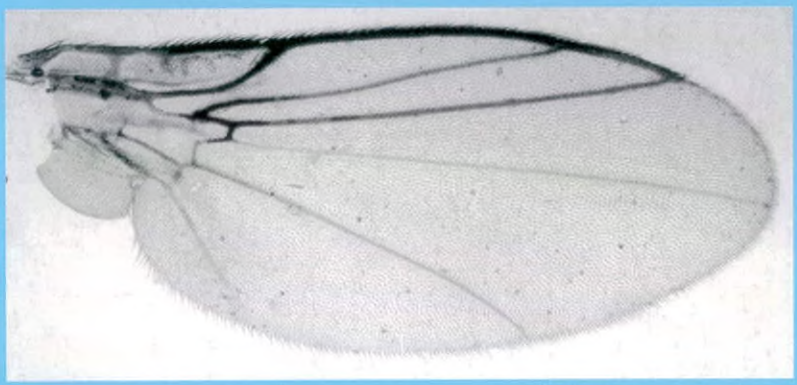
Dipterists Digest



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Dipterists Digest

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 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 and those new to regions, countries etc.;
- local faunal accounts and field meeting results, especially if accompanied by good ecological or natural history interpretation;
- descriptions of species new to science;
- notes on identification and deletions or amendments to standard key works and checklists.

Articles must not have been accepted for publication elsewhere and should be written in clear and concise English. Items exceeding 3000 words may be serialised or printed in full, depending on competition for space. **Contributions should preferably be supplied either as E-mail attachments or on 3.5" computer disc or CD in Word or compatible formats and accompanied by hard copy.**

NEW INSTRUCTIONS: Articles should be supplied in A5 format with text in 9-point font, title 12 point and author's name 10.5 point, with 0.55" side margins. Figures should be supplied separately as jpg or eps files to fit in the above page format, or as 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. References to journals should give the title of the journal in full. Scientific names should be italicised. Authors of scientific names should be given in full and nomenclature should follow the most recent checklist, unless reflecting subsequent changes. Figures should be drawn in clear black ink, about 1.5 times their printed size and lettered clearly. **Colour photographs will also be considered.** 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, Mick Parker, 9 East Wyld Road, Weymouth, Dorset DT4 0RP, UK

Dipterists Digest 2007 **14,** 87-89

Pandivirilia melaleuca (Loew) (Diptera, Therevidae) confirmed as a Gloucestershire species

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Summary
A rearing record of the rare Windsor Forest speciality *Pandivirilia melaleuca* (Loew) is reported from a pear orchard in West Gloucestershire. The context of the discovery in terms of the local landscape of traditional orchards and ancient wood pasture trees is discussed.

Introduction

Until now the only confirmed British site for *Pandivirilia melaleuca* (Loew) has been the general area of Windsor Forest and Great Park, Berkshire (Stubbs and Drake 2001). Alexander (1994) suggested that a therevid larva found in red-rotten heartwood of an old oak in Oakley Wood, Cirencester Park, East Gloucestershire, might be this extremely rare old growth species, but this was not confirmed by rearing. Therevid larvae have also subsequently been found in the same county amongst fine wood mould accumulations in the base of hollow fruit trees in old traditional orchards as well as old pollard trees, but until now these had been assumed to be the more widespread *Thereva nobilitata* (Fabricius). Attempts to rear the larvae through to the adult have failed.

The eel-like larvae of Therevidae are extremely active and well adapted to move through friable media such as sand, soil and wood mould. Stubbs and Drake (2001) reported rearing of *T. nobilitata* from dry wood detritus in hollow ash trees and under bark, as well as other situations.

Thus, while *P. melaleuca* has been reared from larvae collected mainly from red-rotten hollow oaks (Owen 1993), it cannot be assumed that a stiletto-fly larva found in rotten wood of old trees will be *P. melaleuca*.

Rearing from a pear orchard

At last one of the orchard larvae has been successfully reared, and proved to be a female of *P. melaleuca*. The particular orchard is at Oakle Street, a hamlet within the civil parish of Churcham, West Gloucestershire (SO757172). The larva was found amongst wood mould in the base of a hollow live pear tree on 27.ix.2006, and was retained for rearing. The widespread heartwood decay fungus *Laetiporus sulphureus*, which forms a red-rot from the dead woody heartwood tissues, was responsible for the hollowing of the tree. The wood mould was accessible via a small cavity in the side of the trunk – the interior protected from the weather and unaffected by rainfall. A dead female *P. melaleuca* was found in the rearing chamber in the following spring.

Old growth context

The confirmation of such a rare relict old growth species in traditional orchards in the west of England might seem quite remarkable. However, the old orchards of West Gloucestershire are already known to be exceptionally rich in old growth saproxylic beetles (Alexander 2003 and in press). The presence of such a rich fauna in these orchards should not be too surprising as long-established traditional orchards are effectively wood pastures with concentrations of old trees, and these particular orchards lie in the old forest country between the Royal Forest of Dean and Malvern Chase. Indeed, Christopher Saxton's *Map of Gloucestershire* (1577) shows tree symbols in an unbroken band right across this area, from the River Wye in the west virtually to the City of Gloucester, and then swinging northwards to the Malvern Hills. Long habitat continuity of tree cover is therefore very clear.

The rare chafer *Gnorimus nobilis* (Linnaeus) (Coleoptera, Scarabaeidae) has been the focus of extensive survey work in orchards across the three counties of Gloucestershire, Herefordshire and Worcestershire, as this area is known to support Britain's only landscape-scale population – this chafer is a Priority Species under the UK Biodiversity Action Plan. While Diptera have not been specifically investigated as part of this work, other uncommon species noted include the Nationally Scarce cranefly *Tipula peliostigma* Schummel, reared from pupae found in a hollow apple tree with bird nest material, and the dolichopodid *Neurigona pallida* (Fallén), both from Broadway Farm, Westbury-on-Severn (SO71) during 2003.

Relationships with potential prey items

In the USA, Irwin and Lyneborg (1981) refer to therevid larvae preying on beetle larvae, especially those of the families Elateridae, Scarabaeidae and Tenebrionidae. Specialist species of these particular families are characteristic of wood mould in hollow trees as well as other media (Alexander 2002). Owen (1993) reported offering his *P. melaleuca* larvae a variety of insect larvae as food. He found that various moth larvae and larvae of the beetles *Dorcus* (Lucanidae) and *Rhagium* (Cerambycidae) proved acceptable, but that larvae of the elaterid *Ampedus cardinalis* (Schiödte), the alleculine tenebrionid *Prionychus ater* (Fabricius) and the scarabaeid chafer *Gnorimus variabilis* (Linnaeus) were not attacked and eaten.

Stubbs and Drake (2001) mentioned the possibly coincidental occurrence of a *P. melaleuca* larva (successfully reared) with the chafer *G. variabilis*. Although the Gloucestershire *P. melaleuca* was discovered while searching for another rare chafer *G. nobilis*, the only other invertebrates noted within the actual column of wood mould in the pear tree concerned were larvae of alleculine beetles, most likely a *Prionychus* species (Tenebrionidae). These were the commonest insect larvae in the wood mould – by far – and it would seem likely that they are the main prey of the therevid larvae, notwithstanding Owen's observations on *Pandivirilia*; therevid larvae may behave differently under artificial conditions. Therevid larvae are regularly found in wood mould in these old orchards although *Gnorimus* larvae appear to be rather more localised. So is it a coincidence that the two known sites for *P. melaleuca* also have the largest populations in Britain of these two chafers – *G. variabilis* at Windsor and *G. nobilis* in the old orchard country of Gloucestershire, Herefordshire and Worcestershire?

It is hoped that further successful rearing will clarify the extent of the local *P. melaleuca* population.

Acknowledgements

The orchard surveys were mostly commissioned by the People's Trust for Endangered Species and part funded by English Nature, as part of the Noble Chafer Species Action Plan. Thanks are also to due to Alan Stubbs for identifying the reared female *P. melaleuca*.

References

Alexander, K.N.A. 1994. *Pandivirilia (Psilocephala) melaleuca* (Loew) (Diptera: Therevidae) new to Gloucestershire. *British Journal of Entomology and natural History* **7,** 180.

Alexander, K.N.A., 2002. *The invertebrates of living and decaying timber in Britain and Ireland – a provisional annotated checklist.* English Nature Research Report No. **467.**

Alexander, K.N.A. 2003. *Prionychus melanarius* (Germar) (Tenebrionidae) widespread in north Gloucestershire. *The Coleopterist* **12,** 63-65.

Alexander, K.N.A. In press. The saproxylic beetle fauna of Gloucestershire orchards. *The Coleopterist.*

Irwin, M.E. and Lyneborg, L. 1981. Therevidae. **In** McAlpine, J.F. *et al.* (Eds) *Manual of Nearctic Diptera* **1,** 513-523. Research Branch Agriculture Canada, Monograph No. 27.

Owen, J.A. 1993. Rearing *Psilocephala melaleuca* (Loew) (Diptera: Therevidae) from larvae. *Entomologist's Record & Journal of Variation* **105,** 257-259.

Stubbs, A.E. and Drake, M. 2001. *British Soldierflies and their allies.* 512 pp. British Entomological and Natural History Society.

Dipterists Digest 2007 **14,** 90-92

Corrections and changes to the Diptera Checklist (18) – Editor

It is intended to publish here any corrections to the text of the latest 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.

Where names of genera and species are given as in the Checklist, authorship is not stated here, unless a change in taxonomic status is involved. Changes are listed under families; names new to the British Isles list are in bold type. The notes below refer to deletion of 1 species and addition of 10 species, resulting in a new total of **6983** species.

Keroplatidae. A new synonymy results from examination of types in the preparation of the Swedish checklist (KJAERANDSEN, J. *et al.* 2007. Annotated checklist of fungus gnats from Sweden (Diptera: Bolitophilidae, Diadocidiidae, Ditomyiidae, Keroplatidae and Mycetophilidae). *Insect Systematics & Evolution Supplement* No. **65,** 1-128):
Orfelia ***lugubris*** (Zetterstedt, 1851 – *Platyura*) = *O. tristis*

Mycetophilidae. A new synonymy results from KJAERANDSEN, J. *et al.* (2007. *op. cit.*)):
Dynatosoma ***thoracicum*** (Zetterstedt, 1838 – *Mycetophila*) = *D. norwegiense*

The following addition and change result from P. LAŠTOVKA and J. ŠEVČÍK (2006. A review of the Czech and Slovak species of *Docosia* Winnertz (Diptera: Mycetophilidae), with atlas of the male and female terminalia. *Casopis Slezského Musea v Opave, Opava* (A) **55,** 1-37):
Docosia ***expectata*** Laštovka & Ševčík, 2006 = *Docosia* sp. indet. sensu Hutson *et al.*, 1980 [see Note 1 in checklist]
Docosia ***flavicoxa*** Strobl, 1900 = *D. pallipes* Edwards, 1941

Sciaridae. The following changes result from F. MENZEL and K. HELLER (2007. Bemerkungen zur Nomenklatur der Sciariden (Diptera, Bibionomorpha: Sciaridae). *Studia dipterologica* **13**(2006)**:** 209-229):
COSMOSCIARA Frey, 1942
Cosmosciara perniciosa (Edwards, 1922), transferred from *Cratyna* subgenus *Peyerimhoffia*
Sciara ***mendax*** Tuomikoski, 1960 sp. restit. = *S. nursei* Freeman, 1983

Cecidomyiidae. The following new generic synonymy was proposed by K.M. HARRIS, S. SATO, N. UECHI and J. YUKAWA (2006. Redefinition of *Oligotrophus* (Diptera: Cecidomyiidae) based on morphological and molecular attributes of species from galls on *Juniperus* (Cupressaceae) in Britain and Japan. *Entomological Science* **9,** 411-421):
Oligotrophus = *Schmidtiella* and *Arceuthomyia*, resulting in the following new combinations:

Oligotrophus valerii (Tavares, 1904)
Oligotrophus gemmarum (Rübsaamen, 1914)

The following Nearctic species, which has become widely established in Europe, was added by M. SKUHRAVÁ, V. SKUHRAVÝ and G. CSÓKA (2007. The invasive spread of the gall midge *Obolodiplosis robiniae* in Europe, *Cecidology* 84-90):
OBOLODIPLOSIS Felt, 1908
Obolodiplosis ***robiniae*** (Haldeman, 1847 – *Cecidomyia*)

Ceratopogonidae. The following changes result from R. SZADZIEWSKI, W. GILKA and P. DOMINIAK (2007. A redescription of *Forcipomyia squamigera* Kieffer, 1916 in all stages (Diptera: Ceratopogonidae). pp. 275-280. **In** Andersen, T., (Ed.) *Contributions to the Systematics and Ecology of Aquatic Insects – A tribute to Ole A. Saether*. The Caddis Press):
Forcipomyia ***squamigera*** Kieffer, 1916 = *tenuisquama*: Zilahi-Sebess, 1940, misident.
Forcipomyia bipunctata (Linnaeus, 17 67) = *tenuisquama* Kieffer, 1924

A revision by R. SZADZIEWSKI, P. DOMINIAK and A. TÓTHOVA (2007. European *Atrichopogon* biting midges of the subgenus *Meloehelea* (Diptera: Ceratopogonidae). *Polskie Pismo Entomologiczne* **76,** 267-284) has resulted in the recognition that *A. meloesugans* is a distinct species from *A. winnertzi* and that the latter does not attack beetles of the genus *Meloe* but it was not confirmed that both species occur in Britain.

The following synonymy in a revision by R. SZADZIEWSKI, M. GWIZDALKA-KENTZER and E. SONTAG (2007. Predatory biting midges of the genus *Sphaeromias* (Diptera: Ceratopogonidae). *Polskie Pismo Entomologiczne* **76,** 293-302) reduces the species of *Sphaeromias* recognised in Britain and Europe to two:
Sphaeromias pictus (Meigen, 1818) = *miricornis* (Kieffer, 1919) and *candidatus* (Loew, 1856)

Empididae. The following species is added in the present issue:
Hilara ***woodiella*** Chvála, 1999

Dolichopodidae. The following species is added in the present issue:
Medetera ***insignis*** Girschner, 1888

A spelling error to an addition in a previous issue (2005. **12,** 77) requires correction:
Dolichophorus kerteszi [not *kerteszii*]

Syrphidae. The following species was added by M.C.D. Speight, J.-P. Sarthou and D.A. Levy, D.A. (2007 *Eupeodes goeldlini* (Dip.: Syrphidae) new to Britain, France and Ireland, with a key to separate it from related Atlantic zone species. *Entomologist's Record and Journal of Variation* **119,** 213-219) [+ indicates that a species is also new to the Irish list]:
Eupeodes ***goeldlini*** Mazánek, Láska & Bičík, 1999 +

Pipunculidae. The following new synonymy was proposed by C. KEHLMAIER (2006. The West Palaearctic species of *Jassidophaga* Aczél and *Verrallia* Mik described up to 1966 (Diptera: Pipunculidae). *Stuttgarter Beiträge zur Naturkunde, Series A (Biologie)* **697,** 1-34:
*Jassidophaga **fasciata*** (von Roser, 1840 - *Pipunculus*) = *setosa* (Verrall, 1901)

The following changes, including the transfer of the name *varipes* from a species of *Pipunculus* to a species of *Cephalops* and the deletion of the name *hertzogi* from the British list, result from C. KEHLMAIER (2008. Finnish Pipunculidae (Diptera) studies Part I: Taxonomic notes on *Cephalops* Fallén, 1810, *Pipunculus* Latreille, 1802 and *Tomosvaryella* Aczél, 1939 *Zootaxa* **1672,** 1–42):
*Cephalops **varipes*** (Meigen, 1824 - *Pipunculus*) = *semifumosus* (Kowarz, 1887)
Pipunculus campestris Latreille, 1802 = *Pipunculus spinipes* Meigen, 1830 and *Pipunculus thomsoni* Becker, 1897, new synonyms
*Pipunculus **elegans*** Egger, 1860 = *Pipunculus spinipes*: authors, not Meigen, 1830
*Pipunculus **lenis*** Kuznetzov, 1991 = *Pipunculus thomsoni*: authors, not Becker, 1897
*Pipunculus **omissinervis*** Becker, 1889 = *Pipunculus phaeton* Coe, 1966: 49 and *Pipunculus hertzogi*: authors, not (Rapp, 1943) [*P. hertzogi* is a Nearctic species not synonymous with *phaeton*; the synonymy of *phaeton* with *omissinervis* is tentative and it may prove to be a distinct species]
*Pipunculus **violovitshi*** Kuznetzov, 1991 = *Pipunculus varipes*: authors, not Meigen, 1824

Agromyzidae. The following species is added in the present issue:
*Phytomyza **sedi*** Kaltenbach, 1869

The following species was added by R. EDMUNDS and W. ELLIS (2008. *Aulagromyza luteoscutellata* (de Meijere, 1924) (Dipt., Agromyzidae): new to Great Britain. *Entomologist's Record and Journal of Variation* **120,** 21-24):
*Aulagromyza **luteoscutellata*** (de Meijere, 1924 -*Paraphytomyza*)

Asteiidae. The following species was added by D.J. GIBBS and L. PAPP (2007. A review of the Holarctic species of *Leiomyza* Macquart, 1835 (Diptera: Asteiidae) with descriptions of two new species. *Studia dipterologica* **13**(2006)**:** 241-248):
*Leiomyza **birkheadi*** Gibbs, 2007

Muscidae
The following species are added in the present issue:
*Lispe **longicollis*** Meigen, 1826
*Lispe **melaleuca*** Loew, 1847

Changes to the Irish Diptera List (8) – Editor

This section appears as necessary to keep up to date the initial update of the Irish list in Vol. **10,** 135-146. Species are listed under families, but with references listed separately. The additions reported here bring the confirmed Irish list to **3218** species.

Limoniidae
Ilisia occoecata Edwards, 1936 (Ashe *et al.* 2007a)
Molophilus curvatus Tonnoir, 1920 (Ashe *et al.* 2007a)
Rhypholophus bifurcatus Goetghebuer, 1920 (Ashe *et al.* 2007a)
Scleroprocta sororcula (Zetterstedt, 1851) (Ashe *et al.* 2007a)
Tipulidae
Nephrotoma crocata (Linnaeus, 1758) (Irish status confirmed: Ashe *et al.* 2007b)
Tipula (*Platytipula*) *melanoceros* Schummel, 1833 (Irish status confirmed: Ashe *et al.* 2007b)
Tipula (*Vestiplex*) *montana* Curtis, 1834 (Irish status confirmed: Ashe *et al.* 2007b)
Stratiomyidae
Odontomyia angulata (Panzer, 1798) (Gittings 2007)
Syrphidae
Eupeodes goeldlini Mazánek, Láska & Bičík, 1999 (Speight *et al.* 2007; see above)
Lauxaniidae
Sapromyza basalis Zetterstedt, 1847 (Chandler and Alexander 2008 in the present issue)
Drosophilidae
Hirtodrosophila confusa (Staeger, 1844) (O'Connor *et al.* 2007 following Alexander in press)
Sarcophagidae
Macronychia striginervis (Zetterstedt, 1838) (Chandler, O'Connor and Ronayne 2008 in the present issue)

References

Ashe, P., O'Connor, J.P., Chandler, P.J., Stubbs, A.E., Vane-Wright, R.I. and Alexander, K.N.A. 2007a. The craneflies (Diptera) of Ireland. Part 6. Limoniidae: Chioneinae. *Bulletin of the Irish Biogeographical Society* **31,** 358-408.

Ashe, P., O'Connor, J.P., Chandler, P.J., Stubbs, A.E., Vane-Wright, R.I. and Alexander, K.N.A. 2007b. The craneflies (Diptera) of Ireland. Part 5. Tipulidae. *Bulletin of the Irish Biogeographical Society* **31,** 296-357.

Gittings, T. 2007. *Odontomyia angulata* (Panzer, 1798) a soldierfly (Diptera, Stratiomyidae) new to Ireland. *Irish Naturalists' Journal* **28,** 419.

O'Connor, J.P., Chandler, P.J., Ashe, P., Speight, M.C.D. and Nash, R. 2007. A review of the Irish lesser fruit-flies (Diptera: Drosophilidae). *Irish Naturalists' Journal* **28,** 506-516.

Dipterists Day Exhibits 2006
- compiled by Editor from exhibitors' notes

Apart from those exhibits that also appeared at the Exhibition of the British Entomological and Natural History Society, notes were received only for the following exhibits:

CROSSLEY, R. Some noteworthy Diptera from the North York Moors National Park: *Tipula yerburyi* Edwards (Tipulidae), flying in the overhangs along wooded moorland streams; *Ellipteroides alboscutellatus* (von Roser) (Limoniidae), found in tufa flushes in old woodland, abundant in Forge Valley Woods NNR; *Phylidorea abdominalis* (Staeger) (Limoniidae), occurs in quantity at Fen Bog, the only known post 1920 Yorkshire locality; *Dicranomyia aperta* Wahlgren (Limoniidae), known only from Sand Dale [see note on page 4 of the previous issue]; *Oxycera dives* Loew (Stratiomyidae), associated with calcareous flushes in several localities, e.g. Ashberry and Dalby Forest; *Odontomyia hydroleon* (Linnaeus) (Stratiomyidae), a well-established population in a calcareous fen in Dalby Forest is the only known English colony; *Tachytrechus consobrinus* (Haliday in Walker) (Dolichopodidae), known in Yorkshire from two sites, Fen Bog and a small peat bog in Benfield Gill; *Hydrophorus albiceps* Frey (Dolichopodidae), a peat bog specialist on the North York Moors, found at Fen Bog, Tranmere Bog and Benfield Gill; *Campsicnemus alpinus* (Haliday) (Dolichopodidae), of localised occurrence on the Moors, usually found on peat bogs: *Xylota xanthocnema* Collin (Syrphidae), found in ancient woodland at the southern edge of the Moors.

GIBBS, D. Some scarcer Diptera collected in 2006: *Gonomyia abbreviata* Loew (Limoniidae), Tucking Mill (ST7661), Somerset, 18.vii; *Pyratula perpusilla* (Edwards) (Keroplatidae), Elveden (Center Parcs) (TL8080), Suffolk, 2.vii; *Rymosia spinipes* Winnertz (Mycetophilidae), Longleat (Center Parcs) (ST8242), Wiltshire, 6.ix; *Mycetophila lubomirskii* Dziedzicki (Mycetophilidae), Whinfell Forest (Center Parcs) (NY5826), Cumbria, 2-3.vii; *Platypalpus leucothrix* (Strobl) (Hybotidae), Tucking Mill (ST7661), Somerset, 25.vi; *Rhamphomyia micropyga* Collin (Empididae), Tucking Mill (ST7661), Somerset, 28.v; *Medetera parenti* Stackelberg (Dolichopodidae), Elveden (Center Parcs) (TL8080), Suffolk, 27.vii; *Thrypticus divisus* (Strobl) (Dolichopodidae), Whinfell Forest (Center Parcs) (NY5826), Cumbria, 1-2.vii; *Thrypticus laetus* Verrall (Dolichopodidae), Whinfell Forest (Center Parcs) (NY5826), Cumbria, 2.vii; *Rhaphium fractum* Loew (Dolichopodidae), River Eden nr. Temple Sowerby (NY6125), Cumbria, 3.vii; *Lamprochromus bifasciatus* (Macquart) (Dolichopodidae), Bathford Paper Mill (ST7967), Somerset, 28.vi; *Cephalops pannonicus* (Aczél) (Pipunculidae), Bathford Paper Mill (ST7967), Somerset, 28.vi; *Eudorylas fusculus* (Zetterstedt) (Pipunculidae), Longleat (Center Parcs) (ST8242), Wiltshire, 14.vii; *Eudorylas montium* (Becker) (Pipunculidae), Whinfell Forest (Center Parcs) (NY5726), Cumbria, 1-2.vii; *Terellia winthemi* (Meigen) (Tephritidae), Tucking Mill (ST7661), Somerset, 25.vi; *Dasiops trichosternalis* Morge (Lonchaeidae) Whinfell Forest (Center Parcs) (NY5827), Cumbria, 2.vii; *Pherbellia griseola* (Fallén) (Sciomyzidae), Longleat (Center Parcs) (ST8342), Wiltshire, 14.vii; *Paraclusia tigrina* (Fallén) (Clusiidae), Tucking Mill (ST7661), Somerset, 23.vii; *Dicraeus styriacus* (Strobl) (Chloropidae), Tucking Mill (ST7661), Somerset, 28.v; *Eribolus gracilior* (de Meijere) (Chloropidae), Bathford Paper Mill (ST7967), Somerset, 28.vi; *Lasiambia coxalis* (von Roser) (Chloropidae), third British record, Elveden (Center Parcs) (TL8080), Suffolk, 26.vii; *Eustalomyia hilaris* (Fallén) (Anthomyiidae), Bathford Paper Mill (ST7967), Somerset, 28.vi; *Cylindromyia interrupta* (Meigen) (Tachinidae), Longleat (Center Parcs) (ST8242), Wiltshire, 5 & 14.vii; *Freraea gagatea* Robineau-Desvoidy (Tachinidae), Elveden (Center Parcs) (TL8080), Suffolk, 27.vii.

Dipterists Digest 2007 **14**, 95-97

Medetera insignis Girschner, 1888 (Diptera, Dolichopodidae) new to Britain

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Summary
The discovery of a single male *Medetera insignis* Girschner, 1888 in North Somerset is reported, its identification discussed and genitalia illustrated.

