A provisional checklist of larger Brachycera and Conopidae (Diptera) for vice-county 17, Surrey

ROGER K. A. MORRIS
c/o 241 Commonsie East, Mitcham, Surrey CR4 1HB

Contents
Summary .......................................................... 143
Introduction ..................................................... 143
Analysis ......................................................... 144
Species accounts ................................................. 148
Acknowledgements ............................................. 158
References ..................................................... 158

Summary
Available literature and database records for the larger Brachycera and Conopidae of vice-county 17, Surrey, are reviewed and presented as a provisional checklist. A total of 118 species are listed, of which seven are unconfirmed identifications. This checklist compares favourably with the national list and Surrey is rich in species which favour heathlands, chalk downland and woodlands, but species associated with base-rich wetlands and coastal habitats are not so extensively represented. The need for new data for the production of a county atlas in the Surrey atlas series is highlighted and contributions are invited.

Introduction
After the hoverflies, the larger Brachycera and Conopidae are amongst the most popular flies, collected and studied by a wide range of dipterists and amateur naturalists even though some, such as the horseflies, are notoriously difficult to identify. A number of the most spectacular species are illustrated in Colyer and Hammond (1968), but an illustrated key has been long awaited and is soon to be fulfilled by a new book on the larger Brachycera by Alan Stubbs and Martin Drake (in press).

The larger Brachycera include some of the most attractive and easily recognizable flies, but this is an artificial grouping which is in fact a sub-set of the Brachycera comprising the Xylophagoidea, Tabanoidea, Stratiomyoidea, Nemastrinoidea, and Asiloidea (as listed in Chandler 1998). Like the hoverflies, the larger Brachycera exhibit a wide range of life histories ranging from detritivores to active predators of soil-dwelling invertebrates, and parasites of larvae of the Hymenoptera and Lepidoptera. Many are useful indicators of particular geological and hydrological conditions. The Conopidae is a small family ranging from striking black and yellow wasp mimics to small dark species, all of whose larval life histories are poorly documented, but they are known to be internal parasites of adult bees and wasps.

In his key to the larger Brachycera, Oldroyd (1969) commented that ‘it will probably never be possible to compile a Vice-County list of the species of Brachycera, and if it were it would be of little value’. Since then, biological recording has evolved considerably with the advent of active recording schemes based on computerized datasets, and the increasing number of dipterists regularly reporting their finds. Furthermore, the publication of the UK Biodiversity Action Plan (DoE 1994, 1995) places emphasis on action to safeguard a selection of plants and animals thought to need help, amongst which are a number of larger Brachycera. These factors mean that there is an increasing opportunity and need to report on the faunas of individual counties. Checklists such as this are a starting point which will hopefully stimulate greater activity and reporting. Eventually a county atlas may be produced to complement Hoverflies of Surrey (Morris 1998).
At the moment, however, detailed knowledge of the distribution of these flies at vice-county level is poor. A trawl of the popular journals reveals surprisingly few records of larger Brachycera and especially few of the Conopidae from Surrey, but this situation is no different from most other counties. The most useful checklist is provided by Drake (1991) who lists 81 species of larger Brachycera. Previous checklists for the Asilidae of Surrey (17 species) (Parmenter and Oldroyd 1940) and the Conopidae of the London Natural History Society recording area (nine species) (Parmenter 1952) are helpful but obviously outdated, whilst the checklist of 95 species of larger Brachycera from the LNHS recording area (Plant 1990) simply covers the London suburbs and north-east Surrey.

Analysis

At the moment I hold some 2,200 records which include data recently supplied to the larger Brachycera recording scheme (subsequent to the computerization of data by the Biological Records Centre at Monks Wood for the provisional atlas (Drake 1991)), data supplied for the production of the BRC provisional atlas, the available published records trawled so far from some 110 papers and notes, records collected whilst I was recording hoverflies, and records forwarded by a number of Surrey recorders who have not contributed directly to the national scheme.

Table 1. Representation of the British fauna in Surrey.

<table>
<thead>
<tr>
<th>Family</th>
<th>Total accepted species recorded in Surrey 1818-1979</th>
<th>Total of British species</th>
<th>% of British species recorded from Surrey</th>
<th>Records to be confirmed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylophagidae</td>
<td>—</td>
<td>3</td>
<td>33</td>
<td>—</td>
</tr>
<tr>
<td>Athericidae</td>
<td>1</td>
<td>2</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>Rhagionidae</td>
<td>—</td>
<td>10</td>
<td>67</td>
<td>—</td>
</tr>
<tr>
<td>Tabanidae</td>
<td>—</td>
<td>14</td>
<td>47</td>
<td>1</td>
</tr>
<tr>
<td>Xylomyidae</td>
<td>1</td>
<td>1</td>
<td>67</td>
<td>—</td>
</tr>
<tr>
<td>Stratiomyidae</td>
<td>2</td>
<td>28</td>
<td>63</td>
<td>3</td>
</tr>
<tr>
<td>Acroceridae</td>
<td>1</td>
<td>2</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>Bombyliidae</td>
<td>2</td>
<td>2</td>
<td>44</td>
<td>1</td>
</tr>
<tr>
<td>Therevidae</td>
<td>1</td>
<td>4</td>
<td>36</td>
<td>1</td>
</tr>
<tr>
<td>Scenopinidae</td>
<td>1</td>
<td>1</td>
<td>100</td>
<td>—</td>
</tr>
<tr>
<td>Asilidae</td>
<td>2</td>
<td>18</td>
<td>69</td>
<td>—</td>
</tr>
<tr>
<td>Conopidae</td>
<td>1</td>
<td>16</td>
<td>67</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>12</strong></td>
<td><strong>99</strong></td>
<td><strong>183</strong></td>
<td><strong>61</strong></td>
</tr>
</tbody>
</table>

