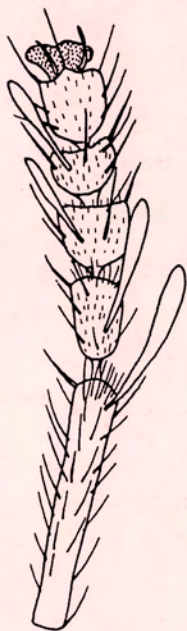
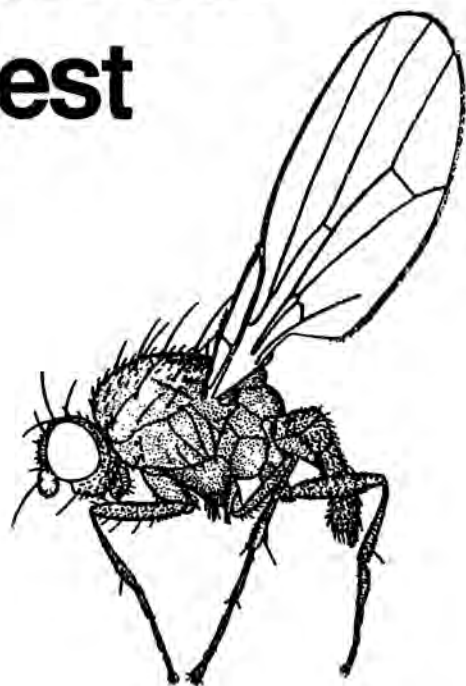


Dipterists Digest



2001 Vol. 8 No. 2

Dipterists Digest



Vol. 8 No. 2

Second Series

2001

Published 5 November 2001

Published by



Dipterists
FORUM

ISSN 0953-7260

Dipterists Digest

Editor

Peter J. Chandler, 43 Eastfield Road,
Burnham, Slough, Berks. SL1 7EL

Editorial Panel

Roy Crossley Graham Rotheray
Keith Snow Alan Stubbs Derek Whiteley Phil Withers

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:

- the behaviour, ecology and natural history of flies;
- new and improved techniques (e.g. collecting, rearing etc.);
- the conservation of flies;
- provisional and interim reports from the Diptera Recording Schemes, including maps;
- records and assessments of rare or scarce species including those new to regions, countries etc.;
- local faunal accounts and field meeting results, especially if accompanied with good ecological or natural history interpretation;
- descriptions of species new to science;
- notes on identification including deletions or amendments to standard key works and checklists.

Articles may be of any length up to 3,000 words and must not have been accepted for publication elsewhere. Items exceeding this length may be serialised or printed in full, depending on competition for space. Articles should be written in clear and concise English and should preferably be typed double spaced on one side of A4 paper. **After acceptance all contributions should, wherever possible, also be supplied on 3.5" computer disc in ASCII, Word or Word Perfect formats and accompanied by hard copy.**

Style and format should follow articles published in the most recent issue. A short Summary (in the form of an Abstract) should be included at the beginning of each article and should be supplied with the article. References to journals should give the title of the journal in full. Scientific names should be underlined or, preferably, italicised. **If an article is to be supplied on disc, scientific names should always be italicised.** Authors of scientific names should be given in full (with parentheses if applicable) and nomenclature should follow the most recent check list, unless reflecting subsequent changes. Tables should be on separate sheets. Figures should be drawn in clear black ink, about 1.5 times their printed size and lettered clearly. Descriptions of new species should include a statement of the museum or institution in which type material is being deposited.

Authors will be provided with twenty separates of papers of two or more pages in length.

Articles and notes for publication should be sent to the Editor at the address given above. Enquiries about subscriptions and information about the **Dipterists Forum** should be addressed to the Membership Secretary, Liz Howe, Gcr-y-Parc, Marianglas, Tynyngogl, Benllech, Gwynedd LL74 8NS, UK

A provisional key to British Piophilidae (Diptera) and *Parapiophila flavipes* (Zetterstedt, 1847) new to Britain

ALAN E. STUBBS* AND PETER J. CHANDLER

*181 Broadway, Peterborough PE1 4DS

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

Summary

A new key is provided to the British species of Piophilidae, including one addition to the British fauna *Parapiophila flavipes* (Zetterstedt, 1847) of which the male genitalia are figured. Comments are made on distribution and biology of the included species.

Introduction

The absence of an up to date key to the British fauna has hindered the study of this small acalyptate family, which is generally associated with carrion, or in some cases rotting fungi or bird's nests. Most piophilids are small (2-4mm), usually either black or black and orange, with a rather shining body. The top of the thorax has few bristles. Species formerly included in Neottiophilidae and Thyreophoridae, earlier treated as separate families, are larger and respectively shining orange-brown and dull grey dusted.

The latest British key was by Collin (1910), when the British list stood at 8 species belonging to the subfamily Piophilinae. Recent check lists (Kloet and Hincks 1976, Chandler 1998) took the total including the three species formerly in other families to 13 species. Two of these were confirmed as British by Cogan and Dear (1975).

This review was initially based on the British collection in the Natural History Museum, London (BMNH). Material was found arranged under two additional names, *Piophila flavipes* Zetterstedt and *P. melanocera* Rondani, plus an unnamed species. This was the basis for the remarks in Note 2 under Piophilidae in Chandler (1998), but only *Parapiophila flavipes* (Zetterstedt, 1847) is here accepted as an addition to the British list. In the present work material at Oxford University Museum (UMO), especially the Verrall-Collin collection, has also been taken into account.

McAlpine (1977) revised the world fauna, including keys that enable identification to species (but without genitalia illustrations). He raised subgenera of *Piophila* to generic rank, which was followed by subsequent authors including the Palaearctic Catalogue (Soós and Papp 1984), although that did treat Neottiophilidae and Thyreophoridae as separate families with different authorship. However, Ozerov (2000) followed McAlpine in including them in Piophilidae. These authors recognised only two subfamilies, Neottiophilinae and Piophilinae, contrary to Chandler (1998) who also gave subfamily rank to Thyreophorinae. McAlpine recognised two tribes of Piophilinae, Mycetaulini and Piophilini, treating Thyreophoridae as subtribe Thyreophorina of Piophilini. Ozerov, however, assigned tribal rank to Thyreophorini, which is followed here.

The Piophilidae are a worldwide family but best represented in the Holarctic Region. In fact we have a good proportion of possible European genera and species, the main absences being those of high latitudes. More recently, Ozerov and Bartak (1993)

described *Mycetaulus latipennis* and *Parapiophila vernicosa* from Georgia and the Czech Republic respectively. *Parapiophila baechlii* (Merz, 1996) was described within a review of the Swiss fauna; since the latter publication appeared, *M. latipennis* and *Prochyliza nigricornis* have also been found in Switzerland (Bernhard Merz pers. comm.).

Biology

Known rearing records were summarised by Ferrar (1987) and some useful information was provided in Smith (1989); knowledge of the biology of several species is limited and there is plenty of scope for original observations.

Members of the tribe Piophilini are typically carrion specialists, although the common *Parapiophila vulgaris* (Fallén) has also been reared from bird's nests, as well as from dead snails and dung. They come to carrion when it starts to smell and various species can be found at most stages during the decay cycle. A very productive situation is a keeper's gibbet, with corpses hung up on a fence, though some species like fish carrion. Even animal protein or bone scraps thrown on the garden lawn should attract one or two species, the flies being obviously different from the larger and more bristly calyptrates. Clearly a pooter should not be used at carrion.

The Thyreophorini, which look rather like hairy dung flies, are seemingly associated with the late decay of large corpses, with larvae often tunnelling within bone marrow. Our only representative is *Centrophlebomyia furcata* (Fabricius), the so-called "bone skipper". The only other European genus is *Thyreophora*, with two species.

Three British genera and species belong to the tribe Mycetaulini. Larvae of *Mycetaulus bipunctatus* (Fallén) have been found in rotting fungi and this species has also been reared from rotten wood and bird's nests. *Allopiophila luteata* (Haliday) has been reared from a dead bird. The biology of *Pseudoseps signata* (Fallén) is unknown.

The Neottiophilinae includes two British species, which have a shining orange-brown body. Larvae of *Neottiophilum praeustum* (Meigen) live in birds' nests where they suck the blood of nestlings; *Protocalliphora* Hough (Calliphoridae) has similar larval biology. Owen (1953) described the biology and distribution of *N. praeustum* and also provided a list of the known avian hosts. The biology of the other species, *Actenoptera hilarella* (Zetterstedt), is unknown.

Status

The status of species is indicated by brief comments on frequency and distribution in the Key. This is based on the BMNH and UMO collections, as well as the experience of the authors and cannot be taken as anything but preliminary comment.

Two species are known to have declined. The "cheese skipper", *Piophila casei* (Linnaeus), got its name from the habits of larvae that infested cheese and other food in old-fashioned larders. The coming of refrigeration and other improved hygiene means that houses rarely provide the required conditions, but it is a cosmopolitan pest of the food industry known to feed on a wide range of dry products of animal origin and is still a serious pest in some parts of the world. *Centrophlebomyia furcata*, last seen in Britain in South Wales in 1906 and with an earlier record for Cornwall, is assumed to be extinct here. Famously, this species was found at a dead donkey, not a common habitat in Britain today! Its recent occurrence in a donkey's graveyard in Cyprus has been reported

by Roger Key (*pers. comm.*). In western Europe it appears to have suffered the same fate as in Britain; Séguy (1934) could only cite 19th century records for France, including from horses, cattle and dogs. It is just possible that it may have survived in western Britain on sheep carcasses in open country and larger deer also have potential.

The carrion fauna as a whole will have suffered decline since much of the countryside is now intensively farmed, leading to the resultant decline in populations of small mammals and birds; rabbits have had their population crashes and partial recoveries. The increases in carrion derive in particular from the major increase in numbers and range of deer and also from the increased strength in some sea bird nesting populations.

Key to British species

1. Body entirely shining orange-brown; wing span 13-21mm. Vein R_1 bearing spinules [Neottiophilinae] 2
 - Body entirely or partly dark. If extensively orange-brown, size much smaller. Vein R_1 without spinules [Piophilinae] 3
2. Wing span 18-21 mm, looking like a large tephritid. Wing tip dark, dark spots over cross-veins and a dark stigma. Costal spines present. (Infrequent but widespread in England) *Neottiophilum praeustum* (Meigen)
- Wing span 13 mm. Wings clear, lacking costal spines. (Rare, Scotland and Suffolk) *Actenoptera hilarella* (Zetterstedt)
3. Large, hairy, heavily grey-dusted species, resembling *Scathophaga*. Scutellum elongate, concave on top; apical bristles very long. [Thyreophorini] (Extinct, formerly Cornwall and Glamorgan) *Centrophlebomyia furcata* (Fabricius) [*Thyreophora* is similar, but lacks costal spines]
 - Smaller species without strong grey dusting. Scutellum normal 4
4. Wings with dark markings at or near apex 5
 - Wings without markings 6
5. Large dark spot at wing tip. Two pairs of dorsocentral bristles. Head and most of thorax orange. (Scarce; mainly Scotland, but reared from bird's nests in Suffolk, Cambridgeshire, Hertfordshire and Oxfordshire) *Mycetaulus bipunctatus* (Fallén)
- Veins R_{2+3} , R_{4+5} and M with darkened strips at apex. One pair of dorsocentrals. Occiput black; thorax black apart from lower part of katepisternum (= sternopleuron). (Scotland: Aviemore and Nethy Bridge, Inverness-shire) *Pseudoseps signata* (Fallén)

6. Front tarsus laterally flattened in both sexes. Several pairs of dorsocentral bristles. Two postpronotal (= humeral) bristles (care: one points up, the other backwards). (Head extensively yellow. Mid and hind legs entirely yellow.) (Herefordshire, Kent, Sussex, Huntingdonshire, Oxfordshire)
Protopiophila latipes (Meigen)
- Front tarsus normal, cylindrical. One pair of dorsocentrals. 1 or 0 postpronotal (= humeral) bristles. (Head entirely black or part orange) 7
7. Postpronotum (= humerus) with a well developed bristle 8
- Postpronotum without a distinct bristle 10
8. Head entirely black (or only dull hints of orange). (Hampshire, Buckinghamshire, Cambridgeshire, Herefordshire; one Scottish record, Inverness-shire)
Parapiophila flavipes (Zetterstedt)
- Head mainly clear orange (including face and jowls, often also occiput) 9
9. Frons sloping down so antennae placed near mid-eye level. (Prosternum bare). (Frequent)
Parapiophila vulgaris (Fallén)
- Frons rather horizontal so antennae placed near top of eye. (Prosternum with a pair of bristles, but not always easy to see). (Widespread)
Allopiophila luteata (Haliday)
10. Head with clear yellow or dull orange coloration not restricted to frons 11
- Head entirely deep black or partly pale only on frons (*nigricornis*) 13
11. Gena (= jowl) very narrow, only one sixth the height of the eye and with murky coloration. (Frequent)
Liopiophila varipes (Meigen)
- Gena very deep, about half height of eye or more, clear yellow 12
12. Top of thorax broadly bald except for three rows of tiny hairs along acrostichal and dorsocentral rows. Mid and hind legs dark (at least on much of hind femora). ("Cheese skipper"; England north to Yorkshire, Wales; no recent records, now rare?)
Piophila casei (Linnaeus)
- Thorax with normal extensive covering of hairs. Fore coxa and mid leg yellow, fore femur at least on distal three quarters contrasted black. (Infrequent but widespread)
Prochyliza nigrimana (Meigen)

13. Gena very deep, about half height of eye. Posteriorly, gena with a vertical dust strip. Anepisternum (= mesopleuron) setulose. (Uncommon but widespread, including St. Kilda) *Prochyliza nigricornis* (Meigen)
- Gena about a third the height of eye, without a vertical dust strip. Anepisternum bare. (Frequent, widely distributed) *Stearibia nigiceps* Meigen

***Parapiophila flavipes* (Zetterstedt, 1847) new to Britain**

British material identified as *flavipes* runs to this in McAlpine's key, in which he separated *flavipes* on the apical segment of the fore tarsus being contrasted yellow while the rest of the tarsus is dark. As the material examined has this segment only obscurely paler than the rest of the tarsus, comparison with authentic material was desirable. Of the additional species in McAlpine's key to *Parapiophila*, those with the head black have the propleuron and meron (= hypopleuron; meropleuron of McAlpine) pruinose rather than shining.

P. flavipes was described from Sweden and according to Hennig (1943) has also been found in Finland, but there are apparently no records from elsewhere in Europe. Enquiries at Swedish Museums found it to be absent from the Stockholm collections but a male, determined by Hugo Andersson, was located in the Lund University collection. This specimen was loaned and is from Sweden, Lule Lappmark, Gällivare, 14.vii.1955; its abdomen had previously been macerated and stored in a vial of glycerol. It has the legs yellowish including much of the femora and the fore tarsus is coloured as in British material. From comparison of the genitalia with the British males, it has been confirmed that they are conspecific.

The structure of the male genitalia of *flavipes* (Fig. 1) resembles that of *P. vernicosa* (as figured by Ozerov and Bartak 1993) and *P. dudai* (Frey, 1930) (as figured by Hennig 1943), both more recently described species which have the head black and run to *flavipes* in the above key. The genitalia of most species of this genus have not been figured, but Merz (1996) figured *P. vulgaris* and *P. baechlii*, which are very different in structure from the above species and from each other; British material of *vulgaris* agrees well with Merz' figures.

Apart from the presence of pleural dusting referred to above, *P. dudai* has the fore first tarsomere (= metatarsus) yellow and the last tarsomere is black. McAlpine referred to undescribed species running to both *flavipes* and *dudai* in his key. For *P. vernicosa* darker coloration of the thorax was cited as a distinction from *flavipes*, on the assumption that the thorax of *flavipes* is dark red brown following the description of the type by Hennig (1943), but the British and Swedish specimens of *flavipes* examined have the thorax shining black, so the type must have been in a teneral or faded condition. However, it is said to differ from *flavipes* in the third antennal segment being dark dorsally and the proboscis, palpi and legs are also darker (fore femur dark except at base and tip, hind femur dark on apical half and fore tarsus black). *P. baechlii* has the genae and anterior part of the frons yellowish; it has shining pleura and the femora mainly black, the tibiae and tarsi yellow but the last segment dark.

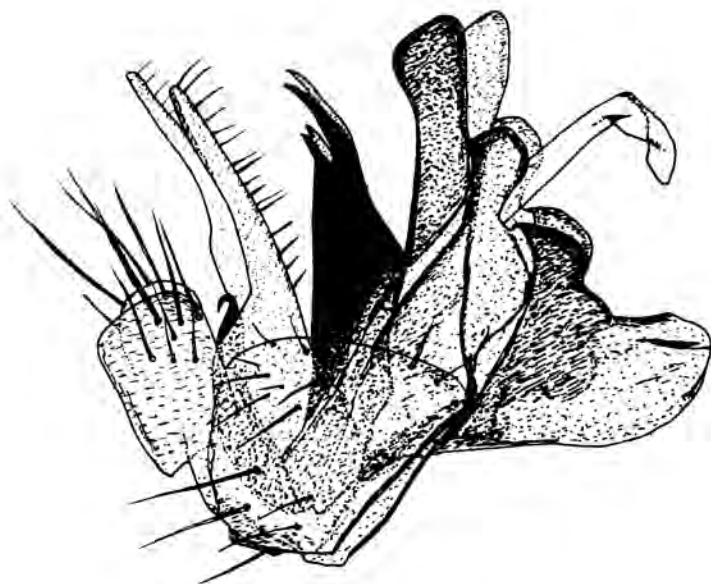


Fig. 1. *Parapiophila flavipes* (Zetterstedt), lateral view of male genitalia.

There is leg colour variation in the British material of *Parapiophila flavipes*. Thus the front coxa, trochanter and tibia are clear yellow (at most only local hint of darkening) in the specimens of both sexes from Devereaux Park. However, a previously unnamed female from Walls Hills, which is also very small, has the coxae and trochanters black and the tibiae extensively darkened. The male from Farnham Royal has the coxae dark. The wing length of material examined is ♂ 2.4-3.1mm, ♀ 2.7-4.0mm.

British material of *Parapiophila flavipes*

SCOTLAND: Inverness-shire, Kincaig, 18.vi.1952, ♀, P. Harwood (UMO)

ENGLAND: Cambridgeshire, Chippenham, 5.vi.1909, ♀ on dead mole (*Talpa europaea*), J.E. Collin (UMO)

Cambridgeshire, Woodditton Wood, 13.v.1928, 3♀ and 20.v.1928, ♀, J.E. Collin (UMO)

Buckinghamshire, Farnham Royal, 9.v.1934, ♂ reared from nest of blackbird (*Turdus merula*), E.B. Basden (UMO)

Hampshire, Ringwood, 3.vi.1946, ♀, C.N. Colyer (BMNH)

Herefordshire, Devereaux Park, 9.viii.1909, 1♂, 2♀, reared from dead bird, mounted together with three vacated puparia. J.H. Wood (BMNH)
Herefordshire, Walls Hills, 17.vii.1912, ♀, J.H. Wood (BMNH)

Comments on other species

The Palaearctic Catalogue followed McAlpine in placing *Piophilila melanocera* Rondani, 1874 as a junior synonym of *Piophilila casei*. However, BMNH and UMO material standing under *melanocera* belongs to the genus *Prochyliza* (referred in error to *Liopiophilila* in Chandler 1998) and is considered to belong to *P. nigricornis*, with the frons entirely orange or more extensively orange than usual. These specimens have the eyes divergent and the frons broader behind as in *nigricornis*, while *P. nigrimana* has the frons parallel sided. There is, however, still some doubt as to whether *nigrimana* and *nigricornis* are distinct or represent extremes of one variable species (Bernhard Merz pers. comm.).

Of the two further *Mycetaulus* species known from Switzerland, *M. latipennis* has the apical wing spot oblique (leaving the wing edge between R_{2+3} and R_{4+5} clear) and the wing is broader, while *M. hispanicus* Duda has the posterior cross-vein clouded.

Acknowledgements

Thanks are due to Brian Pitkin and Nigel Wyatt for access to the BMNH collection for the purpose of developing this paper, and to Darren Mann and John Ismay for facilitating examination of material at UMO. Roy Danielsson and Hugo Andersson kindly made available the Swedish specimen of *Parapiophilila flavipes*. We are also indebted to Bernhard Merz for useful comments on the manuscript.

References

- Chandler, P.J. (Ed.) 1998. Checklists of Insects of the British Isles (New Series). Part 1: Diptera (Incorporating a List of Irish Diptera). *Handbooks for the Identification of British Insects* 12 (1), i-xix. 1-234. Royal Entomological Society, London.
- Cogan, B.H. and Dear, J.P. 1975. Additions and corrections to the list of British Acalypterata Diptera. *Entomologist's monthly Magazine* 110, 173-181.
- Collin, J.E. 1910. Additions and corrections to the British list of Muscidae Acalyptiratae. *Entomologist's monthly Magazine* 46, 169-178.
- Duda, O. 1924. Revision der europäischen u. grönländischen sowie einiger südostasiat. Arten der Gattung *Piophilila* Fallén (Dipteren). *Konowia* 3, 97-113. 153-203.
- Ferrar, P. 1987. A guide to the breeding habits and immature stages of Diptera Cyclorrhapha. *Entomograph* 8, Part 1: text, 478 pp. (Piophilidae, pp. 287-291).
- Hennig, W. 1943. Piophilidae. In Lindner, E. (Ed.) *Fliegen der paläarktischen Region* 5, Teil 40, 52 pp.
- McAlpine, J.F. 1977. A revised classification of the Piophilidae, including 'Neottiophilidae' and 'Thyreophoridae' (Diptera: Schizophora). *Memoirs of the entomological Society of Canada* No.103, 1-66.
- Merz, B. 1996. Die Piophilidae (Diptera) der Schweiz mit Beschreibung einer neuen

- Art. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* **69**, 345-360.
- Owen, D.F. 1957. *Neottiophilum praeustum* in bird's nests. *British Birds* **1**, 16-164.
- Ozerov, A.L. 2000. A.9. Family Piophilidae. pp. 355-365. In Papp, L. and Darvas, B. (Eds) *Contributions to a Manual of Palaearctic Diptera*. Appendix. 604 pp. Science Herald, Budapest.
- Ozerov, A.L. and Bartak, M. 1993. Two new Palaearctic species of Piophilidae (Diptera). *Russian Entomological Journal* **2**, 73-76.
- Séguy, E. 1934. Diptères (Brachycères) (Muscidae Acalypterae et Scatophagidae). *Faune de France* **28**, (pp 73-81 and 89-91; pl XVIII, Fig. 213).
- Smith, K.G.V. 1989. An introduction to the immature stages of British Flies. *Handbooks for the Identification of British Insects* **10** (14), 1-280. Royal Entomological Society, London.
- Soós, A. and Papp, L. 1984. *Catalogue of Palaearctic Diptera* Vol. 9 [Zuska, J. Family Piophilidae. pp. 234-239; Papp, L. Family Thyreophoridae. pp. 240-241; Soós, A. Family Neottiophilidae. pp. 241-242]. Akadémiai Kiadó, Budapest.

Swarming in two *Heteromyza* species (Diptera, Heleomyzidae) -

At Reelig Glen, (V.C. 96) (NH 559428), a valley woodland with numerous planted conifers south of Beaully Firth, on 29 July 2001 at about 17.15 BST, I noticed a group of 8-10 flies in a loose swarm, about 1.5m above an earth path under an *Abies* tree. The area was in a sheltered corner, next to a bend in the path with a wooden seat for convenient observation of the swarm. The flies swung to and fro, with their movements reminiscent of *Fannia* species. Two flies netted were later identified as male *Heteromyza rotundicornis* (Zetterstedt), using the keys by J.E. Collin (1943). The British species of Heleomyzidae. *Entomologist's monthly Magazine* **79**, 234-251). Swarming in *H. rotundicornis* was also described by K.G.V. Smith (1995). An ill-fated swarm of *Heteromyza rotundicornis* Zett. (Dipt., Heleomyzidae). *Entomologist's monthly Magazine* **131**, 174).

I have previously observed swarming in another species of the same genus, *Heteromyza commixta* Collin, at Foxhole Road verge, in the Suffolk Breck (V.C. 26) (TL 738774) on 2 April 1988. On this occasion, a small swarm of 3-4 individuals was observed at the top of a pine tree at about 6m above ground level. Again, the flight was similar to that of *Fannia*. Male *Heteromyza* have large eyes, with zones of different sized facets, a morphological characteristic of those flies that come together as mating swarms - I.F.G. MCLEAN, 109 Miller Way, Brampton, Huntingdon. Cambridgeshire PE28 4TZ

The current distribution of the Hornet Robberfly *Asilus crabroniformis* Linnaeus (Diptera, Asilidae) in England and Wales

MATTHEW N. SMITH

24 Allnatt Avenue, Winnersh, Berks, RG41 5AU

Summary

Asilus crabroniformis Linnaeus (Asilidae) is associated with dung of herbivorous mammals and it is thought that the larvae prey on subterranean larvae of scarabaeid beetles. It appeared to have declined through much of its European range, including Britain. In order to assess the current distribution, records from various sources were collected and a distribution map was prepared. This indicated that it was more abundant and widespread in southern England and Wales than previously thought and the possible reasons for this apparent increase are discussed. It is concluded that females have dispersed more actively due to recent summers with higher late season temperatures and a metapopulation structure is postulated. However, there are probably only 45-50 sites in England with viable breeding populations and it remains of critical interest as a flagship species for conservation of the dung fauna.

Introduction

The hornet robberfly *Asilus crabroniformis* Linnaeus is one of Britain's largest and most spectacular flies and is listed as a priority species in the UK Biodiversity Action Plan. The life history and ecological requirements of this species are complex and are not yet fully understood, but it appears to be intimately associated with the dung of cattle and other herbivorous mammals.

Asilus has been recorded ovipositing in cow dung, underneath rabbit pellets and in soil contaminated with cattle dung. Females appear to exhibit a preference for older, drier dung, and there are possible associations with the dung of both sheep and horses (Oldroyd 1969; Pinchen, Denton and Bird 1997; Clements, Skidmore and Denton 1999). It is thought that the larvae of *Asilus* prey on the subterranean larvae of some of the larger species of dung beetle such as *Geotrupes* and *Typhaeus*. In Britain, adult *Asilus* generally start to emerge in mid-June, though on occasions adults have been recorded in May. The bulk of the emergence begins in late July and peaks around mid-August. Adults are active aerial predators and feed on a wide variety of insects, including many which are attracted to animal dung.

Asilus crabroniformis appears to have declined significantly throughout much of its western European range (Tomasovic 1995). The reasons for this decline are unclear, though changes in land use, loss of habitat due to urban development, modern anti-parasitological chemicals and the increase in 'industrial' farming practice are all cited as possible causes. In Britain, distribution data collected by the "Larger Brachycera" Recording Scheme also suggested that *Asilus* had undergone a decline. A provisional distribution map (Drake 1991) recorded *Asilus* from 101 10km grid squares, of which only 40 were post-1970 records. Most of these mapped records were from the south and south-west of England and west Wales, with the species apparently having disappeared from East Anglia.

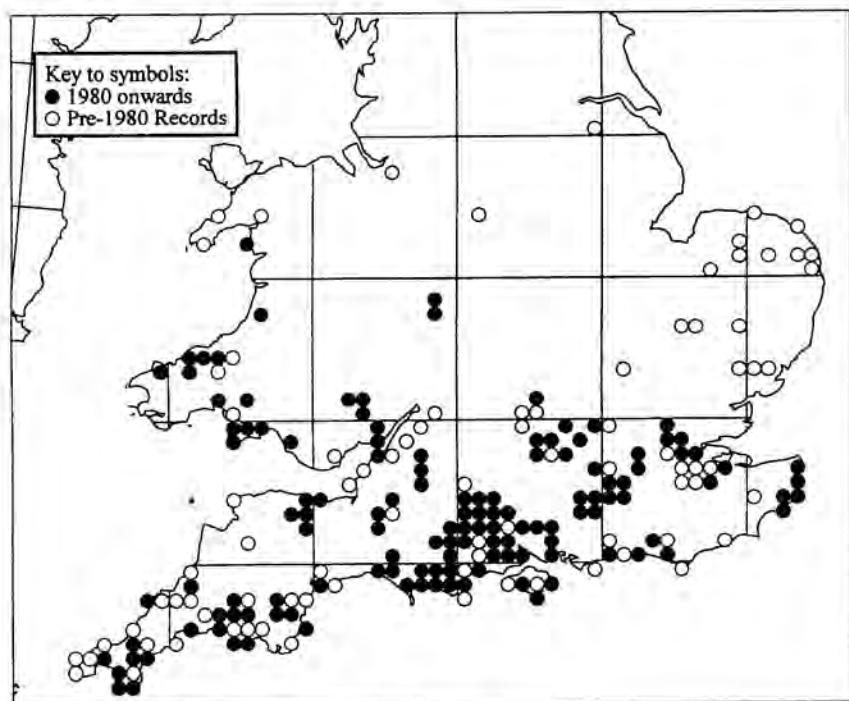


Fig. 1. *Asilus crabroniformis* Linnaeus: British distribution.

Current Distribution

In order to produce a revised distribution map, a total of 730 records of *Asilus* were obtained from a variety of sources. The majority of these were collated during the production of a report funded by the English Nature Species Recovery Program (Smith 2000). Additional records were obtained from recent literature (Morris 2000) and from communication with interested individuals. Analysis of this information shows *Asilus* to have been recorded from a total of 129 post-1980 10km grid squares in Britain. The resulting distribution map is shown in Fig. 1. A total of 507 records provided sufficiently detailed date of record information to be used in the generation of a weekly phenology histogram for *Asilus* (Fig. 2).