Introduction

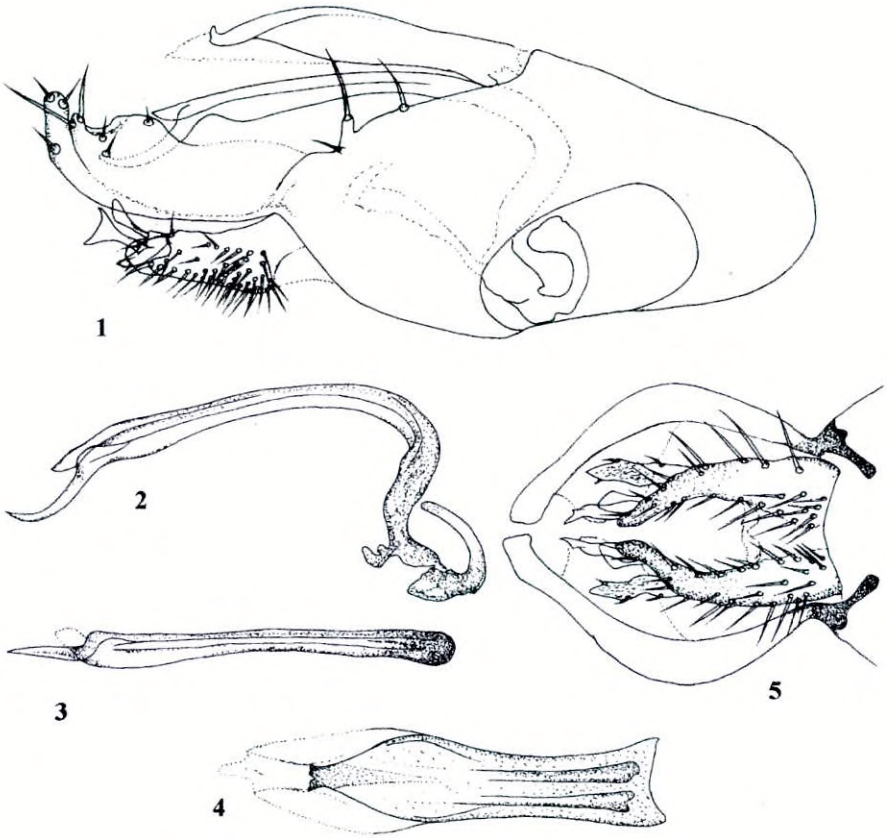
While sampling the banks of a cutting along the long-dismantled Bath to Radstock railway line, Somerset, I captured a distinctive *Medetera*. Most flies of this genus are relatively uniform in general appearance and only with critical examination can the different species be resolved. However, this single male specimen immediately stood out because of its clear yellow legs, only coxae and apical tarsal segments darkened. The only other British species with such clear yellow legs is *M. flavipes* Meigen, 1824, a much larger species with a well-developed presutural dorsocentral. After failing to reach a conclusion using the handbook by d'Assis-Fonseca (1978), I keyed it through Negrobov and Stackelberg (1988) where it ran readily to *M. insignis*. Reference to the illustrations in Negrobov and Stackelberg (1972) confirmed this determination.

Identification

Using d'Assis-Fonseca (1978) *M. insignis* will run to couplet 15 but both the included species *M. obscura* (Zetterstedt, 1838) and *M. pinicola* Kowarz, 1877 (and indeed all other British species with reddish basal antennal segments) are dark-legged. In the single specimen obtained, the reddish basal antennal segment are rather dark and it is possible that this character might be overlooked if lighting is poor. If so then the Somerset specimen runs to couplet 18 where it will agree with the characters given for *M. pallipes* (Zetterstedt, 1843). *Medetera pallipes* is a small species with pale legs, dorsocentrals decreasing in size towards the front of the thorax and a relatively long apical section of vein M_{3+4}. Any overlooked British specimens of *M. insignis* in collections are most likely to be confused with *M. pallipes*. However, *M. pallipes* has the femora infuscated, certainly not clear yellow (teneral individuals might lack such darkening), R_{4+5} and M_{1+2} closely approaching at wing tip, much less than half the depth of cell r_{4+5} at level of dm-cu and hind tibia with anteroventral apical setae normal, slender and concolourous with the tibia.

Males of *M. insignis* can be distinguished from all other British species by the following combination of characters: about 7 dorsocentral setae increasing in size from front to back (anterior ones very small); femora and tibiae clear pale yellow; basal antennal segments reddish; apical section of M_{3+4} about twice as long as dm-cu; tips of R_{4+5} and M_{1+2}

separated by about half the widest depth of cell r_{4+5} opposite crossvein dm-cu; hind tibia apically with two close-set, short, black spines anteroventrally. Additionally the male genitalia are very distinctive (Figs 1-5). Female not seen but chaetotaxy, leg colour (legs even yellower including the coxae according to Negrobov and Stackelberg 1988), antennal colour, and wing venation are the same. However, the black spines on the tip of the hind tibia are probably a secondary sexual character so might not be apparent in the female.



Figs 1-5. ***Medetera insignis*** **male genitalia. 1, male genitalia lateral view; 2, aedeagus lateral view; 3, aedeagus ventral view; 4, hypandrium ventral view; 5, cerci and lobes of surstyli, dorsal view.**

Habitat and Distribution

The single male specimen was swept from the shady bank of a disused railway cutting at Tucking Mill, Somerset, V.C. 6, ST7661, on 18 July 2006. The railway line has been cut through Jurassic limestone and is now encroached upon by the adjacent woodland so is relatively shady. Further along the cutting there are areas of flower-rich calcareous grassland, both on the banks of the cutting and in adjacent meadows. The specimen was not noticed when caught so it is not known if it was swept from the rock face or tree trunks. A visit to the site a few days later specifically to look for further specimens failed to find any.

Outside Britain *M. insignis* is known from the central belt of Europe and northern Africa (Negrobov and Stackelberg 1988).

Acknowledgements

I would like to thank Dr Oleg Negrobov and Dr Igor Grichanov for their help in confirming the identity of the specimen. The survey of Tucking Mill was commissioned by Wessex Water.

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***Hilara pseudosartrix* Strobl (Diptera, Empididae), the first record for England** – On the Dipterists Forum spring meeting at Hereford on 12 May 2006 I collected a single male *Hilara* at Haugh Wood NNR, Herefordshire which would not key out in the keys by J.E. Collin (1961. British Flies VI, Empididae. Cambridge University Press), but where uncertainty began in the key a marginal note reminded me of *H. pseudosartrix* added to the British fauna from Scotland by Adrian Plant (Plant, A.R. 1998. (*Hilara pseudosartrix* Strobl 1892 (Diptera, Empididae) new to Britain). *Dipterists Digest* (*Second Series*) **5,** 6-7). Reference to the key and the fuller description by M. Chvála (2005. The

Empidoidea (Diptera) of Fennoscandia and Denmark. IV. *Genus Hilara. Fauna Entomologica Scandinavica* **40**) confirmed the determination. In my specimen the darker mesonotal lines between the acrostichal and dorsocentral bristles are scarcely distinguishable, in which case, as Plant (*op. cit.*) noted, Collin's key could lead to *medeteriformis* Collin (not *medeterifrons* as printed in error), but among other distinctions the genitalia are very different. I swept the specimen from a heavily shaded small stream, hardly more than a trickle, arising from a seepage on the south east facing slope of Haugh Wood (SO5935), while the Scottish site in Sutherland was a boggy birch (*Betula*) clump bordering a stream and coniferous plantation. On the basis of a single record Plant (2004. *Hilara* Meigen (Diptera: Empididae) in Britain: a provisional synopsis of distribution, habitat preferences and behaviour. *Acta Universitatis Carolinae Biologica* **48,** 165-196) did not place *H. pseudosartrix* in one of his distribution groups, but the two widely separated British sites now suggest that it is likely to occur in suitable wet woodland habitats in intervening areas and belongs in his group of northern and western species – **JONATHAN COLE,** 2 Lenton Close, Brampton, Huntingdon, Cambridgeshire PE28 4TR

***Chyromya britannica* Gibbs (Diptera, Chyromyidae) present in France** – The recent key to British *Chyromya* (Gibbs, D. 2007. *Dipterists Digest (Second Series)* **14,** 13-22) prompted me to re-examine a solitary male reared specimen which had lingered for some years without a positive determination. After maceration and preparation of the genitalia, it became clear that this was the newly described *C. britannica.* The quoted determining feature, the darkening of the apical fore tarsal segments, is less evident in the specimen I have, doubtless because it was killed rather too soon after emergence, before full coloration had been achieved. The male terminalia agree in all respects with the figures of *C. britannica.* The specimen was reared from material taken from a rot-hole in an old *Salix* on 24.ii.1994. The adult fly emerged on 14.vi.94. The locality was Charnay, Rhône (Lambert Grid 781.2021) – **PHIL WITHERS,** 40 Montée du Cimetière, Sainte Euphémie, 01600, France

NOTICE: I am currently compiling an annotated check-list of the Sphaeroceridae of France (similar to my recent treatment of Pipunculidae) and would be grateful for any records or specimens to enhance this – **PHIL WITHERS,** 40 Montee du Cimetiere, Sainte Euphemie, 01600, France

Dipterists Digest 2007 **14**, 99-101

Two West European species of *Lispe* Latreille (Diptera, Muscidae), new to the British list, found in England

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Summary
Two specimens of the genus *Lispe*, one female of *L. longicollis* Meigen, 1826 and one male of *L. melaleuca* Loew, 1847 were collected at Dogsthorpe Star Pit, Cambridgeshire (TF 215025) on 29 June 2004 and represent species new to the British list. No further specimens have been collected and it appears that they may have been chance arrivals that have not become established in Britain.

Introduction

Lispe Latreille is a characteristic and easily recognised genus of Muscidae, immediately distinguished by the enlarged and spoon-like palpi, which is mainly subtropical and tropical in distribution. In Britain the species are usually found on the coast, but *L. tentaculata* (De Geer) is also common inland around muddy ponds and on river banks where there are stretches of mud or sand. JHC has also found *L. pygmaea* Fallén to be well established inland in Cambridgeshire, at several sites along the River Great Ouse valley, and on the Ouse and Nene Washes. Adults are predaceous on other small insects (Werner and Pont 2006). The known larvae live in organically-rich mud and are also predaceous.

Lispe reaches the northern limit of its European distribution in the British Isles and Scandinavia. Six British species were known to Verrall (1901), and this number increased to nine in Kloet and Hincks (1945) although one of these was subsequently deleted from the British list (*L. hydromyzina* Fallén) so that the list hitherto stood at eight species (Chandler 1998).

It was therefore a matter of considerable astonishment to JHC when he collected two specimens of *Lispe* at Dogsthorpe Star Pit, Cambridgeshire (formerly Northamptonshire, TF 215025) on 29 June 2004 that evidently represented two species different from each other but neither of which could be identified as any species currently on the British list. The specimens were sent to ACP who identified them as *Lispe longicollis* Meigen, 1826 (female) and *Lispe melaleuca* Loew, 1847 (male).

Recognition

Lispe longicollis has a widespread distribution in the Palaearctic region from Western Europe eastwards to China and North India, and in the south to North Africa, the Middle East and possibly south to the Sudan (Pont 1986, 2005); it is classed as "endangered" in the Czech Republic (Gregor *et al.* 2006). It has three characters that make it unique compared to previously known British *Lispe* species: vein M is slightly curved forward towards vein R_{4+5}

in its apical part; mid tibia has a strong anteroventral seta; the meron is setulose below the spiracle (in addition to the fine setulae in the lower posterior corner, above hind coxa).

Lispe melaleuca also has a widespread distribution in the Palaearctic region. from Western Europe eastwards to China and North India, and in the south to North Africa (Pont 1986, 2005). It is a species with yellow palpi and shares with *L. tentaculata* the presence of soft hairs on the ventral surface of the scutellum at the tip. The male has the fore leg with tarsomere 1 and apical half of tarsomere 2 yellow, contrasting with tarsomeres 3-5 and basal half of tarsomere 2 which are black; tarsomeres 3-5 are also rather dilated.

Characteristics of the capture site

Dogsthorpe Star Pit consisted of a series of pools in the early 1990s and was designated as an SSSI in 1993, which effectively blocked plans to turn it into a landfill site. It has been described in detail by Drake (2002). When JHC visited the site in June 2004, the single lake had been reduced to about half the original area. Both new *Lispe* were swept from vegetated marginal mud, together with numerous *L. tentaculata* and a few *L. uliginosa* Fallén. The female *L. longicollis* is superficially similar to the latter and was nearly overlooked in sorting the catch. However, subsequent visits in June and July 2005 and 2006 failed to find any further specimens.

In 2005 the lake had been further reduced to two pools preparatory to installing a sluice to control water levels. During 2006 there was considerable bulldozer disturbance of the lake floor and original shore, creating new banked-up and mainly dry lagoons, probably with the aim of restoring the series of pools of the 1990s (see Drake 2002). But in the course of this work, much of the shoreline mud communities were considerably disturbed or destroyed. The low water levels of the last 2-3 years have also dried out the ca. 2 ha of grass and semi-aquatic vegetation with pools which were under water or were wet for at least 6-9 months of the year. So, either artificially or naturally, the water levels and presumably the slight salinity have fluctuated erratically since the pit became an SSSI in 1993.

The origin of these two species of *Lispe* in Britain is a complete mystery. It seems unlikely that they have been present in Britain since earliest times and have been overlooked by dipterists, particularly *L. melaleuca* which was strikingly distinct in the net as a largely black fly with paired silver spots on three abdominal tergites. It is also unlikely that they were chance arrivals with aerial plankton, as may have been the case with the tiny *Atherigona varia* (Meigen) (see Pont and Grainger 2000). Furthermore, the appropriate department of Peterborough City Council could find no records or evidence of imported sand or gravel at the site that might have contained puparia of these species Tim Burke (*pers. comm.*). At all events, it seems extremely improbable that the two species have become established in this country, and they must be regarded as chance arrivals.

Acknowledgements

We are grateful to the Warden, Tim Burke, for permission for JHC to collect and record at Star pit and for his trouble in seeking information from Peterborough City Council.

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***Rhingia rostrata* (Linnaeus, 1758) (Diptera, Syrphidae) in North Wales in 2007 –** *Rhingia rostrata* (Linnaeus) is a largely southern species that has undergone quite a dramatic range expansion through the Welsh Marches in recent years. In the period since the provisional atlas was published (Ball, S.G. and Morris, R.K.A. 2000. *Provisional atlas of British hoverflies (Diptera, Syrphidae)*. CEH, Monks Wood, 167pp) it has become clear that it is now well established as far north as Shropshire (see Hoverfly Recording Scheme website www.hoverfly.org.uk). It was, however, formerly known from North Wales and according to data held on the Hoverfly Recording Scheme database the most recent record was from Rhyd-y-Creuau (by Peter Skidmore on 16 September 1977). Additional previous records were from Barmouth (25 August 1895, R.C. Bradley) and Newborough Warren (1968, P.N. Crow). On 27 August 2007 I took a single female on the edge of conifer woodland close to Lake Vernwy with a forestry signboard giving the name as "Dyfnant" at SJ035180. The site was fairly un-remarkable, comprising verges with knapweed *Centaurea nigra* and wild angelica *Angelica sylvestris* at the edge of a conifer plantation, but within a wider landscape that included flushes with meadowsweet *Filipendula ulmaria*. This single individual was immediately obvious because it was bright orange, and upon closer inspection had no marginal markings on the tergites and completely orange tibiae. *Rhingia rostrata* has two generations annually, one in May-June and the other in late August-September when it appears to be somewhat more numerous. We still do not know about the larval biology with any certainty and this site throws no further light upon the matter apart from making it questionable whether badger latrines are actually significant – **ROGER K.A. MORRIS,** 7 Vine Street, Stamford, Lincolnshire PE9 1QE

***Rhingia rostrata* (Linnaeus, 1758) (Diptera, Syrphidae) in Northamptonshire in 2007 –** On 1 September 2007 I visited two woodlands in Northamptonshire, Wakerley Great Wood (SP9698) and Bedford Purlieus (TL0498) and at both sites took a single female *Rhingia rostrata* (Linnaeus). At Wakerley Great Wood the specimen was flying amongst ride-side vegetation, whilst the specimen at Bedford Purlieus was spotted at a knapweed *Centaurea nigra* flower in shade. These records are a considerable surprise because although *R. rostrata* has clearly been expanding its range in the west Midlands there have been no indications of range change in eastern England. Data held by the Hoverfly Recording Scheme and illustrated by S.G. Ball and R.K.A. Morris (2000. *Provisional atlas of British hoverflies (Diptera, Syrphidae)*. CEH, Monks Wood, 167pp) indicate that until now this species has been confined almost exclusively to counties south of London. There are three more northerly records that must be treated with caution, a record from Lincolnshire in 1897 by A.T. Thornley and two records from Cumberland in 1900 and 1911 by Frank Day; none of which seem to be terribly plausible.

Other syrphids noted at Bedford Purlieus were a single male of *Xylota xanthocnema* Collin and a female of *Volucella inanis* (Linnaeus). The latter is another example of a hoverfly that has undergone substantial range expansion in recent years – **ROGER K.A. MORRIS,** 7 Vine Street, Stamford, Lincolnshire PE9 1QE

Dipterists Digest 2007 **14**, 103-117

Uncommon shore flies (Diptera, Ephydridae) from exposed riverine sediment in Britain

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Summary
Surveys of flies using exposed riverine sediment on 23 rivers in Britain showed that ephydrids were a dominant group. Records and notes on the habitat preferences are given for uncommon species. Three species (*Athyroglossa ordinata* Becker, *Hecamedoides unispinosus* (Collin), *Scatella obsoleta* Loew) that are very rare in Britain showed strong fidelity to wet exposed riverine sediment. Less strong fidelity was shown by *Diclasiopa lacteipennis* (Loew) and *Polytrichophora duplosetosa* (Becker), which are uncommon in Britain. The commoner species *Athyroglossa glabra* (Meigen) and *Ditrichophora palliditarsis* (Becker) were also strongly associated with this habitat. Records of several other uncommon species are given.

Introduction

Ephydrids (shore flies) are frequently one of the dominant families in wetlands, both in terms of abundance of individuals and often in species richness. There is a considerable body of ecological work on the North American fauna, for example, on the ecology and feeding preferences of a number of species elucidated by Foote and his co-workers (e.g. Foote 1993; Blair and Foote 1984; Larson and Foote 1997), but rather little ecological work has taken place in Europe (e.g. Dahl 1959; Bährmann 1978, 1994). In Britain, there has been very little published on the distribution or ecology of the British fauna (e.g. Collin 1930, 1943, 1966; Irwin 1985; Drake 2002). This is due mainly to the scarcity of good keys to the family in English and perhaps to the small size of many species. It has to be admitted that many species are small and undistinguished, and this applies to many discussed here.

Ephydrids are likely to be particularly important at river shores since many have aquatic or amphibious larvae grazing algae or detritus at water margins. In a review of Diptera recorded on exposed riverine sediments (ERS), Godfrey (1999) acknowledged that ephydrids are an important component of the fly fauna of river margins although he discussed the family only briefly. Some relevant papers are by Zack (1979) and Scheiring and Deonier (1979a, b) who sampled stream or river margins in North America; their results indicated that sandy shores (but not a montane stony one) were among the more species-rich habitats. Here I report some of the more interesting records from three surveys undertaken on the assemblages of flies found on ERS (Bell *et al.* 2004; Bates *et al.* 2006; Drake *et al.* 2007).

The Environment Agency and Buglife, the Invertebrate Conservation Trust, initiated these surveys in response to the inclusion of the therevids *Cliorismia rustica* (Panzer) and *Spiriverpa lunulata* (Zetterstedt) and the cranefly *Rhabdomastix* '*hilaris*' *sensu lato* listed in the Biodiversity Action Plan (BAP) as exemplars threatened by interference with ERS (UK Biodiversity Group 1999a, b). As well as investigating these species, the work was expanded to include other families. The more unusual ephydrids are discussed here although the

importance of the family as a whole in ERS assemblages will be covered in a later publication.

Sites and Methods

The surveys included 23 rivers in Britain (Fig. 1). The work focused on sandy rivers with which the BAP therevids and cranefly species are associated, although some sites had stony ERS and little sand. The selection of sites on rivers in Devon was made from a larger number sampled by coleopterists based on advice from the Environment Agency on the occurrence of ERS. Sites in Cheshire were selected from a survey of potential ERS sites undertaken for the Environment Agency (Bates 2005). Sites on the remaining rivers were selected on advice from a number of sources including the Environment Agency, Countryside Council for Wales and fishing syndicates. At each site where access permission had been obtained, discrete patches of ERS were sought along a stretch of river of varying length, but usually between 200-500m. The resource was obvious on larger rivers, for example the Usk and Coquet, but was reduced to tiny patches of bare shore on smaller rivers such as the Rother and Weaver. Between one and six sites were visited on each river, and 1-12 separate samples (usually 5-8) were taken at each site. All surveys took place in July of 2004, 2005 or 2006. I surveyed all rivers except for the Lune (surveyed by Andy Godfrey) and the Tay and Spey (surveyed by Stephen Hewitt and John Parker).

Samples were collected by timed sweep-netting and suction sampling. A sweep-net sample consisted of alternately sweeping and removing flies from the net using a pooter for 10 minutes; most of this time was spent removing flies. The samples were targeted at ERS showing discrete conditions of moisture, vegetation cover and substrate particle size so that assemblages could be associated with particular conditions, for example, the bare wet shore or dry substrate with ruderal vegetation. Suction sampling was undertaken on about half the sites in 2005 and 2006, and consisted of a 2 minute sample taken with a modified garden leaf blower (Drake 2004). The same ground that had been swept was covered using the suction sampler.

Results

A brief summary of results for the family as a whole is useful to set the context for the scarce species. Ephydrids and dolichopodids were nearly always the clearly dominant families. The median number of ephydrid species was between 6 and 11 in each 10-minute sweep-net sample. The total number of species on each river was also high, varying between 15 and 42 species, and usually more than 30 species were found. Altogether, 83 taxa were recognised in the three surveys, which represents well over half the known British fauna. This total included at least one species of *Ditrichophora* and one *Hydrellia* that have still to be named.

Common and ubiquitous wetland species, such as *Scatella tenuicosta* Collin, *Parydra coarctata* (Fallén), *Hydrellia griseola* (Fallén) and *H. maura* Meigen, were the most frequent and often most abundant species. At the water margin on almost bare ERS, the consistent occurrence of *Ditrichophora palliditarsis* (Becker) and *Athyroglossa glabra* (Meigen) on many rivers in England and Wales indicated that these were key river-edge species, and were probably closely associated with wet fine ERS. *Athyroglossa glabra* was almost always

found on bare wet unshaded ERS, usually close to the water's edge and not more than 2m from it. Among the widespread flies, it was one of the best 'high fidelity' indicators of ERS.

Scarce species are discussed in turn. Sites are not usually named in the text but can be found in Appendix 1, which lists the records. Uncommon shore flies that are not restricted to river margins are not discussed here, and these include *Discomyza incurva* (Fallén), *Hydrellia porphyrops* Haliday, *Notiphila brunipes* (Robineau-Desvoidy), *Philygria picta* (Fallén) and *Trimerina madizans* (Fallén).

Athyroglossa ordinata Becker was recorded at five Devon rivers (Avon, Exe, Otter, Teign, Torridge), three sites on the Usk and one on the upper reaches of the Monnow. It was particularly frequent in 2004 in Devon (25 samples) and on the Usk in 2005 (13 samples) but much scarcer on Devon rivers surveyed in 2006 and elsewhere. It was usually found in low numbers at the Devon sites, although was one of the most consistently found species, and was sometimes numerous on the Usk at Llanvihangel Gobion where there was clearly a large population.

This fly showed a marked preference for sites with wide channels and with slow river flows, where it was nearly always found on wet bare substrate close to the water's edge (although up to 10m away on one occasion). It was sometimes found on ERS with sparse ruderal vegetation but not where there was continuous sward or tall herbs. The sites were always unshaded. The species appeared to have no preference for substrate type, being found on a variety ranging from large stones to silt at quiet backwaters. Two Devon samples were from cattle-trampled sand.

Only five other localities are known for *A. ordinata*. Old specimens in the Oxford Museum (Hope Department) are from Padstow and St Merryn, which are two nearby sites in Cornwall (the Padstow record being mentioned by Collin 1911), and from Mordiford, Herefordshire, which is close to the R. Lugg where the specimens may have been collected. Godfrey (1999) implied that the Cornish records were from freshwater streams flowing over the sandy sea shore here, but there are three small unnamed streams in this vicinity which may also have been the source of the specimens. The species was recorded recently from Dinefwr Deer Park, presumably from the R. Towy, Dyfed in Wales (Adrian Fowles, pers. comm.) and on the R. Severn at Dolydd Hafren, Powys, where it was swept from stony ERS (c. SJ201000, 30 July 2004, leg. Andy Godfrey; Godfrey 2004).

Athyroglossa ordinata is one of the few shore flies likely to be given a formal rarity status by JNCC (Falk and Ismay in preparation). Its provisional status of RDB1 is probably higher than can be justified as the species is more widespread than previously thought, but perhaps overlooked because of its close association with a habitat that many recorders would find uninteresting.

Diclasiopa lacteipennis (Loew) was found at three sites on the Weaver and one on the Bollin in Cheshire, and on the Mole and Teign in Devon. No more than three individuals were recorded at any site, and it was clearly scarce. The substrate was always sand or silt, always wet and sometimes with emergent vegetation such as bur-reed (*Sparganium erectum*). This

limited information suggested that it is associated with fine sediments, even when stones were present, as at the Mole, and perhaps has some requirement for vegetation at the water margin.

The species appears to be rare in Britain. The only published records are those of Collin (1943) from the Monnow and two Suffolk heathland or coastal sites, although it is widespread in Europe. In North America it was seen ovipositing in moist sand about 50cm from the waterline on a river sand bar (Deonier 1972). My continental records from France, Italy and Spain were from stony rivers and streams.

Gymnoclasiopa cinerella (Stenhammar) was found at only one site on each of the Coquet and the Till in Northumberland although it was frequent at the Till among *Phalaris* under willows. The fly was found on wet sand in shade and unshaded places.

This species appears to be rare in Britain. Collin (1911, 1943) knew of records from Aviemore in Scotland (Speyside) and Herefordshire but appeared not to have collected it himself. I have made no other records of my own.

Gymnoclasiopa collini (Canzoneri and Meneghini). A single female was found on a bare wet cobbly shore on the Monnow. Collin (1943) gave records (as *longula* (Stenhammar)) from 'the Monnow valley and other localities in Herefordshire' and Llangammarch, Brecknockshire (presumably from the Afon Irfon). I have collected it from saltmarshes in Hampshire (Bury Marsh, SU379115) and Dorset (Keysworth Marsh, SY947885) and from a disused gravel pit in Cambridgeshire (Eldernell Pit, TL313988), so it appears to have a wide ecological range.