Unlike the hoverflies, which are readily attracted to lures such as flowering plants, the larger Brachycera are often more difficult to locate as adults, so it is unlikely that many families will be as well covered by recording for a full atlas. Adult Conopidae are flower visitors, but many are highly localized or have short emergence periods, so they too will be difficult to cover in great detail. Even so, a substantial assemblage of larger Brachycera and Conopidae comprising some 118 species is currently known, although some must be considered doubtful until specimens can be located and/or checked. The absence of many coastal species from the recording area is not surprising given the landlocked nature of Surrey and this in part reflects the lower representation of some families than...
might be expected elsewhere in the UK. In the past, however, the tidal Thames did support coastal habitats as far as Surrey, and this may be a factor behind historic records of some coastal species. Furthermore, the Chalk in Surrey has few active springs or seepages, and other rocks give limited scope for base-rich seepages favoured by many Stratiomyidae. On the positive side, Surrey is rich in heathland, chalk downland, and woodland which is reflected in other elements of the larger Brachycera and Conopidae fauna. Overall comparison with the British fauna is illustrated in Table 1. Many species appear to be holding their own, but there are others, especially those associated with wetlands, which seem to have declined significantly. The low frequency of some species of horseflies (Tabanidae) is especially noteworthy as the published literature suggests that the family was formerly more abundant; this apparent decline possibly reflects the joint effects of increased drainage and declining livestock numbers in the wider countryside. Remarkably, however, the assemblage does not seem to have changed in terms of overall representation.

It is too early to make any detailed comments on the distribution and frequency of many species because few are particularly well recorded, but there is good evidence of defined distributions for species associated with rivers, wetlands, chalk downland and heathland. Interpretation of the geology of Surrey can be found in Morris (1998) and it is this which the following analysis is based upon.

Figure 1, depicting a selection of possible heathland indicators (Table 2), shows that there are species which may be closely associated with heathland, chiefly on the Bagshot Sand and Lower Greensand, but also on the Thames basin gravels and drifts overlying the Chalk. The highest concentrations of possible indicators come from important heathland sites such as Thursley/Hankley Commons, Chobham and Wisley Commons and the
Pirbright Ranges. But, many are unlikely to be confined strictly to a particular vegetation type; drainage, aspect and vegetation density and height being further determining factors which are in themselves reflections of well-drained surface geology. Species associated with Chalk habitats (Table 3) are possibly better defined as shown on Figure 2, but even so there are disparities. In this case, the highest concentrations of possible indicators come from sites such as Riddlesdown, Box Hill and The Sheepleas and others along the Chalk scarp. There is also a need to make a clear distinction between phytophagous species which may be associated with calcicoles or calcifuges, species with associations with other specialist species, and species whose larval stages are more closely associated with soils with particular characteristics such as rapid rates of warming and high drainage. The picture is therefore more complicated than might at first appear.

**Table 2.** Species selected as possible heathland indicators and used to compile Figure 1.

<table>
<thead>
<tr>
<th>Species selected as possible heathland indicators</th>
<th>Species used to compile Figure 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atylotus fulvus (Tabanidae)</td>
<td>Machimus cingulatus (Asilidae)</td>
</tr>
<tr>
<td>Beris clavipes (Stratiomyidae)</td>
<td>Lasiopogon cinctus (Asilidae)</td>
</tr>
<tr>
<td>Thyridanthrax fenestratus (Bombyliidae)</td>
<td>Conops vesicularis (Conopidae)</td>
</tr>
<tr>
<td>Thereva bipunctata (Therevidae)</td>
<td>Myopa fasciata (Conopidae)</td>
</tr>
<tr>
<td>Eutolmus rufibarbis (Asilidae)</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3.** Proposed indicators for Chalk habitats in Surrey and used to compile Figure 2.

<table>
<thead>
<tr>
<th>Species proposed as chalk downland indicators for Surrey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhagio strigosus (Rhagionidae)</td>
</tr>
<tr>
<td>Symphoromyia immaculata (Rhagionidae)</td>
</tr>
<tr>
<td>Tabanus glaucopis (Tabanidae)</td>
</tr>
<tr>
<td>Machimus rusticus (Asilidae)</td>
</tr>
<tr>
<td>Leptarthus brevirostris (Asilidae)</td>
</tr>
<tr>
<td>Leptarthus vitripennis (Asilidae)</td>
</tr>
<tr>
<td>Thecophora atra (Conopidae)</td>
</tr>
</tbody>
</table>

**Figure 2.** Coincidence map of species proposed as chalk downland indicators for Surrey.
This reflection of the role of geology in defining species distribution is
demonstrated by combining the thermophilic (species which favour warmer
environments) components of the list of possible heathland and chalk downland
indicators with a variety of other thermophilic species (Table 4), as shown in
Figure 3. This third map shows the widespread distribution of probable
thermophilic species, some of which are confined more or less to the Chalk and
others to sandy sites, but many such as *Asilus crabroniformis* may simply reflect
the presence of well-drained soils. Overall, these species are seemingly confined
to soils with a high sand content or high porosity such as Chalk; the absence of
these species from the wealden clays to the south of the Chalk and Lower
Greensand clearly shows the importance of soil type and drainage to many of
the species for which Surrey is noteworthy.

