 ♀ .

nuptial prey in Rhamphomyia sulcata

Spelobia rufilabris (Stenhammar) 1994: 2 ♀♀.
Spelobia sp. 1994: 2 specimens.
Sepsidae:
Sepsis cynipsea (L.) 1993: 1 ♂, 1994: 3 ♂♂ 1 ♀ .
Sepsis fulgens Meigen 1994: 2 ♂♂.
Sepsis orthocnemis Frey 1994: 1 ♂ 1 ♀ .
Ephydridae:
Ephydra sp. 1993: 1 specimen, 1994: 2 specimens.
Chloropidae: Oscinellinae 1993: 1 specimen.
Anthomyiidae: 1993: 2 specimens, 1994: 46 specimens.
Scathophagidae: 1993: 3 specimens.
Muscidae:
Hydrotaea albipuncta 1994: 3 ♀♀.
Hydrotaea sp. 1994: 1 ♂.
Limnospila albifrons 1994: 1 ♀.
Fanniidae:
Fannia canicularis (L.) 1993: 1 ♂.
Fannia manicata Meigen 1994: 1 ♂.
Fannia spp. 1994: 10 ♂♂.
Muscomorpha not identified to family: 1994: 21 specimens.

Ephemeroptera:
Leptophlebiidae:
Paraleptophlebia cincta (Retzius) 1994: 1 specimen.
Leptophlebia vespertina (L.) 1994: 1 specimen.

Plecoptera
Nemouridae:
Nemoura cinerea (Retzius) 1993: 1 ♂, 1994: 6 ♂♂.

Hemiptera
Delphacidae:
Javesella sp. 1993: 1 ♂ 1 ♀.
Triozidae:
Trioza remota Förster 1993: 1 ♀ .
Trioza urticae (L.) 1994: 1 ♂ 1 ♀ .

Planipennia
Hemerobiidae:
Hemerobius humuli (L.) 1994: 1 ♂ 1 ♀ .
Wesmaelius nervosus Fabricius 1994: 2 ♂♂.

Hymenoptera
Braconidae: Gen. et spec. indet.1994: 1 specimen.
Eulophidae: Gen. et spec. indet. 1993: 2 specimens.
Proctotrupidae: Gen. et spec. indet. 1994: 1 specimen.
Scelionidae: Gen. et spec. indet. 1994: 1 specimen.

Discussion

Since all the mating flies were not identified to species it cannot be stated with certainty that they were all conspecific. Two species of *Rhamphomyia sulcata*-like empidids have been

recorded from the area in spring, *R. sulcata* and *R. sulcatina* Collin (T. Jonassen, *pers. comm.*). However, *R. sulcatina* was not present among the specimens kept for identification, and neither among the prey insects. I examined specimens of *R. sulcata* and *R. sulcatina* from Western Norway in the collection of the Museum of Zoology, Bergen. In this sample,