Fig. 1 indicates that *Asilus* is much more abundant and more widely distributed in southern England and Wales than previously thought. Its current distribution appears to be restricted to areas south and west of a line from the Mersey to the Thames Estuary, with the greatest concentration of records coming from the Dorset Heaths and the chalk downlands of southern Wiltshire and Hampshire. While there are no modern records for *Asilus* from East Anglia, it would appear that the species has never been very abundant or

particularly well established in this region. Overall, there have been only 19 records for the whole of East Anglia since 1906. Of these, only 3 are post-1950 sightings, with the last being a record from Fouldean Common (TF 7600) in Norfolk in 1965. This would suggest that, whatever the reasons for this species being lost from East Anglia, its decline is not a particularly recent phenomenon.

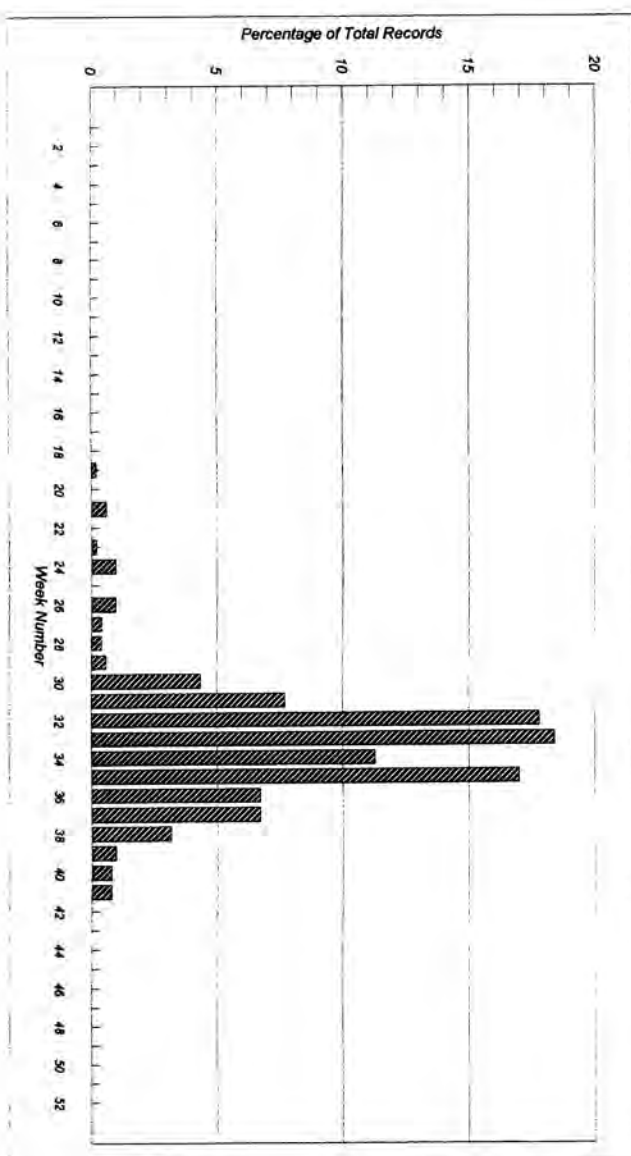
Discussion

Whilst this apparent increase in abundance of *Asilus* is encouraging, there are a range of possible factors that may be contributing to the increase in the number of recent records for this species. Additionally, consideration should also be given to the underlying data used to produce the current distribution map.

Increased recording effort may well account for some of these new records. The inclusion of *Asilus* in the UK Biodiversity Action Plan, local BAPs and its use as a flagship species to highlight concerns relating to the conservation of the dung fauna has certainly increased the 'visibility' of the species with many conservation organisations, landowners and recorders. As an example, both the National Trust and the Countryside Council for Wales have recently commissioned surveys to search for *Asilus* (Spalding 1998; Clements, Skidmore and Denton 1999), both of which produced new site records for this species.

In recent years Britain has experienced a series of summers with above-average late season temperatures. Adult activity appears to be dependent on high ambient air temperatures. Peak flight activity is reported at temperatures above 19-20 °C, with adults ceasing flight and roosting in temperatures below 16 °C (Pinchen, Denton and Bird 1997; Clements and Skidmore 1998). *Asilus* flies from late June, through July, August and September and into early October (Fig. 2). Across the flight period, an increase in the number of days when ambient temperatures cross the 16 °C flight threshold will effectively present the *Asilus* population with additional 'flying days', giving increased opportunities for both oviposition and dispersal to new localities away from existing breeding sites. Recording of these dispersing adults may well account for some of the increase in recent *Asilus* records.

Results from a small mark/recapture study (Pinchen, Denton and Bird, 1997) suggest that *Asilus* can rapidly range over distances of 400m. Skidmore (1997) noted that isolated females were frequently recorded away from the main centres of population and suggested that they may show some tendency to disperse to found new colonies. *Asilus* is a large, powerful fly that under natural conditions would be relying on a transient and widely dispersed larval food source and it would be unsurprising if it did not have the ability to disperse over distances beyond those currently recorded: Morris (2000) suggested that the species may be a highly mobile vagrant. A metapopulation consists of a network of (extinction prone) sub-populations that are linked by the dispersal of individuals. Given that adult *Asilus* can potentially disperse over long distances, *Asilus* would appear to be a good candidate for a species having a metapopulation structure. Some evidence in support of this can be seen at sites which are away from the main body of the population, e.g. Worcestershire, the Surrey Heaths and the sites along the Berkshire/Oxfordshire border, where many of the records are grouped in localised clusters. Further investigation of long distance adult dispersal may be useful in understanding the autecology of *Asilus* in Britain.



In assessing the current distribution of *Asilus*, records where the individual record grid references indicate a separation of only a few hundreds of metres from each other are all considered as belonging to the same site. In Britain, *Asilus* has been recorded from some 376 sites, the earliest record seen being one from south Devon in 1889. At 74% (277) of these sites, *Asilus* has only been recorded on a single occasion at some time between 1889 and 2000. Of the remaining 99 sites where *Asilus* has been recorded in two or more different years, 17 sites have no modern (post-1970) records. This leaves some 82 sites in England and Wales where *Asilus* has been recorded on two or more occasions since 1970, though it would be somewhat over-optimistic to assume that it is breeding at all of these sites. More realistically, I would estimate that there are no more than 45-50 sites in England where populations of *Asilus* are currently breeding. Overall the population appears to be increasing and it would seem females are actively dispersing to seek new breeding sites, and that the species is returning to sites where it was reported some years previously. Though the current situation for *Asilus* is not as critical as suggested by the 1991 distribution map, the species remains uncommon and worthy of continuing conservation interest, both in its own right and as a flagship species for the conservation of the dung fauna.

Acknowledgements

I would like to thank Martin Drake for providing distribution records and for advice regarding the production of this paper. Much of the data collection was financially supported by English Nature as a contribution to the Species Recovery Programme. Once again, I would like to thank the many people and organisations that very kindly provided me with records.

References

- Clements, D.K. and Skidmore, P. 1998. The autecology of the hornet robberfly *Asilus crabroniformis* L. in Wales. 1997. *Countryside Council for Wales Contract Science Report*, No. 263.
- Clements, D.K., Skidmore, P. and Denton, J.S. 1999. The autecology of the hornet robberfly *Asilus crabroniformis* L. in Wales. 1998. *Countryside Council for Wales Contract Science Report*, No. 344.
- Drake, C.M. 1991. Provisional atlas of the Larger Brachycera (Diptera) of Britain and Ireland. *Huntingdon, Biological Records Centre*.
- Morris, R.K.A. 2000. A provisional checklist of the larger Brachycera and Conopidae (Diptera) for vice-county 17, Surrey. *The London Naturalist* No. 79, 143-159.
- Oldroyd, H. 1969. Handbooks for the identification of British Insects: Diptera Brachycera Section (a) Tabanoidea and Asiloidea. Vol IX. Part 4.
- Pinchen, B.J., Denton, J.S. and Bird, D.R. 1997. The hornet robber fly *Asilus crabroniformis* Linnaeus - adult behaviour at selected sites in Dorset, Hampshire and Surrey in 1997. *Peterborough: English Nature Research Reports*, No. 274.

Fig. 2. *Asilus crabroniformis* Linnaeus. Percentage of total records for each week of the flight period.

- Skidmore, P. 1997. The status of the hornet robberfly *Asilus crabroniformis* L. in south Wales. *Countryside Council for Wales Contract Science Report*, No. 212.
- Smith, M. 2000. The hornet robberfly *Asilus crabroniformis*: land use and livestock grazing regimes at sites in England. *English Nature Research Reports*, No. 387.
- Spalding, A. 1998. A survey of the hornet robberfly *Asilus crabroniformis* at National Trust Sites Cotehele, Cadsonbury and Lansallos for the National Trust. *Camborne, Spalding Associates (Environmental) Ltd. Unpublished client report.*
- Tomasovic, G. 1995. Notes sur les Asilidae de Belgique et des régions limitrophes (9). Rarefaction en Europe occidentale et porte disparu en Belgique *Asilus crabroniformis* Linné, 1758 (Diptera, Brachycera, Asilidae). *Bulletin et Annales de la Société royale belge d'Entomologie* **131**, 245-248.

Some recent records of *Carcelia rasa* (Macquart) (Diptera, Tachinidae) in Southern England - The larvae of *Carcelia rasa* (Macquart)

parasitise caterpillars of the family Lymantriidae (Lepidoptera), adults laying incubated eggs on the hairs of the host larvae. In Britain, the only recorded host is the Vapourer Moth *Orgyia antiqua* (Linnaeus) (Lepidoptera, Lymantriidae), though H.-P. Tschorsnig and B. Herting (1994. *Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie)* **506**, 170 pp.) list a wider range of lymantriid host species from Europe. R. Belshaw (1993. *Handbooks for the Identification of British Insects*, **10**(4a(i)), 169pp) gave the flight period as late May to late August. In Europe, Tschorsnig and Herting suggested that the species is double brooded and noted a longer flight period, from mid May to early July, with the second brood flying from the end of July to mid-September.

C. rasa would appear to be very uncommon. Belshaw (1993) noted '8 British and 7 German records' and gave the distribution as southern England (Berkshire, Hampshire, Surrey, Sussex and Essex) and Midlands (Hereford and Worcestershire). The species is currently awaiting publication of a conservation status; the JNCC review that will cover tachinid flies (S. Falk and A.C. Pont. *A review of the scarce and threatened flies of Great Britain: Calyptratae*, in preparation) has provisionally given this species RDB 3 status and notes that 'the most recent record comes from Berkshire in 1989'.

On 18.v.2001, as part of a survey, I visited Coalpit Copse near Sandhurst in Berkshire (SU 8162), a small area of woodland, part of which is classed as ancient woodland. Some Diptera were caught flying in a small glade and one later proved to be a specimen of *C. rasa*. While preparing this note I was informed of two further captures of this species during 2000. Graham Collins identified a single female from the catch of a Malaise trap operated at Horsell Common, Surrey (TQ 0060) between 12-19.vi.2000 (G.A.Collins *pers. comm.*) and Jonty Denton caught a single specimen at Castle Bottom NNR in Hampshire (SU7959) on 12.viii.2000 (J. Denton *pers. comm.*).

I would like to thank Bracknell Forest Borough Council for funding the survey of Coalpit Copse. Hampshire County Council funded the survey of Castle Bottom NNR and Jonty Denton would like to thank Tony Davis for his help with the survey. The Horsell Common Malaise trap is run on behalf of the Horniman Museum, and I would like to thank Graham Collins and Jonty Denton for allowing me to publish their records -
MATTHEW N. SMITH, 24 Allnatt Avenue, Winnersh, Berks, RG41 5AU

***Medetera freyi* Thuneberg, *M. setiventris* Thuneberg and *M. fasciata* Frey (Diptera, Dolichopodidae) new to Britain with notes on the status of *Medetera striata* Parent**

IAIN MACGOWAN

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

Summary

Three species of *Medetera* previously unknown in Britain have been found in the Scottish Highlands. A male *Medetera freyi* Thuneberg has been reared from decaying aspen (*Populus tremula*), and a male of *M. setiventris* Thuneberg taken in a Malaise trap. Twelve males of *M. fasciata* taken at various Scottish localities between 1905 and 2001 have been examined. These included males previously identified as *M. striata* Parent. When females accompanying these males were present these had the reduced abdominal tergites reported to be characteristic of *M. striata*. Only when males are found can *M. striata* be confirmed as a member of the British fauna.

Introduction

Medetera contains many species whose larvae are associated with dead wood habitats, where they prey on other insect larvae that are present. Survey work over the last decade in the Scottish Highlands on the saproxylic Dipteran fauna associated with Scots pine *Pinus sylvestris* and aspen *Populus tremula* has led to the identification of *Medetera* species new to the British Isles and to an increased understanding of their ecology.

Two of these species, *M. setiventris* Thuneberg and *M. fasciata* Frey were included in the recently published checklist of British Diptera (Chandler 1998); this paper provides the collection data and identification details to support their inclusion in the British fauna.

***Medetera freyi* Thuneberg, 1955**

Medetera freyi belongs to a small group within the genus *Medetera* in which the males are characterised by a thickening of a portion of the basal section of wing vein M_{3+4} . In the Scottish Highlands there are two species within this group, *M. excellens* Frey which in Scotland has only been reared from conifers (25 rearing records from Scots pine (*Pinus sylvestris*), 6 from spruce (*Picea* species) and 3 from larch (*Larix* species), Malloch Society) and *M. inspissata* Collin, which has mainly been reared from aspen (*Populus tremula*, 22 rearing records, Malloch Society). *M. inspissata* also occurs in association with other species of poplars (*Populus* species, two rearing records, Malloch Society).

During a re-examination of a reared series of *M. inspissata* from across Scotland it became apparent that there was one male which showed differences in the shape of the basal thickening of wing vein M_{3+4} and in the structure of the male genitalia. This was identified as a specimen of *M. freyi*, a species previously unknown from the British Isles.

The main feature separating the two species is that in *M. inspissata* the male hypandrium is greatly broadened in its basal half, which is covered in minute spinules along the sides (Figs 1 and 3). These features are usually visible without dissection in specimens in which the male genitalia are slightly separated from the abdomen. In *M.*

freyi the hypandrium is narrow and without spinules (Figs 2 and 4). The shape of the basal broadening of vein M_{3+4} in the males is also diagnostic. In *M. inspissata* it is longer and acutely narrowed at the apex (Fig. 5), whilst in *M. freyi* the thickening is rather shorter and with a blunter apex (Fig. 6). In addition vein R_{4+5} is evenly curved towards the apex in *M. freyi* males, whilst in *M. inspissata* it is slightly recurved.

The single specimen was reared from larvae collected from under the bark of a fallen and decaying branch of aspen (*Populus tremula*), in a similar situation in which *M. inspissata* is commonly found. In Europe Negrobov and Stackelberg (1971-1977) and Ounap (1999) list only Finland and Russia as countries from which *M. freyi* is currently known.

Material examined: SCOTLAND: 1 ♂, 15.iv.1998, Inverfarigaig, Inverness-shire, reared from larvae ex *Populus tremula*, I. MacGowan.

***Medetera setiventris* Thunberg, 1955**

This species, along with *M. fasciata* and *M. striata*, belongs to a group within the genus distinguished by having the basal segments of antennae yellow, halteres black and with the apical section of wing vein M_{1+2} straight. These can be rather difficult species to identify and the most reliable method is by comparison of the male genitalia, the apex of the aedeagus being very characteristic for each of the species. Thunberg (1955) described *Medetera setiventris* and Negrobov and Stackelberg (1971-1977) used the paratype and holotype for the re-description of *M. setiventris* in the Palaearctic key, in which the male genitalia are illustrated.

On dissection of all the male specimens standing as *M. striata* in my collection I came across one male which differed from the rest. Comparison with the illustrations in Negrobov and Stackelberg (1971-1977) confirmed that it was a specimen of *M. setiventris*, a species new to the British Isles. The specimen was taken in a Malaise trap within a native pinewood and as a result details of its larval development site are unknown, although in Europe Nuorteva (1956, 1959) recorded this species as being associated with conifers. Despite extensive rearing of *Medetera* from pine and other conifers in the Highlands since the capture of this individual in 1985 no further specimen of this species has yet been recorded. The Malaise trap, in which *M. setiventris* was caught, was situated at a considerable altitude in an area containing some of the highest fragments of native pinewood left in Scotland.

In Europe *M. setiventris* is known from Finland and Russia (Negrobov and Stackelberg 1971-1977, Ounap 1999)

Material examined: SCOTLAND: 1 ♂, 500m Creag Follais, Strathspey, Malaise trap 1-30.vii.1985, I. MacGowan

***Medetera fasciata* Frey, 1915 and *Medetera striata* Parent, 1927**

These two species are separated in the male by the structure of the genitalia and in the female it was considered that *M. striata* had an abbreviated fourth abdominal tergite whilst *M. fasciata* did not. Previously the modified abdominal tergites had been reported in the females of no other species of *Medetera*, so in a genus where females are often difficult to name with confidence, it has appeared that females of *M. striata* could be

readily identified, and as indicated below, distribution records based only on females have been published.

Parent (1927) described *Medetera striata* from France, on the basis of what he considered to be females only. Later, in 1932, Parent sunk the species as a synonym of *M. signaticornis* Loew and in his monograph of 1938 retained this synonym. However in 1941 Collin rejected this synonymy because he found a male in Kowarz's collection which better fitted Loew's description of *M. signaticornis* and which was certainly not Parent's species. In particular, Loew's *M. signaticornis* has the apical section of the distal vein curved and not straight as in *M. striata*.

Collin (1941) did mention the abbreviation of the fourth tergite in the female of *M. striata* and also mentioned that it did not seem to have been noted previously, which is perhaps not surprising as Parent confused the sex of the holotype. There is no mention of Collin having examined Parent's material of *M. striata* and this is perhaps unlikely with the war starting in 1939. Parent died in 1942. Thus it appears that Collin's concept of *M. striata* in Britain was based on Parent's description and the material collected by C.G. Lamb in Scotland during 1905 and 1906, of which the male genitalia had not been dissected.

Thuneberg (1955) keyed out but did not re-describe specimens of *M. fasciata* and *M. striata* though he did figure the penis sheath and side lamellae of the males.

In his paper written in Russian, Negrobov (1971) stated that he had examined the holotype of *M. striata*, which is located in the Muséum National d'Histoire Naturelle in Paris. The holotype of *M. striata* is in fact a male with the hypopygium tightly pressed up under the abdomen but Parent may have overlooked this due to weak optics. Based on examination of this specimen Negrobov confirmed that the *M. striata* of Collin (1941) and Thuneberg (1955) is in fact *M. fasciata*. It seems that Assis-Fonseca was unaware of Negrobov's work when writing his Handbook (Assis-Fonseca 1978) and he continued to use the name *striata* for the British species, as have subsequent British authors.

The distribution of *M. striata* given in Negrobov (1971) includes the Kola peninsula and North Caucasus. In Negrobov and Stackelberg (1971-1977) these localities were given for *M. striata* but not *M. fasciata* so we can presume that by the time this manuscript was submitted Negrobov had examined the holotype of *M. striata*. Negrobov and Stackelberg (1971) also gave a more detailed description of the female abdominal tergites.

Frey (1915) described *Medetera fasciata* from a single male from Finland. The re-description in Negrobov and Stackelberg (1971-1977) was stated to have been based on the holotype but it seems that only some of the genitalia figures were based on the holotype and other material from Finland was also seen. They gave additional records from Sweden and the Russian Federation as far east as Siberia, and Ounap (1999) added Estonia.

Assis-Fonseca (1978) only recorded *M. striata* from Britain based upon captures made by C.G. Lamb in Strathspey during the early part of the 20th century. MacGowan (1987) listed a further three captures, all in Strathspey, during the period 1984-1986. Dyte (1992) recorded taking two females from Strathspey and one from Culbin Forest near Nairn in 1987 and one female from Hampshire in 1985. Rearing and recording work on saproxylic Diptera in Scotland since 1990 has produced another fourteen specimens from four sites in Aberdeenshire and Perthshire (see details below).

After carrying out dissections of the genitalia of the twelve males in my collection I had determined as *M. striata* using the key in Assis-Fonseca (1978), I was somewhat surprised to find that according to the genitalia figures in Negrobov and Stackelberg (1971-1977) eleven were in fact *M. fasciata* whilst one was the specimen of *M. setiventris* as mentioned above. I then borrowed further material, 5 males and 5 females from other collections. On dissection all of these males were found to be *M. fasciata*.

In summary, I have dissected nearly all the available British males of this group, all of which are from the Scottish Highlands and can find none whose genitalia correspond to *M. striata* as illustrated in Negrobov and Stackelberg (1971-1977), according to which all are *M. fasciata* apart from the one specimen of *M. setiventris*.

In the eight British females I have seen the fourth abdominal tergite is shortened. These females have in the majority of occasions been taken in the same locality, on the same day or even on the same fallen tree as males, which were keyed out to *M. fasciata* (see records below from Inver, Galton and Linn of Dee) and I would therefore suggest that they are in fact *M. fasciata* females.

This evidence, combined with the work of Negrobov (1971), who clearly dissected a female which we must assume was associated with the male of *M. striata* and the fact that the comment of Collin (1941) regarding female tergites was based on specimens of *M. fasciata*, confirms that the females of both *M. fasciata* and *M. striata* have shortened fourth tergites.

In their key, Negrobov and Stackelberg (1971-1977: 1972, p. 279) indicated that the modifications of the female abdominal tergites which are present in *M. striata* are lacking in the females of *M. japonica* Negrobov, *M. setiventris* and *M. fasciata* and they referred to and figured the long bristles on the fifth segment of the female of this last species. The present study suggests that the female(s) they attributed to *M. fasciata* were some other species, as it seems that both *M. fasciata* and *M. striata* have females with abbreviated abdominal tergites.

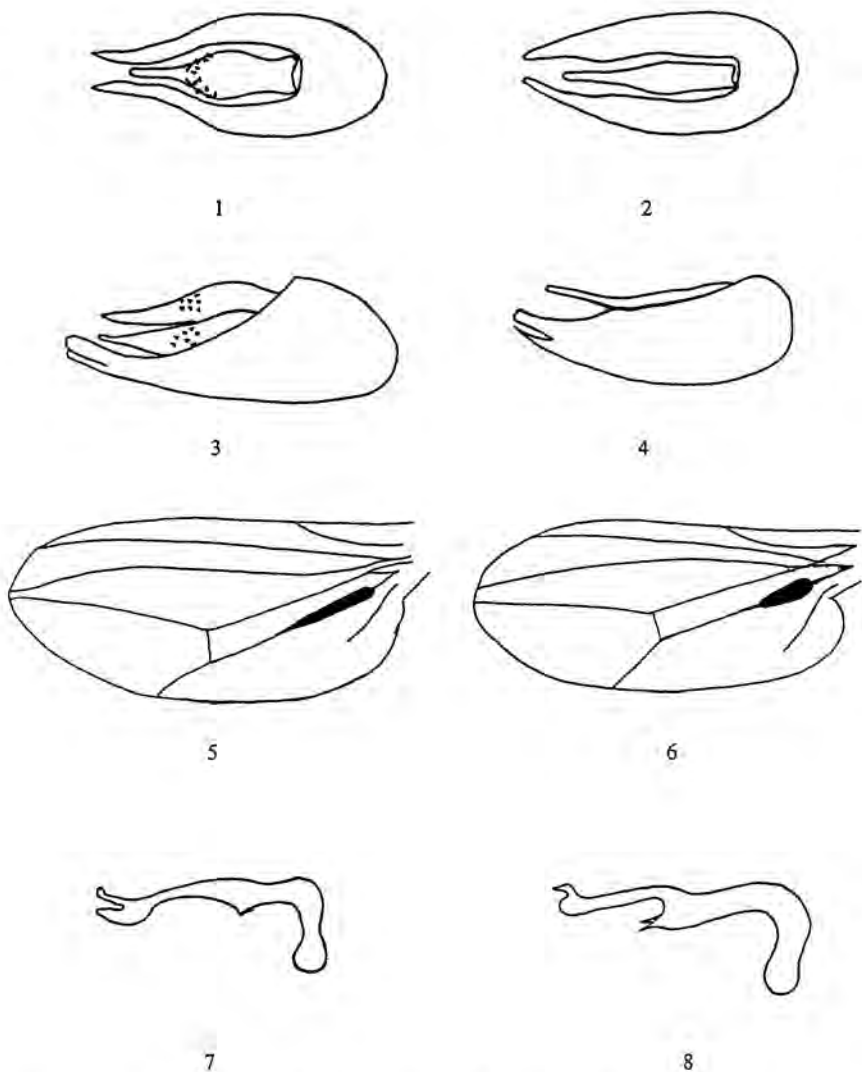
As I have found no males of *M. striata* in the material I have examined I would suggest that its status as a British species is still in need of confirmation.

Medetera fasciata - Material examined:

SCOTLAND: 3♂ Nethy Bridge, Strathspey, vi.1906, C.G. Lamb; 3♀ Nethy Bridge, Strathspey, vi.1906, C.G. Lamb; 1♀ Nethy Bridge, Strathspey, vi.1905, C.G. Lamb (all from Oxford University Museum collection); 1♂ 1♀ Inverdrue, Strathspey 26.vi.1986, R.M. Lyszkowski; 1♂ Loch an Eilean, Strathspey, 10.vi.1990, I. Perry; 2♂ 1♀ Inver, Aberdeenshire 10.vii.1994, I. MacGowan; 2♂ Meggernie, Tayside, ex larvae under bark of dead *Pinus sylvestris*, v.1994, I. MacGowan; 3♂ 1♀ Galton, Aberdeenshire, 4.vi.1997, I. MacGowan; 4♂ 1♀ Linn of Dee, Aberdeenshire, 28.v.2001, I. MacGowan.

Acknowledgements

I wish to thank C.E. Dyte for supplying much of the background information on the taxonomy of *M. striata* and *M. fasciata*, R. Lyszkowski and I. Perry for the loan of specimens from their personal collections, G.C. McGavin for arranging the loan of material from the Verrall-Collin collection at Oxford and David Horsfield, Graham Rotheray and David Robertson for use of their *Medetera* rearing data.



Figs 1-8. *Medetera* species. 1-2, ventral view of male genital capsule: 1, *M. inspissata* Collin; 2, *M. freyi* Thuneberg. 3-4, lateral view of male genital capsule: 3, *M. inspissata*; 4, *M. freyi*. 5-6, male left wing: 5, *M. inspissata*; 6, *M. freyi*. 7-8, male aedeagus: 7, *M. setiventris* Thuneberg; 8, *M. fasciata* Frey.

References

- Assis-Fonseca, E.C.M. d' 1978. Dolichopodidae. *Handbooks for the Identification of British Insects* 9(5), 1-90. Royal Entomological Society, London.
- Chandler, P.J. (Ed.) 1998. Checklists of Insects of the British Isles (New Series). Part 1: Diptera (Incorporating a List of Irish Diptera). *Handbooks for the Identification of British Insects* 12 (1), i-xix, 1-234. Royal Entomological Society, London.
- Collin, J.E. 1941. The British species of *Medeterus*. *Entomologist's monthly Magazine* 77, 145-152.
- Dyte, C.E. 1992. Records of Uncommon Dolichopodids. Empid and Dolichopodid Study Group Newsheet no. 11, p. 4.
- Frey, R. 1915. Zur kenntnis der Dipterenfauna Finnlands. III Dolichopodidae. *Acta Societas Fauna Flora fennica* 40, 1-80.
- MacGowan, I. 1987. A preliminary checklist of Scottish Dolichopodidae (Diptera). Nature Conservancy Council, Edinburgh. Unpublished report.
- Negrobov, O.P. 1971. [Little known species of the Medeterinae subfamily (Diptera, Dolichopodidae) of the USSR fauna]. *Vestnik Zoologii* 1971(5), 43-46 (in Russian).
- Negrobov O.P. and Stackelberg, A.A. 1971-1977. Dolichopodidae. Unterfamilie Medeterinae. In Lindner, E. (Ed.) *Die Fliegen der palaearktischen Region* 4, 238-354. Nagele Stuttgart.
- Nuorteva, M. 1956. Über den Fichtenstamm-Bastkäfer, *Hylurgops palliatus* Gyll., und seine Insektenfeinde. *Acta entomologica fennica* 13, 1-118.
- Nuorteva, M. 1959. Untersuchungen über einige in den Frassbildern der Borkenkäfer lebende *Medetera*-Arten (Dipt. Dolichopodidae). *Annales Entomologica Fennica* (= *Suomen Hyönteistieteellinen Aikakauskirja*) 25, 192-210.
- Ounap, H. 1999. *Medetera*-flies (Diptera, Dolichopodidae) as enemies of bark beetles (Coleoptera, Scolytidae) in Estonia. *Proceedings of the XXIV Nordic Congress of Entomology* pp. 139-144.
- Parent, O. 1927. Contribution à l'étude des espèces paléarctiques du genre *Medetera* Fisch. sensu strict. *Annales de la Société Scientifique de Bruxelles (B). Mémoires* 47 (2), 1-26.
- Thunberg, E. 1955. A revision of the Palearctic species of the genus *Medetera* Fischer. (Diptera, Dolichopodidae). *Annales Entomologica Fennica* (= *Suomen Hyönteistieteellinen Aikakauskirja*) 21, 130-157.

***Paraclusia tigrina* (Fallén) (Diptera, Clusiidae) in**

Herefordshire — Three adults of *Paraclusia tigrina* (Fallén) were observed on the main trunk of a large fallen beech tree (*Fagus sylvatica*) in Brockhampton Park (SO 682548), Herefordshire (V.C. 36) on 9 August 2000 — another addition to the growing list of counties where this species has been reported in recent years. In common with the observations reported by Liz and Mike Howe and John Bratton (2000. *Dipterists Digest* (Second Series) 7, 80) the flies were seen wing waving, and one appeared to be ovipositing in narrow fissures on the sawn end of the trunk — **A.P. FOSTER**, The National Trust, 33 Sheep Street, Cirencester, Gloucs GL7 1RQ

The British species of *Notiphila* Fallén (Diptera, Ephydriidae), with the description of a new species

C.M. DRAKE

Orchid House, Burrage, Axminster, Devon EX13 7DF

Summary

A key is provided to species of *Notiphila* recorded from Britain. *Notiphila umbrosa* is new to science and *N. guttiventris*, *N. nubila* and *N. subnigra* are added to the British list, making a total of 16 species. Notes on the British distribution and habitat preferences are given where these are known. The genitalia are illustrated for all species (except for the subgenus *Dichaeta*).