Table 4. Species selected to demonstrate associations with probable thermophilic
habitats in Figure 3.

<table>
<thead>
<tr>
<th>Paracrocera orbiculus</th>
<th>Asilus crabroniformis</th>
<th>Lasiopogon cinctus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ogcodes gibbosus</td>
<td>Dymachus trigonus</td>
<td>Conops vesicularis</td>
</tr>
<tr>
<td>Ogcodes pallipes</td>
<td>Eutolmus rufibarbis</td>
<td>Myopa fasciata</td>
</tr>
<tr>
<td>Thyridanthrax fenestratus</td>
<td>Machimus cingulatus</td>
<td>Thecophora atra</td>
</tr>
<tr>
<td>Thereva bipunctata</td>
<td>Machimus rusticus</td>
<td>Sicus abdominalis</td>
</tr>
<tr>
<td>Thereva plebeja</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3. Coincidence map of possible thermophilic species recorded in Surrey. This
shows how other elements of sandy and gravel drift deposits can be highly influential in
the distribution of species which favour dry, well-drained soils which warm up quickly.

At the moment there are a small number of sites which have been recorded
sufficiently to give a picture of the likely size of overall assemblages. As might
be expected, Great Bookham Common, with forty-nine species, ranks amongst
the best-recorded sites, but others include Thursley Common, Wisley
Common/RHS Gardens and Mitcham Common. Few sites have a well-recorded Conopidae fauna, but the heathlands and chalk downlands should prove to be rich, and indications from Mitcham and Great Bookham Commons suggest that between eight and ten species are likely from rich and well-recorded sites.

Literature records give some indication of the data available on flower visits by larger Brachycera and Conopidae, and the prey assemblage favoured by the Asilidae, but it is clear that there is considerable scope to improve the published records with contributions of detailed records of flower visits and the prey of Asilidae.

As with the hoverflies, the biggest challenge will be to ensure that the London suburbs are covered adequately, and anyone (including non-dipterists) who feels that they might be able to help are invited to contact me (bee-keepers please note the account for *Scenopinus fenestralis*). I would be particularly pleased to hear from readers who live in the London suburbs of VC17 who would be prepared to run water-traps in their gardens. Data arising from these traps would be used to expand the coverage of this and other Surrey schemes such as that for the bees, wasps and ants which are more advanced in their state of preparation.

**Species accounts**

The species accounts cover all species for which I have identified a record and follow the nomenclature in Chandler (1998). Some of these are very old and, given the difficulty many families present for identification, some records should be treated with caution as I have indicated in the accounts. Species marked with an asterisk have no records from 1980 onwards, and those accounts in brackets are for species whose occurrence in Surrey is doubted. In the species accounts a record is normally accompanied by the name of the recorder abbreviated to initials which are indicated below:

- K. N. A. Alexander (KNAA) R. Fry (RF)
- D. W. Baldock (DWB) A. Godfrey (AG)
- A. Beaumont (AB) A. J. Halstead (AJH)
- P. L. T. Beuk (PLTB) C. O. Hammond (COH)
- J. H. Bratton (JHB) P. Harvey (PH)
- P. J. Chandler (PJC) C. Hart (CH)
- D. K. Clements (DKC) R. D. Hawkins (RDH)
- G. A. Collins (GAC) P. J. Hodge (PJH)
- J. S. Denton (JSD) Mrs G. Jeffcote (GJ)
- J. R. Dobson (JRD) P. Kirby (PK)
- H. C. Eve (HCE) S. Lambert (SL)
- D. C. Lees (DCL)
- R. K. A. Morris (RKAM)
- M. S. Parsons (MSP)
- L. Parmenter (LP)
- C. W. Plant (CWP)
- J. H. P. Sankey (JHPS)
- G. Shephard (GS)
- T. J. Smith (TJS)
- A. E. Stubbs (AES)
- R. W. J. Uffen (RWJU)

Where species are recognized to be of particular conservation interest, the status as listed (*Red Data Book* and Nationally Scarce) by Falk (1991) is also included. *Red Data Book (RDB)* categories are sub-divided into the following categories representing the degree of perceived threat:

- **RDB 1** — Endangered. Taxa in danger of extinction.
- **RDB 2** — Vulnerable. Taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating.
- **RDB 3** — Rare. Taxa with small populations that are not at present Endangered or Vulnerable, but are at risk.
- **RDB K** — Insufficiently Known. Taxa which are thought to fall within one of the three categories above, but for which data are insufficient to ascribe a *Red Data Book* status.

Nationally Scarce was formerly listed as Nationally Notable but changed to Nationally Scarce to maintain consistency with statuses used for plants.
XYLOPHAGIDAE

Xylophagus ater Meigen, 1804. Recorded mainly from broadleaved woodland where adults are often noted 'dancing' up tree trunks in dappled sunlight. Probably widespread but difficult to find in numbers as adults.

ATHERICIDAE

Atherix ibis (Fabricius, 1798). Known from Thundry Meadows and the Elstead area on the River Wey, with published records by Dobson (1992) and Denton and Fry (1997). Likely to be more widespread along the Wey and perhaps the Tillingtonbourne.

Atrichops crassipes (Meigen, 1820)* — RDB 3. According to Falk (1991) this species has been recorded from the River Wey.


