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BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY



BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY

Published by the British Entomological and Natural History Society
and incorporating its Proceedings and Transactions

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British Journal of Entomology and Natural History is published by the British Entomological and Natural History Society, Dinton Pastures Country Park, Davis Street, Hurst, Reading, Berkshire RG10 0TH, UK. Tel: 01189-321402. The Journal is distributed free to BENHS members.

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Typeset by Dobbie Typesetting Limited, Tavistock, Devon.

Printed in England by Henry Ling Ltd, Dorchester, Dorset.

BRITISH ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY

Registered charity number: 213149

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Cover photograph: *Andrena bucephala* Stephens (Hymenoptera: Apidae), a globally rare bee recorded from Warwickshire limestone quarries. Photo: S. Falk.

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A SAWFLY, *PRISTIPHORA LEUCOPUS* (HELLÉN), (HYMENOPTERA: TENTHREDINIDAE) NEW TO BRITAIN

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ABSTRACT

Lime Sawfly, *Pristiphora leucopus* (Hellén) (Tenthredinidae, Nematinae), is reported from Britain for the first time. Notes on the distribution and identification of the insect are given, including a revision to Benson's (1958) identification key.

INTRODUCTION

In July 2003 and June 2004 a number of *Pristiphora* larvae were beaten from limes, *Tilia* spp., at eight sites in Wiltshire and one in Norfolk (per John Badmin). Most of these were reared out. The host plants were *Tilia* × *vulgaris* Hayne and *T. cordata* Miller. The rearings produced 14 adults of a species which could not be identified using the British key (Benson, 1958). Determination was carried out by reference to Zhelochovtsev (1988). Comparison was also made with specimens of adults and larvae, collected in Finland, borrowed from the collections of the Natural History Museum, London (NHM). In 2002, 2003 and 2005 Andrew Halstead swept several *Pristiphora* females from limes in the arboretum at RHS Garden, Wisley, Surrey and he had not succeeded in identifying them. Comparison of these with the Wiltshire reared specimens and those from the NHM confirmed that they were all of the same species. *Pristiphora leucopus* (Hellén) occurs in Finland, Russia, Ukraine (Zhelochovtsev, 1988) and Germany (Andrew D. Liston pers. comm.), always in association with *Tilia*. Of the 49 British species of *Pristiphora*, 41 are believed to be monophagous (Lacourt, 1999). It is not known whether this species is a recent arrival in the country or has simply been overlooked.

DESCRIPTION OF LARVA

The larva has a uniformly pale green body, with a smooth, shiny texture and a narrow whitish line along the flanks level with the spiracles. The larva is a leaf-edge feeder and the green body colour is the same colour as the lime leaves. There are six pairs of prolegs, one on each of abdominal segments 2–7, plus a pair of anal prolegs on the tenth and last abdominal segment. The young larva, as illustrated in Fig. 1, has a very dark head and bold black coxal marks on the thoracic legs. During the final days of feeding the head pattern, as shown in Fig. 2, becomes more contrasting with a pale greenish-grey background colour and black coronal and parietal stripes. A black marking on the frons is separate from the coronal stripe. The coxal markings are less prominent in older larvae. Full-grown larvae are 15 mm long. The head and coxal markings of the reared larvae were an exact match with the NHM loan material. When the reared larvae had finished feeding they spun a brown cocoon approximately 8 mm long among the leaves, no other medium having been provided. No change was noted in the appearance of the larvae at this stage. Adults emerged a few days later. It is estimated that the cycle from egg-laying to emergence of the adults took about three weeks. The collected larvae were reared in an indoor situation and the cocoons kept indoors.

DESCRIPTION OF ADULTS

The reared adult females were easily assigned to the genus *Pristiphora* using Benson (1958). The description is as follows: body length 4.75–5 mm. The head, thorax and abdomen are predominantly black. The surface of the head and thorax is shiny, finely punctured and pilose. The surface sculpture of the tergites is coriaceous. Labrum and mandibles are brown, maxillary and labial palps yellowish-white, each of the latter having a small amount of dark pigment on the basal segments. The ocelli are positioned well back on the vertex leaving a very narrow post-ocellar area. Hind ocelli are twice as far apart as the distance between one of them and the edge of the occipital carina. There is a small pit behind each ocellus. The two basal antennal segments are black with an apical brown rim. The flagellar segments 3–9 are light brown with a narrow darker line longitudinally along the top, fading near the tip so that the apical segment is wholly light brown.

The only paler parts of the thorax are the outer two-thirds of the tegulae which are white merging into black at the interface with the mesonotum and the pronotum, which has pale hind margins adjacent to the tegulae.

The whitish cenchri (Fig. 3a) are more or less oval in shape, slightly angled so that the outer tip of each is slightly further forward than the inner tip and as far apart as approximately $1.4 \times$ the length of one cenchrus. The metascutellum is shiny with a few short hairs. Wings are hyaline with a covering of microtrichia, densest at the wing tips. The stigma is large, brown in the middle and surrounded by a pale border. The costa is pale brown and slightly darker at the swollen apex.

The legs are yellowish-white with a small amount of black as follows. The coxae are black basally. The pale femora have a minimal amount of black surface shading, the extent of which varies between individuals but is never the dominant colour. (Please refer to the note below regarding the femur colour of some adults which emerged in mid-May.) The apices of the tibiae and the tarsal segments are tipped with light brown. The tarsal claws all have a large inner tooth as illustrated in Fig. 3c, best described as sub-bifid. The inner hind tibial spurs are roughly half the length of the basitarsus.

Some abdominal tergites have pale medial apical markings. These are widest and palest on tergite 1 and become smaller and darker from tergite 2 onwards. Tergites 8 and 9 have no pale markings. The sawsheath, viewed from above, is illustrated in Fig. 3d. It is short, not protruding far beyond the ninth tergite and as wide at the tip as the apex of a hind tibia when viewed from above. The saw, illustrated in Fig. 3b, has rows of hairs on the back of the lines arising from each of the saw teeth from tooth 5 onwards. The hairs over tooth 5 are short, sparse and difficult to see even under high magnification (e.g. $\times 180$).

As with the larvae, the reared adults matched the NHM loan material exactly.

The adults swept by Andrew Halstead in the arboretum at Wisley Garden during mid-May had considerably more black on the femora than any of the specimens reared from larvae of the summer generations. The hind femora of five adults collected during May at Wisley had black/white in the ratio of approximately 70:30 for an individual caught on the 10 May ranging up to about 40:60 for individuals caught on 24 May. The six dark-legged species of *Pristiphora* arising from couplet 7, *P. bifida* Hellén, *P. melanocarpa* (Hartig), *P. ruficornis* (Olivier), *P. coniceps* Lindqvist, *P. armata* (Thomson) and *P. confusa* Lindqvist, of Benson's key all have a tiny amount of white on the hind femora. More than 50 examples, the majority on loan from NHM, were examined and none had more than 10% of white, most of them considerably less. Individuals of *P. leucopus* swept at Wisley in June and July were similar to the reared adults described above.



Fig. 1. A young larva of *Pristiphora leucopus* showing mainly black head and black coxal markings on thoracic legs



Fig. 2. An older larva of *Pristiphora leucopus* showing the head markings and reduced coxal markings of the final instar

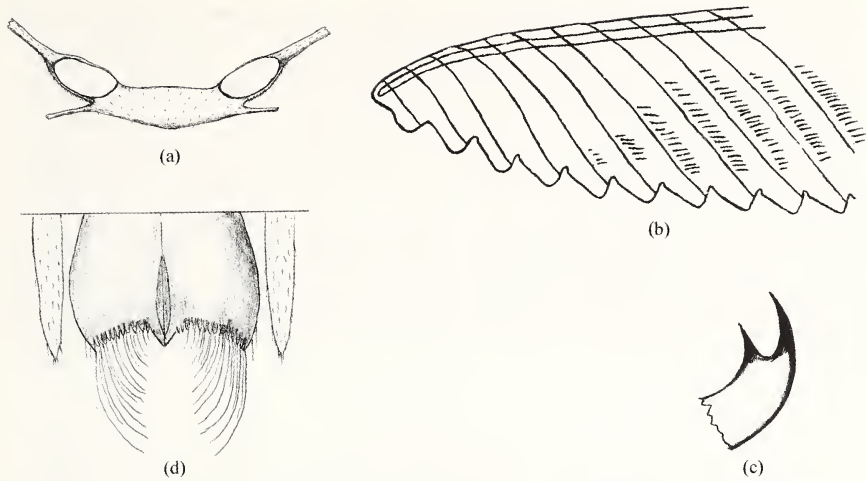


Fig. 3. *Pristiphora leucopus* female, (a) metascutellum and cenchri, (b) saw, (c) tarsal claw, (d) dorsal view of sawsheath. (drawings by K.J.Grearsen)

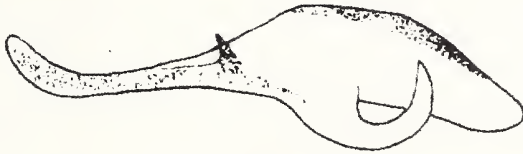


Fig. 4. *Pristiphora leucopus* male penis valve. (drawing adapted from Lindqvist, 1969)

No British male has been seen so far. Lindqvist (1969) referred to a single rearing of larvae in Finland which were overwintered successfully and from which emerged 23 females and four males in the following spring. It seems that it may be normal for males to be in the minority. Lindqvist's drawing of the male penis valve is included here as Fig. 4.

BRITISH MATERIAL EXAMINED

Ashton Keynes, Wilts. (SU048938)–6 July 2003–Larva on *Tilia* × *vulgaris*–reared female emerged 18 July 2003.

Warminster, Wilts. (ST879442)–8 July 2003–Two larvae on *T. cordata*–reared females emerged 22 July 2003.

Water Eaton, Wilts. (SU133950)–28 July 2003–Two larvae on *T. cordata*–reared females emerged 10 and 11 August 2003.

Water Eaton–31 May 2004–Larva on *T. cordata*–reared female emerged 12 June 2004.

Webb's Wood, Wilts. (SU045855)–1 June 2004–Five larvae on *T. cordata*–two reared females emerged 11 and 12 June 2004. Female swept 22 July 2005.

Purton Stoke, Wilts. (SU095897)–4 June 2004–Ten larvae on *T. × vulgaris*–Four preserved and five females emerged 12 June 2004.

Oxborough, Norfolk–4 June 2004–Three larvae on *T. cordata* (J. Badmin)–Females emerged 14–16 June 2004.

Dauntsey, Wilts. (ST993819)–4 June 2004–One larva on *T. × vulgaris*, released.

Purton, Wilts. (SU093875)–4 June 2004–Two larvae on *T. × vulgaris*, released.

Lydiard Millicent, Wilts. (SU081860)–4 June 2004–One larva on *T. × vulgaris*, released.

RHS Gardens, Wisley (TQ064577)–Females swept by Andrew Halstead on 19 June 2002, 14 May 2003, 24 May 2003 (3), 10 May 2005 and 7 July 2005.

It is intended to lodge some of the collected specimens at the NHM, the remainder being kept in the author's reference collection. Andrew Halstead has indicated that he intends to donate two females to the BENHS collection at Dinton Pastures.

DETERMINATION

The host plant list in Lacourt (1999) includes *P. leucopus* as the only European species of the genus found exclusively on *Tilia*. Application of the *Pristiphora* key in Zhelochovtsev (1988), treated there as a sub-genus of *Nematus*, enabled determination of the British females as *P. leucopus*. The key characters are the extent of white on the hind femora, the sub-bifid tarsal claws and the larval host plant.

REVISED KEY

This is a modification to Benson's 1958 key to females in the B Group of *Pristiphora*. The revision begins by replacing Benson's couplet 6 on p. 159 with the following and adding new couplets 6a and 6b:

- | | | | |
|----|-----|--|--|
| 6 | (3) | Hind femur mainly black | 6a |
| – | | Hind femur mainly yellowish white | 6b |
| 6a | (6) | Hind femur mainly black, sometimes with extreme base and apex white, but never more than 10% of total surface area white | 7 |
| – | | Hind femur with extensive area of black but with a minimum of 30% white, sometimes more | 6b |
| 6b | | Tarsal claws with a large sub-apical tooth, almost bifid. Some individuals emerging in May, after overwintering as prepupal larvae, show more extensive black on the hind femora than those emerging in the summer generations which have mainly white femora. | <i>P. leucopus</i> Hellén
Larva on <i>Tilia</i> |
| – | | Tarsal claws with inner tooth either absent or tiny | 11 |

This key has been simplified to enable separation of *P. leucopus*, some of the other characters included by Benson would need to be reinstated in order to identify the species later in the key. The combination of white on the femora, sub-bifid tarsal claws and the use of *Tilia* as a larval hostplant precludes confusion with species which are superficially similar.

The male key is revised as follows, replacing Benson's couplet 3 on p. 164 with the following and adding a new couplet 3a:

- | | | | |
|---|-----|---|----|
| 3 | (2) | Hind femur and tibia reddish-yellow or yellowish-white. | 3a |
| – | | Hind femur mainly black and tibia mainly brownish-white | 6 |

- 3a Hind femur and tibia mainly reddish-yellow 4
 – Hind femur and tibia mainly yellow-white, claws with large sub-apical inner
 tooth, penis valve (Fig. 4 in this paper) *P. leucopus*
 It is not known whether British males emerging in May have black on the femora.

ACKNOWLEDGEMENTS

The author is grateful for the help of the following people in researching and compiling this paper. Neil Springate at the Natural History Museum, London for arranging the loan of specimens and searching for references. Beatrice Gillam, Andrew Halstead, Andrew Liston and Adam Wright for their extensive comments on early drafts. Andrew Halstead also contributed further by the loan of specimens taken by him at Wisley. John Badmin for sending me larvae for rearing which he collected in Norfolk.

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SHORT COMMUNICATION

***Harmonia axyridis* (Pallas) (Coleoptera: Coccinellidae), the multi-coloured Asian ladybird, an etymological note.** – There have been several recent publications in 2005 (e.g. Roy *et al.*, Ecology of the harlequin ladybird a new invasive species. *British Wildlife*, 16: 403–407; Ware *et al.* The harlequin ladybird arrives in Britain: a threat to our native species? *Bull. amat. Ent. Soc.*, 64: 175–186), and many articles in the media, on the arrival in the British Isles of the coccinellid *Harmonia axyridis*. These provide what seem to be unnecessarily alarmist accounts of possible detrimental effects of this species on our existing coccinellid populations as well as on the populations of a number of other insects. In producing these accounts of *H. axyridis*, which is known throughout most of the English speaking world by the common name of multi-coloured Asian ladybird, has been re-christened the Harlequin ladybird. The reason for this change can only be guessed at, but the new name has no doubt been chosen to reflect the wide range of colour varieties found in this species, reminding one of a harlequin clown. There is, however, a probably unintentional significance to this name. Harlequin derives from the Old French *Herlequin* or *Hellequin*, the leader of the Wild Host or troop of demon horsemen (*The Shorter Oxford English Dictionary on Historical Principles*. 3rd edition, revised 1973, Clarendon Press, Oxford). Given the predicted results of the spread of this species it will be interesting to see whether its real attributes will be those of the *Herlequin* or those of a parti-coloured bespangled clown taking advantage of a vacant urban niche. – JOHN MUGGLETON, 17 Chantry Road, Wilton, Salisbury, SP2 0LT

REVIEW

The Empidoidea (Diptera) of Fennoscandia and Denmark. IV Genus *Hilara*. Fauna Entomologica Scandinavica 40 by M. Chvála, (2005). 233 pp. Brill, Leiden, Boston. ISBN 90-04-14799-3. Price: 99€

This landmark publication is the fourth in the FES series covering the Empidoidea of Fennoscandia, the previous volumes having dealt with Hybotidae, Microphoridae, Atelestidae and the genus *Empis* of the Empididae. This volume deals with the difficult empidid genus *Hilara* including sections on adult morphology, classification, life history and zoogeography with backing maps and tabular summaries. The main 'meat' however is the key and accompanying descriptions which provide an authoritative treatment of the 90 species of *Hilara* recorded from the region.

In Britain, correct determination of the empidid genus *Hilara* has been feasible (though thwart with difficulties for the unwary) thanks to J. E. Collin's 1961 revision (British Flies VI, Empididae, CUP). However, understanding of the continental fauna has suffered much from taxonomic and nomenclatural uncertainty which this revisionary work has gone a long way to resolving, at least in northern Europe. Fennoscandian dipterists will welcome this volume with open arms but there is however, much to commend this book to British dipterists too.

Firstly all the British species are included, as well as some of those which might yet be found here. Whilst Collin's key is serviceable, Chvála's studies have unearthed fresh diagnostic characters which will inspire confidence as users navigate their way through the 151 couplets. The problems of keying out wet-preserved material remain as dusting characters (usually hard to see in alcohol) still feature in Chvála's key, however, the abundance of additional morphological characters should provide adequate compensation. Individual species accounts are full and detailed and it is satisfying to note the very necessary provision of illustrations of the male genitalia and basitarsi for all species together with supportive figures of other characters as needed. Each account is very usefully rounded off with short summaries of distribution and biology including ecology and epigamic behaviour.

It is difficult to find fault with this book. I would have liked to have seen a systematic checklist as a separate table and I did find a reference quoted in the text which was not present in the Literature section. But these are very minor issues. The price is another matter and is guaranteed to induce a wave of apoplectic derision in many potential buyers whose personal or institutional funds won't stretch that far. This is an excellent and very useful book which deserves to be on the shelves of every British dipterist interested in the Empididae. It is a great pity that the economics of the marketplace will most likely prevent that from happening.

ADRIAN PLANT

Correction

BARRINGTON, R.D.G. & WHITE, M.C. The first record of multiple allelomorphism in a British butterfly: *Coenonympha tullia* (Müller) ssp. *polydama* (Haworth) (Lepidoptera: Satyridae). *British Journal of Entomology and Natural History* 18: 253–258.

Contrary to the impression given by Barrington & White in their recent paper, Butterfly Conservation did not issue a licence for the release of excess breeding stock of the Large Heath butterfly. Butterfly Conservation is a registered UK charity and non-governmental organisation with no powers to issue licences. Permission to take or release butterflies should be sought from landowners or statutory bodies e.g. English Nature, where appropriate.

THE MODERN BEE AND WASP ASSEMBLAGES (HYMENOPTERA: ACULEATA) OF WARWICKSHIRE'S CALCAREOUS QUARRIES AND SPOILHEAPS, AND THE CONSERVATION ISSUES FACING THEM

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ABSTRACT

A comparative review of the modern bee and wasp assemblages (Hymenoptera: Aculeata) of fourteen calcareous (mudstone, limestone and ironstone) quarries and spoilheaps in Warwickshire is given. The sites were assessed in terms of species diversity, presence of rare species and the quality of various habitat-related assemblages such as calcicoles. 186 species were recorded in total during the main study period from 1990–2002, and the best site (the Bishops Bowl–Bishops Hill Complex) produced a list of 128 species. Notes on some of the scarcer species are provided and discussion of the main conservation issues that affect bees and wasps at these sites. The danger of placing too much emphasis on Species Quality Indices is highlighted.

INTRODUCTION

Geologically speaking, Watsonian Warwickshire is a county of two halves. The north and west is largely underlain by pre-Jurassic mudstone, sandstone and igneous rocks overlain by much younger glacial drift that mostly give rise to base-poor soils. These soils once supported scattered heathland within a setting that remained heavily wooded until relatively late, representing the legendary 'Forest of Arden' which is now classified as 'Ancient Arden' by the Warwickshire Landscape Guidelines (Warwickshire County Council, 1993 parts 1–3) and forming part of the Midlands Plateau Natural Area. Today this part of Warwickshire has lost most of its heathland and bog, but still supports a variety of acidophilous or calcifugous plants and insects which occur predominantly or exclusively within this part of the county.

By contrast, the south and east is largely underlain by mudstone and limestones of Jurassic age, with a scattered drift cover. The Jurassic succession includes a narrow ironstone unit (the Marlstone) that forms some of the escarpments along the northern edge of the Cotswolds such as Edge Hill, plus several large outlying hills just north of the Cotswolds. The underlying geology of southern and eastern Warwickshire has given rise to more fertile, calcareous soils, mostly within the landscape zone known as the 'Feldon', which falls within the Midland Clay Pasture Natural Area. This had largely been cleared of its woodland by the time the Romans arrived, and it is likely that calcareous grasslands were widespread here over many centuries within a landscape of open field systems and grazed hillsides. During the twentieth century, most of the species-rich grassland here was lost. Today, perhaps as little as 50 ha of 'unimproved' ancient limestone grassland remains and most of it is fairly unimpressive in entomological terms.

Fortunately, the various underlying deposits of this area have been exposed through quarrying and the production of cuttings for the local road, railway and canal networks. The quarries in particular display widely varying characters and ages and now collectively support a diverse array of calcareous conditions with many

unusual plants and insects found nowhere else in the County. Calcareous spoilheaps are associated with some of these quarries and are sometimes more interesting than the quarries themselves. A few spoilheaps have also been produced following excavation of railway cuttings through limestone hills during the nineteenth century. The largest of these, Harbury Spoilbank, is included in this review.

Yet, in spite of the fact that some of the sites covered in this paper are amongst the most important calcareous sites in the entire British Midlands and some of the most interesting wildlife sites in Warwickshire, they experience a disproportionate level of threat. This includes the two sites that score highest for bees, wasps, butterflies and a range of other insects. These are not Sites of Special Scientific Interest (SSSIs), whilst lesser sites, often somewhat degraded through the effects of succession, are. It was this in mind that the author set out to collate detailed and reasonably comparative data for a variety of insect groups at fourteen of the potentially best calcareous sites in the county. The following paper concentrates on the bee and wasp information obtained, extending the published information on the aculeates of calcareous habitats furnished by publications such as Archer (1997) and Alexander (2003).

THE GEOLOGICAL DEPOSITS COVERED

- (i) White Lias—the oldest (late Triassic) and most northerly of the important calcareous deposits in Warwickshire, stretching obliquely across the county from the Stour Valley in the south to near Rugby in the east. The White Lias comprises up to 2 metres of hard, fine-grained limestone that was once a popular building stone obtained from a small number of shallow quarries. White Lias can give rise to strongly calcareous habitats with many unusual calcicoles and the clay component can lead to the formation of wetlands and seasonal water-logging.
- (ii) Wilmcote Limestone—a fine-grained late Triassic–early Jurassic limestone historically quarried from a few sites west of Stratford and also giving rise to strongly calcareous conditions.
- (iii) Blue Lias—an early Jurassic deposit underlying much of southern and eastern Warwickshire. It comprises alternating beds of mudstone and fine-grained muddy limestone which has been exploited by the cement industry, resulting in several very large quarries and cement works, one of which (Rugby Works) is still operated by the company RMC Group PLC. Blue Lias produces a strongly calcareous soil prone to intense drying out in dry summers, but also capable of producing some fine wetlands and seasonally flooded areas.
- (iv) Marlstone—a hard, tawny-coloured ‘ironstone’ of early Jurassic age that forms the famous ‘Hornton Stone’ so characteristic of the architecture along the northern edge of the Cotswolds. Several large, shallow quarries exist in the Edge Hill district and can give rise to a mildly calcareous habitat that lacks the floristic diversity and large number of calcicolous plants typically associated with the Lias quarries. The ironstone was also used as a source of ferrous oxide in medieval times, being obtained from shallow quarries on various hill tops in the same general area. This has resulted in some very uneven landforms, most of which are grassed-over agriculturally improved sheep pasture not covered by this paper.
- (v) Middle Jurassic limestone—quarried most recently at Cross Hands Quarry at the southern tip of the county. The Middle Jurassic succession includes oolitic building stones such as the Chipping Norton Limestones, chalkier, less hardy stone such as Clypeus Grit, and substantial layers of mudstone and sandstone.

The limestones give rise to a more distinctly calcareous habitat than Hornton Stone, with many of the unusual calcicoles associated with Lias sites, though they do not easily produce wetlands.

THE SURVEY SITES

Fourteen sites are considered, plus a combined list for Sites 2 and 3, which are immediately adjacent to one another and best considered as a single ecological unit (though traditionally they have been treated separately). A brief description of each site is given, plus the dates of visits. Dates in brackets refer to relatively short visits or visits in sub-optimal weather.

1. Avon Hill Quarry (AH) SP416505 – a medium-sized ironstone and sandstone quarry with patches of species-rich grassland, tall herb, wetland (with seasonal water bodies, swamp and carr) and extensive patches of ruderal habitat maintained by regular four-wheel drive meetings. Dates of visits: 14.iii.1997, 15.viii.2001, 30.iii.2002, 19.iv.2002, 1.vi.2002, 6.vii.2002, 2.ix.2002, 19.x.2002.
2. Bishops Bowl (BB) SP385588 (Fig. 1) – a large Blue Lias quarry system created by the cement industry with a complex mosaic of species-rich calcareous grasslands, tall herb, several permanent water bodies (supporting commercial fishing), assorted wetlands and dense scrub/secondary woodland. Dates of visits: 10.iv.1992, 7.v.2001, (8.v.2001), 11.vi.2001, 23.vii.2001, 27.vii.2001, 29.iii.2002, 21.iv.2002, 8.vi.2002, (12.vii.2002), 12.viii.2002, 13.ix.2002.
3. Bishops Hill (BH) SP393585 – the large spoilheap and former works directly east of the previous site, now supporting species-rich grassland, tall herb and ruderal habitats plus extensive scrub and secondary woodland and a single small quarry. The site was extensively bulldozed in the late 1980s but has become flower-rich since. Dates of visits: 19.vi.1993, 17.ix.1993, 20.iv.1994, 31.v.1994, 9.iv.1995, 30.iii.1997, 25.vii.1998, 8.v.2001, 25.v.2001, 30.viii.2001, 30.vi.2002, 18.x.2002.
Bishops Bowl + Bishops Hill (BB + BH) – the combined lists of the previous two sites, which are best treated as a single ecological unit for evaluation and designation purposes.
4. Cross Hands Quarry (CH) SP269290 (both sides of A44 road) – a pair of medium-sized Middle Jurassic limestone quarries which form the southern tip of Warwickshire, supporting species-rich calcareous grassland, scrub and ruderal habitat. The larger quarry at the east (which includes a small geological SSSI) has largely been land-filled since the mid 1990s and lost much of its original interest. Dates of visits: 19.iii.1995, 4.iv.1995, 28.vi.1995, 27.iv.1996, 31.viii.1996, (6.iv.2002), 5.v.2002, 1.vii.2002, 21.ix.2002.
5. Gypsy Hall (Wilmcote) Quarry (GH) SP152592 – a medium-sized Wilmcote Limestone quarry containing a small geological SSSI, with species-rich calcareous grassland and surrounding scrub. Dates of visits: 24.vii.1999, 5.iv.2002, 3.v.2002, 17.vi.2002, 16.vii.2002.
6. Harbury Spoilbank (HS) SP385598 – a fairly small 6.7 ha site supporting a mixture of species-rich calcareous grassland and tall herbs, with areas of dense scrub. Formed on a long hillock of Blue Lias spoil resulting from construction of the adjacent Leamington Spa to Oxford Railway line through an adjacent cutting in the 1840s. Part of a larger SSSI (Harbury Railway Cutting SSSI) now managed by Warwickshire Wildlife Trust. Dates of visits: 10.iv.1992, 13.vii.1997, 12.iv.2002, 12.v.2002, 12.vi.2002, 3.viii.2002, 14.viii.2002.

7. Lighthorne Quarry (LQ) SP324558—a small shallow White Lias quarry with some established calcareous grassland, sparsely-vegetated scree, several temporary pools and patches of grey willow. No formal management, but occasional sheep grazing. Dates of visits: 24.vi.1999, 7.vii.1999, 14.viii.2001, 26.iii.2002, (5.iv.2002), 4.v.2002, 1.ix.2002.
8. Napton Quarry (Na) SP455613—a large quarry system on the west side of Napton Hill consisting of a very old ironstone quarry at the top (containing a geological SSSI) and younger, but abandoned, brick works at the bottom. These collectively support much improved pasture, wetlands of various sorts (including pools, swamp, carr and spring-fed seepages), and ruderal/tall herb habitats. Dates of visits: 22.viii.1995, 5.iv.1996, 21.iv.1996, 13.vi.1996, 11.ix.1999, 7.iv.2002, 5.v.2002, 28.vi.2002, 24.vii.2002, 22.ix.2002.
9. Nelsons Quarry (Nel) SP443642 (Fig. 2)—a deep Blue Lias quarry with large spoilheaps supporting calcareous grassland, ruderal habitat, scrub, several water bodies with surrounding swamp and reedbeds, secondary woodland and a large seepage system. Part of a larger SSSI (Stockton Quarries and Cutting SSSI) also containing Stockton Cutting. Dates of visits: 12.vi.1994, 9.iv.1995, 13.iv.2002, 13.v.2002, 13.vii.2002, 21.viii.2002.
10. Newbold Quarry LNR (New) SP494769—another deep, water-filled Blue Lias quarry, in the suburbs of north Rugby. Extensively scrubbed over but with limited areas of species-rich calcareous grassland. A Local Nature Reserve managed by Warwickshire Wildlife Trust. Dates of visits: 23.iv.1995, 16.iii.1997, 7.iv.2002, 2.vi.2002, 14.vii.2002, 1.ix.2002, 18.x.2002.
11. Ratley Grange (Edge Hill) Quarry (RG) SP371470. A large Marlstone quarry on the top of Edge Hill, which was being actively worked during the survey period (in a pattern that permitted plentiful ruderal habitat to form), but currently lacking much of its original interest and likely to be developed. Dates of visits: 25.iv.1996, 7.vii.1996, 27.viii.1996, 21.viii.1997, 8.vi.2001, 4.v.2002.
12. Southam Quarry (So) SP421634. A very large series of quarries and spoilheaps, with exposures of White Lias and Blue Lias, still partially worked by RMC for cement and expanding. Very extensive species-rich calcareous grassland and ruderal habitats, scrub and limited wetlands. Dates of visits: 26.v.1998, 11.viii.1999, 23.v.2001, 23.vi.2001, 10.viii.2001, 27.iii.2002, 24.iv.2002, 19.vi.2002, 27.vii.2002, 11.viii.2002.
13. Stockton Cutting (St) SP440649. A disused railway cutting plus adjacent Blue Lias quarries with remains of former works, supporting areas of species-rich calcareous grassland, tall herbs and extensive scrub and secondary woodland. Part of a larger SSSI (Stockton Quarries and Cutting SSSI) and a Local Nature Reserve managed by Warwickshire Wildlife Trust. Dates of visits: 27.vi.1990, 12.vii.1990, 9.vi.1991, 12.v.1996, 11.viii.1996, (25.v.2001), 29.iii.2002, 11.iv.2002, 19.v.2002, 11.viii.2002, 6.x.2002.
14. Ufton Fields SSSI (UF) SP381614—a 32 ha former White and Blue Lias quarry back-filled to form ridges and furrows plus flatter areas. Now supporting a complex mosaic of species-rich grassland and tall herb, scrub, water bodies, swamp, carr and secondary woodland. Also a Warwickshire County Council Country Park and Warwickshire Wildlife Trust reserve. Dates of visits: 1.v.1990, 23.v.1990, 9.vi.1991, 11.iv.1992, 9.ix.1995, 15.iii.1997, (8.v.2001), 30.vii.2001, 14.viii.2001, 26.iii.2002, 6.iv.2002, 11.v.2002, 23.vi.2002, 18.viii.2002, 15.x.2002.



Figure 1. Bishops Bowl.



Figure 2. Nelsons Quarry.

SURVEY METHODOLOGY

Surveying took place between 1990 and 2002 with a structured programme of visits in 2001 and 2002 to ensure that most sites received at least five visits extending from March/April to September/October. Some sites received considerably more visits than this due to circumstances (such as the preparation of impact assessments), though by the end of 2002 it had become difficult to extend the site lists much further for bees and wasps. A variety of survey techniques was employed, including visual surveillance of foraging and nesting habitats and careful sweeping of different habitats with a long-handled net, including patches of flowers, sparsely vegetated areas and sunlit foliage. Special attention was given to the flowers that supported the biggest foraging assemblages at particular times of year, which included:

Spring: grey willow *Salix cinerea*, blackthorn *Prunus spinosa*, hawthorns *Crataegus* spp., dandelions *Taraxacum* spp., daisy *Bellis perennis*, coltsfoot *Tussilago farfara*, ground-ivy *Glechoma hederacea* and dead nettles *Lamium* spp.

Early summer: mouse-ear hawkweed *Pilosella officinarum*, hawk's-beards *Crepis* spp., birds-foot trefoils *Lotus* spp., kidney vetch *Anthyllis vulneraria*, vetches *Vicia* spp., hogweed *Heracleum sphondylium*, oxeye daisy *Leucanthemum vulgare* and bramble *Rubus fruticosus* agg.

Mid to late summer: thistles *Cirsium* and *Carduus* spp., ragworts *Senecio* spp., knapweeds *Centaurea* spp., wild parsnip *Pastinaca sativa*, wild carrot *Daucus carota* mignonettes *Reseda* spp., rosebay willowherb *Chamerion angustifolium*, melilots *Melilotus* spp. and hawkweed ox-tongue *Picris hieracioides*.

Late summer–early autumn: perennial sowthistle *Sonchus arvensis*, scentless mayweed *Tripleurospermum inodorum*, hawkbits *Leontodon* spp., angelica *Angelica sylvestris* and late flowers from the previous category.

Persistence and timing were important for producing good lists. The males of *Lasioglossum xanthopus* (Kirby), for example, peak in late September in Warwickshire, a time when many hymenopterists have ceased recording for the year. Other species such as *Andrena praecox* (Scopoli) start foraging so early that they can have peaked by early April in early springs and are difficult to find by the end of this month. Finding species with very narrow foraging habits requires careful surveillance of specific flowers e.g. mignonettes for *Hylaeus signatus* Panzer and willows for *Andrena apicata* Smith, *A. clarkella* (Kirby) and *A. praecox*. For groups containing species that are indistinguishable in the field such as *Sphecodes*, *Lasioglossum*, *Crossocerus* and *Pemphredon*, reasonable-sized samples were obtained for critical checking under a microscope.

Three parameters were then used to assess the quality of the assemblages present:

- (i) Species richness. This figure was the total number of bee and wasp species recorded per site during the survey period.
- (ii) The presence of rare species. The rarity gradings for Red Data Book and Nationally Scarce species used for assessing this parameter were taken from Falk (1991). However, to allow for the fact that some of these gradings are now known to be misleading, an asterisk has been placed against the obviously misgraded species in Appendix 2 and a bracketed re-grade suggestion that is more realistic given afterwards. Regional scarcity was assessed using information in the available national atlases published by the Bee, Wasp and Ant Recording Society – 'BWARS' (Edwards, 1997, 1998; Edwards & Telfer, 2001, 2002); also personal data and other literature or correspondence to hand. A rarity score (RS) was evaluated for each site by assigning points to the various rarity

gradings as follows: 100 points to Red Data Book species, 50 points to Nationally Scarce species and 20 points to Regionally Scarce species (following Ball, 1986). The rarity score was also divided by the total number of species at a site to produce a Species Quality Index (SQI) which is stated to even out variable recording coverage across multiple sites. These calculations were made for each of the fourteen study sites (plus sites 2 and 3 combined), following adjustment for obvious misgradings.

- (iii) The quality of certain habitat-associated assemblages. A variety of habitat-linked insect assemblages can be used to compare site quality within certain defined parameters. At the sites studied here, these included assemblages associated with open calcareous habitats, shaded calcareous habitats, calcareous wetlands and general wetlands. The first was the main one relevant to the bees and wasps and such species are flagged as calcicoles (Calc) in Table 1 and Appendix 2. A single wetland specific (Wetl) bee was also present at one site, but no bee or wasp species recorded were specialists of shaded calcareous habitats or calcareous wetlands (categories that are important for flies and some other groups). Across the insect fauna as a whole, an interesting assemblage can develop in association with snails at calcareous sites, so a category for snail-associated species was used (Sn), many of which also fall into the calcicole category. These are mostly predatory and parasitic flies and beetles, but include a small number of bees that nest in empty snail shells. The number of aerial nesters at each site i.e. those species nesting in dead wood, hollow stems or amongst foliage (e.g. *Dolichovespula* wasps), was also used as a further parameter specific to bees and wasps. The assignment of species to the calcicole category was based on information in national atlases, other literature and personal data. However, it should be noted that some species that act as calcicoles in Warwickshire, fail to do so in other parts of Britain. This includes *Andrena flavipes* Panzer, *Odynerus melanocephalus* (Gmelin in L.), *Pseudospinolia neglecta* (Schuckard), *Priocnemis parvula* Dahlbom, *Sphecodes ferruginatus* von Hagens and *S. hyalinatus* von Hagens. For *Sphecodes hyalinatus* it stems from the fact that the main Warwickshire host is the calcicolous *Lasioglossum fulvicorne* (Kirby) rather than the acidophilous *L. fratellum* (Pérez) which acts as the main host in many other parts of Britain.

RESULTS

Species richness

Good samples of aculeates were obtained from all fourteen study sites, to the extent that it started to prove difficult to extend the site lists further by the end of the survey period. The data were used to evaluate the quality of the assemblages present at each of the sites (plus sites 2 and 3 combined). The various scores that underpin this evaluation are presented in Table 1. Brief status notes on the scarce species are given in Appendix 1, together with a full species list for each site in Appendix 2.

186 species of bee and wasp (excluding *Apis mellifera* L.) were recorded with certainty from the fourteen sites. The Bishops Bowl–Bishops Hill Complex produced the longest list, of 128 species. Within the West Midlands Region (*sensu* Herefordshire, Worcestershire, Warwickshire, Staffordshire Shropshire and the former West Midlands County), this is only surpassed by Highgate Common, Staffordshire which has recently produced a list of 130 species (S. Falk and

M. Archer, combined data). Southam Quarry produced a list of 112 species. None of the other sites exceeded 100, and the poorest (Lighthorne Quarry) only produced 51 species.

The presence of rare and scarce species

Some very significant records were obtained, including several new county records, substantial national range extensions and numerous records for Red Data Book, Nationally Scarce and Regionally Scarce species. All sites produced records of rare or scarce species, though the number of these, and the SQI value they produced, varied greatly (see Table 1), though the figures were loosely correlated with species richness.