Introduction

Notiphila Fallén is a genus of moderately large pale brown to black ephydriids (shore flies). The genus may be recognised among other British ephydriids by having three or four long dorsal setae on the mid tibiae; in all other British ephydriids there are only hairs in this position. Mathis and Zatwarnicki (1995) listed 130 species in three subgenera, *Dichaeta* Meigen, *Agrolimna* Cresson and *Notiphila* sensu stricto in the world fauna. The 1976 British checklist (Kloet and Hincks 1976) listed eleven species, treating *Dichaeta* as a full genus, and Chandler (1998) gave two more, *stagnicola* (Robineau-Desvoidy) and *aquatica* Becker.

Considering that several species of *Notiphila* are widespread and are among the most abundant larger flies in British wetlands, their neglect in the British literature is remarkable. It may have been fostered by comments such as that by Dahl (1959) who stated: 'this genus is one of the most difficult of the Ephydriidae to determine and many species can be distinguished only after studying long series from a number of localities.' Long series do not necessarily help - they merely produce an almost continuous cline in external features that makes division into species impossible. Collin was the most productive author on British ephydriids, producing eleven papers over a span of 55 years, the first of which concerned a new species of *Notiphila* (Collin 1911), but he did not publish a key to this genus. A manuscript key by him, in the Hope Department Library, University Museum, Oxford (UMO), apparently dates from 1904, so he had obviously developed an interest in the genus by his late twenties. It is clear from his specimens that he was aware later in his life that *subnigra* was distinct from *riparia*, that at least one more species was confused with *cinerea* and that *guttiventris* was a British species.

Keys to European species of *Notiphila* were provided by Becker (1896, 1926), Séguy (1934), Nartshuk (1970), Papp (1975), Canzoneri and Meneghini (1983) and Krivosheina (1998). Dahl (1964, 1973) gave figures of the external part of the genitalia of many of the frequently encountered European species, in both cases without comment. The earlier of his publications shows photographs of what appear to be slide mounts for ten species but his later drawings appear to be rather stylistic interpretations and do not agree well with the photographs, and in some cases (e.g. his *aquatica*) may even be different species. Mathis (1979) figured the genitalia of *N. uliginosa*. Krivosheina's work is undoubtedly the most thorough and useful as she illustrated the male genitalia

and described nearly all known Palaearctic species. The key in her paper does not work in several places with British material and has internal inconsistencies, nor do some descriptions fully cover the range of variation seen in British specimens.

The adults are found on the marginal vegetation beside ponds, lakes, ditches and slowly flowing rivers; they are rarely found far from the water's edge. The detritivorous larvae are aquatic (Smith 1989). Their posterior spiracles are modified as spines to pierce the stems of marginal plants such as *Glyceria maxima* from which they obtain their oxygen supply (Houlihan 1969). The immature stages of eight of the species that occur in Britain have been described: the egg of *annulipes* (Dahl 1959), larva of *riparia* (Müller 1922; Houlihan 1969), *nigricornis* and *nubila* (Krivosheina 1993), the pupa of *riparia* (Varley 1937), the larva and pupa of *stagnicola* (Krivosheina 1993), and all three stages of *caudata* (Eastin and Foote 1971) and *brunipes* (Torelli 1922 (as *chamaeleon*); De Meijere 1941; Hennig 1943; Van der Velde and Brock 1980). There is more information on biology and immature stages of some Nearctic species (e.g. Deonier *et al.* 1978; Larson and Foote 1997).

Characters used

The external morphology of *Notiphila* is remarkably uniform and most characters show sufficient variability to be of limited help in identification. Several authors have used ratios of measurements on the head to separate species, most notably the eye-to-cheek ratio which is the vertical height of the eye to the vertical distance from the bottom of the eye to the cheek's margin, as defined and illustrated by Mathis (1979). While there are real and sometimes large differences in these ratios across the whole genus, they are of limited use in the species-groups that are most difficult to separate on other characteristics. I made the following measurements (as defined in Mathis 1979) in at least ten specimens of five species closely allied to *cinerea*: eye height and width, cheek depth, face height and minimum width, frons length (from behind the rear ocelli) and width (in line with the front of the front ocellus). Measurements were made to 0.01mm using a graticule in a Meiji binocular microscope. From these I obtained the length-to-width ratios for the eye, face and frons, and the eye-to-cheek ratio, which are shown for convenience in two scatter plots (Fig. 1). The polygons enclosing the individual points show an area intersected by all species, for both pairs of data. The mean values (untransformed, since there was no indication of non-normality) for each character did not differ significantly from each other. My sample was small but increasing the number of measurements would merely refine the mean value without removing the overlap.

While it can be generalised that, for instance, the eye-to-cheek ratio of *cinerea* is usually smaller than that of *gracula*, and that the combination of narrow cheeks and nearly round eyes will separate most *nigricornis* from broad-cheeked and oval-eyed *dorsata*, these ratios will not separate some specimens reliably and are therefore not suitable as characters for use in a key. The eye-to-cheek ratio appears to be one of the more misleading measures since it is often quoted as a whole number, implying large and readily measurable differences.

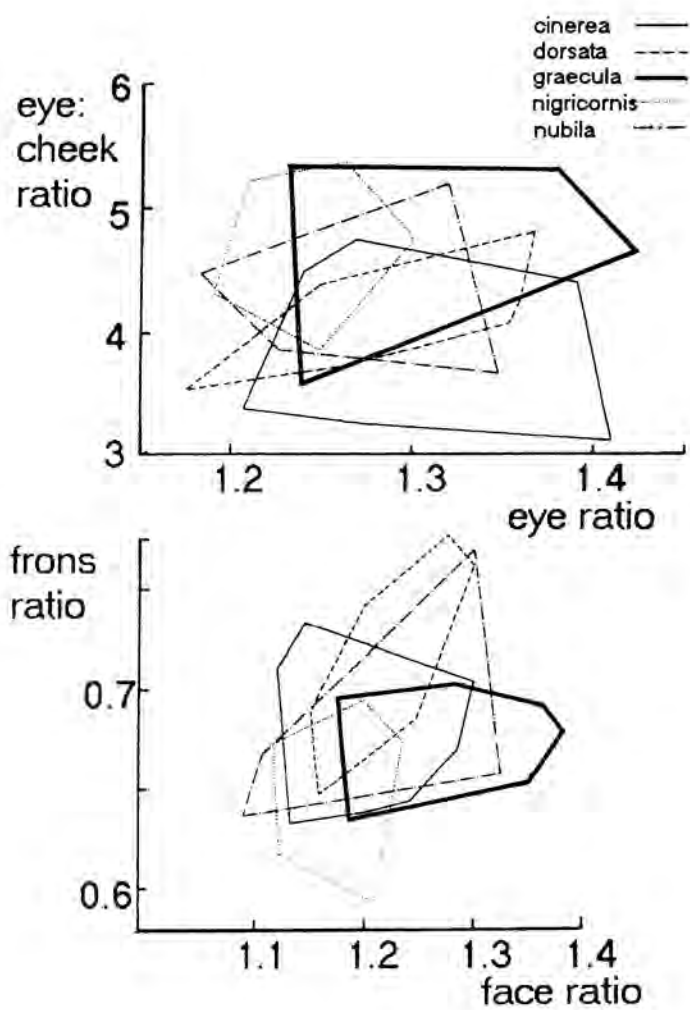


Fig. 1. Ratios of head characters for five species in the *cinerea* group. Upper: eye:cheek ratio against eye ratio; lower: frons ratio against face ratio. Polygons enclose at least ten points for each species.

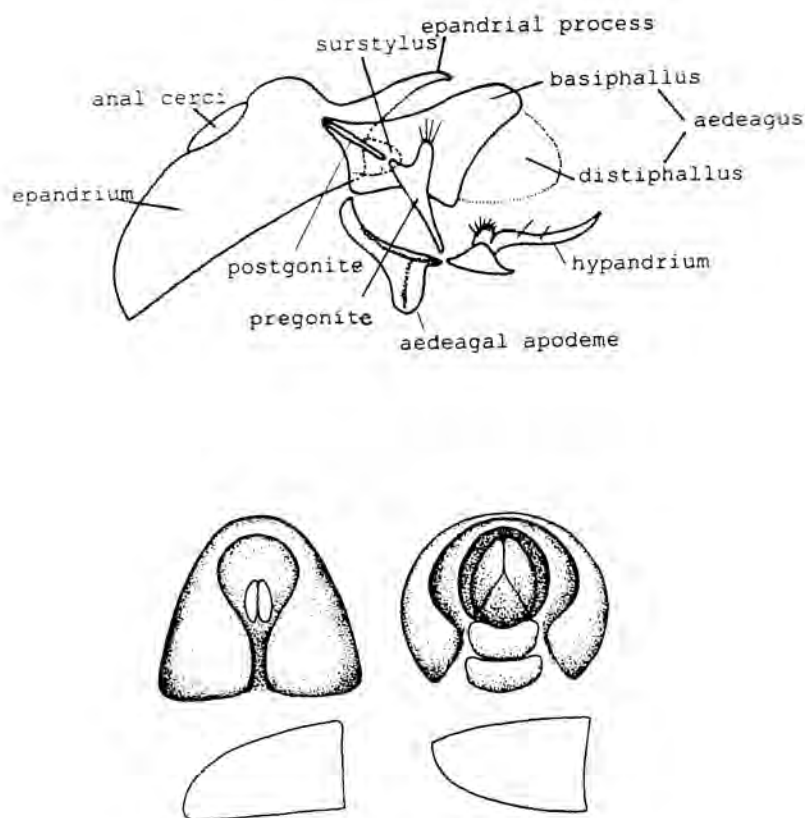


Fig. 2. Upper: schematic arrangement of male genitalia of *Notiphila sensu stricto* in side view. Lower: terminal segments of abdomens of *Notiphila* male (left) and female (right) viewed end-on (upper) and in profile (lower).

Size is a convenient guide and, as the length of the wing happens to be almost the same as that of the body, wing length (which is easier to measure), is given here (Table 1). Individuals from widely different British localities were measured to the nearest 0.1 mm. Females of species that cannot be reliably separated were not measured.

Colour and patterns produced by dusting are useful characters. These can vary widely, leading to misleading emphasis having been placed on the colour of tibiae in past literature, although this feature remains helpful when suitably qualified. The pattern on the tergites has been found to provide a useful feature that does not seem to have been previously used in keys to the European fauna, although it has been illustrated for some North American species (e.g. Mathis 1979; Huryñ 1984). This pattern can be damaged if the end of the abdomen is chipped away while removing the genitalia for maceration. I have found it safer to detach and macerate the entire abdomen, from which the genitalia can be removed with minimal damage to the tergites. The abdomen is dried after washing it in alcohol and glued using the minimum of mountant along with the genitalia (but not immersed in mountant which will turn the entire abdomen black). As the alcohol evaporates, the tergites will curl inwards unless held in a natural shape by inserting fine forceps into the cavity and holding them slightly open for the few seconds it takes to dry. The dust patterns are well preserved by this method.

Males can be identified reliably since their genitalia provide constant characters. The genitalia are hidden in their natural position so, to see them, they need to be ripped out by tearing the intersegmental membrane before the specimen dries or macerated and mounted as described above. For some species in the *cinerea* complex, a proper mount is almost essential, as important features may remain obscured if the genitalia are left attached, even if exposed, while the specimen dries.

The components of the complex male genitalia have not been satisfactorily homologised with those of other ephydriids. Conflicts between advice I obtained from ephydriid specialists and terminology used in the literature have led me to put the issue of unravelling the 'correct' names to one side. I have illustrated the components so there should be no confusion as to what I refer. I have attempted to follow the morphological nomenclature of Zatwarnicki (1992) but use the term *surstylus* rather than *dististylus*, in line with Mathis *et al.* (1993), and I follow Mathis (1979) in the term *epandrial process*.

Visible externally is a large dome-shaped epandrium with the anal cerci placed centrally, and epandrial processes at the apex, which are tucked under the last visible sternite in their normal position (Fig. 2). The aedeagus consists of the basiphallus, which is a black bean-shaped or saddle-shaped capsule containing a large membranous spine-covered sac, called the distiphallus. The 'upper' basal corner of the basiphallus hinges with the epandrium through the *surstylus*, which is an insignificant, articulated sclerite in *Notiphila sensu stricto* but developed into a large clasper in *Agrolimna* (Krivosheina (1998) used the term *surstylus* for the epandrial process). The basal edge of the basiphallus and three other components (aedeagal apodeme, pregonite and postgonite) form a hinged trapezoid on each side of the basiphallus. The hypandrium arises where the pregonite and aedeagal apodeme join; the hypandrial arm connects to the pregenital sternite (the hypandrial receptacle of Mathis 1979) and by a membrane to the remainder of the abdominal wall. In *Notiphila sensu stricto* the pregonite is a small T-shaped sclerite bearing a few apical setae but in *Agrolimna* it is developed into one of the largest internal components.

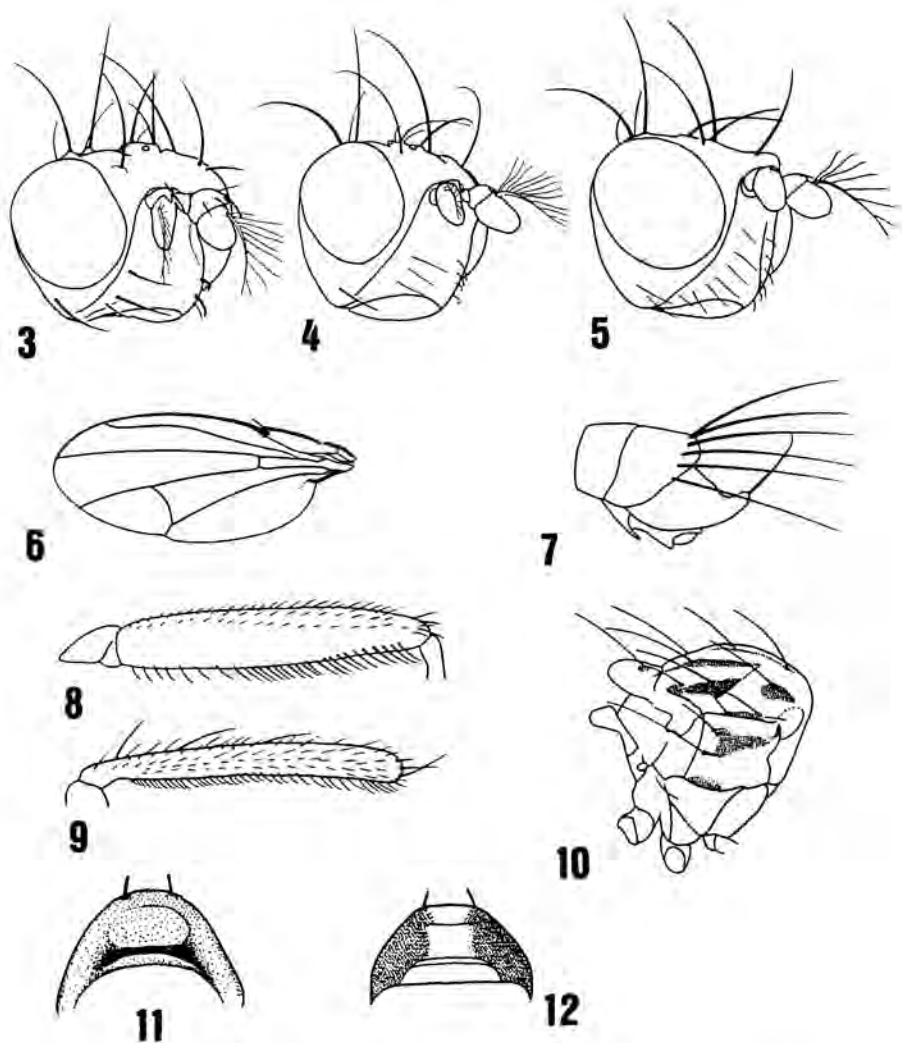
The most useful features of the genitalia for identification purposes are the epandrial process, pregonite and distiphallus. The distiphallus may be everted by gentle teasing in fresh, macerated or wet-preserved material in order to assess the development of the spines that cover it. Most features show remarkable stability, for instance the

outline of the epandrium and the shape of the basiphallus, and this has proved useful when comparing them with the illustrations by Krivosheina (1998). My drawings show the whole epandrium in strictly ventral view and the epandrial processes from a slightly lateral viewpoint as this aspect shows their greatest curvature.

As reliable identification requires males for the more intractable species, it is necessary to determine the sex of specimens. Males of the subgenus *Notiphila* sensu stricto have anteroventral and posteroventral fringes of close-set setae on the mid femur (Fig. 8), and the ten species in the *cinerea* group also have a row of short hooked setae on the mid tibia (Fig. 9). Males of the *riparia* group have such small and almost hidden genitalia that they can appear misleadingly like females if the femoral fringes are overlooked, while the subgenus *Agrolimna* lacks secondary sexual characters. All species can be sexed by viewing the abdomen from behind, when the small sixth tergite of the female can be seen as a ring surrounding the anal cerci, while in the male only the bulbous epandrium is visible; in side view, the last large tergite (fifth) has an upturned lower margin in the female, and a downcurved upper margin in the male (Fig. 2). I have not succeeded in reliably separating females of the *cinerea* complex and, although I include them in the key, identification based on females of *cinerea*, *graecula*, *nubila* and to some extent *dorsata* must be viewed as tentative.

Table 1. Wing lengths of *Notiphila* ranked in order of size of males (mean and range; n = number of individuals measured when fewer than ten).

	male	female
<i>nigricornis</i>	3.1 (2.8-3.5)	3.4 (2.9-3.9)
<i>maculata</i>	3.5 (3.2-3.8)	4.1 (3.6-4.5)
<i>nubila</i>	3.5 (3.3-3.9)	-
<i>venusta</i>	3.5 (3.3-4.0)	3.9 (3.6-4.2)
<i>brunipes</i>	3.7 (3.3-4.1)	4.3 (3.9-4.7)
<i>graecula</i>	3.7 (3.4-3.9)	-
<i>umbrosa</i>	3.8 (3.4-4.2)	4.2 (4.1-4.5) n=5
<i>stagnicola</i>	3.8 (3.5-4.1) n=9	4.4 (3.9-4.9)
<i>cinerea</i>	3.9 (3.4-4.2)	-
<i>caudata</i>	4.0 (3.7-4.3) n=7	4.4 (4.1-4.5) n=8
<i>uliginosa</i>	4.0 (3.8-4.2)	4.3 (3.8-4.7)
<i>subnigra</i>	4.1 (3.8-4.5)	4.6 (4.5-5.8)
<i>guttiventris</i>	4.1 (3.8-4.3) n=4	4.7 (4.3-4.9) n=5
<i>dorsata</i>	4.2 (3.8-4.7)	4.5 (3.9-5.1)
<i>annulipes</i>	4.2 (3.9-4.6)	4.9 (4.7-5.1) n=4
<i>riparia</i>	4.4 (4.0-4.8)	4.8 (4.5-5.1)



Figs 3-12. *Notiphila* spp. 3, *N. (Dichaeta) caudata*, head; 4, *N. (Notiphila) dorsata*, head; 5, *N. (Agrolimna) venusta*, head; 6, *N. caudata*, wing; 7, *N. caudata*, last three tergites of male abdomen; 8, *Notiphila* sensu stricto, male mid femur; 9, *Notiphila* sensu stricto, male mid tibia; 10, *N. maculata*, thorax; 11, *N. annulipes*, underside of scutellum; 12, *N. riparia*, underside of scutellum.

The material examined for this review is mainly my own, that of Castle Museum, Norwich, and of the Verrall-Collin collection at UMO, much of which has also been examined by Dr Marina Krivosheina. I have also checked part of the collection of *Notiphila* at the National Museum of Wales, Cardiff. I have given grid references to records only when the data label provided this information.

The key is based on dry specimens. Colours that depend upon dusting, such as that of the face and tergite pattern, do not show up in greasy or wet-preserved material: the key given here will not work in many places with such specimens. Morphological terms (other than those for the genitalia, covered above) follow Oldroyd (1970).

I have found it impossible to include likely additional species in the key since the published descriptions are usually inadequate. On the premise that it would be remarkable that one person (myself) should be able to find almost the entire British fauna of an under-worked genus in the space of a few years, it is expected that other species will be found in Britain.

My key may join the parade of others that have attempted with only partial success to separate members of this genus on external characters, but examining the male genitalia will almost certainly work, so the epandrial process and the pregonite or aedeagus are shown alongside each species in the key.

Key to *Notiphila*

- 1 Facial and genal setae almost as stout as ocellars and verticals (but shorter) (Fig. 3). Vein R_1 with a distinct bend half way along (Fig. 6). Male with outstanding stout setae on hind margin of fourth tergite (Fig. 7). (Large, almost entirely blackish species with several narrow paler lines on the mesonotum.)
(subgenus *Dichaeta*) *caudata*
- Facial and genal setae obviously finer than vertical and ocellar setae (Figs 4, 5). Vein R_1 without a distinct bend, slightly sinuous or nearly straight. Male abdomen unremarkable 2
- 2 Face with three or four subequal facial setae in a short row about as long as the length of the gap between the uppermost seta and the antenna (ignore short hairs) (Fig. 4). Hind metatarsus with several black stout hairs at its base. Mid tibia usually with three dorsal setae. Male with mid femur with fringes of posteroventral and anteroventral close-set setae (Fig. 8).
(subgenus *Notiphila* sensu stricto) 3
- Face with a long row of six or seven subequal facial setae, leaving a short gap before the antenna about half the row's length (Fig. 5). Hind metatarsus with only yellow or brownish stout hairs at its base (rarely a single black one). Mid tibia usually with four dorsal setae. Male without ventral femoral fringes.
(subgenus *Agrolimna*) 19
- 3 Second antennal segment and more than just the apex of the third segment black (may be entirely black). Underside of scutellum entirely grey-dusted, or with

only a narrow shiny black line near the base (Fig. 11). Mid tibia of male with a ventral fringe of closely spaced fine curved setae, often with hooked tips (Fig. 9). (Wings usually colourless or with dark-margined veins.) 4

- Antenna, including the second segment, yellow with only the margin of the third segment darkened. Underside of scutellum grey-dusted centrally and flanked by contrasting black areas (Fig. 12). Mid tibia of male without a ventral fringe of short curved setae. (Wings usually yellow-tinged.) 17

- 4 Mesonotum with distinct dark brown interrupted streaks along the lines of the setae; the mark passing through the post-humeral and supra-alar setae is clear even if those on the disc are vague (Fig. 10) (pale area of third antennal segment bright orange). Pattern on third and fourth tergites with strongly demarcated median triangles and a lateral band extending round the curled side of the tergite, dark areas slightly shining and contrasting strongly with the pale dusted grey background. Epandrial process with clubbed tip; pregonite club-shaped (Fig. 15). (*venusta* has similar markings.) *maculata*



- Mesonotum almost uniformly coloured, or with only vague darker stripes; if marks are present (some *dorsata*), then a large species with pale area of third antennal segment dull or dark orange. Pattern on tergites with less contrast owing to dusting on both the dark and paler areas. Tip of epandrial process pointed or hooked but never swollen; pregonite not club-shaped but may broaden slightly towards the tip 5

- 5 Front tibia mostly black, either black to the tip or leaving at most only the rim orange or yellow, with colour not reaching as far back as about a fifth of the tibia's length (Fig. 41). (Doubtful cases key out in both halves of the couplet.) 6

Front tibia yellow or if extensively darkened then at least the distal quarter is yellow (Fig. 42). If the tibial character is inconclusive (i.e. mainly dark but yellow all around the tip), then the dark lateral marks of third and fourth tergites extend beyond the curled side of the tergites and continue as a lighter brown shade in the front half of the downward-facing margin of the tergite AND the third antennal segment is obviously pale at the base 11

- 6 Third and fourth tergites with a bold pattern of large median dark triangles with the diagonal edge straight or weakly convex, and often fused in front with the lateral mark; dark marks usually clearly demarcated from the pale background (Fig. 30) 7

- Tergites with a pattern of narrow dark bars (Figs 33-35) or squarish (not obviously triangular) dark marks that are often ill-defined and which do not merge along the front margin (Fig. 32). If uncertain, then a small species (wing length less than 3.8 mm) with completely black antennae 9

- 7 Face and cheeks silver or white. Mid and hind tibiae mainly black. Epandrial process is a blunt-ended triangle. Distiphallus with long slender spines (Fig. 14)

brunipes



- Face and cheeks yellow or golden, sometimes reddish-brown. Mid and hind tibiae mainly yellow (hind often with a dorsal dark streak or central dark band) 8

- 8 Front tarsus dark or dirty yellow (compare with yellow mid tarsi) and without pale hairs below the metatarsi. Third antennal segment appearing black at low magnification, the base inconspicuously dark orange. Pattern on the tergites usually bold (Fig. 30). Epandrial process dumpy S-shaped with a smoothly rounded tip, clearly hooked in strictly ventral view. Distiphallus with small points (Fig. 17). Large species (wing length 3.8 mm or more)

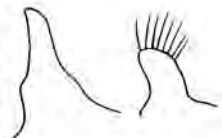
dorsata



- Front tarsus usually as yellow as the mid tarsus and with some pale hairs below. Third antennal segment clearly yellow or orange in the basal half or more. Pattern on tergites either bold or more diffuse (Figs 28, 29) 13

- 9 Antenna entirely black. Third and fourth tergites with almost equally large median and lateral irregularly rectangular marks (often ill-defined) which together occupy about 40% of the dorsal surface, the pale gap between them no wider than the marks (Fig. 32). Face usually greenish grey (rarely yellow or pale grey). Epandrial process small, gently tapered and not at all sinuous. Pregonite squat with a broadly rounded tip bearing a fringe of about eight almost equally long setae (Fig. 21). A small drab species

nigricornis



- Third antennal segment usually obviously orange at the base. Pattern on tergites reduced to small but clearly defined narrow dark bars on the third and fourth tergites, occupying about 20 per cent or less of the dorsal surface and with the pale area outside the median marks clearly wider than the marks themselves (Figs 33-35) 10

- 10 Third antennal segment mostly bright yellow, the black rim usually extending only about a quarter the width of the segment; tip of second segment usually narrowly yellow, at least near the dorsal cleft. Mid tibia with a narrow to broad black ring, usually clearly demarcated, and hind tibia with a wide dark ring and black dorsal streak (Figs 39, 40). Epandrial process slightly sinuous and with a sharp outward-facing point at the truncated tip (fig. 13)



annulipes

- Third antennal segment more extensively dark, the distal third or more dark; second segment entirely black. Mid tibia with at most a vague median ring, and hind tibia with a small dark dorsal streak (Figs 37, 38). (See couplet 12.)



guttiventris

- 11 Face white, silvery or pale ash grey, sometimes vaguely golden. Second tergite almost without dark marks in contrast to the clearly distinct dark marks on the third and fourth tergites, or the dark central area merging gradually into the pale outer area with no perceptible boundary (Figs 31, 34, 35) 12

- Face yellow to pale brown. Second tergite with more obvious dark marks similar in tone to those on the third and fourth tergites (Figs 28, 29) 13

- 12 Pattern on tergites bold, the lateral marks almost reaching the curled edge of the tergites (Fig. 31). All tibiae almost entirely yellow. Epandrial process at the tip with the inner edge curled up to form a narrow flange, appearing slightly twisted; the processes widely separated at their bases; distiphallus with long slender spines (Fig. 22)



stagnicola

- Pattern on tergites much reduced (Figs 34, 35). Front and hind legs with some dark marks. Epandrial process finely tapered to a point, appearing almost straight in strictly ventral view. Distiphallus without spines, and with only numerous tiny points over most of its surface (Fig. 20). See also couplet 10 *guttiventris*

- 13 Males 14

- Females. (The separation of females is unreliable and all the characters used here are very variable.) 16

- 14 Epandrial process straight, narrow and parallel-sided before the slightly hooked tip. In ventral view, base of epandrial process obscured by the swollen end of the epandrium, so its point of connection is not visible. Forked process

present at the articulation of the aedeagus and aedeagal apodeme (Fig. 16). Pregonite with a weakly developed shoulder. Abdominal pattern indistinct, the dark median and lateral patches tending to merge in the front half of each tergite (Fig. 28)

♂ *cinerea*



- Epandrial process curved and either gently tapered (not parallel-sided) or with a distinct shoulder before narrowing to the tip. Abdominal pattern distinct, the dark paired patches usually obviously separated (Fig. 29) 15

- 15 Epandrial process curved and gently tapered to a finely rounded tip, sometimes with a tiny hook. Forked process present at the articulation of the aedeagus and aedeagal apodeme (Fig. 18). Pregonite with a strong shoulder

♂ *gracula*



- Epandrial process with a distinct shoulder before narrowing to the upwardly and outwardly directed pointed tip. No forked process on the aedeagus (Fig. 19). Pregonite tapered, sometimes with a slight shoulder but never so pronounced that the top is almost parallel with the base

♂ *nubila*



- 16 Abdominal pattern with the dark patches more clearly defined against the pale grey (Fig. 29). Width of the cheeks at their narrowest point about as wide as the width of the femur in its distal third (view cheeks anteroventrally to show their greatest width). Front tibia usually with a dark ring extending over about the middle half

♀ *gracula* or *nubila*

- Abdominal pattern somewhat indistinct as the margins of the dark patches merge more gradually into the paler areas, and with less contrast between dark and pale areas (Fig. 28). Width of the cheeks at their narrowest point about as wide as the width of the femur in its broadest part. Front tibia usually mainly yellow

♀ *cinerea* or *nubila*

- 17 Trochanters and all tibiae predominantly black, leaving only the knees and apices pale. (Epandrial process long, gently tapered but appearing parallel-sided in ventral view (Fig. 26). Aedeagus with a simple curved spine where the aedeagal apodeme joins it. A dark species with rather shiny extensive black marks on the tergites occupying well over half the area of the middle tergites, and third tergite mostly (about three-quarters) dark along the lateral margin where it curls under, owing to extensive dark lateral patch.)

subnigra



- Trochanters obviously yellow or at least pale on their rim; tibiae more yellow than black

18

- 18 Epandrial process with a right-angled shoulder on the outer margin. Aedeagus usually with a curled knob where the aedeagal apodeme hinges (rarely not swollen) (Fig. 25). Dark marks of the abdomen more distinctly differentiated from the pale grey areas, especially obvious on the fifth tergite in lateral view where the hind third has dark spots against a pale background. Pleura dusted pale brownish grey, usually paler than the brown mesonotum, and usually with a brown streak or patch towards the upper margin of the mesopleuron and across the anterior spiracle. (Larger species, wing length usually rather more than 4.0 mm)



riparia

- Epandrial process short, obviously triangular in ventral view with a fine finger-like point (Fig. 27). Aedeagus with broader, parallel-sided or slightly swollen process where the apodeme joins it. Abdominal lateral and median dark patches usually continuous, with low contrast between dark and pale areas when viewed from above and slightly from the front (Fig. 36); fifth tergite in lateral view usually mainly dark, rarely with dark spots against a paler background in the hind third. Pleura no paler than mesonotum, with or without a dark mark near the top margin. (Smaller species, wing length usually rather less than 4.2 mm)



umbrasa sp. n.