RHAGIONIDAE

Chrysopilus asiliformis (Preysler, 1791). Few available records, but possibly overlooked.

Chrysopilus cristatus (Fabricius, 1775). Widespread in wetlands and damp woodlands.


Rhagio annulatus (De Geer, 1776) — RDB 3. This is a very distinctive species which is readily distinguished from R. tringarius. It is known from just a few records: the Sheepleas (Chandler 1983); Broadham Green TQ3851 (31.v.1994, RKAM); St Johns Wood, Dormansland TQ4141 (8.vi.1999, GAC).

Rhagio lineola Fabricius, 1794. Few records at present, but likely to be widely distributed.

Rhagio notatus (Meigen, 1820)*. A single published record from Godalming (Oldroyd 1969) based on records from Charterhouse Alder Holt (2.vi.1967, AES; May 1967, June 1968, PJC) of this mainly northern species. Alan Stubbs (pers. comm.) reports that this species has not been seen since the dredging of the River Wey as part of the flood alleviation scheme for Godalming; it is possible that this action has led directly to the loss of R. notatus in Surrey and illustrates the vulnerability of riverine species to bank and channel modifications.

Rhagio scolopaceus (Linnaeus, 1758). Obviously common in the west of Surrey, but poorly represented in central Surrey and apparently scarce on the Chalk.

Rhagio strigosus (Meigen, 1804) — RDB 3. Until 1999, Box Hill was to be the only locality for this species in Surrey, with a series of records dating from 29.vii.1954 (Kidd 1955, Parmenter 1955, Skidmore 1955) to 24.vii.1997 (Alexander and Foster 1998). However, in 1999 two specimens were also taken by G.A. Collins from Headley Heath TQ953 (5.vi.1999, 12.vi.1999).

Rhagio tringarius (Linnaeus, 1758). Widespread, but less frequent than R. scolopaceus.

Symphoromyia immaculata (Meigen, 1804) — Nationally Scarce. Seemingly widespread on the Chalk scarp grasslands from the Sheepleas to Woldingham.

TABANIDAE

Chrysops caecutiens (Linnaeus, 1758). Apparently scarce, but probably under-recorded. Modern records are concentrated in south and south-west Surrey, but historically this species was known north of the Downs and it seems likely that this distribution will be reflected given more intensive recording. Recorded at hemlock water-dropwort Oenanthe crocata (RDH).

Chrysops relictus Meigen, 1820. Slightly scarcer than C. caecutiens, but also likely to be under-recorded. Seemingly confined to western Surrey, but current levels of recording may mean that this apparent distribution is artificially skewed by recorder effort.

Chrysops viduatus Fabricius, 1794. Very scarce, just three modern records. Seemingly confined to sandy acidic sites in Surrey.

Haematopota crassicornis Wahlberg, 1848. Considerably scarcer than H. pluvialis, seemingly more common in the south-west. Current records suggest that this species is associated with sandy, acidic sites.
Haematopota plevis (Linnaeus, 1758). Widespread; the commonest of the Tabanidae in Surrey.

Atylotus fulvus (Meigen, 1804) — Nationally Scarce. Known only from Thursley Common (23.vii.1967, COH), SU9140 (1989–1991, JSD), although it seems likely that this species might occur more widely on the wetter Surrey heaths.

Hybomitra bimaculata (Macquart, 1826). The commonest large horsefly in Surrey today, but represented by very few records; many, but not all, of which are from heathland.

Hybomitra distinguenda (Verrall, 1909). Very few records, mostly from south-west Surrey.

Tabanus autumnalis Linnaeus, 1761. Just a single published record — a female from Bookham Common (Parmenter 1966), but seemingly better known from west Surrey where there are records from three heathland sites.

[Tabanus bovinus Linnaeus, 1761* — RDB K. Verrall (1909) confidently reports this species from Surrey, but Drake (1991) suggests that there are actually very few confirmed records for Britain and this casts doubt on Verrall's reports from Oxshott and Farnham. Most records are likely to be T. sudeticus.]

Tabanus bromius Linnaeus, 1758. Kirkpatrick (1918) reports this species from Leith Hill, where males were 'common . . . resting on pales', and there are a number of other published records which suggest that this is one of the species which has declined with agricultural change. There is just a single modern record: Swan Barn Farm SU9132 (14.viii.1983, KNA/DKC).

Tabanus glaucops Meigen, 1820 — RDB 3. Although obviously scarce, this species seems to be well established in the Box Hill/Mickleham area. On 19.vii.1998 several individuals were attracted to a marquee at Juniper Hall (TQ1752, GAC/RKAM).

Tabanus maculicornis Zetterstedt, 1842. Reported in the literature from a number of localities but today known from just a few sites mainly in west Surrey where it is probably more widespread on heathlands than current records suggest.

Tabanus miki Brauer, in Brauer & von Bergenstamm, 1880 — RDB K. A single female from Buckland (24.v.1997, CH det., confirmed AES). Tabanus sudeticus Zeller, 1842. Probably formerly widespread if the records ascribed to T. bovinus listed in Verrall (1909) are considered to be T. sudeticus. There are a number of records for Thundry Meadows SU8943/8944 (1990–1997, JSD), and a single record from Knaphill SU9658 (July 1992, TJS det., CMD).

XYLOMYIDAE

Solvea marginata (Meigen, 1820) — Nationally Scarce. Probably widespread in urban areas where poplars are planted in parks and cemeteries.