Gymnoclasiopa plumosa (Fallén) was found in the rivers on sandy floodplains: two sites on each of the Rother and Wey (Hampshire, West Sussex, Surrey) and three on the Weaver in Cheshire where it was probably widespread. It was scarce, and no more than three individuals were found in any sample. Nearly all the sites were lightly shaded by trees, which was noteworthy since most samples were taken from unshaded places. The fly was found on wet shores, either with stones or sand, which were usually bare although, since these particular rivers had only narrow shores, there was always a densely vegetated bank close by.

This species is not particularly uncommon and is by no means confined to river margins as I have several records from other types of wetland including pools, seepages on soft cliffs and in valley fens, small streams in woodlands and one unexpected record from puddles on a sea wall between mudflats and grazing marsh. Collin (1943) suggested that it was probably a common British species but had not found it himself outside south-east England, although he mentioned a record from Tarrington, perhaps from the R. Frome, in Herefordshire (Collin 1911). Howe (1998) gave a record from the Monnow.

Hecamedoides unispinosus (Collin) was found at three Devon rivers in 2004: the Culm, two sites on the Otter, and the Teign, in a total of 21 samples taken mainly from the Otter and Teign. It was frequent and even numerous at several of these sites, and was also present in pitfall traps set for beetles. In Northumberland in 2006, it was found at one site on the Till and at two on the Coquet where it was quite widespread. Nearly all the records were on wet

substrate within a metre of either flowing or still water. At almost all the points where it was frequent or numerous, the substrate was silty or sandy wet shores, often at the tail end of bars and by backwaters and pools, and usually with sparse vegetation although in one case it was swept from a *Phalaris* bed and in another from below willows. It was also found at a few places with a more stony substrate but usually only in small numbers. At Hepple on the Coquet, it was frequent at a sandy-edged pool in a vast area of ERS that was nearly all stones, and this suggested that it strongly preferred finer sediments.

Hecamedoides unispinosus is probably scarce in Europe; there are published records only from Britain, from where Collin (1943) described it as *Discocerina glaucella* var. *unispinosa*, and several central European countries (Bulgaria, Czech Republic, Poland, Romania, Slovakia, Switzerland) (Mathis and Zatwarnicki 1995; Zatwarnicki 1996; Hollmann-Schirrmacher 1998), although I have collected it from stony rivers and streams in France and Spain. The few mentions of habitats in Zatwarnicki (1996) are 'along brook', 'meadow' and 'pasture near river', and in North America it has been recorded from the wave-washed sandy shore of a large lake (Steinly 1986 - as *glaucellus*, corrected by Mathis and Zatwarnicki 1990). A firm association with rivers is therefore not supported. The habitat of the related *Hecamedoides glaucellus* (Stenhammar), which appears to be as rare as *H. unispinosus*, has been described as moist sand with a high organic content but without vegetation at a coastal site (Dahl 1959). Collin (1911) quoted records of *H. glaucellus* from the Monnow valley but gave no further records in his 1943 paper. He appeared to suggest that the two species were found together here, so it was surprising that I found only *H. unispinosus*.

Hyadina scutellata (Haliday). One individual was found at the Usk on dry sand and cobbles with ruderal vegetation. The commoner species in the genus have a wide ecological range and are more often associated with damp or dry places rather than wetlands. Dahl (1959) suggested that *H. scutellata* was less xerophilic than *H. rufipes* (Meigen) or *H. guttata* (Fallén), but there appears to be no other information on its habitat preferences. *Hyadina rufipes* was widely distributed in the ERS surveys and was much more frequent than its common relatives *H. guttata* and the species we know as *H. humeralis* Becker (but apparently not this species, David Gibbs pers. comm.), and this suggested that river margins were an important habitat for it and that perhaps it is more truly a wetland species.

Polytrichophora duplosetosa (Becker) was widespread in the surveys and recorded in 47 samples from 14 rivers from Cheshire southwards. Despite its wide distribution, it was rarely found to be more numerous than one or a few individuals in any sample. It was more frequent and slightly more numerous at the Devon rivers than elsewhere; these samples accounted for about half the total records.

Polytrichophora duplosetosa was found at the water's edge on wet substrate that was notably more sandy or silty than usual or, when it was found on mainly stony substrate, there was usually sand or silt mixed with the stones. In the few samples where the fly was slightly more numerous, the substrate was more silty than sandy. Thus there appeared to be a preference for finer particles. The substrate was usually entirely bare or with only sparse

ruderal vegetation, and only occasionally was there continuous sward or dense tall herbaceous vegetation. Often, but not invariably, the places where it occurred were unshaded. Most samples came from recognisably ERS habitat but those from Bordon on the upper reaches of the Wey were from a slow-flowing woodland stream where exposed sediment was restricted to tiny shores.

The only published British records appear to be those of Collin (1943) for the Monnow valley and Porthcawl in Glamorganshire which is a coastal locality where ERS seems an unlikely habitat. My only other record is from a Cornish saltmarsh (Wadebridge, V.C. 3, SW984732, 30 May 2000). The BMNH has a specimen collected by J.H. Wood from Moccas Park, Herefordshire, on 2 September 1911. It therefore appears to be strongly associated with river margins although clearly is not confined to this habitat. Its apparent preference for fine sediment suggests that it does not have exceptionally strong fidelity to ERS.

In North America, other species of *Polytrichophora* have been found on mud or sand shores, and only rarely where there is 'marsh-reed' habitat (Deonier 1965; Scheiring and Foote 1973). Habitats mentioned for central European countries, where it appears to be a common fly, include mud and woodland close to a river (Zatwarnicki 1996; Zatwarnicki *et al.* 2001).

Scatella obsoleta Loew has white-spotted wings and a conspicuous thickened coastal margin in the males so it is unlikely to have been overlooked. It was found at two sites on each of the Coquet and Till, one on the Breamish (which is the same river as the Till but its upstream section), and on the Glen, all in Northumberland. It was also taken by Steven Hewitt and John Parker in the Buglife survey at Kercock on the Tay, V.C. 89 Perthshire (NO1238) on 15 July 2006, and at Fochabers on the Spey, V.C. 95 (NJ342611). The population at Doddington Bridge on the Till was particularly large, and the fly was widespread and sometimes numerous here, often outnumbering the common and ubiquitous *S. paludum* (Meigen) and *S. tenuicosta* Collin.

The records suggested a preference for finer substrate particles as it was particularly numerous on sandy or gravelly shores which were scarce here compared to stony shores, although it was also present in small numbers on pebbly or stony ERS. Nearly all the records were from wet river margin, and none was in the shade.

All previous records are from Scotland where it has been recorded from four places on the Spey and one on the Tay in the Central Highlands of Scotland (Falk and Ismay in prep.). Although in Britain it appears to have a strong association with river margins, it is found in a wider range of habitats elsewhere in Europe, including lake and maritime shores, although always on bare moist mud or sand (Dahl 1959; Olafsson 1991), and by a waterfall in Spain (Hollmann-Schirrmacher 1998). In North America, it was considered more typical of the community of sandy rather than muddy shores (Thier and Foote 1980). Falk and Ismay (in prep.) give the species a provisional Red Data Book status of Vulnerable (RDB2) which seems to be an accurate reflection of its rarity.

Scatella silacea Loew was found rarely, as single individuals at the Culm and Bray in Devon and at one site on the Weaver in Cheshire. There was no consistent pattern to the habitat

where it was found (bare stones or sand, wet or dry, with or without vegetation) and this is probably because river margins may not be its preferred habitat. I have rather more records from coastal streams and seepages, and fewer from saltmarsh and ponds. Nevertheless, it appears to be uncommon in Britain. Although I have not found it in large numbers, Terry (1952) recorded that it formed concentrations of many hundreds in a sewage filterbed.

Scatella subguttata (Meigen) is a frequent species on sandy coasts around Britain, and is mentioned here because the records from the Till and Coquet in Northumberland were well inland, at least 20km to nearest the coast and much further along the course of the rivers. Most authors accept that the species is coastal but Olafsson (1991) stated that it can be found at non-haline localities which are usually the sandy shores of lakes. *Scatella subguttata* was found at Sharperton on the Coquet at a large expanse of mainly stony ERS with drifts of sand by a fast-flowing river, and the fly was recorded at both the stony river edge and by a silty backwater. At Bewick Bridge on the Till it was found on a bare wet pebbly shore of a moderately fast-flowing river. Another non-coastal specimen is known from Sparham Pools, Norfolk, which is an old gravel pit more than 25km from the coast, (V.C. 27, TG0618, 13 August 1975, leg. J.W. Ismay, in the Norwich Castle Museum collection).

Two other commoner and predominantly coastal species were also found at the river margins. *Haloscatella dichaeta* (Loew) was recorded on the Teign in Devon only a few kilometres from the estuary, but an earlier record from the Monnow (Howe 1998) suggested that the Devon specimen may not have been merely a stray from the coast. *Lamproscatella sibilans* (Haliday) was found once on the Coquet but this species is known to have a broad ecological tolerance and can occur inland at freshwater or grassland sites (Pešková 1978, Skidmore 1994).

Scatophila noctula (Meigen). Single males and the presumed female of this species were present at one site on each of the Usk and Monnow in Gwent and the Dane in Cheshire. It was present on bare or sparsely vegetated shores, but on silt, sand or stony substrate both in shade and in the open. It probably occupies a broad range of habitats, as Dahl (1959) found that it (as *flavitarsis* Zetterstedt) preferred vegetated habitats on salt marsh meadow, grass pool, moist meadow and dune heath, and Gibbs (1992) recorded it from a coastal strandline by saltmarsh and a shingle bar. My other records include specimens from *Phragmites* beds in the Ant Valley in Norfolk (Catfield Great Fen, Sutton Fen, Rockland Marsh).

Scatophila unicornis Czerny is a tiny fly whose male has a conspicuous and slightly absurd dumpy horn in the centre of its face, making it unmistakable. A male was found by a shaded sandy backwater on the Usk and a female on the cobbly shore of the heavily shaded Ysgir, which is a small fast stony stream.

The species seems to have a reputation for being found in hot-houses (Collin 1911; Bolwig 1940) so my records, as well as that of Dr Tony Irwin from the Swanton Morley on the River Wensum, Norfolk (V.C. 28, TG0217, 2 August 1977, leg. A.G. Irwin, collected from vegetation beside this slow-flowing lowland river) and a specimen from Magor Marsh,

Gwent, in the Cardiff Museum, demonstrate that it is not confined to warm or anthropic situations.

Discussion

These records of rarely recorded shore flies highlight the family's importance on river margins and in particular of exposed riverine sediment. Apart from the known occurrence of *S. obsoleta* on river margins, the results appear to be the first to indicate that there is a small suite of species of considerable importance on river shores. Attention has previously focused on several rare species of *Tachydromia* (Hybotidae) living on stony ERS that is often dry and more similar to that recognised by coleopterists to be of value (e.g. Hewitt and Chvála 2002). Not all of the ephydrids were confined to ERS but those that appear to be candidate specialists of the habitat are *Athyroglossa ordinata*, *Hecamedoides unispinosus*, *Scatella obsoleta* and perhaps *Polytrichophora duplosetosa* and *Diclasiopa lacteipennis*. The two commoner species, *Ditrichophora palliditarsis* and *Athyroglossa glabra*, are clearly also strongly associated with river shores. Whether the few singled out as specialists of ERS are indeed restricted to this habitat may depend partly on how the habitat is defined. For instance, it could be argued that they are specialists of shore-lines, not necessarily of flood-deposited and re-sorted material that is exposed by falling water in warmer months. This needs to be investigated by more recording on narrow shores that scarcely qualify as ERS (as indeed did many in the surveys discussed here), and by agreeing the limits of what constitutes ERS of conservation significance.

The species fall into two groups according to their substrate preference. *Athyroglossa glabra* and *Gymnoclasiopa plumosa* may be more closely associated with stony to sandy substrates, while *Diclasiopa lacteipennis*, *Hecamedoides unispinosus*, *Polytrichophora duplosetosa* and *Scatella obsoleta* may prefer sand or silt rather than stones. *Athyroglossa ordinata* and *Ditrichophora palliditarsis* appeared to have no preference. The adults of many shore flies are somewhat sedentary and remain close to the site where their larvae develop, so these two groups may reflect larval feeding habits. With the clear exception of *Gymnoclasiopa plumosa*, they were markedly scarce, or even absent, on shaded ERS, so their larval food is likely to be at least partly diatoms or other algae growing in sunnier conditions. The larvae of most of these species therefore probably develop in the fine damp sediment that is the generally recognised habitat of many still-water species. Those of *Athyroglossa glabra* may develop in flowing water, or at least in the interstices of stones between which water is moving. This is at variance with the published biology of *A. glabra* reared from the corpses of vertebrates which seems an unlikely source of the individuals captured in this study (Krivosheina and Ozerov 1989, quoted by Mathis and Zatwarnicki 1990). There is little other specific information on the larval ecology of these species that would confirm this proposed spatial segregation into associations with fine or coarse sediments. Most are regarded as species of muddy shores, although Blair and Foote (1984) found that in North America *S. obsoleta* was associated more with sand than mud, and to feed preferentially on diatoms and flagellates (Scheiring and Foote 1973; Blair and Foote 1984). The food preferences of the other species mentioned here are not given by Ferrar (1987).

The records gave some indication of national distributions. Most of the species appear to be widespread and probably have the distribution typical of many British insects of being commoner in the south and disappearing northwards. Two species which are probably genuinely more frequent in the north or west are *Scatella obsoleta* and *Gymnoclasiopa cinerella*. The Northumbrian records of *Scatella obsoleta* mark a large southward extension from its previously known distribution in eastern Scotland, but the records are still from the east of Britain. The distribution of *G. cinerella* would be similar were it not for the old record from Herefordshire, but nevertheless the few records available suggest that this is a predominantly northern species in Britain. Its Palaearctic distribution is northwards and eastwards of Germany and Hungary, and includes Poland, Finland and Sweden, which would support the idea of a predominantly north-eastern British distribution (Mathis and Zatwarnicki 1995). In contrast, *Athyroglossa ordinata* is known only from southwest England and Wales, and it may be restricted to southern Britain; this reflects its Palaearctic distribution which, apart from Britain, omits northern European countries (Mathis and Zatwarnicki 1995).

Although there have been a few other surveys of the habitat, none has treated the family in any detail, if at all, although they do highlight other families of significance, notably dolichopodids and hybotids (Rotheray and Robertson 1993, Eyre 2000, Sadler *et al.* 2000 Hewitt *et al.* 2005). My results give substance to Godfrey's (1999) assertion that ephydrids are an important family on ERS. A parallel may be drawn with the recognition that coleopterists give to staphylinid beetles as one of the key groups of this habitat, and they have overcome the difficulties of getting to grips with this daunting group to the extent that two tiny species were included in the action plan for river shingle beetles (UK Biodiversity Group 1999b). It is hoped that this paper stimulates a similar interest in ephydrids of river margins.

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Appendix 1. Records collected and identified by C.M. Drake

Athyroglossa ordinata: R. Avon, Knap Mill V.C. 3, SX711472, 5 Aug 2004; R. Exe, Brampford Speke V.C. 3, SX927990, 9 July 2004; R. Exe, Thorverton V.C. 3, SS935018, 24 July 2006; R. Otter, Dotton V.C. 3, SY087888, 6 July 2004; R. Otter, Tipton St John V.C. 3, SY090918, 6 July 2004; R. Teign, Preston V.C. 3, SX848751, 5 July 2004; R. Torridge, Beaford Bridge V.C. 4, SS548138, 5 Aug 2004; R. Monnow, Alltyrynys V.C. 35, SO331234, 8 July 2005; R. Usk, Great Hardwick V.C. 35, SO309109, 16 July 2005; R. Usk, Llanvihangel Gobion V.C. 35, SO343089, 16 July 2005; R. Usk, Scethrog V.C. 42, SO105243, SO106243, SO106244, 15 July 2005

Diclasiopa lacteipennis: R. Teign, Preston V.C. 3, SX848751, 5 July 2004; R. Mole, Meethe V.C. 4, SS678229, 22 July 2006; R. Bollin, Mottram V.C. 58, SJ885797, 10 July 2005; R. Weaver, Coole Hall Farm V.C. 58, SJ660457, 25 July 2006; R. Weaver, Batherton Hall V.C. 58, SJ658448, 26 July 2006; R. Weaver, Mile End Farm V.C. 58, SJ660546, SJ654542, 27 July 2006

Gymnoclasiopa cinerella: R. Coquet, Healey V.C. 68, NU091000, 13 July 2006; R. Till, Doddington Bridge V.C. 68, NT998308, NT994308, 15 July 2006

Gymnoclasiopa collini: R. Monnow, Kentchurch V.C. 35, SO406256, 7 July 2005

Gymnoclasiopa plumosa: R. Rother, Adhurst V.C. 12, SU767256, SU764253, 22 July 2005; R. Rother, Habin V.C. 13, SU798231, SU793233, 21 July 2005; R. Wey, Eashing V.C. 17, SU947438, 20 July 2005; R. Wey, Tilford V.C. 17, SU868428, 20 July 2005; R. Weaver, Coole Hall Farm V.C. 58, SJ659457, SJ659459, 25 July 2006; R. Weaver, Dairy House Farm V.C. 58, SJ671481, SJ670475, 26 July 2006; R. Weaver, Mile End Farm V.C. 58, SJ657542, 27 July 2006

Hecamedoides unispinosus: R. Culm, Ford Farm V.C. 3, ST055112, 12 July 2004; R. Otter, Dotton V.C. 3, SY087888, 21 June 2004; R. Otter, Tipton St John 2V.C. 3, SY090918, 6 July 2004; R. Teign, Preston V.C. 3, SX848749, 2 June 2000; R. Teign, Preston V.C. 3, SX848751, 19 June 2004; R. Teign, Preston V.C. 3, SX848751, 5 July 2004; R. Usk, Llanvihangel Gobion V.C. 35, SO343089, 16 July 2005; R. Usk, Scethrog V.C. 42, SO105243, SO106243, SO106244, 15 July 2005; R. Coquet, Hepple V.C. 68, NT988003, NT987002, 14 July 2006; R. Coquet, Ryehill V.C. 68, NU023019, NU024019, NU025019, 13 July 2006; R. Till, Doddington Bridge V.C. 68, NT994308, 15 July 2006

Hyadina scutellata: R. Usk, Llanvihangel Gobion V.C. 35, SO342089, 16 July 2005

Polytrichophora duplosetosa: R. Rother, Cowdray V.C. 13, SU891218, 22 July 2005; R. Rother, Shopham V.C. 13, SU985184, 21 July 2005; R. Wey, Bordon V.C. 12, SU803357, SU801360, 8 July 2005; R. Avon, Knap Mill V.C. 3, SX711472, 5 Aug 2004; R. Bovey,

Heathfield V.C. 3, SX837765, 5 July 2004; R. Exe, Brampford Speke V.C. 3, SX927990, 9 July 2004; R. Exe, Thorverton V.C. 3, SS935018, 24 July 2006; R. Otter, Dotton V.C. 3, SY087888, 6 July 2004; R. Otter, Tipton St John V.C. 3, SY090918, 6 July 2004; R. Teign, Preston V.C. 3, SX848751, 5 July 2004; R. Yarty, Bowditch V.C. 3, ST255059, ST254058, 9 July 2006; R. Mole, Meethe V.C. 4, SS677229, SS678229, 22 July 2006; R. Monnow, Alltyrynys V.C. 35, SO331234, SO332237, 8 July 2005; R. Monnow, Skenfrith V.C. 35, SO460203, 7 July 2005; R. Usk, Great Hardwick V.C. 35, SO315107, SO314108, SO308109, 16 July 2005; R. Usk, Llanvihangel Gobion V.C. 35, SO342089, SO345088, 16 July 2005; R. Usk, Llanvihangel Gobion V.C. 35, SO342089, 16 July 2005; R. Usk, Scethrog V.C. 42, SO106243, SO106244, 15 July 2005; R. Bollin, Mottram V.C. 58, SJ884797, SJ885797, 10 July 2005; R. Weaver, Batherton Hall V.C. 58, SJ658448, 26 July 2006; R. Weaver, Dairy House Farm V.C. 58, SJ671481, SJ671480, SJ670475, SJ671484, 26 July 2006; R. Weaver, Mile End Farm V.C. 58, SJ663550, 27 July 2006

Scatella obsoleta: R. Till, Doddington Bridge V.C. 68, NT994308, NT998308, NT991312, 15 July 2006; R. Till, Bewick Bridge V.C. 68, NU058224, 16 July 2006; R. Breamish, Brandon V.C. 68, NU036168, 16 July 2006; R. Glen, Akeld V.C. 68, NT957303, 15 July 2006; R. Coquet, Sharperton V.C. 68, NT957033, NT957036, 14 July 2006; R. Coquet, Ryehill V.C. 68, NU025019, 14 July 2006

Scatella silacea: R. Culm, Ford Farm V.C. 3, ST055112, 12 July 2004; R. Bray, Fullabrook V.C. 4, SS674259, 22 July 2006; R. Weaver, Mile End Farm V.C. 58, SJ657542, 27 July 2006

***Scatella subguttata*:** R. Till, Bewick Bridge V.C. 68, NU058224, 16 July 2006; R. Coquet, Sharperton V.C. 68, NT957033, NT956033, 14 July 2006

Scatophila noctula: R. Usk, Llanvihangel Gobion V.C. 35, SO343089,16 July 2005; R. Monnow, Kentchurch V.C. 35, SO406256, SO407257, 7 July 2005; R. Dane, Saltersford V.C. 58, SJ779677, 9 July 2005

Scatophila unicornis: R. Usk, Great Hardwick V.C. 35, SO315107, 16 July 2005; R. Ysgir, Ynys-gyfarch V.C. 42, SN993335, 15 July 2005

Fig. 1. Rivers surveyed for flies using exposed riverine sediment. Devon rivers: 1 – Torridge, 2 – Bray, 3 – Mole, 4 – Exe, 5 – Culm, 6 – Otter, 7 – Coly, 8 – Yarty, 9 – Teign, 10 – Bovey, 11 – Avon.


Spey
Tay
Till
Glen
Breamish
Coquet
Lune
Bollin
Weaver
Dane
Ysgir
Monnow
Usk
Wey
Rother
1
2
3
4
5
6
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8
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10
11

The intertidal fly *Canace nasica* (Haliday) (Diptera, Canacidae) new to Scotland and the intertidal occurrence of *Thoracochaeta brachystoma* (Stenhammar) (Diptera, Sphaeroceridae) – Four flies collected in the intertidal zone at Dumbarnie Links Wildlife Reserve (Scottish Wildlife Trust), Fife (N0 442020) on 5 and 16 August and 4 October 2005 were identified as *Canace nasica* (Haliday), two males and two females, using the key by W.N. Mathis (1982. Canacidae of Israel, with a review of the Palaearctic species of the genus *Canace* Haliday (Diptera). *Entomologica scandinavica* **13**, 57-66).

From the Scottish Insect Record Index held at the National Museums of Scotland (NMS) there appear to be no published records from Scotland of this species, nor of the only other species of the family Canacidae recorded in the British Isles, *Xanthocanace ranula* (Loew). There are no Scottish specimens of *Canace nasica* in the NMS collection, but there is a series of eight *X. ranula* from Scotland in that collection, from Calkerbush, Kirkcudbrightshire, collected on 2.vii.1963 and determined by E.C. Pelham-Clinton. Neither species is represented in the Hunterian or Kelvingrove museums in Glasgow; thanks are due to G. Hancock and J. Robinson (*pers. comm.*) for that information. *Canace nasica* has been found at various points on the south coast of England, north to the north coast of Norfolk in the east and to Carmarthen Bay in Wales in the west, and in Kerry, Ireland (Mathis *op. cit.*; NBN Gateway, Oct. 07).

On the basis of the presence of large numbers of puparia of *C. nasica* it has been concluded that the larvae probably feed on the green intertidal algae *Enteromorpha* spp. (Hinton, H.E. 1967. Plastron respiration in the marine fly *Canace*. *Journal of the Marine Biological Association, UK* **47**, 319-327). *Enteromorpha* is abundant at Dumbarnie Links, both growing in the intertidal zone and as a component of the tide-line detritus. So far I have failed to find larvae or puparia of *Canace* amongst the intertidal *Enteromorpha*. This, however, did contain large numbers of puparia of the small sphaerocerid seaweed fly *Thoracochaeta brachystoma* (Stenhammar). These were amongst living, attached *Enteromorpha* in very shallow pools on rock with sparse sand, in the upper part of the intertidal zone but well below the high water level of neap tides. From a sample collected on 6 September 2007 seven male and 12 female *T. brachystoma* emerged during October (kept indoors), along with a single male of *Halocladius variabilis* (Staeger) (Chironomidae), a species known to develop in intertidal pools. *Thoracochaeta* species are abundant amongst the rotting seaweed on the adjacent tide-line, but of those critically examined 14 were *T. zosterae* (Haliday) and only two were *T. brachystoma*. This points to the possibility that *T. brachystoma* might develop primarily amongst intertidal algae rather than in tide-line debris as usually supposed. This would be consistent with a study of tide-line 'wrack beds' at Whitburn, Co. Durham where both species of *Thoracochaeta* were present as adults but the young stages were all *T. zosterae* (Egglinshaw, T. 1965. Observations on the fauna of wrack beds. *Transactions of the Society for British Entomology* **16,** 189-216).

Two specimens of *Canace nasica* have been deposited in the collection of the National Museums of Scotland – **GORDON CORBET**, Little Dumbarnie, Upper Largo, Leven, Fife, KY8 6JG

Dipterists Digest 2007 **14,** 119-120

Observations of *Gasterophilus intestinalis* (De Geer, 1776) (Diptera, Oestridae) near Ynyslas in mid Wales

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Summary
Details are given for observations of *Gasterophilus intestinalis* (De Geer, 1776) activity in localities near Ynyslas, Cardiganshire (V.C. 46) on 16.vii.2007 and 19.vii.2007.

Introduction

Gasterophilus intestinalis (De Geer, 1776), the Common Horse-bot-fly, is one of a number of injurious agricultural pests whose British populations have been decimated over recent decades due to the successes of modern eradication policies. Traditionally, only preventative methods of control were possible for *Gasterophilus* species; hence, *G. intestinalis* was formerly a far more common and familiar British insect than the seldom-encountered species it is today. Whilst attending the 2007 Dipterists Forum summer field meeting held in Aberystwyth, I investigated the Diptera attracted to horses and ponies in three fields near Ynyslas, Cardiganshire (V.C. 46), and found *G. intestinalis* activity in all three localities. On 16.vii.2007, several male *G. intestinalis* were observed around two ponies at Ty Gwyn (SN613926) and one male was observed around a group of four ponies near Ty Mawr (SN622927). On 19.vii.2007, several females were observed ovipositing on three horses near Ynyslas (SN608922).