Southam Quarry and the Bishops Bowl–Bishops Hill Complex supported particularly important assemblages of scarcer bees and wasps (24 and 27 species, respectively). Their rarity scores of 1010 and 970, respectively, are probably the highest values for any bee and wasp assemblages in Vice-county Warwickshire and compare well, for example, with some of the better heathlands in the West Midlands Region. The scores were considerably higher than that recently obtained for Sutton Park National Nature Reserve (470) though some way short of that for Highgate Common (1800). These two sites collectively produced records of four rare or scarce species unknown from any other sites in Warwickshire at the time of the survey: *Andrena fulvago* (Christ), *A. proxima* (Kirby), *Hylaeus pectoralis* Forster and *Osmia aurulenta* (Panzer). They also supported important populations of *Bombus ruderatus* (Fab.), *Bombus humilis* Illiger and *Nomada ferruginata* (see Appendix 1). The poorest site for scarce species was Newbold Quarry, with only a single Regionally Scarce species. But even relatively impoverished sites have the ability to support surprisingly rare species. Lighthorne Quarry, the smallest and least rich site, with only six scarce species, still produced a record of the RDB1 *N. ferruginata*. Napton Quarry produced the second highest SQI through the presence of *N. ferruginata*, six Nationally Scarce species and nine Regionally Scarce species within its fauna of only 70 species. But given that the site was clearly nowhere near as rich as the Bishops Bowl–Bishops Hill Complex or Southam Quarry, and had a much lower rarity score, this reveals the danger in placing too much emphasis on SQIs, an evaluation system that is often used unquestioningly in site evaluation and one that can obscure substantial real differences in site quality.

In total, nine species were unknown in Warwickshire from any other sites except those considered here at the time of the survey. In addition to the four listed above, these were *Arachnospila minutula* (Dahlbom), *Caliadurgus fasciellus* (Spinola), *Lasioglossum xanthopus* (Kirby), *Sphecodes niger* von Hagens and *S. rubicundus* von Hagens (Appendix 1). The records of *H. pectoralis* and *O. aurulenta* are still the only ones the author is aware of in the West Midlands region and represent considerable extensions to their known national ranges. *Andrena proxima* has been discovered at Napton Quarry since the survey finished, but this site and Bishops Bowl are still the only two locations known within the region.

The quality of certain habitat-linked assemblages

Twenty-one calcicoles, 62 aerial nesters (excluding cleptoparasites), three snail-users and one wetland specialist were recorded. The numbers of these found at each site are summarised in Table 1. For calcicoles, Southam Quarry and the Bishops Bowl–Bishops Hill Complex produced a substantially higher score than the other

Table 1. Hymenoptera Quality scores for 14 calcareous localities in Warwickshire, 1990–2002

	Avon Hill Quarry (AH)	Bishops Bowl (BB)	Bishops Hill (BH)	Bishops Hill (BB + BH)	Bowls + Bishops Hill (BH)	Cross Hands Quarry (CH)	Gypsy Hall (Wilmcote) Quarry (GH)	Harbury Spoilbank (HS)	Light-thorn Quarry (LQ)	Napton Quarry (Na)	Nelsons Quarry (Nel)	Newbold Quarry LNR (New)	Ratley Grange (Edge Hill) Quarry (RG)	Southam Quarry (So)	Stockton Cutting (St)	Ufton Fields SSSI (UF)
# spp	89	90	103	128	71	59	53	51	70	64	65	59	112	68	81	
RDB	0	2	0	0	0	0	0	1	1	1	0	0	1	0	0	
N	5	6	7	11	7	4	3	1	6	2	0	2	13	7	7	
R	8	5	10	11	4	3	4	4	9	7	1	5	13	6	3	
RS	410	600	550	970	430	260	230	230	580	340	20	200	1010	470	410	
SQI	4.6	6.7	5.3	7.6	6.1	4.4	4.3	4.5	8.3	5.3	0.3	3.4	9.0	6.9	5.0	
Calc	8	12	11	15	5	7	7	6	8	7	2	4	13	10	9	
Sn	2	2	3	3	2	1	2	2	0	2	0	0	3	2	1	
Wetl	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	
AN	23	23	22	35	14	5	9	9	7	10	17	8	32	19	23	

Values denote the total number of bees and wasp species (# spp), numbers of Red Data Book (RDB), Nationally Scarce (N) and Regionally Scarce (R) species, the Rarity Score (RS) and Species Quality Index (SQI), and the number of calcicolous (Calc), snail-associated (Sn), wetland (Wetl) and aerial nesting (AN) species. Rarity scores were adjusted for obvious misgradings of species. Abbreviated site names are listed in full in the section describing Survey Sites.

sites (15 and 13 calcicoles, respectively), reflecting the extent and quality of the open calcareous habitats present. This compares to only two such species at Newbold Quarry. These sites also supported a much higher number of aerial nesters (35 and 33 such species, respectively) compared to just five such species at Gypsy Hall Quarry. Just these two parameters considered alone can suffice to reflect the quality of a calcareous site as they are functions of site size, habitat quality and habitat diversity, and a simultaneous high score in both parameters reflects all three attributes. Bishops Bowl produced the only record of a wetland aculeate, *Hylaeus pectoralis*, reflecting the presence of extensive reed beds. The numbers of calcicoles and aerial nesters were loosely correlated with species richness.

DISCUSSION

Factors influencing species richness

- (i) **The extent of floristically diverse habitat.** The Bishops Bowl–Bishops Hill Complex and Southam Quarry supported the largest expanses of floristically-rich limestone grassland and early successional habitat, with very extensive stands of many key forage plants such as spring-blossoming shrubs, birds-foot trefoils, kidney vetch, various umbellifers, thistles, ragworts, knapweeds, oxeye daisy and scentless mayweed. Species such as *Bombus ruderatus*, *B. humilis* and *Osmia aurulenta* appear to specifically require large areas of flower-rich habitat and depend heavily on plants like birds-foot trefoils. The poorest sites (those with under 70 species recorded) were either characterised by relatively small areas of flower-rich habitat (usually much reduced by scrub encroachment or excessive disturbance) or by a lack of floristic diversity or lack of certain key forage plants within the open habitats that were present. The latter occurred at the three sites featuring Ironstone (only mildly calcareous compared with Lias deposits and lacking many key calcicoles); also at sites where the ground conditions were too xeric for a rich plant community. Blue Lias clay for example can often hold very little water in a dry summer, and in the driest areas it can take several decades to develop a reasonable vegetation cover which may only contain the most drought tolerant species such as dog-rose *Rosa canina* agg., dwarf thistle *Cirsium acaule* and autumn gentian *Gentianella amarella*.
- (ii) **The quality of habitat mosaics and adjacent habitats.** Even where sufficiently large areas of flower-rich, calcareous habitats were present, the variety of other habitats and successional stages in and around a quarry was highly influential on richness. Woodland, scrub, and tall herbs can provide important foraging habitats and provide nest sites for a good variety of aerial nesters. Habitats close to a quarry system such as flowery road verges, fields margins, hedges, fallow fields, disused railways and canal banks, even gardens can also boost the aculeate diversity of a quarry, and often support large stands of critical forage plants (especially thistles, hogweed and scentless mayweed) that may be scarce or absent within the quarry itself. It is important to be aware of the landscape around a quarry site when trying to understand the factors influencing the bee and wasp fauna, and to be aware of the likelihood that in some aculeate species local populations are operating at a landscape level across a cluster of suitable sites.
- (iii) **Geology and site history.** It is thought that geology can influence the precise composition of bee and wasp assemblages, though it is difficult to separate the affects of geology from the other variables at play, particularly the history of a

site and the pattern of operations associated with its active phase. The large Blue Lias quarries studied appear to have the greatest potential for bees and wasps, possibly because of the piecemeal pattern of operations usually associated with the cement industry. This tends to produce large spoilheaps and other areas that are allowed to re-vegetate naturally at different times and rates, and to create new quarries adjacent to older, abandoned ones, resulting in complex habitat mosaics. Clay-rich overburden was often mounded up and can produce different conditions to pure Lias deposits. The inability of ironstone quarries to support certain key calcicolous plants has already been mentioned. Uneven quarry floors can result in a complex mosaic of wetland conditions ranging from permanent deep water through to seasonally-flooded inundation marsh and damp ditches and hollows. This can promote the abundance of valuable forage plants such as grey willow, angelica and marsh thistle *Cirsium palustre*, which prefer damp soils. As a rule, longer-abandoned sites tended to exhibit more advanced levels of succession such as scrub encroachment or the development of coarse grassland and have often lost much of their early successional habitats and the aculeates that require these. Rabbit activity and informal human disturbance can sometimes slow down the rate of succession or completely arrest it locally.

- (iv) **Topography and altitude.** A number of the sites were located on fairly high ridges or hills e.g. Cross Hands Quarry, Napton Quarry and Ratley Grange Quarry. These tended to be more exposed to prevailing winds and on a given day (especially a windy one) were often somewhat cooler than nearby sites in less exposed locations. This appeared to reduce species diversity. Newbold Quarry suffered from the fact that much of its species-rich limestone grassland was on north-facing slopes or overshadowed by wooded slopes to the south. This reduced the extent of warm habitat available for thermophilic insects such as bees and wasps.

Factors influencing the number of rare and scarce species and key habitat-linked assemblages

These appear to be much the same as those influencing species richness, and the presence of scarcer species seemed strongly influenced by species richness. Larger sites with extensive, flowery calcareous habitat within a larger habitat mosaic had greater capacity for supporting the key forage plants and ideal nesting sites required by scarcer species and calcicoles. But for some individual rare species and calcicoles, it may have been the abundance of just a small number of flower species that supported their presence. *Andrena proxima* owed its occurrence at Bishops Bowl to a large patch of ground-elder *Aegopodium podagraria*. At Southam Quarry, *Bombus humilis*, *B. ruderatus* and *Osmia aurulenta* were heavily reliant on the very extensive birds-foot trefoils and kidney vetch there. The rare cleptoparasite *Nomada ferruginata* was indirectly dependent on the willows that feed its sole host *Andrena praecox*. *Hylaeus signatus* was entirely dependent on wild mignonette *Reseda lutea* and weld *R. luteola*.

Evidence of losses and gains in the bee and wasp fauna

The low level of insect recording at most of the study sites prior to the 1980s hinders our knowledge of losses. The only certain loss is that of *Bombus sylvarum* (L.), which was present at Ufton Fields as late as 1965 (the last record for

Warwickshire). However, extensive infilling and landscaping of Cross Hands and Ratley Grange Quarries have almost certainly resulted in losses here over recent years, including half of the known Warwickshire sites for *Lasioglossum xanthopus*. Excessive scrub encroachment has probably reduced the diversity of at least four further sites (see Vegetation succession below). Rather more evidence is available for recent gains, and this mostly relates to species known to be expanding their ranges nationally. These include *Andrena flavipes*, *Crossocerus distinguendus* (A. Morawitz), *Dolichovespula media* (Retzius), *D. saxonica* (Fab.), *Ectemnius rubicola* (Dufour & Perris), *Lasioglossum malachurum*, *Microdynerus exilis* and *Philanthus triangulum* (Fab.), and possibly also *Didineis lunicornis* (Fab.), *Andrena proxima*, *Hylaeus cornutus* Curtis, *Hylaeus pectoralis* and *Sphecodes niger*. Climatic factors appear to underlie these expansions, and the sites considered here appear to represent important stepping stones for such expanding species (the intervening countryside providing few opportunities). These records indicate the dispersal abilities of such species, which is usually poorly documented.

The relative national importance of the study sites for bees and wasps

The level of species richness and number of rare and scarce species encountered across the fourteen study sites was comparable to that associated with lowland heathland in the West Midlands (S. Falk data). In the West Midlands Region, any modern list exceeding 100 species can be regarded as extremely good, though heathland sites in counties such as Surrey and chalk heath sites in the East Anglian Brecks by comparison still occasionally produce lists of 200 or more species (S. Falk, D. Baldock & J. Field data). Rather surprisingly, the best calcareous sites on the East Sussex downs, including a number of National Nature Reserves and SSSIs, do not appear to be much richer than the best sites covered here (S. Falk data). This may reflect the less complex topography and habitat mosaics associated with many ancient downland sites compared with large quarries. Based on such comparisons, sites such as the Bishops Bowl–Bishops Hill Complex and Southam Quarry ought to be viewed as nationally significant. Southam Quarry is also noteworthy in that it produced records for 14 *Bombus* species (9 non-parasitic ones and 5 ‘cuckoo’ species). It appears to be the richest bumblebee site in the British Midlands today.

General factors affecting the bee and wasp fauna at these sites

(i) Vegetation succession

The intensity of operations at many quarries during their peak of productivity can limit their entomological and botanical interest. Diversity increases as soon as quarries are partially or completely abandoned and flower-rich vegetation starts to establish. The optimal condition for bees and wasps will tend to occur once a range of floristically diverse conditions, representing a variety of successional stages, has developed. This may take 10–30 years after abandonment, depending on the size of a site and factors such as rabbit levels, hydrology, soil chemistry, and physical disturbance. Flowery early successional stages with plants such as oxeye daisy, hawk’s-beards, birds-foot trefoils and kidney vetch are vital for many aculeates, but areas of scrub, bramble and tall herb can also provide valuable foraging habitat and a source of nesting sites for aerial nesters. But, without further management or disturbance, excessive encroachment of such habitats or floristically poor grassland

such as dense wood false-brome *Brachypodium sylvaticum* can swamp out valuable early successional stages, reducing the diversity of conditions and, in consequence, reduce the variety of bees and wasps. A number of the study sites have deteriorated in the past through the effects of succession, notably Ufton Fields SSSI, Stockton Quarries and Cutting SSSI (containing Stockton Cutting and Nelsons Quarry), Harbury Railway Cutting SSSI and Newbold Quarry LNR. SSSI notification made little difference. Most of these sites are now subject to active scrub control, but have lost a number of calcicolous insects as a result of their recent history, including butterflies such as the small blue *Cupido minimus* (Fuessley). It is presumed certain bees and wasps have been lost too, including some of the species currently confined to the Bishops Bowl–Bishops Hill Complex and Southam Quarry, which currently support the conditions once associated with these other sites.

(ii) Quarry infilling and landscaping

Two sites have been subject to partial infilling and landscaping, Cross Hands Quarry and Ratley Grange Quarry. Currently, it is likely that most of the scarcer bees and wasps recorded there during this study have been lost. The re-establishment of flower-rich vegetation may draw some of these species back, though it awaits to be seen whether the restored sites will regain high quality habitat. However, there is proven potential for land-filled and restored quarries and spoilheaps to regain high entomological value within a decade or two if capped with low fertility sub-soil sourced from other parts of the quarries and allowed to re-vegetate naturally over a sufficiently large area. Bishops Hill, for example, was subject to major re-profiling in the late 1980s, which was viewed as highly damaging to the ecology at the time, but the new ground had already acquired floristically diverse conditions and strong populations of many scarce bees and wasps by the mid-1990s. The most valuable part of Southam Quarry today is a re-vegetated mound of clay that was bare only a couple of decades ago. Where landscaping for nature conservation is taking place, it is essential that the introduction of top soil is avoided and that natural plant regeneration directly from the indigenous seed bank is encouraged. It is also important to produce plenty of south-facing slopes, including banks and some vertical faces.

(iii) Development

During the time of writing, planning applications for development proposals that could substantially impact on site quality had been submitted for Bishops Hill, Bishops Bowl, Ratley Grange Quarry and the lower part of Napton Quarry. This is not surprising given that all the sites covered here fall within a developer's concept of 'brown-field' land which is still unquestioningly viewed as a more acceptable location for development than 'green-field' land (even though the latter is predominantly ecologically impoverished farmland in Warwickshire). Some of the impact assessments associated with these proposals have been very deficient, either due to poor expertise on the part of the ecological consultants working for the applicants, or a lack of sufficient resources or time for bona-fide ecologists to carry out sufficiently detailed surveys, data searches and impact analysis. The development of Individual Species Impact Assessments by the author (Falk, 1998) was a direct response to a deficient impact assessment at one of the sites covered by this paper. Several of the abandoned quarries in the suburbs of Rugby have become surrounded by residential or industrial development over the past 20–40 years, which has left a legacy of rather

isolated quarries with little subsidiary habitat. The agricultural land surrounding other sites has become much more intensively farmed in the latter part of the twentieth century, reducing the amount of subsidiary foraging habitat and possibly exposing quarries to the effects of pesticide drift.

(iv) Excessive disturbance

This is more of a perceived threat than a real one, and nearly all of the study sites would benefit from higher levels of periodic, piecemeal disturbance, especially where this keeps the encroachment of scrub and wood false-brome in check. Avon Hill Quarry currently permits regular meetings of four-wheeled drive vehicles, which follow set routes through an interesting configuration of humps and hollows. Some parts of the site receive intense pressure, but overall the effect is beneficial, resulting in a complex array of early successional stages with good patches of birds-foot trefoils, mouse-ear hawkweed, melilots and clovers. Even where examples of large-scale disturbance have taken place, calcareous substrates have generally shown a remarkable ability to regain floristically diverse conditions with plentiful calcicoles once disturbance ceases.

(v) Site designation

Four of the fourteen sites constitute biological SSSIs: Harbury Spoilbank, Stockton Cutting and the nearby Nelsons Quarry (forming parts of one larger SSSI) and Ufton Fields. This affords legal protection from damaging operations, though, as noted above, it has not protected them from the insidious effects of vegetation succession in the past. Their aculeate faunas are now considerably less diverse than those of the Bishops Hill–Bishop Bowl Complex and Southam Quarry, with fewer rare species. Newbold Quarry is a Local Nature Reserve and Ufton Fields is a Warwickshire County Council Country Park. These designations afford substantial protection as they are generally applied to land that is considered out of bounds to development proposals and under sympathetic ownership. Few of the remaining sites have yet to be formally designated as Second-tier Wildlife Sites (locally termed ‘SINCS’ – Sites of Importance for Nature Conservation), though most are flagged as ‘provisional SINCS’ or ‘Ecosites’ to alert local planning authorities of the need to treat planning proposals affecting them with appropriate vigilance. The Bishops Bowl–Bishops Hill Complex was designated as a provisional SINC during the preparation of this paper, largely on the basis of its entomological value and it is expected that others will follow. Entomological site data can be a powerful tool for designation where it is sufficiently detailed, comparative and interpreted.

(vi) Site management and monitoring

Three of the four SSSIs have been managed by Warwickshire Wildlife Trust (WWT) over a number of decades, with financial support through English Nature’s Reserves Enhancement Scheme. Newbold Quarry LNR is also a WWT Reserve. Ironically, it is these four sites that experienced the greatest past losses of flower-rich habitat through scrub encroachment. The substantial resources required for effective scrub control have been badly under-estimated in the past, and the ecology of many of the scarcer insects was poorly appreciated, resulting in a gradual loss of the extensive early successional stages required by many such species. But now that these issues are more fully appreciated, substantial efforts are being made to restore these

sites to their former value and WWT is better placed to achieve this than any other organisation in the county. However, sites including the Bishops Bowl–Bishops Hill Complex, Avon Hill Quarry, Lighthorne Quarry and Gypsy Hall are largely unmanaged and reliant upon rabbit grazing, physical disturbance unrelated to nature conservation and soil characteristics to keep succession in check. As such they must be considered vulnerable.

(vii) *Local Biodiversity Action Plans (LBAPs)*

The bee and wasp fauna of Warwickshire's calcareous sites is catered for in three habitat action plans in the Warwickshire, Coventry and Solihull LBAP: Quarries and Gravel Pits, Lowland Calcareous Grassland and Disused Industrial and Railway Land. These contain a variety of targets for habitat management, restoration, creation and designation. Species action plans have also been produced for *Nomada ferruginata* and jointly for *Bombus humilis* and *B. ruderatus*, three species featured in the National Biodiversity Action Plan (Anon, 1999). The various habitat and species action plans for Warwickshire can be viewed on the web at: www.warwickshire.gov.uk/biodiversity.

CONCLUSIONS

Warwickshire's calcareous quarries and spoilheaps contribute substantially to the biodiversity of bees and wasps in Britain, by allowing many species new opportunities for range expansion, by supporting a good number of scarce species, and by producing some very valuable calcicolous assemblages. The level of interest may be considerably greater than the ancient calcareous grasslands that preceded their existence (which are likely to have been less physically diverse). But threats to these assemblages are manifold and do not necessarily cease following protective designation, especially if insufficient management is taking place. Assessing the quality of sites should ideally examine the quality of habitat-associated assemblages in addition to noting species richness and the presence of scarcer species, but great caution is urged with the use of SQIs. The Southam Quarry and Bishops Bowl–Bishops Hill Complex both require notification as SSSIs to help preserve their nationally important but vulnerable assemblages.

ACKNOWLEDGEMENTS

The author is grateful to the various site owners for permission to survey and for information relating to the histories of the sites. Dr J. Radley (Keeper of Geology, Warwickshire Museum) kindly assisted in the geological aspects of this paper. M. Edwards and G. Else provided some useful information on some of the scarcer species encountered.

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APPENDIX 1. NOTES ON SOME OF THE SCARCER SPECIES

Andrena bucephala Stephens and *Nomada hirtipes* Pérez—*A. bucephala* shows strong calcicolous tendencies in Warwickshire and the dozen or so sites fall into three categories: re-vegetated quarries and spoilheaps, railway cuttings, and south-facing Cotswoldian hillsides with patches of scrub. Foraging mostly occurs on hawthorn and field maple *Acer campestre* during May, and males can form conspicuous swarms around such blossoms. The communal nests (several females sharing a common nest entrance) are often associated with rabbit burrows within a scrub-grassland mosaic. Five of the strongest *A. bucephala* colonies support *N. hirtipes*, the nomad bees often revealing the precise location of the host's nest. Both species are very rare abroad (G. Else, personal communication), making all British colonies highly significant.

Andrena dorsata (Kirby)—noteworthy for its rarity in Warwickshire—it is a frequent species in many parts of southern Britain, preferring heathland and coastal districts. The Avon Hill record (a single male on grey willow catkins) is one of only two modern ones for the county and its presence here may have been influenced by flowering gorse thickets (a major foraging habitat for first generation females at many sites) on nearby hills.

Andrena flavipes—almost certainly a recent colonist in Warwickshire, where first recorded in 1999 on agricultural land. All but two of the subsequent records fall within the sites covered here and suggest that calcareous quarries provide the most ideal habitat for it in Warwickshire.

Andrena fulvago—the Southam record (23 May 2001) is the only modern one for Warwickshire (1950s H.W. Daltry material from 'Rugby' exists at Coventry Museum). Only a single female was encountered, close to a patch of *Crepis*, a likely forage plant.

Andrena praecox—not considered especially scarce nationally. However, the Warwickshire populations are unusual in showing strong calcicolous tendency, preferring to nest in bare or sparsely-vegetated Lias clay at sites with plentiful willows. At the sites considered here, foraging was observed on grey willow, goat willow *Salix caprea* and (at the end of its flight period) white willow *S. alba*. The other two willow-requiring mining bees, *A. apicata* Smith and *A. clarkella* (Kirby) lack strong calcicolous tendencies, indeed *A. clarkella* favours sandy, acidic sites in districts away from limestone and the populations encountered during this survey were very weak.

Andrena proxima—a strong population was discovered at Bishops Bowl, representing a considerable extension to its known range in Britain. Males were numerous on 7 May 2001 swarming over paths and visiting daisy flowers. Females were recorded on 11 June 2001 and 8 June 2002 mainly foraging on a large patch of ground elder, and hogweed to a lesser extent. It is suspected that this is another species increasing in range and frequency within southern Britain (S. Falk data) and it has been recorded at Napton Quarry in 2005 subsequent to the survey.

Arachnospila minutula—Bishops Hill and Southam Quarry support the only populations known in Warwickshire.

Bombus humilis—the Southam Quarry population is the stronger of the two modern ones known in Warwickshire (the other population may already have been lost since 1995). At Southam, a queen was recorded foraging on *Lotus* spp. on the relatively late date of 23 May 2001. Workers were also observed visiting *Lotus* and red bartsia *Odontites verna* in July and August. Compared with the closely-related *B. pascuorum* (Scopoli), *B. humilis* seems to have a much shorter foraging season involving fewer forage species.

Bombus ruderatus—at Southam, a queen was found foraging on *Anthyllis* flowers on 23 May 2001 and presumed workers (which are very difficult to distinguish from those of *B. hortorum* (L.) but often include fully melanic individuals) were foraging almost exclusively on *Lotus* until August. Like *B. humilis*, a relatively short foraging period and limited foraging scope were noted, compared to the closely-related *B. hortorum*. This BAP Priority Species seems to be exhibiting a major expansion in south Warwickshire at the time of writing (S. Falk data), which is rather surprising given that it has been traditionally regarded as one of the most seriously declined British bumblebees.

Caliadurgus fasciatus—the closely approximated Southam Quarry and Stockton Cutting support the only populations known in Warwickshire, which are associated with sparsely-vegetated Blue Lias clay.

Crossocerus distinguendus—seemingly another recent colonist, first discovered in Warwickshire in 1998, since when it has been found at six sites of rather different character including one of the sites covered here, Cross Hands Quarry.

Didineis lunicornis—only a single record from the present study (Ufton Fields), plus a further record for Newbold Quarry (R. Wright, personal communication), though many of the sites appear to provide ideal habitat (sparsely-vegetated clay with desiccation cracks). Its other four Warwickshire sites include sheep or rabbit grazed hillsides and railway cuttings.

Dipogon variegatus (L.)—the Avon Hill record is only the second for Warwickshire. It was first recorded in July 1998 from a post-industrial site in Coventry, which has since been developed.

Ectemnius sexcinctus (Fab.)—the Cross Hands and Southam records are the third and fourth for the county.

Hylaeus cornutus – the Southam record is only the second for Warwickshire, and the locality of the previous record (a post-industrial site in Coventry) has now been developed. At both sites it was recorded on wild carrot flowers.

Hylaeus pectoralis – a most unexpected record representing a substantial extension to its known range in Britain. The site involved, Bishop Bowl, supports the largest stands of *Phragmites* of all the sites surveyed. The wasp nests in dead stems of reeds and the old galls of *Lipara* flies on reeds.

Hylaeus signatus – the three sites covered here repeat a pattern seen elsewhere in the county of a species with an almost complete reliance on ‘brownfield’ land, in association with *Reseda* spp. However, the colonies at calcareous quarries are relatively weak compared with those associated with post-industrial sites in the Coventry region during the 1990s, possibly because of the greater frequency of *Reseda*-rich habitat in the Coventry area during the 1990s (much of which has now been developed).

Lasioglossum malachurum – seemingly another recent colonist in Warwickshire where it was first recorded in 1999. Seven of its ten Warwickshire sites are calcareous quarries and females forage on a wide variety of flowers, but especially composites such as daisy, hawk-beards and oxeye daisy. Observed nesting colonies have been associated with hard clay ground.

Lasioglossum xanthopus – Warwickshire records are currently confined to the four calcareous quarries covered in this paper. Females have been observed foraging heavily from ragworts and kidney vetch in May and June and nesting in vertical banks. Males have been found on perennial sowthistle flowers in late September. No evidence of its scarce cleptoparasite *Sphecodes spinulosus* von Hagens could be found, though both species occur in a disused railway cutting just over the Oxfordshire border (C. O’Toole, pers. comm.). Populations at two of its four sites (Cross Hands and Ratley Grange Quarries) have almost certainly been lost since the records were made through recent landfilling and restoration operations.

Microdynerus exilis (Herrich-Schäffer) – the Southam record is the second for Warwickshire where it was first recorded in August 1998 (a post-industrial site in Coventry that has since been developed).

Nomada ferruginata – the Napton population, which was first discovered in April 1996, is a strong one with good numbers observed around a nesting colony of the host *Andrena praecox* that forages on the plentiful grey willow here. The Bishops Bowl and Lighthorne Heath records relate to singletons, and the presence of only a few grey willow bushes at Lighthorne suggests this site does not support a secure population of the host. National data (Edwards & Telfer, 2002) suggests *N. ferruginata* may be currently expanding in southern Britain, and does not support its continued grading as an RDB1 species.

Odynerus melanocephalus – only two further Warwickshire sites are known beyond the nine covered by this paper, and all sites are characterised by the presence of bare or sparsely vegetated clay slopes with plentiful black medick *Medicago lupulina* – the source of its prey, the larvae of *Hypera* weevils (pers. observ.). The short-funnelled nests have been observed on a few such slopes, and contrast strongly with the long-funnelled nests of *O. spinipes* that tend to occur in vertical sand or clay faces (often the sandy overburden at the top of a limestone quarry face). The majority of Warwickshire records for the *Odynerus* cleptoparasite *Pseudospinolia neglecta* are associated with *O. melanocephalus*, though a strong population was formerly associated with *O. spinipes* at Ufton.

Osmia bicolor – this is one of our most strongly calcicolous bees, with only two other known Warwickshire sites beyond the twelve shown here. Females have mainly

been observed foraging from birds-foot trefoils and kidney vetch, though visits to ground ivy, hawthorn, crab apple *Malus sylvestris*, willows, dandelions, brambles, violets *Viola* spp. and cowslip *Primula veris* have also been noted and males will visit composites like mouse-ear hawkweed and hawks-beards. Another strongly calcicolous megachiline bee *Hoplitis spinulosa* (Kirby) occurs alongside *O. bicolor* at many of its sites but forages almost exclusively on composites. The suitability of sites probably depends on the combination of plentiful forage plants combined with an abundance of empty snail shells in warm, sheltered locations fully exposed to the sun (the nesting site).

Osmia aurulenta—the Bishops Hill and Southam Quarry populations are remarkable for their isolated location in the centre of England far from any other known colonies. This is typically a species of calcareous coastal dunes with a more limited presence inland, mainly on chalk grassland. Foraging has only been observed from birds-foot trefoils and kidney vetch and it seems to require large quantities of such flowers, combined with an abundance of empty snail shells in open locations fully exposed to the sun for nesting.

Philanthus triangulum—singletons recorded from two sites. A recent colonist in Warwickshire, first recorded in 1995, with about a dozen records since. The sites studied here do not appear to be sandy enough to support strong colonies.

Priocnemis agilis (Schuckard)—Bishops Bowl is one of six Warwickshire sites, all of which are calcareous grasslands including semi-improved calcareous pasture.

Priocnemis parvula Dahlbom—strongly associated with heathland and other sandy habitats over much of its range. Its presence at six of the calcareous sites studied here is noteworthy, though its presence at several non-calcareous sites locally has kept it off the calcicole list.

Psenulus schencki (Tournier)—the Ufton record is the second for Warwickshire, where it was first recorded in 1999.

Sphecodes niger—the Nelsons Quarry record is the first for Warwickshire and coincides with a particularly strong colony of the host *Lastiglossum morio* (Fab.). Another species expanding nationally (S. Falk data, M. Edwards, pers. comm.).

Sphecodes rubicundus—the Napton Quarry and Bishops Bowl records were the only ones for Warwickshire at the time of the study (two more sites have subsequently been discovered) and coincide with strong populations of its main host, *Andrena labialis* (Kirby), which requires plentiful legume flowers.

<i>Arachnospila minuula</i> (Dahlbom)*	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Arachnospila spissa</i> (Schiodte)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Calidurgus fasciellus</i> (Spinola)*	R																		
<i>Dipogon subintermedius</i> (Magretti)	R																		
<i>Dipogon variegatus</i> (L.)	N, Calc	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Priocnemis agilis</i> (Schuckard)	R																		
<i>Priocnemis exaltata</i> (Fab.)	R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Priocnemis parvula</i> Dahlbom		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Priocnemis perturbator</i> (Harris)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Vespidae																			
<i>Ancistrocerus gazella</i> (Panzer)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Ancistrocerus nigricornis</i> (Curtis)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Ancistrocerus parietinus</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Ancistrocerus parietum</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Ancistrocerus trifasciatus</i> (Müller)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Dolichovespula media</i> (Retzius)	N* (no status)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Dolichovespula norvegica</i> (Fab.)	RDBK* (no status)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Dolichovespula saxonica</i> (Fab.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Dolichovespula sylvestris</i> (Scopoli)	R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Gymnomerus laevipes</i> (Schuckard)	N	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Microdynerus exilis</i> (Herrich-Schäffer)	N, Calc	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Odynerus melanocephalus</i> (Gmelin in L.)	R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Odynerus spinipes</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Symmorphus bifasciatus</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Symmorphus gracilis</i> (Brullé)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Vespula germanica</i> (Fab.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Vespula rufa</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Vespula vulgaris</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

(continued)

The Status column lists various Quality Indicators. This includes species graded as Nationally Threatened (RDBI, 2, 3 & K), Nationally Scarce (N), Regionally Scarce 'sensu Vice-county Warwickshire' (R), calcicolous (Calc) and wetland-associated (Wet). An asterisk after a grade indicates a misleading national grading and is followed by a bracketed value indicating a more realistic grading. A species name followed by an asterisk relates to species unknown from any other site in Warwickshire beyond those shown. Abbreviated site names are listed in the section on Survey Sites.