Xylonya maculata (Meigen, 1804)* — RDB 2. There is a single record of a female bred from 'fungus impregnated wood' from the trunk of a partly decayed beech tree at Virginia Water collected on 8.iii.1933 which emerged on 6.v.1933 (Richards 1934).

STRATIOMYIDAE

Beras chalybata (Forster, 1771). Widespread and common.

Beras clavipes (Linnaeus, 1767) — Nationally Scarce. Seemingly very scarce and restricted to west Surrey where it may be closely associated with heathland. One modern site: Thursley NNR, 18.vii.1993 (Denton and Fry 1997).

Beras fuscipes Meigen, 1820 — Nationally Scarce. Nationally, this species has a distinctly western distribution, but there is a record for Surrey: Knaphill SU9659 (6.vii.1991, AJH).

Beras geniculata Haliday, in Curtis, 1830. Just three modern records. Possibly more widespread, but certainly not common.

Beras morsii Dale, 1841. Widespread, but not common.

Beras pallata (Forster, 1771). After B. chalybata this is the commonest of the genus in Surrey.

Chorisops nagatomi Roskošný, 1979 — Nationally Scarce. Probably a good deal more common than records suggest. I have taken it at Farnham, River Wey SU8504 (15.vii.1992); Scale SU8847 (15.vii.1992); near Hungry Hill TQ0555 (23.vii.1992) and Mitcham Common TQ2867 (27.vii.1991).
**Chorisops tibialis** (Meigen, 1820). Widespread but not common.

*Clitellaria ephippium* (Fabricius, 1775). Reported by Verrall (1909) from a 'Coombe Wood', reputedly in Surrey, but Oldroyd (1969) suggests this site is near Deal, so we cannot be sure of the true location. If ever resident, *C. ephippium* is certainly extinct.


**Oxycera nigricornis** Olivier, 1812. Known from a small number of sites ranging from vegetated river margins to flushed fens. Possibly overlooked as a chloropid as it is small, colourful and often abundant where found. Modern records include: Tuesley SU9642 (15.vii.1989, RKAM); Charterhouse Alderholt SU9544 (11.vii.1994, JRD); Godalming SU9643 (27.vi.1993, JRD); Cobham TQ1060 (19.vii.1989, RKAM).

**Oxycera rara** (Scopoli, 1763). Scarce, but known from a number of similar sites to *O. nigricornis*. Modern records include: Waverley Abbey SU8745 (6.viii.1988, RKAM/GAC); Tuesley SU9642 (15.vii.1989, RKAM).

**Oxycera terminata** Meigen 1822* — RDB 2. A single record from Oxshott (8.vii.1891 (Billups 1891)). This is a species which is associated with base-rich streams and rivers and is therefore highly unlikely to have occurred at Oxshott; this record is therefore extremely doubtful.

**Oxycera trilineata** (Linnaeus, 1767). Verrall (1909) lists Surrey amongst the counties where this species has been recorded, but the only record of which I am aware is from Wisley RHS Gardens TQ0658 (23.vi.1988, AJH).


**Neopachygaster meromelas** (Dufour, 1841) — Nationally Scarce. A species which may be more abundant than records suggest, given that it appears to be associated with poplars which are widespread in urban areas. Three post-1980 records: Wisley RHS Gardens TQ0658 (22.vii.1986, AJH (Halstead 1987)); Richmond Park (6.vi.1992, PJC (Miles 1993)); Nunhead Cemetery TQ3475 (27.vii.1991 (Jones 1992)).

**Pachygaster atr/a** (Panzer, 1798). Widespread and common, usually swept from foliage.

**Pachygaster leachii** Stephens, in Curtis, 1824. Widespread, usually swept from foliage.

**Zabrachia tenella** (Jaennicke, 1866) — Nationally Scarce. Taken as larvae by Paul Beuk at a number of localities in 1989: Walton on the Hill, West End Common and Esher Common (Beuk 1989). The larvae, which are to be found under the bark of dead pines, seem to be more straightforward to find than adults and will probably prove to be the main way of recording this species.

**Chloromyia formosa** (Scopoli, 1763). A common visitor to umbellifers. Flower visits noted include: ground elder *Aegopodium podagraria*, hemlock water-dropwort *Oenanthe crocata*, hemlock *Conium maculatum*, hogweed *Heracleum sphondylium*.

*Microchrysa cyanoevertinis* (Zetterstedt, 1842). I am aware of a number of Malaise trap specimens reported as this species which I feel should be checked before this is accepted as a Surrey species.

**Microchrysa flavicornis** (Meigen, 1822). Rather scarce.

**Microchrysa polita** (Linnaeus, 1758). Widespread, often swept from foliage.

**Sargus bipunctatus** (Scopoli, 1763). Widespread, mainly in north-east Surrey; this probably reflects the late emergence of this species and my tendency to visit sites close to home in the autumn. Noted at ivy *Hedera helix* flowers.

**Sargus cupriarius** (Linnaeus, 1758). Listed from Surrey by Drake (1991). I have a specimen which seems to run to this species but needs checking.


**Sargus iridatus** (Scopoli, 1763). There would appear to be a very strong association with south-east Surrey where the soils are stiff and water-logged and mainly used as pasture for cattle.