- 19 Legs almost entirely black, knees not yellow (or faintly so in wet or greasy specimens). Palps and antennae black
- Knees yellow. Palps orange; third antennal segment orange basally. (Abdomen conspicuously pale grey with contrasting black marks, thorax with dark streaks along the lines of larger setae)

uliginosa

venusta

Notes on the species

Notiphila umbrasa sp. n.

Diagnosis. A species in the *riparia* group closely allied to *subnigra*, having an almost uniformly dark brown thorax, a dull brown face, tibiae and tarsi mainly yellow but tibiae with moderately distinct median dark bands, and an ill-defined dark abdominal pattern.

Male. Head. Frons dark brown, entirely dull dusted, paler only at the eye margins and often slightly paler on the ocellar triangle; no shifting pattern with change of angle of incident light. Face dark yellowish brown, slightly paler than the frons but not bright. Cheeks and occiput similar in colour and shade to the face. Antenna with second and third segments orange, the third segment brown along the upper and distal margins. Arista with 10-12 dorsal rays. Clypeus black. Palp orange. Chaetotaxy unremarkable, as in *riparia*, although the lowermost facial bristle is sometimes almost as strong as the usual three upper pairs.

Thorax. Mesonotum and scutellum dark brown, almost the same colour and shade as the frons (scutellum sometimes slightly paler than mesonotum). Humerus and extreme front of mesonotum paler greyish brown. Rarely any marks other than a pair of narrow, ill-defined dark stripes on the front margin forward of the dorsocentral setae, and small dark spots at the base of the first two dc setae. Underside of scutellum black and undusted on either side of a central dusted grey area. Mesopleuron and sternopleuron the same colour as the mesonotum, the mesopleuron either with or without a small darker brown mark toward its upper margin. Slightly paler areas are above the fore coxa and the hind half and upper front corner of the sternopleuron. Chaetotaxy unremarkable, as in *riparia*. Propleuron finely hairy.

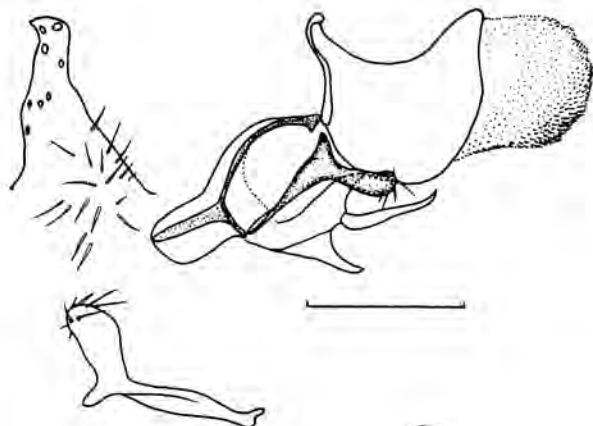
Wings. Clear or with yellow tinge most marked along the front half and around veins M and Cu. Veins yellow or brown. Halteres and stem yellow.

Legs. Coxae black, dark grey dusted. Trochanters dark yellow, at least at the outer margin. Femora black with the extreme tip or just the distal rim yellow. Front tibia yellow with about the middle half black-ringed. Mid tibia mainly dirty yellow with an ill-defined black ring at the position of the distal dorsal seta. Hind tibia yellow with a moderately distinct median ring, shining black on the middle three-fifths of the dorsal surface. All tarsi yellow except the metatarsus which is darkened. Mid coxa with two strong setae and a row of hairs distal to them.

Abdomen. Tergites with an indistinct pattern of shiny black patches without sharply defined edges, and dusted on the paler areas which are contrastingly duller (Fig. 36); in some specimens, the dark marks are smaller than illustrated. The inner and outer patches usually merge in the front half or are only vaguely separated by paler areas. The pattern becomes more distinct when viewed from behind. Usually only the hind marginal setae arise from discrete dark round spots (sometimes the small hairs towards the hind margin also arise from spots). Fifth tergite in lateral view mainly dark, rarely with distinct dark spots against a paler background in the hind third. A central pale line runs the length of tergites 1-4 and front part of tergite 5. Sternites uniformly blue-grey and short haired.

Figs 13-15. Male genitalia of *Notiphila*. Entire epandrium, enlargement of the epandrial process, pregonite and aedeagus (with or without attached appendages). Scale line = 0.25mm, epandrial process and pregonite are enlarged to approximately the same scale. 13, *annulipes*; 14, *brunipes*; 15, *maculata*.

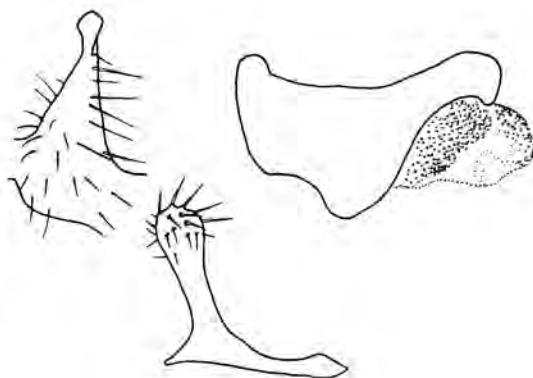
13

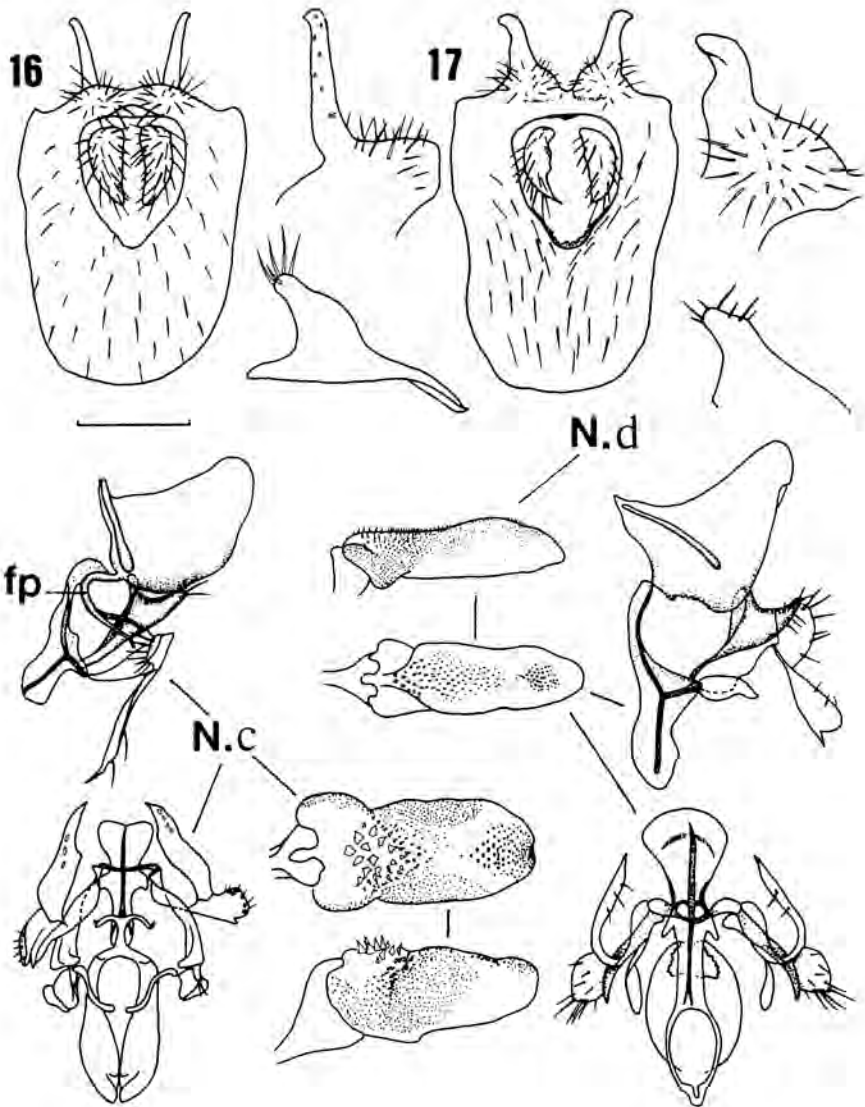


14



15





Genitalia with a short triangular epandrial process ending in a fine sinuous pointed tip and having only a slight shoulder on the inner margin (Fig. 27). Basiphallus of aedeagus with an almost parallel-sided appendage where the apodeme hinges. Spines of distiphallus fine and simple. Pregonite straight and usually with three distal spines.

Wing length 3.4-4.0 mm. Body length 3.5-4.0 mm.

Female. Similar to male. Wing length 4.1-4.5 mm.

Type material. Holotype ♂ England, Essex, Wake Valley Pond (TQ 420987), 26.vi.2000. C.M. Drake, deposited in the Natural History Museum, London. Paratypes: 7♂, 5♀. same data as holotype; 1♂ 11.viii.1977, Hardley Floods, Norfolk, riverside marsh (TG 3799), A.G. Irwin; 1♂ 8.viii.1979 Benacre Broad, Suffolk, reeds and sedges (TM 5283), A.G. Irwin; 1♂ 3.vii.1979, Sutton Broad, Norfolk, fen vegetation (TG 3723), A.G. Irwin; 1♂ 1.viii.1980 and 1♂ 5.viii.1980 Catfield Great Fen, Norfolk, muddy path and pool (TG 3621), A.G. Irwin.

Etymology. I have named the species after its dark and ill-defined abdominal pattern (umbrosus is the Latin for dark, shady).

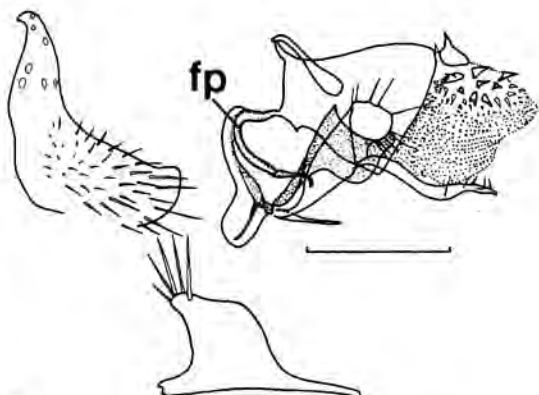
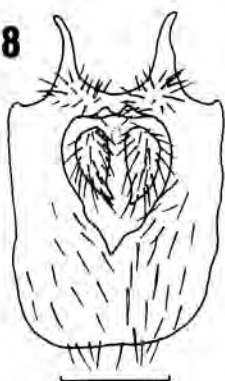
A paratype male has been sent to each of the Naturhistorisches Museum, Basel, Rijksmuseum van Natuurlijke Historie, Leiden, and the collections of the British Entomological and Natural History Society at Dinton Pastures Country Park near Reading. The remaining paratypes from Essex are in the author's collection and those collected by A.G. Irwin are in the Castle Museum, Norwich.

The first-recognised specimens were collected from Wake Valley Pond, a large lowland pond set within deciduous woodland and with overhanging trees on most sides. It is on tertiary gravels and is probably slightly acid. Wake Valley Pond, like all other ponds in Epping Forest, is man-made, dating from about 1830 (Hanson 1992). The specimens were swept from emergent vegetation (mainly *Phragmites australis* and *Sparganium erectum*) at the margin. Other *Notiphila* collected here were *caudata*, *cinerea* (frequent), *guttiventris*, *maculata* and *riparia* (frequent). The fenland sites in Norfolk and Suffolk are lowland fens of high conservation value. *Notiphila riparia* and *subnigra* were also collected at Sutton Broad.

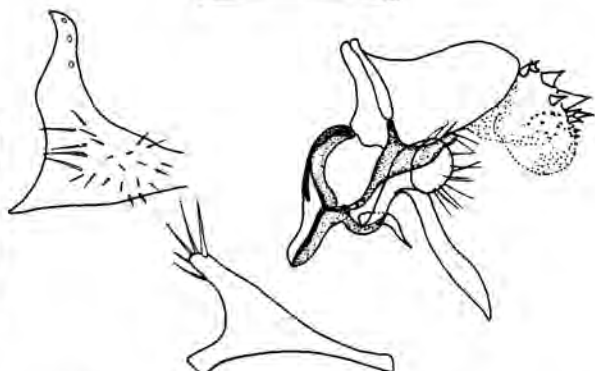
The species is intermediate between *subnigra* and *riparia*, perhaps more closely resembling *subnigra* but not clearly distinct from dark specimens of *riparia*. Both sexes of *umbrosa* may be distinguished externally from *subnigra* by their partially yellow trochanters and more extensively yellow tibiae and tarsi, and from *riparia* by the generally darker and drab appearance. Females are difficult to separate reliably, and I can see no obvious differences in the ventral receptacles of these three species.

Figs 16-17. Male genitalia of *Notiphila*. Entire epandrium, enlargement of the epandrial process, pregonite, and aedeagal complex in lateral (upper figure) and ventral (lower figure) views, distiphallus in lateral and ventral views. fp - forked process. Scale line = 0.25mm; epandrial process and pregonite are enlarged to approximately the same scale. 16, *cinerea* (N.c.); 17, *dorsata* (N.d.).

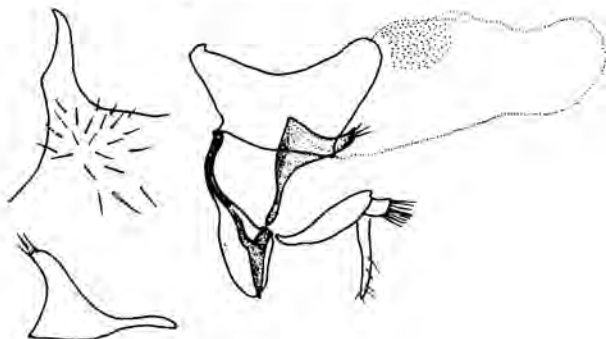
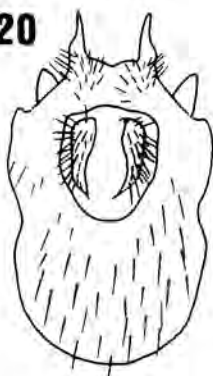
18



19



20



The epandrial process of the male is similar in form to that of *subnigra* but is markedly shorter and when viewed ventrally it is seen to have a dumpy triangular base with a fine finger-like point, rather than the long sinuous parallel-sided process of *subnigra*. The basal appendage of the basiphallus is similar to narrower examples found in some *riparia* and is not a pointed spine as found in *subnigra*. The pregonite has 3-4 spines, rather than about 5 in *subnigra*. I measured the dimension of 28 characters (as listed in Mathis (1979) plus femora, tibiae and metatarsi) of seven males, and these were indistinguishable from seven males of *subnigra*. A principle component analysis of these data, using CANOCO (Ter Braak 1987-1992), could not separate the two species. It is very unlikely that this is merely a variant of *subnigra* since my specimens of that species from England, Northern Ireland and Italy agree with the figure by Krivosheina (1998).

No other species covered by Krivosheina (1998) resemble *umbrosa* which runs to *riparia* / *subnigra* in her key.

Notiphila annulipes Stenhammar, 1844

The sparsely marked tergites are unusual in *Notiphila*; the median and lateral marks are usually small and clearly separated, and rarely touching on the front margin (Fig. 33). Nearly all specimens have pale tips to the second antennal segment, notably on the dorsal knob that supports the stout apical spine, but the extent of colouring never approaches the entirely pale condition in the *riparia* group of species. The face is bright golden. The underside of the scutellum is unusual in *Notiphila* sensu stricto in having the pale dusted central area bordered in front by a narrow shiny black strip, but not broadly black at the sides as in species of the *riparia* group. Male genitalia: Fig. 13.

N. annulipes may be a northern species in Britain as the only specimens seen are from Scotland: 1♀ 16.vii.1899, 1♂ 3♀ 28.vi.1900 Aviemore, Inverness-shire, J.W. Yerbury; 2♂ 25.vi.1933, 2♂ 1♀ 27.vi.1933 Aviemore, Inverness-shire, B.M. Hobby; 1♂ 25.vi.1933 Aviemore, Inverness-shire, J.E. Collin; 2♀ 28.vii.1904 Nethy Bridge, Inverness-shire, J.W. Yerbury; 4♂ 10.vii.1936 Kinrara, Inverness-shire, J.E. Collin; 1♂ 12.vi.1982 Craigellachie NNR, Inverness-shire, J.H. Cole; 4♂ 13.vi.1982 Craigellachie NNR, Inverness-shire, lakeside *Carex* and flushes below lake (NH 8812) A.G. Irwin; 10♂ 14.vi.1982 Loch Garten NR, Inverness-shire, *Carex* and *Juncus* at pools and *Carex* among *Sphagnum* south of Loch Mallachie (NH 9616) A.G. Irwin; 1♂ 4.vii.1904 Nairn, J.W. Yerbury; 9 specimens (including ♂) 29.vi.1933 Grantown, Morayshire, B.M. Hobby, det. ? L.W. Grensted; 1♂ 18.vii.1910 Blairgowrie, Perthshire, J.E. Collin; 1♂ 4.vi.1913 and 1♂ 30.vi.1913 Blairgowrie, Perthshire, A.E.J. Carter; 2♀ 13.vii.1898 and 1♀ 28.vi.1902 Rannoch, Perthshire, J.W. Yerbury; 1♂ 11.vii.1937 Rannoch, Perthshire, J.E. Collin; 1♂ 1.vii.1936 Trinafour, Glen Garry, Perthshire, J.E. Collin. (Specimens collected up to 1933 in UMO, det. M. Krivosheina).

Figs 18-20. Male genitalia of *Notiphila*. Entire epandrium, enlargement of the epandrial process, pregonite, and aedeagus with attached appendages. fp - forked process. Scale line = 0.25mm; epandrial process and pregonite are enlarged to approximately the same scale. 18, *graecula*; 19, *nubila*; 20, *guttiventris*.

The scarcity of British specimens of *annulipes* and their apparent confinement to north-east Scotland is in marked contrast to its status elsewhere in Europe. Dahl (1959) found that it was the 'commonest *Notiphila* in all Fennoscandia', and that it had a wider ecological range than the other eleven *Notiphila* from Scandinavia. As his photograph of the epandrial process is identical to my specimens, there can be no doubt that he identified this species correctly (Dahl 1964). Krivosheina (1998) described it as common and had seen material from Finland, Sweden, Poland, Russia, Ukraine and Romania; Mathis and Zatwarnicki (1995) gave numerous European countries.

Notiphila brunipes (Robineau-Desvoidy, 1830) (not Stenhammar)

This is one of the two European species with silver faces, the other being *stagnicola*, although the face of *guttiventris* can also be very pale. It differs from other *Notiphila* sensu stricto in that all the tibiae are mainly black: in other species, the mid tibia, at least, is usually predominantly yellow. The tergite marks are similar to those of *dorsata* but a little more murky (cf. Fig. 30). Male genitalia; Fig. 14.

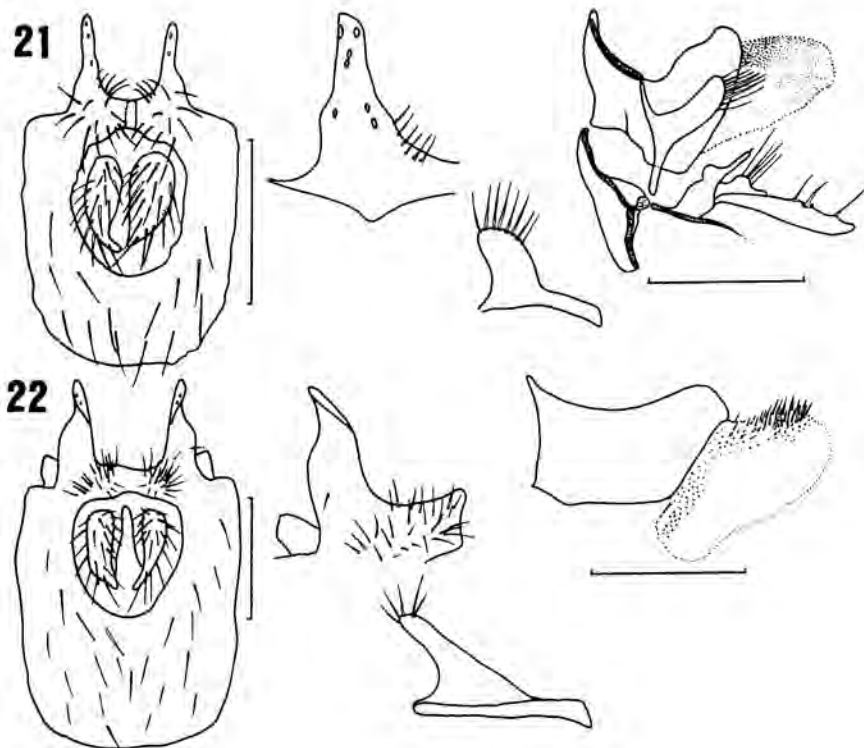
The habits of the adults of this species differ from those of other *Notiphila*. They are seen almost exclusively on the leaves of water lilies, *Nuphar lutea*, *Nymphaea alba*, *N. candida* and *Nymphoides peltata* (Rousseau 1919 (as *stagnicola*); de Meijere 1940; Van der Velde and Brock 1980). Dahl (1959) misquoted de Meijere (1941) as saying that the larvae feed upon the submerged parts of water lilies but Van der Velde and Brock (1980) showed that they feed on detritus, as do other *Notiphila*, and use mainly a variety of plants other than *Nuphar* or *Nymphaea* for their air supply (although *Nymphoides* was used), including *Typha angustifolia* and *Acorus calamus*. However, the adults lay their eggs exclusively within the flowers of the lilies (only *Nuphar* and *Nymphaea*) where the higher temperature within the closed flowers speeds up the rate of hatching (Van der Velde and Brock 1980).

The species is regarded as uncommon in Britain but this may be apparent only, due to its particular habitat preference, which requires collectors to make a special effort to find it. I have found it numerous on *Nuphar* in the River Nene near Peterborough, Cambridgeshire, and on *Nymphaea* at Bosherton Lake, Pembrokeshire; in both cases it was not found on nearby and easily accessible marginal emergent vegetation. Collin (1911) recorded it at Ranworth, Norfolk, and UMO has several from other Broadland localities and Wicken Fen, Cambridgeshire. The Cardiff Museum has a male and female from Tunbridge Wells, Kent, collected by C.G. Nurse in August 1924.

Notiphila cinerea Fallén, 1813

This is one of a complex of very similar species (*dorsata*, *graeclula*, *nubila*) that are difficult or impossible to separate reliably on external characters. While each species within this group has a typical leg colour, the range of variation makes this a poor discriminator.

N. cinerea usually has almost completely yellow front tibiae, although I have specimens with darkened shafts and tarsi similar to those of *dorsata*, and many whose tibiae are identical to the slightly darkened tibiae of *graeclula* and *nubila*. The abdominal pattern of *cinerea* is one of the most bland in the genus but dull specimens of *nubila* can resemble it (compare Figs 28 and 29).



Figs 21-22. Male genitalia of *Notiphila*. Entire epandrium, enlargement of the epandrial process, pregonite, and aedeagus (with or without attached appendages). Scale line = 0.25mm; epandrial process and pregonite are enlarged to approximately the same scale. 21, *nigricornis*; 22, *stagnicola*.

While the cheek is narrower than that of *gracula*, the difference is small and the range of measurements overlap so it is not a good key character. The epandrial process is a straight narrow rod, and this is a reliable character for identifying the species without the need for mounting the genitalia. *Notiphila gracula* is the only other British species with a forked process at the articulation of the aedeagus and its apodeme (Figs 16, 18).

Notiphila cinerea is one of the most common and widespread species, being found beside ponds, ditches, slowly flowing rivers and even by damp ground or puddles in fens. I have found it more often than other species of *Notiphila* on wet mud, although

usually it sits on emergent plants. My records include many sites in England, Scotland and Wales.

Notiphila dorsata Stenhammar, 1844

This species is one of the largest in the genus but otherwise resembles several others in the *cinerea* complex. The tergites in both sexes have a strongly contrasting pattern (Fig. 30) and the chunky and sinuous epandrial process is unlike that of any other British species (Fig. 17). Small females look superficially like large *nigricornis* but should be separable using the key.

Its British distribution is wide and, although the flies are usually found in low numbers, they can be sometimes be abundant in stands of *Glyceria maxima*.

Notiphila graecula Becker, 1926

The strong contrast in the pattern on the tergites will distinguish many specimens from *cinerea*, although much less certainly from *nubila* (cf. Fig. 29, *nubila*, which is very similar to *graecula*). At sites where I have found *graecula* males far outnumbering *cinerea*, females with the same abdominal pattern were assumed to be *graecula*, and thus the pattern may serve as a rough guide to the identity of the females, but there is no way to confirm it. The front tibia is usually slightly darkened in the middle (paler in most *cinerea* but similar in *nubila*). The only reliable features are found in the male genitalia, in which the presence of a forked process under the aedeagal apodeme, in combination with the almost square pregonite, is unique (Fig. 18). See more comments under *cinerea*.

I had for several years recognised a species distinct from *cinerea*, and most of the specimens were found to be *graecula*, using Krivosheina (1998). The discovery in Britain of *nubila*, which I had confused with the previously unidentified species, has reduced the number of reliable records to those where I kept specimens, which are from Cambridgeshire, Norfolk, Essex, Kent, Hampshire and Herefordshire. M. Krivosheina identified specimens in UMO from Hampshire and Norfolk, and David Gibbs (*pers. comm.*) has specimens from Gwent, Essex and Somerset. It is a common species found very often with *cinerea* and in similar numbers. I have specimens from France, a country not mentioned in Krivosheina's (1998) review; Marne; Lac de Der Chantecoq, 2.viii.1997; Vitry-le-François, 3.viii.1997; Finistère; St Guénolé, 28.viii.1999; Seine et Marne; Neung-sur-Beuvron, 13.viii.2000.

Notiphila guttiventris Stenhammar, 1844

The overall appearance is of a rather uniformly brown fly. There are sometimes small dark spots at the base of the dorsocentral setae. In males, the abdominal pattern is reduced to a pair of narrow longitudinal median dark bars on the third tergite and sometimes on the fourth one too, leaving most of the tergites uniformly grey-brown; the usual lateral mark is absent (Fig. 35). Females have three such pairs of bars and a small square lateral mark (Fig. 34). The face is yellow or cream-coloured, and the third antennal segment is mostly black with a dark orange basal area. The front legs are rather variably coloured, either almost completely black, with yellow areas only at the extreme tip of the femur, base and tip of tibia and tips of tarsal segments 2-4, or with entirely yellow tibia and tarsus. The mid and hind tibiae are usually black dorsally in the middle

half or (mid leg only) along most of its length. The epandrium has a conspicuous waist (Fig. 20).

The genitalia closely resemble *nubila* in the shape of the epandrial process but differ in having an oblong lobe on the pregenital sternite, rather than semi-circular as in most species in the *cinerea* complex. Dark-legged individuals of *guttiventris* and *nubila* differ from each other in *guttiventris* having distinctly dark front tarsi (rather like *dorsata*), whereas I have not seen any *nubila* with such dark tarsi, even if the tibiae are mostly and obviously black. The distiphallus differs from that of most species in the subgenus in having only numerous tiny points but no larger spines (it is similar in *maculata*), and is amply distinct from *nubila*, which has massive spines at its base. The surstylus, which just protrudes beyond the epandrium outside of the process, is shaped like a somewhat pointed egg; most species have a more rounded surstylus, and that of *nubila* is lumpy; this feature is visible with minimal dissection so is a useful indication that a specimen may not be one of the common species.

The correct identification of this species proved difficult since not only are the few British specimens highly variable but the three descriptions or figures of *guttiventris* in modern works are at variance with one another. I am grateful to Dr Zatwarnicki for comparing his specimens with my description and drawings; he concluded that my specimens fall within the variability of *guttiventris*.

Krivosheina (1998) keyed and illustrated the epandrium (but not the internal components) and profile of the head. She described the tibiae as yellow whereas the British specimens have at least some dark areas, and she did not mention that females have marks on more than one pair of tergites, despite having examined more females than males. Papp (1975) also provided a key that included *guttiventris* and he illustrated the epandrial process and pregonite. His concept appears to differ from that of Krivosheina, and it is likely that these are different species. In his key, *guttiventris* is grouped with *riparia* and *subnigra* (as *aquatica*) on the basis of yellow antennae and narrow cheeks ('head index' of 5 or more), and so cannot be the same as *guttiventris*. Papp's species resembles *guttiventris* in having a pale ash-coloured face and frons, indistinct pale brown spots on the tergites, and yellow tibiae and tarsi, but differs in having a slender epandrial process ending in a pointed prolongation. The pregonite has three fine terminal setae, similar in shape to that of *guttiventris*. Finally, Dahl's (1964) photograph of the epandrial process of '*brunipes*' appears to be that of *guttiventris*, and he may have arrived at this identification because of the pale face and yellow tibiae (his later (1971) drawing of *brunipes* appears to be the right species).