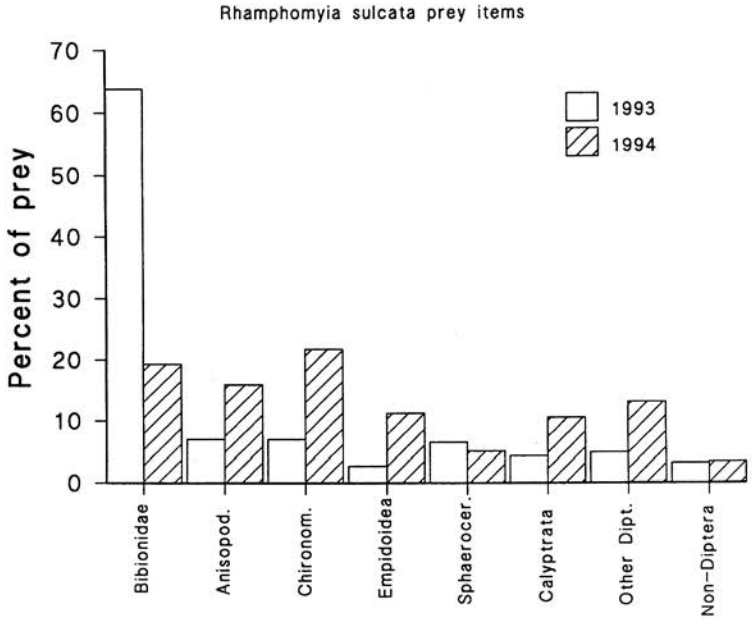

Fig. 1. The percent of prey in different groups captured as nuptial gifts in Norwegian populations of *R. sulcata* in 1993 and 1994.

the *R. sulcatina* specimens were considerably smaller than the *R. sulcata* specimens. The flies collected seemed, subjectively, to be rather homogenous in size. Although it is possible that the sample of pairs consisted of a mixture of *R. sulcata* and *R. sulcatina*, it is likely that most of the specimens were *R. sulcata*.

In 1993, the bibionid *Dilophus febrilis* (L.) was by far the most common nuptial prey at the site and time of sampling (Fig. 1). In 1994, spring was considerably slower due to cold weather in April and early May, and swarming of *D. febrilis* had barely started when the

samples were collected. This probably accounts for the low number caught as prey. Anisopodids, chironomids and brachycerous flies then made up a much larger fraction of the prey collected (Fig. 1), and the bibionids *Bibio johannis* and *B. varipes* were taken as prey. In 1993 some pairs of *Rhamphomyia* were seen carrying *B. johannis* some days before 10 May, but the swarming period of *B. johannis* was over by the time the sample was taken. Parmenter (1950), Laurence (1955) and Smith (1968) all found that *D. febrilis* was the commonest prey insect taken by *R. sulcata* in England. This bibionid made up approximately two thirds of the prey items in the surveys by Parmenter and Laurence. Both this survey and the three surveys from England show that *R. sulcata* takes predominantly (97 % or more in all surveys) Diptera. It is notable that Anisopodidae and Chironomidae are absent among the prey insects recorded by Parmenter (1950). Tuomikoski (1952) reported that prey of *R. sulcata* in Finland consisted of chironomids and empidids. The preferred prey insect in England and SW Norway, *D. febrilis*, has not been recorded from Finland. Disney (1978) stated that *R. sulcata* "nearly always carry the bibionid *D. febrilis* even though it may be otherwise unobtainable".

Dilophus febrilis was very abundant at the sampling site in 1993, and many single flies and mating pairs were found in the willow tree in which most of the danceflies were caught, as well as on the nearby vegetation. The shift in prey insects between 1993 and 1994 indicates that *R. sulcata* is not a specialist on any particular prey species, but hunts opportunistically for whatever dipterous prey is easily available. Most of the prey taken are relatively weakly-flying Diptera, and all except *B. varipes* and *R. sulcata* itself are considerably smaller than the empidid. A site near a marshy area was included in the 1994 survey, and this is probably the reason why Ephemeroptera and larger numbers of Plecoptera and Chironomidae were collected in 1994.

Dilophus febrilis is a relatively small bibionid fly measuring 5-6 mm in total length, and it is confined to the south coast in Norway. The empidid flies were seen to form loose swarms at an altitude of about two metres above the grass fields. Males of *D. febrilis* also hovered at this altitude. *Bibio varipes* aggregates on and around trees at the field edges. Males of *Fannia* spp. were also seen to hover above the fields in considerable numbers. *Bibio johannis* and the sphaerocerids, on the other hand, generally fly very low over the fields. These flies are also commonly taken, indicating that *R. sulcata* hunts at a low altitude, too. There are no flightless insects among the prey, although the sphaerocerids and *Platypalpus* spp. are often reluctant to fly. One of the *S. punctatus* specimens had its pupal exuviae still attached, but it would probably have been able to fly despite this. Since most of the prey insects are males of species seen to hover at the study site, it is concluded that most prey capture at the site probably takes place in the air. Parmenter (1950) found that both prey capture and mating initiation in *R. sulcata* took place in flight. Direct observations of this was very difficult at the study site because the empidids hovered rather high up and moved quickly around. From a distance of more than three metres, I found it difficult to distinguish between hovering single males of *Rhamphomyia* and males of *Bibio varipes*, which have a similar swarming appearance.