**Odontomyia argentata** (Fabricius, 1794)* — RDB 2. Known solely from Great Bookham Common where it was taken in the 1940s (Parmenter 1950).
Odontomyia ornata (Meigen, 1822)* — **RDB 2.** Listed from Mitcham Common in 1900 by Shirt (1987) and 'Surrey' by Oldroyd (1969). This is a surprising record which I have yet to follow up and have some doubts about, given that this seems to be a grazing marsh species; it could, however, be a stray from the Essex coast or from former coastal wetlands now part of Greater London.

Odontomyia tigrina (Fabricius, 1775) — **Nationally Scarce.** Probably widespread where lush vegetation occurs around the edges of ponds. My own records include: Epsom Common TQ1860 (29.vi.1986, 11.vi.1987); Haxted Mill TQ4145 (23.vi.1985); Wimbledon Common TQ2372 (27.v.1990); Mitcham Common, Goat Green TQ2866 (4.vi.1989).


Stratiomys potamida Meigen, 1822 — **Nationally Scarce.** Deceptively widespread because this is a conspicuous species which visits umbellifers and is noted by a wide variety of naturalists. My records include: Eashing SU9443 (7.vii.1985); Coxes Lock TQ0664 (5.vii.1987); Forest Green TQ1241 (27.vii.1985); Ashtead Common TQ1859 (26.vii.1987); St Joseph Hood Playing Field TQ2267 (24.vii.1987); Mitcham Common TQ2967 (2.viii.1991); Blindley Heath TQ3645 (27.vii.1986). Flower visits I have noted are: hogweed *Heracleum sphondylium* (2), hemlock water-dropwort *Oenanthe crocata*.


**ACROGERIDAE**


*Ocodes gibbosus* (Linnaeus, 1758)* — **Nationally Scarce.** Verrall (1909) lists this species from a number of sites, including a very old record for Richmond Park (4.vii.1835, Hope Dept. Collection). The most recent record is for Mitcham Common (1975, F. Falk (1991)).

*Ocodes pallipes* Latreille, in Olivier, 1812 — **Nationally Scarce.** There are very few records: Ham Common, Richmond TQ1871 (9.vii.1999, GAC); Box Hill TQ1751 (11.vi.1987, PK/SL); Coulsdon TQ3158 (4.vii.1954, RWJU); and a report by Wakely (1950) who reports finding at Warlingham a solitary wasp nest in a cavity in white mullein *Verbascum lychnitis* provisioned with 21 specimens of *O. pallipes*. Most of these records suggest that this species may be associated with Chalk sites, but more are needed before any firm conclusions can be drawn.

**BOMBYLIIDAE**

*Bombylus discolor* Mikan, 1796* — **Nationally Scarce.** At present known only from old records from Great Bookham Common (Plant 1990) and Limpsfield Common (Parmenter 1942).

*Bombylus major* Linnaeus, 1758. Abundant throughout much of Surrey. A regular flower visitor for which there are a number of published flower visit records. Recent flower visit records of which I am aware include: green alkanet *Pentaglottis sempervirens* (RKAM), lesser celandine *Ranunculus ficaria* (RDH), slender speedwell *Veronica filiformis* (RDH), germander speedwell *Veronica chamaedrys* (RDH), cuckoo-flower *Cardamine pratensis* (RDH), ground ivy *Glechoma hederacea* (RDH) and white dead-nettle *Lamium album* (RDH).

[Bombylus minor Linnaeus, 1758 — **RDB 2.** Reported from Surrey by Drake (1991), but a recent review (Stubbs 1996) found no evidence of accurate records of this species from Surrey.]
Tharidanthrax fenestratus (Fallén, 1814) — RDB 3. Seemingly widespread on many of the west Surrey heaths. Although reported to parasitize the digger wasp Ammophila sabulosa, the distribution of T. fenestratus seems more closely to match that of A. pubescens in Surrey. T. fenestratus is a species on the UK Biodiversity Action Plan, and detailed records of locations and associated behavioural observations would be especially useful in helping to understand its biology.

Villa venusta (Meigen, 1820)* — RDB 1. Reported from Chobham and Oxshott in Stubbs and Drake (in press), possibly extinct.

![Figure 4](image-url)

**Figure 4.** Coincidence map for yearly occurrence of Tharidanthrax fenestratus since 1955. This map suggests that T. fenestratus has its stronghold in the Thursley/Hankley area. Records from a number of more easterly sites, especially the Esher Common/Oxshott Heath area are old and this species may have disappeared from these sites which were heavily coniferized post-Second World War.

**THEREVIDAE**


Pandivirilia melaleuca (Loew, 1847) — RDB 1. There is a tantalizing record of larvae (not reared) from red heart rot in oak at Richmond Park (Owen 1993) but, as the larvae cannot be identified at present, and Thereva nobilitata have been found and reared from similar habitat, this record should be treated with caution. At the moment the only confirmed record for Surrey is from Royal Holloway College (Ismay 1981).


[Thereva fulva (Meigen, 1804)* — RDB 3. There is a single record of this species from Oxshott by Billups (1891) whose note includes a number of other surprising records; this must therefore be considered doubtful.]

Thereva nobilitata (Fabricius, 1775). Widespread and not uncommon.