Observations

In contrast to the inclement local weather of the preceding days, 16.vii.2007 was mainly a hot, sunny and fairly windless day in the coastal districts around Ynyslas. Approaching noon on 16.vii.2007, I visited a rough pasture at Ty Gwyn in order to investigate the Diptera attracted by two resident ponies. Upon my arrival, and for most of the following two hour period, several *Gasterophilus* could be seen hovering close around the lower torsos and legs of the ponies; however, no *Gasterophilus* were noticed ovipositing on the ponies, and all appeared to be males, presumably taking up position in order to intercept arriving females. Periodically, a male would intercept an approaching *Gasterophilus* and the pair would fly away from the ponies, usually in the direction of a prominent short-grassed slate mound in the same rough pasture. At times it was obvious that two of the hovering males had temporarily attempted a pairing by mistake, but they would soon separate and resume close hovering around the ponies. My attempts at securing voucher specimens were hampered by the exceedingly uncooperative ponies, which were prone to gallop, and continuously kept their distance from me, and my net. However, I succeeded in securing two male *G. intestinalis*; one was taken by sweeping the slate mound, and one was retrieved from the ponies' drinking water. Both these

captures were apparently the fortuitous results of causing the ponies to gallop, and hence occasionally temporarily dislodging the flies from their hosts. Later in the day, I came across four ponies in a rough pasture at Ty Mawr, one of which had a male *G. intestinalis* hovering close to its body. Here too, the ponies were nervous and prone to gallop, and the *Gasterophilus* would usually spend only a short time hovering close around the lower torso and legs of a pony before transferring itself to another pony. I netted this male *G. intestinalis* whilst it hovered close around the most tame and inquisitive of the four ponies.

There were strong winds and showers in the Aberystwyth area on 17.vii.2007 but 18.vii.2007 was mainly hot and sunny with variable wind speed, hence I returned to spend an hour or so around noon, and again from 7 p.m., with the ponies at Ty Gwyn; however, no *Gasterophilus* were seen during these visits.

During hot and sunny weather on 19.vii.2007, I flitted several times between the field at Ty Gwyn (SN613926), which now contained three ponies, and a group of three horses in a field near Ynyslas (SN608922). As was the case the previous day, no *Gasterophilus* were seen at Ty Gwyn, which was surprising, as this had been the scene of much male activity three days earlier. The Swiss owner of the ponies at Ty Gwyn told me that she regularly treated them for *Gasterophilus* larvae, and, in previous years, she had noticed such larvae in their faeces, in addition to adult *Gasterophilus* activity around the ponies.

During the late morning of 19.vii.2007, I periodically visited three horses beside a fence near Ynyslas (SN608922), and captured two female *G. intestinalis*. At 10.00 a.m. there were no *Gasterophilus* with the horses, but by 11.00 a.m. several female *G. intestinalis* were present ovipositing, and upon a further return at 11.23 a.m., three females were again seen ovipositing. The newly laid whitish eggs were conspicuous in the sunshine, and hundreds had been attached to hairs on various parts of all the horses. Eggs were mainly attached to hairs on the outside of the fore legs above the knees, and many had also been placed on the lower neck, flanks and underbelly.

Biology of *Gasterophilus intestinalis*

The development of *Gasterophilus* was summarised by Ferrar (1987). Most species attach their eggs in the way described, although *G. pecorum* (Fabricius, 1794) attaches them to food plants such as grasses. The very active first instar larvae find their way to the horse's mouth, where development to the second instar stage takes place in the mucosa of the tongue. Second instar larvae are then swallowed and attach themselves within the stomach where development of the third instar also takes place. Larvae feed mainly on tissue exudates but sometimes on blood especially when it is released as they attach to the stomach wall. Pupation takes place following the discharge of mature larvae. The total life cycle takes about a year. Other species develop in other parts of the gut.

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Dipterists Digest 2007 **14,** 121-124

Phytomyza sedi Kaltenbach, 1869 (Diptera, Agromyzidae) new to Britain

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Summary
The discovery of the agromyzid fly *Phytomyza sedi* Kaltenbach, 1869 in Bristol, Great Britain and its association with *Sedum rupestre* Linnaeus is reported.

Introduction

During a survey of Troopers Hill Local Nature Reserve, ST6273, Bristol in 2006 I swept a number of small, nondescript agromyzid flies from a slope dominated by *Sedum* plants. Once dissected these proved to be a species I had not encountered before. Reference to the illustrations in Spencer (1990) and Griffiths (1976) enabled their identification as *Phytomyza sedi* Kaltenbach, 1869, a species not previously reported from Britain.

Identification

Phytomyza sedi is a small, uniformly black or dark blackish-brown fly, on external characters very reminiscent of the common *Chromatomyia milii* (Kaltenbach, 1864). In the keys provided by Spencer (1972) it will key to couplet 104 where, on size and relative length of the second costal section, it most closely fits the description of *P. heringiana* Hendel, 1922. In the keys of Spencer (1976) *P. sedi* will run to couplet 162 but no external characters seem adequate to separate it from the other two species running to this couplet (*C. milii* and *Chromatomyia periclymeni* (de Meijere in Hendel, 1922)) with any certainty.

When compared with *C. milii* it is a smaller, blacker species, sharing with it a yellowish haltere, proboscis and usually vaguely paler fore-knees and two equally developed upper orbital setae. The wings of *P. sedi* are noticeably shorter than those of *C. milii* (1.8mm compared to 2.2-2.8mm) with vein R_{2+3} reaching only slightly beyond vein M_{3+4} (Fig. 1). In *C. milii* vein R_{2+3} reaches the costa clearly more distal than the tip of M_{3+4}. The short rounded wings and relatively short costal sector two are very similar to the form of the wing of *P. nigritella* Zetterstedt, 1848. This species has costal sector two $1^1/_2$ times the length of the fourth, even shorter than in *P. sedi*. *Phytomyza nigritella* has very deep jowls, two-thirds the height of an eye, which should readily distinguish it from *P. sedi*.

Although the series of *P. sedi* examined are very uniform in their external appearance, such characters are too subtle for reliable identification. In other agromyzid species wing length and the proportions of the second and fourth costal sectors can be very variable. *Chromatomyia milii* seems to be particularly prone to such variation. Although the external characters, particularly the wing shape, might help in picking out *P. sedi* from closely similar species, only dissection and examination of the male genitalia will confirm identification. A

key amendment, genitalia figures and ecological data were provided by Hering (1957, vol. iii: 24-25 and 1967: 72-73), Griffiths (1976) and von Tschirnhaus (1994). In the last mentioned work *P. catalaunica* Spencer was synonymized with *P. sedi*.

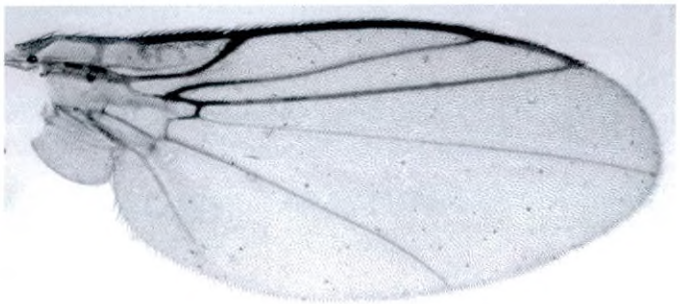


Fig 1. Wing of *Phytomyza sedi*.

The male genitalia of *P. sedi* (Figs 2-4) are abundantly distinct from all the closely similar species discussed above. Even the closely related species *P. rhodiolae* Griffiths, 1976 (which has the posterior upper orbital seta lacking) has quite different male genitalia.

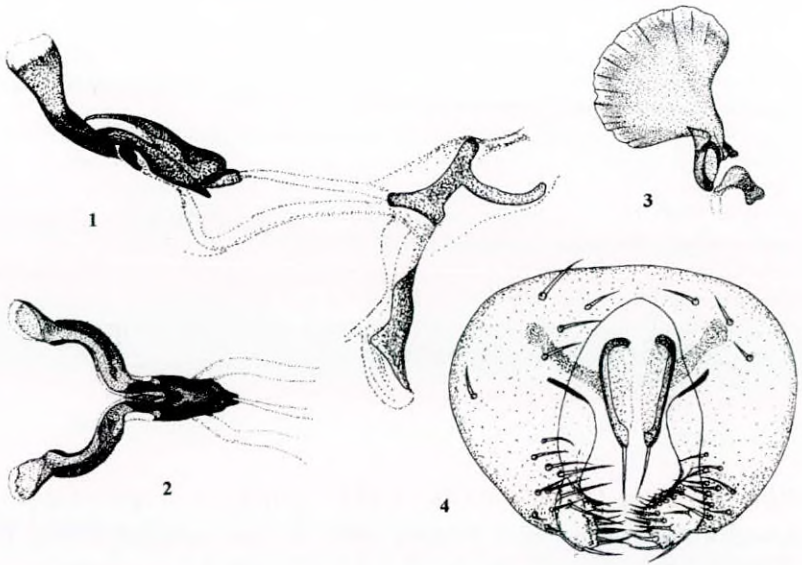
Biology

On the continent *P. sedi* is recorded as mining stonecrop *Sedum* species, nearly all records so far referring to *S. album* (M. von Tschirnhaus *pers. comm.*) although Hering (1957) also mentioned *S. acre*. But as Griffiths (1976) pointed out, Hering in volume iii, p. 25 of his work did not repeat that statement. As no mines or reared flies from *S. acre* are in Hering's collection, the record for *S. acre* seems best discounted (M. von Tschirnhaus *pers. comm.*). At Troopers Hill the specimens were swept from a patch of naturalised reflexed stonecrop *S. rupestre*. All the adult, field caught specimens from Troopers Hill were taken on 2 June 2006. On 19 April 2007 numerous mines were found in the lower leaves of the same patch of *S. rupestre*. Most of these mines contained puparia, the pair of rather elongated, curved anterior spiracles protruding from the leaf cuticle. These puparia produced adults indoors from 7 - 9 May 2007.

Distribution and Status in Britain

Phytomyza sedi is only known from Europe where, so far, there are published records from France, Germany, Spain, Switzerland and the former Yugoslavia (the island of Hvar, now Croatia) (Martinez 2005, Černý and Merz 2005). Moreover, Rondani (1876: 68) recorded from Italy a reared parasitoid, "*Dicyclus cerialis* Wesmael". Given the location of Troopers Hill in the west of Britain well away from the south coast, it seems unlikely that this is a natural immigrant. A more likely possibility is that, like so many phytophagous insects, it has been imported with garden plants. Its association with the non-native *S. rupestre* would tend

to support this. However, it is equally likely that *P. sedi* is an overlooked native that has taken advantage of this garden plant spreading into suitable habitat. It is worth noting that the closely related rock stonecrop *S. forsterianum*, a very rare plant in Britain, occurs just a few miles to the west in the Avon Gorge.



Figs 2-4. Male genitalia of *Phytomyza sedi*. Fig 1. Aedeagus, left lateral view. Fig 2. Distiphallus, ventral view. Fig 3. Ejaculatory apodeme. Fig 4. Epandrium.

Acknowledgements

I am very grateful to Michael von Tschirnhaus and Milan Černý for additional information on *Phytomyza sedi*. I also thank Sally Oldfield of Bristol City Council, who commissioned the survey of Troopers Hill.

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***Ceratitis capitata* (Wiedemann, 1824) (Diptera, Tephritidae) from Buckinghamshire** – On 4 February 2008 we were surprised to find a female Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann), on the kitchen window of our house at Long Crendon, Buckinghamshire (SP693090). A second, male, specimen was found in our integral garage on 17 February.

Ceratitis capitata is an occasional introduction into Britain (White, I.M. 1988. Tephritid flies. Diptera: Tephritidae. *Handbooks for the Identification of British Insects.* **10**(5a), 1-134. Royal Entomological Society of London). It originates from tropical, subtropical or Mediterranean countries, where it is considered one of the most damaging pests of fruits and vegetables known, with an exceptionally wide range of host plants. It has never been recorded as establishing a population in Britain and is unlikely to do so, since the winters are too cold. Fruit is usually stored at low temperatures during transit and at 4°C larvae of this fly are killed.

We receive boxes of organic fruit and vegetables each week and it is most likely that one of the fruits so received was infested. A check revealed that a mango, received two weeks before the first record, had some lesions but no larvae were apparent. The origin of this mango is unknown but is under investigation – **JOHN W. and BARBARA ISMAY,** 67 Giffard Way, Long Crendon, Aylesbury, Buckinghamshire, HP18 9DN

Dipterists Digest 2007 **14**, 125-150

Towards an inventory of the flies (Diptera) of a nature reserve, Pierre Vérots Foundation, in Ain, France: the first 1000 taxa

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Summary
The Diptera present in a nature reserve in south-eastern France were surveyed continually over 2 consecutive years using a variety of collecting strategies. In total, 1011 species were definitely identified as present, with 133 of these not having been recorded in France so far. Some discussion of selected species is given along with some observations of potential use in the future management of the locality.

Introduction

As a precursor to developing or refining a management regime for the flora and fauna of a protected area, it is helpful to know as much as possible about the range of species represented. Comprehensive surveys of higher floral taxa are commonplace, and plants lend themselves to this approach, being obvious and immobile. It is usually far more difficult to evaluate faunas, especially those of invertebrates, as specimens are smaller, more numerous, generally highly mobile and sometimes difficult to identify with confidence. As a consequence, management of nature reserves has historically been oriented towards maintaining "ideal" conditions for selected plants or notable megafauna, often to the detriment of, for example, insects (Kirby 1992). Small changes in habitat, particularly of overlooked features on a smaller scale than is normally considered (e.g. patches of bare ground) can lead to local extinction of certain invertebrates. The decline across Europe of insects associated with mosaic habitats such as heathland, or undervalued resources such as dead wood, is becoming marked. It cannot be assumed that designating nature reserves will automatically assure the needs of all the inhabitants. Management for invertebrates needs to be an active process.

This paper presents the first results of an inventory survey of a full range of flies of a protected site in France.

The Pierre Vérots Foundation is a privately-owned reserve of 150 hectares in the Praillebard hamlet, near St. Jean de Thurigneux, Ain (Lambert Grid 800.2108). This area of south-east France is within the Rhône-Alpes administrative region. (See Fig. 1).

The reserve was donated to the nation as a research environment by the industrialist Pierre Vérots and is currently managed by a ten-man board of directors, assisted by a scientific committee. It comprises three large shallow lakes, woodland (predominantly oak (*Quercus robur*), birch (*Betula pendula*), beech (*Fagus sylvatica*), hornbeam (*Carpinus betulus*) and wild cherry (*Prunus avium*)) and grassland. It is thus typical of the topography of the area known as La Dombes. Much of the reserve is enclosed by a solid steel fence,

which both denies public access and delimits the activity of the herd of around 100 fallow deer that permanently resides within it.

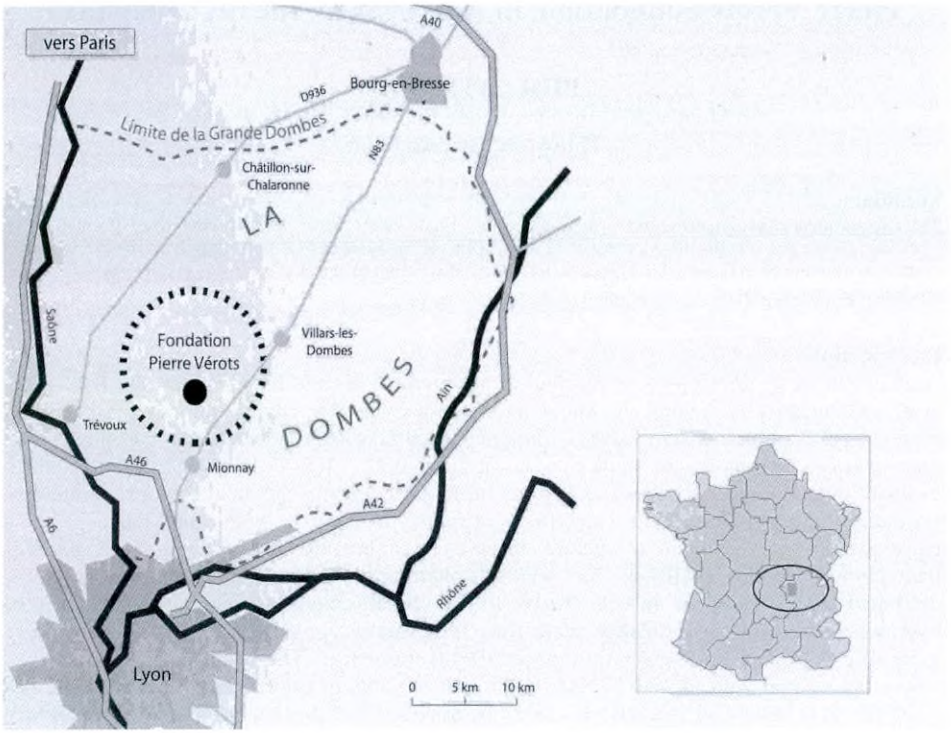

Fig. 1. Localisation of Pierre Vérots Foundation

Methods

Flies were caught in a hand-net, throughout the study area. Three types of passive trap were used; the Malaise trap, the water trap and the combination trap (piège entomologique composite: PEC). The latter is a modified Malaise-style trap head and a pair of flight-interception trap collecting units (Robert 1992). The Foundation has a number of these made to Robert's specification, which had been used in previous years to assess coleopteran diversity. An individual PEC was sited initially in a carr woodland, close to one of the lakes, but was subsequently resited due to persistent flooding of the area and the risk of potential interference when it became clear that the integrity of the deer-proof fencing around the site had been compromised. It was repositioned in sparse woodland near the main entrance to the

reserve. The Malaise trap was sited at the opposite end of the reserve, in a glade by some artificial ponds close to mature woodland. Both traps ran continuously from March 2005 until March 2006, except during August, being emptied weekly at peak periods. From March 2006 until March 2007 the Malaise trap and one water trap were situated on the shore of one of the lakes. Further white water traps (one at each site) were placed on the ground in rank grassland (near to the site meteorological station) and beside two *Formica* nests. These were also emptied weekly. Material collected by PEC over 24 hours in previous years (1998-2005) by students of the University of Franche-Comté, Besançon, was also sorted for Diptera. All trap material thus collected was stored in 90% alcohol for subsequent examination and determination. The period of trapping detailed in this paper represents over 15000 hours of trap effort. Trap locations are marked in Fig. 2.

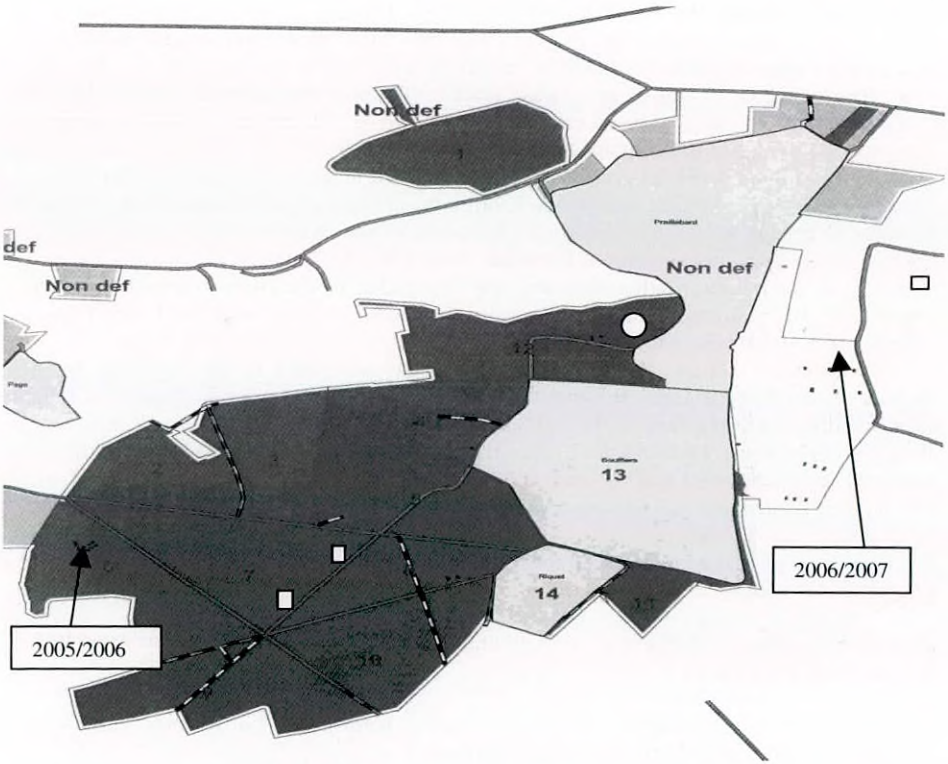

Fig. 2. Position of traps within reserve. Arrow = Malaise trap; Square = water trap; Circle = PEC

Carcasses encountered on the reserve (chiefly young deer or coypu, the latter resulting from an active elimination programme) were assessed by sweeping and some rearing of larvae for their fly fauna was carried out. Some rearing from rot-hole material gathered on site, or from fungi clearly infested with larvae, also occurred, but in an unsystematic way.

Specimens selected for further examination were either mounted on glass slides or dried and pinned, as appropriate to their size and the standard methodology for the family. A representative collection of identified pinned material has been donated to the Vérots Foundation. Other material is in the authors' private collection. A list of the taxa recorded is presented in the Appendix.

Notes on selected species

In assessing whether a species of fly is hitherto unrecorded for a country it has been traditional to consult the Catalogue of Palaearctic Diptera (Soós and Papp, 1984-1993). Unfortunately, this is now over 20 years old, and some of the names and records were accepted uncritically, with no attempt to establish synonymy or provenance; also the cut-off year for inclusion of most taxa was 1982. The on-line resource Fauna Europaea (*www.faunaeur.org*) is a more recent source prepared in 2004 by specialists in the groups concerned, although it too contains significant errors and omissions, to which correction and updating by authors is not yet practicable. Species listed in this paper as new to France are by comparison with this system, except where omissions from Fauna Europaea of species known to occur in France have been identified. It should be remembered that, in many cases, the absence of a previously published French record mostly reflects the paucity of active dipterists in the country, rather than any specific quality of the site or methodology herein employed. The distribution stated for species discussed below is based on Fauna Europaea except where stated otherwise.

Perhaps as a consequence, nearly 15% of the taxa listed in the Appendix are new records for the French fauna. In some families this is either due to a past absence of reliable identification keys (Milichiidae, Periscelididae) or the neglect of small, superficially similar flies (Sphaeroceridae, Pipunculidae). Indeed, the French fauna of the two latter families is so seriously under-recorded that the author has prepared taxonomic reviews of both, of which that on the Pipunculidae has appeared (Withers 2006).

Cerotelion racovitzai Matile & Burghele-Balacesco (Keroplatidae) – This large distinctive fungus gnat is widespread in southern Europe, but has not hitherto been recorded in France.

Exechiopsis seducta (Plassmann) (Mycetophilidae) – Hitherto recorded only from Russia, Sweden and Hungary.

Sciophila jakutica Blagoderov (Mycetophilidae) – Known previously only from Russia, Sweden, Finland, Czech Republic and Switzerland.

Drapetis exilis Meigen/*D. parilis* Collin (Hybotidae) – Both these species can be found around trees, either on the trunk or running on leaves and are new to the French fauna.

Oedalea species (Hybotidae) – The larvae of *Oedalea* species probably all develop in rotten wood, as many species have been recorded as reared from this medium. *Oedalea flavipes* Zetterstedt is relatively common in lowland Europe, while *O. freyi* Chvála is only known from Finland and northern Russia. *O. holmgreni* Zetterstedt is also rare, found in Scandinavia, England, Germany and France, whereas *O. tristis* Scholtz is uncommon, recorded from Austria, Czech Republic, Germany, Italy, Poland, Slovakia and Switzerland.

Empis woodi Collin (Empididae) – The "*Empis*" sensu stricto season began in the woodland area in March with *E. chioptera* Meigen and continued until the end of May with overlapping representations of 7 species (one of these being the rare and mainly northern *E. planetica* Collin). None were present for very long, but *E. woodi* was remarkable as only being represented in one 10-day sample period (from 7-17 April). This represents a very short flight season and highlights the value of continual passive trapping: no specimens were detected during this period by sweeping.

Microsania pectipennis (Meigen)/*M. vrydaghi* Collart (Platypezidae) – The species of *Microsania* are the "smoke flies", attracted to columns of wood smoke, but rarely seen otherwise. I was fortunate to obtain specimens of both these species by sweeping in smoke near a small fire made to clear brushwood and stumps. The majority were *M. vrydaghi*, a species hitherto unrecorded from France: the material seems to contain the so far unrecognised female of this species.

Euxesta pechumani Curran (Ulidiidae) – This North American species of ulidiid is seemingly spreading westwards in Europe, being recorded in 1996 as new to Switzerland (Merz 1996), and already known from Italy, Hungary and the former Czechoslovakia.

Phyllomyza longipalpis (Schmitz)/*P. melania* (Hendel) (Milichiidae) – Insects associated with rot-holes are rarely encountered away from this situation, and such insects are generally considered to be rare (although it is probably the circumstance which is rare, coupled with the difficulty in collecting adults from such confined spaces). Material collected from a base-rotted oak produced a long series of *P. longipalpis* and two males of *P. melania*. Both species are new to the French fauna.

Telomerina eburnea Roháček (Sphaeroceridae) – In their revision of the genus *Telomerina*, Marshall and Roháček (1984) recorded this species from Czechoslovakia, Finland and Denmark, on the basis of just 4 specimens and it was recently added to the fauna of Great Britain (Smith and Harvey 2006). The species was represented only in the interception trap part of the PEC in May and June 2005.

Trachyopella lineafrons (Spuler) (Sphaeroceridae) – Despite being judged as frequent on various decaying organic media and showing strong synanthropy, *T. lineafrons* is not easily sampled, as it is minute (approximately 1mm in length). A chance collection of Diptera from well-decayed coypu carcasses contained many specimens of this species.