Acknowledgements

I am indebted to Terje Jonassen, Sjernarøy, Norway, who identified and kindly provided information on the empidid flies, Folke Florèn, Sunnansjö, Sweden, who identified the sphaerocerids from the 1993 sample, and Dr. Hans Mendl, Kempten, Germany, who identified the limoniids. Lita Greve, Bergen, is acknowledged for identifying the hemerobiids, commenting on the manuscript and giving me access to the insect collection in the Museum of Zoology, Bergen. I also wish to thank Torstein Solhøy, Bergen and Bo G. Svensson, Uppsala, for constructive criticism on the manuscript.

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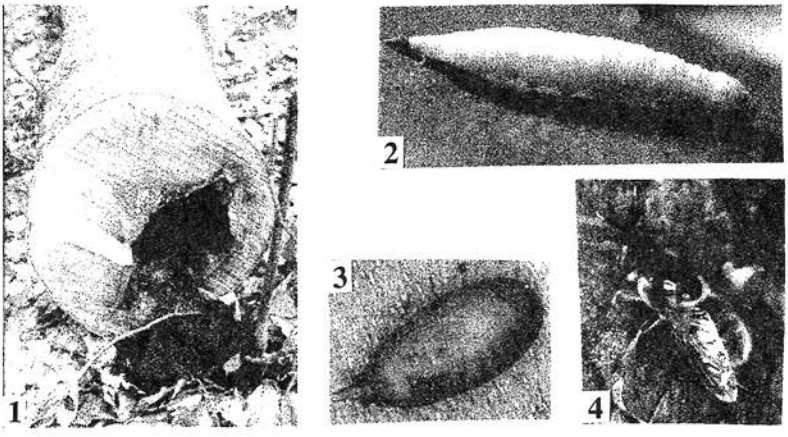
***Callicera spinolae* (Diptera, Syrphidae) reared in France** - During the winter period woodyards are worth visiting to examine tree trunks for insects. On 4 March 1995 I visited one such woodyard in the Department of Sarthe, District of Vibraye, France where trees had been cut from a 6000 ha private *Fagus/Quercus* forest in the area. Within the rotten centre of a 55cm diameter *Fagus* tree trunk (Fig. 1) I discovered 5 syrphid larvae. Two of the larvae were identified as *Mallota cimbiciformis* Fallén using A. Maibach & P. Goeldlin de Tienfenau (1989. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft*, **62**: 67-78) and G.E. Rotheray (1993. *Dipterists Digest* **9**: 1-158). The remaining larvae appeared to belong to the same species (Fig. 2) and one was preserved according to Rotheray (*loc. cit.*). The other two were placed in a plastic box containing material taken from the tree trunk and the box stored in an unheated room with access to natural light following details given by Maibach & Goeldlin de Tiefenau (*loc. cit.*). The larvae were active, they moved away from light and burrowed into the material. On 18 July 1995 one of the larvae pupated (Fig. 3) and on 20 July so did the other one which subsequently failed to develop. On 2 August 1995 a male *Callicera spinolae* Rondani emerged (Fig. 4). The larva was identified using Rotheray (*loc. cit.*) and the adult by M.C.D. Speight (1991. *Dipterists Digest* **10**: 1-25).

The only previous rearing records for *C. spinolae* are from a rot-hole in a *Populus* tree (Zimina, L.V. 1986. *Entomological Review* **65**: 633-638) and from a rot-hole in a *Fagus* tree (Rotheray, G.E. & Perry, I. 1994. *The Entomologist* **113**: 205-210). With thanks to Graham Rotheray - **CYRILLE DUSSAIX**, 30, rue de la Bastille, F-72400 La Ferté-Bernard, France.