ACULEATE HYMENOPTERA	Rarity/ Quality Status	BB+														
		AH	BB	BH	BH	CH	GH	HS	LQ	Na	Nel	New	RG	So	St	UF
Chrysididae																
<i>Chrysis angustula</i> Schenck					/							/				
<i>Chrysis nigriceps</i> Schenck									/							/
<i>Omalus pumcticollis</i> (Mocsáry)	N															
<i>Pseudomalus auratus</i> (L.)																
<i>Pseudospinolia neglecta</i> (Schuckard)	R, Calc															
<i>Trichrysis cyanea</i> (L.)																
Sapygidae																
(<i>Monosapyga clavicornis</i> L.)	N															
<i>Sapyga quinquepunctata</i> (Fab.)																
Tiphidae																
<i>Tiphia immita</i> Vander Linden	N* (no status)				/	/	/	/				/				
Mutillidae																
<i>Myrmosia atra</i> Panzer																
Pompilidae																
<i>Agentoides cinctellus</i> (Spinola)	R															
<i>Anoplus concinnus</i> (Dahlbom)	R															
<i>Anoplus ingerrinus</i> (Scopoli)																
<i>Arachnospila anceps</i> (Wesmael)																
Arachnospilidae																
<i>Arachnospila trinivida</i> (Dahlbom)*	N, Calc											/				/
<i>Arachnospila spissa</i> (Schodde)																
<i>Callidurgus fasciellus</i> (Spinola)*	R															
<i>Dipogon subintermedius</i> (Magretti)																
<i>Dipogon variegatus</i> (L.)	R															
<i>Priocnemis agilis</i> (Schuckard)	N, Calc		/		/											
<i>Priocnemis exaltata</i> (Fab.)																/
<i>Priocnemis parvula</i> Dahlbom	R															
<i>Priocnemis perturbator</i> (Harris)																
Vespidae																
<i>Ancistrocerus gazella</i> (Panzer)																
<i>Ancistrocerus nigricornis</i> (Curtis)																/
<i>Ancistrocerus parietinus</i> (L.)																
<i>Ancistrocerus parietinus</i> (L.)																
<i>Ancistrocerus trifasciatus</i> (Müller)					/	/	/	/								
<i>Dolichovespula media</i> (Retzius)	N* (no status)				/	/	/	/								/
<i>Dolichovespula norvegica</i> (Fab.)																
<i>Dolichovespula saxonica</i> (Fab.)	RDBK* (no status)															
<i>Dolichovespula sylvestris</i> (Scopoli)		/	/	/	/	/	/	/								
<i>Gyromonetus laevis</i> (Schuckard)	R															/
<i>Microdynerus exilis</i> (Herrich-Schäffer)	N															
<i>Odynerus melanocephalus</i> (Gmelin in L.)	N, Calc				/	/	/	/								
<i>Odynerus spinipes</i> (L.)	R															/
<i>Symmorphus bifasciatus</i> (L.)																/
<i>Symmorphus gracilis</i> (Brullé)		/	/	/	/	/	/	/								
<i>Vespa germanica</i> (Fab.)		/	/	/	/	/	/	/								
<i>Vespa rufa</i> (L.)		/	/	/	/	/	/	/								
<i>Vespa vulgaris</i> (L.)		/	/	/	/	/	/	/								

(continued)

Appendix 2. (continued)

ACULEATE HYMENOPTERA	Rarity/ Quality Status	AH	BB	BH	BH	CH	GH	HS	LQ	Na	Nel	New	RG	So	St	UF
Crabronidae																
<i>Argorytes fargeii</i> (Schuckard)	N									/				/		
<i>Cerceris rybyensis</i> (L.)	R		/							/						
<i>Crossocerus annulipes</i> (Lepeletier & Brullé)			/							/						
<i>Crossocerus capitatus</i> (Schuckard)		/		/						/						/
<i>Crossocerus cetratus</i> (Schuckard)			/							/						/
<i>Crossocerus dimidiatus</i> (Fab.)			/							/						/
<i>Crossocerus distinguendus</i> (Morawitz, A.)	N									/						
<i>Crossocerus elongatulus</i> (Vander Linden)										/						/
<i>Crossocerus megacephalus</i> (Rossius)		/								/						/
<i>Crossocerus nigrinus</i> (Lepeletier & Brullé)		/								/						/
<i>Crossocerus podagricus</i> (Vander Linden)		/	/	/						/						/
<i>Crossocerus pusillus</i> (Lepeletier & Brullé)			/							/						/
<i>Crossocerus tarsatus</i> (Schuckard)			/							/						/
<i>Didineis lunicornis</i> (Fab.)	N, Cate									/						/
<i>Diodontus luperus</i> Schuckard	R	/	/	/						/						/
<i>Ectemnius cavifrons</i> (Thomson)			/							/						/
<i>Ectemnius continuum</i> (Fab.)		/	/	/						/						/
<i>Ectemnius rubicola</i> (Dufour & Perris)	R									/						/
<i>Ectemnius sexcinctus</i> (Fab.)	N		/							/						/
<i>Entomognathus brevis</i> (Vander Linden)		/	/	/						/						/
<i>Gorytes quadrifasciatus</i> (Fab.)		/	/	/						/						/
<i>Harpactus tumidus</i> (Panzer)	R									/						/
<i>Lindenius albilabris</i> (Fab.)			/							/						/

<i>Melinus arvensis</i> (L.)					R	/	/	/	/	/	/	/
<i>Mimamea dahlbomi</i> (Wesmael)							/	/	/	/	/	/
Nysson dimidiatus Jurine					N	/						
Nysson trimaculatus (Rossius)					N	/	/	/	/	/	/	/
<i>Oxybelus uniglutinis</i> (L.)						/		/	/	/	/	/
<i>Passaloecus corniger</i> Shuckard							/	/	/	/	/	/
<i>Passaloecus gracilis</i> (Curtis)						/	/	/	/	/	/	/
<i>Passaloecus singularis</i> Dahlbom						/	/	/	/	/	/	/
<i>Pemphredon inornata</i> Say						/	/	/	/	/	/	/
<i>Pemphredon lethifera</i> (Shuckard)						/	/	/	/	/	/	/
<i>Pemphredon lugubris</i> (Fab.)						/	/	/	/	/	/	/
<i>Pemphredon morio</i> Vander Linden					N	/	/	/	/	/	/	/
<i>Philanthus triangulum</i> (Fab.)					RDB2*							
<i>Psenulus concolor</i> (Dahlbom)					(R)	/	/	/	/	/	/	/
<i>Psenulus pallipes</i> (Panzer)						/	/	/	/	/	/	/
<i>Psenulus schencki</i> (Tournier)					N	/	/	/	/	/	/	/
<i>Rhopalum clavipes</i> (L.)						/	/	/	/	/	/	/
<i>Rhopalum coarctatum</i> (Scopoli)						/	/	/	/	/	/	/
<i>Spilomena beata</i> Blüthgen					R	/	/	/	/	/	/	/
<i>Spilomena troglodytes</i> (Vander Vindlen)						/	/	/	/	/	/	/
<i>Stigmus solskyi</i> Morawitz						/	/	/	/	/	/	/
<i>Tachysphex pompiliiformis</i> (Panzer)					R	/	/	/	/	/	/	/
<i>Trypoxylon attenuatum</i> Smith						/	/	/	/	/	/	/
<i>Trypoxylon claviterum</i> Lepeletier & Serville						/	/	/	/	/	/	/
<i>Trypoxylon figulus</i> (L.) 's.s.'						/	/	/	/	/	/	/
<i>Trypoxylon 'figulus</i> s.l.						/	/	/	/	/	/	/
Apidae												
<i>Andrena apicata</i> Smith					N	/	/	/	/	/	/	/
<i>Andrena bicolor</i> Fab.						/	/	/	/	/	/	/
<i>Andrena bucephala</i> Stephens					N, Calc	/	/	/	/	/	/	/
<i>Andrena chrysoseceles</i> (Kirby)						/	/	/	/	/	/	/

(continued)

ACULEATE HYMENOPTERA	Rarity/ Quality Status															
		AH	BB	BH	BB+ BH	CH	GH	HS	LQ	Na	Nel	New	RG	So	St	UF
Crabronidae																
<i>Argogorytes fargei</i> (Schuckard)	N															
<i>Cerceris rybyensis</i> (L.)	R															
<i>Crassocerus annulipes</i> (Lepeletier & Brulle)																
<i>Crassocerus capitatus</i> (Schuckard)																
<i>Crassocerus cetratus</i> (Schuckard)																
<i>Crassocerus dimidiatus</i> (Fab.)																
<i>Crassocerus distinguendus</i> (Morawitz, A.)	N															
<i>Crassocerus elongatulus</i> (Vander Linden)																
<i>Crassocerus megaccephalus</i> (Rossius)																
<i>Crassocerus nigrilus</i> (Lepeletier & Brulle)																
<i>Crassocerus podagricus</i> (Vander Linden)																
<i>Crassocerus pusillus</i> (Lepeletier & Brulle)																
<i>Crassocerus tarsatus</i> (Schuckard)																
<i>Dalmanis hunicornis</i> (Fab.)	N, Calc															
<i>Diodontus lupinus</i> Schuckard	R															
<i>Ectemnius cavifrons</i> (Thomson)																
<i>Ectemnius continuus</i> (Fab.)																
<i>Ectemnius rubicollis</i> (Dufour & Perris)	R															
<i>Ectemnius sexcinctus</i> (Fab.)	N															
<i>Entomognathus brevis</i> (Vander Linden)																
<i>Gorytes quadrfasciatus</i> (Fab.)																
<i>Harpactus nanus</i> (Panzer)	R															
<i>Lindenius albilabris</i> (Fab.)																
<i>Melinus arvensis</i> (L.)	R															
<i>Mummesea dahlbomi</i> (Wesmael)																
<i>Nysson dimidiatus</i> Jurine	N															
<i>Nysson trunculatus</i> (Rossius)	N															
<i>Oxybelus unghamsi</i> (L.)																
<i>Passaloecus coringei</i> Shuckard																
<i>Passaloecus gracilis</i> (Curtis)																
<i>Passaloecus singularis</i> Dahlbom																
<i>Pemphredon inornata</i> Say																
<i>Pemphredon lethifera</i> (Schuckard)																
<i>Pemphredon lugubris</i> (Fab.)																
<i>Pemphredon norioi</i> Vander Linden																
<i>Phylanthus triangulum</i> (Fab.)	N RDB2* (R)															
<i>Psenulus concolor</i> (Dahlbom)																
<i>Psenulus pallipes</i> (Panzer)																
<i>Psenulus schencki</i> (Tournier)	N															
<i>Rhopalum clavipes</i> (L.)																
<i>Rhopalum coarctatum</i> (Scopoli)																
<i>Spilonota beata</i> Blüthgen	R															
<i>Spilonota troglodytes</i> (Vander Vinden)																
<i>Stigmus salskyi</i> Morawitz																
<i>Tachysphex pompiiformis</i> (Panzer)	R															
<i>Trypoxylon attenuatum</i> Smith																
<i>Trypoxylon clavicerum</i> Lepeletier & Serville																
<i>Trypoxylon figulus</i> (L.) 's.s.'																
<i>Trypoxylon 'figulus' s.l.</i>																
Apidae																
<i>Andrena apicata</i> Smith	N															
<i>Andrena bicolor</i> Fab.																
<i>Andrena bucephala</i> Stephens	N, Calc															
<i>Andrena chrysoceles</i> (Kirby)																

ACULEATE HYMENOPTERA	Rarity/ Quality Status	AH	BB	BH	BB+				Na	Nel	New	RG	So	St	UF	
					BH	CH	GH	HS								
Apidae (continued)																
<i>Andrena cineraria</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena clarkella</i> (Kirby)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena dorsata</i> (Kirby)	R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena flavipes</i> Panzer	R, Calc	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena fulva</i> (Müller in Allom)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena fulvago</i> (Christ)*	N, Calc	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena haenorrhoa</i> (Fab.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena helvola</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena lalialis</i> (Kirby)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena minutilla</i> (Kirby)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena nigroaenea</i> (Kirby)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena nitida</i> (Müller)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena praecox</i> (Scopoli)	Calc	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena proxima</i> (Kirby)*	RDB3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena scotica</i> Perkins		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena scutellata</i> Pérez		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena sinuata</i> Smith	N	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena subopaca</i> Nylander		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena thibialis</i> (Kirby)	N	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena varians</i> (Rossius)	N	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Andrena wilkella</i> (Kirby)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Anthophora fucata</i> (Panzer)	R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Anthophora plumipes</i> (Pallas)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus bartholomaeus</i> (Kirby)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus conspurcator</i> (Panzer)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus hortorum</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus lucorum</i> (L.)	N, BAP	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus lapidarius</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus lucorum</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus pascuorum</i> (Scopoli)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus pratorum</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus ruderarius</i> (Müller)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus ruderatus</i> (Fab.)	N*	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	(RDB2),															
	BAP															
<i>Bombus rupestris</i> (Fab.)	N* (no status)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus sylvestris</i> (Lepeletier)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus terrestris</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Bombus vestalis</i> (Geoffroy in Fourcroy)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Chelostoma florissomne</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Colletes daviesanus</i> Smith		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Colletes rubicundus</i> (Christ)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Halictus tumulorum</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hoplitis claviventris</i> (Thomson)	R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hoplitis spinulosa</i> (Kirby)	R, Calc	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hylaeus amandaris</i> (Kirby)	Calc	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hylaeus brevicornis</i> Nylander		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hylaeus communis</i> Nylander		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hylaeus confusus</i> Nylander		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hylaeus cornutus</i> Curtis	N	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hylaeus hyalimatus</i> Smith		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hylaeus pectoralis</i> Forster*	R* (N), Weit	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Hylaeus signatus</i> (Panzer)	N	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Lastioglossum alipes</i> (Fab.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Lastioglossum calceatum</i> (Scopoli)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Lastioglossum cupronicans</i> (Pérez)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Lastioglossum fulvicorne</i> (Kirby)	Calc	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Lastioglossum lativentris</i> (Schenck)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Lastioglossum leucopis</i> (Kirby)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Lastioglossum leucozonium</i> (Schrank)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

(continued)

<i>Osmia rufa</i> (L.)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Osmia aurulenta</i> (Panzer)*	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes crassus</i> Thomson	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes ephippius</i> (L.)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes ferruginatus</i> von Hagens	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes geoffrellus</i> (Kirby)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes gilbbus</i> (L.)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes hyalinatus</i> von Hagens	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes monticornis</i> (Kirby)	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes niger</i> von Hagens*	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes puncticeps</i> Thomson	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes rubicundus</i> von Hagens*	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Total Aculeates	89	90	103	128	71	59	53	51	70	64	65	59	112	68	82				

Site abbreviations are: Avon Hill Quarry (AH), Bishops Bowl (BB), Bishops Hill (BH), Bishops Bowl + Bishops Hill (BB + BH), Cross Hands Quarry (CH), Gypsy Hall (Wilmcote) Quarry (GH), Harbury Spoilbank (HS), Lighthorne Quarry (LQ), Nampton Quarry (Na), Nelsons Quarry (Nel), Newbold Quarry LNR (New), Ratley Grange (Edge Hill) Quarry (RG), Southam Quarry (So), Stockton Cutting (St), Ufton Fields SSSI (UF).

Appendix 2. (continued)

ACULEATE HYMENOPTERA	Rarity/ Quality Status	BB +														
		AH	BB	BH	BH	CH	GH	HS	LQ	Na	Nel	New	RG	So	St	UF
Apidae (continued)																
<i>Lasioglossum malachurum</i> (Kirby)	N* (R), Calc															
<i>Lasioglossum mimitissimum</i> (Kirby)	R															
<i>Lasioglossum morio</i> (Fabricius)																
<i>Lasioglossum nitidiusculum</i> (Kirby)	R															
<i>Lasioglossum smeathumellus</i> (Kirby)																
<i>Lasioglossum villosulum</i> (Kirby)																
<i>Lasioglossum xanthopus</i> (Kirby)*	N, Calc															
<i>Megachile centumularis</i> (L.)																
<i>Megachile ligniseca</i> (Kirby)																
<i>Megachile versicolor</i> Smith																
<i>Megachile wilsoni</i> (Kirby)																
<i>Nomada fabriciana</i> (L.)																
<i>Nomada ferruginata</i> (L.)*	RDB1* (RDB3), BAP, Calc															
<i>Nomada flava</i> Panzer																
<i>Nomada flavoguttata</i> (Kirby)																
<i>Nomada goodeniana</i> (Kirby)																
<i>Nomada hirtipes</i> Pirez	RDB3* (N), Calc															
<i>Nomada lathburiana</i> (Kirby)	RDB3* (no status)															
<i>Nomada marshanella</i> (Kirby)																
<i>Nomada panzeri</i> Lepelletier																
<i>Nomada ruficornis</i> (L.)																
<i>Osmia bicolor</i> (Schränk)	N, Calc															
<i>Osmia caerulea</i> (L.)																
<i>Osmia leuana</i> (Kirby)																
<i>Osmia rufa</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Osmia aurulenta</i> (Panzer)*	R, Calc															
<i>Sphecodes crassus</i> Thomson	N* (no status)															
<i>Sphecodes ephippius</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes ferruginus</i> von Hagens	N, Calc															
<i>Sphecodes geoffrellus</i> (Kirby)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes gibbus</i> (L.)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes hyalinatus</i> von Hagens	R, Calc															
<i>Sphecodes monilicornis</i> (Kirby)		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes niger</i> von Hagens*	RDB3															
<i>Sphecodes puncticeps</i> Thomson		/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
<i>Sphecodes rubicundus</i> von Hagens*	N, Calc															
Total Aculeates		89	90	103	128	71	59	53	51	70	64	65	59	112	68	82

Site abbreviations are: Avon Hill Quarry (AH), Bishops Bowl (BB), Bishops Hill (BH), Bishops Bowl + Bishops Hill (BB + BH), Cross Hands Quarry (CH), Gypsy Hall (Wilmcote) Quarry (GH), Harbury Spoilbank (HS), Lighthorne Quarry (LQ), Napton Quarry (Na), Nelsons Quarry (Nel), Newbold Quarry LNR (New), Ratley Grange (Edge Hill) Quarry (RG), Southam Quarry (So), Stockton Cutting (St), Ulfon Fields SSSI (UF).

NEW COUNTY RECORDS OF HETEROPTERA (HEMIPTERA) FROM GLOUCESTERSHIRE

KEITH N. A. ALEXANDER

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ABSTRACT

Eighteen species of terrestrial Heteroptera have been added to the Gloucestershire (vice-counties 33 and 34) county list over the last ten years. These have arisen from each of the main biogeographical regions of the county, and are largely from semi-natural vegetation. This suggests that the additions largely represent under-recording rather than recent colonisation.

INTRODUCTION

The Gloucestershire county Heteroptera fauna has been fully reviewed (Alexander, 1995 & 1996) and recording has subsequently aimed to consolidate coverage of the whole land area of the county and to confirm the continued presence of species which have not been noted for many years. One of the consequences of this new recording effort has been the discovery of a number of previously overlooked species as well as some which may be new arrivals. The two categories are often difficult to discern, however, as many bugs appear to be highly mobile and there are a large number which appear to be expanding their UK ranges northwards and westwards. The assumption is made that species which are strongly associated with long-established semi-natural vegetation are likely to be overlooked long-term residents. The eighteen additions bring the county total of terrestrial Heteroptera to 318 species, an increase of 6% in ten years.

HEATHLAND FAUNA

A good case is presented by the county's heathland fauna. Heathland was once very widespread in the Forest of Dean but has become very fragmented and localised through plantation forestry. Only recently has Forest Enterprise initiated some heathland conservation projects.

The absence of the most widespread heathland specialists from the county list was one of the most noticeable gaps, and investigation rapidly demonstrated their presence. The seed bug *Scolopostethus decoratus* (Hahn) (Lygaeidae) and the plant bug *Orthotylus ericetorum* (Fallen) (Miridae) were found at: Merring Meend Reserve, Plumhill (VC 34; SO61), 15.ix.1990; Wigpool Common (VC34; SO61), 10.viii.1996; and Poor's Allotment (VC34; ST59), 15.viii.1993; as well as other sites subsequently, and are clearly ubiquitous in the heathland fragments. The predatory shieldbug *Rhacognathus punctatus* (L.) appears to be much more localised and may need larger areas of habitat. Nymphs were present amongst heather foliage at Crabtree Hill (VC34; SO61) – a major Forest Enterprise heathland restoration area – 10.viii.2002, and two adults were also found amongst the dense mosses beneath the heather canopy. Interestingly, only *O. ericetorum* has been found on the limestone heaths of the Cotswold Hills: Cleeve Cloud (VC33; SO92), common on heather, 5.ix.1991.

SEVERN FLOODPLAIN

The other major part of the county which appears to have been neglected by past recorders is the wide floodplain of the River Severn, with its expanses of modern intensively managed farmland and expanding urban and industrial developments. There are still fragments of the floodplain marshes however and these still support a few relict species.

The most interesting find has been the shore bug *Salda littoralis* (L.) (Saldidae). This is mainly a northern species in Britain, but also occurs in a few southern coastal counties. The northern habitat is typically river and lake margins where the marginal area is silty and there is vegetation close by, but in the south it is found in brackish habitats (Southwood & Leston, 1959). Its discovery in the old grazing marsh reserve of Ashleworth Ham (VC34; SO82), 4.viii.2002, with its relict brackish water plant species, is a significant addition to the county list. Although the area still floods during the winter months the brackish nature of the water must be fairly negligible.

Other wetland species have also been found along the floodplain. The debris living predatory plant bug *Fieberocapsus flaveolus* (Reuter) has been found in small numbers by beating collapsed *Glyceria* stems over a net at Long Pool, Deerhurst (VC33; SO82), 3.ix.2000 – this area is part of a larger scheme by the Gloucestershire Wildlife Trust (GWT) to recreate areas of the former Severn marshes by returning areas currently under intensive agricultural exploitation to poorly-drained grazing land which is subject to natural flooding from the adjacent river.

The saltmarsh plant bug *Orthotylus moncreaffi* (Douglas & Scott) has also drawn attention to the county's small areas of saltmarsh developed around the mouth of the Severn: Beachley Point (VC34; ST59), 14.vii.1990. *Trigonotylus caelestialium* (Kirkaldy) is the most recent addition to the county list, having been swept from tall saltmarsh grassland along the estuary at Whitescourt, Awre (VC34; SO70), 11.viii.2004.

The floodplain also appears to be an important area for tree canopy bugs. Ashleworth Ham is again the only county site for one of these species, the aphid-feeding plant bug *Pilophorus clavatus* (L.), associated principally with the broad-leaved willows *Salix cinerea* and *S. capraea* (Southwood & Leston, 1959), although beaten from hawthorn here, 4.viii.2002. The similar *P. perplexus* Douglas & Scott has also been added to the county list recently, and is proving to be scattered along the margins of the floodplain. It is another ant mimic, and similarly feeds on aphids and other soft-bodied invertebrates living amongst the foliage of oaks and other trees and shrubs. It was first discovered in the county at Forthampton Oaks (VC34; SO83), with brown tree ant *Lasius brunneus* on the foliage of this large concentration of ancient oaks, 14.viii.1999. It has subsequently been found on the foliage of an ancient oak pollard at Newnham (VC34; SO61), 5.viii.2004, and from pear foliage in an old orchard at Malswick, Newent (VC34; SO72), 5.viii.2004. These are all sites with brown tree ant and its distribution pattern in the county closely fits the distribution of this ant.

The widespread southern flower bug *Orius laticollis* (Reut.) (Anthocoridae) was also discovered at Ashleworth Ham, 4.viii.2002, and is mostly associated with larger trees of poplar, willow and ash. It has also turned up at Debdene (VC33; SP12) in the Cotswolds, 17.vi.2000, and so appears not to be a floodplain speciality in the county.

The grass bug *Miridius quadrivirgatus* (Costa) (Miridae) was said to be mainly associated with wall barley where it grows in rough pastures near the sea (Southwood & Leston, 1959) but it has since then spread well inland and northwards

(B.S. Nau, pers.comm.). A single specimen was swept from the old grassland of Shuthonger Common (VC33; SO83), 14.viii.1999. It has subsequently been swept from ditch-side rough grassland at Sherborne Farm water meadows (VC33; SP11) in the Windrush Valley of the Cotswold Hills by John Widgery, 24.viii.2000.

LIMESTONE GRASSLANDS

The third major geographical feature of Gloucestershire is the Cotswold Hills, with their large expanses of unimproved limestone pastures, large areas of enclosed ancient woodland, and a landscape of large old open-grown native trees. Although this area is probably the most favoured by recorders it has still generated the largest number of additional species, suggesting that the whole county remains under-recorded for Heteroptera.

The most significant find has probably been the seed bug *Megalonotus antennatus* (Schilling). It is not particularly associated with limestone grasslands (Kirby, 1992) but has only been found so far on one of the highest quality examples, Swifts Hill (VC33; SO80), a GWT reserve. One was found in a disused quarry there, another on the south-facing hillside, 19.vi.2003. A single specimen of another seed bug *Peritrechus nubilus* (Fallén) was found in Three Grove's Wood GWT Reserve, Oakridge (VC33; SO90), 13.xi.2003, but this normally open country species is presumed to be an overwintering individual here from the neighbouring limestone pasture of Strawberry Banks GWT Reserve.

The stilt bug *Berytinus crassipes* (Herrich-Schaeffer) (Berytinidae) has a mainly eastern distribution in England, where it favours sparse but grassy wastes, especially old mineral workings, cinder railway embankments, feeding on mouse-ear chickweeds and other plants (Southwood & Leston, 1959). One was swept in an area of old quarry workings at Kilkenny Viewpoint (VC33; SP01), 8.vi.2002, and another was found on the old clinker bed of Chedworth Railway GWT Reserve (VC33; SP01), 23.vii.2003.

The Cotswold grasslands also include areas of unimproved neutral grassland and the knapweed associated plant bug *Oncotylus viridiflavus* (Goeze) (Miridae) was found at Box Farm Meadows (VC34; SO80), 23.vii.2003. Gloucestershire is close to the northern edge of its British range (Southwood & Leston, 1959).

The final open country species added to the county list from the Cotswolds is the lace bug *Agramma laeta* (Fallen) (Tingidae). It is thought to be associated with sedges, woodrushes and rushes, and occurs on saltmarshes, limestone grasslands, in damp woodland, and elsewhere. It is a typical inhabitant of old limestone grasslands and has been found widely on the old commons around Stroud (SO80): Minchinhampton Common, 3.vi.1985; Littleworth Common, 25.iii.1988; Selsley Common, 10.viii.1997 (all VC 34), and Swifts Hill, 18.vi.2003. Andy Foster (pers. comm.) has also taken it on Haresfield Beacon (VC33), 28.vii.1998. One further site has also been found on the edge of the Forest of Dean in the old limestone quarry Stenders Quarry (VC34; SO61), 5.viii.2003.

Two further additions come from tree and woodland sites on the Cotswolds. A specimen of the nationally scarce plant bug *Psallus albicinctus* (Kirschbaum) was swept from grassland downwind of old boundary oaks near Old Hinchwick (VC33; SP12) on a very windy day, 17.vi.2000. It has a south-eastern distribution in England, from Dorset to Northamptonshire, and is associated with mature oaks in open-structured woodland or wood-pasture trees, possibly specialising in high canopy (Kirby, 1992).

Another plant bug, *Mecomma dispar* (Boheman) is also a surprising addition to the list. Although a boreo-montane species, this bug has an odd distribution in Britain involving the north and west—as might be expected—but also Surrey, East Anglia and a few Midland counties, but is rare in the South West (Southwood & Leston, 1959). Its habitat associations are also diverse, including rank vegetation, on marshes, on sand dunes, and also in short turf on sea cliffs. One was swept along a wide grassy ride in Siccaridge Wood (VC33; SO90), 11.vi.2003.

ACKNOWLEDGEMENTS

I would like to record my thanks to Colin Twissell and other members of the Gloucestershire Invertebrate Group who have accompanied me on recording trips and often found the more interesting bugs for me. Access was usually arranged by Rosie Cliffe of the Gloucestershire Wildlife Trust, who also commissioned some reserve surveys during 2003, funded by the Heritage Lottery Fund. Thanks also to Bernard Nau and Pete Kirby for help with determinations; and to Andy Foster and John Widgery for passing on their records.

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SHORT COMMUNICATIONS

***Schreckensteinia festaliella* (Hübner) (Lepidoptera: Schreckensteiniidae) on an unusual food-plant in the Outer Hebrides.** – On 30.vii.2005 in the gorge-woodland near the mouth of Allt Volagir (O.S. Grid NF7929), on South Uist (VC110), many of the hazel trees (*Corylus avellana*) had marked “browning” of the leaves. Closer inspection revealed that this browning took the form of many small elongate areas of windowing, due to larval feeding removing portions of the upper epidermis parallel to the larger veins. Careful searching soon revealed the characteristic green larva of *Schreckensteinia festaliella* feeding exposed on the upper surface of the leaf. These larvae subsequently formed the typical spindle-shaped network cocoons of *S. festaliella*.

In my experience in Scotland, *S. festaliella* larvae normally feed on raspberry, *Rubus idaeus*, and less frequently on bramble, *R. fruticosus* agg. and stone bramble, *R. saxatilis*. On South Uist, the brambles under and near the infested hazel trees had signs of *S. festaliella* larval feeding, but to a far lesser extent than the hazel bushes. This report appears to be the first record of *S. festaliella* from the Outer Hebrides (VC110) and the first report of hazel as a food-plant for this species. – K. P. BLAND, National Museums of Scotland, The Granton Centre, 242 West Granton Road, Edinburgh, EH5 1JA.

Mortality of Orthoptera caused by mechanised mowing of grassland. – Orders such as Orthoptera are prey for bird and spider species (Joern, 1986; Belovsky & Slade, 1993; Oedekoven & Joern, 1998) and are known to be an important component of the diet of late season Cirl bunting *Emberiza cirius* chicks (Evans *et al.*, 1997). Therefore the decline of this species may be directly attributable to the loss of invertebrate diversity and abundance, particularly of Orthoptera, from farmland. Gardiner *et al.* (2002) and Gardiner & Hill (2003) found that Orthoptera were scarce in many agricultural grasslands that were heavily grazed or cut for silage, perhaps because of the short swards created by such management, which do not afford grasshoppers shelter from predation or inclement weather. However, the physical process of silage cutting is likely to have significant effects on grasshoppers that are in the sward when mowing occurs.

A study by Gardiner & Hill (2005) found that male and female Meadow Grasshopper *Chorthippus parallelus* Zetterstedt adults resided for the majority of time in the ground zone (sward height: <20 cm) and that this may lead to high mortality when grass cutting occurs. Grasshoppers are however very mobile and can jump large distances to escape from predators (Clarke, 1948; Richards & Waloff, 1954) and as a consequence may be able to escape damage or death during harvesting of silage.

Further to the study outlined in Gardiner & Hill (2005), laboratory examinations of cut hay (on 10 July 2004) and silage herbage (on 20 May and 10 July 2004; two-cut strategy determined by local climate and soil conditions) on the Writtle College Estate (site grid reference: TL664067) were undertaken to determine whether mechanised cutting caused mortality of Orthoptera. The hay and silage treatments were cut using a ride-on rotary mower (cutting height: 90 mm). Herbage from 80 randomly located 10 × 10 cm quadrats was collected from the hay and silage treatments (total area of herbage collected for each treatment: 0.8 m²) two hours after cutting. The cut herbage within the quadrat boundaries was collected and transported back to the laboratory in plastic bags. The contents of each sample were then emptied onto a white tray and searched for two minutes in an effort to locate dead and live Orthoptera.

Three dead adult *C. parallelus* individuals were found in the hay herbage collected on 10 July (Table 1). Mowing on 10 July also caused mortality of nymphs, two dead *C. parallelus* nymphs each were collected from the hay (both fourth instar) and silage (both second instar) treatments. A dead third instar nymph of the Lesser Marsh Grasshopper *C. albomarginatus* (De Geer) was found in the silage herbage on 10 July, but no dead or live individuals of any species were collected from the silage herbage after cutting on 20 May. In contrast to recording dead *C. parallelus* individuals, a total of five live adults (3 ♀, 2 ♂) of this species were collected from the

Table 1. Total number of dead and live grasshoppers in herbage of the hay and silage treatments mown on 10 July 2004

Species/life stage	Hay		Silage		Total	
	Dead	Live	Dead	Live	Dead	Live
<i>Chorthippus parallelus</i> adult	3	2	2	3	5	5
<i>C. parallelus</i> nymph	2	0	2	1	4	1
<i>C. albomarginatus</i> nymph	0	0	1	1	1	1

cut herbage, of which three were collected from the silage treatment. One live nymph of both *C. parallelus* (second instar) and *C. albomarginatus* (second instar) were also observed in the cut silage herbage.

Although only a small scale investigation of cut hay and silage herbage, the study does show that Orthoptera of all developmental stages were killed by rotary cutting blades or contact with machinery during the process of hay and silage mowing. Dead individuals of two species were identified from the cut herbage in this experiment: *C. albomarginatus* and *C. parallelus*, both common grasshopper species on farmland at Writtle College (Gardiner *et al.*, 2002). The latter species is known to inhabit the ground zone (<20 cm sward height) of hay meadows where it primarily exhibits resting and basking behaviour (Gardiner & Hill, 2005) making it vulnerable to disturbance and mortality from cutting blades which pass through the vegetation at approximately 10 cm height. The initial response to disturbance of species such as *C. parallelus* is to jump (Clarke, 1948); this means that individuals which become trapped under the mower are likely to jump into the rotary blades as an initial response to the disturbance caused by cutting. No assessment was made of the scale of mortality of grasshoppers on the swards, although it is likely that the mortality rate was fairly high as 10 dead individuals were identified from a relatively limited area of herbage (1.6 m²) with an average population density of 0.50 adult grasshopper (*Chorthippus* spp.) individuals per m² in the sward (Gardiner *et al.*, 2002).

Wagner (2004) concluded that mortality of *Metrioptera bicolor* Philippi due to cutting was high in German hay meadows (mortality rate: 42% of marked individuals). Other species such as Large Marsh Grasshopper *Stethophyma grossum* L. and Speckled Bush-cricket *Leptophyes punctatissima* Bosc are also susceptible to injury or death by cutting blades (Oppermann & Krismann, 2001). These authors showed that injury rates of adult Orthoptera from rotary mowers were dependent on body size; larger individuals being more prone to injury. Therefore, large mature nymphs (fourth instar) and adults that are frequent in early July (Marshall & Haes, 1988) may be particularly prone to death or injury from hay and silage cutting that is undertaken at this time of year.

Perhaps as interesting as the confirmation of dead individuals from both hay and silage herbage, was the presence of live individuals. Live individuals of *C. albomarginatus* and *C. parallelus* were present in the cut herbage (Table 1), indicating that transfer of cuttings from one site to another (hay strewing) may transport species between sites. Wagner (2004) suggests that sexually active females of *M. bicolor* that survive cutting of hay can be transported to donor sites in the cut herbage.—TIM GARDINER, Centre for Environment & Rural Affairs (CERA), Writtle College, Chelmsford, Essex, UK, CMI 3RR & JULIAN HILL, Faculty of Land and Food Resources, University of Melbourne, Parkville, Victoria 3010, Australia.

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Exochomus quadripustulatus (L.) (Coleoptera: Coccinellidae) as a host of *Dinocampus coccinellae* (Schrank) (Hymenoptera: Braconidae). – During an extended study of mortality of pine ladybirds *Exochomus quadripustulatus* (L.), mainly in Sheffield, the bulk of parasitoids that emerged from the ladybird pupae, were identified as the chalcid *Aprostocetus neglectus* (Domenichini) (Hymenoptera: Eulophidae). In early May, 2004 a pine ladybird imago was observed in a crack of bark on a sycamore tree in Millhouses Park (VC 63, SK3383) which was immobile for at least a week. It was removed on 18th May and seen to be attached to the tree by a cocoon. Kept in a fairly warm place, a wasp emerged on 24th May which appeared to be a small *Dinocampus coccinellae* (Schrank). This was confirmed by Dr Mark Shaw.

Majerus (1997, *Br. J. Ent. Nat. Hist.* **10**: 15–24) detailed his observations of the parasitoid *Dinocampus coccinellae* predating various British coccinellid species. This parasitoid, which develops within the ladybird imago and pupates below it, was not observed on c. 3000 specimens of *E. quadripustulatus* nor any other members of the sub-family Chillocorinae. Majerus quotes the non-inclusion of any of the British chillocorines as hosts of the braconid in the list of Hodek (1973, *Biology of Coccinellidae*, Junk/Academic Press). Neither do Klausnitzer & Klausnitzer (1977, *Marienkafer*, Westarp Wissenschaften, Magdeburg) include chillocorines as hosts. However, Hodek does include a record of *D. coccinellae* parasitizing *Exochomus concavus* Fursch in Transvaal, South Africa. This therefore appears to be the first record of *E. quadripustulatus* as prey and possibly the first palaeartic record from any chillocorine.

I thank Dr Shaw for his advice. The organisms and cocoon are deposited in the Royal Museum of Scotland. – PAUL R. MABBOTT, 49 Endowood Road, Millhouses, Sheffield, S7 2LY. mabbott@blueyonder.co.uk

ON THE IDENTITY OF *PSEUDEXECHIA PARALLELA* (EDWARDS, 1925) (DIPTERA: MYCETOPHILIDAE) AND DESCRIPTION OF A NEW RELATED SPECIES FROM GREAT BRITAIN

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ABSTRACT

Pseudexechia parallela (Edwards, 1925) is redescribed and illustrated. Based on study of types and new material *Pseudexechia parallela* (Edwards, 1925) is considered to be a senior synonym of *P. hamulata* (Lackschewitz, 1937) **syn. n.** *Pseudexechia parallela* is reported from Sweden, Kamtschatka, Russia and Minnesota, U.S.A. for the first time, thus expanding its known range from Europe to a wide Holarctic distribution. A new allied species, *Pseudexechia monica* **sp. n.**, is described and illustrated based on males from Wales in Great Britain.

INTRODUCTION

The genus *Pseudexechia* Tuomikoski was established by Tuomikoski (1966) for a small group of closely related species segregated from *Exechia* Winnertz, characterised by the absence of discal bristles on the mesoscutum, ovate clypeus and distinctive features of the male terminalia such as the bud-like hypandrial lobe (Chandler, 1978). At present there are 22 known species associated in this genus from the Holarctic, the Oriental and the Afrotropical regions. However, several species await description and some that were described in other genera are yet to be formally transferred to *Pseudexechia*.

Pseudexechia parallela (Edwards, 1925) was described based on a single British female with a two-segmented cercus. Edwards (1925) considered it to be an easy task to associate it to the male based on key characters such as parallel branches of the cubital fork and a straight Rs vein. However, the association proved to be problematic as the wing venation of the holotype is apparently rather aberrant with respect to the narrow cubital fork. Consequently, Lackschewitz (1937) described a second very close species, *P. hamulata* (Lackschewitz, 1937), from Latvia without any notes on its relationship to *P. parallela*. Stackelberg (1948) subsequently associated and figured the male of *P. parallela* based on material from the Leningrad district of Russia. Burghel-Balacesco (1972) reported *P. parallela* from Romanian caves and was the first to notice that the narrow cubital fork was not a constant character. Chandler (1978) reviewed the known Holarctic species of *Pseudexechia* without adding any material or further description of *P. parallela*. *Pseudexechia parallela* was later incorrectly associated and figured by Krivosheina *et al.* (1986), whose figure represents another species of which the identity is yet to be confirmed. Zaitzev (2003) questioned the validity of *P. hamulata* as separate from *P. parallela*, referring to Chandler (1978). At present *P. parallela* is reported to be widespread in most of Europe while *P. hamulata* is known only to have a disjunct distribution in Estonia, Latvia and Denmark (Chandler, 2004).

No clear difference is apparent between the two species based on previously published illustrations. At most it seems that *P. hamulata* as figured by Lackschewitz (1937) has a sharper apicodorsal corner of the ventral branch of the gonostylus than

has *P. parallela* as figured by Stackelberg (1948). This character, however, is liable to great variation in dorsoventral view depending on the exposed angle of the ventral branch, and only the internal face of the gonostylus will reveal the true shape of this thin plate (not figured by Stackelberg 1948).

New material of *Pseudexechia* from Great Britain has revealed two closely related species of which one is more widespread and represented by both sexes. We consider this to be the true *P. parallela*, thus confirming the identity of its male. When compared with the holotype of *P. hamulata* we find the two to be identical. Hence, we consider *P. parallela* to be a senior synonym of *P. hamulata*. Unfortunately we have not been able to re-examine the material that was studied by Stackelberg (1948), but based on his figures we find it very likely that this material was correctly assigned to *P. parallela*. Other British specimens represent a new species, so far known only from Wales. A review of all Nordic species of *Pseudexechia* will be presented elsewhere (Kjærandsen in prep.).

MATERIAL AND METHODS

The following abbreviations are used for institutions in which specimens are deposited. Other specimens are in the private collection of P. J. Chandler.

BMNH – Natural History Museum, London, England.

FMNH – Finnish Museum of Natural History, Helsinki, Finland.

MZLU – Museum of Zoology, Lund, Sweden.

ZMHB – Museum für Naturkunde der Humboldt-Universität, Berlin, Germany.

The general terminology follows Söli (1997), the measurements and ratios follow Kjærandsen & Kurina (2004), and the terminology of the male gonostylus follows Kjærandsen (in press). In cases where a range of measurement is given, the figure following the range is the mean.

THE SPECIES

***Pseudexechia parallela* (Edwards, 1925)**

(Fig. 1)

Exechia parallela Edwards, 1925: 596.

Pseudexechia hamulata (Lackschewitz, 1937), syn. n.

– Type material examined: Holotype (female) of *P. parallela*: **ENGLAND (U.K.)**: Newmarket, Cambs, 23 Sep 1888 (coll. G. H. Verrall) – SPM-005283 (BMNH, pinned with terminalia in balsam preparation mounted on pin); holotype (male) of *P. hamulata*: **LATVIA**: Paplacken, Kurl, 7 Oct 1934 (coll. P. Lackschewitz) – SPM-011949 (ZMHB, pinned with terminalia in balsam preparation mounted on pin).

– Other material examined: **ENGLAND (U.K.)**: (all NCC Wetland Survey, coll. A. Foster and D. Procter): Cambridgeshire, Chippenham Fen, 10–24 Aug 1988 – 2 males; Norfolk, 13 Jun–11 Jul 1988 – 5 males, 2 females (MZLU, 1 male, 1 female on slide); Reedham, 27 Jun–11 Jul 1988 – 1 male, 11 Jul–12 Aug 1988 – 1 male, 12 Aug–20 Sep 1988 – 2 males (MZLU, 1 male on slide), 26 Aug 1988 – 3 males; Brancaster, 1–15 Jul 1988 – 9 males (MZLU, 1 male pinned); Stallode Wash, 29 Jun–8 Jul 1988 – 1 male; Catfield, 29 Sep–12 Oct 1988 – 1 male, 12 Oct 1988 – 1 male; Middle Harling, 26 Jun–17 Jul 1988 – 1 male; Wendling, 14–24 Sep 1988 – 1 male; Old Buckenham Fen, 28 Jun–12 Jul 1988 – 1 male; Thompson Common, 1988 – 1 male; Suffolk, Walberswick, 14–29 Aug 1988 – 4 males; **WALES** (all NCC Peatland Survey, coll.