The only other species from the Palaearctic or Nearctic that appears to resemble *guttiventris* is *mima* Canzoneri and Meneghini, 1979, which has dark front legs and a reduced abdominal pattern; my specimens of *guttiventris* key to *mima* using Krivosheina (1998). However, *guttiventris* is larger than indicated by Canzoneri and Meneghini (1979) (the body length of *mima* is 3.3-3.6mm), and the genitalia drawn by Krivosheina and Canzoneri and Meneghini are dissimilar to those of *guttiventris* in several respects, such as the general shape of the epandrial process, the pronounced and unusual median notch between the epandrial processes in *mima*, and the bulges at the base of these processes (as in *cinerea*) which are absent in *guttiventris*.

Notiphila guttiventris is an addition to the British list. It appears to a genuinely scarce species in Britain. I was alerted to the species from males sent to me by David

Gibbs who collected them from water traps set beside ditches in freshwater grazing marsh. One ditch was mostly covered by *Phragmites australis* but with some cattle trampling on one bank, and the other was near a sea wall and contained a dense growth of submerged plants and had a narrow fringe of emergent vegetation. Yerbury's specimens were also presumably from coastal grazing marsh. My own specimens were from a woodland pond, which has no similarities with the grazing marsh sites (see *umbrosa* for a description of Wake Valley Pond).

2♂ 27.viii.1999 Weston Moor, Somerset (ST 4473), D.J. Gibbs, from water trap; 1♂ 28.vii.1991 Peterstone, Gwent (ST 2579), D.J. Gibb, from water trap; 1♂ 1♀ 26.vi.2000 swept from Wake Valley Pond, Essex (TQ 420987), C.M. Drake, and another female on the same occasion, J.W. Ismay. Four females in UMO standing under the label '*guttiventris*' appear to be correctly identified by Collin. They were collected by J.W. Yerbury from Gravesend, Kent, 23.vii.1903 (presumably grazing marsh); his diary for this date merely states "Went to Gravesend. Very hot, not much." (only the first specimens of a species new to Britain!).

Notiphila maculata Stenhammar, 1844

Attractively marked specimens are usually this species. The less common *venusta* is marked similarly on the thorax and abdomen but differs in its legs being less dark overall and in the subgeneric characters given in couplet 2 of the key. Some individuals of *dorsata* may also have vague thoracic marks. Male genitalia: Fig. 15.

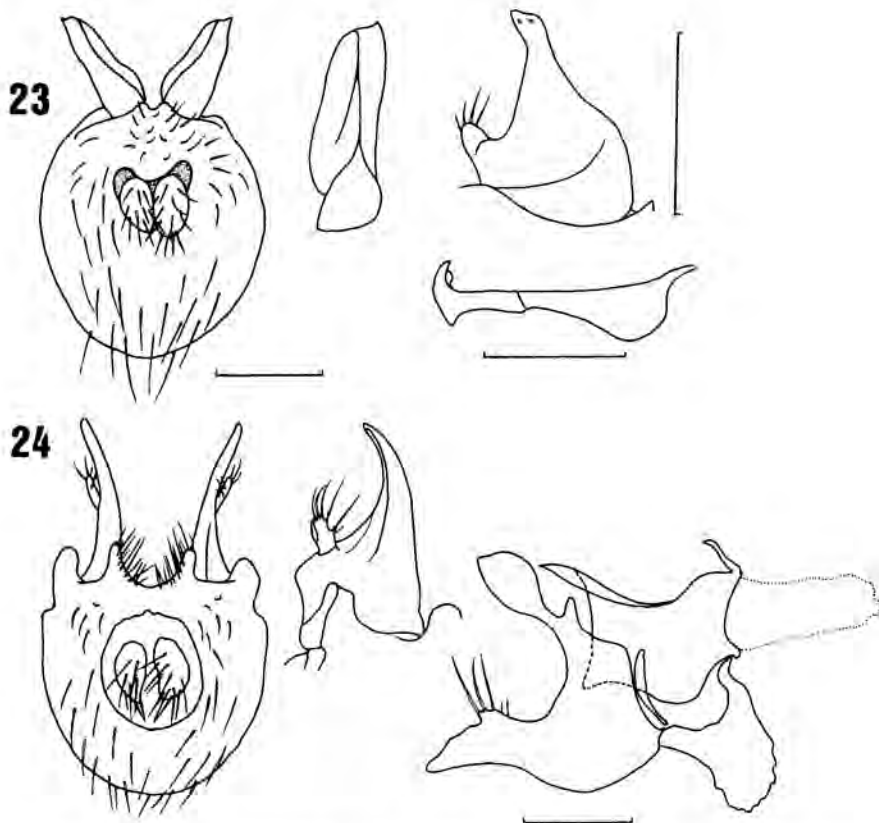
Collin (1911) proposed the name *supposita* for the maculated species with femoral ventral fringes, in place of Stenhammar's (1844) name *maculata*. He stated that 'from Stenhammar's description it is obvious that in his species there should be no ciliation beneath the middle femora ...', and that Stenhammar's species was in fact *venusta* Loew (1856). Collin did not go on to suggest that *venusta* should become the junior synonym of *maculata*, and the matter remained unresolved until Krivosheina (1998, 1999) designated a lectotype for *maculata* from Stenhammar's collection in Naturhistoriska Riksmuseet, Stockholm, and a lectotype for *supposita* from Collin's collection in UMO.

The name *supposita* is now a junior synonym of *maculata*; Chandler (1999) made this correction to the British checklist. Krivosheina's drawings of the male genitalia are identical to specimens that I have examined from Britain, France and Spain.

The species is moderately common and widespread in Britain although I have not found more than a few individuals at any time.

Notiphila nigricornis Stenhammar, 1844

Small, dark individuals are usually this species. Its face is usually drab, although occasionally may be bright yellow or even pale grey. The front legs are nearly entirely black, and the antennae are completely black and without a trace of pale colour at the base. Females closely resemble those of *dorsata* but are markedly smaller and the pattern on the tergites is usually drab owing to the fuzzy edges of the dark patches, which merge with the paler areas (Fig. 32), in comparison with the sharply defined pattern of *dorsata* (Fig. 30). The slightly dumb-bell-shaped aedeagus is characteristic (Fig. 21); the distiphallus has only tiny spines and points and no large basal spines.



Figs 23-24. Male genitalia of *Notiphila* (*Agrolimna*). Entire epandrium, enlargement of the surstylus, pregonite, and aedeagus. Scale line = 0.25mm; epandrial process and pregonite are enlarged to approximately the same scale. 23, *uliginosa*; 24, *venusta*.

I cannot reconcile Krivosheina's description of 'tibiae yellow' with our dark-legged species, but her figure of the genitalia agrees with mine.

This is another moderately common species, found in many parts of Britain. Learner and Potter (1974) recorded high densities emerging from an enriched pond and deduced that it was univoltine, flying from the beginning of June to mid August.

Notiphila nubila Dahl, 1973

The abdominal pattern of *nubila* (Fig. 29) is intermediate between those of *cinerea* and *graeacula*, although the variation includes specimens with the strong contrast of *graeacula* to the murky drabness of *cinerea* (Fig. 28), so these three species cannot be reliably separated externally. The front tibia of most *nubila* is dark in the middle, so resembles many specimens of *graeacula*, rather than *cinerea* with its usually mostly or entirely pale front tibia. The epandrial process can be confused with that of *graeacula* (although not *cinerea*), if a genitalia preparation is not made, but the more triangular pregonite and absence of a forked process at the articulation of the aedeagus and its apodeme distinguish it from both species (Fig. 19).

This species is added to the British list. It was first recognised in Britain by Krivosheina in 1998 from specimens collected by J.E. Collin from Felixstowe and Aldeburgh (Suffolk) and Blakeney Point (Norfolk) (UMO). I have specimens from coastal grazing marshes in Kent (Neatscourt Marshes, Chetney Marshes) and Essex (Fobbing Marsh), two chalk streams in Hampshire (River Itchen at Abbotstone, River Test at the Lower Test Nature Reserve), a freshwater marsh next to a saltmarsh in Glamorganshire (Llanrhidian Marsh) and disused flooded clay pits in Cambridgeshire (Dogsthorpe Star Pit and Orton Pit near Peterborough, Drake in press). There is a male from Frinton, Essex, (C.G. Nurse) in the National Museum of Wales. The sites are freshwater or slightly brackish, and *cinerea* was also present at nearly all of them. It is likely that the species will be found more widely in England. A specimen I collected from Bodeira in southern Portugal is identical to my British material; this adds another country to those listed by Krivosheina (1998).

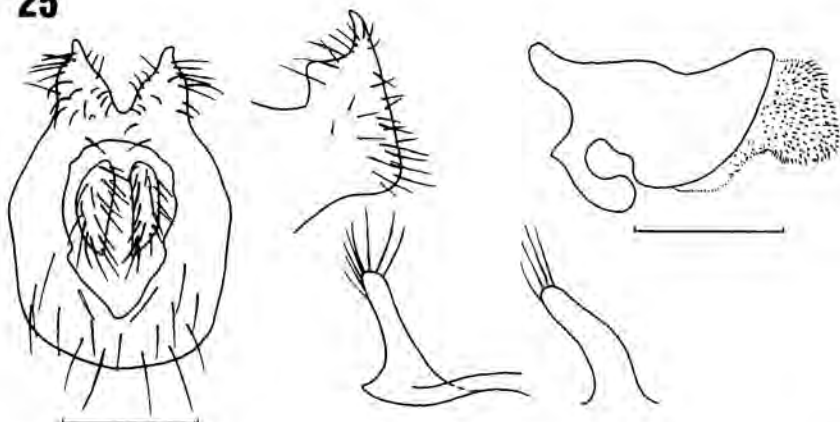
Notiphila riparia Meigen, 1830

This is our largest British *Notiphila* and forms a distinct 'group' sharing the characters mentioned in couplet 3 of the key. The genitalia of *riparia* are particularly distinctive in having a broad square shoulder to the epandrial process and a knobbed extension at the base of the aedeagus (Fig. 25). Although most specimens have yellow tibiae, some have mainly dark front tibiae and pronounced dark areas on the mid and hind tibiae, thus coming close to the condition in *subnigra* and *umbrosa*. The contrast between the pale and dark areas on the tergites is usually strong, although murky specimens look similar to *umbrosa*; as a rule, the median marks are small longitudinal bars that do not extend more than about two thirds the length of the tergites.

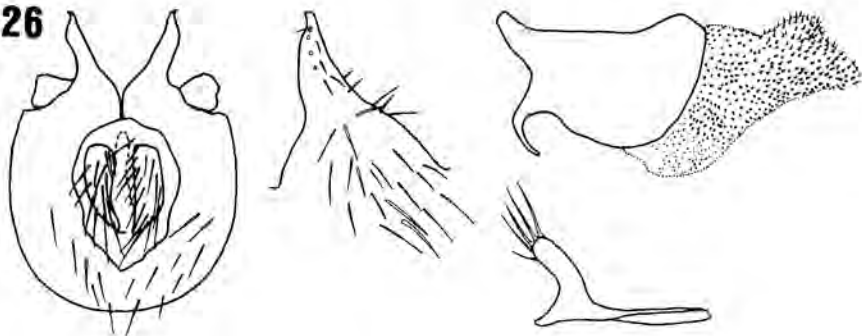
This is one of the commonest *Notiphila* in Britain and may be found, often in large numbers, in nearly all lowland wetlands, including slightly brackish coastal marshes.

Figs 25-27. Male genitalia of *Notiphila*. Entire epandrium, enlargement of the epandrial process, pregonite, and aedeagal apodeme. Scale line = 0.25mm; epandrial process and pregonite are enlarged to approximately the same scale. 25, *riparia*; 26, *subnigra*; 27, *umbrosa*.

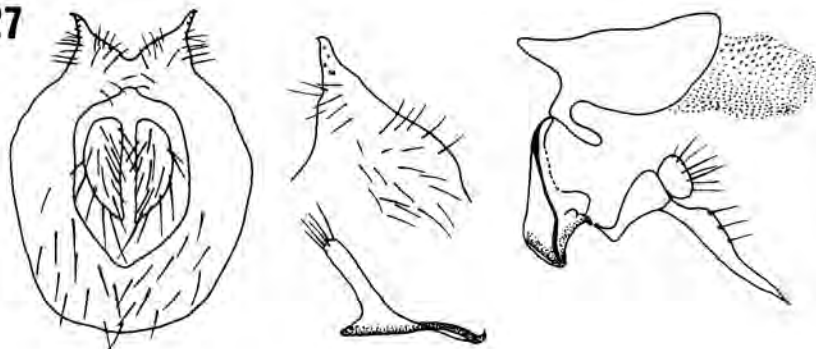
25



26



27



Notiphila stagnicola (Robineau-Desvoidy, 1830)

This species and *brunipes* have silver faces but *stagnicola* is immediately distinguished from *brunipes* by its entirely yellow tibiae and the bright orange basal half of the third antennal segment. The pale and dark areas of the tergites contrast markedly but the second segment almost lacks dark marks (Fig. 31). The underside of the scutellum may be bordered in front by narrow shiny black areas, as in *annulipes*. Krivosheina (1986) stated that *stagnicola* differs from other *Notiphila* in the 'arrangement of the bristles in the middle of frons', but I cannot see any consistent differences. Male genitalia: Fig. 22.

The species appears to be rare in Britain. UMO has specimens identified by M. Krivosheina from Loughton, Essex, 14.vi.1876 (or 1916?), no collector; 'S. T.' (should this be S. L. = Sutton Lodge? (Pont 1995)), 28.vii.1905, J.E. Collin; Wareham, Dorset, no collector, 5.ix.1906; Porthcawl, Glamorgan, 12 and 25.vi.1903, J.W. Yerbury. I have one record only, from Stamford, Lincolnshire (TF 045074) 21.vii.1997, where *stagnicola* was locally frequent in a mixed stand of *Glyceria maxima* and *Sparganium erectum* beside the River Welland, an unremarkable nutrient-enriched lowland river passing through sheep pasture. Other *Notiphila* collected on this occasion were *cinerea*, *nigricornis*, *riparia*, *venusta* and *maculata*. In France, I collected specimens from a stand of *Glyceria maxima* in a small drainage ditch close to arable countryside near St Dizier, Haute-Marne, in a nutrient-enriched drainage ditch in cattle pasture at St Guénolé, Finistère, and in Andalucía, Spain beside a fast montane river at Gaucín, and from a patch of tall *Glyceria* (? *maxima*) by a small limestone stream at Teba. This wide range of habitats does not suggest exacting ecological requirements so its scarcity in Britain may be a consequence of being at its northern limit; Krivosheina (1998) gives its distribution as 'widely distributed in central and southern Europe ...'.

Notiphila subnigra Krivosheina, 1998

This is a large and markedly dark species, superficially more resembling *Dichaeta* than *Notiphila* sensu stricto. The black areas of the abdomen are conspicuously shiny, more so than in *riparia*, and the intervening areas are also rather dark (*umbrosa* is similar, Fig. 36). Male genitalia: Fig. 26. All the specimens that I have seen have dark tibiae; they run to *aquatica* Becker in Krivosheina's key and also fit her description of this species but not that of *subnigra*. According to her key and description, *subnigra* has pale tibiae, yet her figure of the genitalia matches mine, including the long sinuous epandrial process and the curved spike at the base of the aedeagus where it joins the apodeme. My new species *umbrosa* is compared with *subnigra* above.

I erroneously added *aquatica* Becker to the British list (in Chandler 1998) based on the resemblance of the epandrial process of my specimens to the drawings by Dahl (1973) and Papp (1975), and before I had seen Krivosheina's description of *subnigra* published in 1998. I assume that Dahl and Papp illustrated *subnigra* since, although Krivosheina did not refer to their papers, she stated that most specimens of *aquatica* had been misidentified and were *subnigra*, and that *N. aquatica* is rare in the Palearctic.

Should *aquatica* occur in Britain, it would run to the *riparia* group in my key but the combination of mainly dark tibiae and golden face should suggest that it is none of these species. Dahl's (1964) earlier photograph of the epandrial process of '*aquatica*' appears to be *riparia*.

N. subnigra appears to be rare in Britain. Specimens in UMO (all det. M. Krivosheina): 1♂ 21.vi.1952, 2 specimens 26.vi.1952, 1♂ 15.vi.1955 Denny Bog, Hampshire, J.E. Collin; 1 specimen 7.vii.1953 Horning Ferry, Norfolk: 1♂ and 5 other specimens 15.vi.1904 Ranworth, Norfolk, J.E. Collin; 1♀ 21.vi.1928 Upton, Norfolk, J.E. Collin; 1♀ 14.vi.1906 and 1 specimen 30.vii.1907 Crymlyn Bog, Glamorgan, J.W. Yerbury; 2♂ 18.vi.1903 and 1 specimen 23.vi.1906 Porthcawl, Glamorgan, J.W. Yerbury. Other specimens: 1♂ 2♀ 18.vi.2000 Holmsley Bog, New Forest, Hampshire (SZ 248999), I. Perry; 1♂ 1♀ 22.vi.2000 Norley Copse, New Forest, Hampshire (SZ 365977), I. Perry; 5♂ 9.vii.1996 and numerous specimens 15.vii.1999 Greywell Fen, Hampshire (SU 718509), C.M. Drake; 13♂ 3.vii.1979 Sutton Broad, Norfolk, reeds, fen and sedge (TG 3723), A.G. Irwin; 1♂ 20.vi.1979 Upton Broad, Norfolk, decoy pond (TG 3813), A.G. Irwin; 1♀ 15.ix.1977 Catfield Great Fen, Norfolk, open water (TG 3621), A.G. Irwin; 1♂ 1♀ 11.vii.1999 Oxwich National Nature Reserve, Glamorgan, I. Perry; 1♂ 16.vi.1999 Brackagh Bog, Armagh, Northern Ireland, acid mire with pools dominated by *Molinia* and frequent *Eriophorum*, C.M. Drake.

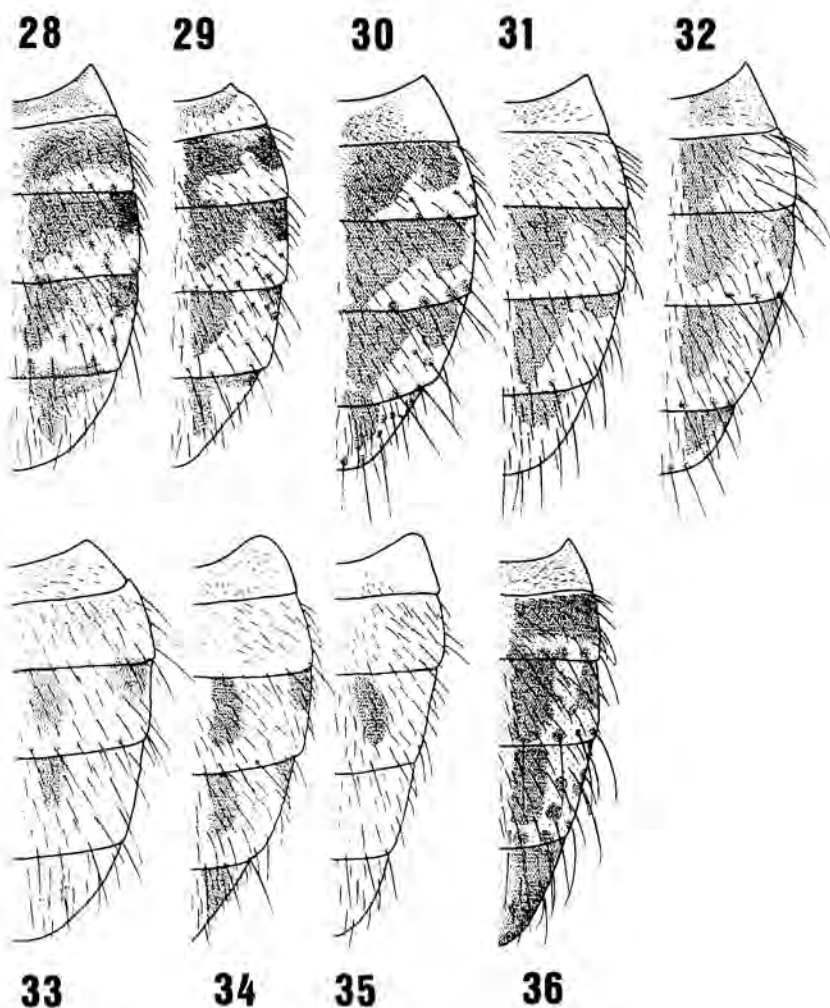
Two females from Lismore Island, Argyll, reeds and at stream with bogbean (*Menyanthes*) (NM 8239), 18.vi.1978, and a single female from Loch Chealamy, Sutherland, bog by pond, 29.vii.1972, P.J. Chandler, appear to be *subnigra*; they are clearly not *riparia*, but could be *umbrosa*. These extend the distribution well beyond southern England, with the implication that '*riparia*' will need to be carefully examined from the whole of Britain.

Where the habitat is known or can be inferred from the locality, it is base-rich or acid mire. Specimens from Greywell Fen were caught along the banks of the River Whitewater, which runs alongside the fen, where this species was the commonest *Notiphila* and more frequent than *N. riparia* with which it was mixed, along with only occasional *maculata*, *cinerea* and *caudata*. The site is a base-rich valley fen with willow and alder carr. The margins of the Whitewater are peaty and saturated, with the water level only just below ground level, and with much *Glyceria maxima* and *Carex vesicaria*. Holmsley Bog is valley mire; the Norfolk sites are rich fen, and Crymlyn Bog and Brackagh Bog are acid mire. All the sites have high conservation value.

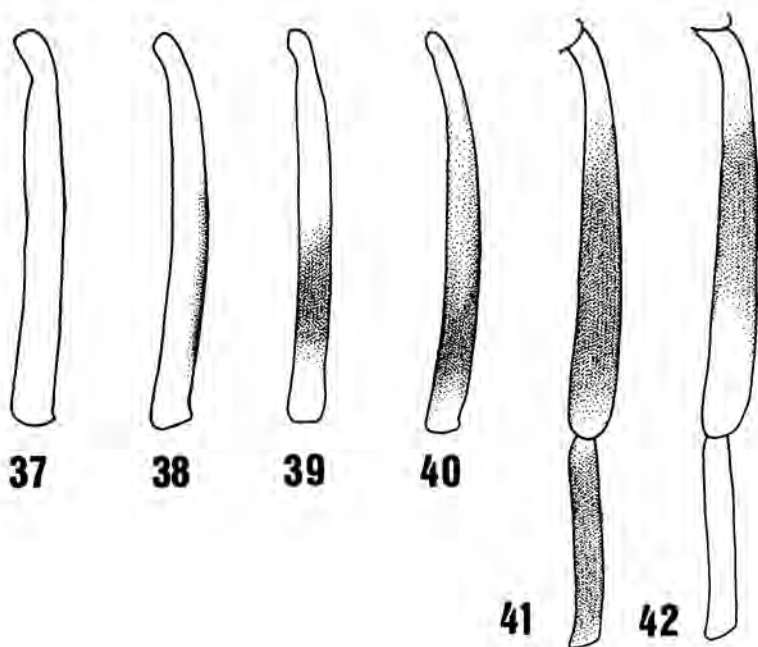
I found a male and female in lake-side swamp at Largo di Piano in northern Italy, 30 August 1997, so Italy and Ireland (above) can also be added to the countries listed for *subnigra* by Krivosheina (1998).

Subgenus *Agrolimna*

The subgenus *Agrolimna* was retained by Mathis and Zatwarnicki (1995) despite Mathis (1979) earlier having relegated it to species-group status within his broader concept of *Notiphila* sensu stricto. Several key characters have been suggested to separate these subgenera (Cogan 1968) and of these the most reliable are the absence of fringes on the mid femur in the male and the form of the male genitalia. In *Agrolimna* the epandrial process articulates with the epandrium (fused in *Notiphila* sensu stricto), the surstylus is developed into a conspicuous clasper, and the pregonite is far larger than the small and simple T-shaped bar in *Notiphila* sensu stricto.



Figs 28-36. Abdominal patterns of *Notiphila* (males unless stated otherwise). 28, *cinerea*; 29, *nubila*; 30, *dorsata* (female); 31, *stagnicola*; 32, *nigricornis* (female); 33, *annulipes*; 34, *guttiventris* (female); 35, *guttiventris* (male); 36, *umbrosa*.



Figs 37-42. *Notiphila* tibia and metatarsus (left side, anterior face). 37, *guttiventris* mid tibia; 38, *guttiventris* hind tibia; 39, *annulipes* mid tibia; 40, *annulipes* hind tibia; 41, *dorsata* front tibia and metatarsus; 42, *graecula* front tibia and metatarsus.

Two previously used characters also work for most specimens of both sexes for the limited British fauna, and these have been incorporated into the key: facial setae extending further than half-way up the face (Cresson 1917) or over the complete vertical length of the face (Cogan 1968), and yellow or brown - not black - basal setae on the hind metatarsal comb (Cogan 1968). Exceptions to the latter character are relatively rare, for example, two of 21 specimens of *uliginosa* in my collection have black setae in this position, but it holds for all examined specimens of *venusta* and *Notiphila* sensu stricto. In contrast, Cresson's (1917) character of four dorsal setae on the mid tibiae in *Agrolimna* and three in *Notiphila* sensu stricto is less reliable and there may occasionally be three in *N. (Agrolimna) venusta* or 3-5 in *uliginosa*, and four in several species of *Notiphila* sensu stricto.

Notiphila (Agrolimna) uliginosa Haliday, 1839

This species is amply distinct externally from other British *Notiphila* in having entirely black legs, antennae and palps. Male genitalia: Fig. 23.

It is an uncommon but widespread species. I have seen specimens from Hampshire, Kent, Greater London, Essex, Suffolk, South Yorkshire, Gwent, Powys, Anglesey, Ayrshire, Perthshire, and Inner and Outer Hebrides. The records suggest that it is more often found in coastal or nutrient-poor situations such as bogs and beside heathland and upland ponds. The flight period is more restricted than that of most *Notiphila*, with records from 2 June to 20 July. Dahl (1959) found it to be widespread in Scandinavia where he recorded a longer flight period than the few British records suggest (26 May to 9 August).

Notiphila (Agrolimna) venusta Loew, 1856

The mesonotum of *N. venusta* is streaked, so superficially resembles *maculata* but can be distinguished as discussed under *maculata*. The almost entirely black mid tibia is unusual among *Notiphila*, most of which have a mainly pale mid tibia. The ground colour of the abdomen is conspicuously light grey rather than the brownish grey of most species, and is exposed broadly at the lateral margins, which are usually darkened to some extent in many other species. It is the only British species with a bare pronotum - all others have sparse short hairs. Male genitalia: Fig. 24.

The species is uncommon but widespread, being recorded from England, Wales and Scotland. The sites where it has been found do not appear to have any obvious habitat features in common.

Notiphila (Dichaeta) caudata Fallén, 1813

Different authors treat *Dichaeta* either as a full genus or subgenus, but the British check list treats it as a subgenus (Chandler 1998). It differs externally from *Notiphila* sensu stricto and the subgenus *Agrolimna* in having 2-3 pairs of robust facial setae (Fig. 3), rather than a row of several fine ones, and (at least in *caudata*) in having a distinct bend half way along vein R_1 (Fig. 6). *N. caudata* is a moderately large fly with a predominantly black, slightly shining body with narrow grey streaks on the mesonotum between the lines of large setae. Males are at once distinguished by their circlet of exceptionally long stout marginal setae on the fourth tergite and the curious upturned conical fifth tergite (Fig. 7). Loew (1860) described *brevicauda*, which has a conspicuously shorter apical cone on the fifth tergite and reduced number of long setae (figured by Krivosheina 1986), but it has been synonymised with *caudata*. I have found this form mixed with normal *caudata* in France (Chambon-sur-Lac, Auvergne), and it may cause puzzlement if found in Britain.

I have rather few records of *caudata* from Britain, whereas it appears to be much more frequent and numerous in France (personal observation). Its occurrence seems to be rather erratic, and the sites where it occurs do not appear to be particularly noteworthy although they tend to be fens or swamps. Allen (1992) recorded it from *Glyceria* (? *maxima*) in a pond in Kent. I have seen specimens from a number of sites from Inverness-shire in Scotland to Kent and Somerset in England. In Scandinavia and the United States it has been found overwintering as an adult (Dahl 1959; Eastin and Foote

1971), which appears to be different from our other species, which fly only from spring to autumn and pass the winter as larvae or puparia.

Acknowledgements

My special thanks go to Tony Irwin for testing the key, supplying material and refereeing the manuscript. I would also like to thank Jon Cole and Ivan Perry for the loan of specimens. David Gibbs for commenting on an early draft and sending the first male specimens of *guttiventris*. John Ismay for his specimens from Epping Forest. Dr Tadeusz Zatwarnicki for commenting on the identity of *guttiventris* and advice on terms. Dr John Deeming for resolving the terminology of the male genitalia, and Andrew Godfrey for drawing my attention to Collin's manuscripts in the Hope Department Library. I thank Jeremy Dagley of the Corporation of London for organising the survey of Epping Forest where *umbrosa* was found as part of the Forest Insect Survey carried out from 1996 to 2000. Dr George McGavin gave access to the collections at the University Museum, Oxford, and Dr Mike Wilson to those at National Museum of Wales, Cardiff.