Thereva plebeja (Linnaeus, 1758) — Nationally Scarce. Modern records suggest that T. plebeja is well established in west Surrey on sandy sites. Reported bred from Epsom by Prof. J. A. Owen (Allen 1991). The specimen reported from Thundry Meadows (Dobson 1992) has since been redetermined as T. nobilitata (J. Dobson pers. comm.).
SCENOPINIDAE

Scenopinus fenestralis (Linnaeus, 1758). Reported by Plant (1990) as ‘widespread and very common’ in the LNHS recording area, but the only modern records from Surrey are: Thursley Village SU9039 (16.ii.1992, in house (Denton and Fry 1997)); Fernhill TQ3041 — on mugwort Artemisia vulgaris (12.vii.1993, RDH). A recent account by Dobson (1999) suggests that this species has an association with beehives where it is likely to be predacious on the larvae of insects which live in association with bees’ nests; it may prove to be a lot more abundant if the detritus from beehives is examined and any larvae are bred out. I would therefore welcome samples of the ‘rubbish’ cleared from hives by bee-keepers which may lead to a better understanding of this species’ biology.


ASILIDAE

Asilus crabroniformis Linnæus, 1758 — Nationally Scarce. Figure 5. This is an easily identified species on account of its size and distinctive coloration. It is well known from the Thursley/Hankley area and regularly recorded from Horsley by H.C. Eve, but has seemingly disappeared from other downland haunts. There are records from the London area which suggest that this is either a highly mobile vagrant or that there are small relict populations on some of the south London commons. Records for late May and early June are remarkably early but they do seem to be confined to years when there was exceptionally hot weather in April and May which accelerated emergence in a number of species, especially hoverflies and perhaps the Asilidae. This species is currently being studied in detail as part of work on the UK Biodiversity Action Plan. Detailed records are therefore most welcome, especially as relict populations may exist on the commons of south London. Modern records include: Hankley Common SU8840 (1.vii.1989, JHB; 19.viii.1998, GAC), SU8841/8940/9040 (undated (Denton and Fry 1997)); SU8841 (30.vii.1999, GAC); Thursley Common SU9139 (3.viii.1995, 5.vii.1999).

**Figure 5.** Coincidence map for yearly occurrence of *Asilus crabroniformis* since 1931. This shows a heavy concentration of records around Thursley/Hankley Commons and the Chalk west of the Mole gap. Formerly, this species was well established in the Wisley/Ockham area but there are no recent records.

**Dysmachus trigonus** (Meigen, 1804). Rather scarce, seemingly concentrated on sandy sites on the Bagshot Sand, Lower Greensand and Thames basin gravels.


**Machimus atricapillus** (Fallén, 1814). Widespread and common on dry heathlands, chalk grasslands and sandy sites.

**Machimus cingulatus** (Fabricius, 1781). Widely distributed across the Bagshot Sand and Lower Greensand.

**Machimus rusticus** (Meigen, 1820) — **RDB 2.** Known from chalk downland at the Sheepleas (23.vi.1990, AHJ (Halstead 1991)) and White Downs (1992-1993 (Denton and Fry 1997)). Possibly more widespread than current records suggest.

**Neoitamus cyamus** (Loew, 1849). Widespread but not common, in woodlands. I took a specimen at a mercury vapour light at Friday Street TQ1245 (23.vi.1981).

**Leptarthrus brevirrostris** (Meigen, 1804). Widely distributed across the North Downs.

**Leptarthrus vitripennis** (Meigen, 1820). Currently known only from a series of downland sites (Hawkins 1998): Box Hill (20.vi.1948, OWR in NHML); White Downs (14.viii.1988, AHJ); Riddlesdown (1.vii.1996, beaten from juniper bush, RDH).

**Choerades gileus** (Linnaeus, 1758) — **RDB K.** Recorded from a number of sites in Surrey in the 1940s and early 1950s. The disappearance of this species is curious as it appears to have been widespread for some time, associated with conifers on heathland. The records include four larvae taken from pine bark at Ash Vale (Duffy 1946) and adults at: Stocksbridge Pond, Frensham (15.vii.1951, JHPS (Sankey 1952)); Oxshott (24.vi.1946, pair in copula, LP (Parmenter 1946)).

**Choerades marginatus** (Linnaeus, 1758) — **Nationally Scarce.** A widespread woodland species which is rarely seen in numbers.

**Leptogaster cylindrica** (De Geer, 1776). A widely distributed grassland species.

**Leptogaster guttiventris** Zetterstedt, 1842. Apparently very scarce, current records suggest that this species is mainly confined to western Surrey, but it is possibly overlooked amongst the more common *L. cylindrica*, so no firm conclusions can be made at the moment.

**Dioctria atricapilla** Meigen, 1804. A widely distributed and common species which is associated with dry grasslands.

**Dioctria baumhaueri** Meigen, 1820. A common species which is seemingly confined to sandy or other sites with good drainage.

**Dioctria cothurnata** Meigen, 1820* — **RDB 3.** I am aware of just the one record: Oxshott (6.vii.1895, AB (Parmenter and Oldroyd 1940)).

**Dioctria linearis** (Fabricius, 1787). A woodland species whose distribution seems to be concentrated in central and south-west Surrey.

**Dioctria oelandica** (Linnaeus, 1758) — **Nationally Scarce.** Seemingly very scarce and confined to wooded heathland in western Surrey: Hindhead Common SU8938 (6.vi.1988, PJH); Thundery Meadows SU8943 (18.vi.1994 (Denton and Fry 1997)); Hankley Common SU8840 (1.vi.1999, GAC/RKAM); Thursley NNR SU9040 (16.vi.1985, PH), SU9140 (v-vi. 1994 (Denton and Fry 1997)).