Holmes, Boyce & Reed): Anglesey, Cors Erddreiniog, 27 Jul 1988 – 2 males; Cors Bodeilio, *Molinia* / *Myrica* bog and *Phragmites* bed, 28 Jun 1988 – 1 female, 26 Jul 1988 – 1 female, 5 Oct 1988 – 1 male; Rhos-y-Gad, calcareous flush fen, 27 Jul 1988 – 1 male, 1 female; West Glamorgan, Fairwood Common, *Juncus* flush, 4 Oct 1989 – 1 female; Pant-y-Sais, among *Carex acutiformis* and in *Molinia* bog, 5 Oct 1989 – 2 males, 1 female; **SWEDEN**: SK, Håckeberga Nature Reserve, 29 Sep 1988 (coll. L. Huggert) – 3 males (MZLU, two on slide); **ESTONIA**: Tõrva, Helme Cave [old refuge cave in sandstone, about 50 m deep], 5801'00"N, 02553'00"E, 19 Jan 1996 (coll. O. Kurina) – 2 males (MZLU, on slides); **RUSSIA**: Kamtschatka, Bolscherjetsk, 1 Jul 1917 (coll. Y. Wuorentaus) – 1 male (FMNH, pinned with cleared terminalia in glycerine); **USA**: Minnesota, Cook co., Hovland N. J., Min. F. S., 14 Jul 1968 (coll. E. F. Cook) – 1 male (MZLU, on slide).

Diagnostic characters: *P. parallela* forms together with *P. monica* sp. n. a group (also including an undescribed Oriental species) of small *Pseudexechia* species with dark brown mesoscutum bearing fused thoracic stripes, and with reduced size of the gonostylus relative to the gonocoxite (normally protruding less than a fifth gonocoxal length beyond its apex depending on orientation of gonostylus). The latter character also applies to *P. aurivernica* Chandler 1978 but that has distinct thoracic stripes. It can be separated from *P. monica* by unique characters in the male terminalia, including the ventral branch of gonostylus that is apicodorsally pointed, the hypandrial lobe being concave with a small, slightly diverging split apically, and the hypoproct forming a long, only slightly down-curved cylindrical process. *Pseudexechia parallela* is so far the only known species of *Pseudexechia* where the female has a two-segmented cercus (females of a second species not yet associated with males is known from Sweden, but this has distinct thoracic stripes so is not considered to be *P. monica*).

Description

Male ($n=6$, except where otherwise stated). Total length 3.7–4.8, 4.3 mm. Wing length 2.56–3.2, 2.82 mm, or 2.98–3.38, $3.21 \times$ as long as profemur. Mesoscutum length 0.66–0.82, 0.75 mm, or 0.25–0.28, $0.26 \times$ as long as wing.

Coloration (dry, pinned specimens, $n=42$). Head brown, grey dusted. Antenna with scape, pedicel and first flagellomere yellowish brown, otherwise darker brown. Palpus brownish yellow. Thorax with mesoscutum mostly dark brown and grey dusted on disc without separate stripes, leaving only the side margins and humeral areas yellowish. Dark coloration continued onto disc of scutellum. Pleura yellowish brown. Legs yellow, including tibial spurs. Wing yellowish, with costa and radial veins slightly darker. Abdomen with tergites mostly dark brown dorsally, but tergites 1–5 with yellow lateral markings, more or less triangular on 2–5 and broadest on hind margins. Tergite 6 all brown. Sternites and genitalia brownish yellow.

Head. Round, width / length to frontal tubercle 1.4–1.48, 1.44. Antenna 1.34–1.66, 1.51 mm long. First flagellomere 1.67–2.04, 1.85 times as long as second flagellomere. Second flagellomere 1.29–1.94, 1.66 times as long as wide. Two ocelli present, touching compound eyes. Clypeus ovate, length/width 1.1–1.28, 1.18. Antepenultimate segment of maxillary palp 0.10–0.11, 0.10 mm long, palpomere ratios 1: 1.11–1.44, 1.3: 1.83–2.62, 2.42.

Thorax. Proepisternum with one strong and one smaller bristle. Mesoscutum with some strong front-marginal, prealar and postalar bristles, otherwise covered with small dark, decumbent setae. Scutellum with one pair of strong bristles.

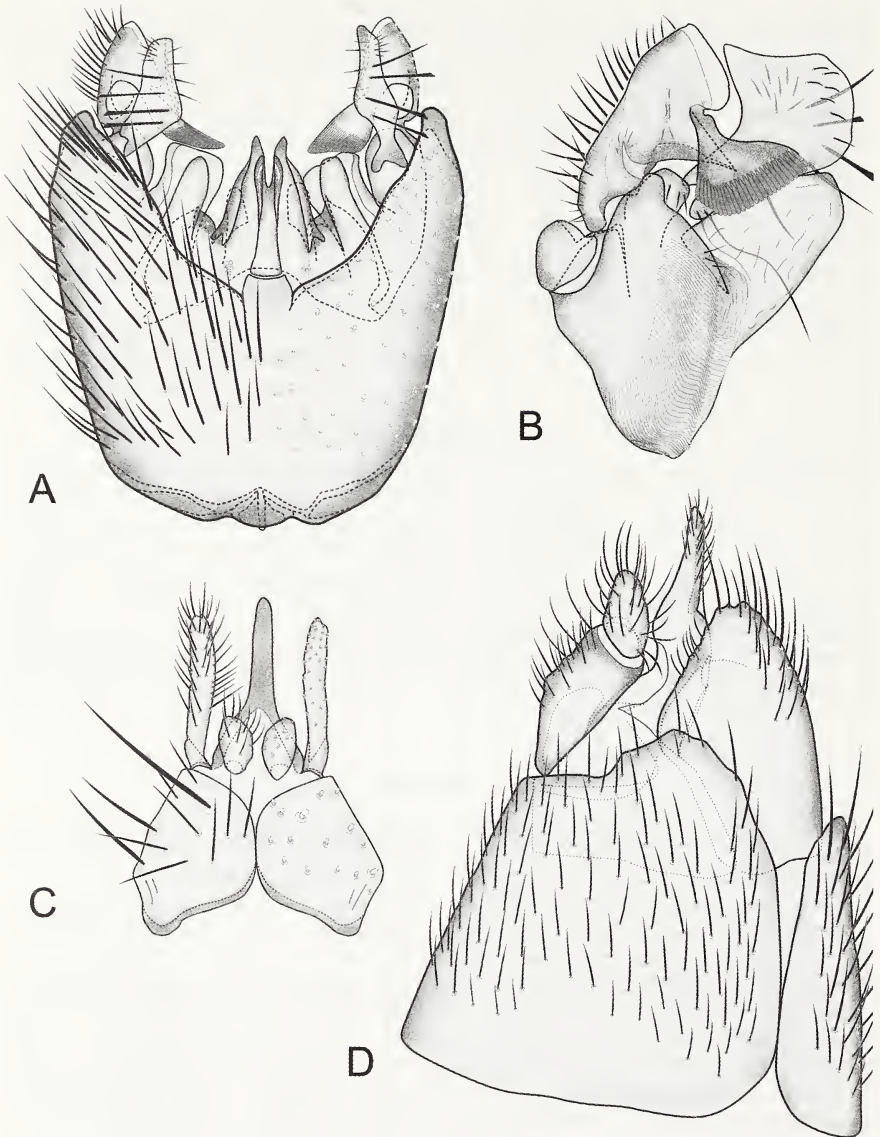


Fig. 1. Terminalia of *Pseudexechia parallela* (Edwards, 1925). **A.** Male terminalia, ventral view; **B.** Internal face of gonostylus, enlarged; **C.** Male tergite 9, cerci and hypoproct, dorsal view; **D.** Female terminalia, lateral view.

Wings. Costa and R_5 with setae both dorsally and ventrally, stem of R and R_1 with dorsal setae only, except a few (0–15, 7) ventral setae apically on R_1 . Rs, ta, tb, M and Cu without setae. Wing length to length of R_1 2.2–2.4, 2.32. R_5 nearly straight, wing length to length of R_5 1.73–1.77, 1.75. Length of ta to length of M-petiole 0.89–

1.11, 1. Cu-fork short, fork length ratio (A/B) 0.76–0.8, 0.78. Fork width ratios (C/D and E/F) 1.14–1.28, 1.21 and 0.8–1.2, 0.98. M-ratios 0.58–0.63, 0.6 and 0.64–0.7, 0.66. CuA-ratios 1.35–1.53, 1.45 and 1.81–2.11, 1.99. Cubital fork width (F) to length of CuA₁ 0.33–0.41, 0.36. CuP vague, ratio of length to length of wing 0.41–0.49, 0.45. A₁ distinct, ratio of length to length of wing 0.34–0.38, 0.36.

Legs. Leg ratios given for fore, mid and hind leg: LR 1.11–1.17, 1.14: 0.81–0.86, 0.84: 0.63–0.68, 0.65; SV 1.61–1.69, 1.65: 2.04–2.15, 2.08: 2.52–2.68, 2.61; BV 1.51–1.65, 1.57: 1.87–2.05, 1.94 (*n* = 5): 2.76–3.1, 2.98; TR 1.53–1.67, 1.58: 1.58–1.74, 1.67: 1.85–2.07, 1.96.

Terminalia. Tergite 9 (Fig. 1C) medially divided into semicircular plates, with setae of variable size. Cercus long, slender, 6–7, 6.4 as long as wide in dorsal view. A second small ovate, setose lobe present medial to cercus (this lobe of questionable origin but possibly resulting by separation from a bilobed cercus as found in other related genera). Gonocoxite (Fig. 1A) open dorsally and moderately incised ventrally, without medial suture. Hypandrial lobe concave, apically with a small, slightly diverging split. Hypoproct well developed, apically prominent, forming a long, only slightly down-curved cylindrical process, reaching beyond apex of cercus, ventrally forming rectangular recess, apparently fused with small conical aedeagal apparatus. Gonocoxal apodeme long, moderately sclerotised, apically broadened with two condyles. Accessory copulatory appendages hyaline and difficult to interpret. Gonostylus (Fig. 1B) with five branches. Dorsal branch with strong setae on lateral face, apically truncated to whitish, smooth cushion, devoid of setae. Dorsointernal branch wide, nearly symmetrically fan shaped, with 23–24 lamellae. Medial branch reduced or absent. Ventral branch forming thin plate, apically widened, subcircular, apicodorsally prolonged into acute angled pointed corner; basally with one very long and one shorter seta, apicolateral face with 2–4 strong, fan-tipped setae and group of small regular setae; apicointernal face with some small setae. Internal branch forms a large, subrectangular pouch, partly striated, ventroapically with a few strong setae. Anterior branch present as large hyaline cushion, devoid of setae.

Female (*n* = 1). Total length 4.4 mm. Wing length 2.84 mm, or 3.23 × as long as profemur. Mesoscutum length 0.8 mm, or 0.28 × as long as wing.

Coloration (*n* = 5). As for male except more extensive yellow markings on abdomen, yellow lateral triangles also on tergite 6, tergite 7 and ovipositor entirely yellow.

Head. Round, width / length to frontal tubercle 1.45. Antenna 1.4 mm long. First flagellomere 1.67 times as long as second flagellomere. Second flagellomere 1.67 times as long as wide. Two ocelli present, touching compound eyes. Clypeus ovate, length/width 1.14. Antepenultimate segment of maxillary palp 0.12 mm long, palpomere ratios 1: 1.18: 2.1.

Thorax. As for male.

Wings. Setation as for male, R₁ with 8 setae apically. Wing length to length of R₁ 2.29. R₅ nearly straight, wing length to length of R₅ 1.67. Length of ta to length of M-petiole 1.11. Fork length ratio (A/B) 0.74. Fork width ratios (C/D and E/F) 1.28 and 1. M-ratios 0.58 and 0.63. CuA-ratios 1.56 and 2.19. Cubital fork width (F) to length of CuA₁ 0.38. CuP vague, length to length of wing 0.48. A₁ length to length of wing 0.35.

Legs. Leg ratios given for fore, mid and hind leg: LR 1.14: 0.87: 0.67; SV 1.64: 2.03: 2.56; BV 1.56: 1.99: 2.96; TR 1.61: 1.79: 2.03.

Terminalia (Fig. 1D). Tergite 7 with straight margin apicodorsally, apicolateral margin slightly produced, evenly convex. Cercus two-segmented, scattered with small setae; apical segment ovate, twice as long as wide in lateral view. Gonapophysis 8

broad, with slightly truncated apex, with gradually stronger setae towards apex. Postgenital plate stout, bluntly tapered, apically sclerotized and with numerous small setae.

Variation. The narrow cubital fork in the holotype, described as having parallel branches, is considered to be aberrant. The measured specimens all have distinctly divergent branches, but the cubital fork width (F) to length of CuA_1 ratio is rather variable [0.33–0.41, 0.36 ($n=7$)], i.e. up to 24% wider in the specimen with the widest cubital fork compared to the specimen with the narrowest cubital fork. Some variation in the apicodorsal prolongation of the ventral branch of the male gonostylus is also notable, but considered to be within the species limits.

Distribution. Recorded from Sweden, Kamtschatka, Russia and Minnesota, U.S.A. for the first time, thus expanding its known range from most of Europe (see Chandler, 2004) to a wide Holarctic distribution. The British sites are a wide range of wetland habitats and the new material was obtained by water trapping in two major wetland surveys carried out by the former Nature Conservancy Council. It has not been found during other extensive collecting of Mycetophilidae in the British Isles in recent years but a single male was recorded from County Kerry in Ireland (Chandler *et al.*, 2000; Falk & Chandler, 2005).

Pseudexechia monica sp. n.

(Fig. 2)

– Type material: Holotype male: **GREAT BRITAIN (U.K.):** WALES, Anglesey, Cors Erddreiniog, 27 July 1988, NCC Peatland Survey, water trap 9, rank *Schoenus* flushes, coll. Holmes, Boyce & Reed (deposited in National Museums of Scotland, Edinburgh).

Paratypes: **GREAT BRITAIN (U.K.):** WALES, same data as holotype – 1 male; Anglesey, Cors Erddreiniog, NCC Peatland Survey (water trap 11), 27 July 1988 (coll. Holmes, Boyce & Reed) – 1 male (MZLU, on slide); Anglesey, Cors Bodeilio, NCC Peatland Survey (water trap 1 – *Phragmites* bed), 26 July 1988 (coll. Holmes, Boyce & Reed) – 3 males (MZLU, 1 male on slide); Anglesey, Cors Bodeilio, Mar 1990 (coll. A, Godfrey) – 1 male.

Etymology: The name is an adjective referring to the origin of the type material from the Isle of Anglesey, known in Latin as Mona.

Diagnostic characters: *P. monica* forms together with *P. parallela* a group of small *Pseudexechia* species with dark brown mesoscutum bearing fused thoracic stripes and with reduced size of the gonostylus relative to the gonocoxite. It can be separated from *P. parallela* by unique characters in the male terminalia, including the ventral branch of the gonostylus being angled and club shaped, the hypandrial lobe being large subrectangular, elaborate and with a large diverging split apically, and the hypoproct forming a shorter, strongly downcurved cylindrical process. It shares the shape of the ventral branch of the gonostylus with *P. aurivernica* but can easily be separated from this larger species by fused thoracic stripes and other details of the male terminalia such as shape of the hypandrial lobe and the widened apex of the dorsal branch of the gonostylus.

Description

Male ($n=2$, except where otherwise stated). Total length 3.9–3.9 mm. Wing length 2.58–2.6 mm, or 2.89–3 × as long as profemur. Mesoscutum length 0.7–0.74 mm, or 0.27–0.28 × as long as wing.

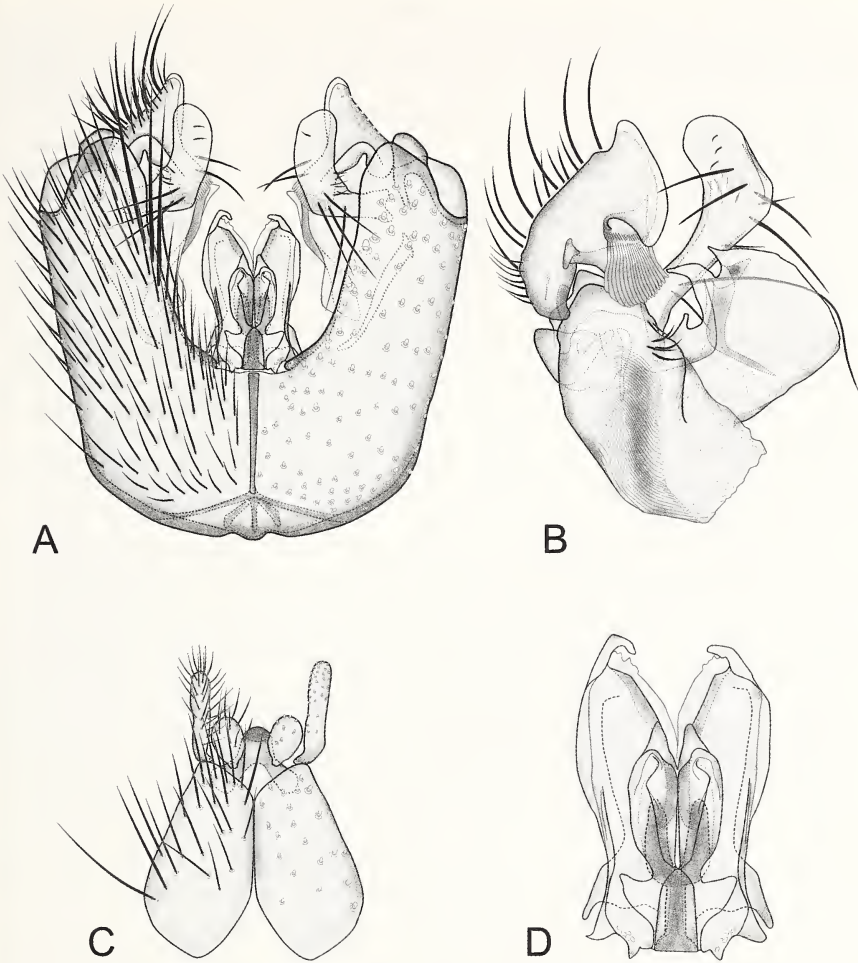


Fig. 2. Male terminalia of *Pseudexechia monica* sp. n. **A**. Terminalia, ventral view; **B**. Internal face of gonostylus, enlarged; **C**. Tergite 9, cerci and hypoproct, dorsal view; **D**. Hypandrial lobe, ventral view, enlarged.

Coloration ($n = 7$). Head brown. Antenna with scape, pedicel and first flagellomere yellowish brown, otherwise darker brown. Palpus brownish yellow. Thorax with mesoscutum mostly dark brown with grey dusting, with only the side margins and humeral areas yellowish. Dark coloration continued onto disc of scutellum. Pleura yellowish brown. Legs yellow, including tibial spurs. Wing yellowish, with costa and radial veins slightly darker. Abdomen with tergites mostly brown, but tergites 1–5 usually with yellow lateral markings, more or less triangular on 2–5 and broadest on hind margins but usually more restricted in extent than in *P. parallela*. Tergite 6 all brown. Sternites and genitalia brownish yellow.

– Head. Round, width/length to frontal tubercle 1.31–1.36. Antenna 1.44–1.62 mm long. First flagellomere 1.87–2.03 times as long as second flagellomere. Second flagellomere 1.72–1.88 times as long as wide. Two ocelli present, touching compound eyes. Clypeus ovate, length/width 1.25–1.28. Antepenultimate segment 0.1–0.11 mm long, palpomere ratios 1: 1.32–1.44: 2.16–2.34.

– Thorax. Proepisternum with one strong and one smaller bristle. Mesoscutum with some strong front-marginal, prealar and postalar bristles, otherwise covered with small dark, decumbent setae. Scutellum with one pair of strong bristles.

– Wings. Costa and R_5 with setae both dorsally and ventrally, stem of R and R_1 with dorsal seta only, except a few (2–10) ventral setae apically on R_1 . Crossvein ta with one seta ventrally. Rs, tb, M and Cu without setae. Wing length to length of R_1 2.26–2.32. R_5 nearly straight, wing length to length of R_5 1.7–1.71. Length of ta to length of M-petiole 1.29–1.36. Cu-fork short, fork length ratio (A/B) 0.69–0.72. Fork width ratios (C/D and E/F) 1.15–1.22 and 1.08–1.19. M-ratios 0.54–0.56 and 0.59–0.61. CuA-ratios 1.63–1.69 and 2.2–2.36. Cubital fork width (F) to length of CuA_1 0.33–0.35. CuP vague, ratio of length to length of wing 0.48–0.5. A_1 distinct, ratio of length to length of wing 0.33.

– Legs. Leg ratios given for fore, mid and hind leg: LR 1.15–1.16: 0.87–0.91: 0.65–0.66; SV 1.6–1.65: 1.97–2.02: 2.58–2.63; BV 1.53: 1.87–1.88: 2.67–2.76; TR 1.54–1.61: 1.66–1.68: 1.78–1.84.

– Terminalia. Tergite 9 (Fig. 2C) medially divided into semicircular plates, with setae of variable size. Cercus long, slender, 4.67–6.18 as long as wide in dorsal view. A second small ovate, setose lobe present medial to cercus (of uncertain origin as indicated under *P. parallela*). Gonocoxite (Fig. 2A) open dorsally and deeply incised ventrally, with medial suture. Hypandrial lobe (Fig. 2D) large, subrectangular, elaborately folded, apically with a large diverging split. Hypoproct well developed, apically less prominent forming distinctly down-curved cylindrical process, not reaching beyond apex of cercus, ventrally forming rectangular recess, apparently fused with small conical aedeagal apparatus. Gonocoxal apodeme long, moderately sclerotized, apically broadened with two condyles. Accessory copulatory appendages hyaline and difficult to interpret. Gonostylus (Fig. 2B) with five branches. Dorsal branch with strong setae on lateral face, apically truncated and strongly widened to whitish, smooth cushion, devoid of setae. Dorsointernal branch narrowly fan shaped, with 17 large lamellae. Medial branch reduced or absent. Ventral branch forming thin plate, apically angled club shaped; basally with one very long and one shorter seta, apicolateral face with 3 regular, strong setae and group of small setae; apicointernal face with two strong and a few small setae. Internal branch forms a large, subrectangular pouch, partly striated, ventroapically with a few strong setae. Anterior branch present as large hyaline cushion, devoid of setae, apical rim sclerotized, with three tapered projections.

Female unknown.

– Distribution. Known only from Wales in Great Britain.

ACKNOWLEDGEMENTS

The study was financially supported by the Swedish Taxonomy Initiative (J. Kjerandsen, see Miller, 2005). We are indebted to D. Notton (BMNH), P. Sihvonen (FMNH), R. Danielsson (MZLU), and W. Schacht (ZMHB) for the opportunity to work with the collections and for the loan of material.

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ANNOUNCEMENT

Harley Books are delighted to announce the sale of their series, *The Moths and Butterflies of Great Britain and Ireland*, to Apollo Books Aps, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark; email: apollobooks@vip.cybercity.dk; website: www.apollobooks.com.

With three of the ten volumes yet to be published – Vols 5, 6 and 8 – Apollo Books, who are leading publishers of multi-volume works on European and world entomology, plan to complete the series. Dr K.P. Bland, Pelham-Clinton Curatorial Fellow at the National Museums of Scotland, Edinburgh, an associate editor and a contributing author to two volumes in the series, has been appointed editor.

All standing orders are being passed to Apollo Books and henceforward all matters relating to sales of this work, including orders for published volumes, should be referred to them. Apollo Books will continue to use Harley Books' distributors and therefore British orders will be despatched from the UK.

RESULTS OF THE 2005 BENHS MEMBERS' QUESTIONNAIRE

MARK G. TELFER

10, Northall Road, Eaton Bray, Dunstable, Bedfordshire, LU6 2DQ

In order to plan the development of the Society, the Council and Officers of the British Entomological & Natural History Society wanted to gain a clearer understanding of Members' views about various aspects of the Society's current activities. A questionnaire was initiated by Mike Wilson. The questionnaire was developed through several further drafts during 2005 by Mark Telfer in consultation with Council members and Officers. The final version of the questionnaire was posted to all individual members in September, including members living outside Britain. Members attending the Annual Exhibition and Dinner on 12 November were given another opportunity to fill out a questionnaire if they had not already done so.

A deadline of 30 November was set for return of questionnaires. In practice, all questionnaires received before Christmas were included in the analysis, and only a few were returned later than that.

The questionnaire responses were numerically coded where necessary and entered into a custom-built relational database.

Most of the 24 questions about the Society were of the multiple-choice type. Five questions (questions 3, 7, 13, 18 and 23) asked respondents to order items by interest, preference or importance (the most interesting/preferred/important item getting 1, the next getting 2, and so on until indifferent about the remaining options). Many respondents used ties in their responses. If more than one option was allocated the same level of preference, they were all scored the same, e.g. all '1st equal' were scored as '1'. If preferences were scored for example as follows: 1 =, 1 =, 1 =, 2, 3 =, 3 =, 4, 5, they were recoded on data entry as follows: 1, 1, 1, 4, 5, 5, 7, 8.

The questionnaire also asked respondents to write down the county in which they live, and concluded with a blank space in which respondents were invited to add any further comments they wished to make about the Society. Finally, respondents were given the option of putting their name on the questionnaire.

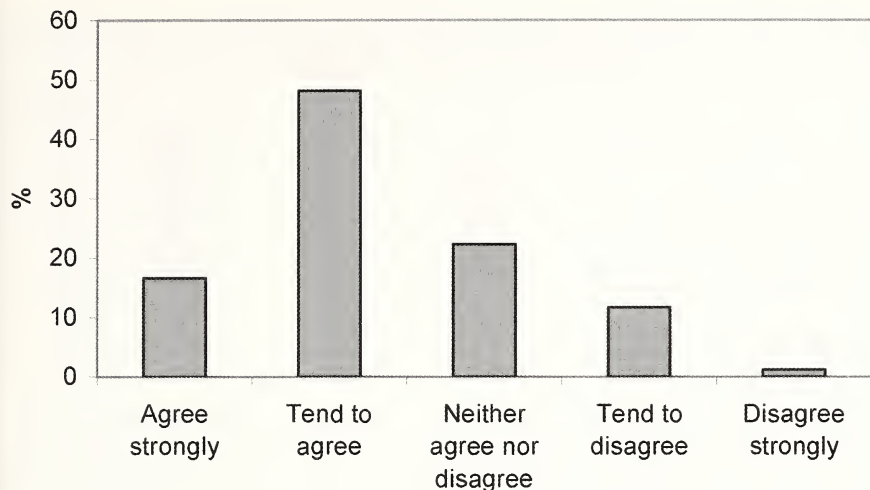
RESULTS

334 completed questionnaires were returned in time to be included in this analysis. This is a return rate of 39% of the 857 questionnaires that were mailed out. This is felt to be an excellent rate of return.

The remainder of this Results section incorporates the subheadings and questions of the original questionnaire, followed by summaries of the responses.

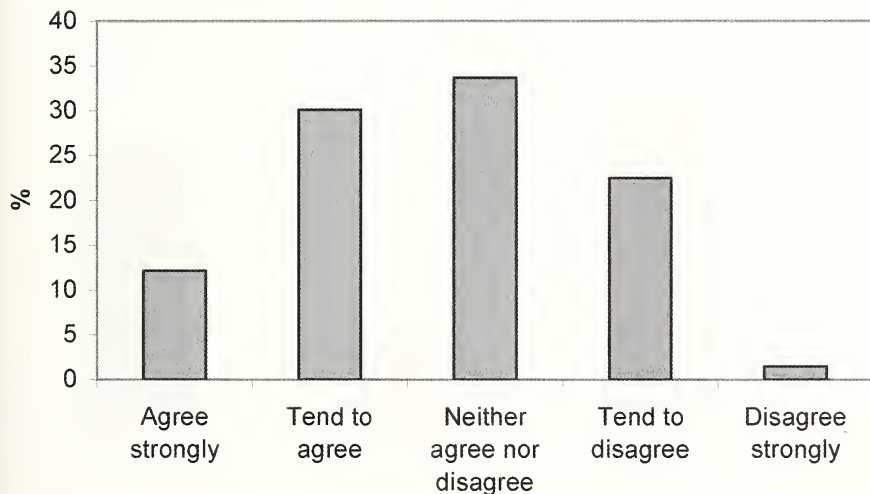
The British Journal of Entomology and Natural History.

1. "Most of the contents of the Journal interest me".



Most members tended to agree that the contents of the Journal are interesting, though this still leaves some room for improvement.

2. "The Society should spend more on colour plates in the Journal".



Opinions on this issue were quite varied with most respondents plumping for the middle option, neither agreeing nor disagreeing. There was a slightly greater tendency to agree with the proposal than to disagree but on balance there seems to be no strong mandate for the Society to spend more on colour plates in the Journal.

3. Please number the following Journal sections in order of interest to you (the most interesting item scores 1, the next most interesting scores 2, and so on until you are indifferent about the remaining options):

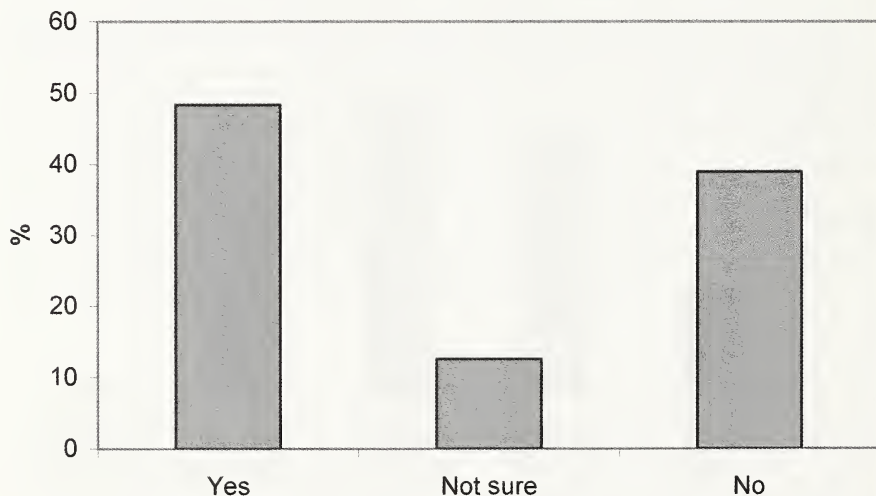
Table 1. Summary of responses to question 3, listed in decreasing order of interest. For each of the eight options, the average (mean) score is given, along with a measure of the amount of variation amongst the scores (standard deviation), and the number of scores (N).

	Average	Amount of variation	Number of scores
Articles	1.6	1.2	320
Short communications	2.5	1.2	312
Field Meeting reports	3.5	1.6	288
Exhibition reports	4.1	2.1	259
Book reviews	4.3	1.7	285
Indoor Meeting reports	5.1	1.6	229
Announcements	6.0	1.7	223
Officers' reports	6.5	1.6	202

On average, Articles were judged the most interesting, and Officers' reports the least interesting. Opinions on the Exhibition reports were more varied than on any other Journal section (note that the standard deviation of 2.1 is higher than for all other options), with some readers rating this very high and others very low.

Book publishing

4. Did you know that members are entitled to a third off Society publications?

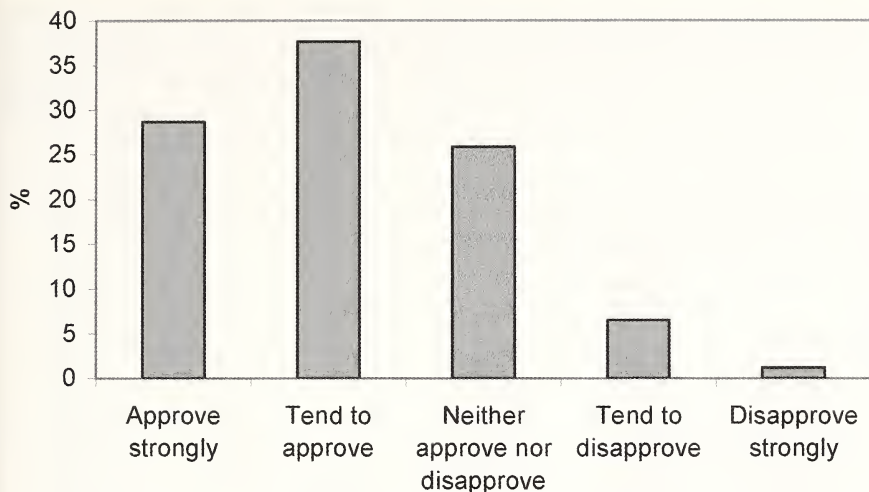


There was poor awareness of the discount available to members purchasing the Society's books.

Indoor Meetings in London

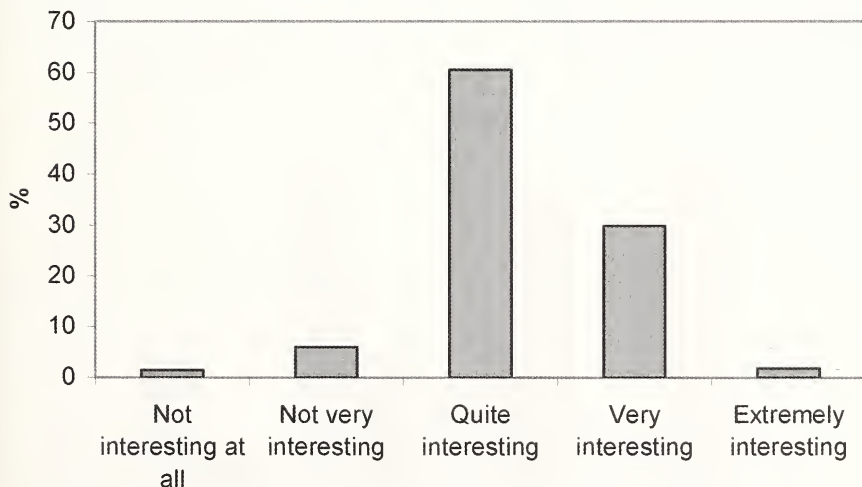
The Society holds Indoor Meetings in London six times a year on Tuesday evenings at 18.00 h.

5. How would you feel about a proposal to hold Indoor Meetings elsewhere in Britain?



There was quite a spread of opinion on this question. Attendances at the Indoor Meetings in South Kensington in recent years have been consistently disappointing. The bulk of the membership support the proposal to hold meetings elsewhere in Britain and Council should give this further consideration.

6. How would you rate the Indoor Meetings programmes?



This question was intended to gauge whether the poor attendance at Indoor Meetings was caused by a lack of interest in the talks on offer, as opposed to the time, expense and inconvenience of attending on a Tuesday evening in London. It may not have done this very successfully and might have been better worded as: "How would you rate the talks on the Indoor Meetings programme (irrespective of whether or not you can attend)?". Taken at face value, the responses appear to

indicate that the talks on the programme are only 'quite interesting' to most members, leaving substantial room for improvement.

7. Please number the following types of talk in order of interest to you (the most interesting item scores 1, the next most interesting item scores 2, and so on until you are indifferent about the remaining options):

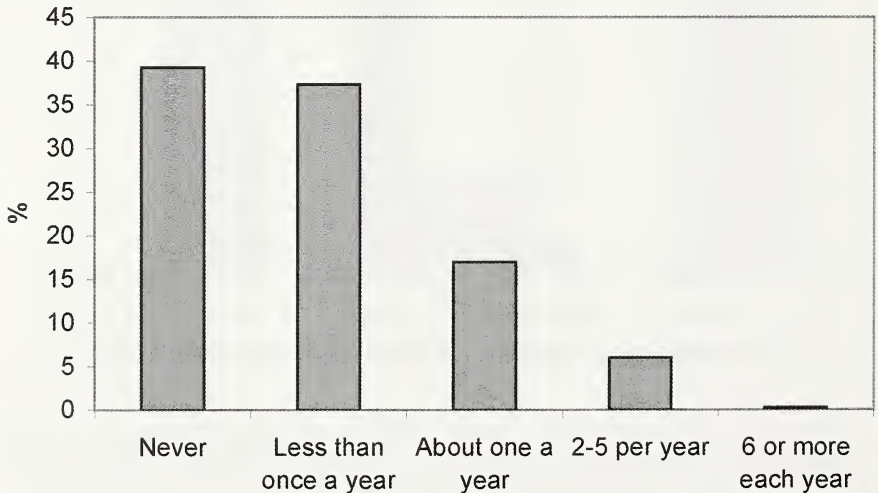
Table 2. Summary of responses to question 7, listed in decreasing order of interest. For each of the nine options, the average (mean) score is given, along with a measure of the amount of variation amongst the scores (standard deviation), and the number of scores (N).

	Average	Amount of variation	Number of scores
British insects	2.1	1.5	278
Ecological studies	3.1	1.9	260
Conservation	3.3	1.9	271
Recording scheme activities	3.9	1.9	247
Taxonomic studies	4.3	2.4	211
History of natural history	5.2	2.2	211
Foreign insects	5.3	2.2	188
Natural history other than insects	5.7	2.4	190
Foreign travel	6.6	2.2	157

British insects, Ecological studies and Conservation were the most interesting subject areas on average. The least interesting subjects on average were Foreign travel, Natural history other than insects and Foreign insects.

Field Meetings across the UK

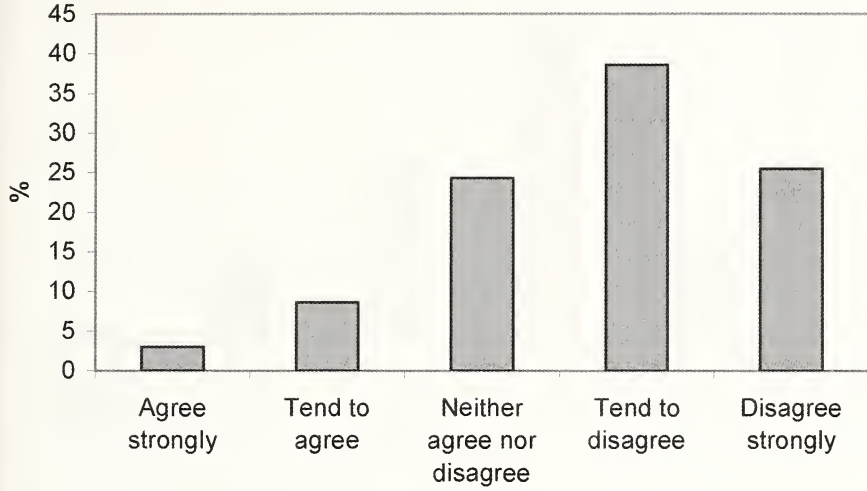
8. On average, how often do you attend the Society's Field Meetings?