References

- Allen, A.A. 1992. Some notable Diptera from Oxleas Wood SSSI, Shooters Hill, N.W. Kent. *Entomologist's Record and Journal of Variation* **104**, 297-302.
- Becker, T. 1896. Dipterologische Studien IV. Ephydridae. *Berliner Entomologische Zeitschrift* **41**, 91-276.
- Becker, T. 1926. 56a Ephydridae und 56b Canaceidae. In E. Lindner (Ed.) *Die Fliegen der palaearktischen Region* **6**(1), 1-115. 134 figs.
- Canzoneri, S. and Meneghini, D. 1979. Nuove specie di Ephydridae Italiani (Diptera - Brachycera). *Bollettino del Museo civico di Storia naturale di Venezia* **30**, 199-208.
- Canzoneri, S. and Meneghini, D. 1983. Ephydridae e Canaceidae. *Fauna d'Italia* **20**, 1-337.
- Chandler, P.J. (Ed.) 1998. Checklists of Insects of the British Isles (New Series). Part 1: Diptera (Incorporating a List of Irish Diptera). *Handbooks for the Identification of British Insects* **12** (1), i-xix. 1-234. Royal Entomological Society, London.
- Chandler, P.J. 1999. Corrections and changes to the Diptera Checklist (2). *Dipterists Digest (Second Series)* **6**, 112-113.
- Cogan, B.H. 1968. A revision of the Ethiopian species of the tribe Notiphilini (Diptera: Ephydridae). *Bulletin of the British Museum (Natural History). Entomology* **21**, 281-365. 1 plate.
- Collin, J.E. 1911. Additions and corrections to the British list of Muscidae. Acalyptratae. *Entomologist's monthly Magazine* **47**, 182-187.
- Cresson, E.T. 1917. Studies in the American Ephydridae (Diptera). II. A revision of the species of the genera *Notiphila* and *Dichaeta*. *Transactions of the American Entomological Society* **43**, 27-66.
- Dahl, R.G. 1959. Studies on Scandinavian Ephydridae (Diptera, Brachycera). *Opuscula Entomologica Supplement* **15**, 1-255.
- Dahl, R.G. 1964. Some Ephydridae and Canaceidae (Dipt., Brachycera) from Morocco and the Spanish Sahara. *Notulae Entomologicae* **44**, 101-104.

- Dahl, R.G. 1973. Beiträge zur Kenntnis der Fauna Afganistans. Ephydridae. Diptera. *Acta Musei Moraviae* **56-57**, 347-360.
- de Meijere, J.C.H. 1940. *Hydromyza livens* Fall. en *Notiphila brunnipes* Rob. Desv., twee dipteres wier levenswijze verband houdt met *Nymphaea alba* L. *Entomologische Berichten (Amsterdam)* **10**, 220-222.
- de Meijere, J.C.H. 1941. Over de levenswijze van *Notiphila brunnipes* Rob. Des. *Entomologische Berichten (Amsterdam)* **10**, 281-287.
- Deonier, D.L., Mathis, W.N. and Regensburg, J.T. 1978. Natural history and life-cycle stages of *Notiphila carinata* (Diptera: Ephydridae). *Proceedings of the Biological Society of Washington* **91**, 798-814.
- Drake, C.M. (in press). Some wetland Diptera of a disused brick-pit. *British Journal of Entomology and Natural History*.
- Eastin, W.C. and Foote, B.A. 1971. Biology and immature stages of *Dichaeta caudata* (Diptera: Ephydridae). *Annals of the Entomological Society of America* **64**, 271-279.
- Hanson, M.W. 1992. Epping Forest through the eye of the naturalist. *Essex Naturalist* No. 11.
- Hennig, W. 1943. Übersicht über die bisher bekannten Metamorphosestadien der Ephyriden, mit Neubeschreibungen nach dem material der Deutschen Limnologischen Sundaexpedition (Diptera: Ephydridae). *Arbeiten über morphologische und taxonomische Entomologie aus Berlin-Dahlem* **10**, 105-138.
- Houlihan, D.F. 1969. The structure and behaviour of *Notiphila riparia* and *Erioptera squalida*, two root-piercing insects. *Journal of Zoology, London* **159**, 249-267.
- Huryn, A.D. 1984. New *Notiphila* (Diptera: Ephydridae) from the Okefenokee Swamp, Georgia. *Proceedings of the Entomological Society of Washington* **86**, 942-945.
- Kloet, G.S. and Hincks, W.D. 1976. A check list of British insects. Second edition. Part 5: Diptera and Siphonaptera. *Handbooks for the Identification of British Insects* **11**(5).
- Krivosheina, M.G. 1986. [Revision of Palaearctic species of *Dichaeta* (Diptera, Ephydridae).] *Zoologicheskij Zhurnal* **65**, 809-813. [in Russian]
- Krivosheina, M.G. 1993. [Larvae of the ephyrid flies of the genera *Notiphila* Fl. and *Dichaeta* Mg. (Diptera, Ephydridae) and their significance for understanding of the position of these genera in the system.] *Entomologicheskoe Obozrenie* **72**, 222-231. [in Russian]
- Krivosheina, M.G. 1998. A revision of the shore-fly genus *Notiphila* Fallén of Palaearctic (Diptera, Ephydridae). *International Journal of Dipterological Research* **9**, 31-63.
- Krivosheina, M.G. 1999. Some taxonomic notes on Ephydridae (Diptera). *International Journal of Dipterological Research* **10**, 45-49.
- Larson, L. and Foote, B.A. 1997. Biology of four species of *Notiphila* Fallén (Diptera, Ephydridae) associated with the yellow water lily, *Nuphar luteum* (Nymphaeaceae). *Proceedings of the Entomological Society of Washington* **99**, 541-559.
- Learner, M.A. and Potter, D.W. 1974. The seasonal periodicity of emergence of insects

- from two ponds in Hertfordshire, England, with special reference to the Chironomidae (Diptera: Nematocera). *Hydrobiologia* **44**, 495-510.
- Loew, H. 1860. Neue Beiträge zur Kenntnis der Dipteren. In *Die bisher in Schlesien beobachteten Arten derselben*. 7. Berlin, 1-46.
- Mathis, W.M. 1979. Studies on Notiphilinae (Diptera: Ephydriidae). I. Revision of the Nearctic species of *Notiphila* Fallén excluding the *caudata* group. *Smithsonian Contributions to Zoology* No. 287, 1-111.
- Mathis, W.M. and Zatwarnicki, T. 1995. World catalogue of shore flies (Diptera: Ephydriidae). *Memoirs on Entomology, International* **4**, 1-423.
- Mathis, W.M., Zatwarnicki, T. and Krivosheina, M.G. 1993. Studies on Gymnomyzinae (Diptera: Ephydriidae). V: A revision of the shore-fly genus *Mosillus* Latreille. *Smithsonian Contributions to Zoology* No. 548, 1-38.
- Müller, G.W. 1922. Insektenlarven an Wurseln von Wasserpflanzen. *Naturwissenschaftlicher Verein von Neu-Vorpommern und Rügen Greifswald. Mitteilungen* **48/49**, 30-47.
- Nartshuk, E.P. 1970. [Family Ephydriidae - shore flies.] In Stackelberg, A. A. and Nartshuk, E. P. (Eds). *Keys to the insects of the European USSR. 5. (Flies, Fleas)*. Part 2 (363-388). Akademiia Nauk SSSR ('Nauka'). Leningrad. [in Russian]
- Oldroyd, H. 1970. Diptera. I. Introduction and key to families. *Handbooks for the Identification of British Insects* **11**(1).
- Papp, L. 1975. [Family: Ephydriidae - water flies.] In *Fauna Hungariae*. Volume 15. Diptera 2. Part 6. 1-128. Akadémiai Kiadó, Budapest. [in Hungarian]
- Pont, A.C. 1995. *The type-material of Diptera (Insecta) described by G. H. Verrall and J. E. Collin*. Clarendon Press. Oxford.
- Rousseau, D. 1919. Notes biologiques. I - *Notiphila stagnicola* Sten. (Diptère). *Bulletin de la Société Entomologique de Belgique* **1**, 101.
- Séguy, E. 1934. Diptères (Brachycères) (Muscidae Acalypterae et Scatophagidae). *Faune de France* **28**, 1-832. Le Chevalier. Paris.
- Smith, K.G.V. 1989. An introduction to the immature stages of British flies. *Handbooks for the Identification of British Insects* **10**(14).
- Stenhammar, C. 1844. Försök till Gruppering och Revision af de Svenska Ephydrinae. *Kongliga Vetenskaps-Akademiens Handlingar*. series 3. **1843**, 75-272.
- Ter Braak, C.J.F. 1987-1992. *CANOCO - a FORTRAN program for canonical community ordination*. Microcomputer Power, Ithaca, New York, USA.
- Torelli, B. 1922. Fauna degli Astroni. La *Notiphila chamaeleon* Becker e la sua larva rinvenute nel laghetto craterico degli Astroni. *Annuario del Museo Zoologica della R. Università di Napoli. Supplemento* **2**, 1-6. 1 plate.
- Van der Velde, G. and Brock, T.C.M. 1980. The life history and habits of *Notiphila brunnipes* Robineau-Desvoidy (Diptera, Ephydriidae). an autecological study on a fly associated with nymphaeid vegetations. *Tijdschrift voor Entomologie* **123**, 105 - 127.
- Varley, G.C. 1937. Aquatic insect larvae which obtain oxygen from the roots of plants. *Proceedings of the Royal Entomological Society of London (A)* **12**, 55-60.
- Zatwarnicki, T. 1992. A new classification of Ephydriidae based on phylogenetic reconstruction (Diptera: Cyclorrhapha). *Genus* **3**, 65-119.

Corrections and changes to the Diptera Checklist (6) - Editor

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

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

The notes below refer to the loss of no names due to synonymy, so the addition of 8 species results in a new total of 6723 species.

Corrections

- p. 59 *Paralauterborniella* Lenz, 1941 (not 1921)
- p. 66 *Monodiamesa* Kieffer, 1922 (not 1921)
Conchapelopis Fitkau, 1957 (not 1987)
- p. 74 *Oxycera nigricornis* Olivier, 1811 (not 1812)
- p. 74/75 *O. analis* and *O. terminata* authorship should be Wiedemann in Meigen
- p. 75 *Beris nigra* (under *Nomina dubia*) is a synonym of *B. fuscipes*.
- p. 115 Under *Tomosvaryella geniculata* Note 4 should be Note 5.
Under Corrections and Changes (5), the following correction is required:
- p. 68 *Rheotanytarsus pellucidus* should read *Rheotanytarsus* in the title cited.

Changes

Cecidomyiidae. *Rabdophaga repenticornua* Bland, 2001 was added by K.P. BLAND (2001, *Rabdophaga repenticornua* sp. nov. (Diptera: Cecidomyiidae) galling *Salix repens* in Scotland, *Entomologist's Gazette* 52, 195-198).

Rhagionidae. The genera *Spania* and *Ptiolina* (together with some other exotic genera) were referred to a new family **Spaniidae** by B.R. STUCKENBERG (2001, Pruning the tree: a critical review of classifications of the Homeodactyla (Diptera, Brachycera), with new perspectives and an alternative classification, *Studia dipterologica* 8, 3-41).

Stratiomyidae. N.E. WOODLEY (2001, *A World Catalog of the Stratiomyidae (Insecta: Diptera)*, 473 pp. North American Dipterists' Society, Washington. Backhuys Publishers, Leiden) has suggested different suprageneric concepts to those adopted in the checklist. *Nemotelus* is placed in subfamily **Nemotelinae**, while *Oxycera* and *Vanoyia* are placed in tribe **Oxycerini** within the Stratiomyinae, the remaining genera of this subfamily being placed in **Stratiomyini**; a phylogenetic discussion justifies these changes.

The British checklist has not been taken into account in this otherwise very thorough work, which uses *meromelaena* for *Neopachygaster meromelas* and lists *Zabrachia minutissima* rather than *tenella* as British. Occurrence in Ireland is omitted for

several species and *Sargus cuprarius* is listed from Ireland in error. The corrections cited above to pp. 74-75 of the checklist stem from this work.

Dolichopodidae. *Medetera freyi* Thuneberg, 1955 is added in the present issue. *M. setiventris* and *M. fasciata*, introduced in the checklist, are formally recorded as British in the present issue. *Medetera striata* is indicated to require confirmation as British.

Syrphidae. OPINION 1982 (*Musca arcuata* Linnaeus, 1758 and *M. festiva* Linnaeus, 1758 [currently *Chrysotoxum arcuatum* and *C. festivum*) and *M. citrofasciata* De Geer, 1776 (currently *Xanthogramma citrofasciatum*) (Insecta, Diptera): specific names conserved by the designation of neotypes for *M. arcuata* and *M. festiva*. *Bulletin of Zoological Nomenclature* **58**(3), 241-242) has confirmed usage of *Chrysotoxum arcuatum*, *C. festivum* and *Xanthogramma citrofasciatum* as in the checklist.

Lonchacidae. *Lonchaea bukowski* Czerny, 1934 is added in the present issue.

Piophilidae. *Parapiophila flavipes* (Zetterstedt, 1847 – *Piophila*) is added in the present issue.

Tethinidae. *Pelomyia occidentalis*, a probably introduced species added in the checklist, was formally added to the British list by A.G. IRWIN, J.H. COLE and W. ELY (2001). *Pelomyia occidentalis* Williston (Dip.: Tethinidae) new to Britain and Germany. *Entomologist's Record and Journal of Variation* **113**, 153-156).

Ephydriidae. The following species are added in the present issue:

Notiphila guttiventris Stenhammar, 1844

Notiphila nubila Dahl, 1973

Notiphila umbrosa Drake, 2001

The genus **CNESTRUM** Becker, 1896 and its species *lepidopes* Becker, 1896 are also added in the present issue. It belongs to subfamily DISCOMYZINAE, tribe Psilopini.

Scathophagidae. The authorship of the generic names *Parallelomma*, *Conisternum* and *Nannu* was emended from "Becker in Strobl" to Strobl alone by V. MICHELSEN (2001). Nomenclatorial notes on Scathophagidae (Diptera): the status of genus- and species-group names first proposed in "Die Dipteren von Steiermark. II. Theil." by P. Gabriel Strobl, 1894. *Studia dipterologica* **8**, 323-326). The validity of these names as senior synonyms of names proposed by Becker in the same year is also affirmed.

Anthomyiidae. Details of the record, on which *Eurichota pilimana* was added in the checklist, are given in the present issue.

Muscidae. *Coenosia karli* Pont, 2001 is proposed as a new name for *C. lacustris* (Karl, 1930 – *Dexiopsis*), a secondary junior homonym of *Coenosia lacustris* Schnabl in Becker & Schnabl, 1926 by A.C. PONT (2001. Four replacement names in the tribe Coenosiini (Diptera, Muscidae, Coenosiinae). *Studia dipterologica* **8**, 266).

Records of two species of intertidal Chironomidae (Diptera)

from Scotland - Few Diptera are adapted to the intertidal zone of marine littoral biotopes. Chironomidae comprise mainly species whose larvae live in freshwater situations, though a few genera have become adapted to the markedly different saline conditions present at the edge of the sea. On 4 August 2001, towards the end of a showery afternoon (17.45-18.30 BST) I observed numerous Chironomidae skating over the water of rock pools and seaweeds in a small bay on the eastern side of Tarbet Ness (V.C. 106) (NH 945871). The flies were found at low tide in the upper intertidal zone, where *Fucus* predominated, with 28 males (captured by pooting and sweeping) later identified using a combination of two standard key works (Pinder, L.C.V. 1978. A key to the adult males of British Chironomidae. *Freshwater Biological Association Scientific Publication No. 37* and Coe, R.L. 1950. Family Chironomidae, pp 121-206. In Coe, R.L., Freeman, P. and Mattingley, P.F. (Eds) 1950. *Handbooks for the Identification of British Insects* 9(2), 1-216) as *Clunio marinus* Haliday. No females were found; in this species they are flightless, virtually legless and vermiform (Cranston, P.S., Oliver, D.R. and Sæther, O.A. 1989. The adult males of Orthocladiinae (Diptera: Chironomidae) of the Holarctic Region - Keys and diagnoses, pp 165-352. In Wiederholm, T. (Ed.) Chironomidae of the Holarctic Region. Keys and diagnoses. Part 3. Adult males. *Entomologica Scandinavica. Supplement* 34, 1-532) and hence are hard to detect without special searching. According to the Scottish Insects Records Index (SIRI), housed at the National Museums of Scotland, Edinburgh, *C. marinus* has been recorded previously from three Scottish vice-counties.

On 5 August 2001, on the rocky shore at Nairn (V.C. 96) (NH 868569) I found some larger midges skating over upper shore intertidal pools with *Fucus* and other algae at about 15.30 BST. A sample obtained by pooting was subsequently determined, using the two key works cited above, as *Thalassomyia frauenfeldi* Schiner. A total of 22 males and 2 females were taken; in this species the females are fully winged and are of similar size and appearance to the males. Previous Scottish records in SIRI are from four vice-counties.

There has been much research into the ecology and behaviour of *C. marinus*, which has revealed remarkable adaptations for coping with the twice daily tidal inundation of its breeding sites. The adults emerge at low tide around the time of full and new moons, when the tidal range is at its greatest extent (Saigusa, M. and Akiyama, T. 1995. The tidal rhythm of emergence, and the seasonal variation of this synchrony, in an intertidal midge. *Biological Bulletin (Woods Hole)* 188, 166-178). This allows the greatest time for adult eclosion, mating (with males copulating with teneral or even pharate females in their urgent haste to reproduce; behaviour which has been termed "pupal rape", see Cranston *et al. op. cit.*) and egg laying to be completed before the larval habitat is submerged once more. There was a full moon on 4 August 2001 and so the observations of these two species nicely coincide with a period of maximal tidal range, consistent with previous studies of *C. marinus*. I would like to thank Andy Whittington for consulting SIRI for previous Scottish records of these species. - I.F.G. MCLEAN, 109 Miller Way, Brampton, Huntingdon, Cambridgeshire PE28 4TZ

***Cnestrum lepidopes* Becker 1896 (Diptera, Ephydriidae) new to Britain**

IVAN PERRY AND C. MARTIN DRAKE*

27 Mill Road, Lode, Cambridgeshire CB5 9EN

* Orchid House, Burriddle, Axminster, Devon EX13 7DF

Summary

Cnestrum lepidopes Becker 1896 (Ephydriidae) is recorded as a genus and species new to Britain from Hampshire.

A distinctive male ephydrid was collected by IP at the Lower Test Nature Reserve, Hampshire (grid reference SU 361140) on 24 July 1999. It was found at the western edge of the reserve near to Totton where several seepages give rise to a marshy area dominated by *Glyceria maxima*. The lower edge of the marsh is bounded by a tidal creek, partly shaded by *Salix fragilis* and fringed with *Phragmites australis* and *Carex*. The specimen was passed to MD who identified it as *Cnestrum lepidopes* Becker 1896, a species new to Britain.

Cnestrum is placed in the subfamily Discomyzinae and tribe Psilopini (Mathis and Zatwarnicki 1995). The genus can be distinguished using Séguy (1934) and differs from other British genera by the following combination of characters: plumose arista, only three long, strongly sculpted and arched tergites and, in the male, club-shaped setae on the mid tarsi. Becker (1896) described both sexes, and females of *Cnestrum* can be distinguished using this diagnosis. It superficially resembles *Axysta* in being almost entirely shining black and having strongly sculpted tergites, but that species has five clearly visible subequal tergites. *Trimerina* is another similar black species with only three long tergites but these are flattened and finely pitted; it also has pale legs.

Some of the more obvious characters are given here, based on the British specimen. It has a glossy mesonotum with numerous short fine hairs, which are not arranged in regular rows, one pair of large prescutellar setae and only one notopleural seta; the humeri are not differentiated and there is no humeral seta. The abdomen is distinctive since tergites 2-4 are long and the first and fifth much reduced; tergite 3 is broad, parallel-sided and almost twice as long as the second or fourth. The tergites are strongly domed and curved smoothly round the sides to an abrupt lower edge. Both the tergites and sternites are entirely covered in coarse warts at the base of every hair, giving the surface a rippled appearance. The legs are shining black except for trochanters, tip and base of the tibiae, first tarsal segment and much of the remaining segments of the hind tarsi, which are yellow.

The chaetotaxy is unremarkable except for that on the mid tarsus of the male, which has a single long flattened club-shaped seta on each of the first to fourth segments (Fig. 1), from which the specific name, meaning scale-foot, is derived. The specimen examined has the body length 2.7mm and the wing length 2.6mm.

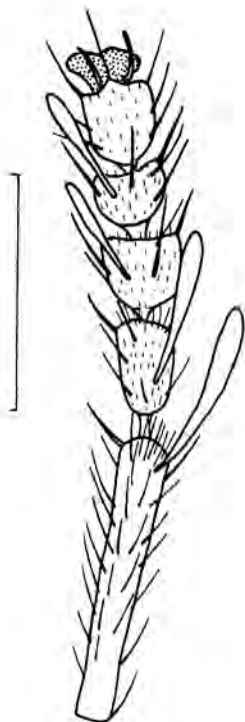


Fig.1. Mid left tarsus of male *Cnestrum lepidopes* Becker. Scale line = 0.25mm.

The genus is monospecific and has been found in Russia (Far East), Germany, Poland, Slovakia, Czech Republic and Romania (Mathis and Zatwarnicki 1995; Hollmann-Schirmacher 1998). Although Séguy included it in his generic key, it has not been recorded in France.

The only published information on the habitat is given by Krivosheina (1988), who described and illustrated the pupa and larval mouthparts from a pupa collected from the surface of a narrow roadside ditch containing very warm turbid water enriched with the excrement of ducks, geese and cattle. This ditch evidently dried up later, and it may be deduced from Krivosheina's account that *Cnestrum* emerged at about the time that the ditch dried up (an adult emerged from the pupa in mid July). This Russian site contrasts with the Hampshire site, which has good water quality, although the Hampshire site may also have many temporary pools.

Acknowledgements

IP would like to thank the Hampshire Wildlife Trust for permission to collect at the Lower Test Reserve. David Witherington kindly translated part of Krivosheina's paper.

References

- Becker, T. 1896. Dipterologische Studien IV. Ephydridae. *Berliner Entomologische Zeitschrift* **41**, 91-276.
- Hollmann-Schirmacher, V. 1998. Zur Verbreitung der Ephydriden (Diptera) im westlichen Europa. *Entomologische Nachrichten und Berichte* **42**, 15-23.
- Krivosheina, M.G. 1988. Morfologija preimaginalnych stadij *Brachydeutera* ibara *Ninomyia* i *Cnestrum lepidopes* Becker (Diptera, Ephydridae). *Bulletin of the Moscow Society of Surveyors of Nature, Biological Section* **93**, 49-54 [in Russian].
- Mathis, W. M. and Zatwarnicki, T. 1995. World catalogue of shore flies (Diptera: Ephydridae). *Memoirs on Entomology, International* **4**, 1-423.
- Séguy, E. 1934. Diptères (Brachycères) (Muscidae Acalypterae et Scatophagidae). *Faune de France* **28**.

***Phasia barbifrons* (Girschner, 1887) (Diptera, Tachinidae) at a second Surrey site** - *Phasia barbifrons* (Girschner) was newly added to the British list by L. Clemons (2000. *Dipterists Digest (Second Series)* **8**, 3-5) from Kent and one Surrey record at Headley Warren, ix.2000. It was first recorded in Kent in 1993 and is probably a recent arrival in Britain; Clemons (*op. cit.*) reported that it was first found in 1972 in the Netherlands, where it is now widespread. On 1 September 2001 I swept two males of *P. barbifrons* along different stretches of a ditch partly shaded by alders (*Alnus glutinosa*) at Thundry Meadows, Surrey, close to the River Wey. These specimens were recorded during a survey of the Diptera carried out at the request of Jonty Denton, who is surveying this site on behalf of and funded by the Surrey Wildlife Trust - **PETER CHANDLER**, 43 Eastfield Road, Burnham, Slough, Berks SL1 7EL.

***Melinda gentilis* Robineau-Desvoidy new to Scotland with notes on *Melinda viridicyanea* (Robineau-Desvoidy) (Diptera, Calliphoridae) in Scotland** - The first record of a *Melinda* species in Scotland was of *M. viridicyanea* (Robineau-Desvoidy) in F. Walker (1853. *Insecta Britannica Diptera* **2**, 1-292. Lovall Reeve, London), under the name *Musca caerulea* Meigen, with *Musca cognata* Meigen given as a synonym. The species was noted as 'common' and occurring in England, Scotland and Ireland. F. I. van Emden (1954. *Handbooks for the Identification of British Insects* **10** (4a), 1-133) gave no Scottish records for either species of *Melinda*, though *M. viridicyanea* was noted as generally distributed in England and

Wales, while *Melinda gentilis* Robineau-Desvoidy was noted as less widespread occurring within a range encompassed by Kent to Cornwall to Salop to Nottinghamshire to Norfolk. There are only two more recent Scottish records of *Melinda* species, both of *M. viridicyanea* (under the name *Bellardia cognata* (Meigen)), respectively from South Uist in the Outer Hebrides by A. R. Waterston (1981, *Proceedings of the Royal Society of Edinburgh* **79B**, 215-321) and from Rum by Peter Skidmore (Wormell, P. 1982, *Biological Journal of the Linnean Society* **18**(4), 291-401). According to the Scottish Insects Records Index (SIRI) there are no Scottish records of *M. gentilis*.

Records from my study are as follows. One ♀ *M. gentilis* was found in material caught in a Malaise trap operated by Keith Bland from 17-22.vi.1998 in the wooded limestone gorge of Allt Feith Lair in the Forest of Atholl (NN 997794, alt. 440m). *M. viridicyanea* was captured in a number of ash-elm woods with herb-rich ground floras in the Clyde Valley and in the Lothians. Details of the captures are as follows: Crichton Glen (NT 382608). 1♂ taken by sweeping the ground vegetation on 11.vi.1993 and 1♂ taken in a water-bowl trap in operation 1-22.v.1999; Upper Nethan Valley Woods (NS 8044). 4♀ collected by hand from the ground vegetation on 7.vii.1996; Garrion Gill (NS 8052). 1♂ taken on hogweed (*Heracleum sphondylium*) flowers on 2.viii.1996; Jock's Gill Wood (NS 8250). 1♀ collected from the ground vegetation on 15.ix.1996. Peter Chandler informs me that he collected 1♂ of *M. viridicyanea* at the Pass of Killiecrankie, Perthshire on 12.vi.1982.

Identifications of all specimens in the collections of the National Museums of Scotland (NMS) were checked using the keys and descriptions provided by K. Rognes (1991, *Blowflies (Diptera, Calliphoridae) of Fennoscandia and Denmark*, 1-272, E.J. Brill and Scandinavian Science Press Ltd., Leiden and Copenhagen). Four specimens of *M. viridicyanea* from the Lothians, three from Edinburgh and the other from Aberlady are present. Details are as follows: 1♀ Fairmilehead (NT 2568). 1.vi.1918; 1♂ Blackford Hill (NT 2570). 21.iv.1894. Percy H. Grimshaw; 1♂ Edinburgh (NT 27). (date indecipherable). Waterston: 1♀ Aberlady (NT 4640). 6.viii.1904. There are also 2♀ and 1♂ *M. viridicyanea* labelled 'Scotland'. A ♀ from South Uist, vi.1910. Percy H. Grimshaw, labelled "*Onesia caerulea*" and sorted under *Bellardia cognata* in the NMS collection was, however, found to be *M. gentilis* and is probably the source of the record by Waterston (1981) of *M. viridicyanea* which is therefore likely to be based on a misidentification.

D. Keilin (1919, *Parasitology* **11**, 430-455) found that *M. viridicyanea* was a parasite of the snail *Cerutuella virgata* (da Costa) and the eggs were laid in the pulmonary cavity. The majority of the records of *Melinda* species reported here are from base-rich habitats where snails are likely to be abundant.

Summarising all records, *M. gentilis* is recorded as Scottish for the first time from the open landscape of South Uist in the Outer Hebrides and from a contrasting wooded gorge in a remote part of the eastern Highlands. *M. viridicyanea* has been recorded from Rum and Perthshire and was found widely in woods in the Clyde Valley and Lothians, in various localities in Edinburgh and along the Lothian coast at Aberlady, but a published record from South Uist may refer to *M. gentilis*.

I am grateful to Andy Whittington for access to the collections, the library and SIRI at the NMS and to Keith Bland for the Malaise trap catch from the Forest of Atholl -
DAVID HORSFIELD, 131 Comiston Road, Edinburgh EH10 6AQ

***Lonchaea bukowskii* Czerny (Diptera, Lonchaeidae) new to Britain**

IAIN MACGOWAN

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

Summary

Lonchaea bukowskii Czerny is recorded from the British Isles for the first time and its separation from *Lonchaea ragnari* Hackman is discussed.

Rearing and distribution records for *Lonchaea ragnari* Hackman, 1956 listed in MacGowan and Rotheray (2000) show that it is typically a species of old birch (*Betula*) woods in the Scottish Highlands, where the larvae have been found within the decaying sapwood of fallen birch trees. Since *L. ragnari* was originally identified as a species new to Britain further *Lonchaea* specimens from southern England have been examined and it is now clear that there is a second species, similar to *L. ragnari*, present within the British Isles. By reference to Czerny (1934) and material in the Natural History Museum, London this species has been determined as *L. bukowskii* Czerny, 1934.

The *L. ragnari* group is distinguished within the genus *Lonchaea* by the following characteristics: bare eyes, sub-vibrissal setae in a single row anteriorly, only hind metatarsus obscurely yellow, yellow squamal fringes and more than one stigmal bristle. In addition, both *L. ragnari* and *L. bukowskii* tend to have a number of small spinules on the costa of the wing at or just beyond the stigmal cell, a character amongst the British *Lonchaea* only shared with *L. hackmani* Kovalev, 1981 and *L. corusca* Czerny, 1934. In identification of specimens of this group confusion can easily arise as the rather obscure yellow/brown hind metatarsi can be overlooked resulting in these species being keyed out as belonging to the group having entirely black tarsi.