Trachyopella kuntzei (Duda) (Sphaeroceridae) – Another very tiny species, recorded by Roháček and Marshall (1985) from Germany, the former Czechoslovakia, Hungary and Sweden in Europe, and Canada in the Nearctic region.

Fannia minutipalpis (Stein) (Fanniidae) – Fauna Europaea states that there are "no data" from France for this species. Rozkošný *et al* (1997) indicated that it is rare in northern and central Europe and recorded it from a total of 12 countries.

Lispocephala falculata Collin (Muscidae) – Gregor *et al* (2002) stated that this species has only been reliably recorded from Great Britain, Denmark and the former Czechoslovakia.

Sarcophaga (Kramerea) schuetzei (Kramer) (Sarcophagidae) – Povolny and Verves (1997) recorded that this species is endangered in Europe. A forest species with associations with lepidopteran larvae and pupae, it is particularly vulnerable when woodland becomes fragmented.

Blaesoxipha species (Sarcophagidae) – The grasshopper parasitoids of this genus are fascinating flies, not least for the varied oviposition strategies employed. Larvae are laid (or sprayed) into the genital aperture, anus or intersegmental membrane of the host. Of the 5 species recorded, 4 are relatively common (although rarely captured by conventional means), attacking predominantly *Chorthippus*. *Blaesoxipha descosseae* Léonide & Léonide is much rarer (represented by only one specimen in 2006) and the host is currently unknown.

Discussion

The use of traps and their relative efficiency vs hand-netting

The obvious advantage of using passive traps is that, unlike entomologists, they operate 24 hours a day and in all types of weather. They are thus far more likely to catch insects that are in low population densities. Furthermore, species with short flight periods may otherwise be missed.

All traps are, however, selective and it should not be presumed that any trap would necessarily catch representatives of the entire range of, e.g. flies, in a given habitat. The positioning of the trap, prevailing weather (particularly temperature), normal flight activity, the height of surrounding vegetation: all of these features will influence the catch. Certain fly families are poorly represented in, for example, Malaise trap catches, even when they are known to occur in the immediate vicinity — in the present study, only a few species of Lauxaniidae were regularly trapped, although hand-netting revealed substantially more in the same area.

Several taxa are represented by less than 10 specimens (in extreme cases, 1 only). As examples: *Telmatoscopus advenus* (Eaton), *Diaphorus oculatus* (Fallén), *Temnostoma bombylans* Fabricius, *Psilota anthracina* Mg., *Criorhina floccosa* (Meigen), *Megamerina dolium* (Fabricius), *Telomerina eburnea* Roháček, *Stegana nigrithorax* Strobl, *Fannia*

minutipalpis (Stein). These species would probably not have been detected at all using more traditional methods.

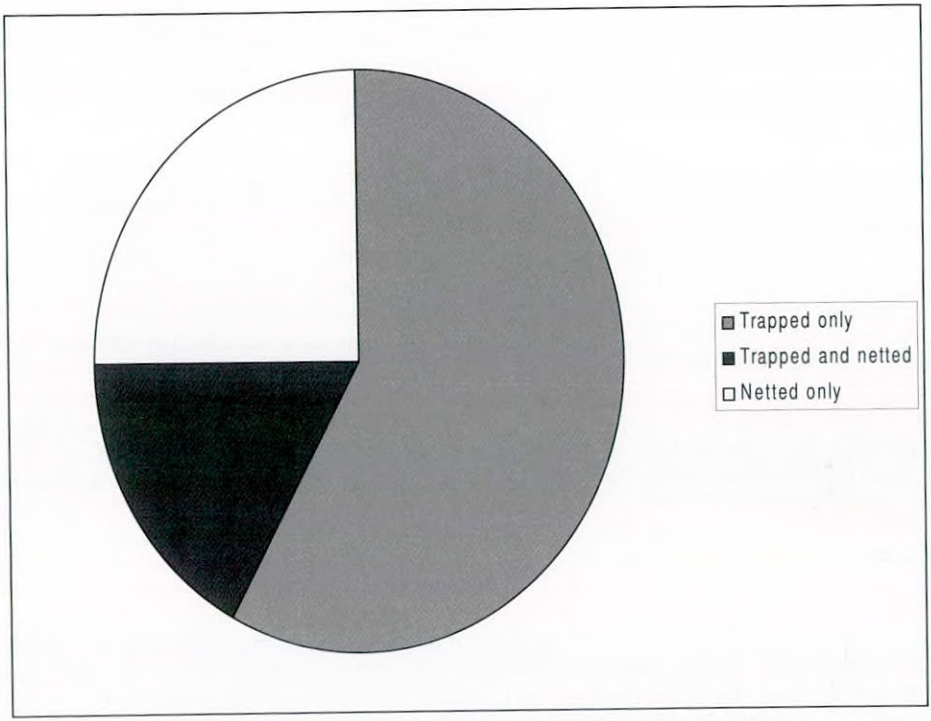

Fig. 3. Proportion of species collected using traps or nets.

58% of the species recorded were only collected in traps. If the taxa caught only by trapping are combined with those caught also by other methods, the proportion of the total fauna recorded rises to 75%. In some cases, this may be seen as "collector bias" — a tendency to ignore supposedly familiar species, or those too tiny to notice when in a net. On the other hand, even quite large species, which were well represented in trap samples, were not seen abundantly when collecting generally in the area. As an example, *Tanyptera atrata* (Linnaeus) was seen on only two occasions in 2005, early in the morning, and a total of five individuals. By contrast, the Malaise trap caught over 30 specimens per week that year for a period of three weeks. Some of the smaller taxa, easily overlooked in a net, were collected abundantly (often exclusively) in the traps. Most Mycetophilidae, Sciaridae, Sphaeroceridae and Phoridae fall into this category; some of these may be nocturnal or crepuscular and so unlikely to be detected otherwise. What is certain is that only 42% of the Diptera recorded in

the reserve were captured without the use of passive traps, and the traps alone do not reveal all the fauna either. Both approaches are necessary as an absolute minimum.

The PEC proved to be poorly adapted to long-term use (previously it had only been used in the reserve for 24-hour collections). The construction is insufficiently robust to withstand side winds, and on one memorable occasion due to spring flooding it floated 10 metres away from its original position. The Malaise-style trap head collected relatively few insects, and modification of this by shading the majority of the chamber to force insects to gather at one end where the collecting pot was placed did little to improve efficacy. This element of the trap was thus abandoned after August 2005. The flight-interception component was more useful, at least in terms of the range of insects collected, but is cumbersome to manipulate and is a dubious improvement on the simple water trap. For this reason, more traditional water traps were used during the second year.

Two years of intensive trapping and identification have resulted in an inventory for the reserve of slightly more than 1000 dipteran taxa. Certain families were not evaluated systematically during the period detailed in this paper, mostly due to partial or total lack of adequate literature permitting the identification of European (or at least French) species. This is the case for Chironomidae, Ceratopogonidae, Cecidomyiidae, certain genera of Sciaridae, Phoridae (genus *Megaselia)* and Chloropidae. The craneflies of the reserve have already been the subject of a separate publication (Kramer and Withers 2006), but the taxa represented are repeated in the Appendix for completeness.

The fallow deer in the woodland area studied during the first year have a significant effect on the floral understorey. They have an appetite for most types of vegetation up to 3 metres above ground, and with the exception of rushes, Oxford ragwort (*Senecio squalidus*) and a few early violets (*Viola*) and primroses (*Primula*), all flowering plants are cropped indiscriminately. In consequence, many flower-visiting syrphids are absent from this sector of the reserve, and the agromyzid fauna so far recorded is extremely poor.

The original owner introduced the deer for the sole purpose of providing sport; towards the end of his life, Pierre Vérots no longer had the same enthusiasm, but the deer were not removed from an otherwise typical area of La Dombes (they occur nowhere else in this part of France). Following the donation of the site, a preliminary count revealed over 400 head of deer; this has been reduced over the last decade to a stable population of around 100, but even these numbers are excessive for the area concerned. The effect of the deer on the floral diversity is major, and a considerable further reduction in numbers is highly desirable.

In contrast, the saproxylic dipteran fauna of the reserve area sampled is particularly rich. All age-classes of dead wood are represented, with principally birch, wild cherry and some aspen falling as mature trees (although some remain upright even when clearly dead), whilst oaks tend to lose side-branches, creating rot-holes. In many other localities, species known to be associated with standing or fallen dead wood, rot-holes in living trees or sap-runs of various durations are generally scarce, especially where management of woodland has tended towards tidying of fallen or supposedly dangerous trees. It is also true that the age structure of managed woodlands can lead to an imbalance between the very mature and the much younger re-growth — there is no intermediate age class to replace the senescent trees as these die. A recent evaluation of Syrphidae in this context (Speight and Good 2003) has

shown that by far the largest proportion is associated with still-living trees rather than dead woody material. Almost none of the threatened European species of Syrphidae are favoured by traditional management for saproxylic organisms. The following associations are extremely important in this context, and many of the taxa cited are very local, even if it is not yet possible to define them as rare. The inventory of saproxylic species compiled by Alexander (2002) is particularly useful in detailing such associations.

Sap run species:

Brachyopa scutellaris Robineau-Desvoidy, *Ferdinandea cuprea* (Scopoli), *Psilota anthracina* Meigen, *Volucella inflata* (Fabricius), *Xylota tarda* Meigen. (Syrphidae), *Periscelis annulipes* Loew, *P. winnertzi* Egger (Periscelididae), *Pseudolyciella stylata* Papp [probable] (Lauxaniidae), various Drosophilidae, *Aulacigaster pappi* Kassebeer [probable] (Aulacigastridae), *Lasiambia baliola* (Collin) (Chloropidae), *Phaonia laeta* (Fallén) (Muscidae) .

Rot-hole species:

Ctenophora pectinicornis (Linnaeus) (Tipulidae), *Rhipidia uniseriata* Schiner (Limoniidae), *Telmatoscopus advenus* (Eaton) (Psychodidae), *Holoplagia richardsi* (Edwards) (Scatopsidae), *Eupachygaster tarsalis* (Zetterstedt) (Stratiomyidae), *Euthyneura halidayi* Collin, *Tachypeza fuscipennis* (Fallén) (Hybotidae), *Systenus leucurus* Loew (Dolichopodidae), *Myathropa florea* (Linnaeus) (Syrphidae), *Phyllomyza longipalpis* (Schmitz), *P. melania* (Hendel) (Milichiidae), *Drosophila (Dorsilopha) busckii* Coquillett (Drosophilidae), *Apteromyia claviventris* (Strobl) (Sphaeroceridae), *Helina abdominalis* (Zetterstedt) (Muscidae).

Dead wood:

Dictenidia bimaculata (Linnaeus), *Tanyptera atrata* (Linnaeus) (Tipulidae), *Austrolimnophila ochracea* (Meigen), *Epiphragma ocellare* (Linnaeus), *Achyrolimonia decemmaculata* (Loew), *A. neonebulosa* (Alexander), *Neolimonia dumetorum* (Meigen) (Limoniidae), *Symmerus annulatus* (Meigen) (Ditomyiidae), *Macrocera angulata* Meigen, *M. vittata* Meigen (Keroplatidae), *Ectrepesthoneura hirta* (Winnertz), *Leia bilineata* (Winnertz) [probable], *Neoempheria pictipennis* (Haliday), *Phronia nitidiventris* (van der Wulp) (Mycetophilidae), *Cratyna nobilis* (Winnertz), *Leptosciarella viatica* (Winnertz), *Scatopsciara atomaria* (Zetterstedt), *Trichosia morio* (Fabricius) (Sciaridae), *Xylophagus ater* Meigen. (Xylophagidae), *Solva marginata* (Meigen) (Xylomyidae), *Neopachygaster meromelas* (Dufour) (Stratiomyidae), *Choerades* species (Asilidae), *Oedalea* species (Hybotidae), *Leptopeza flavipes* (Meigen), *Rhamphomyia (R.) marginata* (Fabricius) (Empididae), *Sciapus platypterus* (Fabricius) (Dolichopodidae), *Brachypalpoides lentus* (Meigen), *Brachypalpus valgus* Panzer, *Criorhina* species, *Chalcosyrphus nemorum* (Fabricius), *Temnostoma bombylans* Fabricius, *T. vespiforme* Linnaeus, *Xylota segnis* (Linnaeus), *X. sylvarum*

(Linnaeus) (Syrphidae), *Tanypeza longimana* Fallén (Tanypezidae), *Megamerina dolium* (Fabricius) (Megamerinidae), *Myennis octopunctata* (Coquebert) (Ulidiidae), all Clusiidae, *Asteia amoena* Meigen (Asteiidae), *Stegana* species (Drosophilidae), *Fannia aequilineata* Ringdahl (Fanniidae). Some species of Diptera are associated indirectly with dead wood, inasmuch as they are inhabitants of bark-beetle burrows. This is the case for many species of *Medetera* (Dolichopodidae) and *Lonchaea* (Lonchaeidae).

It is probable that the current management of dead wood resources in the reserve (which effectively amounts to doing very little) has favoured considerable diversity.

The final inventory here documented exceeds 1000 species; 275 of these were detected in trap samples prior to the start of intensive surveying from March 2005. The first 6 months of surveying added 50% of the remaining taxa. The equivalent period in 2006 added a further 40%. By contrast the two "winter" semesters (October to March) only added 7% and 3% respectively (see Fig. 4), although many of these species were apparently active at no other time of the year. These included Trichoceridae, and some Mycetophilidae and Heleomyzidae.

It can thus be seen that an optimal trapping regime when time is limited appears to be from April to September (at least in this region of France).

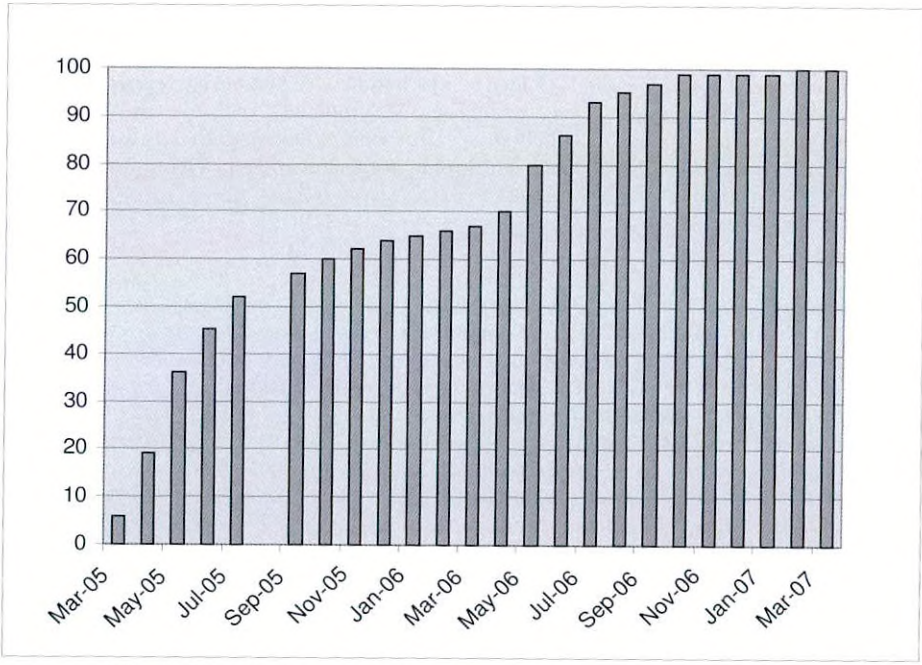

Fig. 4. Cumulative percentage of final total by month of surveying.

The inventory of Diptera occurring in the reserve is far from complete. As already stated, the fauna of carcasses is little studied (and the representatives of this guild poorly represented in traditional traps), as is that of the rich fungal flora. Neither water traps nor Malaise traps efficiently sample the predominantly aerial species; it would be necessary to place traps in the tree canopy to evaluate this component. Certain families of Diptera, which are important to an understanding of the trophic relationships active in the reserve, require a deeper investigation: this is particularly urgent for the Chironomidae. Further focused survey work will continue...

Acknowledgements

In attempting to provide as detailed and complete an inventory as possible, the author has necessarily had to solicit the assistance of a number of colleagues, more adept than him in the determination of selected families. Particular thanks for identifications or confirmations are thus due to John Kramer (most Tipulidae), Peter Chandler (Mycetophilidae *sensu lato*), Henry Disney (selected Phoridae), René Richet (*Blaesoxipha*), Christian Kehlmaier (selected Pipunculidae), Bernhard Merz (Tephritidae, Lauxaniidae) and David Henshaw (Agromyzidae). Without their help the inventory would be much less impressive.

The Fondation Pierre Vérots generously gave the author free access to all areas of the reserve in its care. For their technical assistance and unequalled knowledge of the area I am indebted to Benoit Castanier and Charles Grenat. The use of their laboratory facilities and some financial assistance was also greatly appreciated.

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Appendix

Inventory of Diptera recorded at the Fondation Vérots, St. Jean de Thurigneux, Ain (Grille Lambert 800.2108).

* [suffix] = species only recorded from trap samples
† [suffix] = species recorded by rearing
• [prefix] = species new to France (mainly based on Fauna Europaea)

NEMATOCERA

Tipulidae

Ctenophora pectinicornis (Linnaeus)
Dictenidia bimaculata (Linnaeus)
Nephrotoma appendiculata (Pierre)
N. cornicina (Linnaeus)*
N. crocata (Linnaeus)*
N. dorsalis (Fabricius)*
N. flavescens (Linnaeus)
N. flavipalpis (Meigen)*
N. quadrifaria (Meigen)*
N. quadristriata (Schummel)*
Nigrotipula nigra (Linnaeus)
Prionolabis hospes (Egger)*
Tanyptera atrata (Linnaeus)
Tipula fascipennis (Meigen)*
T. lunata Linnaeus *
T. oleracea Linnaeus
T. varipennis Meigen*
T. vernalis Meigen*

Cylindrotomidae

Diogma glabrata (Meigen)*

Limoniidae

Achyrolimonia decemmaculata (Loew)
•A. neonebulosa (Alexander)*
Atypophthalmus inustus (Meigen)*
Austrolimnophila ochracea (Meigen)
Dicranomyia mitis (Meigen)*
D. modesta (Meigen)*
D. tristis (Schummel)*
Epiphragma ocellare (Linnaeus)*
Erioconopa diuturna (Walker)*
Erioptera fusculenta Edwards
E. griseipennis Meigen*
E. squalida Loew
Euphylidorea dispar (Meigen)
Helius flavus (Walker)
H. longirostris (Meigen)
Ilisia maculata (Meigen)
Limnophila pictipennis (Meigen)*
Limonia macrostigma (Schummel)
L. nigropunctata (Schummel)*
L. phragmitidis (Schrank)*
L. stigma (Meigen)
Molophilus griseus (Meigen)
M. ochraceus (Meigen)
Neolimnomyia nemoralis (Meigen)
Neolimonia dumetorum (Meigen)
Ormosia lineata (Meigen)
O. nodulosa (Macquart)
O. pseudosimilis (Lundbeck)
Phylidorea ferruginea (Meigen)*
P. longicornis (Schummel)
Pilaria discicollis (Meigen)
Rhipidia uniseriata Schiner†
Pseudolimnophila lucorum (Meigen)*
P. sepium (Verrall)
Symplecta hybrida (Meigen)

Bibionidae

Bibio johannis (Linnaeus)
B. lanigerus Meigen
•B. lepidus Loew*
B. marci (Linnaeus)
B. reticulatus Loew
B. venosus (Meigen)*

Dilophus febrilis (Linnaeus)*

Bolitophilidae
Bolitophila cinerea Meigen*
B. saundersii (Curtis)*

Diadocidiidae
Diadocidia ferruginosa (Meigen)*

Ditomyiidae
Symmerus annulatus (Meigen)*

Keroplatidae
•Cerotelion racovitzai Matile & Burghele-Balacesco*
Keroplatus reaumurii Dufour*
K. tipuloides Bosc
Macrocera angulata Meigen*
M. phalerata Meigen*
M. pusilla Meigen*
M. vittata Meigen*
Monocentrota lundstroemi Edwards*
Neoplatyura modesta (Winnertz)*
N. nigricauda (Strobl)*
Orfelia bicolor (Macquart)*
O. fasciata (Meigen)*
O. nemoralis (Meigen)*
O. nigricornis (Fabricius)*
O. persimilis Caspers*
O. tristis (Lundström)*
O. unicolor (Staeger)*
Platyura marginata Meigen.*
Urytalpa ochracea (Meigen)*

Mycetophilidae
•Acnemia amoena Winnertz
A. nitidicollis (Meigen)*
Allodia (A.) lugens (Wiedemann)
A. (A.) ornaticollis (Meigen)
A.(Brachycampta) grata (Meigen)*
A. (B.) pistillata (Lundström)*
A. (B.) triangularis (Strobl)*
•Anaclileia beshovskii Bechev*
Anatella turi Dziedzicki*
Apolephthisa subincana (Curtis)*
Boletina gripha Dziedzicki
•B. griphoides Edwards*
B. lundstroemi Landrock*
B. sciarina Staeger
Brevicornu fuscipenne (Staeger)*
B. griseicolle (Staeger)*
B. sericoma (Meigen)
B. verralli (Edwards)*
Cordyla brevicornis (Staeger)*
C. crassicornis Meigen*
C. flaviceps (Staeger)*
C. fusca Meigen*
•C. sp. n.* [*C. murina* Winnertz group; to be described by O. Kurina in preparation]
•C. pusilla Edwards*
C. semiflava (Staeger)*
•C. styliforceps (Bukowski)*
•Docosia fuscipes (von Roser)
D. gilvipes (Haliday in Walker)
D. sciarina (Meigen)*
Dynatosoma fuscicorne (Meigen)*
Ectrepesthoneura hirta (Winnertz)*
Epicypta aterrima (Zetterstedt)*
Exechia bicincta (Staeger)*
E. cincta Winnertz*
E. fulva Santos Abréu*
E. fusca (Meigen)
E. parva Lundström
E. parvula (Zetterstedt)*
E. repanda Johannsen*
•E. repandoides Caspers*
E. seriata (Meigen)*
•Exechiopsis crucigera (Lundström)*
•E. seducta (Plassmann)*
•Leia bilineata (Winnertz)*
L. bimaculata (Meigen)*
L. cylindrica (Winnertz)*
Macrobrachius kowarzi Dziedzicki*
Megophthalmidia crassicornis (Curtis)*
Monoclona rufilatera (Walker)*
Mycetophila alea Laffoon

M. britannica Laštovka & Kidd
M. cingulum Meigen*
M. edwardsi Lundström
M. fungorum (De Geer)*
M. ichneumonea Say
M. luctuosa Meigen*
M. marginata Winnertz
M. ocellus Walker
M. occultans Lundström*
M. perpallida Chandler
M. pumila Winnertz
M. ruficollis Meigen
M. sepulta (Laffoon)*
M. signatoides Dziedzicki*
M. strigatoides (Lundström)*
M. trinotata Staeger
M. vittipes Zetterstedt
Mycomya annulata (Meigen)*
M. prominens (Lundström)*
M. tenuis (Walker)
Neoempheria bimaculata (von Roser)*
N. pictipennis (Haliday)*
Phronia biarcuata (Becker)
P. cinerascens Winnertz
P. conformis (Walker)
P. humeralis Winnertz
P. nigricornis (Zetterstedt)*
P. nitidiventris (van der Wulp)
•Phthinia humilis Winnertz*
P. mira (Ostroverkhova)*
P. winnertzi Mik*
Platurocypta punctum (Stannius)*
P. testata (Edwards)*
Pseudexechia trivittata (Staeger)
Rymosia affinis Winnertz*
R. fasciata (Meigen)*
Sceptonia costata (van der Wulp)
S. membranacea Edwards
S. nigra (Meigen)*
•Sciophila interrupta (Winnertz)*
•S. jakutica Blagoderov*
S. nigronitida Landrock*
S. nonnisilva Hutson*
S. rufa Meigen
•S. silvatica Plotnikova*
Stigmatomeria crassicornis (Stannius)*
Synapha fasciata Meigen*
S. vitripennis (Meigen)*
Tetragoneura sylvatica (Curtis)*
Trichonta submaculata (Staeger)
T. terminalis (Walker)*
T. vitta (Meigen)*
Zygomyia humeralis (Wiedemann)
Z. notata (Stannius)*
•Z. setosa Barendrecht
Z. valida Winnertz

Sciaridae
Bradysia placida (Winnertz)*
•Corynoptera compressa (Walker)*
•C. forcipata (Winnertz)
•C. irmgardis (Lengersdorf)*
Cratyna nobilis (Winnertz)
C. vagabunda (Winnertz)*
Ctenosciara hyalipennis (Meigen)*
•Leptosciarella viatica (Winnertz)*
•Phytosciara (Prosciara) ungulata (Winnertz)*
Scaptosciara atomaria (Zetterstedt)*
Sciara flavimana Zetterstedt*
•S. mendax Tuomikoski*
•S. ruficauda Meigen
Trichosia morio (Fabricius)*
T. splendens Winnertz

Psychodidae
Boreoclytocerus ocellaris (Meigen)
Paramormia ustulata (Haliday in Walker)
Pericoma (Pneumia) trivialis Eaton*
Peripsychoda auriculata (Curtis)
Psychoda albipennis Zetterstedt
•P. cinerea Banks
•P. erminea Eaton
P. gemina (Eaton)*
P. mycophila Vaillant*
•Telmatoscopus advenus (Eaton)*

Tinearia alternata Say*

Trichoceridae
Trichocera (Saltrichocera) annulata (Meigen)*
T. (S.) maculipennis (Meigen)*
T. (S,) parva (Meigen)*
T. (S.) regelationis (Linnaeus).
• T. (S.) saltator (Harris) [not F in FE]
T. (Trichocera) hiemalis (De Geer)*
T. (T.) major Edwards*

Anisopodidae
•Sylvicola cinctus (Fabricius)*
•S. fenestralis (Scopoli)*

Scatopsidae
Apiloscatopse picea (Meigen)*
Colobostema infumatum (Haliday)*
C. nigripenne (Meigen)*
C. triste (Zetterstedt)*
Holoplagia richardsi (Edwards) †
Swammerdamella brevicornis (Meigen)*

Ptychopteridae
Ptychoptera contaminata (Linnaeus)*

Dixidae
Dixella amphibia (De Geer)