Figs. 1-4. ***Callicera spinolae*. 1, larval habitat, rotten centre of *Fagus* log; 2, third stage larva; 3, puparium; 4, adult.**

Dipterists Digest 1996 **3**, 44-45

Helophilus affinis new to the British Isles (Diptera, Syrphidae)

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While visiting the Royal Museum of Scotland in Edinburgh, I noticed in the hoverfly collection a female *Helophilus* specimen that appeared to be *Helophilus affinis* Wahlberg. It was labelled: "Fair Isle; II - 8 - 1982; A. B. Duncan.", next label: "*H. hybridus* LOEW w", next label: "Sir A. B. Duncan; RSMNH 1984.040". The identity of the specimen was verified using keys in Speight (1988) and Van der Goot (1981). Additionally, it was compared with a named *H. affinis* female from Sweden. *Helophilus affinis* has not been recorded from the British Isles previously (Stubbs & Falk 1983; Stubbs 1995). However its occurrence in the British Isles had been anticipated by Speight (1988).

Helophilus affinis can be separated from the other *Helophilus* species occurring in the British Isles by the following field characters: black face stripe, partly yellow fore and middle tibiae and complete black posterior margins of tergite 2-4.

Helophilus affinis is thought to be a species which undertakes migrations (Stuke, 1995; Torp 1994). There are at least four reasons to support this:

1. *H. affinis* is recorded from habitats where larval development of an aquatic species is not possible (Stuke 1995).

2. *H. affinis* is found in many different habitats (Barkemeyer 1994; Torp 1995) as is characteristic of migrating species.

3. Closely related species such as *Helophilus pendulus* (Linnaeus) or *Helophilus trivittatus* (Fabricius) are known migrants (Gatter & Schmid 1990), so it can be supposed that *H. affinis* is able to migrate, too.

4. *H. affinis* has extended its range quickly southwards from Northwest Europe (Claussen 1985) to Switzerland (Maibach *et al.* 1992). In Denmark, up to 1963, only three specimens were found (Nielsen 1966), by 1994 it was widespread (Torp, 1994). For this extension of its range it has to be mobile.

Fair Isle is well known as a place for migrating birds, and many rare species have been reported. It is thus not unexpected that migrating insects, such as *H. affinis* should be found there too.

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Dipterists Digest 1996 **3**, 47-48

Gymnosoma nitens (Tachinidae, Phasiinae): second, third and fourth British records

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DEL SMITH, 12 Tring Gardens, Harold Hill, Romford, Essex, RM3 9EP.

A single specimen of the tachinid fly *Gymnosoma nitens* Meigen, 1824 was collected in a sweep net by one of us (CWP) on calcareous waste ground at Richborough Power Station, near Sandwich in East Kent on 2 July 1995 and subsequently positively identified by DS using Belshaw (1993). This apparently constitutes only the second British record of the species, the other having been taken at Happy Valley, near Boxhill, Surrey on 8 July 1956 (Belshaw, *op. cit.*) - a chalk downland site.

Subsequently, CWP swept a second specimen of the same species from poor calcareous grassland with birch/sallow scrub at Mill Wood Pit, near Grays, South Essex on 3 August 1995 whilst collecting in the company of Peter Harvey. Subsequently, it transpired that Peter had taken yet another specimen from more or less the same spot two days earlier on 1 August 1995 (identified by DS). These Essex specimens represent only the third and fourth British records known to us.