L. bukowskii is distinguished from *L. ragnari* by its lack of hairs on the orbital plates above the orbital bristle and in the notopleural depression. In addition whereas *L. ragnari* usually has several stigmal bristles, including a few which are hair like, the British specimens examined of *L. bukowskii* have two or three stigmal bristles all equally strong. The squamal fringe in *L. bukowskii* comprises longer and more golden yellow hairs than in *L. ragnari* whose squamal fringe is relatively pale. Hackman (1956) illustrated the male genitalia and female ovipositor of *L. ragnari*. *L. bukowskii* was described by Czerny (1934) from a female specimen and females seem to predominate in the collected material. Czerny does, however, note that W. Bukowski caught one male of this species on 26 August in the Leningrad (St. Petersburg) area of Russia but there appears to be no illustration of the male genitalia available in the literature.

The specimen in the Natural History Museum in London is also a female taken by R.L. Coe in Plitvice, Croatia between 4 and 10 July 1955. Kovalev and Morge (1984) only listed Yugoslavia (presumably based on this Croatian specimen which was identified by Morge) and four areas of the then Soviet Union, among them the Ukraine (including the Crimea) as areas in which *L. bukowskii* has been recorded. On the basis of these records it seemed that *L. bukowskii* was very much an eastern European species but

the records of three specimens from southern England extend the known range considerably and it is possible that it will occur in other western European countries.

L. bukowskii is at present only known in Britain from three female specimens.

England: Buckinghamshire, Burnham Beeches, Malaise trap in wood pasture. 10–23.v.1995. 2 females. J.W. Ismay; Somerset, Folly Farm (ST 6060). 3.vii.2000. 1 female. D.J. Gibbs.

Acknowledgements

Thanks are due to David Gibbs for the Folly Farm specimen, John Ismay for access to the Burnham Beeches material and Nigel Wyatt for allowing me access to the Natural History Museum specimen.

References

- Czerny, L. 1934. Lonchaeidae. In Lindner, E. (Ed.) *Die Fliegen der Palaearktischen Region* 5 Family 43. 1–40. Stuttgart.
- Hackman, W. 1956. The Lonchaeidae (Dipt.) of Eastern Fennoscandia. *Notulae Entomologicae* 36, 89–115.
- Kovalev, V.G. and Morge, G. 1984. Family Lonchaeidae, pp 247–259. In Soós, Á. and Papp, L. (Eds.), *Catalogue of Palaearctic Diptera. 9. Micropezidae - Agromyzidae*. Elsevier.
- MacGowan I. and Rotheray G.E. 2000. New species, additions and possible deletions to the British *Lonchaea* Fallén (Diptera, Lonchaeidae). *Dipterists Digest (Second Series)* 7, 37–49.

The capture of *Eutrichota pilimana* (Ringdahl) (Diptera, Anthomyiidae), a species recently added to the British list -

Eutrichota pilimana (Ringdahl) was introduced as new to the British list by D.M. Ackland (Chandler, P.J. 1998. *Handbooks for the Identification of British Insects* 12(1), i–xix, 1–234). The addition of this species to the British list was based on one of my specimens of *E. pilimana* confirmed by Michael Ackland. I caught two males of this species in native oak woodland by the shores of Loch Ness on 25 May 1983. The specimens were taken from tree foliage. The exact locality was not recorded but was between a lay-by off the A82 road a few miles south of Inverness and the shore of the loch towards the top end of the loch (grid ref. NH53).

The species was identified by examination of the male genitalia and comparison with genitalia drawings in W. Hennig (1966–1976. *Anthomyiidae*, 63a. In E. Lindner (Ed.) *Die Fliegen der palaearktischen Region* 7, i–lxxviii + 1–974. E. Schweizerbart, Stuttgart). I am grateful to Michael Ackland for confirming the identity of one of the males - **DAVID HORSFIELD**, 131 Comiston Road, Edinburgh EH10 6AQ

A review of the Dipterists Forum summer field meeting in Dorset, 1998

M.A. HOWE, M.J. PARKER* and E.A. HOWE

Countryside Council for Wales, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ

* 9 East Wyld Road, Weymouth, Dorset, DT4 0RP

Summary

The Dipterists Forum summer field meeting in Dorset from 27 June to 4 July 1998 generated data for 1212 species of fly from 107 sites in three vice-counties. Records for 45 Red Data Book species and 104 Nationally Scarce species were made; 121 species of craneflies, 105 fungus gnats, 75 "Larger Brachycera" and 116 hoverflies were recorded. *Campsicnemus umbripennis hispanicus* Strobl (Dolichopodidae) from coastal soft cliff at The Spitles, and *Atherigona varia* (Meigen) (Muscidae) from Stoborough Heath were new to Britain. *Helus hispanicus* Lackschewitz (Limoniidae) was re-found at Haven Cliff, its only British locality; *Oxycera terminata* Meigen (Stratiomyidae) was recorded at Bracket's Coppice, the first Dorset record since 1840, and *Eutolmus rufibarbis* (Meigen) (Asilidae) at Avon Heath Country Park is the first Dorset record since 1909. *Sphaerophoria virgata* Goeldlin de Tiefenau (Syrphidae), from Holt Heath and Parley Common, was new to Dorset. Studland Little Sea was confirmed as the only British locality outside Cambridgeshire for *Parochthiphila spectabilis* (Loew) (Chamaemyiidae). *Platycephala umbraculata* (Fabricius) (Chloropidae) was recorded at three coastal soft cliff sites in Dorset: *Bitia modesta* (Meigen) (Tachinidae) at White Nothe Cliff and Worbarrow Bay were the first British records since 1954.

Introduction

Between 27 June and 4 July 1998, 31 entomologists based at Kingston Maurward Agricultural College in Dorchester visited 107 sites in three vice-counties (1 in South Devon, 101 in Dorset and 5 in South Hampshire). Habitats sampled included coastal soft clay cliffs, dry sandy heaths and wet heaths on the Isle of Purbeck and elsewhere in Dorset and South Hampshire, wetlands, chalk grasslands, limestone grasslands on Portland, and wet woodlands. Data was generated for 1212 species of fly, including 45 Red Data Book (RDB) and 104 Nationally Scarce species, and 121 species of craneflies, 105 fungus gnats, 75 "Larger Brachycera" and 116 hoverflies were recorded. Two species were new to Britain: *Campsicnemus umbripennis hispanicus* (Dolichopodidae) from coastal soft cliff at The Spitles (Perry 1999), and *Atherigona varia* (Muscidae) from Stoborough Heath (Grainger 1998; Pont and Grainger 2000). Table 1 provides a more comprehensive breakdown of the number of species by family and by conservation status.

A brief summary highlighting some of the more important records has been published in the Bulletin of the Dipterists Forum (Stubbs 1998) and a full report has been published as a Dipterists Forum occasional publication (Howe, Parker and Howe 2000). Some of the more significant finds have been exhibited at the annual exhibition of the British Entomological & Natural History Society and details of material collected by A. Godfrey, A.J. Halstead, M.J. Parker and I. Perry have been published (Chandler 1999a-c, 2000). Records of some of the scarcer tachinid flies have been reported (Howe and Howe 2001) and significant hoverfly finds have been published in the annual Proceedings

of the Dorset Natural History & Archaeological Society (Levy and Levy 1998, 1999). The aim of this paper is to disseminate the results of the Dorset field meeting to a wider audience than is possible with the full report.

Table 1. The number of fly species recorded during Dipterists week in Dorset, 27 June to 4 July 1998. The total number comprises all Diptera families.

*comprises the families Tipulidae, Cylindrotomidae, Pediciidae and Limoniidae.

**comprises the families Bolitophilidae, Diadocidiidae, Ditomyiidae, Keroplatidae and Mycetophilidae.

*** comprises the families Xylophagidae, Athericidae, Rhagionidae, Tabanidae, Xylomyidae, Stratiomyidae, Acroceridae, Bombyliidae, Therevidae, Scenopinidae and Asilidae

Family	No. of species	No. of RDB species	No. of Nationally Scarce species
TOTAL NO. OF DIPTERA	1212	45	104
Craneflies*	121	9	16
Fungus gnats**	105	2	4
Larger Brachycera***	75	9	16
Tabanidae	15	3	2
Stratiomyidae	27	1	8
Bombyliidae	5	2	2
Asilidae	17	3	2
Hybotidae + Empididae	80	4	1
Dolichopodidae	115	2	8
Syrphidae	116	3	17
Tephritidae	29	2	4
Lauxaniidae	31	1	4
Sciomyzidae	31	2	2
Chloropidae	46	1	8
Scathophagidae	12	-	1
Muscidae	63	3	3
Sarcophagidae	26	1	3
Tachinidae	49	1	2

A summary of the more important records made is given in Appendix 1 which provides a brief description of the site and the site status. Appendix 2 lists all Red Data Book fly species recorded and those Nationally Scarce and other species referred to in the following accounts. Reference is also made to the importance of the records in a more local context.

Coastal habitats

The Dorset and South Devon coastlines are blessed with numerous and extensive examples of eroding soft clay cliffs, of which the importance for aculeate Hymenoptera and Coleoptera is already well recognised. Records for Diptera have been rather sparse to date but have hinted at the potential of this habitat, and this was realised during the meeting when a number of RDB species and rich fly assemblages were recorded. *Helius hispanicus* (Limoniidae) was refound at seepages at Haven Cliff, its only known British locality and only the second record since its discovery in 1989 (Stubbs 1992a). *Dicranomyia goritiensis* (Limoniidae) is more widespread but still scarce in Britain and adults were swept from seepages at East Ebb Cliff and Haven Cliff. *Arctoconopa melampodia* (Limoniidae) and *Gonomyia abbreviata* (Limoniidae), *Monocentrata favonii* (Keroplatidae), *Platypalpus aeneus* (Hybotidae), and *Campsicnemus umbripennis* and *Hydrophorus viridis* (Dolichopodidae) were recorded only from soft cliffs at The Spittles. *Oxycera morrisii* (Stratiomyidae), *Kowarzia tenella* (Empididae) and *Herina oscillans* (Ulidiidae) were restricted to Haven Cliff and *Homoneura interstincta* (Lauxaniidae) was found only at St. Gabriels. *Oxycera pygmaea* (Stratiomyidae) was restricted to cliff seepages at East Ebb Cliff, Eype's Mouth, Haven Cliff and Worbarrow Bay. *Oxycera pardalina* (Stratiomyidae) occurred at Haven Cliff and at a single inland locality, Luccas Farm, and *Vanoyia tenuicornis* (Stratiomyidae) was found at Eype's Mouth, St. Gabriels, Seatown and White Nothe Cliffs and at inland seepages at Loscombe and Woolcombe.

Platycephala umbraculata (Chloropidae), a species associated with stands of common reed *Phragmites australis* on coastal soft cliff, was recorded at East Ebb Cliff, Eype's Mouth and The Spittles, and *Lipura rufitarsis* (Chloropidae), which causes galls in reed, was found at East Ebb Cliff, Eype's Mouth, The Spittles and White Nothe Cliff. *Orchisia costata* (Muscidae) was swept from reed at East Ebb Cliff and Worbarrow Bay (Howe, Howe and Skidmore 2000), and *Lispe nana* (Muscidae) was taken at Eype's Mouth. *Cyrtophleba ruricola* (Tachinidae) was found at White Nothe Cliff, the first record for Dorset, and *Bithia modesta* (Tachinidae), restricted to a small stretch of the Dorset and Hampshire coasts and not seen since 1954 (Falk and Pont in preparation), was recorded from White Nothe Cliff and Worbarrow Bay (Howe and Howe 2001).

The saltmarsh around Poole Harbour proved quite productive, with the horsefly *Atylotus latistriatus* (Tabanidae) recorded from areas abutting Godlingstone Heath and Studland Heath, the freshwater seepage crane fly *Dicranomyia mellicauda complicata* (Limoniidae) at Arne and Studland Heath, and the hoverflies *Lejogaster tursata* and *Platycheirus immarginatus* (Syrphidae) at Arne and Studland Heath respectively. Another saltmarsh horsefly, *Haematopota bigoti* (Tabanidae), was surprisingly found at an inland station, West Compton. The dunes at Studland provided records of *Phthiria pulicaria* (Bombyliidae) and *Eumerus sabulonum* (Syrphidae).

Heathland

The Isle of Purbeck and surrounding areas of Dorset support some of the most extensive areas of lowland heath in Britain. Dry sandy heaths support a distinctive, rich dipteran fauna, whilst adjacent areas of wet heath support a very different range of species. *Thyridanthrax fenestratus* (Bombyliidae) has its stronghold on the dry heaths of Dorset and it was found to be widespread, although usually in low numbers, with records from Arne, Hartland Moor, Stoborough Heath, Stokeford Heath, Studland, Tadnoll, Wareham Forest and Winfrith Heath. *Bombylius minor* (Bombyliidae) was found at Hartland Moor and Studland Heath, and *Bombylius canescens* (Bombyliidae) was recorded from Studland Heath as well as St. Gabriels. *Eutolmus rufibarbis* (Asilidae) was recorded at Merritown Heath in South Hampshire and Avon Heath Country Park, the first recent record for Dorset, and *Asilus crabroniformis* (Asilidae) was found at Sopley Common. *Rhamphomyia physoprocta* (Empididae), which occurs at several sites in Dorset (Plant 1994, 1999), was taken at Studland Heath and *Tachytrechus consobrinus* (Dolichopodidae) was recorded at Godlingstone Heath.

Pelecocera tricolor (Syrphidae) was widespread and quite abundant and usually seen visiting flowers of tormentil *Potentilla erecta* growing along the disturbed edges of sandy heath. It was recorded from Aftipuddle Heath, Avon Heath Country Park, Cranborne Heath, Creech Heath, Morden Bog, Oakers Bog, Parley Common, Puddletown Forest, Slop Bog, Stokeford Heath, Studland, Town Common and Wareham Forest. *Paragus tibialis* (Syrphidae) was similarly widespread and recorded from twelve sites, including eleven heathlands. *Sphaerophoria virgata* (Syrphidae) was found at Holt Heath and Parley Common, and *Xanthandrus comtus* (Syrphidae) was found at Merritown Heath. *Meoneura glaberrima* (Carnidae) was taken at Hartland Moor and *Campiglossa producta* (Tephritidae) was recorded from Higher Hyde Heath and Stoborough Heath.

Coenosia vibrissata (Muscidae), which is mostly confined to Dorset in Britain, was recorded at Hartland Moor, Stokeford Heath and Studland Heath, and *Atherigona varia* (Muscidae) was taken from grassy heath on Stoborough Heath (Grainger 1998; Pont and Grainger 2000). *Loewia submetallica* (Tachinidae) was recorded from Morden Bog and Troublefield Heath, and *Erymia ocypterata* (Tachinidae) was found at Hartland Moor and Stoborough Heath. In addition, *Leiophora imnoxia* (Tachinidae) was taken at Morden Bog and Sopley Common. *Vibrissina debilitata* (Tachinidae) from Studland Heath and Troublefield Heath, and *Phytomyza nigrina* (Tachinidae) from Studland Heath. *Miltogramma germari* (Sarcophagidae) was recorded at Stoborough Heath and Studland Heath. *Blaesoxipha plumicornis* (Sarcophagidae) was found at Stoborough Heath and *Pterella grisea* (Sarcophagidae) at Stokeford Heath. *Eustalomyia hilaris* (Anthomyiidae) was also taken at Stokeford Heath.

Wetlands

Several wetland sites were visited including acid bogs at Morden Bog, Oakers Bog and areas of Studland Heath, base-rich valley mire at Hartland Moor and flooded clay pits and seepages at Creech Heath, and these yielded many important records. *Tipula marginella* (Tipulidae) was collected from Creech Heath and *Erioptera flavissima* (Limoniidae) was recorded here as well as at Hartland Moor. *Chrysops sepulchralis* (Tabanidae) was found at Hartland Moor, Oakers Bog and Warmwell Heath, *Atylotus fulvus* (Tabanidae) was recorded at Creech Heath, Hartland Moor, Oakers Bog and

Studland Heath, and *Tabanus cordiger* (Tabanidae) was found at Oakers Bog. *Ortochile nigrocoerulea* (Dolichopodidae) was taken in bog/wet heath transitional vegetation at Warmwell Heath, and *Rhaphium fuscipes* (Dolichopodidae) was recorded at Corfe Common and Creech Heath.

Tussocks of the sedge *Carex paniculata* on Morden Bog supported *Stenomicroa delicata* (Stenomicroidae), as well as *Opomyza lineatopunctata* (Opomyzidae), *Anagnota bicolor* (Anthomyzidae) and *Melanochaeta pubescens* (Chloropidae). The emergent vegetation around the flooded clay pits at Creech Heath provided records of *Parhelophilus consimilis* (Syrphidae) and a rich snail-killing fly (Sciomyzidae) fauna including *Psacadina verbekei*, *Psacadina vittigera*, *Psacadina zernyi* and *Tetanocera punctifrons*. *Parochthiphila spectabilis* (Chamaemyiidae) was found in moderate numbers in sparse reed growing on the edge of acid flushes on Studland Heath, having been previously recorded in Britain only from fens in Cambridgeshire and Norfolk, although specimens had been taken from this same locality in 1996 by two of the authors but not identified at that time. *Stratiomys potamida* (Stratiomyidae) was associated with base-rich springs and seepages at several sites including Alder Coppice and Luccas Farm.

Grasslands

Despite several chalk grasslands being visited during the meeting, *Machimus rusticus* (Asilidae) was only recorded at Hod Hill. *Symphoromyia immaculata* (Rhagionidae) was similarly restricted to a single locality, White Horse Hill, although *Cheilosia cynocephala* (Syrphidae) was reported from here as well as Bowdens Hill and Warmwell Heath. *Ogcodes pallipes* (Acroceridae) was recorded from Hod Hill, and was found in good numbers alongside *Acrocera orbiculus* (Acroceridae) at Hog Cliff. The gall flies *Oxya flavipennis* and *Urophora solstitialis* (Tephritidae) were taken at Hod Hill, whilst *Eladina morio* (Tachinidae) and *Sarcophaga arcipes* (Sarcophagidae) were recorded at Hog Cliff.

The limestone grasslands and disused quarries on Portland provided a few interesting records, with *Neopachygaster meromelus* (Stratiomyidae) at Church Ope Cove, *Chaetorellia loricata* (Tephritidae) at Waycroft Quarries, and *Sarcophaga compactilohata* (Sarcophagidae) at the Verne. This latter species was also recorded at The Fleet, White Nothe Cliffs and Worbarrow Bay. *Herina palustris* (Ulidiidae) was found at Waycroft Quarries, but was also recorded from a range of other habitats at Creech Heath, Powerstock Common and The Spittles. *Acanthiophilus helianthi* (Tephritidae) was taken in flower-rich neutral meadows at Bracket's Coppice, and *Dioxyna hidentis* (Tephritidae) was found at Ballard Down, Chesil Beach and Loscombe. *Melanostolus melancholicus* (Dolichopodidae) was recorded at Luccas Farm, and *Homoneura tesquae* (Lauxaniidae) was taken at Lower Kingcombe Meadows.

Woodlands

A range of woodland sites was visited including seepage carr, broadleaved woodland and conifer plantation. The calcareous seepage carr at Aunt Mary's Bottom supported 14 species of fungus gnats and a rich assemblage of craneflies (40 species) including *Atypophthalmus inustus*, *Molophilus corniger* and *Pilaria fuscipennis* (Limoniidae), all of which proved to be quite widespread. Comparable habitat at Hartcliff Coombe springs (11 fungus gnats and 27 craneflies) and West Compton (14 fungus gnats and 36 craneflies) was similarly rich. Whilst *Dicranomyia lucida* (Limoniidae) was also found

at a good number of wet woodland and seepage carr sites, other craneflies were more localised. For example, the only record for *Rhipidia uniseriata* (Limoniidae) was from Pilsdon Pen. *Erioptera limbata* (Limoniidae) was restricted to Notton and North Poorton, and *Gnophomyia viridipennis* (Limoniidae) was found only at Alder Coppice. *Paradelphomyia nielsenii* (Limoniidae) was restricted to North Poorton, *Tipula yerburyi* (Tipulidae) was found only at Slop Bog, and *Ptychoptera longicauda* (Ptychopteridae) and *Molophilus bihamatus* (Limoniidae) were recorded from Hartcliff Coombe springs.

Adults and larvae of *Oxycera terminata* (Stratiomyidae) were found along a wooded chalk stream at Bracket's Coppice, the first Dorset records since 1840. *Choerades marginatus* (Asilidae) was restricted to Deadmoor Common and *Dioctria cothurnata* (Asilidae) was recorded only from Loscombe. Kingston Wood provided the only records of the fungus gnats *Grzegorzekia collaris* and *Boletina nitida* (Mycetophilidae), and *Tipula helvola* (Tipulidae) was found at Merritown Heath. *Tolucella inflata* (Syrphidae) was widespread and recorded from eight sites including Kingston Wood, Luccas Farm, Melcombe Park and Piddles Wood. *Eumerus ornatus* (Syrphidae) was found at Bracket's Coppice, Heath Bottom, Piddles Wood and Ringmoor, but *Callicera aurata* (Syrphidae) was restricted to Holt Heath. *Phaonia bitincta* (Muscidae), the larva of which is associated with sap runs, was recorded at Ringmoor.

Conclusions

This review has highlighted the importance for Diptera of a range of habitats in Dorset and adjoining areas of South Hampshire and south-east Devon. Rich cranefly and fungus gnat faunas were associated with wet woodlands and records of *Oxycera terminata* (Stratiomyidae) and *Dioctria cothurnata* (Asilidae) were significant. Whilst the faunas of chalk and limestone grasslands were rather impoverished, important finds included *Machimus rusticus* (Asilidae) and *Elodia morio* (Tachinidae). As expected, the heathlands and acidic wetlands of the Isle of Purbeck and surrounding areas provided important records, including the first recent Dorset record of *Eutolmus rufibarbis* (Asilidae), *Atherigona varia* (Muscidae) new to Britain, and the first identified specimens of *Parochthiphila spectabilis* (Chamaemyiidae) from Dorset. Arguably of greatest significance, the meeting has helped to emphasise the importance of coastal soft cliff habitats in Dorset and south-east Devon for Diptera, with 11 RDB and good numbers of Nationally Scarce and uncommon species recorded including the first British record of *Campsicnemus umbripennis* (Dolichopodidae), confirmation of the continued presence of *Helius hispanicus* (Limoniidae), *Platycephala umbraculata* (Chloropidae), *Orchisia costata* (Muscidae) and *Bithia modesta* (Tachinidae), and new county records of *Platypalpus aeneus* (Hybotidae), *Hydrophorus viridis* (Dolichopodidae) and *Cyrtophleba ruricola* (Tachinidae).

Acknowledgements

Dipterists Forum would like to thank staff at Kingston Maurward Agricultural College, Dorchester for their hospitality and assistance. The authors thank all participants who provided their records for inclusion in this paper: S.G. Ball, P.J. Chandler, J.D. Coldwell, J.H. Cole, A. Davidson, M. Earle, J.B. Formstone, N. Frankum, A. Godfrey, P.J.

Grainger, A.J. Halstead, S. Hayhow, D.J. Heaver, E.A. Howe, M.A. Howe, J. Kramer, T.H. Mawdsley, K. Merrifield, R. Merrifield, M.J. Parker, I. Perry, A.R. Plant, M.N. Pugh, N.A. Robinson, M.J. Smart, C. Spilling, A.E. Stubbs, D. Sumner, R. Uffen, R. Underwood and R. Williams. The Forum also thanks the many owners and site managers for allowing access to sites, and in particular the Dorset Wildlife Trust, the National Trust and the RSPB.

References

- Ball, S.G. and Morris, R.K.A. 2000. *Provisional Atlas of British Hoverflies (Diptera, Syrphidae)*. Abbots Ripton. Biological Records Centre. Centre for Ecology and Hydrology.
- Chandler, P.J. 1998. Checklists of Insects of the British Isles (New Series). Part 1: Diptera (Incorporating a List of Irish Diptera). *Handbooks for the Identification of British Insects* 12(1). Royal Entomological Society, London.
- Chandler, P.J. 1999a. 1998 annual exhibition: Diptera (Halstead, A.J.). *British Journal of Entomology and Natural History* 12, 166-167.
- Chandler, P.J. 1999b. 1998 annual exhibition: Diptera (Parker, M.). *British Journal of Entomology and Natural History* 12, 168.
- Chandler, P.J. 1999c. 1998 annual exhibition: Diptera (Perry, I.). *British Journal of Entomology and Natural History* 13, 168.
- Chandler, P.J. 2000. 1999 annual exhibition: Diptera (Godfrey, A.). *British Journal of Entomology and Natural History* 13, 167-168.
- Clemons, L. 1997. *A provisional atlas of the Tephritidae (Diptera) of Britain and Ireland*. Dipterists Forum.
- Drake, C.M. 1991. *Provisional Atlas of the Larger Brachycera (Diptera) of Britain and Ireland*. Abbots Ripton. Biological Records Centre. Institute of Terrestrial Ecology.
- Falk, S.J. 1991. *A review of the scarce and threatened flies of Great Britain (Part 1)*. Research and Survey in Nature Conservation 39. Peterborough. Nature Conservancy Council.
- Falk, S.J. and Chandler, P.J. (in preparation) *A review of the scarce and threatened flies of Great Britain: Nematocera and Aschiza not covered by Falk (1991)*. UK Nature Conservation Series. Peterborough. Joint Nature Conservation Committee.
- Falk, S.J. and Crossley, R. (in preparation) *A review of the scarce and threatened flies of Great Britain: Empidoidea*. UK Nature Conservation Series. Peterborough. Joint Nature Conservation Committee.
- Falk, S.J. and Ismay, J.W. (in preparation) *A review of the scarce and threatened flies of Great Britain: Acalyptrata*. UK Nature Conservation Series. Peterborough. Joint Nature Conservation Committee.
- Falk, S.J. and Pont, A.C. (in preparation) *A review of the scarce and threatened flies of Great Britain: Calyptrata*. UK Nature Conservation Series. Peterborough. Joint Nature Conservation Committee.
- Grainger, P. 1998. A new genera (sic) of muscid possibly new to Britain. *Bulletin of the Dipterists Forum*. No. 46, p.15. (August 1998).
- Howe, M.A. 1998. *Field meeting of the Dipterists Forum at Abergavenny, June 1997*.

- Natural Science Report. **98/5/2**. Countryside Council for Wales.
- Howe, M.A. and Howe, E.A. 2001. Recent records of scarce tachinid flies (Diptera, Tachinidae) in England and Scotland. *Dipterists Digest (Second Series)* **8**, 6.
- Howe, M.A., Howe, E.A. and Skidmore, P. 2000. Recent records of *Orchisia costata* (Diptera, Muscidae) from Dorset and Wiltshire. *Dipterists Digest (Second Series)* **7**, 8.
- Howe, M.A., Parker, M.J. and Howe, E.A. 2000. Dipterists Forum Occasional Publication No.1. Dorset Field Meeting 27 June to 4 July 1998.
- Levy, D.A., Levy, E.T. and Dean, W.F. 1992. *Dorset Hoverflies: County Status and Distribution*. Dorset Environmental Records Centre & Diptera Recording System.
- Levy, E.T. and Levy, D.A. 1997. Natural History Reports: Dorset Hoverfly Report 1996. *Proceedings of the Dorset Natural History and Archaeology Society* **118**, 178-179.
- Levy, E.T. and Levy, D.A. 1999. Natural History Reports: Dorset Hoverfly Report 1998. *Proceedings of the Dorset Natural History and Archaeology Society* **120**, 138.
- Levy, E.T. and Levy, D.A. 1999. Natural History Reports: Dorset Hoverfly Report 1999. *Proceedings of the Dorset Natural History and Archaeology Society* **121**, 175.
- Mahon, A. and Pearman, D. 1993. *Endangered Wildlife in Dorset. The County Red Data Book*. Dorset Environmental Records Centre.
- Perry, I. 1999. *Campsicnemus umbripennis hispanicus* Strobl (Diptera, Dolichopodidae) new to Britain. *Dipterists Digest (Second Series)* **6**, 118-120.
- Plant, A. R. 1994. *Rhamphomyia physoprocta* Frey (Dipt., Empididae) in Dorset. *Entomologists monthly Magazine* **130**, 248.
- Plant, A.R. 1999. Observations on the distribution, phenology and ecology of *Rhamphomyia physoprocta* Frey (Diptera, Empididae). *Dipterists Digest (Second Series)* **6**, 53-56.
- Pont, A.C. and Grainger, P. 2000. *Atherigona varia* (Meigen, 1826) (Diptera, Muscidae) in southern England. *Dipterists Digest (Second Series)* **7**, 53-58.
- Stubbs, A.E. 1992a. *Helius hispanicus* Lackschewitz, 1928 (Diptera: Tipulidae) new to Britain. *British Journal of Entomology and Natural History* **5**, 135.
- Stubbs, A.E. 1992b. *Provisional Atlas of the long-palped crane flies (Diptera: Tipulinae) of Britain and Ireland*. Abbots Ripton, Biological Records Centre. Institute of Terrestrial Ecology.
- Stubbs, A.E. 1993. *Provisional Atlas of the ptychopterid crane flies (Diptera: Ptychopteridae) of Britain and Ireland*. Abbots Ripton, Biological Records Centre. Institute of Terrestrial Ecology.
- Stubbs, A.E. 1998. Reports of Meetings: Dorchester Field Meeting (June 27 - 4 July 1998). *Bulletin of the Dipterists Forum* No. 46. pp. 11-12 (August 1998).
- Stubbs, A.E. 1999. A review of field meetings held by the Diptera Recording Schemes, including an analysis of species added to the British list. *Bulletin of the Dipterists Forum* No. 47. pp. 21-26. (February 1999).

Appendix 1. Sites from which Red Data Book (RDB) species and selected Nationally Scarce species of flies were recorded during the Dorset field meeting.

Site status, grid reference, a brief site description and a list of the more important species recorded are given. Species nomenclature follows Chandler (1998).

South Devon (V.C.3)

Haven Cliff SSSI SY 258897 Coastal clay cliffs with seepages.
Dicranomyia goritiensis, *Helius hispanicus*, *Oxyccera morrisii*, *Oxyccera pardalina*, *Oxyccera pygmaea*, *Kowarzia tenella*, *Herina oscillans*.