Chaoboridae
Chaoborus crystallinus (De Geer)*
C. flavicans (Meigen)*

Culicidae
Ochlerotatus annulipes (Meigen)

Chironomidae
Camptochironomus pallidivittatus (Malloch)*
Paramerina cingulata (Walker)*
Pentapedilum sordens (van der Wulp)*
Polypedilum nubeculosum (Meigen)*
Procladius choreus (Meigen)*
Tanypus punctipennis Meigen*
Tanytarsus ejuncidus (Walker)*
Thienemannimyia lentiginosa (Fries)*

BRACHYCERA
Xylophagidae
Xylophagus ater Meigen

Rhagionidae
Chrysopilus asiliformis (Preyssler)
Rhagio lineola Fabricius*
R. scolopaceus (Linnaeus)*

Tabanidae
Chrysops rufipes Meigen*
C. viduatus (Fabricius)*
Haematopota pluvialis (Linnaeus)
H. subcylindrica Pandellé
Hybomitra bimaculata (Macquart)
H. ciureai (Séguy)
•H. muehlfeldi (Brauer)*
Tabanus autumnalis Linnaeus*
T. bovinus Linnaeus
T. bromius Linnaeus
T. spodopterus Meigen*
T. sudeticus Zeller*

Xylomyidae
Solva marginata (Meigen)

Stratiomyidae
Beris vallata (Forster)*
Chloromyia formosa (Scopoli)
Eupachygaster tarsalis (Zetterstedt)
Neopachygaster meromelas (Dufour)
Odontomyia argentata (Fabricius)
O. ornata (Meigen)*
O. tigrina (Fabricius)

Bombyliidae
Bombylius major Linnaeus*
B. venosus Mik*

Asilidae
Choerades fuliginosus (Panzer)
C. marginatus (Linnaeus)*
Dioctria atricapilla Meigen*
D. hyalipennis (Fabricius)
D. linearis (Fabricius)
D. longicornis Meigen
D. wiedemanni Meigen
Dystolmus kiesenwetteri (Loew)*
Leptogaster cylindrica (De Geer)
Machimus (Tolmerus) atricapillus (Fallén)*
M. caliginosus (Meigen)*
Neoitamus cyanurus (Loew)
Pogonosoma minor Loew*

Hybotidae
•Crossopalpus humilis (Frey)
•Drapetis (D.) exilis Meigen
D. (D.) infitialis Collin*
•D. (D.) parilis Collin*
D. (D.) pusilla Loew*
D. (Elaphropeza) ephippiata (Fallén)
•Euthyneura halidayi Collin*
Ocydromia glabricula (Fallén)
•Oedalea flavipes Zetterstedt
•O. freyi Chvála
O. holmgreni Zetterstedt
•O. tristis Scholtz
Platypalpus agilis (Meigen)*
P. calceatus (Meigen)
P. ciliaris (Fallén)*
P. cothurnatus Macquart
P. flavicornis (Meigen)*
P. notatus (Meigen)*
•P. stabilis (Collin)
•P. subtilis (Collin)
•Stilpon graminum (Fallén)*
Tachypeza fuscipennis (Fallén)†
T. nubila (Meigen)
•Trichina bilobata Collin*
T. clavipes Meigen*

Empididae
Empis (Coptophlebia) albinervis Meigen*
E. (C.) vitripennis Meigen*
•E. (E.) bicuspidata Collin*
E. (E.) chioptera Meigen
E. (E.) nigripes Fabricius
•E. (E.) nuntia Meigen
E. (E.) pennipes Linnaeus*
•E. (E.) planetica Collin
•E. (E.) prodromus Loew*
•E. (E.) woodi Collin*
E. (Kritempis) livida Linnaeus
E. (Euempis) sericans Brullé*
E. (E.) tessellata Fabricius*
E. (Xanthempis) lutea Meigen
E. (X.) stercorea Linnaeus*
Hilara cornicula Loew*
H. fuscipes (Fabricius)
H. interstincta (Fallén)*
•H. lugubris (Zetterstedt)*
H. maura (Fabricius)*
H. nigrina (Fallén)
H. pilosa Zetterstedt
•H. subpollinosa Collin
Leptopeza flavipes (Meigen)
Phyllodromia melanocephala (Fabricius)
•Rhamphomyia (Aclonempis) albohirta Collin*
R. (A.) longipes (Meigen)*
R. (Megacyttarus) crassirostris (Fallén)*
•R. (Pararhamphomyia) albipennis (Fallén)*
R. (P.) barbata (Macquart)*
R . (P.) marginata (Fabricius)
R. (P.) tibiella Zetterstedt*
•R. (R.) albosegmentata Zetterstedt*
•R. (R.) laevipes (Fallén)*
•R.(R.) subcinerascens Collin*
R. (R.) tibialis Meigen*

Microphoridae
Microphor anomalus (Meigen)
M. holosericeus (Meigen)

Dolichopodidae
Achalcus cinereus (Haliday in Walker)
Argyra diaphana (Fabricius)
A. leucocephala (Meigen)
Campsicnemus dasycnemus Loew
C. pusillus (Meigen)
C. scambus (Fallén)
C. simplicissimus Strobl*
Chrysotimus flaviventris (von Roser)
C. molliculus (Fallén)*
Chrysotus cilipes Meigen*
C. gramineus (Fallén)
C. laesus (Wiedemann)*
C. pulchellus Kowarz*
C. suavis Loew*
Diaphorus oculatus (Fallén)
Dolichopus arbustorum Stannius
D. festivus Haliday
D. flavipes Stannius
D. griseipennis Stannius*
D. latilimbatus Macquart
D. nitidus Fallén*
D. nubilus Meigen
D. plumipes (Scopoli)*
D. signatus Meigen*
D. trivialis Haliday*
D. ungulatus (Linnaeus)*
D. wahlbergi Zetterstedt*
Ethiromyia chalybea (Wiedemann)
Gymnopternus aerosus (Fallén)*
G. assimilis (Staeger)*
G. cupreus (Fallén)
G. metallicus (Stannius)
Hercostomus argentifrons Oldenberg*
H. nanus (Macquart)*
H. parvilamellatus (Macquart)*
•Medetera abstrusa Thuneberg*
M. dendrobaena Kowarz
•M. impigra Collin
•M. insignis Girschner*
M. jacula (Fallén)
M. lamprostoma Loew*
•M. lamprostomoides Negrobov*
M. micacea Loew*
M. muralis Meigen
M. tristis (Zetterstedt)
M. truncorum Meigen
Micromorphus albipes (Zetterstedt)*
Neurigona erichsoni (Zetterstedt)*
N. quadrifasciata (Fabricius)
Rhaphium appendiculatum Zetterstedt
R. caliginosum Meigen*
R. commune (Meigen)
R. fascipes (Meigen)*
R. micans (Meigen)
Sciapus contristans (Wiedemann)
S. platypterus (Fabricius)
Sympycnus simplicipes Becker*
Syntormon denticulatum (Zetterstedt)
S. metathesis (Loew)
S. pallipes (Fabricius)*
Systenus leucurus Loew†
Teuchophorus calcaratus (Macquart)
T. spinigerellus (Zetterstedt)*
Thrypticus bellus Loew*

Platypezidae
Agathomyia viduella (Zetterstedt)
Lindneromyia dorsalis (Meigen)*
Microsania pectipennis (Meigen)
•M. vrydaghi Collart
Paraplatypeza atra (Meigen)*
Polyporivora picta (Meigen)*
Protoclythia rufa (Meigen)*
Seri obscuripennis (Oldenberg)*

Phoridae
Aenigmatias lubbocki (Verrall)*
Anevrina thoracica (Meigen)*
A. unispinosa (Zetterstedt)*
•A. urbana (Meigen)*
Beckerina umbrimargo (Becker)*
Borophaga femorata (Meigen)*
•B. incrassata (Meigen)*
Chaetopleurophora erythronota (Strobl)*
Conicera floricola Schmitz*

C. similis (Haliday)*
•C. tarsalis Schmitz*
C. tibialis Schmitz*
Diplonevra concinna (Meigen)*
D. florescens (Turton)*
D. nitidula (Meigen)*
Gymnophora arcuata (Meigen)*
G. integralis Schmitz*
G. quartomollis Schmitz*
•Gymnoptera vitripennis (Meigen)*
Hypocera mordellaria (Fallén)*
Megaselia brevicostalis (Wood)*
M. giraudii (Egger)*
M. nigriceps (Loew)*
M. plurispinulosa (Zetterstedt)*
M. ruficornis (Meigen)*
Metopina braueri (Strobl)*
M. galeata (Haliday)*
M. heselhausi Schmitz*
M. oligoneura (Mik)*
M. pileata Schmitz*
Phalacrotophora fasciata (Fallén)
Phora atra (Meigen)*
P. tincta Schmitz*
Plectanocnema nudipes (Becker)*
Pseudacteon fennicus Schmitz*
P. formicarum (Verrall)*
Spiniphora bergenstammi (Mik)*
S. maculata (Meigen)*
Triphleba autumnalis (Becker)*
T. luteifemorata (Wood)*
T. nudipalpis (Becker)*
T. trinervis (Becker)*
T. withersi Disney*

Lonchopteridae
Lonchoptera lutea Panzer

Syrphidae
Anasimyia lineata (Fabricius)*
A. transfuga (Linnaeus)*
Brachyopa scutellaris Robineau-Desvoidy
Brachypalpoides lentus (Meigen)
Brachypalpus valgus Panzer*
Chalcosyrphus nemorum (Fabricius)
Cheilosia fraterna (Meigen)*
C. illustrata (Harris)
Chrysotoxum arcuatum (Linnaeus)
C. bicinctum (Linnaeus)*
C. festivum (Linnaeus)*
Criorhina asilica (Fallén)*
C. berberina (Fabricius)*
C. floccosa (Meigen)*
Dasysyrphus tricinctus (Fallén)*
Epistrophe eligans (Harris)*
Episyrphus balteatus (De Geer)
Eristalinus aeneus (Scopoli)*
E. sepulchralis (Linnaeus)
Eristalis arbustorum (Linnaeus)
E. horticola (De Geer)*
E. intricarius (Linnaeus)*
E. tenax (Linnaeus)*
Eumerus ornatus Meigen
E. strigatus (Fallén)*
Eupeodes corollae (Fabricius)
E. luniger (Meigen)
Ferdinandea cuprea (Scopoli)
Helophilus pendulus (Linnaeus)
•Melangyna barbifrons (Fallén)*
Melanostoma mellinum (Linnaeus)
M. scalare (Fabricius)*
Meliscaeva auricollis (Meigen)
Mesembrius peregrinus Loew*
Microdon analis (Macquart)
•M. miki Doczkal & Schmid*
Myathropa florea (Linnaeus)
Neoascia (Neoasciella) interrupta (Meigen)
Paragus (P.) albifrons Fallén
P. (P.) majoranae Rondani
P. (Pandasyophthalmus) constrictus Simic*
P. (P. haemorrhous Meigen
P. (P.) tibialis (Fallén)*
Parhelophilus versicolor (Fabricius)
Pipiza luteitarsis Zetterstedt

Pipizella viduata (Linnaeus)
P. virens (Fabricius)
Platycheirus albimanus (Fabricius)*
P. fulviventris (Macquart)*
P. granditarsa (Forster)*
P. rosarum (Fabricius)
P. scutatus (Meigen)*
Psilota anthracina Meigen*
Rhingia campestris Meigen
Scaeva pyrastri (Linnaeus)
Sphaerophoria rueppellii (Wiedemann)
S. scripta (Linnaeus)
Syritta pipiens (Linnaeus)
Temnostoma bombylans Fabricius
T. vespiforme Linnaeus
Tropidia scita (Harris)*
Volucella bombylans (Linnaeus)
V. inanis (Linnaeus)
V. inflata (Fabricius)
V. pellucens (Linnaeus)
V. zonaria (Poda)
Xanthogramma pedissequum (Harris)*
Xylota segnis (Linnaeus)
X. sylvarum (Linnaeus)*
X. tarda Meigen*

Pipunculidae
Cephalops aeneus Fallén*
•C. chlorionae (Frey)*
•C. varipes (Meigen)*
C. signatus (Becker)
•C. subultimus Collin*
C. ultimus (Becker)*
•Chalarus parmenteri Coe
C. spurius (Fallén)*
•Clistoabdominalis dilatatus (De Meyer)*
C. ruralis (Meigen)*
•Dasydorylas horridus (Becker)*
•D. roseri (Becker)*
Dorylomorpha confusa (Verrall)
D. extricata (Collin)
•Eudorylas fuscipes (Zetterstedt)*
•E. fusculus (Zetterstedt)*
•E. goennersdorfensis Dempewolf & Dunk*
•E. montium (Becker)*
E. obliquus Coe*
E. zermattensis (Becker)*
•E. zonellus Collin*
•Jassidophaga fasciata (von Roser)*
Pipunculus campestris Latreille*
•P. fonsecai Coe
•P. tenuirostris Kozanek*
•Tomosvaryella coquilletti (Kertész)*
T. geniculata (Meigen)*
T. kuthyi (Aczél)*
T. sylvatica (Meigen)*

ACALYPTRATAE
Micropezidae
Neria cibaria (Linnaeus)*

Tanypezidae
Tanypeza longimana Fallén

Megamerinidae
Megamerina dolium (Fabricius)*

Psilidae
•Chamaepsila nigricornis (Meigen)*
C. rosae (Fabricius)*
Loxocera albiseta (Schrank)*
L. fulviventris Meigen*
Psila fimetaria (Linnaeus)

Conopidae
Conops scutellata Meigen*
Myopa buccata (Linnaeus)
M. extricata Collin*
M. testacea (Linnaeus)*
Sicus ferrugineus (Linnaeus)
Thecophora distincta (Wiedemann)*
Zodion cinereum (Fabricius)*

Lonchaeidae
Lonchaea collini Hackman

•L. fraxina McGowan & Rotheray*
L. fugax Becker
•L. limatula Collin
•L. patens Collin*

Pallopteridae
Palloptera scutellata (Macquart)

Piophilidae
Protopiophila latipes (Meigen)
Stearibia nigriceps (Meigen)

Ulidiidae
Ceroxys hortulana (Rossi)
•Euxesta pechumani Curran
Myennis octopunctata (Coquebert)
Otites centralis (Fabricius)*
O. formosa jacunda (Robineau-Desvoidy)
O. lamed (Schrank)*

Platystomatidae
Rivellia syngenesiae (Fabricius)

Tephritidae
Acanthiophilus helianthi (Rossi)
Dioxyna bidentis (Robineau-Desvoidy)
Euleia heraclei (Linnaeus)
Oxyna flavipennis (Loew)
Rhagoletis cerasi (Linnaeus)*
Tephritis formosa (Loew)
T. matricariae (Loew)
T. vespertina (Loew)
Xyphosia miliaria (Schrank)

Lauxaniidae
Calliopum aeneum (Fallén)
C. simillimum (Collin)*
•Homoneura christophi (Becker)
H. dilecta (Rondani)
H. interstincta (Fallén)
H. notata (Fallén)
Minettia fasciata (Fallén)
M. inusta (Meigen)
M. longipennis (Fabricius)*
M. tubifer (Meigen)*
Meiosimyza decempunctata (Fallén)
M. decipiens (Loew)
M. rorida (Fallén)
Pseudolyciella pallidiventris (Fallén)
P. stylata Papp
P. subpallidiventris Papp
Peplomyza discoidea (Meigen)
P. litura (Meigen)
•Sapromyza (S.) opaca Becker
S. (S.) sexpunctata Meigen
S. (Sapromyzosoma) laevatrispinosa (Carles-Tolra)*
S. (S.) quadripunctata Becker
•S. (S.) senilis (Meigen)
Tricholauxania praeusta (Fallén)
Trigonometopus frontalis (Meigen)

Chamaemyiidae
•Chamaemyia herbarum (Robineau-Desvoidy)
C. juncorum (Fallén)

Sciomyzidae
Colobaea distincta (Meigen)
C. pectoralis (Zetterstedt)
C. punctata (Lundbeck)
Ditaeniella grisescens (Meigen)
Elgiva cucularia (Linnaeus)
Hydromya dorsalis (Fabricius)
Ilione albiseta (Scopoli)
Limnia unguicornis (Scopoli)*
Pherbellia annulipes (Zetterstedt)
P. dorsata (Zetterstedt)
Psacadina zernyi (Mayer)
Renocera pallida (Fallén)
Sepedon sphegea (Fabricius)
S. spinipes (Scopoli)
Tetanocera ferruginea Fallén

Sepsidae
Saltella sphondylii (Schrank)

Sepsis fulgens Meigen*
S. punctum (Fabricius)
S. thoracica (Robineau-Desvoidy)
S. violacea Meigen

Clusiidae
Clusia flava (Meigen)*
Clusiodes (C.) albimanus (Meigen)*
C. (Clusiaria) ruficollis (Meigen)*

Odiniidae
Odinia boletina (Zetterstedt)

Agromyzidae
Agromyza mobilis Meigen
A. nigrella (Rondani)*
A. nigrescens Hendel*
A. nigrociliata Hendel*
Cerodontha (Poemyza) atra (Meigen)
C. (P.) pygmaea (Meigen)*
C. (Dizygomyza) luctuosa(Meigen)*
Chromatomyia milii (Kaltenbach)
Liriomyza richteri Hering*
Pseudonapomyza atra (Meigen)

Opomyzidae
•Geomyza apicalis (Meigen)*
G. balachowskyi Mesnil
G. majuscula (Loew)*
G. tripunctata Fallén
Opomyza florum (Fabricius)
O. germinationis (Linnaeus)

Anthomyzidae
•Typhamyza bifasciata (Wood)

Aulacigastridae
Aulacigaster pappi Kassebeer*

Periscelididae
•Periscelis annulipes Loew
•P. winnertzi Egger

Asteiidae
•Asteia amoena Meigen*
Leiomyza scatophagina (Fallén)

Milichiidae
Desmometopa sordida (Fallén)†
Madiza glabra Fallén*
Milichia ludens (Wahlberg)
Neophyllomyza acyglossa (Villeneuve)
•Phyllomyza equitans (Hendel)*
•P. longipalpis (Schmitz)†
•P. melania (Hendel)†
P. securicornis Fallén

Carnidae
•Meoneura neottiophila Collin*

Chloropidae
Camarota curvipennis Loew*
Cetema elongatum (Meigen)
C. neglectum Tonnoir
Chlorops speciosus Meigen
Cryptonevra flavitarsis (Meigen)†
Elachiptera bimaculata (Loew)*
E. brevipennis (Meigen)
E. cornuta (Fallén)
E. scrobiculata (Strobl)*
•Lasiambia baliola (Collin)*
Lipara lucens Meigen†
Melanochaeta pubescens (Thalhammer)*
Meromyza rufa Fedoseeva*
Neohaplegis tarsata (Fallén)*
•Oscinimorpha sordidissima (Strobl)*
Oscinisoma gilvipes (Loew)*
Tricimba (Nartshukiella) cincta (Meigen)

Heleomyzidae
Eccoptomera emarginata Loew*
E. longiseta (Meigen)*
E. microps Meigen)*
•E. nigricornis Strobl*
•E. obscura (Meigen)*
Gymnomus caesius (Meigen)

•Heteromyza commixta Collin*
Neoleria propinqua Collin
N. ruficeps (Zetterstedt)*
Oecothea praecox Loew*
Suillia affinis (Meigen)
S. bicolor (Zetterstedt)*
S. humilis (Meigen)*
S. laevifrons (Loew)*
S. mikii (Pokorny)
S. notata (Meigen)*
•S. parva (Loew)
S. vaginata (Loew)*
S. variegata (Loew)
Tephrochlamys flavipes (Zetterstedt)*
T. rufiventris (Meigen)*

Sphaeroceridae
Alloborborus pallifrons (Fallén)*
Apteromyia claviventris (Strobl)†
Borborillus uncinatus (Duda)
Chaetopodella scutellaris (Haliday)
Coproica ferruginata (Stenhammar)*
•C. hirticula Collin*
C. lugubris (Haliday)*
C. vagans (Haliday)*
Copromyza equina Fallén
C. nigrina (Gimmerthal)*
C. stercoraria (Meigen)
Crumomyia fimetaria (Meigen)
C. glabrifrons (Meigen)*
C. notabilis (Collin)
C. roserii (Rondani)*
•Elachisoma aterrimum (Haliday)*
E. pilosum (Duda)*
Gonioneura spinipennis (Haliday)*
•Ischiolepta crenata (Meigen)*
I. denticulata (Meigen)*
•I. vaporariorum (Haliday)*
Leptocera (L.) fontinalis (Fallén)
L. (L.) nigra Olivier
Limosina silvatica (Meigen)*
Lotophila atra (Meigen)
•Minilimosina (Allolimosina) alloneura (Richards)*
•M. (M.) parvula (Stenhammar)*
•M. (Svarciella) splendens (Duda)*
•M. (S.) guestphalica (Duda)*
M. (S.) vitripennis (Zetterstedt)*
Opacifrons coxata (Stenhammar)*
•O. (Hackmanina) czernyi (Duda)*
•Opalimosina (O.) collini (Richards)*
O. (O.) mirabilis (Collin)*
Paralimosina fucata (Rondani)*
Phthitia (Collimosina) spinosa (Collin)*
Pullimosina heteroneura (Haliday)
P. moesta (Villeneuve)*
P. pullula (Zetterstedt)*
•Rachispoda breviceps (Stenhammar)
•R. cryptochaeta (Duda)
R limosa (Fallén)
R. lutosa (Stenhammar)
R. lutosoidea (Duda)
S. (Bifronsina) bifrons (Stenhammar)*
•Spelobia baezi (Papp)
S. clunipes (Meigen)*
S. luteilabris (Rondani)*
S. rufilabris (Stenhammar)*
S. talparum (Richards)*
Sphaerocera curvipes Latreille
•Telomerina eburnea Roháček *
T. flavipes (Meigen)*
T. pseudolecoptera (Duda)*
•Trachyopella kuntzei (Duda)*
•T. lineafrons (Spuler)

Drosophilidae
Amiota (A.) alboguttata (Wahlberg)*
Chymomyza amoena (Loew)*
Drosophila (Dorsilopha) busckii Coquillett*
D. (Drosophila) funebris (Fabricius)*
D. (D.) kuntzei Duda*
D. (D.) limbata von Roser
D. (D.) picta Zetterstedt
D. (D.) testacea von Roser*

D. (Sophophora) ambigua Pomini*
D. (S.) helvetica Burla*
D. (S.) obscura Fallén*
D. (S.) tristis Fallén
Hirtodrosophila cameraria (Haliday)*
H. confusa (Staeger)*
Gitona distigma Meigen*
Phortica variegata (Fallén)
Scaptodrosophila deflexa (Duda)
S. rufifrons (Loew)
Scaptomyza (Parascaptomyza) pallida (Zetterstedt)
Stegana (Steganina) coleoptrata (Scopoli)*
•S. (S.) nigrithorax Strobl*
•S. (S.) similis Laštovka & Máca

Campichoetidae
Campichoeta punctum (Meigen)

Diastatidae
Diastata adusta Meigen
D. costata Meigen*
D. fuscula (Fallén)
D. nebulosa (Fallén)
•D. vagans Loew*

Ephydridae
Atissa limosina Becker*
Discomyza incurva (Fallén)
Hyadina guttata (Fallén)*
H. humeralis Becker*
H. rufipes (Meigen)*
Limnellia quadrata (Fallén)
Notiphila (Agrolimna) venusta Loew
N. (Dichaeta) caudata (Fallén)
N. (N.) dorsata Stenhammar*
N. (N.) graecula Becker*
•N. (N.) nubila Dahl*
N. (N.) riparia Meigen
Ochthera manicata (Fabricius)
O. mantis (De Geer)
Paracoenia fumosa (Stenhammar)
Pelina aenea (Fallén)
Philygria interstincta (Fallén)*
P. picta (Fallén)*
Psilopa nigritella Stenhammar
Scatella stagnalis (Fallén)
Trimerina madizans (Fallén)*

CALYPTRATAE
Scathophagidae
Cleigastra apicalis (Meigen)
Nanna fasciata (Meigen)
N. flavipes (Fallén)*
Norellisoma spinimanum (Fallén)*
Cordilura (Cordilurina) albipes (Fallén)
Cordilura (C.) picipes Meigen*
Phrosia albilabris (Fabricius)*
Scathophaga furcata (Say)*
S. lutaria (Fabricius)*
S. stercoraria (Linnaeus)
Trichopalpus fraternus (Meigen)

Anthomyiidae
•Alliopsis sepiella (Zetterstedt)
Anthomyia confusanea Michelsen
A. monilis (Meigen)
A. pluvialis (Linnaeus)*
A. procellaris Rondani
Botanophila dissecta (Meigen)*
B. fugax (Meigen)
•B. laterella (Collin)*
Delia antiqua (Meigen)
D. cardui (Meigen)*
D . florilega (Zetterstedt)
D. linearis (Stein)*
•D. pilifemur Ringdahl*
D. planipalpis (Stein)*
Egle ciliata (Walker)
•E. minuta (Meigen)*
E. parva Robineau-Desvoidy
E. rhinotmeta (Pandellé)*
Emmesomyia grisea (Robineau-Desvoidy)*
E. socia (Fallén)

Hydrophoria lancifer (Harris)*
Hylemya urbica van der Wulp
H. variata (Fallén)*
Hylemyza partita (Meigen)
Lasiomma seminitidum (Zetterstedt)*
L. strigilatum (Zetterstedt)
Mycophaga testacea (Gimmerthal)
Pegomya bicolor (Wiedemann)
P. holosteae (Hering)*
Pegoplata juvenilis nitidicauda (Schnabl)
Phorbia fumigata (Meigen)
Zaphne ambigua (Fallén)*
Z. divisa (Meigen)*

Fanniidae
Fannia aequilineata Ringdahl
F. armata (Meigen)
F. canicularis (Linnaeus)*
F. fuscula (Fallén)*
F. genualis (Stein)*
F. lustrator (Harris)
•F. minutipalpis (Stein)*
F. nigra Malloch*
F. sociella (Zetterstedt)*
Piezura boletorum (Rondani)*