Most respondents had attended at least one of the Society's Field Meetings but were typically attending less than one a year. The Council should consider how to

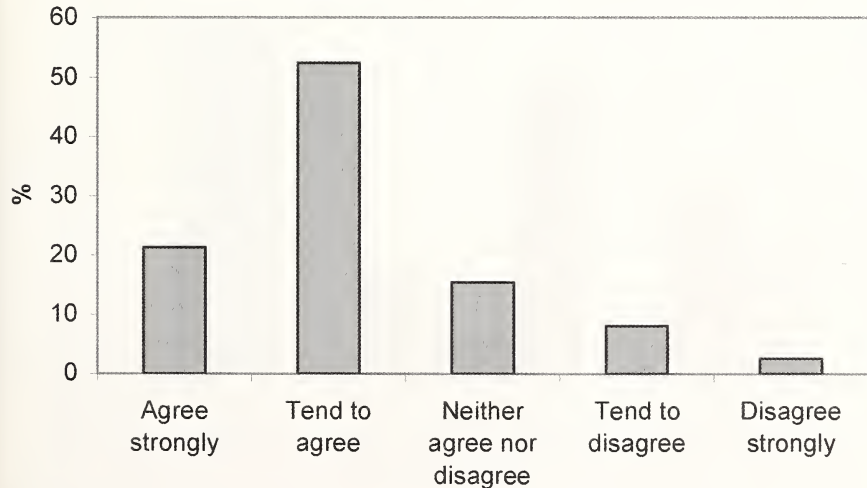
improve the levels of participation in Field Meetings, including by expanding the number of Field Meetings still further, by inviting new field meeting leaders to come forward, and by making the process of getting a field meeting on the programme clearer.

9. "The Field Meetings do not usually interest me"



A positive response regarding the interest of the Field Meetings, though probably leaving some room for improvement.

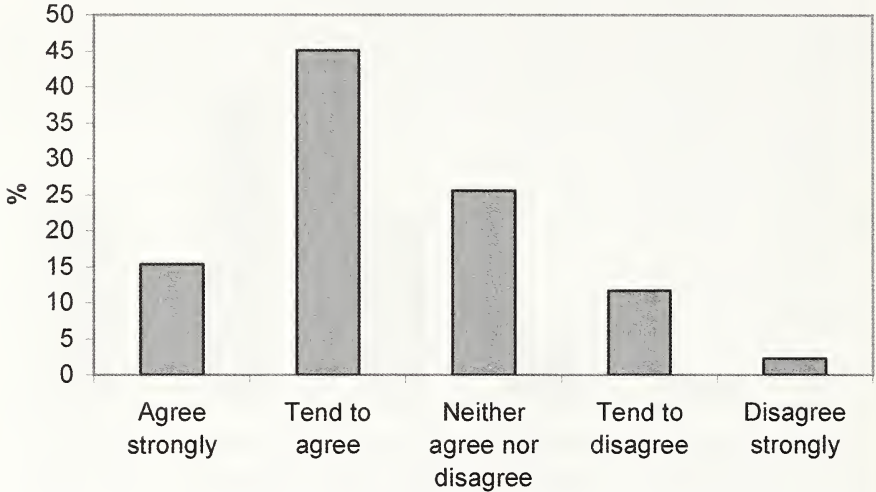
10. "The Field Meetings cover a good geographical spread"



A positive response regarding the geographical spread of the Field Meetings. This was an encouraging result given the geographical spread of the Society's members

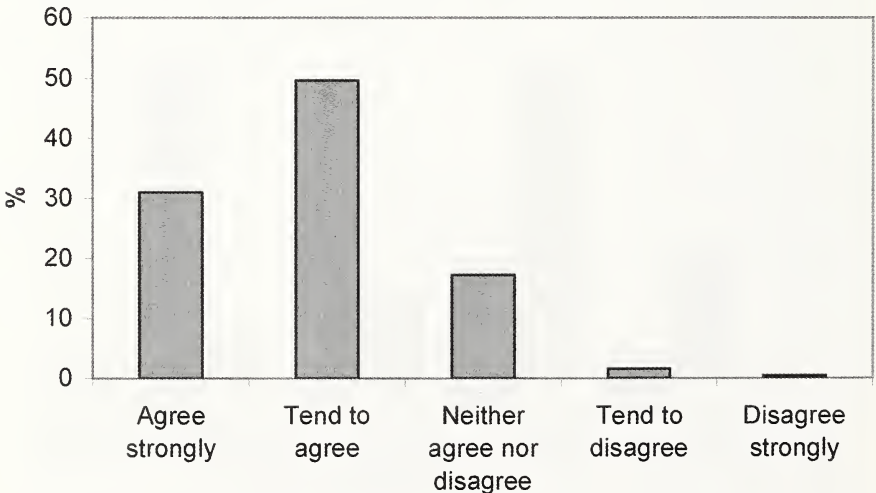
and their differing willingness and ability to travel to Field Meetings. Further improvements could be made by making it easier for anyone who feels their area has been neglected in recent Field Meetings programmes to step forward as a leader.

11. "The Field Meetings cover the taxonomic groups I am interested in"



A positive response regarding the taxonomic coverage of the Field Meetings. There is probably room for improvement by encouraging those who feel their taxonomic interests are under-represented to come forward and lead Field Meetings.

12. "The Field Meetings are led by knowledgeable, experienced and helpful leaders"



A clear and highly positive response which is a credit to all those who have led Field Meetings for the Society in recent years.

13. Please number the following types of Field Meetings in your order of preference (the most preferred scores 1, the next most preferred scores 2, and so on until you are indifferent about the remaining options):

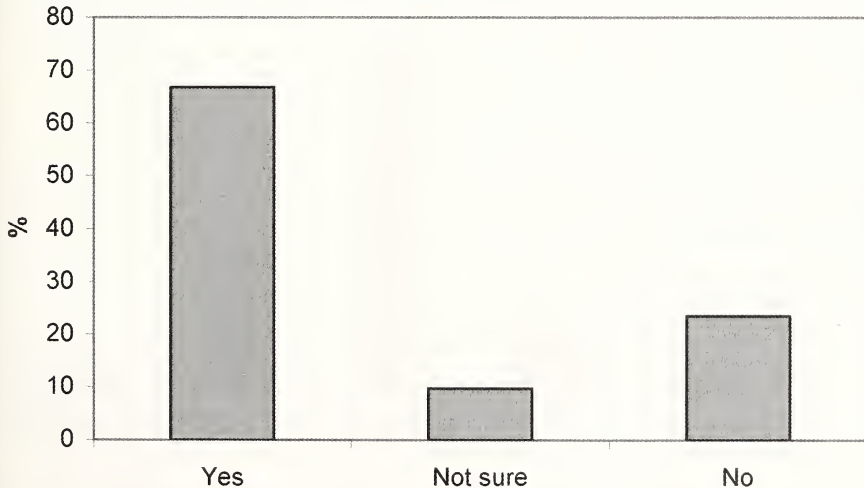
Table 3. Summary of responses to question 13, listed in decreasing order of preference. For each of the six options, the average (mean) score is given, along with a measure of the amount of variation amongst the scores (standard deviation), and the number of scores (N).

	Average	Amount of variation	Number of scores
Unknown sites	2.3	1.4	249
Threatened sites	2.6	1.3	237
Search for particular species	3.0	1.6	234
Helping recording schemes	3.1	1.6	237
Known sites	3.3	1.7	215
Making management recommendations	4.7	1.6	193

The average preference scores were fairly closely bunched, with the exception of 'Making management recommendations' which was clearly the least favoured option. Respondents clearly favoured exploring unknown sites over known sites but also appreciated the role of Field Meetings in surveying threatened sites, searching for particular species and helping recording schemes.

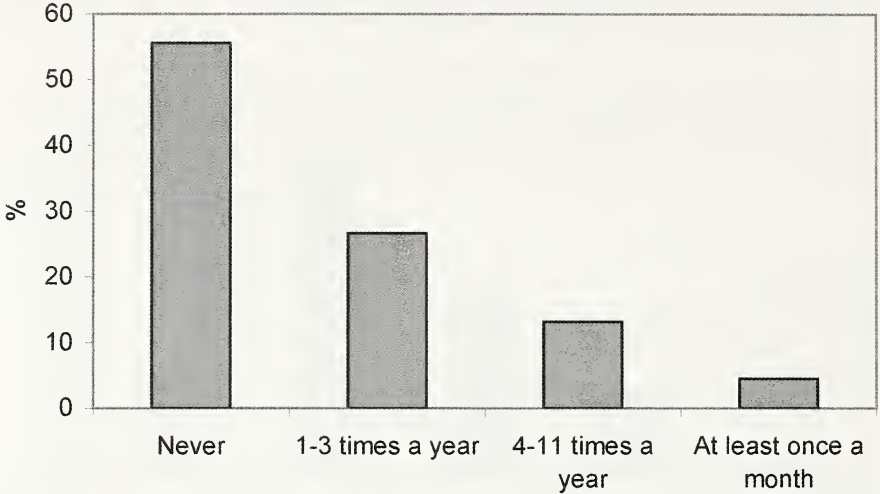
The website: www.benhs.org.uk

14. Were you aware that the Society has a website?



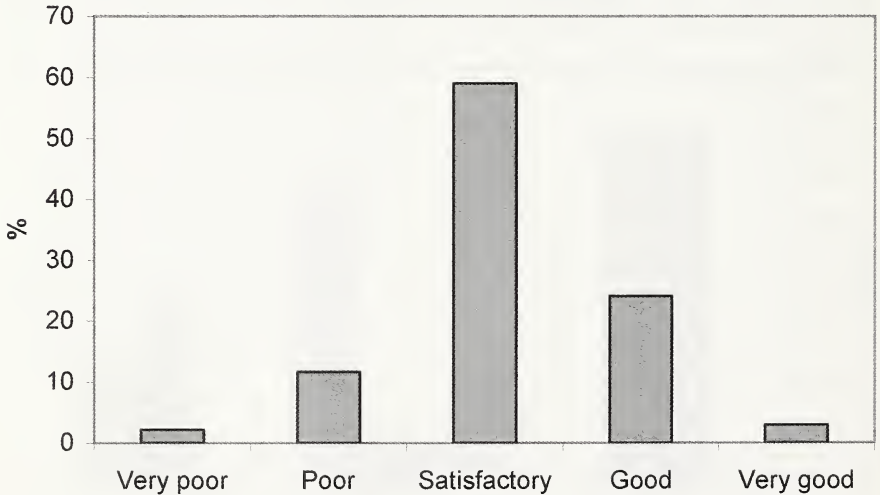
Most respondents were aware of the Society's website. It seems likely that a substantial proportion of those who were unaware of the website or unsure of its existence are not internet users.

15. On average, how often do you use the website?



It seems that the Society’s website is relatively little used, with only 14 respondents having used the website at least once a month.

16. If you have used the website, how would you rate it?

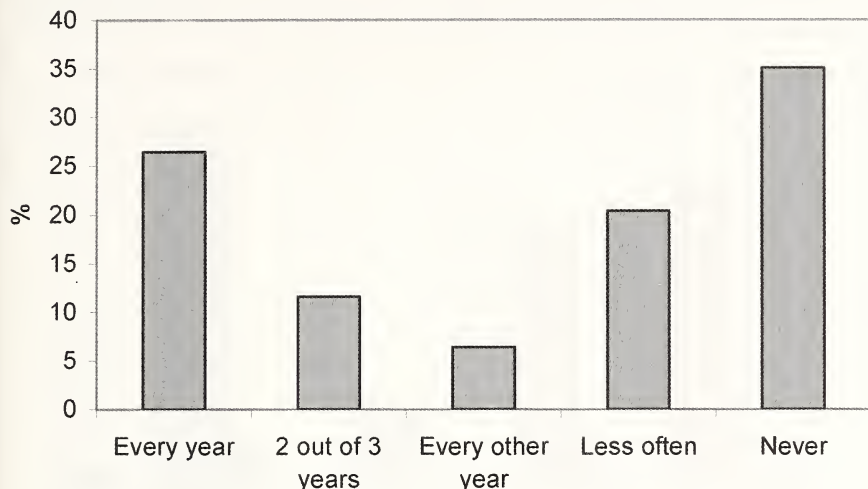


Only 137 respondents (41%) felt able to offer an opinion on the website; presumably most others had not visited the website. Most of those who did express an opinion felt the website was satisfactory.

There is considerable scope to improve the website and to encourage greater use of it and greater awareness of it.

The Annual Exhibition and Dinner

17. Which of the following best describes your attendance at the Annual Exhibition in London?



The number of respondents who attend the Annual Exhibition more often than not, is slightly outweighed by the number who never come or miss the exhibition more often than not. This represents something of a division in the Society. On the one hand there are many for whom the Exhibition is an important event in the Society's calendar. Of the remainder, there may be some who are not interested in the Exhibition, though many wrote comments on their questionnaires to explain that they would like to attend but find the travel too expensive, awkward or time-consuming.

18. The council is considering changes to the Annual Exhibition venue which could give the Society much better value for money. Please number the following in order of importance to you (the most important thing scores 1, the next most important scores 2, and so on until you are indifferent about the remaining options):

Table 4. Summary of responses to question 18, listed in decreasing order of importance. For each of the five options, the average (mean) score is given, along with a measure of the amount of variation amongst the scores (standard deviation), and the number of scores (N).

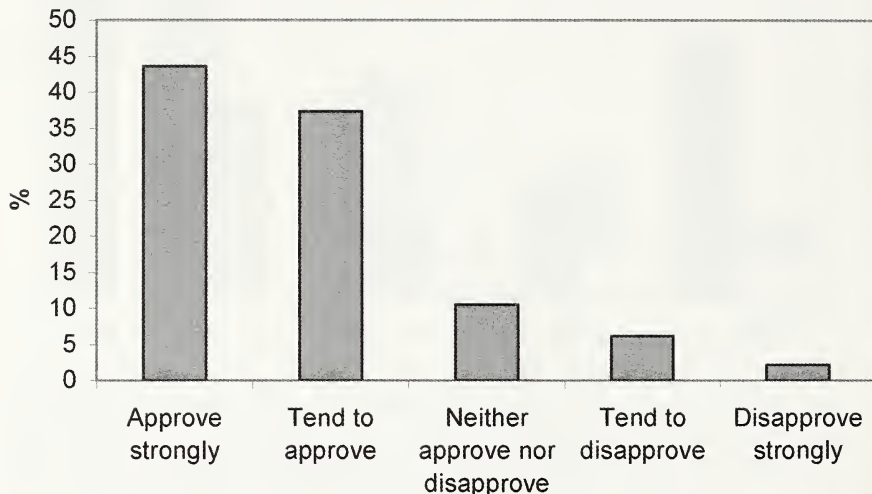
	Average	Amount of variation	Number of scores
Good public transport access	1.7	1.0	245
A more central location within Britain	2.1	1.3	200
Cheaper parking	2.4	1.2	193
Better lighting of the exhibition venue	3.2	1.1	150
A venue with a bar	3.9	1.2	151

Good public transport access was clearly the most important aspect of the Exhibition venue and the current venue at Imperial College, South Kensington does have very good public transport links. However, if an alternative venue could be found at a more central location within Britain with cheaper parking and equally good public transport links, this could prove more popular.

Many respondents were indifferent about the lighting of the venue and the presence of a bar (note the much smaller number of respondents who scored these options).

Council should investigate alternative venues but members can be assured that Council recognises that many members are more than happy with the current arrangements: any changes will only be made after due consideration.

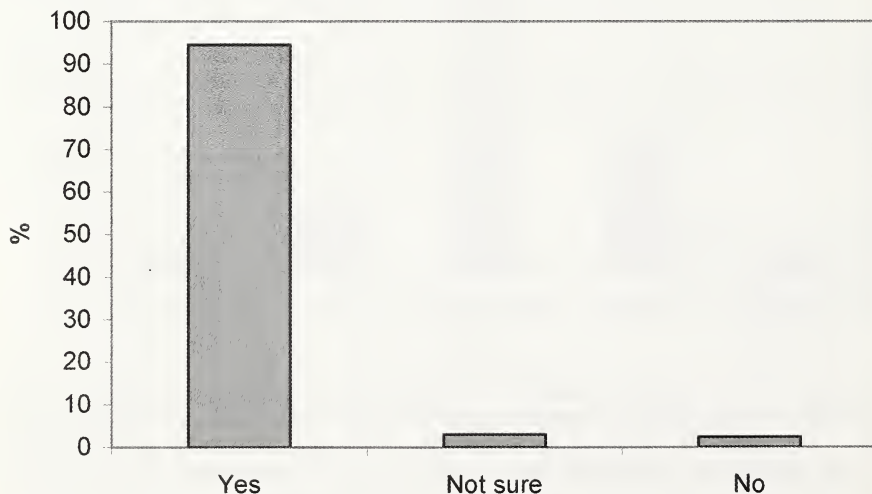
19. How would you feel about selected book dealers and equipment sellers being invited to the Exhibition?



This proposal met with strong approval, providing one of the clearest results of the questionnaire. Council thus have a strong mandate to move forward with this proposal.

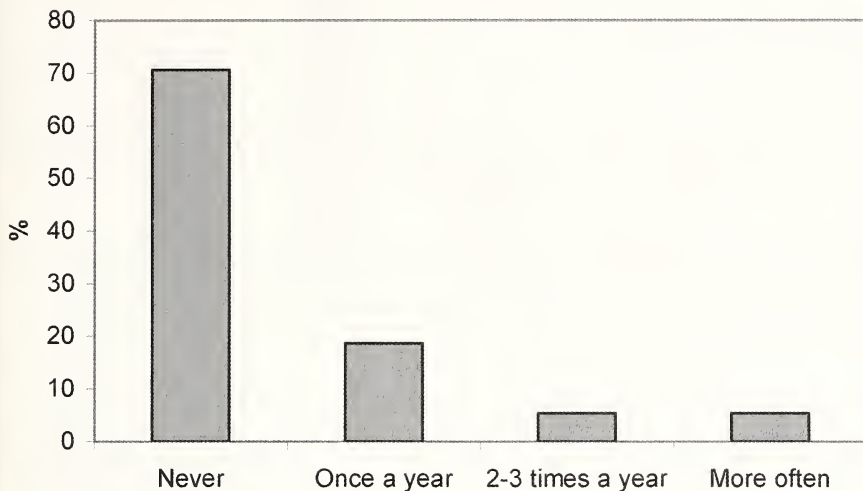
The Society's Collections and Library are housed at Dinton Pastures, Reading

20. Were you aware of the facilities at Dinton Pastures?

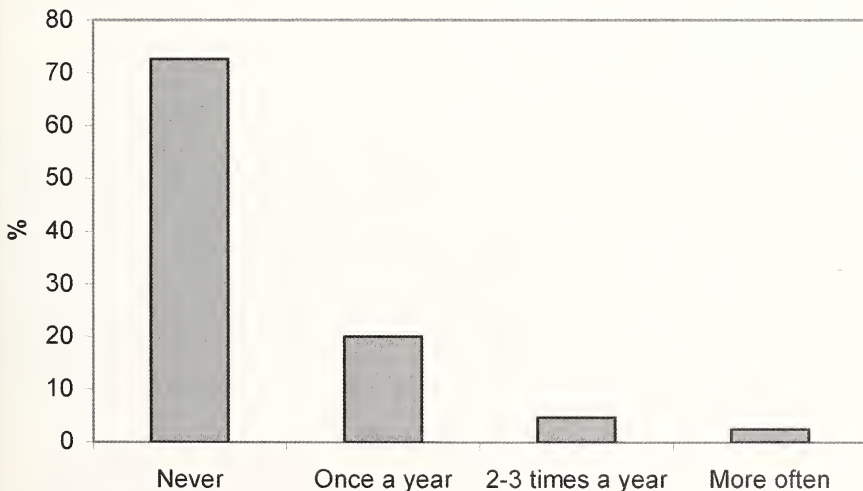


There was excellent awareness of the Society's facilities at Dinton Pastures.

21. On average, how often do you attend the Society's Open Days at Dinton Pastures?



22. On average, how often do you attend the Society's Workshops at Dinton Pastures?



Despite the excellent awareness of the Society's facilities at Dinton Pastures, a relatively small proportion of members make use of those facilities, whether for the

Open Days or the Workshops. Although members do travel from as far afield as Scotland and Devon to attend Dinton Pastures, it would seem that many members are put off by the journey. It may be worth noting here that Dinton Pastures is a simple 2 km walk from Winnersh station as it may not be widely appreciated just how easy it is to get to by public transport.

The Society as a whole

23. Please score the Society's activities in order of importance to you. Give '1' to the most important, '2' to the second most important, and so on to the end or until you are indifferent about the remainder.

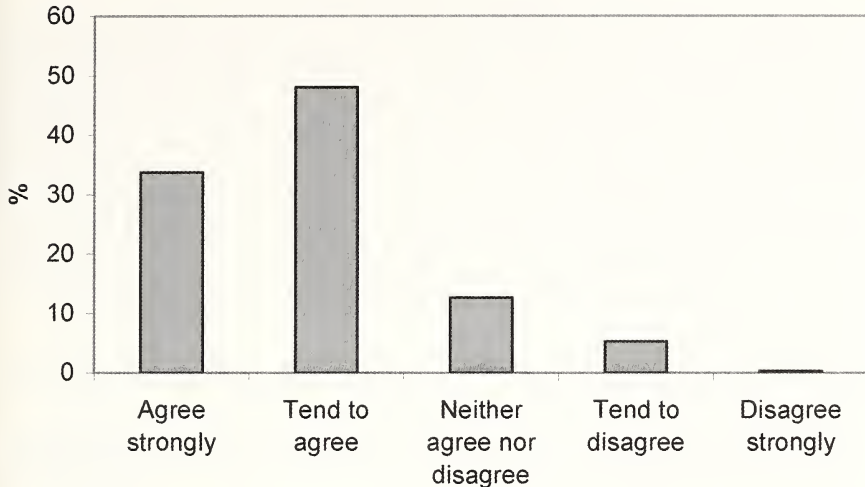
Table 5. Summary of responses to question 23, listed in decreasing order of importance. For each of the nine options, the average (mean) score is given, along with a measure of the amount of variation amongst the scores (standard deviation), and the number of scores (N).

	Average	Amount of variation	Number of scores
Journal	2.0	1.4	318
Field Meetings	3.4	1.7	247
Books	3.7	1.9	246
Annual Exhibition and Dinner	3.8	2.7	216
Dinton Pastures (Collections and Library)	3.8	2.3	224
Workshops	4.2	1.9	219
Indoor Meetings	4.8	1.8	192
Public Liability Insurance of £5,000,000	6.5	2.9	147
Website	6.6	2.2	146

The nine options in this question represent the full range of the Society's activities, of which the Journal was clearly felt to be the most important. Field Meetings were ranked as the second most important of the Society's activities despite the fact that 39% of respondents had never attended a Field Meeting (question 8). The Society's Books were ranked third, and like the Journal, this is an aspect of the Society's activities that is accessible to all, irrespective of geographical location. By contrast, the Annual Exhibition and Dinner ranks fourth on average but the large variation in scores reveals the division in attitudes to the Exhibition noted under question 17. The largest variation was in scores for Public Liability Insurance. Various marginal comments revealed that many respondents were simply unaware of this insurance and thus could not offer an opinion on its importance: this needs to be better publicised.

24. "The subscription for 2006 of £19 a year provides good value for money".

Many Life Members felt unable to answer this question!



There was a strong positive response that the Society does provide good value for money—one of the strongest positive responses from the questionnaire. This was a particularly welcome result considering that the questionnaire was issued shortly after the announcement of a rise in subscription rates.

CONCLUDING REMARKS

Of the 334 returned questionnaires, 192 (57%) included comments. These comments have been very helpful in interpreting the numerical results of the questionnaire presented here.

Many respondents took the opportunity to express their appreciation of the Society and the work done by its Council and Officers, such as “A pleasure to belong to such a well run Society”. These comments have been gratefully received.

Many respondents expressed their views on the logistical difficulties of participating in all the Society’s activities, such as the following from a member in Devon: “I think the BENHS an excellent society. The only downside is not symptomatic of the Society but rather of modern life (or just my lifestyle). The workshops, meetings and other interactive functions of the society are great but it is a case of whether one can make it to them. Keep up the good work”.

Many of the comments provided valuable detail on some of the problems encountered by members, often with constructive suggestions, all of which will help Council to decide on its responses to these results.

ACKNOWLEDGEMENTS

Thanks to all those who took the time to fill out and return the questionnaire. The excellent response rate is a testament to just how much members care about our Society. Particular thanks are also due to David Young for printing and mailing out the questionnaire. John Badmin and Mike Wilson commented on an earlier draft.

ANNOUNCEMENT

Lepidoptera recording in northwest Wales (Merionethshire, Caernarvonshire and Anglesey). – In 2001 a grant from the BENHS Research Fund helped to establish a moth recording project in northwest Wales (VCs 48, 49, and 52). The underlying aim of the project is to make the best use of the efforts of a small number of dedicated resident recorders, by stimulating recording, improving data capture, and providing a report which acts as a reference to the range of species currently being recorded. So far we have seen production of 3 editions of the annual Lepidoptera report, improving co-ordination between Vice-county recorders, processing of part of the important Treborth dataset, and the ongoing development of Andrew Graham's excellent database program for the area. Recent developments include a number of changes of 'personnel' in the Vice-county Recorder roles as listed below:

VC48 Merioneth

Moths & butterflies: Andrew Graham, Trawscoed, Llanuwchllyn, Bala, Gwynedd LL23 7TD; e-mail: angrhm@globalnet.co.uk

VC49 Caernarfon

Moths: Julian Thompson, Pensychnant, Sychnant Pass, Conwy, Gwynedd, LL32 8BJ; e-mail: julian@pensychnant.fsnet.co.uk

Butterflies: David Thorpe, 3 Brynteg, Clwt y Bont, Gwynedd, LL55 3DT; e-mail: david.thorpe@environment-agency.wales.gov.uk

VC52 Anglesey

Moths: John Harold, Hen Ardd, Carreg y Gath, Rhiwlas, Bangor, Gwynedd LL57 4HD; e-mail: jhmoths@yahoo.co.uk

Butterflies: David Thorpe, 3 Brynteg, Clwt y Bont, Gwynedd, LL55 3DT; e-mail: david.thorpe@environment-agency.wales.gov.uk

As the new Moth Recorder for VC52 Anglesey, I am engaged in a review of the current records. I would be particularly pleased to receive any old Anglesey records which have been lying neglected in field notebooks, or which derive from specimens in collections. Anyone contributing such records or with information which leads me to useful historic material, will be welcome to receive a free copy of the North West Wales Lepidoptera Report. Volumes so far produced are 2001, 2002, and 2003, with 2004 in preparation (early 2006).

Julian Thompson and Andrew Graham would be similarly pleased to receive any records relating to Caernarvonshire and Merionethshire, respectively. In tandem with the Lepidoptera Report, Andrew Graham has for some years been constructing an impressive database program for the area covered by VCs 48, 49 and 52. The database draws on the currently available records (at present comprehensive for VC48 – partial for VCs 49 and 52) and gives flight histograms, dot distribution maps, and much other useful information for more than 1300 taxa. Copies of the database CD are available from Andrew Graham; SAE appreciated.

JOHN HAROLD,
Hen Ardd, Carreg y Gath, Rhiwlas,
Bangor, Gwynedd, LL57 4HD



THE MAITLAND EMMET BENHS RESEARCH FUND

In 2001 the family of the late Lt. Col. Maitland Emmet, a distinguished amateur microlepidopterist, made a generous donation to the Society's Research Fund in his memory. As a result the Society has renamed its Research Fund the Maitland Emmet BENHS Research Fund. The Society is very grateful to the Emmet family for their generosity.

The Society invites applications for grants, from the Maitland Emmet Research Fund, to be awarded in December 2006. Awards are open to both members and non-members of the BENHS and will be made to support research on non-marine arthropods, with reference to the British fauna, and with preference given to insects, arachnids, myriapods and isopods. Grants will be given for:

- (a) the assistance of fieldwork on non-marine arthropods with relevance to their conservation,
- (b) work leading to the production of identification guides and distribution lists, but not the cost of publishing such items.

Travel to examine museum collections and to consult taxonomic specialists would be included. The work and travel is not limited to the British Isles but must have a demonstrable relevance to the British arthropod fauna. Individual grants are unlikely to exceed £500.

Preference will be given to work with a clear final objective (e.g., leading to publication or the production of a habitat management plan). Work on leaf miners and gall forming insects should be submitted to the Society's Professor Hering Memorial Research Fund.

Applicants should send seven copies, if possible, of their plan of work, the precise objectives, the amount for which an award is requested and a brief statement outlining their experience in this area of work, to **Dr J. Muggleton, 17 Chantry Road, Wilton, Salisbury, Wiltshire SP2 0LT**, as soon as possible and **not later than 30 September 2006**. Further information may be obtained from the same address (email: jmuggleton@aol.com).

THE PROFESSOR HERING MEMORIAL RESEARCH FUND

The British Entomological and Natural History Society announces that awards may be made from this Fund for the promotion of entomological research with particular emphasis on:

- (a) leaf-miners
- (b) Diptera, particularly Tephritidae and Agromyzidae
- (c) Lepidoptera, particularly Microlepidoptera
- (d) general entomology

in the above order of preference having regard to the suitability of applicants and the plan of work proposed.

Awards may be made to assist travelling and other expenses necessary for fieldwork, for the study of collections, for attendance at conferences, or, exceptionally, for the costs of publication of finished work. In total they are unlikely to exceed £1000 in the year 2006.

Applicants should send seven copies, if possible, of a statement of their qualifications, of their plan of work, and of the precise objectives and amount for which an award is sought, to **Dr J. Muggleton, 17 Chantry Road, Wilton, Salisbury, Wiltshire SP2 0LT** as soon as possible and **not later than 30 September 2006**.

Applications are also invited from persons wishing to borrow the Wild M3 Stereomicroscope and fibre optics illuminator bequeathed to the Fund by the late Edward Pelham-Clinton, 10th Duke of Newcastle. Loan of this equipment will be made for a period of up to six months in the first instance.



BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY
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June 2006

ISSN 0952-7583

Vol. 19, Part 2

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BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY



BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY
Published by the British Entomological and Natural History Society
and incorporating its Proceedings and Transactions

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British Journal of Entomology and Natural History is published by the British Entomological and Natural History Society, Dinton Pastures Country Park, Davis Street, Hurst, Reading, Berkshire RG10 0TH, UK. Tel: 01189-321402. The Journal is distributed free to BENHS members.

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Typeset by Dobbie Typesetting Limited, Tavistock, Devon.

Printed in England by Henry Ling Ltd, Dorchester, Dorset.

BRITISH ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY
Registered charity number: 213149

Meetings of the Society are held regularly in London, at the rooms of the Royal Entomological Society, 41 Queen's Gate, London SW7 and the well-known ANNUAL EXHIBITION is planned for Saturday 11 November 2006 at Imperial College, London SW7. Frequent Field Meetings are held at weekends in the summer. Visitors are welcome at all meetings. The current Programme Card can be obtained on application to the Secretary, J. Muggleton, at the address given below.

The Society maintains a library and invertebrate collections at its headquarters in Dinton Pastures, which are open to members on various advertised days each month, telephone 01189-321402 for the latest meeting news. The Society's web site is: <http://www.BENHS.org.uk>

Applications for membership to the Membership Secretary: D. Young, 22 Wordsworth Close, Saxmundham, Suffolk IP17 1WF. Tel: 01728 603568.

Subscriptions and changes of address to the Assistant Treasurer: R. D. Hawkins, 30D Meadowcroft Close, Horley, Surrey RH6 9EL.

Non-arrival of the Journal, faulty copies or other problems arising from distribution of the Journal or notices to the **Distribution Secretary:** D. Young, 22 Wordsworth Close, Saxmundham, Suffolk IP17 1WF. Tel: 01728 603568.

Orders for books and back numbers of the Journal and Proceedings to the Sales Secretary: G. Boyd, 91 Fullingdale Road, Northampton NN3 2PZ. Tel: 01604 410056.

General Enquiries to the Secretary: J. Muggleton, 17 Chantry Road, Wilton, Salisbury, Wiltshire SP2 0LT. Tel: 01722 741487. email: jmuggleton@aol.com

Society Website: www.benhs.org.uk for recent information on the Society's meetings programme and general society details.

Cover photograph: *Hyphoraia testudinaria* (Geoff.) (Arctiidae), at my light, Chichester, West Sussex, 30.v.2005, collected by Sarah Patton. Wingspan 50 mm. Photo: R. A. Jones.

NOTE: The Editor invites submission of photographs for black and white reproduction on the front covers of the journal. The subject matter is open, with an emphasis on aesthetic value rather than scientific novelty. Submissions can be in the form of colour or black and white prints or colour transparencies.

THE ACULEATE HYMENOPTERA OF SHOTOVER HILL, OXFORDSHIRE

IVAN R. WRIGHT¹ AND STEVE J. GREGORY²

¹*Shotover Wildlife, 15, Blenheim Way, Horspath, Oxford, OX33 1SB*

²*Northmoor Trust: Ecology Department, Little Wittenham, nr Abingdon, Oxon, OX14 4RA*

ABSTRACT

Five years of new survey work on Shotover Hill (2000–2004) for aculeate Hymenoptera are presented and compared with newly collated historic records. This study has recorded 184 species, which when combined with the results of surveys in the 1980s, places the total of recently recorded aculeate species at 209. By comparison, in the years before 1939 an estimated total of 203 species had been accumulated. Sixty-two of the species that were recorded before 1939 have not been observed in recent years, yet the recent work (1980s–2004) has added 68 species (54 by this study). The nesting requirements of these ‘formerly recorded’ and ‘recently added’ species differ, and are shown to be consistent with the land use changes since the 1930s. Site quality scoring indices suggest that when compared with other UK sites, Shotover Hill remains an important site for wasps and bees. The all-time total of aculeate Hymenoptera for Shotover Hill is calculated to be 271 species.

INTRODUCTION

Like the many small areas of sandy soil in Oxfordshire, Shotover Hill developed as heath through being suitable only for rough grazing and pasture. In the 20th century, Shotover was spared the agricultural ‘improvement’ of many local heaths through its proximity to Oxford, gaining a measure of protection as an area of public enjoyment and academic study.

Much of the current interest in aculeate Hymenoptera on Shotover Hill stems from work in the early years of the 20th century by staff of Oxford University Museum of Natural History. By 1939, 141 species had been recorded for Shotover (Salzman, 1939), rising to 185 species by 1987 (Steel, 1984; M. E. Archer, pers. comm.). Subsequent work on the source material by the authors has shown that when common and widespread species are included from Salzman (1939), the overall total of Aculeata for Shotover Hill by the 1980s (before the addition of records presented in this study) is estimated to be 217 species.

A site with > 150 species of aculeate can be considered ‘Class 1’ in Britain (Steele, 1984), especially for locations that are some distance from East Anglia and the south coast of Britain (M. E. Archer, pers. comm.). Clearly, Shotover Hill would rank as an important site on the basis of accumulated species, however 99 of these species were not re-recorded by the subsequent work of the 1980s (Steel, 1984; M. E. Archer pers. comm.). Since the 1930s, scrub encroachment on Shotover has considerably reduced the extent of open grassland, heath and bare soil, and without further survey work, an historic total of 185 species may not be a true reflection of the current status of the Aculeata on Shotover Hill.

SITE DESCRIPTION

Shotover Hill (summit: 171 m amsl at SP564063) is 3 km east of Oxford, and is a small sandstone plateau, 100m above the Thames Clay Vales and within the Midvale

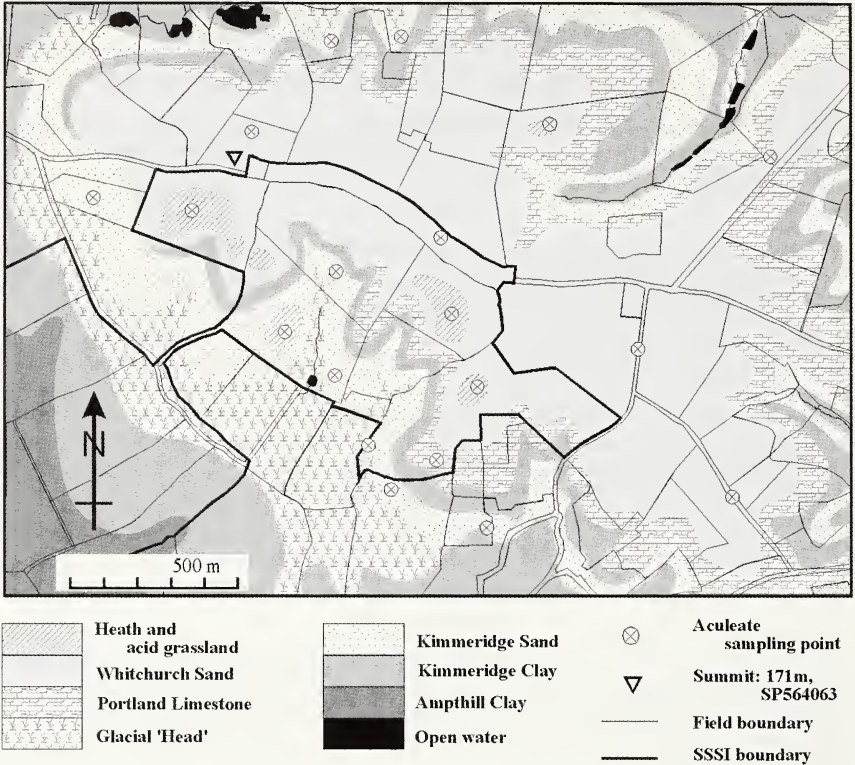


Figure 1. A plan of Shotover Hill showing the principal aculeate sampling points, geology and areas of heath and acid grassland.