Dorset (V.C.9)

Alder Coppice SY 836106 Alder woodland on peat.
Gnophomyia viridipennis, *Molophilus corniger*, *Pilaria fuscipennis*, *Atypophthalmus inustus*, *Stratiomys potamida*.

Affpuddle Heath SY 805925 Heathy rides in conifer plantation.
Peleccocera tricineta.

Arne SSSI SY 9888 Dry heath and saltmarsh.
Dicranomyia mellicicanda complicata, *Thyridanthrax fenestratus*, *Lejogaster tarsata*.

Aunt Mary's Bottom SSSI ST548024 Seepage carr with chalk stream.
Molophilus corniger, *Pilaria fuscipennis*, *Atypophthalmus inustus*.

Avon Heath Country Park SSSI SU 1202 Wet and dry heath.
Eutolmus rufibarbis, *Peleccocera tricineta*.

Badbury Rings SSSI ST 962030 Chalk grassland, woodland and seepages.
Atypophthalmus inustus.

Ballard Down SSSI SZ 023811 Chalk grassland with scrub.
Dioxyna bidentis.

Binnegar Plain SY 8787 Dry heath and bare sand in abandoned sand pit.
Paragus tibialis.

Bowdens Hill ST 7302 Chalk grassland and scrub.
Cheilosia cynocephala.

Bracket's Coppice SSSI ST 5106 Flower-rich meadows, woodland and sandy stream.
Oxyccera terminata, *Eumerus ornatus*, *Acanthophylus helianthi*.

Chesil Beach SSSI, Cogden SY 5088 Raised shingle beach with adjacent reedbeds.
Dioxyna bidentis.

Chesil Beach SSSI, Ferry Bridge SY 671748 Vegetated shingle bar and mudflats.
Dioxyna bidentis.

Church Ope Cove SSSI SY 698710 Coastal limestone grassland.
Neopachygaster meromelas.

Corfe Common SSSI SY 964809 Grassland and scrub with stream.
Rhaphium fuscipes.

Cranborne Common SSSI SU 106115 Wet heath.
Peleccocera tricineta.

Creech Heath SSSI SY 9283 Wet and dry heath, scrub and flooded clay workings.
Tipula marginella, *Erioptera flavissima*, *Dicranomyia lucida*, *Axyolus fulvus*, *Rhaphium fuscipes*, *Parhelophilus consimilis*, *Peleccocera tricineta*, *Herina pulavris*, *Psacadina verbecki*, *Psacadina vitigera*, *Psacadina zernyi*, *Tetanocera punctifrons*.

Deadmoor Common ST 7511 Rough grassland with woodland and scrub.
Chorades marginatus.

East Ebb Cliff SSSI SY 428913 Coastal clay cliffs with seepages and fen.
Dicranomyia goritiensis, *Oxyccera pygmaea*, *Tetanocera punctifrons*, *Platycephala umbraculata*, *Lipara rufitarsis*, *Orchisia costata*.

Iggarden Hill SSSI	SY 5395	Flower-rich roadside verge.
<i>Stratiomys potamida.</i>		
Lype's Mouth SSSI	SY 447910	Coastal clay cliffs with seepages and fen.
<i>Oxyccera pygmaea, Vanoxia tenuicornis, Tetanocera punctifrons, Platycephala umbraculata, Lipara rufitarsis, Lispe nana.</i>		
The Fleet SSSI	SY 6675	Shingle beach with adjacent fen.
<i>Sarcophaga compactilobata.</i>		
Godlingstone Heath NNR	SZ 018828	Dry sandy heath, wet heath, bog pools and saltmarsh.
<i>Aylotus latistriatus, Tachytrechus consobrinus.</i>		
Hambledon Hill NNR	ST 8412	Chalk grassland and beech woodland.
<i>Dicranomyia lucida.</i>		
Hartcliff Coombe springs	ST 805095	Chalk springs and seepages in peaty carr.
<i>Molophilus bhamatus, Molophilus corniger, Ptilaria fuscipennis, Psychoptera longicauda.</i>		
Hartland Moor NNR	SY 945855	Wet and dry heath, and base-rich valley mire.
<i>Erioptera flavissima, Chrysops sepulchralis, Aylotus fulvus, Bombylius minor, Thyridanthrax fenestratus, Paragus tibialis, Meoneura glaberrima, Coenosia vibrissata, Erynnia ocypterata.</i>		
Heath Bottom SSSI	ST 794056	Chalk grassland.
<i>Eumerus ornatus, Volucella inflata.</i>		
Higher Hyde Heath SSSI	SY 8590	Wet heath, grassland and scrub.
<i>Campiglossa producta, Opomyza lineatopunctata.</i>		
Hod Hill NNR	ST 8510	Chalk grassland and scrub.
<i>Ogcodes pallipes, Machimus rusticus, Urophora solstitialis, Oxya fuscipennis.</i>		
Hog Cliff NNR	SY 615975	Chalk grassland and scrub.
<i>Acrocera orbiculus, Ogcodes pallipes, Sarcophaga arripes, Elodia morio.</i>		
Holt Heath NNR	SU 0604	Heathland, grassland and woodland.
<i>Callicera aurata, Sphaerophoria virgata.</i>		
Kingston Wood	SY 9379	Limestone woods and meadows.
<i>Atypophthalmus inustus, Boletina nitida, Grzegorzekia collaris, Volucella inflata.</i>		
Loscombe SSSI	SY 503978	Meadows and woodland with seepages.
<i>Ptilaria fuscipennis, Dicranomyia lucida, Vanoxia tenuicornis, Diotria cothurnata, Diaxyia bidentis.</i>		
Lower Kingcombe Meadows SSSI	SY 5598	Herb-rich grassland and willow carr.
<i>Ptilaria fuscipennis, Homomenra tesquae.</i>		
Luccas Farm SSSI	SY 5495	Grasslands and woodlands with seepages.
<i>Dicranomyia lucida, Oxyccera pardalina, Stratiomys potamida, Melanostolus melancholicus, Volucella inflata.</i>		
Melcombe Park	ST 7404	Oak woodland with hazel.
<i>Volucella inflata.</i>		
Morden Bog NNR	SY 9191	Acid bog and wet heath.
<i>Paragus tibialis, Pelecocera tricineta, Opomyza lineatopunctata, Anagnota bicolor, Stenomicra delicata, Melanochaeta pubescens, Lelophora innixa, Loewia submetallica.</i>		
North Poorton	SY 522985	Wooded coombe with stream.
<i>Erioptera limbata, Paradelphomyia nielsenii.</i>		
Notton	SY 615955	Grazed meadows on the River Frome.
<i>Erioptera limbata.</i>		
Oakers Bog SSSI	SY 814917	Acid valley mire with pools.
<i>Chrysops sepulchralis, Aylotus fulvus, Tabanus cordiger, Pelecocera tricineta.</i>		
Oakers Wood SSSI	SY 8091	Acid oak woodland with hazel.
<i>Atypophthalmus inustus.</i>		
Parley Common SSSI	SZ 093994	Wet and dry, sandy heath.
<i>Paragus tibialis, Pelecocera tricineta, Sphaerophoria virgata.</i>		
Piddles Wood SSSI	ST 7912	Oak woodland with coppice.
<i>Eumerus ornatus, Volucella inflata.</i>		
Pilsdon Pen	ST 4101	Willow carr with seepages.

<i>Rhipidia uniseriata</i> .		
Powerstock Common SSSI	SY 5497	Wet heath and grassland, and oak woodland.
<i>Paragus tibialis</i> , <i>Herina palustris</i> .		
Puddletown Forest	SY 7492	Heathy rides in mixed woodland.
<i>Pelecocera tricincta</i> .		
Ringmoor	ST 813083	Broadleaved woodland and rides.
<i>Eumerus ornatus</i> , <i>Volucella inflata</i> , <i>Phaonia bitincta</i> .		
St. Gabriels SSSI	SY 3992	Coastal clay cliffs with seepages.
<i>Vanovia tenuicornis</i> , <i>Stratiomys potamida</i> , <i>Bombylius canescens</i> , <i>Platycheirus immarginatus</i> , <i>Homoneura interstincta</i> .		
Seatown SSSI	SY 4291	Coastal clay cliffs with seepages.
<i>Vanovia tenuicornis</i> .		
Slop Bog SSSI	SU 077017	Acid bog with pools and wet heath.
<i>Tipula verburvi</i> , <i>Pelecocera tricincta</i> .		
The Spittles SSSI	SY 3593	Coastal clay cliffs with seepages, fen and woodland.
<i>Arctocnopa melampodia</i> , <i>Erioptera flavissima</i> , <i>Gonomyia abbreviata</i> , <i>Monocentrotia favonii</i> , <i>Platypalpus aeneus</i> , <i>Hydrophorus viridis</i> , <i>Campsicnemus umbripennis hispanicus</i> , <i>Paragus tibialis</i> , <i>Herina palustris</i> , <i>Platycephala umbraculata</i> , <i>Lipara rufitarsis</i> .		
Stoborough Heath SSSI	SY 9485	Dry heath, grassland and scrub.
<i>Thyridanthrax fenestratus</i> , <i>Campiglossa producta</i> , <i>Atherigona varia</i> , <i>Mitrogramma germari</i> , <i>Blaesoxipha plumicornis</i> , <i>Erynnia ocypterata</i> .		
Stokeford Heath	SY 860892	Dry sandy heath.
<i>Thyridanthrax fenestratus</i> , <i>Paragus tibialis</i> , <i>Pelecocera tricincta</i> , <i>Eustalomyia hilaris</i> , <i>Coenosis vibrissata</i> , <i>Pterella grisea</i> .		
Studland Heath NNR	SZ 0384	Dry sandy heath, fixed dunes and saltmarsh.
<i>Dicranomyia melleicauda complicata</i> , <i>Atylotus fulvus</i> , <i>Atylotus latistrigatus</i> , <i>Bombylius canescens</i> , <i>Bombylius minor</i> , <i>Thyridanthrax fenestratus</i> , <i>Phthiria pulicaria</i> , <i>Rhamphomyia physoprocta</i> , <i>Eumerus sabulorum</i> , <i>Paragus tibialis</i> , <i>Pelecocera tricincta</i> , <i>Platycheirus immarginatus</i> , <i>Coenosis vibrissata</i> , <i>Mitrogramma germari</i> , <i>Vibrissina debilitata</i> , <i>Phytomyza nigripes</i> .		
Studland, Little Sea NNR	SZ 026843	Dry sandy heath, wet heath, acid flushes and fen.
<i>Thyridanthrax fenestratus</i> , <i>Paragus tibialis</i> , <i>Parochthiphila spectabilis</i> , <i>Vibrissina debilitata</i> .		
Tadnoll SSSI	SY 7987	Dry and wet heath.
<i>Thyridanthrax fenestratus</i> .		
The Verne SSSI, Portland	SY 697738	Limestone grassland and scrub.
<i>Paragus tibialis</i> , <i>Sarcophaga compactilobata</i> .		
Wareham Forest	SY 8991	Wide, heathy rides in conifer plantation.
<i>Thyridanthrax fenestratus</i> , <i>Paragus tibialis</i> , <i>Pelecocera tricincta</i> .		
Wareham Forest, Bloxworth Heath	SY 8891	Dry sandy heath in conifer plantation.
<i>Thyridanthrax fenestratus</i> .		
Warmwell Heath SSSI	SY 7587	Dry sandy heath, wet heath, acid bog and carr.
<i>Chrysops sepulchralis</i> , <i>Orthocentrus nigrocoerulea</i> , <i>Cheilosia cynocephala</i> .		
Waycroft Quarries SSSI	SY 692731	Limestone grassland and scrub.
<i>Herina palustris</i> , <i>Chaetorellia loricata</i> .		
West Compton	SY 5694	Seepage carr, chalk stream and fen.
<i>Molophilus corniger</i> , <i>Pilaria fuscipennis</i> , <i>Atyphthalpus mustus</i> , <i>Dicranomyia lucida</i> , <i>Haematopota biguttata</i> .		
White Horse Hill SSSI	SY 7184	Chalk grassland with seepages.
<i>Symphoromyia immaculata</i> , <i>Stratiomys potamida</i> , <i>Cheilosia cynocephala</i> .		
White Nothe Cliff SSSI	SY 760815	Coastal clay cliffs with seepages, fen and scrub.
<i>Vanovia tenuicornis</i> , <i>Lipara rufitarsis</i> , <i>Sarcophaga compactilobata</i> , <i>Cryptophleba ruficollis</i> , <i>Bithia modesta</i> .		
Winfrith Heath SSSI	SY 8086	Dry sandy heath and scrub.

<i>Thyridanthrax fenestratus</i> .		
Woolcombe SSSI	SY 556957	Acid grassland with seepages, fen and wet woodland.
<i>Molophilus corniger</i> , <i>Atypophthalmus inustus</i> , <i>Dicranomyia lucida</i> , <i>Panoxia tenuicornis</i> , <i>Stratiomys potamida</i> , <i>Volucella inflata</i>		
Worbarrow Bay SSSI	SY 8680	Coastal clay cliffs with seepages and fen.
<i>Pilaria fuscipennis</i> , <i>Oxyccera pygmaea</i> , <i>Orchisia costata</i> , <i>Sarcophaga compactilobata</i> , <i>Bititia modesta</i> .		
South Hampshire (V.C.11)		
Merritown Heath	SZ 1199	Dry heath and birch woodland.
<i>Tipula helvola</i> , <i>Eutolmus rufibarbis</i> , <i>Paragus tibialis</i> , <i>Volucella inflata</i> , <i>Nanthandrus comtus</i> .		
Sopley Common SSSI	SZ 1397	Wet heath.
<i>Asilus crabroniformis</i> , <i>Leucophora innoxia</i> .		
Town Common SSSI	SZ 1469	Wet and dry heath.
<i>Peleccocera tricincla</i> .		
Troublefield Heath SSSI	SZ 1298	Dry heath and woodland.
<i>Vibrissina debilitata</i> , <i>Loewia submetallica</i> .		

Appendix 2. Red Data Book (RDB) and selected Nationally Scarce and local species of flies recorded during the Dorset field meeting.

For each species, the national status as given by Falk (1991) is provided. Where relevant, an assessment of its local status is given based on NCC (Falk 1991) and JNCC (Falk and Chandler in preparation, Falk and Crossley in preparation, Falk and Ismay in preparation, Falk and Pont in preparation) Diptera reviews, Biological Records Centre (BRC) and other provisional atlases (Ball and Morris 2000, Clemons 1997, Drake 1991, Stubbs 1992, 1993), the Dorset hoverfly atlas (Levy, Levy and Dean 1992) and the Dorset Red Data Book (Mahon and Pearson 1993). Species nomenclature follows Chandler (1998) and more recent updates. Vice-counties refer only to records made during the meeting.

DIPULIDAE		
<i>Tipula helvola</i> Loew, 1873	Scarce	V.C.11.
<i>Tipula verburyi</i> Edwards, 1924	Scarce	V.C.9.
<i>Tipula marginella</i> Theowald, 1980	RDB 3	V.C.9. Two previous Dorset localities.
LIPOPTERIDAE		
<i>Acrotonopa melampodia</i> (Loew, 1873)	RDB 2	V.C.9. Previously recorded from The Spittles.
<i>Erioptera flavissima</i> Stary, 1972		V.C.9. Recorded new to Britain from Dorset in 1989.
<i>Erioptera limbata</i> Loew, 1873	RDB 2	V.C.9. Three previous Dorset localities.
<i>Gnophomyia viridipennis</i> (Gimmerthal, 1847)	Scarce	V.C.9.
<i>Gonomyia abbreviata</i> Loew, 1873	RDB 3	V.C.9.
<i>Molophilus bimaculatus</i> de Meijere, 1918	Scarce	V.C.9. First Dorset records.
<i>Molophilus corniger</i> de Meijere, 1920	Scarce	V.C.9.
<i>Paradelphomyia nielsenii</i> (Kuntze, 1919)	Scarce	V.C.9.
<i>Pilaria fuscipennis</i> (Meigen, 1818)	Scarce	V.C.9.
<i>Atypophthalmus inustus</i> (Meigen, 1818)	Scarce	V.C.9.
<i>Dicranomyia garritensis</i> (Mik, 1864)	RDB 3	V.C.3, 9.
<i>Dicranomyia livida</i> de Meijere, 1918	Scarce	V.C.9.
<i>Dicranomyia melleocauda complicata</i> de Meijere, 1918	Scarce	V.C.9. First Dorset record.
<i>Helieta hispanicus</i> Lackschewitz, 1928		V.C.3. Restricted to Haven Cliff in Britain. Only one previous record.
<i>Rhipidia uniseriata</i> Schiner, 1864	RDB 3	V.C.9. First Dorset record.
KLROPIATIDAE		
<i>Monocentrata favonii</i> Chandler, 1987	RDB 1	V.C.9. One previous Dorset record.
MYCETOPHILIDAE		
<i>Boletina nitida</i> Grzegorzek, 1885	Scarce	V.C.9.
<i>Grzegorzekia collaris</i> (Meigen, 1818)	RDB 3	V.C.9. First Dorset record.
PTYCHOPTERIDAE		

<i>Psychoptera longicauda</i> (Tonnoir, 1919)	Scarce	V.C.9. First Dorset record.
RHAGIONIDAE		
<i>Symphoromyia immaculata</i> (Meigen, 1804)	Scarce	V.C.9.
TABANIDAE		
<i>Chrysops sepulchralis</i> (Fabricius, 1794)	RDB 1	V.C.9. Dorset heaths and bogs are British stronghold.
<i>Haematopota bigoti</i> Gobert, 1880	RDB 3	V.C.9.
<i>Aylotus fulvus</i> (Meigen, 1804)	Scarce	V.C.9. Dorset heaths are a British stronghold.
<i>Aylotus latistriatus</i> Brauer in Brauer & von Bergenstamm, 1880	RDB 3	V.C.9.
<i>Tabanus cordiger</i> Meigen, 1820	Scarce	V.C.9.
STRATIOMYIDAE		
<i>Oxycera morristi</i> Curtis, 1833	Scarce	V.C.3.
<i>Oxycera pardalina</i> Meigen, 1822	Scarce	V.C.3. 9.
<i>Oxycera pygmaea</i> (Fallén, 1817)	Scarce	V.C.3. 9. First Dorset records.
<i>Oxycera terminata</i> Wiedemann in Meigen, 1822	RDB 2	V.C.9. First Dorset record since 1840.
<i>Vanoyia tenuicornis</i> (Macquart, 1834)	Scarce	V.C.9.
<i>Neopachygaster meromelas</i> (Dufour, 1841)	Scarce	V.C.9.
<i>Stratiomys potamida</i> Meigen, 1822	Scarce	V.C.9.
ACROCERIDAE		
<i>Acrocera orbiculus</i> (Fabricius, 1787)		V.C.9.
<i>Ogcodes pallipes</i> Latreille in Olivier, 1812	Scarce	V.C.9.
BOMBYLIIDAE		
<i>Bombylius canescens</i> Mikan, 1796	Scarce	V.C.9.
<i>Bombylius minor</i> Linnaeus, 1758	RDB 2	V.C.9. Dorset heaths are British stronghold.
<i>Thyridanthrax fenestratus</i> (Fallén, 1814)	RDB 3	V.C.9. Dorset heaths are British stronghold.
<i>Phthiria pulicaria</i> (Mikan, 1796)	Scarce	V.C.9.
ASILIDAE		
<i>Asilus crabroniformis</i> Linnaeus, 1758	Scarce	V.C.11.
<i>Eutolmus rufibarbis</i> (Meigen, 1820)	RDB 3	V.C.9. 11. First modern Dorset record. Second recent Hampshire record.
<i>Machimus rusticus</i> (Meigen, 1820)	RDB 2	V.C.9. Only one previous Dorset locality.
<i>Chorades marginatus</i> (Linnaeus, 1758)	Scarce	V.C.9. Only three previous Dorset records. Previously recorded from Deadmoor Common.
<i>Dioctria cothurnata</i> Meigen, 1820	RDB 3	V.C.9. Dorset a British stronghold.
HYBOTIDAE		
<i>Platypalpus aeneus</i> (Macquart, 1823)	RDB 3	V.C.9. First Dorset record.
EMPIDIDAE		
<i>Kowarsia tenella</i> (Wahlberg, 1844)	RDB 3	V.C.3. First Devon record.
<i>Rhamphomyia physoprocta</i> Frey, 1913	RDB 1	V.C.9. Dorset heaths are British stronghold.
DOLICHOPODIDAE		
<i>Melanostolus melancholicus</i> (Loew, 1869)	RDB 3	V.C.9. First Dorset record.
<i>Orthoclele nigrocoerulea</i> Latreille, 1809	Scarce	V.C.9. First post-1960 British record.
<i>Tachytrechus consobrinus</i> (Haliday in Walker, 1851)	Scarce	V.C.9.
<i>Hydrophorus viridis</i> (Meigen, 1824)	RDB 3	V.C.9. Second post-1980 British record. First Dorset record.
<i>Rhaphium fascipes</i> (Meigen, 1824)	Scarce	V.C.9. First Dorset record.
<i>Campicnemus umbripennis hispanicus</i> Strobl, 1899		V.C.9. First British record.
SYRPHIDAE		
<i>Callicera aurata</i> (Rossi, 1790)	RDB 3	V.C.9. Third Dorset record.
<i>Cheilosia cynocephala</i> Loew, 1840	Scarce	V.C.9.
<i>Eumerus ornatus</i> Meigen, 1822	Scarce	V.C.9.
<i>Eumerus sabulonum</i> (Fallén, 1817)	Scarce	V.C.9. Previously recorded on Studland Dunes.
<i>Lejogaster tarsata</i> (Meigler in Meigen, 1822)	Scarce	V.C.9. Third Dorset record and second locality.
<i>Paragus tibialis</i> (Fallén, 1817)	Scarce	V.C.9. 11. Dorset and Hampshire heaths are British stronghold.
<i>Parhelophilus consimilis</i> (Malm, 1863)	RDB 2	V.C.9. First Dorset record since 1985. Fourth Dorset record and second locality.
<i>Pelecocera trincta</i> Meigen, 1822	RDB 3	V.C.9. 11. Dorset and Hampshire heaths are British stronghold.
<i>Platychetris immarginatus</i> (Zetterstedt, 1849)	Scarce	V.C.9. First Dorset record since 1987.
<i>Sphaerophoria virgata</i> Goeldlin de Tiefenau, 1974	Scarce	V.C.9. First Dorset records.
<i>Volucella inflata</i> (Fabricius, 1794)	Scarce	V.C.9. 11.

<i>Xanthandrus comtus</i> (Harris, [1780])	Scarce	V.C.11.
ULIIDAE		
<i>Herina oscillans</i> (Meigen, 1826)	RDB 3	V.C.3, Previously recorded from Haven Cliff.
<i>Herina palustris</i> (Meigen, 1826)	Scarce	V.C.9, First Dorset record.
EPIRHOTIDAE		
<i>E. raphora subtilitalis</i> (Linnaeus, 1758)	RDB 3	V.C.9, One previous Dorset locality.
<i>Acontiocephalus helianthi</i> (Rossi, 1794)	Scarce	V.C.9, Two previous Dorset localities.
<i>Campiglossa producta</i> (Loew, 1844)	Scarce	V.C.9, First Dorset record.
<i>Diavus bidentis</i> (Robineau-Desvoidy, 1830)	Scarce	V.C.9, First recent Dorset record.
<i>Oxyia flavipennis</i> (Loew, 1844)	Scarce	V.C.9, First Dorset record.
<i>Chaetorellia loricata</i> (Rondani, 1870)	RDB 2	V.C.9, First Dorset record.
EUCYANIIDAE		
<i>Homocidura interstincta</i> (Fallén, 1820)	RDB 3	V.C.9, First Dorset record.
<i>Homocidura tesquae</i> (Becker, 1895)	Scarce	V.C.9, First Dorset record.
CIAMAEAMYIIDAE		
<i>Parochliphila spectabilis</i> (Loew, 1858)	RDB 1	V.C.9, Only British locality, outside Cambridgeshire. Previously recorded (1996) from same Dorset site.
SCIOMYZIDAE		
<i>Psacadina verbekei</i> Rozkošný in Knutson, Rozkošný & Berg, 1975	Scarce	V.C.9.
<i>Psacadina vitigera</i> (Schiner, 1864)	RDB 2	V.C.9, First Dorset record.
<i>Psacadina zernyi</i> (Mayer, 1953)	RDB 2	V.C.9, First Dorset record.
<i>Tetanocera punctifrons</i> Rondani, 1868	Scarce	V.C.9.
OPOMYZIDAE		
<i>Opomyza lineatopunctata</i> von Röser, 1840	Scarce	V.C.9.
ANTIOMYZIDAE		
<i>Anagnota bicolor</i> (Meigen, 1838)	Scarce	V.C.9.
STENOMICRIDAE		
<i>Stenomera delicata</i> (Collin, 1944)	RDB 2	V.C.9, First Dorset record.
CARNIDAE		
<i>Meonera glaberrima</i> Becker, 1910	RDB 3	V.C.9, First Dorset record.
CHLOROPIDAE		
<i>Platycephala ambraculata</i> (Fabricius, 1794)	RDB 2	V.C.9, Dorset coastal soft cliffs are British stronghold.
<i>Lipara rufitarsis</i> Loew, 1858	Scarce	V.C.9.
<i>Melanochaeta pubescens</i> (Thalhammer, 1898)	Scarce	V.C.9.
ANTIOMYIIDAE		
<i>Eustalomyia hilaris</i> (Fallén, 1823)	RDB 3	V.C.9, First Dorset record.
MUSCIDAE		
<i>Coenosia vibrissata</i> Collin, 1953	RDB 3	V.C.9, First Dorset record since 1976.
<i>Orchisia costata</i> (Meigen, 1826)	RDB 2	V.C.9, First Dorset records since 1960.
<i>Lispe nana</i> Macquart, 1835	Scarce	V.C.9, First Dorset record.
<i>Phaonia bitincta</i> (Rondani, 1866)	RDB 3	V.C.9, First Dorset record.
<i>Atherigona varia</i> (Meigen, 1826)		V.C.9, First British record.
SARCOPIAGIDAE		
<i>Mitogramma germari</i> Meigen, 1824	RDB 3	V.C.9.
<i>Pterella grisea</i> (Meigen, 1824)	Scarce	V.C.9, First Dorset record since 1970.
<i>Blaesoxipha plumicornis</i> (Zetterstedt, 1859)	Scarce	V.C.9, First post-1960 Dorset record.
<i>Sarcophaga arcipes</i> Pandellé, 1896	Scarce	V.C.9, First post-1960 Dorset record.
<i>Sarcophaga compenlobata</i> (Wyatt, 1991)		V.C.9, First Dorset record since 1963.
TACHINIDAE		
<i>Cyrtophleba ruficula</i> (Meigen, 1824)		V.C.9, First English record since 1972, First Dorset record.
<i>Teciophora innoxia</i> (Meigen, 1824)		V.C.9, 11, First British records since 1992.
<i>Vibrissina debilitata</i> (Pandellé, 1896)		V.C.9, 11, First Dorset and Hampshire records.
<i>Flodia morio</i> (Fallén, 1820)		V.C.9, First Dorset record.
<i>Erynnia ocypterata</i> (Fallén, 1810)	RDB 2	V.C.9, First British records since 1977, First Dorset records.
<i>Loewia submetallica</i> (Macquart, 1855)		V.C.9, 11, First post-1960 British records, First Dorset record.
<i>Phytomyza nigrina</i> (Meigen, 1824)		V.C.9.
<i>Rithia modesta</i> (Meigen, 1824)		V.C.9, First British records since 1954, Dorset coast is British stronghold.

Corrections and changes to the Diptera Checklist (6)	
EDITOR	126-127
Records of two species of intertidal Chironomidae (Diptera) from Scotland	
I.F.G. MCLEAN	128
<i>Cnestrus lepidopes</i> Becker 1896 (Diptera, Ephydriidae) new to Britain	
IVAN PERRY AND C. MARTIN DRAKE	129-131
<i>Phasia barbifrons</i> (Girschner, 1887) (Diptera, Tachinidae) at a second Surrey site	
PETER CHANDLER	131
<i>Melinda gentilis</i> Robineau-Desvoidy new to Scotland with notes on <i>Melinda viridicyanea</i> (Robineau-Desvoidy) (Diptera, Calliphoridae) in Scotland	
DAVID HORSFIELD	131-132
<i>Lonchaea bukowskii</i> Czerny (Diptera, Lonchaeidae) new to Britain	
IAIN MACGOWAN	133-134
The capture of <i>Eutrichota pilimana</i> (Ringdahl) (Diptera, Anthomyiidae), a species recently added to the British list	
DAVID HORSFIELD	134
A review of the Dipterists Forum summer field meeting in Dorset, 1998	
M.A. HOWE, M.J. PARKER* and E.A. HOWE	135-148

Dipterists Digest Volume 8, No. 2 2001

A provisional key to British Piophilidae (Diptera) and *Parapiophila flavipes* (Zetterstedt, 1847) new to Britain

ALAN E. STUBBS* AND PETER J. CHANDLER 71-78

Swarming in two *Heteromyza* species (Diptera, Heleomyzidae)

I.F.G. MCLEAN 78

The current distribution of the Hornet Robberfly *Asilus crabroniformis* Linnaeus (Diptera, Asilidae) in England and Wales

MATTHEW N. SMITH 79-84

Some recent records of *Carcelia rasa* (Macquart) (Diptera, Tachinidae) in Southern England

MATTHEW N. SMITH 84

Medetera freyi Thunberg, *M. setiventris* Thunberg and *M. fasciata* Frey (Diptera, Dolichopodidae) new to Britain with notes on the status of *Medetera striata* Parent

IAIN MACGOWAN 85-90

Paraclusia tigrina (Fallén) (Diptera, Clusiidae) in Herefordshire

A.P. FOSTER 90

The British species of *Notiphila* Fallén (Diptera, Ephydriidae), with the description of a new species

C.M. DRAKE 91-125

continued inside back cover

Published by

ISSN 0953-7260



Dipterists
FORUM