Muscidae
Atherigona varia (Meigen)
Azelia cilipes (Haliday)*
Coenosia pulicaria (Zetterstedt)
C. pumila (Fallén)
C. testacea (Robineau-Desvoidy)
Helina abdominalis (Zetterstedt)
H. concolor (Czerny)
H. evecta (Harris)*
H. impuncta (Fallén)*
H. lasiophthalma (Macquart)*
H. quadrinotata (Meigen)
Hydrotaea irritans (Fallén)
Limnophora obsignata (Rondani)*
L. tigrina (Am Stein)
Lispe longicollis Meigen*
L. melaleuca Loew
L. pygmaea Fallén*
L. tentaculata (De Geer)
Lispocephala alma (Meigen)
L. erythrocera (Robineau-Desvoidy)
•L. falculata Collin
L. pallipalpis (Zetterstedt)
Mesembrina meridiana (Linnaeus)*
Morellia hortorum (Fallén)*
Musca autumnalis De Geer
Muscina levida (Harris)*
M. prolapsa (Harris)*
Mydaea setifemur Ringdahl*
Neomyia cornicina (Fabricius)*
Phaonia errans (Meigen)*
P. laeta (Fallén)
P. latipalpis Schnabl*
P. pallida (Fabricius)*
P. subventa (Harris)
P. tuguriorum (Scopoli)*
Polietes lardarius (Fabricius)*
Drymeia brumalis (Rondani)
Schoenomyza litorella (Fallén)
Spanochaeta dorsalis (von Roser)*
Spilogona denigrata (Meigen)
Stomoxys calcitrans (Linnaeus)*

Calliphoridae
Bellardia vulgaris (Robineau-Desvoidy)
Calliphora vomitoria (Linnaeus)*
Lucilia bufonivora Moniez
L. richardsi Collin*
Melanomya nana (Meigen)*
Pollenia labialis Robineau-Desvoidy*
P. griseotomentosa (Jacentovsky)*
P. rudis (Fabricius)

Rhinophoridae
Stevenia atramentaria (Meigen)*

Sarcophagidae
Agria affinis (Fallén)*
Blaesoxipha erythrura (Meigen)*
B. descosseae Léonide & Léonide*

B. laticornis (Meigen)*
B. plumicornis (Zetterstedt)*
B. rossica Villeneuve*
Brachicoma devia (Fallén)*
Metopia argyrocephala (Meigen)
M. campestris (Fallén)*
•M. roseri Rondani*
• Sarcophaga (Heteronychia) ancilla (Rondani)*
S. (H.) dissimilis Meigen*
S. (H.) haemorrhoa Meigen*
S. (H.) hemorrhoides (Böttcher)*
S. (Kramerea) schuetzei (Kramer)
S. (Krameromyia) anaces Walker*
S. (Mehria) sexpunctata (Fabricius)*
S. (Myorhina) nigriventris (Meigen)*
S. (Pandelleana) protuberans (Pandellé)
S. (Pandelleisca) similis (Meade)*
S. (Rosellea) aratrix Pandellé
S. (S.) carnaria (Linnaeus)*
S. (S.) subvicina Rohdendorf*
S. (S.) variegata (Scopoli)
S. (Sarcotachinella) sinuata Meigen*
S. (Thyrsocnema) incisilobata Pandellé

Tachinidae
Actia crassicornis (Meigen)
A. dubitata Herting*
A. infantula (Zetterstedt)*
Bactromyia aurulenta (Meigen)
Bessa selecta (Meigen)*
Blepharomyia pagana (Meigen)
•Brachicheta strigata (Meigen)*
Campylocheta praecox (Meigen)
Cistogaster globosa (Fabricius)*
Clytiomya continua (Panzer)*
Cylindromyia auriceps (Meigen)*
C. bicolor (Olivier)*
C. brassicaria (Fabricius)
C. interrupta (Meigen)*
Cyzenis albicans (Fallén)*
Ectophasia crassipennis (Fabricius)
Eliozeta helluo (Fabricius)*
Eriothrix rufomaculatus (De Geer)*
Exorista larvarum (Linnaeus)*
E. nova (Rondani)*
E. rustica (Fallén)*
Gonia divisa Meigen*
G. picea (Robineau-Desvoidy)*
Goniocera schistacea Brauer & von Bergenstamm*
Gymnocheta viridis (Fallén)*
Gymnosoma dolycoridis Dupuis*
G. rotundatum (Linnaeus
Halidaya aurea Egger*
Hemyda obscuripennis (Meigen)*
Leucostoma simplex (Fallén)*
Lydella stabulans (Meigen)*
Lypha dubia (Fallén)*
Medina luctuosa (Meigen)*
Meigenia dorsalis (Meigen)*
Oswaldia muscaria (Fallén)*
Pales pavida (Meigen)*
Peribaea apicalis Robineau-Desvoidy*
P. tibialis (Robineau-Desvoidy)*
Phania funesta (Meigen)*
Phasia obesa (Fabricius)*
P. pusilla Meigen
P. subcoleoptrata (Fabricius)*
Phorocera assimilis (Fallén)*
P. obscura (Fallén)
Pseudoperichaeta nigrolineata (Stephens)
Ramonda prunaria (Rondani)*
Senometopia separata (Rondani)
Siphona cristata (Fabricius)*
S. flavifrons Staeger*
S. geniculata (De Geer)*
S. pauciseta Rondani
Tachina fera (Linnaeus)
Vibrissina turrita (Meigen)*
Wagneria gagatea Robineau-Desvoidy*
Zenillia fulva (Fallén)
Zophomyia temula (Scopoli)

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The male of *Orellia tragopogonis* Korneyev & J. Dirlbek in Korneyev, 2003 (Diptera, Tephritidae)

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Summary
The previously unknown male of *Orellia tragopogonis* Korneyev & J. Dirlbek, 2003 (Diptera, Tephritidae), is described and illustrated for the first time, based on a specimen from Southern Spain (province Almeria).

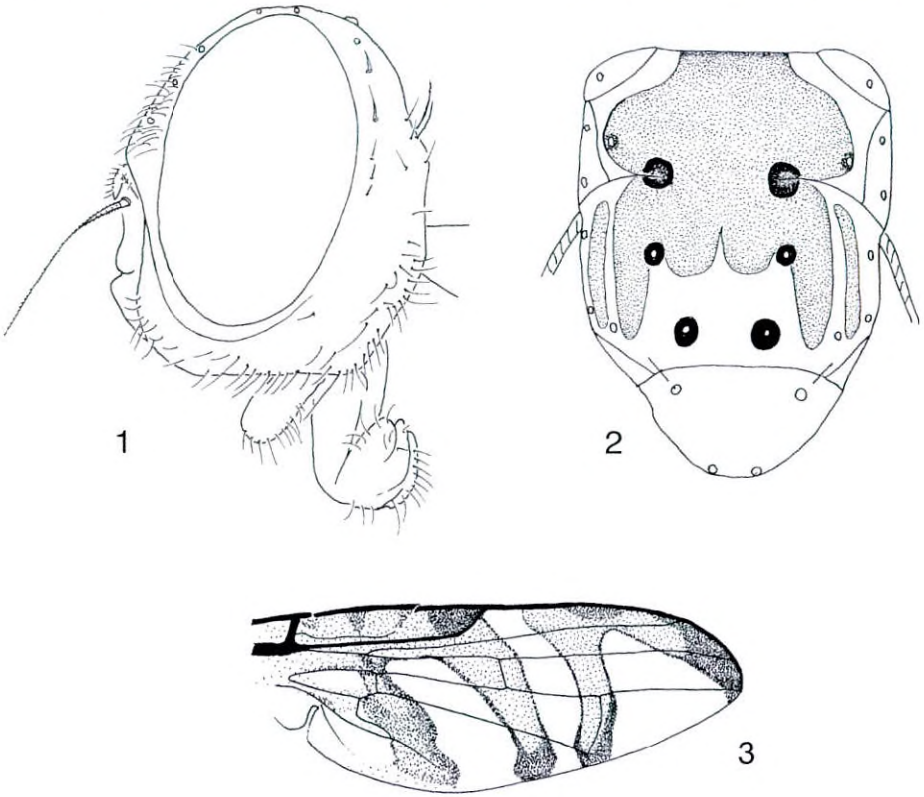
Introduction

The fruit-fly fauna of Europe is quite well known with about 250 described species (Merz and Korneyev 2007), not only because some species are pests or beneficial in agriculture, but also because these flies are among the most colourful acalyptrate Diptera and rather easy to observe and collect. Nevertheless, new species may still be found, especially in Southern Europe. Often they do not differ only in minute details from already described species, but exhibit some quite unique characters making them easily recognizable. Such a species is *Orellia tragopogonis* Korneyev & J. Dirlbek described from two females (Korneyev 2003). The holotype was found in Benidorm (Eastern Spain, Valencia region, about 35 km NE of Alicante at the Mediterranean sea coast). The paratype comes from Granada (Southern Spain, Anadalucia region). Both specimens were reared from flower heads of *Tragopogon dubius* (Asteraceae, Cichorioideae).

Orellia tragopogonis differs morphologically from the other three European species of the genus by the absence of the pair of black spots at the base of the apical scutellar setae (present in *O. falcata* (Scopoli) and *O. stictica* (Gmelin)), and the wing pattern with the apical and preapical crossbands united along the anterior wing margin (all crossbands separated from each other in *O. scorzonerae* (Robineau-Desvoidy)). A unique character is the dense brush of white setulae dorsally on the fore femur which are less numerous and blackish in the other three species. In addition, the host plant of *O. tragopogonis* is *Tragopogon dubius*, whereas the other species develop in *Tragopogon orientale*, *T. longirostre* and other species of *Tragopogon* (*O. falcata* and *O. stictica*, Freidberg and Kugler 1989, Merz 1994, Korneyev, *pers. comm.*) and *Scorzonera humilis* (*O. scorzonerae*).

Through the kindness of Miguel Carles-Tolrá the author was able to study a specimen which turned out to be the first male of *O. tragopogonis*. Because of the importance of the study of male terminalia in the Terelliini for the correct generic assignment (Korneyev 1985) the opportunity is here taken to describe and illustrate its male for the first time and to discuss its generic position. The specimen is deposited in the entomological collection of the Natural

History Museum Geneva (MHNG). Terminology follows Korneyev (2003) for external morphology, and Korneyev (1985) and White *et al.* (1999) for structures of male terminalia.



Figs 1-3. ***Orellia tragopogonis*** **Korneyev & J. Dirlbek, 2003, male. 1, head, lateral view; 2, scutum and scutellum, dorsal view; 3, wing (all drawn in situ).**

Orellia tragopogonis **Korneyev & J. Dirlbek, 2003**

Orellia tragopogonis Korneyev & J. Dirlbek in Korneyev 2003: 8.

Material studied: 1 male, **Spain**: Almeria province, Cabo de Gata, surroundings of La Islica, 37°01'02.9"N, 01°55'22.1"W, 22.iv.2005, leg. D. Cañadas, sweeping on vegetation (MHNG).

The specimen was first stored in alcohol and later dried and pinned on a minuten pin on a block of plastozote. The condition of the specimen is fair, with most setae on head and thorax missing. Legs and wings are more or less intact. The genitalia were dissected and they are kept in glycerol in a glass tube attached on the same pin.

Description: the female was fully described by Korneyev (2003). It is therefore not necessary to repeat it here. The present male differs from the female as follows (condition of the female according to the original description in parenthesis):

Head (Fig. 1):
- Ocellar triangle brown, only the three ocelli on small black spots (ocellar triangle entirely black).
- Frontal plates without black setulae (with 4-7 black setulae at posterior 0.1 of its length).
- Scape with 5-6 white and one black setulae (with 5-6 black setulae).

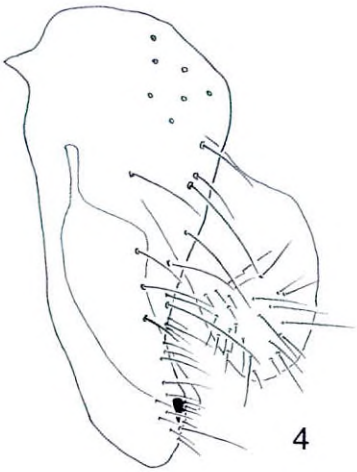
Thorax (Fig. 2) *and wing* (Fig. 3):
- Katepisternum with brown spot (with dull black spot).
- vein R4+5 dorsally and ventrally with one basal setula (with 1-3 setulae basally on dorsal surface and 0-1 setula on ventral surface).
- wing base more strongly infuscated; cell c2 in middle with distinct brown spot, also slightly darker at base and apex (uniformly yellowish).

Abdomen
- Tergite 5 with white setulae in basal half and black setulae in distal half (black setulose with few white setulae antero-medially).

Male terminalia (Figs 4-8):
- Epandrium and surstylus (Figs 4-5) higher than wide; lateral surstylus poorly developed; medial surstylus with a row of 5-6 setulae; medial prensiseta distinctly stouter and longer than lateral prensiseta.
- Inner terminalia as in other species of the tribe; ejaculatory apodeme (Fig. 6) large, longer than height of epandrium.
- Glans of phallus (Figs 7-8) with long, weakly sclerotized ligula (= basal lobe in White et al. 1999) at base; acrophallus rather strongly sclerotized; epiduct long, consisting of several weakly defined sclerites; the ventral basal sclerite of the acrophallus is finely setulose (Fig. 7); juxtostyle (= subapical lobe in White *et al.* 1999) rather long, weakly sclerotized; vesica (= apical lobe in Korneyev 1985) small, apically pointed in lateral view, straight in ventral view.

Discussion

The male of *O. tragopogonis* resembles in most external characters the description of the female. The small differences concern the colour of body and of some fine setulae, and in small details of the wing pattern. Therefore, there is no doubt about the association of the specimen to two known females. In addition, it was collected in the same area of Spain, i.e. between the two localities from where the females were obtained.



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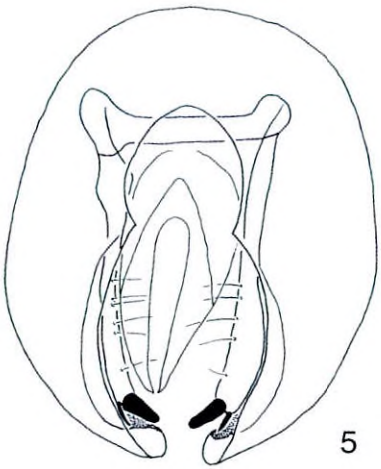

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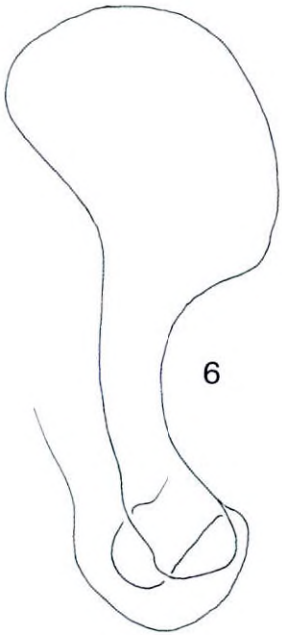

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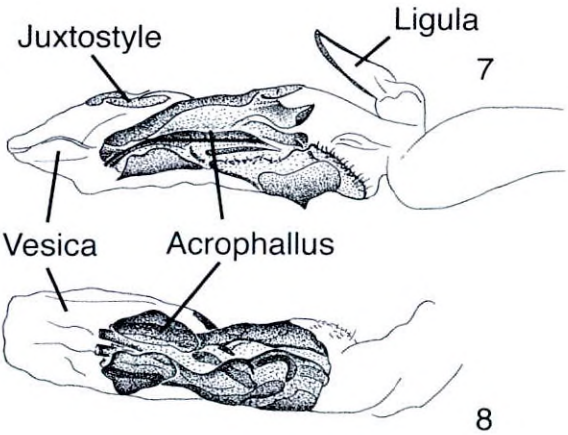

The study of the male terminalia reveals that they are similar to those of *Orellia falcata* (Scopoli, 1763) (Korneyev 1985, Fig. 29; Freidberg and Kugler 1989, Fig. 165). The glans of both species is characterized by a conspicuous, large ligula (Korneyev 1985), a finely setulose basal sclerite of the acrophallus, the same shape of the juxtostyle (Korneyev 1985), and the small vesica with a membranous duct. The paired sclerites of the epiduct are slightly longer than the tip of the acrophallus and of the same structure in both species (Freidberg and Kugler 1989). The main differences between the two species - besides the external differences of thorax, wing and fore leg - concern the almost undeveloped ampulla of the ejaculatory duct in *O. tragopogonis* (a rather similar condition is found in *O. scorzonerae* (Robineau-Desvoidy, 1830) (=*O. distans* Loew, see Korneyev 1985, Fig. 28), the less bowed epiduct and the more sclerotized tip of the acrophallus. The illustrations of the tip of the aculeus by Korneyev (2003) resemble those of other species of *Orellia* with a large sternite 8 and an evenly rounded tip (Merz 1994). These small differences leave no doubt that the two species are congeneric.

It is rather surprising that a large species of Tephritidae like *O. tragopogonis* differing conspicuously in external characters from congeneric species was only recently found and described, and is known from three specimens only. Moreover, the host plant, *Tragopogon dubius*, has a wide distribution in Central and Southern Europe (Richardson 1989), and the tephritid could be much more widespread than presently known. One explanation may be the poor collecting effort for Tephritidae in Spain (Merz 2001) and other Mediterranean countries in conjunction with the early collecting date (April), which may indicate a short flight period. As the two females were obtained by rearing from infested flower heads it may be argued that it is easier to obtain them in this way than by sweeping. Usually, only few entomologists collect plant species (or parts of them) without a known economic significance, like *T. dubius* in order to rear phytophagous insects. As a consequence, monophagous or narrowly oligophagous insect species attacking such plants are under-represented in collections. Other species of Tephritidae which are usually easier to rear than to sweep belong to genera like *Oedaspis* that have mostly non-functional mouthparts, some species whose larvae develop in fleshy fruit (*Rhagoletis* spp., *Goniglossum wiedemanni* (Meigen), *Carpomya* spp.) with adults probably resting in the canopy, or some *Tephritis* species and *Campiglossa* species of high altitude which have probably a very short flight period (Merz, *personal observation*).

Acknowledgements

It is my wish to thank sincerely Miguel Carles-Tolrá (Barcelona, Spain) for the donation of the specimen and his valuable information about its finding. My thanks are extended to Antonio Aguirre (Almeria, Spain) for making the specimen available for study. Further, I express my thanks to Valery Korneyev (Kiev, Ukraine) for sharing his knowledge with me and for his precious comments on a first version of the manuscript. I am most indebted to Florence Marteau (MHNG) for her technical help.

Figs 4-8. *Orellia tragopogonis* Korneyev & J. Dirlbek, 2003, male terminalia. 4, epandrium, surstyli and cercus, lateral view; 5, same, caudal view; 6, ejaculatory apodeme; 7, glans of phallus, lateral view; 8, same, ventral view.

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Dipterists Digest 2007 **14**, 157-158

Hilara woodiella Chvála, 1999 (Diptera, Empididae: Empidinae) new to Britain

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Summary

Hilara woodiella Chvála, 1999 is recorded as new to the British Diptera fauna.

The empidid fly *Hilara woodiella* Chvála, 1999 is here recorded for the first time in Great Britain. One male and two females were collected by RC at North Duffield Carrs [V.C. 61, SE697370] in the Lower Derwent Valley National Nature Reserve on 18.vi.2007. These were submitted to AP for identification and the specimens have been deposited at the National Museum of Wales.

Hilara woodiella was first described by Chvála (1999) and is a member of the *H. chorica* group that was discovered after and hence not included in the major revision of the European members of that group by Chvála (1997). It is a small species (2.5–3.0mm) with rather short black legs and tarsal segments 2–4 of the anterior leg hardly longer than wide. It closely resembles *H. pseudochorica* Strobl, 1892, especially in males in respect of the presence of long fine setae, that become longer distally, on the fore tibia and of an inflated anterior basitarsus with 3-4 long dorsal and dorsoapical setae, and in females by the similarly broadly swollen hind tibia. Unlike *H. pseudochorica*, the scutum is coppery brown when viewed from in front and the acrostichal setae are shorter and regularly quadriserial while the labrum is exceedingly long, being about as long as the head is high (very noticeably longer than in *H. pseudochorica*). The combination of elongated mouthparts and quadriserial acrostichal setae is unique amongst the *H. chorica*-group *sensu* Chvála (1997). Descriptions and figures of the legs and male genitalia were given by Chvála (1999, 2005) and the species was keyed by Chvála (2005).

Hilara woodiella was found to be abundant at a site in south-east Netherlands and a single locality in northern Belgium (Goot *et al.* 2000) but is otherwise only known from two sites in Finland and considering this northern European distribution, its occurrence in Britain is perhaps not unexpected. In the Netherlands it was 'numerous near an obsolete meander of the river Rhine' (Goot *et al.* 2000), in the same locality referred to as 'boggy biotopes' by Chvála (2005). The British site is a winter-flooded traditional hay-meadow towards the southern end of the complex of sites that make up the Lower Derwent Valley NNR and it seems likely that intermittently flooded alluvial plains are a key requirement for this species. The exact location within North Duffield Carrs was the margin of a field drainage dyke and the specimens were taken by general sweeping of dyke-side vegetation, which includes small

Salix bushes. Other Diptera collected at the same time and location included *Hilara pseudochorica* (det. ARP) *H. longifurca* Strobl, 1892, *H. quadrifasciata* Chvála, 2002 (Empididae), *Nigrotipula nigra* (Linnaeus, 1758) (Tipulidae), *Platycheirus immarginatus* (Zetterstedt, 1849) (Syrphidae), *Dolichopus cilifemoratus* Macquart, 1827) (Dolichopodidae) and *Colobaea distincta* (Meigen, 1830) (Sciomyzidae).

Acknowledgements
We would like to thank Peter Roworth (Natural England, York), the Site Manager of Lower Derwent Valley National Nature Reserve, for allowing access to the site by RC.

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Oxycera dives Loew, 1845 (Diptera, Stratiomyidae) in Ayrshire in 2007

– On 28 July 2007 I visited a variety of sites in Ayrshire and Dumfriesshire, including a roadside verge at Nether Wellwood (NS653262), which abutted a scrubby area largely of *Salix*. This was an upland site within a wider area of sheep pasture at an altitude of 650 feet. The western verge had a ditch with running water and was vegetated with meadowsweet *Filipendula ulmaria*. Two females of an *Oxycera* species were netted along this ditch, after having been spotted sitting on vegetation; these subsequently proved to be *O. dives* Loew. This species has been recorded at a number of sites within the vicinity of Galashiels, south-east Scotland, as well as sites in Northumbria and North Yorkshire. This record appears to be a westward extension of its known range but must surely be just an indication of much wider distribution because seepages with meadowsweet are a very widespread feature of the upland landscape in southern Scotland – **ROGER K.A. MORRIS,** 7 Vine Street, Stamford, Lincolnshire PE9 1QE

Dipterists Digest 2007 **14**, 159-160

Urophora stylata (Fabricius, 1775) (Diptera, Tephritidae), new to Norway

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Summary
Urophora stylata (Fabricius, 1775) (Tephritidae) is added to the Norwegian Diptera list.

The tephritid fly *Urophora stylata* (Fabricius, 1775) is here recorded as new to Norway. One male was netted at Sokna, near the vicarage, in Ringerike community, Buskerud province (EIS 36) on 30 July 2005. This specimen, however, could not be determined with certainty. The host plant was not noted either as *Carduus* species, *Cirsium vulgare* (Savi) and *Centaurea* species, which were growing close to each other at this part of the locality. Between 21 and 26 June 2007 seven males and three females were collected from *Cirsium vulgare* growing at road-side at 150 m distance from the first locality. Sokna is located N.W. of Oslo in south-eastern Norway, at approximately 60 ° 15 ´N, 10 ° E.

According to Merz (1994) *U. stylata* is recorded from all over Europe with the exception of Scandinavia. Hedström (1995), who referred to Merz (1994), recorded *U. stylata* from localities in southern Sweden, and it was also later recorded from Denmark (Merz *et al.* 2001). Thus it is not surprising that *U. stylata* occurs also in Norway.

There are, however, two old records of *U. stylata* from Norway given by Persson (1958). Both are from Northern Trøndelag province. This material was collected by J. Zetterstedt in 1840. Both records from Levanger community viz. Alstahaug and Tynes; five females from this material have been checked, three marked with "Tynes" and all five are *U. jacaena* Hering. These are the northernmost records of the genus *Urophora* in Norway. These records agree also with the Swedish distribution of *U. jaceana*, given by Hedström (1995) as north to Jämtland province, which borders Northern Trøndelag province, while *U. stylata* has a more southern distribution in Sweden.

Merz (1994) recorded *Cirsium vulgare* as the only host plant for *U. stylata* in Switzerland, while otherwise in Middle Europe *Cirsium arvense*, widespread in Norway, and *Carduus nutans*, introduced and very rare in Norway, were also host plants. A third species, *C. eriophorum*, however, is not recorded from Norway (D. Moe *pers. comm.*)

The genus *Urophora* is easy to recognise; some species, however, are difficult to determine unless using characters of the female genitalia. *Urophora stylata* has three distinct cross-bands on the wing; the sub-basal band is normally absent. Its femora are yellow to orange, sometimes striped black. To separate *U. stylata* from other *Urophora* species one can use characters of the female aculeus - see Merz (1994). Larvae of *U. stylata* make a gall in the capitulum, usually of *Cirsium* species.

Urophora stylata was described from England ("Angliae nemoribus") by Fabricius (1775). It is widespread throughout the British Isles, reaching the Scottish Highlands (Clemons 2004). It has also been introduced to Canada as a biocontrol agent (White 1988).

Including *U. stylata*, three species of *Urophora* have been recorded from Norway compared with six species from Sweden (Hedström 1995) and seven from Denmark (Merz *et al.* 2001).

Acknowledgements

I thank Dr. Bernhard Merz, Muséum d'histoire naturelle, Genève, Switzerland, who verified my determination of the material from Sokna, Dr. Dagfinn Moe for information on the genus *Cirsium* in Norway and Roy Danielsson of the Zoologisk Muséet Lunds Universitet for a loan from the J. Zetterstedt collection.

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Dipterists Digest 2007 **14**,

The phenology of *Empis tessellata* Fabricius (Empididae) and evidence of its response to climate change

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Summary
Rrecent changes in the phenology of the widespread species *Empis tessellata* Fabricius are discussed.