**Dioctria ruftipes** (De Geer, 1776). Widespread and not uncommon.
Lasiopogon cinctus (Fabricius 1781) — **Nationally Scarce.** Clearly confined to the heathlands of the Bagshot Sand and the Lower Greensand, this appears to be a good heathland indicator. My records include: Hankley Common golf course SU8742 (29.iv.1990); Wyke Common SU9152 (14.v.1994); Pirbright Common SU9556 (8.vi.1996).

**CONOPIDAE**

*Conops ceriaeformis* Meigen, 1824. Widespread but less common than *C. flavipes* and *C. quadridasciatus*.

*Conops flavipes* Linnaeus, 1758. Widespread and common. Adults noted at hogweed *Heracleum sphondylium* and hemp agrimony *Eupatorium cannabinum*.

*Conops quadridasciatus* De Geer, 1776. Widespread and common.


*Conops vesicularis* Linnaeus, 1761 — **Nationally Scarce.** Figure 6. Restricted mainly to the heathlands of west Surrey and to the Wrexford Forest/Hurtwood area of the Lower Greensand. More widespread than might be expected. My records include: Tilford Reeds SU8643 (28.v.1988); Hankley Common golf course SU8742 (29.iv.1990); Westbrook, near Elstead SU8943 (28.v.1994); Puttenham Common SU9145 (13.vi.1987); Hurtwood TQ0644 (5.v.1995); Leith Hill Wood TQ1241 (4.v.1992); Friday Street TQ1245 (5.v.1989); Redlands Wood TQ1545 (5.vi.1993); Tolworth, Hogsmill River TQ2064 (10.vi.1995).

*Leopoldius brevirostris* (Germar, 1827) — **RDB 2.** Known from a single female from Sydenham Hill Wood exhibited by A. Godfrey at a BENHS indoor meeting (Godfrey 1988).

---

**Figure 6.** Distribution map of *Conops vesicularis* showing the high concentration of records on the Bagshot Sand and Lower Greensand.
Leopoldius signatus Wiedemann, in Meigen, 1824 — **Nationally Scarce.** Widespread in the Mitcham/Morden area (Morris 1991). Rarely seen elsewhere in Surrey, but I took a specimen at ivy Hedera helix by Wotton Church TQ1247 on 29.ix.1995.

Physocyphala rufipes (Fabricius, 1781). Seemingly widespread. I have no records of the closely related *P. nigra* (De Geer, 1776) but believe that it should be searched for, given that it occurs on the Dorset heaths and the fauna of the Surrey heaths closely mirrors that of Dorset and Hampshire.

*Myopa buccata* (Linnaeus, 1758). Mainly from western Surrey, but apparently moderately common.

*Myopa fasciata* Meigen, 1804 — **RDB 3.** Confined to the heathlands of west Surrey.

[Myopa poly stigma Rondani, 1857* — **RDB 3.** Until museum collections are checked, published records of this species need to be treated with caution as they may refer to *M. tessellatipennis.*]

*Myopa tessellatipennis* Motschulsky, 1859. Widespread, no obvious pattern of distribution. Recorded from sunlit *Acer* leaves at Dunsfold.

*Myopa testacea* (Linnaeus, 1767). Widespread, no obvious pattern of distribution, but no records are from the Chalk. Recorded from sunlit *Acer* leaves, at apple *Malus* spp. blossom and at dandelion *Taraxacum* spp. (RKAM).

*Thecophora atr a* (Fabricius, 1775). Figure 7. Almost entirely confined to the Chalk where this species appears to be widespread and even common. There are, however, a few outlying records including one from Spencer Road Wetland TQ2866 (1.vii.–31.viii.1997, CWP). Reported as associated with *Lasioglossum morio* nests (DWB, pers. comm.).

*Thecophora fulvipes* (Robineau-Desvoidy, 1830) — **Nationally Scarce.** This species is much scarcer than *T. atr a* and at the moment is known from just two specimens: Happy Valley, Coulsdon TQ3056 (12.vii.1999, 28.ix.1999, GAC).

![Figure 7. Distribution map of *Thecophora atr a* showing heavy concentrations of records on the Chalk and a few outliers.](image-url)
Sicus abdominalis Kröber, 1915 — RDB 1. There are just two records for this species, one from Chobham Common (2.ix.1962, AES confirmed DKC (Stubbs 1990)), the other from Mitcham Common TQ2867 (6.vii.1991, RKAM confirmed DKC).

Sicus ferrugineus (Linnaeus, 1761). An abundant species across much of Surrey, but possibly less frequent on the clays of the Weald where current records suggest it is largely absent.

Zadion notatum (Meigen, 1804)* — Nationally Scarce. There is a single record for the Sheepleas dated 9.vi.1968 (PJC).

Acknowledgements
I would like to thank Peter Chandler, Martin Drake, Colin Plant and Alan Stubbs for commenting on earlier versions of this manuscript, and to Martin Drake for forwarding the data held on the national recording scheme database and printouts of data compiled for the provisional atlas (Drake 1991). I would also like to thank all recorders who have contributed either directly or indirectly to this brief review.

The distribution maps in this paper have been produced using the program DMap (in its Windows version) written by Dr Alan Morton of Imperial College at Silwood Park. For further information about the program and its implementation in this case, see Morton and Collins (1992).

References


BILLUPS, T. R. 1891. 'Two and a half hours' investigation of the entomology of Oxshott. Entomologist 24: 201–204.