Ridge Natural Area (English Nature, 1997). Below the Cretaceous capping of Whitchurch Sand (Fig. 1) are strata of Portland Limestone and Kimmeridge Clay (Jurassic) which, at Shotover, includes associated beds of sand and coarse stone with a range of different textures. In places, the lower slopes are covered with shallow deposits of glacial clay or 'head'. The land use is mixed and comprises heathland scrub, secondary woodland of various ages, pasture, large gardens and a little arable agriculture. The area represented by surveying in this study is about 250 hectares.

Much of the south west side of Shotover Hill is taken up with a public access Country Park, most of which is designated an SSSI (Fig. 1) for its flora and invertebrate fauna. Over recent years, the heathland on Shotover has been enlarged and although the area of *Calluna* heather is small (about 1.5 hectares), it is a relatively large expanse for the County of Oxfordshire.

On the basis of archive photographs spanning the 20th century (including many aerial photographs) and anecdotal evidence from local residents, it has been possible to interpret the changing habitats over this period. Until the middle years of the 20th century, Shotover was predominantly rough grazing and low-grade pasture with some areas of crop cultivation and isolated woodland. Then, between *c.*1940 and *c.*1960, the area was considerably altered through various significant influences: the

reduction of pasture-based farming, reduced rabbit grazing following the onset of myxomatosis, and a period of substantial disturbance by public and military vehicles.

Therefore, until about 1950 extensive areas of short vegetation and bare soil would have been present, and would have been of considerable benefit to ground nesting invertebrates. Since 1950, scrub vegetation has grown up and matured in places, creating extensive pioneer woodland with only isolated areas of mown or rabbit-grazed grassland.

ASSESSMENT OF HISTORIC RECORDS

Appendix 12 of Steel (1984) provides a list of aculeate Hymenoptera recorded on Shotover Hill to that date: that is, Salzman (1939) plus the later work of O'Toole. However in returning to the original data, possible errors in the extraction of data from Salzman (1939) were highlighted, and this accounts for small differences between the species given here and those in Steel (1984). For this study, six species are discounted from Steel's list: *Ancistrocerus antilope* (Panzer), *Passaloecus gracilis* (Curtis), *Andrena bucephala* (Stephens), *A. nigroaenea* (Kirby), *Bombus ruderatus* (F.) and *B. rupestris* (F.), and 11 species are added: *Arachnospila anceps* (Wesmael), *Ancistrocerus oviventris* (Wesmael), *A. trifasciatus* (Müller), *Crabro peltarius* (Schreber), *Mimesa equestris* (F.), *Passaloecus monilicornis* Dahlbom, *Andrena pilipes* (F.), *A. trimmerana* (Kirby), *Anthidium manicatum* (L.), *Nomada flavoguttata* (Kirby) and *Bombus sylvestris* (Lepeletier). This adjustment increases Steel's accumulated total for that time (1984) from 174 to 179 species.

Incorporating the above adjustment, Salzman (1939) lists 141 species of aculeate as being specifically associated with 'Shotover', and a further 62 species are listed as widespread or 'common round Oxford'. Many of these common species would have been present on Shotover Hill, and probably recorded there, but were not specifically listed as such. The number of species actually recorded on Shotover in the early 20th century must, therefore, be between the minimum of 141 and a maximum of 203 (Table 1), and introduces some uncertainty into the interpretation of any subsequent changes in the aculeate fauna.

Table 1. Summary of previous aculeate Hymenoptera recording on Shotover Hill.

Historic records	Number of species based on '1939 minimum'	Species 'common round Oxford' (1930s)	Number of species based on '1939 maximum'
Species recorded before 1939 (Salzman, 1939)	141	+ 62	203
of which			
Species remaining unrecorded by the 1980s	99	+ 32	131
Species refound in the 1980s by O'Toole and Archer	42	+ 30	72
Species added in the 1980s by O'Toole and Archer	44	-	14
Total species recorded by the 1980s	185	+ 32	217

'1939 minimum' includes species specifically recorded for 'Shotover' in Salzman (1939)

'1939 maximum' includes all species listed as either for 'Shotover' or 'common round Oxford'.

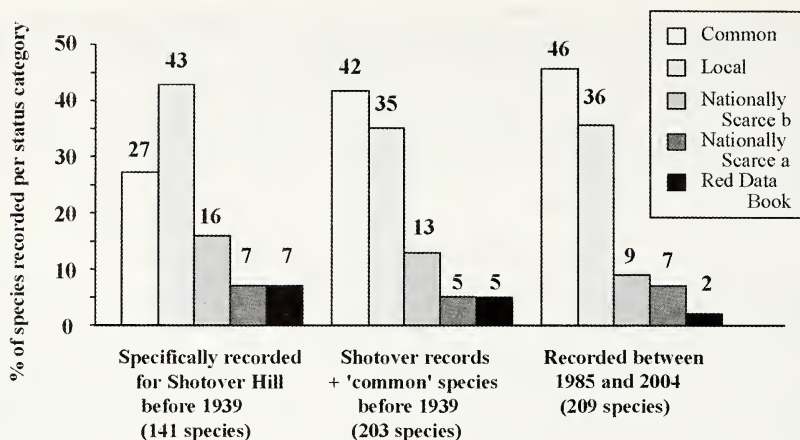


Figure 2. Status profiles of aculeate Hymenoptera records showing the effect of including implicit 'common' species from earlier records. National statuses after Falk (1991) and Ball (1997).

In the early 1980s, Mr Chris O'Toole (Department of Entomology, Oxford University) made two visits to survey Aculeata on Shotover Hill, and Dr Michael Archer (BWARS) made survey visits in 1985 and 1987. These visits recorded a total of 86 species, of which 42 had been previously noted for Shotover Hill by Salzman (1939), and 44 were formally new records for Shotover (Table 1). However, when considering those species that Salzman notes as 'common round Oxford', these statistics are altered to 72 species re-recorded and 14 added. Consequently, the all-time total of Aculeata on Shotover Hill by 1987 was formally raised to 185, or when 'common' species are added, to an estimated total of 217 (Table 1).

Table 1 shows that the exclusion of common aculeate species would greatly affect a comparison between current and previous work. Therefore it is necessary to investigate some feature of the recorded species to justify either exclusion of the implicit 'common' species (i.e. '1939 minimum' in Table 1) or their inclusion (i.e. '1939 maximum'). It is proposed here that the national statuses for Aculeata (Falk, 1991; Ball, 1997) would be a suitable indicator, even though the conservation status of some species will have changed since the 1930s.

Figure 2 shows that there is a very marked similarity between the status profiles of early and recent work, but only when the 'common' species are included. Although some of the 'common' species may not have been recorded on Shotover in the 1930s, the inclusion of all 'common' species from Salzman (1939) would clearly provide the most relevant comparisons with recent work. It is unlikely that changes in status over time would greatly affect this conclusion, and all 'common' species (1939 maximum) are assumed to have been on Shotover in the 1930s for the purposes of analysis herein.

SURVEY METHODOLOGY (2000–2004)

Specimens were collected over the five years from 2000 to 2004, and sampled by water trap, Malaise trap and by hand net. Pitfall traps yielded most of the ants and a few other Hymenoptera.

Most of the trapping activity was concentrated at the points shown in Fig. 1. Although the distribution of sampling is reasonably representative of the area, it was not possible to give the same amount of attention to all locations, and not all locations were sampled using the same methods. Some of the sampling was within the public park where passive traps cannot be left unattended for more than a day or two without risk of disturbance. However, some of the areas of heavy public usage coincide with the heathland habitat where many of the scarcer Aculeata would be expected. In these areas there is, therefore, a bias towards netting by hand. In light of these limitations, no attempt has been made to analyse the species profiles from the areas of different soil or habitat within the site.

RESULTS

In this study 184 species of aculeate Hymenoptera were recorded during the period 2000–2004 (Appendix 1), of which 54 are new records for Shotover Hill. Table 2 gives a summary of these species by family/sub-family (BWARS, 2005), and Table 3 shows a summary of their national statuses (Falk, 1991; Ball, 1997), together with more recent ratings derived from national records for the period 1970 to 2004 (Archer, 2004a, 2004b, 2005; BWARS, 2003). The status of five species were 'unknown' to Ball (1997) but have been classified since by Archer (2004a & b) as either 'universal' or 'widespread'. For completeness these five species have been given retrospective equivalent statuses, however, this does not affect the analysis that follows.

When the records from this study are supplemented by the work of C. O'Toole and M. E. Archer in the 1980s, a further 25 species can be included in the analysis as representative of recent recording (Appendix 2). From the early 1980s until 2004, 209 species have been recorded, of which 116 are formally new records for Shotover Hill. However, 48 of these 116 species are amongst those that Salzman (1939) considered 'common round Oxford', leaving 68 species as entirely new records for Shotover.

Table 2. Tabulation by family/subfamily of species recorded in this study (2000–2004).

	Family	No. of species
Ants	Formicidae	8
Wasps	Chrysididae	6
	Tiphidae	2
	Mutillidae	1
	Pompilidae	13
	Eumeninae	4
	Vespiniae	4
	Crabonidae	47
Bees	Colletinae	8
	Andreninae	24
	Halictinae	28
	Megachilinae	11
	Anthophorinae	17
	Apinae	11
All species	Total	184

Table 3. Tabulation by national status of species recorded in this study (2000–2004).

Status Falk (1991) Ball (1997)		Status Archer (2004a&b, 2005) BWARS (2003)	
	No.		No.
Common	89	Universal	92
Local	65	Widespread	57
Nationally Scarce b	14	Restricted	11
Nationally Scarce a	13	Scarce	17
Red Data Book 3	2	Rare	6
Red Data Book 2	1	Very Rare	1
Red Data Book 1	0		
Totals	184		184

Table 4. Quality scoring indices for the recent surveys (1980s-2004) and pre-1939 on Shotover Hill, together with quality indices for other UK sites of comparative area.

Site	Area (ha)	No. of Species	Quality Score	Aerial Nester Frequency		Parasitic Load	
				Wasps	Bees	Wasps	Bees
Chafford Hundred, Essex ¹	137	218	5.96	20.3	22.3	19.5	26.4
Ambersham Common, West Sussex ²	212	219	4.53	38.5	23.3	16.1	22.3
Iping Common, West Sussex ²	172	219	4.51	42.4	21.0	12.4	23.5
Sherwood Forest, Nottingham- shire ³	390	100	2.96	47.6	19.4	17.6	25.0
Shotover 1980s–2004⁴	250	209	2.89	51.3	27.4	23.1	32.3
Shotover pre-1939⁴	~250	203	–	44.6	23.4	29.6	29.6
Crow Wood, Yorkshire ³	152	105	2.53	20.4	9.4	16.9	28.9
Blaxton Common, Yorkshire ³	150	109	1.85	43.1	13.9	15.0	26.5
Risby Warren, Lincolnshire ³	170	63	1.81	12.5	8.3	17.2	29.4
Skipworth Common, Yorkshire ³	312	69	1.57	42.4	30.0	13.2	35.5

¹O'Toole (1998)²Archer & Edwards (2002)³Archer & Burn (1995)⁴This study

Of the species listed for the early 20th century by Salzman (1939) 62 remain unrecorded by the recent surveys (Appendix 3). Including all surveys, the total number of species so far recorded on Shotover Hill will be close to the estimated maximum total of 271: about half of the national fauna of Aculeata.

Quality scoring indices

Following work by Archer & Burn (1995) to derive indices that describe the aculeate fauna of a site, quality scores have been calculated for Shotover Hill in a similar manner. These are the Quality Score, Aerial Nester Frequency and Parasitic Load, and permit objective comparisons with other UK sites for which similar work

has been presented. The Quality Score used here is the total score after assigning each recorded species with a value relating to its national status (but not its abundance): e.g., common = 1, very rare = 32, (Archer & Burn, 1995), divided by the total number of species in the survey. Thus the calculated index includes a measure of the proportion of scarcer species at each site. For the most recent survey work on Shotover Hill (2000–2004) the Quality Score is 2.72, which increases to 2.89 when combined with the work in the 1980s by O'Toole and Archer.

Aerial Nester Frequency expresses the number of Aculeata that nest above ground as a proportion of the total soil and aerial nest builders, and Parasitic Load expresses the number of parasitoids and cleptoparasites as a proportion of the total host and parasite species. These indices are calculated for bees and wasps separately. Table 4 shows published indices for eight UK sites that are notable for their aculeate Hymenoptera (Archer & Burn, 1995; O'Toole, 1998; Archer & Edwards, 2002). As Quality Scores are partly influenced by the area of a site (Archer & Burn, 1995), only those sites in the range 100–400 ha were chosen, being within 150 ha of the area surveyed in this study. Table 4 lists the chosen sites in order of Quality Score, which places Shotover Hill centrally among the other notable sites.

It would not be relevant to calculate the site Quality Score for the historic data from Shotover Hill, as the statuses would not be accurate for the early 20th century, and comparison could be misleading. However, Aerial Nester Frequency and Parasitic Load can be legitimately derived for both historic and recent data, and these are shown in Table 4.

DISCUSSION

Rare and notable species

Considering the influences of changing habitat, and possibly climate, it is to be expected that the status of mobile species such as Hymenoptera will change over time, and Table 3 should be viewed with this in mind. Of the three 'Red Data Book' (RDB) species, the cleptoparasitic bee *Sphecodes niger* (von Hagens) is now listed as 'very rare' in Britain (Archer, 2005). However, the 'Bee Wolf' wasp, *Philanthus triangulum* (F.) (RDB2 but provisionally RDB4) and cleptoparasitic bee *Nomada lathburiana* (Kirby) (RDB3) have become much less scarce and are now considered widespread (Archer 2004a & b). Table 3 shows that 30 (16%) of the species recorded by this study are either 'Nationally Scarce' or 'RDB', but this is not an especially high proportion compared with other published studies (e.g. O'Toole, 1998; Archer & Edwards, 2002). However, it should be noted that it is easier to observe a species becoming more common by recording its presence, than it is to suspect that a species is becoming scarcer by eventually noting its absence.

Several are new records for this far north in the region: for example the solitary wasp *Astata boops* (Schränk) and its associated cleptoparasite *Hedychridium roseum* (Rossius). Were it not for the paucity of recent recording of Aculeata in the region, these new records could be indicators of northward migration.

Comparison with historic records

Reworking past records from Shotover Hill has shown that in the early 20th century the sandy heath and pasture of the hill supported a remarkable diversity of aculeate Hymenoptera. Notwithstanding the uncertainty of including implicit common species, a total of about 200 species would rank as a very good habitat by current standards. In comparison, this and recent studies (1980s–2004) have

Table 5. National status and nesting requirements of 'Formerly recorded', 'Recently added' and 'Continuously present' species on Shotover Hill.

	'Formerly recorded' Species not recorded since 1939. %	'Recently added' Species newly added 1980s–2004. %	'Continuously present' Species recorded in both early and recent surveys. %
Common	19	36	53
Local	40	41	33
Nationally Scarce b	18	6	10
Nationally Scarce a	8	13	4
RDB	15	4	0
	No. (%)	No. (%)	No. (%)
Soil nesters	30 (48)	26 (38)	65 (46)
Aerial nesters	10 (16)	23 (34)	37 (26)
Total species	62	68	141

recorded 209 species, which includes 68 that were either not present or not recorded on Shotover in the 1930s. Clearly some of these species went unrecorded, such as the common ant *Myrmica ruginodis* Nylander, but 68 species seems to be too many to have gone unnoticed by the experienced collectors of Oxford University in those early years. Considering the 62 species that have not been observed since 1939, the habitat requirements of these 'formerly recorded' and 'recently added' groups of aculeate species warrants investigation.

Table 5 shows the distribution of national statuses within the 'formerly recorded', 'recently added' and 'continuously present' groups of species. Although some species may have been present but not recorded in the various surveys, and current statuses may not be representative of the 1930s, the large number of species involved would suggest that most of the differences are due either to habitat change, or species becoming generally more scarce or common in the region.

As might be expected, there is a high proportion of the more ubiquitous common species (53%) recorded continuously through both surveys. Of the scarce and possibly more habitat specific species, just 14% (all Nationally Scarce and no RDBs) have survived on Shotover from the early 20th century to the present day (Table 5). In contrast to this, 41% and 23% of 'formerly recorded' and 'recently added' species respectively are Nationally Scarce or Red Data Book. (Separate comparison of the 'formerly recorded' and 'recently added' groups also mitigates the earlier decision to include the implicit 'common' species.)

Of particular interest is the proportion of 'formerly recorded' and 'recently added' species that build their nests specifically either in the soil or in aerial cavities (e.g., hollow plants stems and holes in dead wood). In Table 5 it can be seen that there are more soil nesters in the 'formerly recorded' group of species (30) than in the 'recently added' group (26), yet many more aerial nesters have been 'recently added' (23) than are in the 'formerly recorded' group (10). The change over time from soil to aerial nesting is statistically significant at the 5% level (d.f. = 1, $\chi^2 = 4.54$, $p < 0.05$), and is entirely consistent with the habitat changes over the period. In the early 20th century, Shotover had much more pasture and patches of sunlit soil, especially on

the warmer south side of the hill. In contrast to this, much of the obsolete pasture and rabbit-grazed grassland has now succeeded to woody scrub, and bare soil is reduced to paths, areas of conservation effort and public disturbance. When wasps and bees are considered separately, Table 4 shows a very similar increase ($\sim 16\%$) in Aerial Nester Frequency for both groups since the 1930s.

Comparing the pre-1939 and post 1980s surveys, Parasitic Load for bees rose a little over the interceding years from 29.6 to 32.3 (+9%), and for wasps fell from 29.6 to 23.1 (−22%). However, these changes are not statistically significant. When compared with the Parasitic Load values given for the other eight UK sites (Table 4), Shotover appears to have a higher proportion of parasitic species than most of the other listed sites.

CONCLUSION

The 184 species recorded by this study show that, on this basis alone, Shotover Hill retains a good diversity of aculeate Hymenoptera. An area of 250 hectares in the south of England, which includes a range of heath and scrub woodland habitats, would be expected to yield a reasonable diversity of Aculeata. However, Shotover Hill is some distance from the particularly diverse southern coastal sites and is therefore notable in supporting such a diversity of Aculeata in the south midlands of Britain. Furthermore, several of the species recorded in this study are close to the north-western limit of their UK and European ranges.

The recording of aculeate Hymenoptera on Shotover Hill in this study, and over the past 100 years, has shown that the overall species diversity has remained fairly constant at just over 200 species, even though the land use and vegetation have changed. However, as pasture and short heathy scrub have been replaced, in part, by successional woodland, it appears that the profile of aculeate species has changed in a manner that this succession would suggest. When comparing those species that have not been recorded since 1939, for whatever reason, with those that have been recorded more recently, there has been a small but consistent shift from soil to aerial nesting in both wasps and bees. Measures could be taken to increase the range of bare soil habitats, and thereby avoid a possible trend towards fewer soil nesting species. Nevertheless, this study of aculeate Hymenoptera has shown that Shotover Hill remains an important habitat for this specialised group of invertebrates.

ACKNOWLEDGEMENTS

The authors would like to express their thanks to the following for permission of access and recording for the purposes of survey work: Lt. Col Sir John Miller of Shotover House, Oxford City Council, Mrs D. Stogdale of Monk's Farm, Shotover and Mr B. Walker of Manor Farm, Horspath. We also express our thanks for the assistance of the Oxfordshire Biological Records Centre (now the Thames Valley Environmental Records Centre), the Northmoor Trust Ecology Department (Little Wittenham, Oxfordshire) and the Department of Entomology at the Oxford University Museum of Natural History. Also thanks to Mr C.O'Toole and Dr M. E. Archer for additional information and unpublished data.

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APPENDIX 1

Aculeate Hymenoptera (184 species) recorded on Shotover Hill, 2000–2004. National statuses (BWARS, 2003; Archer, 2004a, 2004b & 2005) as Universal (U), Widespread (W), Restricted (RE), Scarce (S), Rare (R), Very rare (VR) and (new) indicates a new record for Shotover Hill by this study.

Chrysididae: *Hedychridium roseum* (Rossius) (S, new), *H. ardens* (Latreille in Coquebert) (U), *Trichrysis cyanea* (L.) (W), *Chrysis angustula* Schenck (W, new), *C. ignita* (L.) (U), *C. impressa* Schenck (U, new).

Tiphidae: *Tiphia formorata* F. (S, new), *T. minuta* Vander Linden (W).

Mutillidae: *Myrmosa atra* Panzer (W).

Formicidae: *Myrmica lobicornis* Nylander (U, new), *M. rubra* L. (U), *M. ruginodis* Nylander (U, new), *M. scabrinodis* Nylander (U, new), *Formica fusca* L. (U), *Lasius flavus* (F.) (U), *L. brunneus* (Latreille) (RE, new), *L. niger* (L.) (U).

Pompilidae: *Priocnemis perturbator* (Harris) (U), *P. coriacea* Dahlbom (R), *P. parvula* Dahlbom (U), *P. exaltata* (F.) (U, new), *P. fennica* Haupt (W, new), *P. hyalinata* (F.) (S, new), *P. gracilis* Haupt (S), *P. schioedtei* Haupt (U), *Dipogon subintermedius* (Magretti) (U, new), *Caliadurgus fasciellus* (Spinola) (S, new), *Arachnospila anceps* (Wesmael) (U), *Evagetes crassicornis* (Shuckard) (U), *Anoplius nigerrinus* (Scopoli) (U, new).

Vespididae: *Gymnomerus laevipes* (Shuckard) (S), *Symmorphus bifasciatus* (L.) (U), *Ancistrocerus gazella* (Panzer) (W, new), *A. trifasciatus* (Müller) (U), *Dolichovespula sylvestris* (Scopoli) (U), *D. media* (Retzius) (W, new), *Vespula vulgaris* (L.) (U), *V. germanica* (F.) (U).

Crabronidae: *Astata boops* (Schrank) (RE, new), *Tachysphex pompiliformis* (Panzer) (U), *Trypoxylon attenuatum* Smith, F. (U), *T. clavicerum* Lepelletier &

Serville (W, new), *T. medium* de Beaumont (U, new), *Crabro peltarius* (Schreber) (U), *Crossocerus ovalis* Lepetelier & Brullé (U, new), *C. pusillus* Lepetelier & Brullé (U), *C. ceiratus* (Shuckard) (W, new), *C. megacephalus* (Rossius) (U), *C. podagricus* (Vander Linden) (U), *C. quadrimaculatus* (F.) (W), *C. dimidiatus* (F.) (U), *Ectemnius cavifrons* (Thomson) (U), *E. continuus* (F.) (U), *E. lituratus* (Panzer) (RE, new), *E. cephalotes* (Olivier) (W, new), *Rhopalum clavipes* (L.) (U), *Lindenius panzeri* (Vander Linden) (RE, new), *L. albilabris* (F.) (U), *Entomognathus brevis* (Vander Linden) (W), *Oxybelus uniglutinis* (L.) (U), *Mimesa equestris* (F.) (U), *Mimumesa dahlbomi* (Wesmael) (W, new), *Psenulus pallipes* (Panzer) (W), *P. concolor* (Dahlbom) (W, new), *P. schencki* (Tournier) (R, new), *Pemphredon lugubris* (F.) (U), *P. inornata* Say (U), *P. lethifera* (Shuckard) (U), *P. morio* Vander Linden (S, new), *Passaloeus corniger* Shuckard (W), *P. insignis* (Vander Linden) (W), *P. gracilis* (Curtis) (W, new), *P. singularis* Dahlbom (W, new), *Spilomena curruca* (Dahlbom) (W, new), *Mellinus arvensis* (L.) (U), *Didineis lmicornis* (F.) (S, new), *Nysson spinosus* (Forster) (U), *N. trimaculatus* (Rossius) (W), *N. dimidiatus* Jurine (S), *Gorytes quadrifasciatus* (F.) (W), *Harpactus tumidus* (Panzer) (U), *Argogorytes mystaceus* (L.) (U), *Philanthus triangulum* (F.) (W, new), *Cerceris rybyensis* (L.) (RE), *C. arenaria* (L.) (W).

Colletinae: *Colletes succinctus* (L.) (U, new), *C. similis* Schenck (W, new), *C. daviesanus* Smith, F. (U, new), *Hylaeus cornutus* Curtis (S), *H. annularis* (Kirby) (RE, new), *H. communis* Nylander (W), *H. hyalinatus* Smith, F. (W), *H. confusus* Nylander (U, new).

Andreninae: *Andrena haemorrhoa* (F.) (U), *A. flavipes* Panzer (RE), *A. nitida*, (Müller) (W), *A. nigroaenea* (Kirby) (U), *A. bicolor* F. (U), *A. scotica* Perkins (U), *A. fucata* Smith, F. (U), *A. helvola* (L.) (W), *A. fulva* (Müller in Allioni) (U), *A. clarkella* (Kirby) (U), *A. apicata* Smith, F. (S), *A. fuscipes* (Kirby) (U, new), *A. denticulata* (Kirby) (U), *A. barbilabris* (Kirby) (U), *A. humilis* Imhoff (S), *A. chrysoceles* (Kirby) (W), *A. labiata* F. (S), *A. semilaevis* Perez (U), *A. falsifica* Perkins (R, new), *A. minutula* (Kirby) (U), *A. subopaca* Nylander (U), *A. ovatula* (Kirby) (W), *A. wilkella* (Kirby) (U, new), *A. dorsata* (Kirby) (W).

Halictinae: *Halictus rubicundus* (Christ) (U), *H. tumulorum* (L.) (U), *Lasioglossum leucozonium* (Schrank) (W), *L. quadrinotatum* (Kirby) (R), *L. lativentre* (Schenck) (W), *L. calceatum* (Scopoli) (U), *L. albipes* (F.) (U), *L. malachurum* (Kirby) (RE, new), *L. pauxillum* (Schenck) (RE, new), *L. fulvicorne* (Kirby) (W), *L. villosulum* (Kirby) (U), *L. punctatissimum* (Schenck) (W), *L. minutissimum* (Kirby) (W), *L. parvulum* (Schenck) (W), *L. rufitarse* (Zetterstedt) (W, new), *L. smeathmanellum* (Kirby) (U), *L. morio* (F.) (W), *L. leucopus* (Kirby) (U), *Sphcodes gibbus* (L.) (W), *S. reticulatus* Thomson (S, new), *S. monilicornis* (Kirby) (U), *S. pellucidus* Smith, F. (W), *S. ephippius* (L.) (W), *S. niger* von Hagens (VR, new), *S. puncticeps* Thomson (W, new), *S. ferruginatus* von Hagens (S), *S. crassus* Thomson (RE), *S. geoffrellus* (Kirby) (U).

Megachilinae: *Anthidium manicatum* (L.) (W), *Chelostoma florissomne* (L.) (W), *C. campanularum* (Kirby) (RE), *Osmia rufa* (L.) (U), *O. caerulescens* (L.) (W), *O. leaiana* (Kirby) (W), *Hoplitis spinulosa* (Kirby) (RE), *Megachile willughbiella* (Kirby) (U), *M. centuncularis* (L.) (U), *M. ligniseca* (Kirby) (W, new), *M. versicolor* Smith, F. (U, new).

Anthophorinae: *Nomada integra* Brullé (R), *N. rufipes* F. (U), *N. flavopicta* (Kirby) (S, new), *N. fucata* Panzer (RE, new), *N. goodeniana* (Kirby) (U), *N. lathburiana* (Kirby) (W, new), *N. marshamella* (Kirby) (U), *N. ruficornis* (L.) (U), *N. striata* F. (W), *N. leucopthalma* (Kirby) (U), *N. flava* Panzer (W, new), *N. panzeri* Lepetelier (U), *N. fabriciana* (L.) (U), *N. flavoguttata* (Kirby) (U), *Epeolus cruciger* (Panzer) (W, new), *Anthophora plumipes* (Pallas) (W), *A. furcata* (Panzer) (W).

Apinae: *Bombus lucorum* (L.) (U), *B. terrestris* (L.) (U), *B. lapidarius* (L.) (U), *B. pratorum* (L.) (U), *B. hortorum* (L.) (U), *B. pascuorum* (Scopoli) (U), *B. campestris* (Panzer) (U), *B. rupestris* (F.) (W), *B. sylvestris* (Lepelletier) (U), *B. vestalis* (Geoffroy in Fourcroy) (W), *Apis mellifera* L. (U).

APPENDIX 2

Aculeate Hymenoptera (25 species) added to the records for Shotover Hill in the 1980s by O'Toole and Archer, and not recorded since then.

Myrmica sabuleti Meinert (U), *Lasius fuliginosus* (Latreille) (W), *Cleptes semiauratus* (L.) (S), *Sapyga quinquepunctata* (F.) (W), *Pompilus cinereus* (F.) (U), *Anoplius viaticus* (L.) (S), *Odynerus spiiipes* (L.) (U), *Symmorphus gracilis* (Brullé) (W), *Ancistrocerus parietinus* (L.) (U), *A. scoticus* (Curtis) (U), *Vespa crabro* L. (W), *Dolichovespula norvegica* (F.) (U), *Crabro cribrarius* (L.) (U), *Crossocerus palmipes* (L.) (S), *Ectemnius sexcinctus* (F.) (W), *E. lapidarius* (Panzer) (U), *Rhopalum coarctatum* (Scopoli) (U), *Oxybelus argentatus* Curtis (S), *Colletes fodiens* (Geoffroy in Fourcroy) (W), *Andrena thoracica* (F.) (W), *Stelis punctulatissima* (Kirby) (S), *Osmia pilicornis* Smith, F. (R), *O. bicolor* (Schrank) (S), *Bombus ruderarius* (Müller) (W), *B. bohemicus* (Seidl) (U).

APPENDIX 3

Aculeate Hymenoptera (62 species) recorded on Shotover Hill before 1939 (Salzman, 1939), and not recorded since then. (Note: Some national statuses may have changed since 1939.)

Ateon gaullei Keiffer (status unknown), *Gonotopus striatus* Keiffer (status unknown), *Cephalononia formiciformis* Westwood (status unknown), *Bethylus cephalotes* Foerster (U), *B. fuscicornis* (Jurine) (W), *Leptothorax acervorum* (F.) (U), *Lasius mixtus* (Nylander) (U), *Pseudospinolia neglecta* (Shuckard) (S), *Chrysuria radians* (Harris) (R), *Chrysis illigeri* Linsenmaier (S), *C. ruddii* Shuckard (U), *C. viridula* L. (S), *Priocnemis agilis* (Shuckard) (S), *Arachnospila spissa* (Schjødte) (U), *A. trivialis* (Dahlbom) (W), *Ceropales maculata* (F.) (R), *Symmorphus connexus* (Curtis) (VR), *Ancistrocerus oviventris* (Wesmael) (U), *Vespula rufa* (L.) (U), *Crossocerus tarsatus* (Shuckard) (U), *C. capitosus* (Shuckard) (U), *C. nigritus* Lepelletier & Brullé (W), *C. vagabundus* (Panzer) (VR), *Ectemnius rubicola* (Dufour & Perris) (RE), *Mimesa bicolor* Jurine (VR), *Diodontus minutus* (F.) (W), *D. luperus* Shuckard (W), *Passaloecus monilicornis* Dahlbom (W), *Spilomena troglodytes* (Vander Linden) (W), *Mellinus crabroneus* (Thunberg) (VR), *Nysson interruptus* (F.) (VR), *Argogorytes fargei* (Shuckard) (R), *Hylaeus signatus* (Panzer) (S), *H. brevicornis* Nylander (W), *Andrena pilipes* F. (S), *A. bimaculata* (Kirby) (S), *A. tibialis* (Kirby) (S), *A. angustior* (Kirby) (W), *A. trünnerana* (Kirby) (S), *A. varians* (Rossius) (S), *A. praecox* (Scopoli) (W), *A. nigriceps* (Kirby) (S), *A. labialis* (Kirby) (W), *A. coitana* (Kirby) (W), *A. alfkenella* Perkins (VR), *A. niveata* Friese (VR), *A. similis* Smith (W), *Lasioglossum laevigatum* (Kirby) (RE), *Sphecodes hyalinatus* von Hagens (W), *S. niniatus* von Hagens (S), *Megachile circumcincta* (Kirby) (U), *Coelioxys elongata* Lepelletier (U), *Nomada obtusifrons* Nylander (W), *N. fulvicornis* F. (S), *N. sheppardana* (Kirby) (RE), *Eucera longicornis* (L.) (R), *Anthophora retusa* (L.) (VR), *Melecta albifrons* (Forster) (W), *Bombus soroensis* (F.) (U), *B. ruderatus* (F.) (S), *B. humilis* Illiger (W), *B. barbutellus* (Kirby) (W).

ADDITIONS AND CHANGES TO THE
BRITISH FAUNA OF FUNGUS GNATS
(DIPTERA: MYCETOPHILIDAE)

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ABSTRACT

Six species of Mycetophilidae are added to the British list from Scotland. These and another recently added species, *Mycomya paradentata* Väisänen, 1984 are figured. The female of *Creagdhubhia mallochorum* Chandler, 1999 is newly described and figured. The new synonymy *Phronia vitrea* Plassmann, 1999 = *P. carli* Chandler, 2001 is proposed. A new name *Sciophila pomacea* **nom. n.** is proposed for the preoccupied name *Sciophila ochracea* Stephens in Walker, 1856. *Mycetophila sigillata* Dziedzicki, 1884 of the British list is shown to be *M. subsigillata* Zaitzev, 1999.

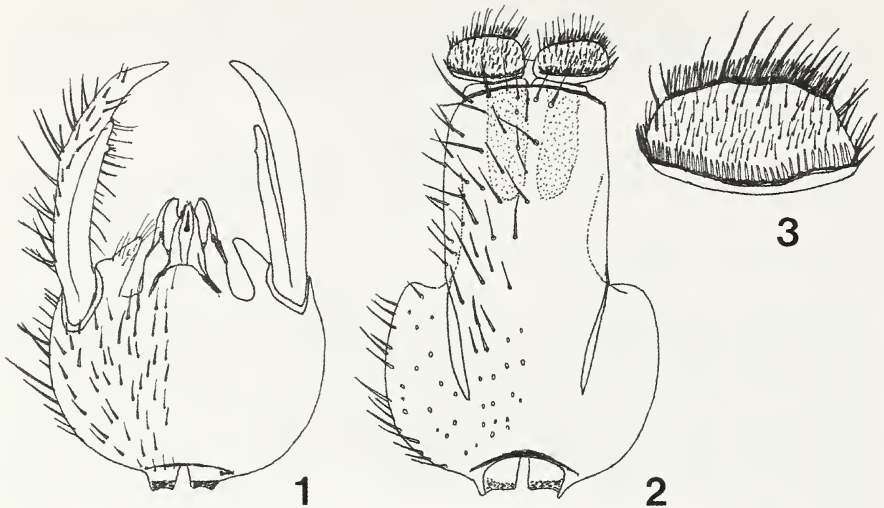
INTRODUCTION

The British list of fungus gnats was last updated by Chandler (2001) but further additions were already coming to notice when that paper was published. It is still not possible to provide names for the *Docosia* and *Cordyla* species mentioned then as revisions of the European species of these genera are still pending. A new species of *Pseudexechia* has recently been added (Kjaerandsen & Chandler, 2006) and further changes in that genus will be published elsewhere. Other additions and changes are reported here, in this instance all belonging to the family Mycetophilidae. Four of the additions result from Malaise trapping on the Royal Society for the Protection of Birds (RSPB) Abernethy Estate in Scotland and the discovery of these species, three of them represented by single specimens, shows that there is still potential in the Highlands for further additions to our fauna despite the increased recording there in recent years. Although collected in 1999, this material was only sorted and identified in 2004.

Most of the species added here belong to the groups covered by Hutson *et al.* (1980) and these species are figured and indication given where they fit in the keys provided in that handbook. For consistency the one species of Mycetophilinae added here is also figured. The higher classification used follows Chandler (2004) although some other authors prefer to follow Edwards (1925) and accord tribal status within Sciophilinae to the first three subfamilies covered.

The following abbreviations are used for institutions in which specimens are deposited. Other material cited is in the author's collection:

- BMNH Natural History Museum, London.
- NMS National Museums of Scotland, Edinburgh.
- NMW National Museum of Wales, Cardiff.
- ZSM Zoologische Staatssammlung, Munich, Germany.



Figs 1–3. Male genitalia of *Boletina landrocki* Edwards: 1, ventral view of gonocoxites and gonostyli; 2, dorsal view of tergite 9 (fused to gonocoxites basally) and cerci; 3, cercus.

THE SPECIES

Gnoristinae

Boletina bidenticulata Sasakawa & Kimura, 1974

Zaitzev *et al.* (2006) have shown that *Boletina dispecta* Dziedzicki, 1885 is on the British list due to a misidentification and our species should be known by the above name. They figured the male genitalia and provided a key to nine species of this group.

Boletina landrocki Edwards, 1924

(Figs 1–3)

New to Britain. This is a fairly large species, wing length 5.3–5.5 mm of similar build to *B. villosa* Landrock, 1912, which was found at the same locality. It has the body all black and the antenna dark except for the base of the first flagellomere. The palpi and halteres are yellow. The legs are yellow except for black trochanters. It has the laterotergite setose, Sc bare, sc-r present and the posterior claw of the fore leg modified into a broad black lobe. In the keys by Hutson *et al.* it runs to the couplet including *B. nasuta* (Haliday, 1839) and *B. pectinunguis* Edwards, 1932 but lacks the facial horn and yellow basal flagellomeres of the first while the latter has all the male claws modified and a third medial comb on each cercus.

This is apparently a boreo-alpine species with previous records from Norway, Finland, the Baltic states and northern Russia. It is newly recorded from France in Fauna Europaea (Chandler, 2004) and details of that record will be published elsewhere.

Boletina landrocki belongs to the group of the genus with the gonostylus basally divided into two lobes (Fig. 1). In the British fauna this also includes *B. nasuta*, *B. pectinunguis*, *B. villosa*, *B. dubia* (Meigen, 1804) and *B. plana* (Walker, 1856). Of

these *B. dubia* and *B. plana* differ from *B. landrocki* in having Sc setose and in *B. dubia* sc-r is absent. The modification of the male claws in *B. landrocki* is shared with *B. plana*, *B. nasuta* and *B. pallidula* Edwards, 1925, the last with undivided gonostylus. Some other species have like *B. pectinunguis* modified claws on all legs, *B. dubia* among the above group and two species with undivided gonostylus, *B. basalis* (Meigen, 1818) and *B. groenlandica* Staeger, 1845 while *B. villosa* differs in having all claws unmodified.