Empis tessellata Fabricius is a common spring species that is widely distributed across the whole of mainland Britain; it also occurs in the Orkney and Shetland Islands. Collin (1961) reported records until early July, while Plant (2002) showed its emergence to range between early April and early September. My field recording in southern England rarely yields this species much beyond the end of June. Whilst recording in southern Scotland in 2007 I realised that its emergence period in Scotland differed substantially from southern England and I therefore thought it would be worthwhile looking at its phenology in different parts of Britain. Fig. 1 depicts the 338 records that comprise my notes on this species made during field visits, divided into southern and northern records (using V.C. 64 as the point of differentiation).

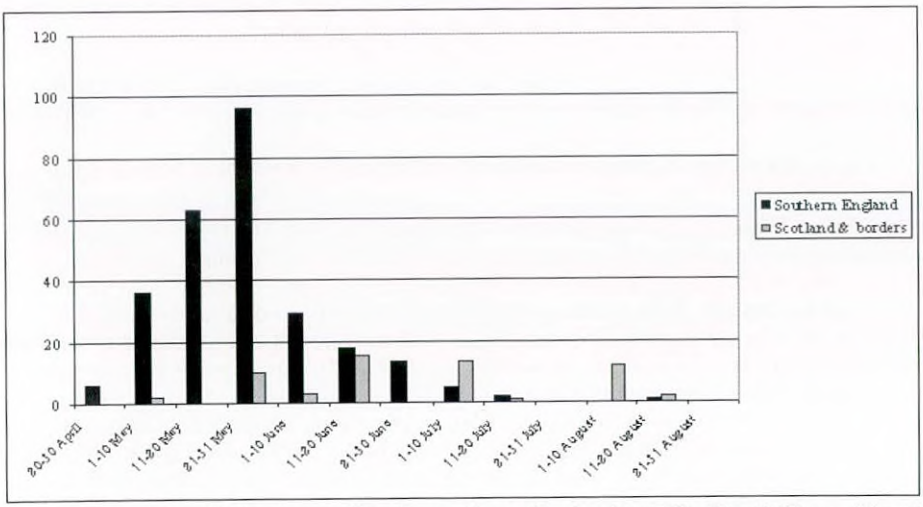

Fig. 1. Phenology of *Empis tessellata* in southern England and Scotland (Roger Morris data).

The majority of my southern English records fall between late April and the beginning of July. The peak is in late May with a rapid decline in occurrence in June. The graph also shows that occasional examples occur in August, which might suggest a partial second generation. Data from Scotland and northern England present a more complex picture, but it is clear that *E. tessellata* occurs well into August at these latitudes. The data I hold are not particularly comprehensive for Scotland, however, and a bigger dataset is needed to determine the peak emergence.

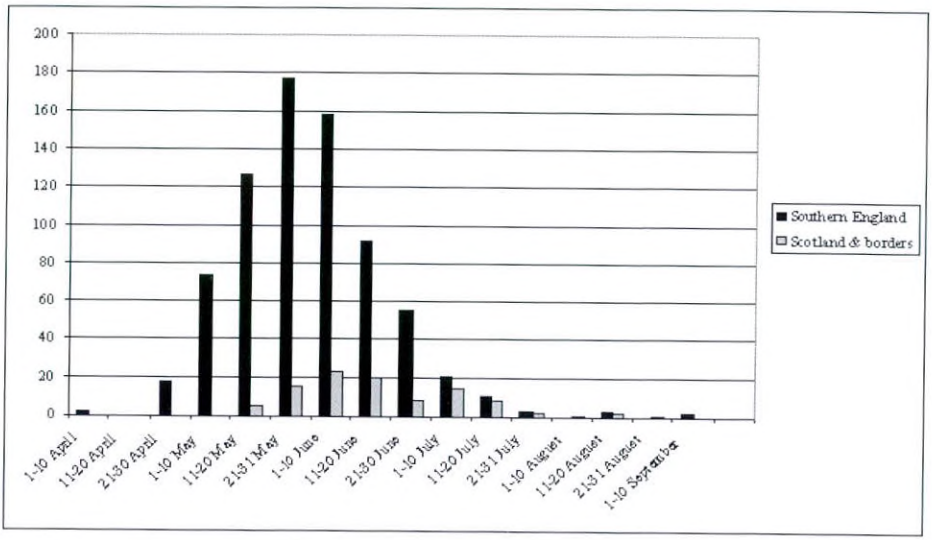

Fig. 2. Phenology of *Empis tessellata* using Empididae Recording Scheme data.

Adrian Plant kindly commented on my initial analysis and my postulation that *E. tessellata* might have a partial second generation (based on the seeming gap in occurrence between July and August). He observed that the phenology curve resulting from the national dataset did not support this hypothesis, and kindly forwarded that dataset for further analysis. This is a much larger sample, comprising some 842 records that can be treated in the same manner as my own. The resulting phenology graph (Fig. 2) shows similar characteristics to my southern English data (south of V.C. 64). There are differences, however, because the peak emergence falls in the last ten days of May and the first ten days of June, rather than the last ten days of May in my data. Moreover, the occurrence curve is much more symmetrical and does not exhibit the same rapid decline in June. The data for Scotland and northern England are as limited as my own, but they do suggest that the peak is towards the middle of June.

The differing peaks of occurrence in my data and the national scheme database raise questions about differences in phenology across Britain. Analysis of the phenology of *Epistrophe eligans* (Harris) (Syrphidae) by Ball and Morris (1992) provides a useful pointer to the solution of this observation: it showed that there were phenological differences from north to south and from east to west. The wider spectrum of the peak of emergence is therefore likely to reflect the broader geographical coverage of data held by the national scheme when compared with my southern data, which are largely confined to Lincolnshire, Northamptonshire and Surrey.

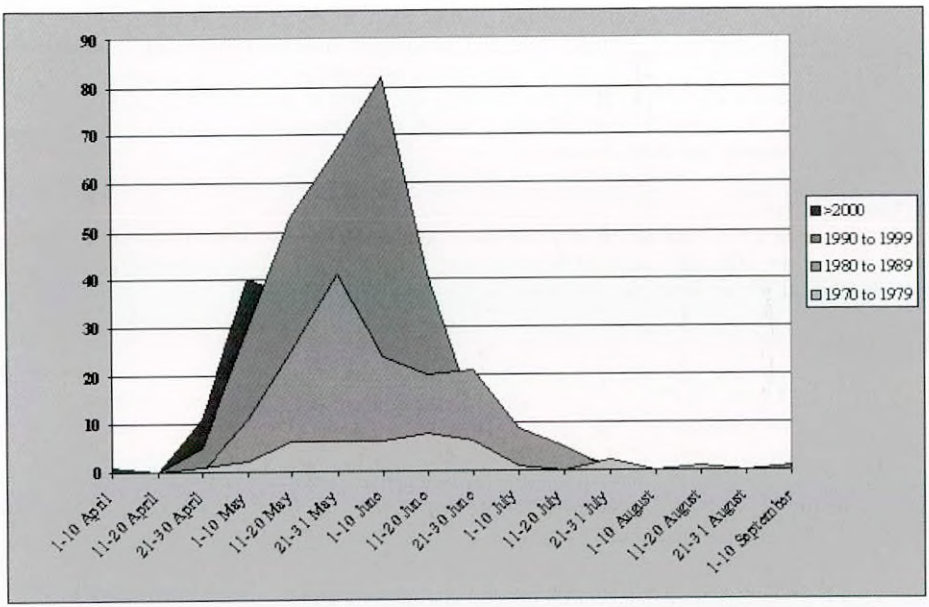

Fig. 3. Phenological shifts in *Empis tessellata* since 1970.

There is a further explanation for some of the differences between my data and those of the national scheme: this is the impact of climate change on phenology. There is ample evidence that insect emergence is getting earlier as a result of climate change, and this has been demonstrated in a variety of taxa, including the Empididae (Plant 2002, 2005). My analysis of phenological shift in some spring hoverflies illustrated the possibilities of detecting changes in relatively small samples (Morris 2000). Analysis of the Empididae scheme dataset was therefore undertaken using a similar approach. This is depicted in Fig. 3, which clearly illustrates a shift, with emergence occurring much earlier in the year. It is clear that in the 1970s and 1980s, *E. tessellata* rarely, if ever, occurred in April, and yet the data

post-1990 clearly show that occurrence in April is increasing in frequency and is getting earlier. It is also clear that occurrence in July is declining, which may help to support the hypothesis of a partial second generation in August. This is consistent with observations made on spring hoverflies and for example evidence of a partial second generation in *Leucozona lucorum* (Linnaeus) (Syrphidae) (Morris 2005).

Concluding comments

This brief analysis illustrates the importance of making detailed records of relatively common species and the use to which such data can be applied. *Empis tessellata* is clearly sensitive to the implications of climate change and is a further addition to the suite of species that can be used to follow the impact of climate change. The analysis does not provide any certainty that *E. tessellata* occurs as a partial second generation as much more data are needed. It does show, however, that phenology plots need to be interrogated in more detail to establish trends: a simple plot over many decades of data yields a very broad spectrum of occurrence and smoothes over trends and fluctuations.

Acknowledgements

I am most grateful to Adrian Plant for helpful comments on my initial postulation and for forwarding data from the Empididae Recording Scheme for analysis. Adrian's comments have helped turn this from a short note to a much more detailed analysis.

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Dipterists Digest 2007 **14,** 165-167

Cyrturella albosetosa (Strobl) (Diptera, Dolichopodidae) in Norfolk, England

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Summary
Cyrturella albosetosa (Strobl) was recorded at a small fen meadow in Norfolk. This is the second British record and the first for over half a century. The male genitalia and wing are figured.

Introduction

Cyrturella albosetosa (Strobl, 1909) is a tiny dolichopodid, the smallest British species according to d'Assis-Fonseca (1978). It was known from one tiny area of Chippenham Fen National Nature Reserve, near Newmarket, Cambridgeshire, between 1935 and 1951 (Falk and Crossley 2005). The site warden built his hut on this patch of ground, not realising that this was the only British locality for a fly that has not been seen since at Chippenham Fen. The Broads Authority commissioned me and two colleagues to briefly survey the invertebrates of Ducan's Marsh SSSI, Norfolk (TG339027), which is a single small field (3.6ha) of wet valley grassland by a small tributary of the River Yare about 10km south-east of Norwich. I sampled the site by sweep-netting on 21 June, 2007.

Results

Among the flies recorded were five male and two female *Cyrturella albosetosa*. Most of the specimens were collected from rushy pasture dominated by dense blunt-flowered rush (*Juncus subnodulosus*), which obscured a richer underlying flora on a gentle slope fed by weak seepages. One male was collected nearby at the foot of the slope, from a shallow ditch that was choked by the same rush. Similar vegetation was swept on the flat area of the field but no *Cyrturella* were found in these samples, nor in samples taken from seepages, pond margins, wet woodland and scrub in the field. Among the 33 species of dolichopodids taken at Ducan's Marsh were the uncommon species *Hercostomus plagiatus* (Loew), which was one of the most frequent dolichopodids here, *Dolichopus longitarsis* Stannius, *Diaphorus oculatus* (Fallén), *Hercostomus blankaartensis* Pollet and *Lamprochromus bifasciatus* (Macquart).

Identification

The specimens were easily identified, using the key by d'Assis-Fonseca (1978) and confirmed using the description and figures by Parent (1938). The male genitalia and wing of one of my specimens are shown here (Fig. 1) as they are distinctive but were not figured by d'Assis-Fonseca. The various appendages of the genitalia articulate and alter position between specimens, rather more so than in most dolichopodids. The flies were between 1.2 and 1.3mm long which is slightly larger than the '1mm or less' quoted by d'Assis-Fonseca and

makes them scarcely different in size to the less robust of our species of *Micromorphus* (whose identities are still uncertain). As well as its small size, the species is conspicuous by all its setae being completely pale, as suggested by its specific name, and in the male by the last two tergites and the genitalia being curled forward under the abdomen, reminiscent of *Thrypticus* and *Dolichophorus* to which it is related, but unlike other tiny British dolichopodids.

Habitat requirements

The two British sites for *Cyrturella* have a few features in common. Both sites are fed by base-rich water and are both permanently wet. Chippenham Fen does not have obvious seepages so this feature is unlikely to be necessary in itself. The base-rich water supply is responsible for the diverse fen meadow vegetation dominated by blunt-flowered rush and black bog-rush (*Schoenus nigricans*) at Ducan's Marsh, which has been managed by light summer grazing for at least 20 years since the site was notified as an SSSI. A similar fen grassland flora occurs in some of the mown compartments of Chippenham Fen, although reed (*Phragmites australis*) and saw sedge (*Cladium mariscus*) dominate large areas of the fen. The compartment where *Cyrturella* was recorded at Chippenham Fen is currently mixed fen vegetation managed by cutting, and is in part tussocky with plenty of leaf litter. From Parent's (1938) description of this locality, from where J.E. Collin had sent him specimens, it appears that this area was managed by mowing in the 1930s and the flies were present on re-growth following the first cut of the season. Keeping the vegetation low by cutting or grazing may therefore be important to *Cyrturella*.

Falk and Crossley (2005) gave the species Endangered status and suggested that the risk of extinction in Britain must be high. It is clearly exceedingly rare and its small size cannot be the only reason for being overlooked, although it may be more readily found by suction sampling than by sweep-netting. The present finds may spur recorders to locate other colonies of this fly between its two known fenland sites separated by about 75km.

Acknowledgements

I thank the Broads Authority who funded the survey of Ducan's Marsh, and Sandie Tolhurst for instigating the work and commenting on a draft.

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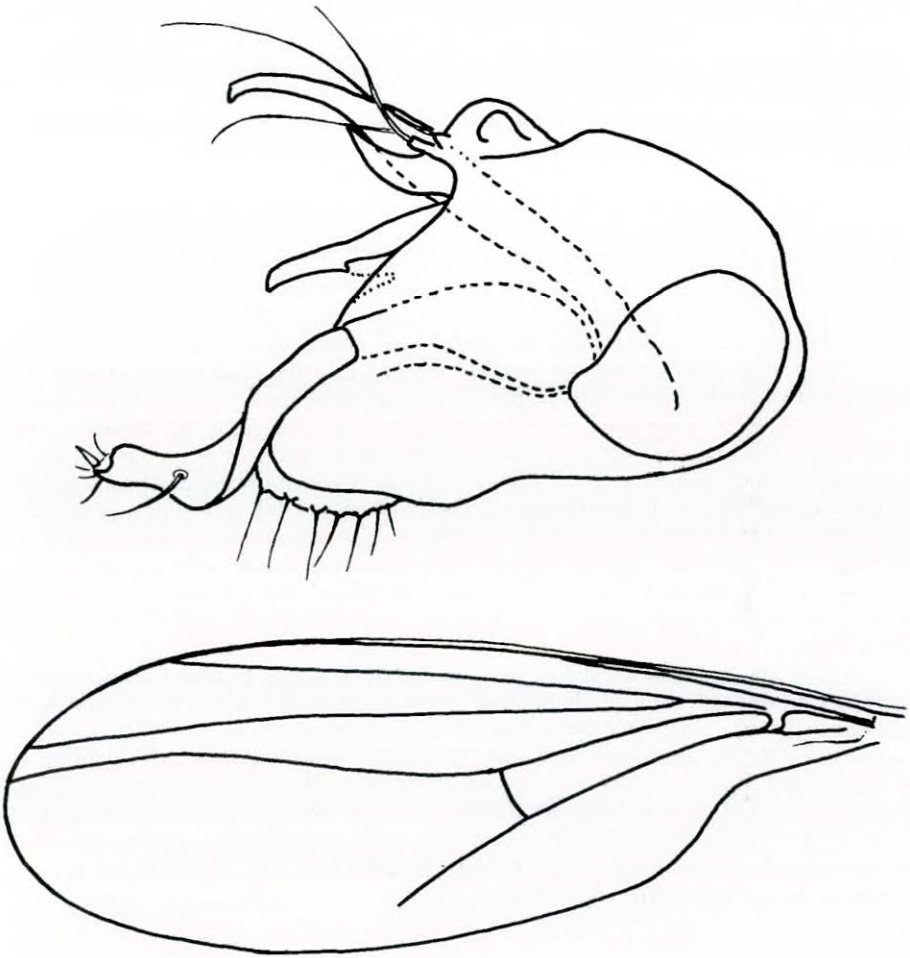

Fig. 1. *Cyrturella albosetosa* (Strobl): male genitalia and wing.

***Erioptera flavissima* Starý (Diptera, Limoniidae) still at Aunt Mary's Bottom** – *Erioptera flavissima* Starý, 1972 is a small and entirely yellow cranefly that was first recorded in Britain from the small wet woodland (c. 8 ha) of Aunt Mary's Bottom SSSI, Dorset (ST546023), which is part of the Rampisham Estate. The wood, which is probably mainly secondary, had developed on valley mire formed by the headwaters of a tributary of the River Frome cutting through the Lower Chalk and Upper Greensand to the underlying Gault Clay. Base-rich water issuing from the junction of the sand and clay has given rise to a particularly rich swathe of seepages that extend almost throughout the wood.

I surveyed the site on 8 July 1987 while working for the Nature Conservancy Council and passed the craneflies to Alan Stubbs who recognised *E. flavissima*, which was subsequently mentioned in the SSSI citation and was added to the British list in the checklist (Chandler, P.J. (Ed.) 1998. Checklist 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**), although details of British records have not previously been published.

On the Dipterists Forum summer field meeting in 1998, Alan found a female of *E. flavissima* where wild currant (*Ribes*) bushes occurred along a seepage runnel (on either 28 June or 3 July 1998). I was asked to survey the wood again for English Nature (Dorset Team) to assess whether there had been any major changes in the fauna since my first visit nearly two decades earlier. On 3 July 2005, I found a female collected from one of the more lightly shaded areas of seepages with a thin ground cover of grasses and herbs under young alders *Alnus glutinosa* and a few large ash trees *Fraxinus excelsior* where the organic peaty deposit ('squidge') was particularly well developed. Other craneflies of note collected on my second visit were *Atypophthalmus inustus* (Meigen), *Lipsothrix nervosa* Edwards, *Molophilus corniger* de Meijere, *Pilaria fuscipennis* (Meigen) (also found in 1987) and *Tasiocera robusta* (Bangerter).

I identified my 2005 female using Alan Stubbs' test keys to craneflies, in which he stated that the ovipositor is long. In my specimen it is almost as long as veins R_2 and R_3; this may help to qualify 'long' when the abdomen has contracted on drying.

Several nearby wet woods on the same geological formation and with similar base-rich seepages were surveyed in 1987 and one of these again in 2006 but no other specimens of *E. flavissima* were found. Aunt Mary's Bottom appears to be the only known British locality for *E. flavissima* whose continued presence here is therefore worth noting. I thank Alan Stubbs for permission to include his records – **C. MARTIN DRAKE,** Orchid House, Burridge, Axminster, Devon EX13 7DF

Dipterists Digest 2007 **14**, 169-170

Macronychia striginervis (Zetterstedt, 1838) (Diptera, Sarcophagidae) new to Ireland

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Summary
Macronychia striginervis (Zetterstedt, 1838) is added to the Irish list, from two sites, in Kildare and Wicklow.

During a visit to Ireland by PJC in 2006, a short stop was made on 20 July at a small copse by the River Liffey, near Victoria Bridge, Co. Kildare (N8419). It was a surprise to observe a female of *Macronychia striginervis* (Zetterstedt) alight and run about on low foliage where dappled sunlight was reaching a glade. Within a few minutes a female of *Lindneromyia dorsalis* (Meigen) (Platypezidae), of which there are few Irish records, was curiously also seen running about on foliage at the same spot.

Macronychia striginervis has a distinctive body shape, with the broad abdomen narrowed basally giving a waisted appearance and bearing a series of black triangular markings on each tergite. It is an active conspicuous insect, 7-13mm in body length, so was an unexpected addition to the Irish list.

It was a further surprise when a second Irish specimen of *M. striginervis* was found among material referred by JPOC to PJC for identification. This example had been reared from a dead branch containing aculeate nests, collected at Knocksink Wood NNR, Co. Wicklow (O2117) by CR. The adult had emerged on 17 May 1994 and had been deposited in the collections of the National Museum of Ireland, Dublin.

There are three species of *Macronychia* in Britain, of which *M. polyodon* (Meigen) had previously been recorded from Ireland (Chandler *et al.* 2000), based on a single specimen reared in 1924. Clearly the genus, which comprises cleptoparasites of solitary wasps (Hymenoptera, Sphecidae), is elusive in Ireland. *Macronychia polyodon* is the most widespread species in Britain with a record from Scotland but all species are otherwise found mainly in southern England, where *M. striginervis* is the more frequently observed species.

The species recorded here is known to develop in nests of *Ectemnius cavifrons* (Thomson) (Sphecidae). This wasp, which nests in decaying wood and provisions its nest with hoverflies (Syrphidae), has an easterly distribution in Ireland, both records of *M. striginervis* being within its range. A wider range of hosts, including some stem-nesting species, is known for *M. polyodon* so it is possible that alternative hosts may also be used by *M. striginervis*.

In England *M. striginervis* is usually seen running about on the surface of dead trunks and decaying wood in which the nests of its host are to be found and it may be restricted to

developing in nests of wasps occupying this habitat. Anthomyiids of the genus *Eustalomyia*, of which there are also few Irish records, are also cleptoparasites of wood-nesting aculeates including *Ectemnius cavifrons* and may be seen behaving similarly around the entrances to the nests of their hosts. They also resemble *M. striginervis* in the mainly grey dusted coloration with black markings.

Macronychia species may be determined using the keys to the British species by van Emden (1954), where *M. striginervis* is called *M. ungulans* Pandellé, and from the keys to the Scandinavian species by Pape (1987).

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***Sapromyza basalis* Zetterstedt, 1847 (Diptera, Lauxaniidae) new to Ireland** – The Lauxaniidae have not been the subject of a separate study of the Irish species but have been recorded mainly in papers on general Diptera. The most recent update of knowledge of the Irish species of the family (Chandler, P.J., O'Connor, J.P., Nash, R. and Withers, P. 2002. Diptera new to Ireland in seventeen families. *Dipterists Digest* (*Second Series*) **9,** 121-136) added eight species, bringing the confirmed Irish total to 35 out of a British fauna of 56 species. A number of widespread British species have yet to be recorded from Ireland so it is not surprising for a further addition to be made.

It is, however, surprising that the species newly recorded here has in recent years been found to be numerous at several sites in Ireland, some of which have been well recorded for Diptera previously. It is a small, although distinctive, species and may have been overlooked but the recent finds suggest that it has become more numerous or widespread in latter years.

Sapromyza basalis (Zetterstedt) is widespread in southern England, particularly in western counties and also known from Wales (Monmouthshire and Merioneth). At present it has Nationally Scarce status in Britain, but this may not be justified as it is locally numerous in broad-leaved woodland, where it occurs amongst low vegetation. Like most Lauxaniidae little is known of its biology but it is assumed to be saprophagous in leaf litter or decaying vegetation in woodland.

PJC first found *S. basalis* in Ireland on a visit to Virginia Woods, Co. Cavan in 2004 and found it there again and at four other sites during a visit to Ireland in 2006, while KNAA found it at a site in Northern Ireland during a survey of ancient woodland ASSIs in 2007.

The sites where we have found this species in Ireland are as follows:

CAVAN: Virginia Woods (N5987), 18.ix.2004 and 21.vii.2006
KILDARE: Ardscull Mote (S7397), 20.vii.2006
WICKLOW: Glen of the Downs (O2611), 24.vii.2006
WICKLOW: Djouce Woods (O1909), 24.vii.2006
WICKLOW: Devil's Glen (T29), 26.vii.2006
DOWN: Rostrevor Oakwood ASSI (J1817), 23.v-11.vii.2007

At the five sites in the Republic of Ireland *S. basalis* was in numbers, mostly found by sweeping low vegetation. The habitats involved were predominantly broad-leaved or mixed woodland but at Djouce Woods it was present in a conifer plantation. At the site in Northern Ireland a single example was found in a sample taken using a flight interception trap in mature oak woodland.

This species is brownish yellow like many Lauxaniidae but is easily distinguished from other lauxaniids with this coloration by having the basal antennal segments (scape and pedicel) dark brown in contrast to the yellow third segment (first flagellomere).

Some Irish specimens of *S. basalis* have been deposited in the collections of the National Museum of Ireland, Dublin. The ASSI survey was commissioned by the Environment & Heritage Service of Northern Ireland – **P.J. CHANDLER,** 606B

Berryfield Lane, Melksham, Wiltshire SN12 6EL and **K.N.A. ALEXANDER,** 59 Sweetbrier Lane, Heavitree, Exeter EX1 3AQ

***Stemonocera cornuta* (Scopoli, 1772) (Diptera, Tephritidae) in Carmarthenshire –** During the week of 31 July – 6 August 2004 a small party of members of the British Plant Gall Society visited sites in Carmarthenshire to record galls in a region from which there had previously been very few records indeed. This visit had been arranged in conjunction with local botanists who were carrying out their own surveys and with their assistance and thanks to fine weather we recorded just over 100 galls new to the county.

In addition to recording gall-inducers I also as usual recorded leaf miners, among which were those belonging to the tephritid *Stemonocera cornuta* (Scopoli). I had not previously observed the species in more than 25 years' field observations, possibly because these have been mainly in the Midlands with any visits to the south too early for finding the mines of this species.

On 2 August we visited a woodland site at Pontyberam where I noticed an old railway track, which I then decided to explore on 6 August. Close to the eastern end of the accessible part of this track (in SN5010) there was a patch of hemp agrimony *Eupatorium cannabinum* with a number of its leaves being actively mined, possibly corresponding to the number of eggs laid by a single female fly.

Mines may be identified from the keys to European leaf miners by E.M. Hering (1957. *Bestimmungstabellen der Blattminen von Europa*. Band **1,** 648 pp. Uitgeverij Dr W. Junk – 's-Gravenhage). Adults may be determined using the handbook by I.M. White (1988. Tephritid flies. Diptera: Tephritidae. *Handbooks for the Identification of British Insects.* **10**(5a), 1-134. Royal Entomological Society of London). Both works use the name *Vidalia cornuta* for this species.

Although the literature (Hering *op. cit.*) indicates a mining period of August to October these larvae were quite well grown, suggesting that mining had begun before the end of July – **JOHN ROBBINS,** 123b Parkgate Road, Coventry CV6 4GF

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