These are most interesting captures and some examination of the capture sites is worth while. At Richborough, the land is contaminated with ash and other material from the power station and is clearly calcareous, as evidenced by the very good quantity and variety of orchids and other plants growing there. Away from the dense sward of purple-coloured orchid spikes the ground is almost bare in places and in some areas scrub is invading. The fly was swept at around mid-day in a light drizzle from very short, extremely sparse vegetation in one of these almost bare areas where scrub had commenced to invade. Also captured in the same area were the tephritids *Paroxyna lhommei* Hering and *Paroxyna loewiana* Hendel amongst other interesting insects. The site is likely to be developed as a part of the Channel Tunnel Rail Link.

Mill Wood Pit at Grays is an outstanding invertebrate site, undoubtedly of national significance for its assemblage of nesting aculeate Hymenoptera, with in excess of 170 species now recorded. The site is a sand pit (Thanet Sand) and the sand overlies the Upper Chalk which outcrops in many places in the Grays area. In an area of level, exposed chalky substrate, sparsely vegetated by grasses and other vegetation with some scrub invasion (*Betula* spp. and *Salix* spp.), CWP swept his second *G. nitens*. The specimen collected by Peter Harvey also occurred two days earlier in the same area. Like the Richborough site, this location is under threat of development and is unlikely to persist more than a couple of years before it is built upon.

Thus, all four British examples of the fly can be directly related to a calcareous substrate and three of them can be attributed to sparsely vegetated, largely bare ground with some scrub invasion.

The British hosts of this parasitic fly are evidently unknown, but in Europe it has been reared from two species of pentatomid Heteroptera - *Sciocoris cursitans* (Fabricius) and *S. helferi* Fb.. The latter species is not recorded from Britain. *Sciocoris cursitans* is a ground-dwelling species of chalk and sand habitats (P. Kirby *pers. comm.*) and is relatively scarce. It is recorded in Essex only from the Grays area, for 1938 at Purfleet (D.C. Thomas) and at Grays Chalk Pit SSSI in 1985 (P. Harvey). In Surrey, its main stronghold is, interestingly, the Box Hill area. In Kent it is established at a number of sites across the county, perhaps mostly coastal (though this could be observer bias), but always on well-drained substrates, chiefly calcareous in nature. It thus seems likely that this bug may also be the British host of the fly, which overwinters as a larva within its host and could, therefore, perhaps be more easily reared than captured as a free-flying adult. The fly is accorded the highest category (endangered) in Shirt (1987).

Acknowledgements

We are grateful Peter Kirby for his detailed information on the status and distribution of the bug *Sciocoris cursitans*, without which much of the significance of the data presented here would be lost. We are also grateful to Peter Harvey for permission to publish the data pertaining to his specimen of *G. nitens*.

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Cheilosia chrysocoma (Diptera, Syrphidae) in Argyll

Cheilosia chrysocoma (Meigen) is a rare (RDB 3) species (Falk, S.J. 1991. *A review of scarce and threatened flies*. NCC). It is known from southern Scotland (Stubbs, A.E. & Falk, S.J. 1983. *British Hoverflies*. BENHS) and Verrall G.H. (1901. *British Flies* **8**) records it from Nethy Bridge, but most British records are from western sites where it is particularly associated with calcareous soils, often in wet conditions. In recent years I have taken this species twice. The first specimen, a female, was taken from *Salix* catkins on the 12 May 1985, on the Isle of Mull, (Loch Frisa). The second, with a lapse of ten years to the day, was a male at Connel reservoir near Oban on 12 May 1995.

Both these captures are in areas not exactly renowned for calcareous soils. In fact, both my specimens were recorded from areas where acid soils predominate. However, both sites had wet conditions, particularly in the winter and both are grazed by cattle. Accepting that the genus is primarily phytophagous (Rotheray, G.E. 1993. *Dipterists Digest* **9**: 1-155), it is difficult to assess possible candidates for foodplants. One striking floral component, common to both localities, was wild *Fuschia*. Interestingly, the roots/rhizomes of *Fuschia* at Loch Frisa was examined some years ago and one very wet rhizome was found to be bored out, but with no evidence as to the cause - **BOYD BARR**, New Schoolhouse, Arinagour, Isle of Coll.

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