Three other European species also have the gonostylus divided. Of these *B. hundbecki* Lundström, 1912 and *B. oreadophila* Chandler, 1995 have the internal lobe deeply bifid apically, while *B. conformis* Siebke, 1864 has it with an apical spinose seta as in *B. villosa*.

Material examined. SCOTLAND: Inverness-shire, Abernethy Forest RSPB Reserve, by River Nethy, 20.ix–3.x.1999, 4 males, 2 females, leg. RSPB.

Boletina kivachiana Polevoi & Hedmark, 2004

Boletina nigrofusca: Edwards, 1925: 575, misidentification

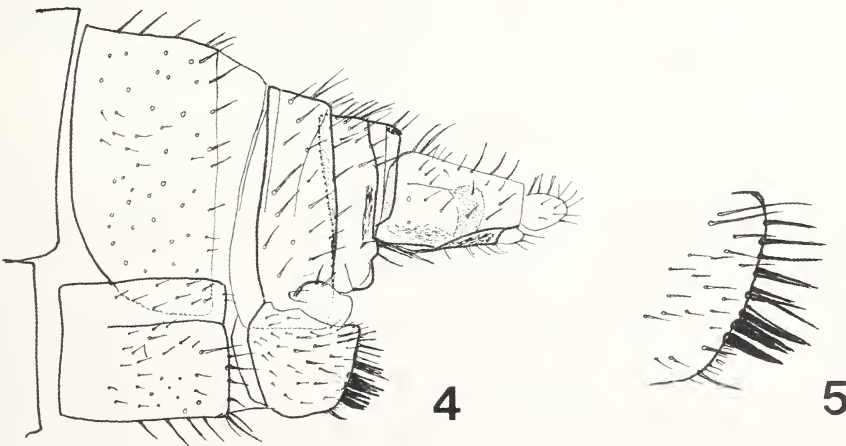
This change has been noted in *Dipterists Digest* (Editor, 2004). Polevoi & Hedmark (2004) described *B. kivachiana* from Finland but also noted that it was the species identified by Edwards (1925) and Hutson *et al.* (1980) as *B. nigrofusca* Dziedzicki, 1885. Edwards noted that the British specimen he had examined (Dingwall) did not fully agree with Dziedzicki's figures (Dziedzicki, 1885, Plate V, Figs 14–17) but thought this insufficient to establish a new species.

Material examined. SCOTLAND: Perthshire, Birks of Aberfeldy, 20.vii.1990, leg. P.J. Chandler; Elgin, Logie, 22.ix.1909 and ix.1913, leg. F. Jenkinson (BMNH and NMS); East Ross, Dingwall, 22.vii.1909, leg. J.J.F.X. King (BMNH).

Creaghubhia mallochorum Chandler, 1999

(Figs 4–5)

This species was described from a single male from Creag Dhubh, Perthshire (Chandler 1999). Further examples of both sexes have been found in Malaise trap



Figs 4–5. Ovipositor of *Creaghubhia mallochorum* Chandler: 4, lateral view; 5, detail of lateral lobe of sternite 8.

samples from the Mar Lodge Estate, Aberdeenshire so it is possible to describe the female. The specimens are not in good condition, having become partly dismembered after a few years in spirit so have lost most legs. The males agree with the previous description in having the radial cell quadrate unlike the females, but agree with the females in having sc-r a little less apical in position. All of these specimens of both sexes have all the fork veins complete to the wing margin so the slight abbreviation of M_2 and CuA_1 described and figured for the holotype does not appear to be typical. The description of the male antenna as being as long as the thorax appears to have been an error for twice as long as the thorax according to these further males examined.

Female. Similar to male in most respects. Antenna more slender and shorter, about equal in length to head and thorax together but proportion of flagellomeres similar. Palpus slender and shorter than in male, about as long as two thirds height of eye.

Legs with coxae and trochanters all dark, otherwise yellow. Mid tibia simple and unmodified, lacking the slight swelling and bare strip near the base in the male.

Wing venation similar but sc-r more basal, nearer to level of apical third of vein Sc. Vein R_4 further removed from R_s than in male, so that radial cell is 1.5–2.0 as long as broad, but slightly different in position in the two wings of each specimen.

Abdomen with tergites 2–6 subequal, tergite 7 shorter and ovipositor partly contracted into it in situ. Ovipositor (Fig. 4) mainly, including cercus and apical part of sternite 8 yellow. Sternite 8 (Fig. 5) bears 5–6 spinose setae on each side of its apical margin.

Wing length 4.9–5.4 mm.

Material examined: SCOTLAND: Aberdeenshire, Mar Lodge Estate: Dubh Ghleann (NO076956), 19.vi.2000, 2 males, 1 female; Upper Quoich (NO095952), 21.vi.2000, 2 females (all ex Malaise traps, leg. A. Godfrey).

Ectrepesthoneura Enderlein, 1911

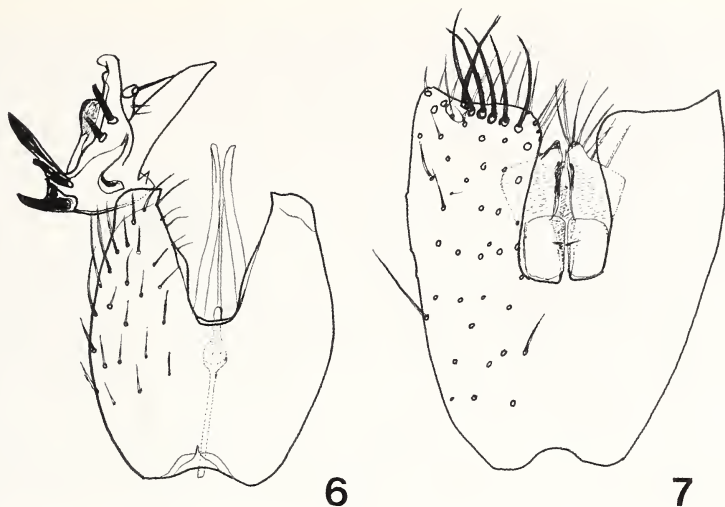
Descriptions and detailed figures of the ovipositors of the three species of this genus previously recorded as British (Chandler, 1980; Hutson *et al.*, 1980) have been provided by Martinsen & Söli (2000), which enables identification of the females. The female of the species added here has not, however, been described.

Ectrepesthoneura tori Zaitzev & Økland, 1994

(Figs 6–7)

New to Britain. This is a rare species, which was described from Norway by Zaitzev & Økland (1994) but has since been recorded from the Czech Republic, Germany, northern Russia and Italy. Kurina *et al.* (2005) have recently added Sweden to the distribution.

Ectrepesthoneura tori is a small species (wing length of British specimen 2.3 mm), entirely dark bodied with mainly yellow legs. The scape is black, the pedicel contrasted brownish yellow and the flagellum brownish, the palpi yellow and the legs mainly yellow. The mid and hind coxae are brownish and the hind femur has a slight brownish shade apically. It is thus closest to *E. pubescens* (Zetterstedt, 1860) in the colour characters given by Hutson *et al.* (1980) but the costa clearly extends more than halfway from R_5 to M_1 and it differs in the arrangement of setae on the hind tibia. The anterior setae are larger and more widely spaced on the basal half but form



Figs 6–7. Male genitalia of *Ectrepesthoneura tori* Zaitzev & Økland: 6, ventral view of gonocoxites and gonostyli; 7, dorsal view of tergite 9 and cerci.

a continuous row with the short close-set setae on the apical half; the dorsal setae are also sparse on the basal half but close-set on the apical half.

Tergite 9 (Fig. 7) is large and covering the genitalia dorsally as in most species of the genus and most resembles *pubescens* of the British species in having a simple apical margin that is narrowly cleft medially. However, the structure of the gonostylus (Fig. 6) is rather different with a convoluted surface bearing strong broadly flattened setae.

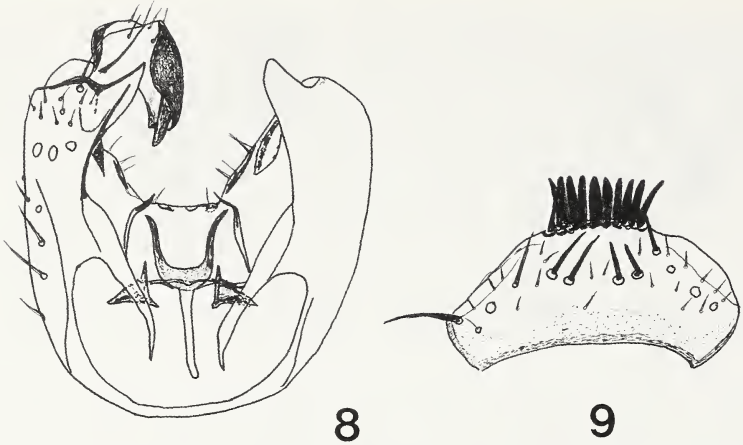
Material examined. SCOTLAND: Inverness-shire, Abernethy Forest RSPB Reserve, Bognacruie, 3.viii–25.ix.1999, Malaise trap, 1 male, leg. RSPB.

Syntenna setigera Lundström, 1914

(Figs 8–9)

New to Britain. Polevoi (2003) revised the Palaearctic species of this genus and provided a key to eleven species based on male genitalia. In this respect *S. setigera* differs from other British species in having tergite 9 (Fig. 9) broadly tapered apically and the comb of strong setae that characterises most species of the genus appears set directly on the margin rather than on a medial lobe as in the other three British species. In Polevoi's key it is coupled with *S. penicilla* Hutson, 1979 as both have a single row of subsidiary setae on the disc of tergite 9 but *S. penicilla* has tergite 9 broadened immediately basal to the comb and lacks the apical internal flap of the gonocoxites present in *setigera*.

The body of the British specimen (wing length 2.8 mm) is entirely dark with dark bristling, the antennae and palpi brownish, the coxae brownish but the legs otherwise yellow. Abdominal coloration is variable in this genus so cannot be used as a key character.



Figs 8–9. Male genitalia of *Syntenna setigera* Lundström: 8, dorsal view of gonocoxites and gonostylus; 9, dorsal view of tergite 9.

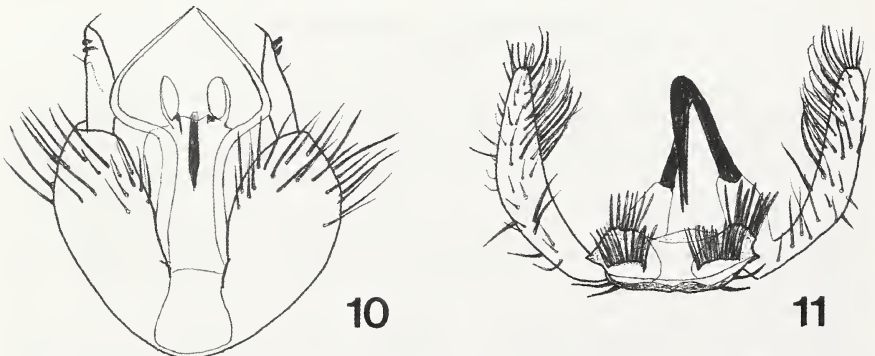
Material examined. SCOTLAND: Inverness-shire, Abernethy Forest RSPB Reserve, Bognacruie, 3.viii–25.ix.1999, Malaise trap, 1 male, leg. RSPB.

Mycomyinae

Mycomya (Mycomyopsis) paracentata Väisänen, 1984

(Figs 10–11)

This species was added to the British list from Sheephouse Wood, Yorkshire by Coldwell (2004), who stated that it had already been found in Wales. This is a widespread western Palaearctic species including France, Denmark, Sweden, Finland, Poland, Ukraine and Russia (Väisänen, 1984). The Welsh records were from a survey of woodlands carried out using Malaise traps by Brian Levey and Mark Pavett (National Museum of Wales).



Figs 10–11. Male genitalia of *Mycomya paracentata* Väisänen: 10, dorsal view of gonocoxites and gonostylus; 11, dorsal view of tergite 9.

Mycomya paracentata belongs to the subgenus *Mycomyopsis*, characterised by distinctive genital structure of the male with tergite 9 (Fig. 11) possessing setose lateral appendages and paired combs of spinose setae medially. The male coxae are simple without any secondary sexual characters and the posterior fork of the wing begins distal to the base of the stem of the median fork. The body is mainly dark, with yellow markings on the thorax restricted to the prothoracic sclerites and the humeral area and narrow sides of the mesonotum.

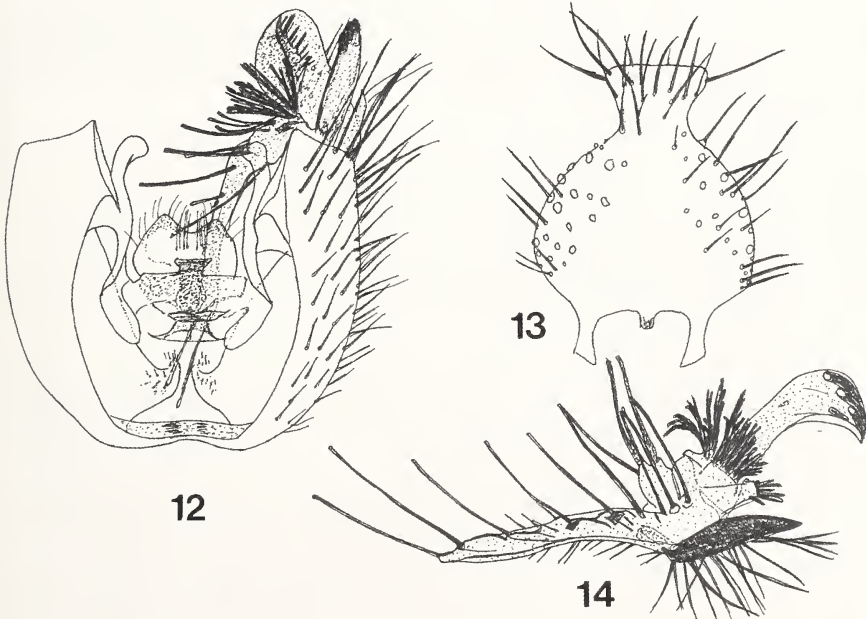
From the five previously known British species of *Mycomyopsis*, *M. paracentata* is distinguished by the tergal lateral appendages (Fig. 11) having a dense brush of close-set setae occupying the apical half of the internal face with sparsely scattered setae on most of their surfaces while the other species have this appendage more uniformly setose and all except *M. affinis* (Staeger, 1840) have a row of flattened setae internally or apically in the case of *M. trilineata* (Zetterstedt, 1838). It agrees with *M. affinis*, to which it runs in the key by Hutson *et al.* (1980), in having the fork veins practically devoid of setulae but agrees with the other species in the presence of slender curved sternal submedian filaments (Fig. 10) that are lacking in *M. affinis*.

Material examined. WALES: Merionethshire, Coed y Rhygen, 14.vii–8.ix 1999, 3 males, 1 female, leg. B. Levey & M. Pavett (NMW).

Sciophilinae

Sciophila Meigen

Additions and changes to this genus were covered by Chandler (2001) but it was then mentioned that description of a further species was awaited. This has now been



Figs 12–14. Male genitalia of *Sciophila salassea* Matile: 12, dorsal view of gonocoxites and gonostylus, without tergite 9 but including cerci; 13, dorsal view of tergite 9; 14, internal view of gonostylus.

described as *S. krysheni* Polevoi, 2001. Another species from Scotland is added here. It is also necessary to provide a replacement name for a homonym.

Sciophila salassea Matile, 1983

(Figs 12–14)

New to Britain. This species was described from the valley of Aosta in the Italian Alps and has since been recorded from Norway and Russian Karelia. Only a single male has been found in Britain but Jostein Kjaerandsen kindly forwarded some Norwegian material for comparison. He has also examined type material of *salassea* at Paris and confirmed it to be conspecific.

Male. Head dark brown. Antenna dark, only slightly paler at base of first flagellomere; flagellomeres 2–6 about twice as long as broad, subsequent flagellomeres becoming progressively more slender with apical one most elongate. Palpus longer than height of head, brownish yellow; terminal palpomere paler and more slender.

Thorax entirely dark with pale bristling. Pleura bare. Laterotergite and mediotergite with long pale bristling

Legs yellow, except for trochanters with dark patch beneath and tarsi appearing more brownish; tibial spurs yellow. Coxae with long yellow bristling. Femora with short brown hairs. Tibiae and tarsi with short black setae. Mid tibia with 5 *a-d*, 2 *p-d*, 3 *p* and 3 *p-v* setae. Hind tibia with 5 *a*, 4 *a-d* and 5 *p-d* setae about as long as tibial width and 4 shorter *p* setae on apical half.

Wing broad (maximum width 1.4–1.6 mm), yellowish, with both macrotrichia and microtrichia evenly distributed over entire membrane. Vein *sc-r* level with base of *Rs*. Vein *R*₄ present, forming a quadrate radial cell. Costa produced 0.2 distance from *R*₅ to *M*₁. Stem of median fork short, less than half as long as crossvein *r-m*. Median and posterior forks complete. Posterior fork begins level with basal quarter of median fork. Haltere yellow.

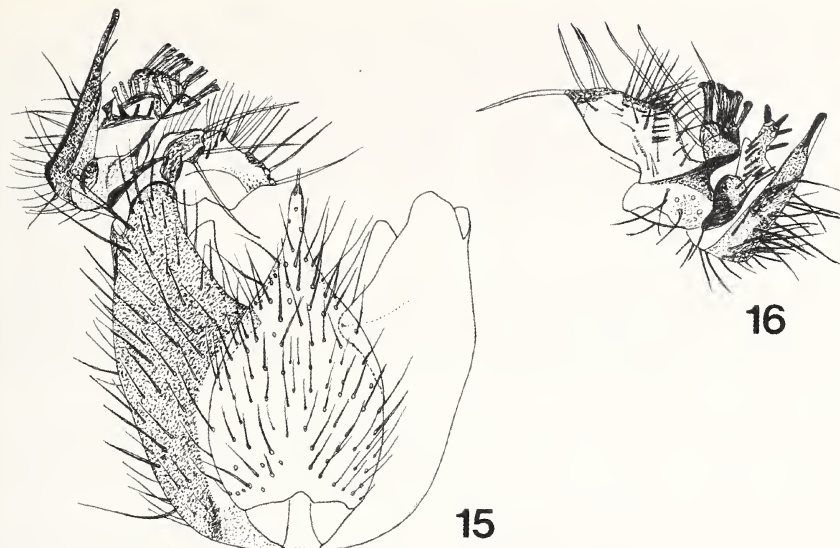
Abdomen entirely dark with yellowish to brown hairs and some longer setae dorsally on tergite 7. Tergite 9 (Fig. 13) laterally rounded but constricted before a short blunt apical lobe bearing irregular setae on its margin. Genitalia with gonocoxites (Fig. 12) dark brown, gonostylus mostly yellow with dark brown setae. Gonostylus (Fig. 14) with dorsal lobe elongate, apically broadened and asetose apart from a comb of short flattened setae apically; internal lobe bearing branched setae; ventral lobe broad apically, with elongate proximal lobe bearing long strong setae.

Wing length 3.0–3.7 mm.

Female. Not examined.

Material examined. SCOTLAND: Inverness-shire, Abernethy Forest RSPB Reserve, by River Nethy, 19.vi–5.vii.1999, 1 male, leg. RSPB, deposited in National Museums of Scotland, Edinburgh (NMS). NORWAY: MRI [= Møre og Romsdal inner], Øvre vike, 12.vi–2.vii.1999, Malaise trap, 3 males, leg. O. Hassen (1 deposited in NMS, others in author's collection).

Discussion. This is a small species with distinctive genital structure, the dorsal lobe of the gonostylus being especially striking. The form of the other parts of the gonostylus is more typical of the genus. In the key by Hutson *et al.* (1980) it runs to the couplet including *S. cliftoni* Edwards and *S. fridolini* Stackelberg, 1943 but apart from the gonostylar structure it differs from them in the form of tergite 9, which is similar among British species to that of *S. nigronitida* Landrock, 1925, a darker species with the hind femur black apically. Matile (1983) suggested that it formed a natural group with this and two other boreal species, the Palaearctic *S. fuliginosa*



Figs 15–16. Male genitalia of *Sciophila krysheni* Polevoi: 15, dorsal view, with tergite 9 *in situ*, of gonocoxites and gonostylus; 16, internal view of gonostylus.

Holmgren and Nearctic *S. canadensis* Zaitzev, 1982. The latter species differ in other details of the genital structure, *S. nigronitida* and *S. fuliginosa* differing most obviously in the ventral lobe of the gonostylus being pointed and bearing short setae apically.

***Sciophila krysheni* Polevoi, 2001**

(Figs 15–16)

New to Britain. This was first recognised from the male collected by Ivan Perry but introduction to the British list was deferred pending description from Finland. Subsequently, Andrew Godfrey found further examples. The description of the British specimens provided below agrees well with that by Polevoi (2001).

Male. Head black, grey dusted, with all setae pale yellow. Antenna longer than thorax with scape, pedicel and flagellomeres 1–3 clear yellow, 4 obscurely yellow basally, the rest black; flagellomeres 2.5–3× long as broad. Palpus slender, yellow.

Thorax black but strongly grey dusted; proepisternum brownish yellow with many long yellow setae; mesonotum covered with long pale yellow setae. Anepisternum with short pale setae on anterior part. Laterotergite with long yellow setae. Scutellum with long yellow setae on disc and margin.

Legs yellow with tarsi pale basally on first tarsomere, progressively appearing more brownish. Femora with pale yellow hairs, tibiae with brown setulae and darker setae, tarsi with all setae and setulae dark.

Wing clear with costa, radial veins and vein *tb* brownish and bearing dark setulae. Wing membrane covered with both microtrichia and macrotrichia, the latter being sparser in the basal cells from costa to *tb*. Vein *sc-r* just beyond junction with *Rs*. *R*₄ vertical, forming a square radial cell. Costa exceeding tip of *R*₅. Stem of median fork

shorter than crossvein r-m. Posterior fork begins opposite level of tip of Sc. Fork veins complete. Squama with pale marginal hairs. Haltere clear yellow.

Abdomen dark brown with pale setae. Genitalia (Figs 15–16) entirely dark brown with dark setae. Tergite 9 (*in situ* in Fig. 15) broadly rounded basally, tapered apically to end in slender median process. Outer lobe of gonostylus (Fig. 16) tapered to blunt tip. Some intermediate lobes with flattened or apically enlarged macrochaetae, lower lobe triangular with long yellow setae on dorsal and apical margin and transverse row of short black setae are internally projected on its basal half.

Wing length 3.2 mm.

Female. Unknown.

Material examined. SCOTLAND: Perthshire, Black Wood of Rannoch, Allt nan Bogair, 2.vi.1998, 1 male, leg. I. Perry, deposited in NMS. Aberdeenshire, Mar Lodge Estate, Luibeg (NO036932), 21.ix.2000, 2 males, Malaise traps, leg. A. Godfrey, in author's collection.

Discussion. This species was described from Finland by Polevoi (2001) and has also been recorded from the Czech Republic (Ševčík, 2005). In the key by Hutson *et al.* (1980) it runs to couplet 14 because of the dark body coloration with the legs and base of the flagellum yellow, but differs from the included species in the relatively short flagellomeres and genital structure.

The genitalia bear some resemblance to *S. cliftoni*, but in that species tergite 9 is less tapered apically and with longer apical setae (according to Zaitzev, 1982 but not according to Hutson *et al.*, 1980) and the external lobe of the gonostylus is short without the produced apical part. The Nearctic species *S. iowensis* Zaitzev, 1982 is also similar, but has tergite 9 broader subapically and also has a simple outer lobe to the gonostylus.

Sciophila pomacea nom. n.

Sciophila ochracea Stephens in Walker, 1856: 41, preocc. Macquart, 1826: 100

A new name is proposed for this species because the name in previous use is a homonym. *Sciophila ochracea* Macquart is a nomen dubium and type material is presumed to be lost. According to Macquart's description the abdominal tergites are black with yellow hind margins so it cannot be conspecific with *ochracea* Stephens in Walker, which is an entirely yellow species.

The identity of *Sciophila ochracea* Stephens in Walker was established by Edwards (1925), who found a type specimen in the Stephens collection (BMNH).

Etymology. The name is an adjective relating to the host fungus *Phellinus pomaceus* (Pers.) Maire, which forms brackets on trees of the family Rosaceae. The few British records are mainly in association with this fungus (Chandler, 1992; Falk & Chandler, 2005). Some specimens that were under *S. lutea* Macquart, 1826 in the Staeger collection (Zoological Museum, Copenhagen) were labelled as from a polypore fungus on *Salix* so *P. pomaceus* may not always be the host.

Mycetophilinae

Keys in English including the majority of British species of this subfamily have recently appeared (Zaitzev, 2003), with illustrations of the male genitalia. Chandler (2005) reviewed this work from the point of view of the British fauna and provided a list of references covering those British species that are omitted from it.

Mycetophila subsigillata Zaitzev, 1999

Zaitzev (1999) recognised that *Mycetophila sigillata* Dziedzicki, 1884 of previous authors comprised two species and restricted the name *M. sigillata* to a species that was widespread in central Europe and the east Palaearctic, describing the other as *M. subsigillata*. It was incorrectly stated by Chandler (2001) that British specimens of *M. sigillata* agreed with Zaitzev's figures under that name. Subsequent examination of British and Irish material has so far only confirmed the occurrence here of *M. subsigillata*, so it is necessary to replace the name *M. sigillata* on the British list. Both species have been examined from Switzerland and *M. sigillata* has also been seen from France so it is possible that it too occurs in Britain.

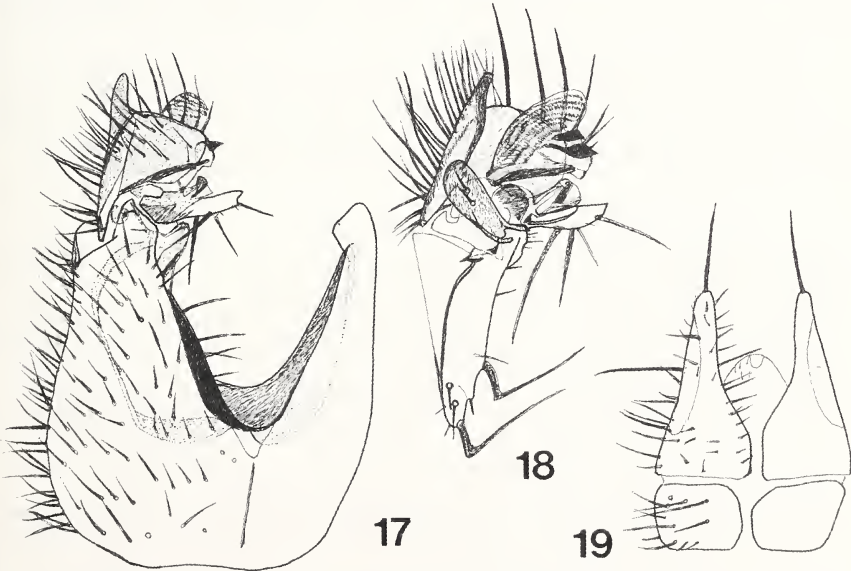
Material examined. SCOTLAND: 24 males from 17 localities in Sutherland, West and East Ross, Inverness-shire, Aberdeenshire, Argyllshire, Perthshire and the Isle of Mull. WALES: 1 male, Merionethshire, Coed Cymerau, 13.vii.1976, leg. A.E. Stubbs. IRELAND: 4 males from Sligo, Roscommon, Wicklow and Cork.

Phronia tiefii Dziedzicki, 1889

(Figs 17–19)

This is a distinctive species as the gonocoxites (Fig. 17) have a deep triangular excavation for about two thirds of their length and the gonostylus (Fig. 18) bears on the internal margin of its proximal lobe two setae that are conspicuously bent at right angles. This species is also of more slender build with longer legs than most *Phronia* species. The male genitalia were figured by Dziedzicki (1889) and Gagné (1975).

Phronia tiefii is a Holarctic species that is widespread in central and northern Europe. Both Scottish sites are native *Pinus* woodland with *Betula* and *Juniperus*.



Figs 17–19. Male genitalia of *Phronia tiefii* Dziedzicki, 1889: 17, ventral view of gonocoxites and gonostylus; 18, internal view of gonostylus; 19, dorsal view of tergite 9 and cerci.

Material examined.. SCOTLAND: Inverness-shire, Loch an Eilein (NH897080), 15.ix.2004, 2 males, leg. I. Perry; Rothiemurchus (NH9181000), 15.ix.2004, 1 male, leg. I. Perry.

Phronia vitrea Plassmann, 1999

Phronia vitrea Plassmann, 1999: 6.

Phronia carli Chandler, 2001: 239, **syn. n.**

Phronia longelamellata: Lundström, 1906, misidentification, not Strobl, 1898

Phronia carli was proposed as a new name for the species added to the British list as *P. longelamellata* Strobl by Chandler (1992). During the preparation of the list for *Fauna Europaea* the type of *P. vitrea* (Plassmann, 1999) was examined and it was found that it was conspecific with the types of *P. carli*. This synonymy has already been indicated (Chandler, 2004) but is formally established here.

Type material examined.

Holotype male of *Phronia vitrea* Plassmann: SWEDEN, Abisko, 18–25.viii.1976, leg. K. Müller (ZSM).

Holotype male of *Phronia carli* Chandler: SCOTLAND, Perthshire, Bridge of Balgie, 10.vii.1998, leg. P.J. Chandler (NMS).

ACKNOWLEDGEMENTS

The author is indebted to the collectors involved for referring material to me, in particular Andrew Godfrey and Ivan Perry for their interesting finds. The species recorded from Abernethy Forest were the result of surveys carried out by the Royal Society for the Protection of Birds. I am grateful to Mark Telfer for organising the sorting and identification of this material and to David Gibbs and John Ismay, who sorted the fungus gnats from these samples.

I am grateful to Jostein Kjaerandsen for kindly forwarding to me Norwegian material of *Sciophilina salassea* and enabling me to include his record here and to Olavi Kurina for alerting me to this find. I also thank Alexander Zaitzev for informing me of the pending description of *S. krysheni* when he saw my figures of this in 1999.

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BOOK REVIEW

Coléoptères d'Europe: Carabes, Carabiques et Dytiques. Volume 1: Adepaga by Gaëtan du Chatenet. (N.A.P. Editions, 3 Chemin des Hauts Graviers, 91370 Verrières le Buisson, France, 2005), 639 pp. Hard cover. €59.00 including postage and packaging from the publisher. ISBN 2-913688-05-5.

This is the third identification guide in French written and illustrated by du Chatenet covering the beetles of Europe. Its two predecessors covered a range of phytophagous families. Further information on all three books is available at www.coleopteres.com, in both French and English.

The current volume includes 62 pages of general introduction to the Coleoptera. There are sections on the morphology, biology, habitats and distributions of beetles, followed by a well-illustrated section on collecting and studying beetles.

The introduction is followed by a key to the four sub-orders of Coleoptera (Archostemata, Adepaga, Myxophaga and Polyphaga). The small sub-orders Archostemata and Myxophaga are then dealt with in five pages, leaving the remaining bulk of the book to cover the Adepaga. Rather more space is given to the Carabidae, and particularly to the tiger-beetles (Cicindelinae) and species of *Carabus*, etc. (Carabinae). These two subfamilies of large and colourful beetles are popular with collectors and are covered in 84 pages. By contrast, the aquatic families of Adepaga (Dytiscidae, Noteridae, Gyrinidae, Hygrobiidae and Haliplidae) are covered in 51 pages.

This book includes keys to sub-orders, to families within sub-orders, and for Carabidae and Dytiscidae, keys to sub-families. However, the vast bulk of the book is organised as a field guide. Each species account includes a French vernacular name (usually simply a translation of the scientific name), adult body length and description, habitat, season and either a small European distribution map or a description of the range.

The 31 plates are bound into the centre of the book. Du Chatenet's colour paintings are beautiful and make this book a pleasure to own even when reading the foreign language text poses a problem. It has to be said that the plates rather exaggerate the beauty of the beetles they illustrate, with stronger colours and more contrasting patterns than in life. Du Chatenet also has a curious habit of stretching his illustrations to make every specimen look more elongate and slender than in reality. However, these criticisms do not necessarily detract from the usefulness of the illustrations as identification aids. On the facing page to each plate, there are schematic maps of the distribution of each illustrated species in France with a comment on its French status. In addition to the plates, there are numerous sketches scattered through the text.

Inevitably for a field guide, this book is more useful for the larger, more colourful or patterned species (such as the tiger-beetles and *Carabus* species) than it is for the more technical groups such as *Amara* and *Harpalus*. It does appear to provide complete coverage of the European fauna but many species are just listed with a line or two describing their European range.

The whole volume is well-produced, attractive and sturdily bound. This makes a worthwhile purchase for British coleopterists, especially those whose entomological interests extend to the continent, who have an ability in the French language, and who appreciate a good quality book.

MARK G. TELFER

APPARENT TERRITORIALITY OF THE BLACK DARTER *SYMPETRUM DANAÆ* (SULZER), NEW TO THE NATIONAL WETLANDS CENTRE WALES

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ABSTRACT

A preliminary study was made of two male *Sympetrum danae* (Sulzer), on the day of their only recorded sighting to date, at an alkaline pond at the National Wetlands Centre Wales. Behaviour was categorised and recorded in twenty minute blocks to produce a time budget for each insect. Perch sites and perch durations were also noted. Differences between and within the time budgets of the individual males were confirmed using a G-test for homogeneity. Both had one perch site they used more frequently than others and intruders of alien species were chased away from such locations. The territory of each male was separated by a boardwalk, and therefore had no common edge. This apparent site attachment supports the view that these individuals were behaving in a territorial manner.

INTRODUCTION

Males of many species of dragonfly (Odonata) have been observed to exhibit territoriality (Corbet, 1980). Complex combinations of spatial, temporal and biological factors determine such expressions of territoriality (Parr, 1983). A territory has been defined for Odonata by Corbet (1999) as “an area occupied by an individual (or occasionally more than one individual) and defended against intruders”. Site attachment is defined as the “association over time between an individual and a particular site” (Corbet, 1999). Site attachment is positively correlated with territoriality and aggression (Parr, 1983).

The most widely accepted primary function of territoriality is to space individuals, providing the territory holder with improved access to essential resources (Kaufmann, 1983). These resources include food, protection from predators, and access to females for mating. Territoriality in the Odonata tends to occur in species with marked sexual dimorphism. Such species can visually recognise male and female conspecifics and react appropriately (Johnson, 1963). Intra-specific territoriality predominates (Moore, 1964), but inter-specific territoriality can occur when specific recognition is impossible, or when individuals of different species are competing for the same resource (Alcock, 2001).

Recent accounts of the expression of territoriality in the Black Darter *Sympetrum danae* (Sulzer) are conflicting. Michiels and Dhondt (1990) define *S. danae* as “a small non-territorial libellulid”. Brooks (2002) states that “mature males are non-territorial”, while Corbet (1999) reports that *S. danae* shows sexual selection “through mate acquisition by scramble competition”, a non-territorial form of mate selection. Subsequently, Corbet, referring to Michiels and Dhondt’s (1991) work on *S. danae*, states that “size increases mating success in non-territorial males”. In contrast, Parr (1983), in work analysing territoriality in libellulids, categorised *S. danae* as a territorial libellulid. He described the relationship between size of odonate species and the area they defend as being one in which “small species [e.g. *Sympetrum danae*] tend to defend small areas”. Merritt *et al.* (1996) describe *S. danae* as being “not strongly territorial”.

The present study provides preliminary evidence of territorial expression by *S. danae* in a single locality and on a single day.

MATERIALS AND METHODS

Recording took place on 17 September 2003 at the National Wetlands Centre Wales (NWCW). The Centre is located at OS Grid Reference SS532984 (51:39:55N, 4:07:59W) and is part of the Millennium Wetlands. It is a Site of Special Scientific Interest, based on its dragonfly population alone, a Special Area of Conservation, a Special Protected Area and a RAMSAR site (a designation for important wetland areas) (Hails, 1996). Data collected involved the first recorded incidence of *S. danae* at the site.

Observations took place at a small alkaline pool (pH 9.2) with an approximate diameter of 10m, to the north of the site. *Iris pseudocorus* (Yellow Flag Iris), *Typha augustifolia* (Lesser Reedmace) and *Juncus* spp (rushes) dominated emergent vegetation. The pool is a known breeding site for other species of Odonata (Thomas, 2002).

Behavioural Data Collection

The activity budgets of two male *S. danae* were recorded at isolated sections of the pool. Sessions were timed separately using a continuously running standard digital chronograph (with the smallest measurable unit of one-hundredth of a second). Interactions with all other odonate species were recorded, and observations for each individual continued for 20 minutes at a time. The time each bout of activity ended was recorded. Behaviour was categorised as:

Perching. Adults not flying, remaining in a place and maintaining an open view of the surroundings (Corbet, 1999). Perch duration and location were recorded. Perch sites were subsequently scored 1 to 4 (1 for the perch site at which the greatest time was spent).

Patrolling. Steady and moderately low-level flight (Corbet, 1999).

Chase types. Definitions of these encounters can be found in Corbet (1999) and Alcock (1987). They included horizontal chase, ascending flight, meet-and-turn encounters, spiral or circle flights, zigzag flight and feeding attempts.

Data Analysis

The behavioural data were recorded as a spreadsheet in Excel (2000). The activity budgets for males 1 and 2 are presented in Table 1. Percentage times allocated for each perch site in each male's area were recorded and are presented in Table 2.

The data were analysed to compare time allocated to each activity by each male, and to compare times allocated to each perch site. A G-test for homogeneity (Fowler *et al.*, 1998) was used to confirm trends statistically.

RESULTS

The data showed that both male *S. danae* devoted significantly more time to perching than to other activities (Table 1).

The time allocation of the first male differed significantly from that of the second male. The first male spent more time patrolling, which increased encounter rate and resulted in more time chasing. The second male spent less time patrolling, which to a

Table 1. Time budgets for two male *Sympetrum danae* at the National Wetlands Centre Wales, 17 September 2003.

	Total duration of each activity in seconds			
	Perch	Patrol	Chase	Feed
Male 1 (% time)	986 (82.2)	121 (10.1)	87 (7.2)	6.0 (0.5)
Mean (n)	26.0 (38)	8.1 (15)	4.0 (22)	2.0 (3)
Male 2 (% time)	1143 (95.3)	42 (3.5)	15 (1.2)	0.0 (0.0)
Mean (n)	60.2 (19)	2.6 (16)	7.5 (2)	0.0 (0)

Table 2. Percentage time spent by each male *Sympetrum danae* at scored perch sites in their respective areas.

Perch site score	% time allocated to perch sites	
	Male 1	Male 2
1	88.2	76.0
2	7.0	17.9
3	4.6	4.1
4	0.2	2.0

degree resulted in less time chasing. Only the first male was observed feeding. Both males devoted more time to patrolling than to chasing (Table 1).

Both males used a total of four perch sites during the observation period. However, they spent significantly more time at one particular perch site within each of their respective areas (Table 2).

Observations showed that the type of chase behaviour varied according to the 'adversary' involved. Intruders were easily identified as they were always of different species (no intra-specific encounters were noted). Chases involving aeshnid dragonflies tended to be of the 'zigzag', 'meet-and-turn' or 'horizontal' types, and to be the longest such events in the present study.

The first male showed mean chase durations of 5.3 seconds and 6.3 seconds when chasing *Aeshna mixta* (Latrielle) (Migrant hawk) and *Aeshna cyanea* (Müller) (Southern hawk), respectively. The second male only had encounters with *A. mixta* that resulted in a mean chase duration of 7.5 seconds of the 'zigzag' category. Chases involving *Sympetrum striolatum* (Charpentier) (Common darter) were of a 'horizontal' or 'spiral' nature. The mean chase duration for this species for male 1 was 3.0 seconds. Chases of lestedids tended to be brief, and 'horizontal'; the mean duration of chases for *Lestes sponsa* (Hansemann) (Emerald damselfly) was 2.1 seconds. The resident was always seen to 'win' every encounter observed, resulting in the 'loser' retreating from the area.

DISCUSSION

The first male allocated more time to chasing than the second male, as a higher incidence of intruders occurred within its home area. The second male operated in an

area that did not appear to be so desirable as an oviposition site, so that fewer intruders might be expected. This may have also resulted in this individual showing a greater tendency to move between perches, as intruders deemed no part of the area as particularly desirable. The higher frequency of chases undertaken by the first male may have necessitated feeding, as more energy would have been expended in patrolling and chasing. In contrast, the second male was more sedentary and did not feed during the observation period. Any discrepancies in the times that the two males spent at their preferred perch sites may have resulted from differences in the amount of time allocated to chasing intruders.

Both males spent most of their time perching and clearly had preferred locations. Parr (1983) defines 'perchers' as spending less than 20% of their time in the air. Males 1 and 2 spent 17.4% and 4.7% of time in the air, respectively, and therefore their behaviour fits this description of territorial male Odonata. This behaviour is not incompatible with Corbet's definition of site attachment. Basking areas favoured by other *Sympetrum* species were available in close proximity to the used perch sites, but were not used by these males.

As noted earlier, this was the only recorded sighting to date of this species at the NWCW and regrettably responses to conspecifics by these males could not be assessed. Both test males, however, rapidly responded to the presence of other species of Odonata by chasing them away from their perch sites and the area immediately surrounding them. The pond at which the recordings took place is a popular oviposition site for other species of Odonata. Species recorded using the pond included 4-Spotted chaser *Libellula quadrimaculata* (L.), Emperor dragonfly *Anax imperator* (Leach), Common darter *Sympetrum striolatum* (Charpentier) and Migrant hawk *Aeshna mixta* (Latrielle). Frantsevich and Mokrushov (1984) suggested that as *S. danae* lacks wing markings, it cannot easily distinguish inter- from intra-specific competitors. Consequently, the high population density of Odonata at the site may be perceived by this species as a high density of competitors.

Mating tactics of Odonata appear to change under varying environmental conditions (Corbet, 1999), and territoriality is known to be a 'plastic' feature in certain species of Odonata. Particular factors at the site may have enabled these two individuals to show apparent territorial behaviour. Geographic location may also alter the incidence of territoriality; *S. danae* behaving differently in different parts of its range, as environmental conditions vary. The limited numbers of observations of the behaviour of this species in only a few geographic areas of its range, and in defined circumstances, are likely to account for the varied judgements made concerning whether *S. danae* is territorial or not. The present study confirms that *S. danae* can be territorial. The precise reasons for this occurrence at this place and time remain to be determined.

ACKNOWLEDGEMENTS

The authors would like to thank Mr John Badmin and the anonymous referees for their valuable comments on previous drafts of the manuscript.

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BOOK REVIEW

Invertebrati di una foresta della Pianura Padana, Bosco Della Fontana. Secondo Contributo [*Invertebrates of a Padana Plain Forest: Bosco della Fontana. Second Contribution.*] Edited by Pierfilippo Cerretti, Sönke Hardersen, Franco Mason, Gianluca Nardi, Mara Tisato & Marzio Zapparoli. Conservazione Habitat Invertebrati 3–2004. Cierre Grafica Editore, Verona, 304 pp. €12.00. ISBN 88-8314-335-3. Available from: Corpo Forestale dello Stato, Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale, Via C. Ederle 16 a, 37100 Verona, Italy.

The National Centre for the Study and Conservation of Forest Biodiversity in Verona has been undertaking a series of studies on the invertebrates of Italy's protected areas. The first book *Invertebrates of a Padana Plain Forest: Bosco della Fontana* was published in 2002 and both describes the study site and contains a series of papers by taxonomists from home and abroad. The new volume reports on the findings of subsequent scientific surveys, and comprises nineteen individual papers plus a large number of short notes. Despite the title, the papers are mostly written in English—the few in Italian have English abstracts.

The Bosco della Fontana nature reserve is one of the last oak-hornbeam relict forests still existing on the Po plain in Lombardy. It occupies about 233 ha at an altitude of 25m asl. More than half of the papers in the volume are on different

families of Coleoptera, but other groups are also included—centipedes, dragonflies, scorpion flies, and various Diptera. There is also a paper by Peter Huemer providing an initial assessment of the species diversity of Lepidoptera. The Coleoptera covered are Carabidae, water beetles, Nosodendridae, Dermestidae, Bostrichidae, Anobiidae, Ptiliidae, Throscidae, Latridiidae, Laeomophloeidae, Silvanidae, Ciidae and Scolytidae. Diptera covered are fungus gnats—written by Peter Chandler—Culicidae, Stratiomyidae, Asilidae and Tachinidae.

The papers are packed with data and illustrated with drawings and some excellent photography—partly in colour. The Ciidae paper by Johannes Reibnitz illustrates the depth and style of investigation—156 specimens were collected between April and October 2000 using 70 window traps of two types (flight and trunk) on three tree species in *Quercus robur* forest. Nine species of Italy's 49 recorded species were represented, the commonest by far being *Cis boleti* (Scopoli)—as in GB. Six of the nine species are on the British list so there is a significant overlap in the fauna. Interestingly *Orthocis lucasi* (Abeille de Perrin) develops in the fungus *Schizophyllum commune* on the Reserve—while this fungus is widespread in Britain we have not found this beetle. The author emphasises that dead wood exposed to the sun is important for this group of beetles. All of the specimens are preserved in the Centre's collection.

The studies are not just about compiling site inventories. Research is also being conducted into various aspects of forest ecology, and especially where this might inform conservation management. The aim of the paper on ambrosia beetles (Scolytidae) by Massimo Faccoli and Jean-Paul Rukalski, for example, was to evaluate the attractiveness of different types of oak trees to some of the scolytids occurring in the reserve. Natural causes of tree death were replicated by artificially snagging, uprooting or girdling trees. They found that naturally fallen and artificially uprooted trees were more attractive than girdled or snagged trees. The paper on tachinid flies compared the catches in Malaise traps placed either in the understorey or high in the tree canopy. 964 specimens of 41 species were collected and the data analysed using a variety of statistical approaches. While highest numbers of species and specimens occurred in the understorey traps, there were clear differences in species composition and abundance between the two height classes. Thirty species were caught exclusively in the understorey traps and five exclusively in the canopy.

The final section of the volume includes a large number of 'short notes' covering a wider array of invertebrates, and including many useful snippets. There is mention of the larvae of the beetle *Aderus populneus* (Creutzer) feeding on the fungal material in red wood-mould of old trees—something I have suspected but hadn't seen written before—and that the weevil *Dryophthorus corticalis* (Paykull) is widespread in Italy in rotting wood of both conifer and broadleaved trees—in contrast it is a relict forest species in Britain only known from the Windsor Great Park area where it has only been found in oak and beech. Our own Rob Angus has contributed a section on helophorid beetles. Diptera notes include sections on Cecidomyiidae and Ephydriidae. Basically, there is a lot in this volume that is of potential interest to British invertebrate specialists.

KEITH N. A. ALEXANDER

**STATUS AND DISTRIBUTION OF THE SHIELDBUG
ODONTOSCELIS FULIGINOSA (L.) AND SEEDBUG
PIONOSOMUS VARIUS (WOLFF) (HEMIPTERA: HETEROPTERA)
ASSOCIATED WITH BARE AND PARTIALLY-VEGETATED
DUNES ON THE CASTLEMARTIN PENINSULA**

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ABSTRACT

The shield bug *Odontoscelis fuliginosa* (L.) and seed bug *Pionosomus varius* (Wolff) were searched for on bare, and partially-vegetated ground, at five sand dune complexes on the Castlemartin Peninsula, Pembrokeshire. Third instar nymphs and adults of *Odontoscelis* were recorded from 20 locations at six sites. Adults and fifth instar nymphs of *Pionosomus* were recorded from 13 locations at four sites. The habitat requirements of both species are described and their distributions are mapped.

INTRODUCTION

The dune systems on Castlemartin Peninsula, south-west Wales, support rich assemblages of heteropteran bugs and are the UK foci for the shieldbug *Odontoscelis fuliginosa* (L.) (Hemiptera: Scutelleridae) and the Red Data Book 3 seedbug *Pionosomus varius* (Wolff) (Hemiptera: Lygaeidae) (Plate 1, Figs 2 & 3, respectively) (Kirby, 1992a & b; Howe, 2004). These two species are important components of the invertebrate assemblages which are SSSI qualifying features at Stackpole and Castlemartin Coast. They are associated with bare and partially-vegetated sand which supports their preferred foodplants. As much of this habitat has been lost in recent years to fixed dune grassland, primarily because of changes in grazing regimes, land use and most significantly, reduced rabbit populations, they are potentially under threat. For this reason, a survey was undertaken to assess the extent of bare ground available and the current status and distribution of the two associated rare bug species.

The ground-dwelling shieldbug *O. fuliginosa* is widely distributed in Europe, from Spain to Sweden and eastwards to Russia (Stichel, 1957–1959). In the UK it forms small, discrete colonies, burrowing in sand close to the roots of Stork's-bill *Erodium* spp. on open semi-fixed dunes. There are no modern records from former sites in Cheshire, Cornwall, Hampshire, Norfolk and Suffolk, and the shieldbug now appears to be restricted to Sandwich Bay in Kent and the Castlemartin Peninsula (Kirby, 1992a). It was first recorded in Wales from the Castlemartin Peninsula at Freshwater West in 1938 and the last British records for it were from Barafundle Bay (Stackpole NNR) and Broomhill Burrows in 1990. It has also been recorded from Mere Pool Valley on Stackpole NNR (Howe, 2004). Boyce (2001) considered Stackpole to be the only British site at which it is possible to reliably record this shield bug.

The seedbug *P. varius* is widely distributed in Europe and northern Asia where it occurs in a wide variety of different habitats (Péricart, 1998 & 2001). In the UK it is confined to coastal sand dunes where it occurs in small, localised colonies in areas with sparse vegetation and bare ground. Its exact host plant requirements are uncertain but it has been associated with Little Mouse Ear *Cerastium semidecandrum*,

Biting Stonecrop *Sedum acre*, Common Stork's-bill *Erodium cicutarium* and Shepherd's-purse *Capsella bursa-pastoris*. Modern records are restricted in the UK to Kent, Glamorgan and Pembrokeshire (Kirby, 1992a). It was first recorded in Wales from Freshwater West in 1938 and was last recorded ten years ago on the Gower Peninsula. It has been widely recorded across Stackpole NNR and also from Broomhill Burrows and Freshwater West on the Castlemartin Peninsula (Howe, 2004).

SURVEY LOCATIONS AND DATES

A total of 57 sampling locations across four dune complexes were visited by S. Judd and C. Felton between 8–12.viii.2003 and 8–9.ix.2004. Aerial photographs were used to assess and target areas of bare and partially vegetated ground within fixed and semi-fixed dune habitat. The survey sites were:

Freshwater East (26 ha).

A popular holiday location where over 60% of the non-developed dune habitat is secondary woodland and scrub. Rabbit-grazed relict grey dunes occur on middle and lower slopes behind a yellow dune ridge, on undulating, almost hummocky ground with hollows. These have a characteristic short, herb-rich, turf with substantial patches of Wild Thyme *Thymus polytrichus*, bryophytes and lichens, and are criss-crossed by sandy tracks. Sandy areas on the relict grey dunes are confined to rabbit scrapes and footpaths. Some of these support small plants of Common Stork's-bill.

Stackpole NNR (110 ha).

This complex site includes fixed dune grassland and semi-fixed dune, including perched dunes on Stackpole Warren, semi-fixed dunes to the rear of Broadhaven and Barafundle Bay (the latter with significant scrub encroachment), and excavated limestone slopes of Mere Pool Valley (Plate 1, Fig. 1) with areas of sand remaining over some rock-faces. Open, rabbit-grazed lichen heath has developed over several small, scattered areas of open sand/shallow limestone soils on Stackpole Warren and Mere Pool Valley slopes. The remaining open areas result from wind erosion, grazing/burrowing rabbits and human trampling along footpaths. The 'perched' dune grassland is grazed by sheep and a small herd of Welsh Mountain ponies.

Castlemartin Army Training Estate (190 ha).

Comprising Linney, Brownslade and Gupton Burrows and dominated by fixed and semi-fixed dune communities with predominantly wind-blown sand over limestone. Most open sand habitat results from rabbit grazing pressures (augmented by winter sheep and cattle grazing), military activities and sand extraction. Fresh sand supply is very limited but the dunes are still possibly being fed by small amounts of wind blown sand.

Broomhill and Kilpaison Burrows SSSI (201 ha).

One of Pembrokeshire's largest dune systems (Plate 1, Fig. 4). Species-rich dune grassland overlying Old Red Sandstone is especially well represented. Broomhill Burrows was managed as a rabbit warren until myxomatosis decimated the rabbit population in the mid 1950s. Cattle grazing and a recovery in the rabbit population have checked the spread of scrub and bracken. Rabbit activity have created a patchwork of bare sand in the grey dunes, which with abundant mosses and lichens, provides important habitat on south-west facing upper slopes. There has also been localised quarrying and ploughing across the site.

RESULTS

Third instar nymphs and both living and dead adults of *O. fuliginosa* were recorded from 20 locations at six sites on the Castlemartin Peninsula, south-west



Fig. 1. Habitat for *Odontoscelis* and *Pionosomus* at Mere Pool Valley, Stackpole.



Fig. 2. Adult *Odontoscelis fuliginosa* on Storks-bill. Note: adults and nymphs were typically found under the plant and partially buried in sand.



Fig. 3. Adult *Pionosomus varius*.



Fig. 4. Typical rabbit-grazed dune habitat in the foreground at Broomhill and Kilpaison Burrows.

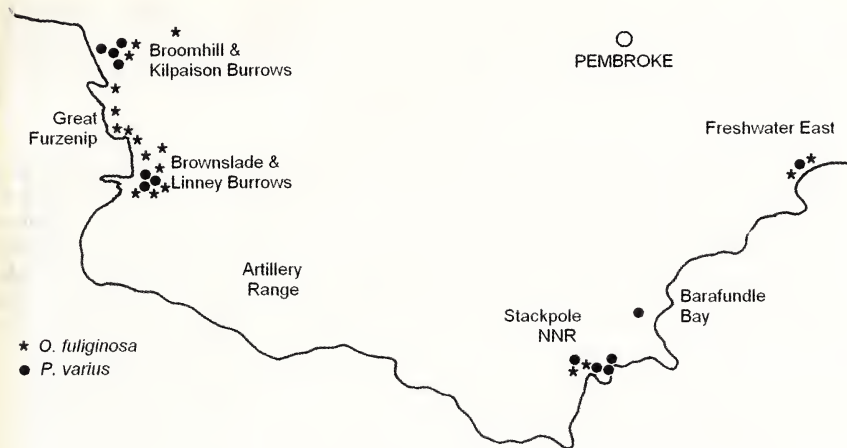


Figure 1. Distribution of *Odontoscelis fuliginosa* and *Pionosomus varius* on the Castlemartin Peninsula in 2003–2004.

Wales (Fig. 1, Appendix 1). Records for Gupton and Brownslade Burrows, Great Furzenip Cliffs, Linney Burrows and Freshwater East represent new sites for this species. *Odontoscelis* was not recorded from Barafundle Bay and is probably lost to this site.

The shieldbug is psammophilous and was recorded from a wide variety of open sandy habitats created by rabbit grazing, erosion, quarrying, military activity and trampling by walkers. Adults were strongly, but not exclusively, associated with Stork's-bill. Nymphs were only found under this plant. Typical habitat with Stork's-bill included eroded bare areas of sand alongside rabbit burrows in very short, tight, thyme-dominated, fixed dune sward; bare sand exposures in fixed dune grassland; bare sandy areas in a large abandoned sand quarry; the eroded edge of a sandy path through fixed dunes; and a fixed, high dune slope with scattered vegetation.

Habitat where Stork's-bill was apparently absent, but where adults were recorded, included soft-rock cliff habitat with exposures of sand; the almost vertical side of a limestone escarpment with wind-blown sand; a 20 m high, south-facing, dune slope with burnt Marram *Ammophila arenaria* and 60% bare sand; and bare sand on rocks above the sea.

Adults and fifth instar nymphs of *P. varius* were recorded from 13 locations at four sites on the Castlemartin Peninsula (Fig. 1, Appendix 2). Records for Linney Burrows and Freshwater East represent new sites for this species. It was recorded from south, or south-west facing, cattle and rabbit-grazed, fixed dune slopes of 30–45°, in very short, tight, thyme-dominated sward with other herbs such as Squill *Scilla verna*, Birdsfoot Trefoil *Lotus corniculatus*, Autumn Hawkbit *Leontodon autumnalis*, Salad Burnet *Sanguisorba minor* and Lady's Bedstraw *Galium verum* together with moss carpet and ca. 10–20% bare sandy patches.

Marram dominated, mobile dunes were not suitable habitat for either of the target species. Recently tilled fields provided large temporary areas of open sand which, when left fallow, develop extensive and in places almost monocultures, of Stork's-bill. However, these appeared too ephemeral to support breeding populations of

Odontoscelis, presumably the presence of *Erodium* at a site must be predictable over time, and are also unsuitable for *Pionosomus*. *Odontoscelis* was also absent from what appeared to be optimal bare sand habitat with Storks-bill on Stackpole Warren.

DISCUSSION

A dramatic decline in disturbance has occurred on the Castlemartin sand dunes in south-west Wales resulting in a significant loss in the extent and quality of bare and partially-vegetated ground. This is due to a decrease in rabbit numbers, cessation of military activity (at Stackpole), absence of a fresh sand supply, planting of conifers, development of woodland and scrub, introduction of exotic species and encroachment of Bracken *Pteridium aquilinum*. Currently, the availability of bare and partially vegetated sand ranges from <5% at Stackpole NNR and Broomhill and Kilpaison Burrows SSSI to 15% on Castlemartin Army Training Estate.

Despite the decline in available habitat, both *Odontoscelis* and *Pionosomus* are widely distributed across the dune systems on the Castlemartin Peninsula. The only localised extinction appears to have been for *Odontoscelis* at Barafundle Bay and this is balanced against new findings for both species at Freshwater East and for *Odontoscelis* at Brownslade and Linney Burrows. It was most surprising that *O. fuliginosa* was not recorded in what appeared to be optimal bare sand habitat with Stork's-bill habitat at Stackpole Warren. The long-term survival of both species is dependent on the provision of a more dynamic dune system with larger areas of bare sand and short, herb-rich, rabbit-grazed grassland within semi-fixed dune habitat. Ideally, management should aim to retain at least 10–15% of semi-fixed dune habitat at each site as bare or partially vegetated sand.

ACKNOWLEDGEMENTS

The author would like to thank Bob Haycock and Mike Howe (Countryside Council for Wales) for commissioning this project and for their advice and support. Thanks are also due to Chris Felton (World Museum Liverpool) for assistance with fieldwork and Guy Knight (World Museum Liverpool) for assisting in the preparation of this report and site managers for access to Castlemartin dune systems. Images of *Odontoscelis*, *Pionosomus* and the survey sites were kindly supplied by Mike Hammett, Bernard Nau and Carl Clee, respectively.

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Appendix 1. *Odontoscelis fuliginosa* records for Castlemartin Peninsula in 2003–2004**Broomhill and Kilpaison Burrows**

1 adult	10.ix.03	SM882006	Eroded bare areas of sand by rabbit burrows with small and limited numbers of <i>Erodium</i> plants at edges. On south-west facing, 30–45 cattle- and rabbit-grazed slope with a very short, tight, thyme dominated sward.
1 dead adult	10.ix.03	SM889004	Island of exposed, ca. 50% bare sand, facing the sea, with <i>Euphrasia</i> and Stork's-bill, surrounded by cattle-grazed dune grassland with ca. 90–100% vegetation cover.
1 third instar	10.ix.03	SM890001	Eroded edge of sandy path with scattered vegetation including Stork's-bill and 50% bare sand.
1 third instar	10.ix.03	SM900007	Under small amounts of Stork's-bill on bare sandy areas to the Refinery side of a large abandoned sand quarry.

Great Furzenip

2 pitfallen adults	5–14.vi. & 14.vi.– 2.vii.03	SR888986	Soft-rock cliff habitat with no obvious Stork's-bill (recorded during a survey of soft-rock cliff habitat undertaken earlier in the year).
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Gupton and Brownslade Burrows

1 adult	–.vi.03	SR888987	Under Stork's-bill in a sand scrape above cliffs and amongst closed turf grassland.
3 adults & 1 third instar	11.ix.03	SR890984	45°, sea-facing, rabbit-grazed slope with sandy exposures and dense, short, thyme sward with barer mossy areas.
1 third instar	11.ix.03	SR897985	Quarry floor (sand extraction stopped in 1990) with very sparse vegetation and 50–90% bare sand and some wet, damp patches. Under Stork's-bill.
1 adult	10.ix.03	SR895978	Fixed, high dune slope ca. 200 m from lake, with scattered Marram, Bugloss, Wild Carrot and some dominant patches of Yarrow.
1 adult & 2 third instars	11.ix.03	SR897977	South facing sand scrape with invading Dewberry and also scattered Bugloss, Carrot and Hawkbit.

Linney Burrows

1 instar 3	12.ix.03	SR893974	Small rabbit scrape with Stork's-bill.
1 adult	12.ix.03	SR890971	20 m high, south-facing, dune slope with burnt Marram and 60% bare sand, Marram, Dewberry and Wild Carrot.
3 adults	12.ix.03	SR891971	Under Yellow Melilot, Marram and Birds-foot Trefoil.
7 third instars & 1 second instar	11.ix.03	SR894971	Under Stork's-bill in small, rabbit produced, sand scrape of ca. 15 m ² with 50% bare sand and Bugloss, Restharrow Burnet Rose and Dock.

Stackpole Complex

1 adult fragment	10.ix.03	Mere Pool Valley SR974943	Ca. 10 m up the side of limestone scarpment with wind-blown sand and ca. 40% bare sand and short vegetation of Birds Foot Trefoil, Hawkbit and Knapweed. No Stork's-bill recorded at all. Remaining areas more thickly vegetated but still short.
1 adult and 3 third instars	12.ix.03	Mere Pool Valley SR974943	Ca. 10 m up the side of limestone scarpment – using suction sampler. Small Stork's-bill and scattered vegetation in ca. 60% bare mossy areas.

(continued)

Appendix 1. (continued)

Stackpole Complex (continued)

2 third instars 9.ix.03 Warren SR978942 Up to 50% bare sand on rock above Bay with a mosaic of a few plant species including Burnet Rose, moss and lichens.

Freshwater East

8 third instars 8.ix.03 SS018981 Ca. 50 m² patch at the back of 'Wavecrest', to the rear of the dune system, next to crossroad signpost and disturbed by trampling. Paths pure sand and remaining areas ca. 50% sand and 50% vegetation of Bugloss, Restharrow and big patches of prostrate, mature Stork's-bill.

2 third instar 8.ix.04 SS018980 Disturbed sand with rabbit-grazed turf and scattered Burnet Rose.

4 third instars 8.ix.04 SS019981 Under Stork's-bill. At confluence of paths on fixed dune with very short, heavily rabbit-grazed, swards of thyme, Sand sedge and Restharrow. Stork's-bill limited to small sand scrapes. Bare sand ca. 5% or less.

Appendix 2. *Pionosomus varius* records for Castlemartin Peninsula in 2003–2004**Broomhill and Kilpaison Burrows**

1 adult and fifth instar 10.ix.03 SR882006 Suction sampling south-west facing, 30–45° cattle- and rabbit-grazed slope with a very short, tight, thyme dominated sward with Squill, Lotus, Autumn Hawkbit, Salad Burnet and Ladies Bedstraw with barer moss carpet, covered sandy patches with *Cladonia* lichen and some thin Marram. Bare disturbed sand ca. 10–20% of total area.

2 adults 10.ix.03 SR886004 Very short, tight, thyme dominated, rabbit-grazed sward with 30% moss, small areas of rabbit scrapings but no burrows and ca. 10% bare sand. Suction sampling.

1 adult 10.ix.03 SR887003 Sieving mossy, short sward. Vegetation very similar to previous location but less extensive and apparently degrading, with invasive Marram.

1 fifth instar 10.ix.03 SR888003 Large blow-out with ca. 25% bare sand, 40% moss and very short thyme-dominated sward. Marram starting to invade. Possibly rabbit-grazed – but no burrows or obvious signs. Suction sampling.

Linney Burrows

1 adult 12.ix.03 SR893975 Side of south facing, fixed dune with lots of rabbit burrows and sandy barer areas close to them. Short vegetation of ca. 50% thyme, 30% moss and 10% bare sand in small patches.

1 fifth instar 12.ix.03 SR892974 Habitat same as for previous record.

1 fifth instar 11.ix.03 SR893972 Very short, rabbit-grazed turf with moss and thyme on 45° slope with small areas of disturbed sand and rabbit scrapes.

Stackpole Complex

2 adults & 1 fifth instar 12.ix.03 Mere Pool Valley SR974943 Ca. 10 m up the side of limestone escarpment with wind-blown sand – using suction sampler. Small Stork's-bill plants and scattered vegetation in ca. 60% bare mossy areas.

1 adult 9.ix.04 Warren SR979942 South-facing, 40° slope, with very short rabbit-grazed vegetation – ca. 50% moss, 30% thyme and 20% bare sand.

(continued)

Appendix 2. (continued)

Stackpole Complex (continued)

4 adults	9.ix.04	Warren SR980942	South-facing, 40° slope, with very short rabbit-grazed vegetation – ca. 50% moss, 30% thyme and 20% bare sand.
1 adult	9.ix.04	Warren SR982943	South-facing, 30° slope with ca. 50% thyme, 30% bare sand and 20% moss.
5 adults	9.ix.04	Barafundle Bay SR988952	South facing very short vegetated limestone outcrop with ca. 40% thyme, 40% wind-blown sand and 20% moss.

Freshwater East

1 adult	9.ix.04	SS019980	Moss/thyme edge to semi-fixed, heavily trampled fore dune with 30% bare sand, Dewberry, Marram, encrusted moss carpet, sparse Stork's-bill and Ragwort.
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BOOK REVIEW

Ants of Surrey by J. Pontin. Surrey Wildlife Trust, 2005, 88 pp, 78 colour photographs in 16 plates. Hardback £14.00 plus £2.40 post and packing, available from: Atlas Sales, Surrey Wildlife Trust, School Lane, Pirbright, Woking, Surrey, GU24 0JN.

This is the ninth volume in a highly commendable county atlas project in which, refreshingly, invertebrates account for eight out of the nine titles now published. At 88 pages it is also the slimmest volume thus far with, for example, the same sized orthopteran fauna (30 species) being afforded a full 40 pages more. The reasons for this economy of scale are not known, but this current volume perhaps suffers slightly for it. Inevitably, when such a book is “written to appeal to a wide range of readers from the interested beginner to the experienced entomologist”, there is a danger of falling between two stools. The result is a “whistle-stop tour” introduction to the topic in general that is ruthlessly brief but still occupies a larger proportion of the book than the species accounts. This introduction covers ant biology, their ecological associations and interactions with other taxa, a rather brief summary of Surrey habitats in relation to geology and their value to ants, an identification key for species recorded in Surrey and methods for studying and rearing ants in captivity.

The identification key provided is, by the author's own admission, aimed at the beginner and recognises its shortcomings with regard to the “difficult” species. To that end, the beginner will be heartened by the clarity and brevity of the key with some very useful and simple line drawings to indicate comparative features. Some of the white-space or the several illustrations of body morphology variation could have been given over to a more detailed “naming of parts” illustration for the beginner, thereby removing the need for trips to the glossary at the back of the book to learn what a funiculus is, especially when such a search for the location of the “propodeal spiracle” or the “posterior orifice” goes unrewarded.

The numerous excellent colour photographs show nesting behaviour, habitat and whole insect detail. For the more advanced student, there is a quite successful attempt at reaching that Holy Grail of myrmecologists: clear illustrations of the scape base in *Myrmica* species, with some ingenious head-to-head photographs that allow direct comparison. At up to seven pictures a page, one occasionally wonders if fewer, larger prints or a few extra pages to allow for larger and clearer photographs might have been advantageous.

The species accounts follow a familiar format, opening with a summary statement on the status of each species in Surrey, although there is no indication if phrases such as “rare”, “local” and “abundant” have been rigorously determined from the

distribution map statistics or are just experienced interpretations of the overall distribution. There then follows a concise and useful summary of their observed habitat preferences in the county, with other ecological notes and pointers to similar species and how they might be differentiated, in support of the identification key. A summary of the species' known distribution in Britain then places the Surrey data in context. The distribution maps retain the boundaries of the principal geological divisions illustrated in greater detail elsewhere in the book, which allows for an interesting and easy interpretation of the data. This is seen clearly in the case of *Lasius alienus*, where an otherwise curious distribution pattern is explained by its affinities with chalk grassland in the county. This compares nicely with the distribution of *L. psammophilus*, recently split from the former species, and which is seen to avoid the chalk, but occurs very close by in heathland habitats. The use of a separate mapping symbol for queens found in isolation of nests is a sensible precaution, which does not muddy the true distribution data with unsuccessful dispersal events.

Some important locations for ant populations are listed in Appendix 1, but it is disappointing that these are not discussed in greater detail, with site descriptions, recording habitat preferences for the notable species and suitable management, for example, as an aid to future conservation. This appendix identifies several "nationally rare species" with an asterisk, with such a designation in conservation circles often translated as being a Red Data Book species. Here, however, this status is seemingly interpreted more liberally with species such as *Myrmica sulcinodis* (not nationally scarce or threatened: Edwards & Telfer, 2001), *Tapinoma erraticum* and *Ponera coarctata* (both nationally scarce Nb: Falk, 1991) and *Myrmecina graminicola* (not scarce or threatened: Edwards in Harvey, 2005) being thus marked. Confusion over national statuses also occurs within the species accounts, so that *Formica sanguinea* is said to be "rated 'Notable' in the Red Data Book" [Red Data Books do not accord the status "Nationally Notable", only the threat statuses RDB1, 2 or 3. This species is listed as Notable by Falk, 1991]. This may lead to some confusion amongst beginners.

As a fledgling county recorder, I can well appreciate the enormity of the effort that has gone into the production of such a book: a life-time's work recording the distribution of a group of species in sufficient detail across a county to provide a meaningful interpretation of their ecology and to highlight conservation concerns and identify critical habitats and locations. Many an avid recorder has, in the past at least, failed to get their life's work in print and at the disposal of the general public and for this reason alone this latest volume and the Surrey Wildlife Atlas Project as a whole are to be commended. The interested beginner will find much in this book to stimulate their study of these complex insects. It should also encourage and facilitate accurate identification whilst also providing a wealth of ecological knowledge that is applicable certainly across south-east England. The more advanced naturalist will also benefit from the knowledge presented here and I for one will look with renewed vigour at those infernal *Myrmica* scapes!

ADRIAN KNOWLES

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**ROSE BUD SAWFLY, *MONARDIS PLANA* (KLUG)
(HYMENOPTERA: TENTHRIDINIDAE), NEW TO BRITAIN,
DISCOVERED IN SOUTH WALES**

DAVID GIBBS

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ABSTRACT

Monardis plana (Klug, 1817) belongs to a sawfly genus new to the British list. Its identification is discussed and the male penis valve and female sawsheath illustrated.

INTRODUCTION

On the 16 April 2003 the extensive dune system at Merthyr-mawr Glamorgan, South Wales was visited. Along the northern fringe of the dunes, where sand covers the adjacent low hills, a pair of small black sawflies was swept from an area dominated by Burnet Rose *Rosa spinosissima* L. (= *pimpinellifolia* L.). When it came to naming them using Benson (1952) they could be readily placed in the sub-family Blennocampinae, tribe Blennocampini but would not key cleanly to genus. The specimens were taken to the BENHS rooms at Dinton Pastures where some continental keys were available. Using Berland (1947) the specimens appeared to key to *Monardis plana* (Klug), a genus and species not previously recorded in Britain.

The specimens were then passed on to David Sheppard who was able to confirm the genus using the key of Zombori (1982) to the European genera of Blennocampinae and in the keys of Zhelochovtsev (1994) to the sawflies of European Russia. There is only one western European species of *Monardis*, namely *M. plana* Klug, 1817, also known as the Rose-bud sawfly. The tarsal claw, mandibular space and antennal segment characters and, most particularly, the shape of the sawsheath confirmed this conclusion.

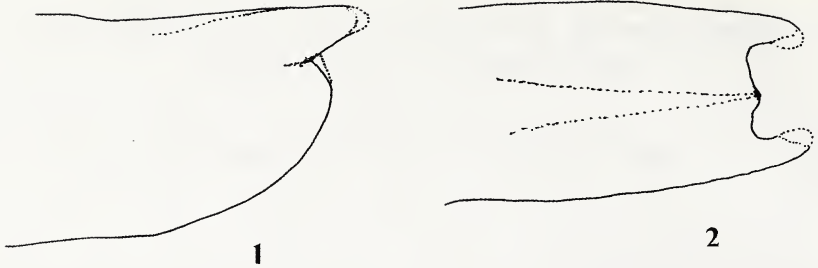
IDENTIFICATION

Using Benson's key to the tribe Blennocampini (1952) the specimens run to couplet 13 fairly straightforwardly but do not fit either alternative. *Monardis plana* is 6–7 mm long, has vein 2r of the forewing joining Rs approximately its own length from vein 2m, the stub of vein 3A straight but with a vague upturned continuation, and the second antennal segment as long as broad. Thus it most closely resembles *Cladardis*, a genus only uncertainly recorded in Britain (Benson, 1952). However, female *Monardis* are immediately distinguishable from *Cladardis* by the robust, blunt spines on the dorsal tip of the sawsheath (Figs 1 & 2).

The only British species possessing spines on the sawsheath is *Ardis pallipes* (Serville, 1823) (= *brunniventris* Hartig, 1834), also associated with *Rosa*. However, this species is readily identified by a series of deep pits immediately behind the eyes (see Benson, 1952, fig. 292). Although the sawsheath of *Ardis* is similar when viewed dorsally, it is quite different in lateral aspect (see Benson, 1952, fig. 288) (A. Liston, pers. comm.).

BIOLOGY

Monardis plana is a single brooded species, adults appearing in early spring (Scheibelreiter, 1973). Oviposition takes place as the leaf buds are opening, the eggs



Figs. 1–2. Sawsheath 1. left lateral 2. dorsal.

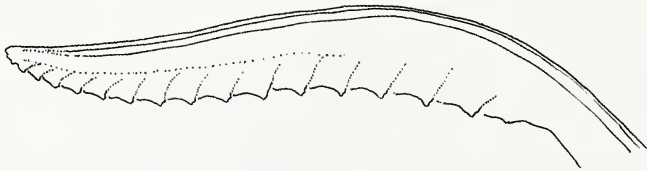


Fig. 3. Ovipositor (saw) right lateral.

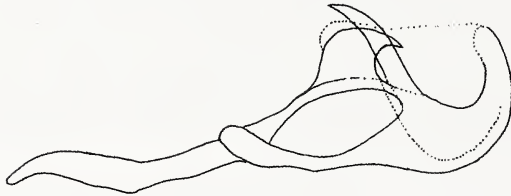


Fig. 4. Penis valve.

laid between the upper- and underside of the serrate margins of the leaflets. These often lie so close together, that the impression of a single egg pocket is given. The egg and pocket is pale so easily seen in May. The young larvae emerge at the beginning of May and initially live between folded unopened leaflets, feeding in groups and hollowing out the buds. When the leaflets spread and open, they show small holes with brown margins. The larvae bore holes up to 1–1.5cm length into the flower stalks and soft parts of the apical shoots. Older larvae chew irregular holes in the young leaves, in some cases damaging up to 100% of the buds and young leaves. Larval development takes from three to three-and-a-half weeks. The cocoon is formed near the soil surface not far from the hostplant (Scheibelreiter, 1973; Viitasaari, 2002). A description of the larva can be found in Lorenz & Kraus (1957).

In semi-natural situations *M. plana* larvae were found only in small numbers on the wild roses *R. multiflora* Thunb., *R. canina* L., *R. dumetorum* Thuill. amongst others. Conversely, cultivated roses (particularly polyantha roses) in public parks and graveyards were often heavily attacked (Scheibelreiter, 1973). In Finland the species has been recorded feeding on *Rosa pimpinellifolia* (Kontuniemi, 1960).

At Merthyr-mawr, the specimens were found in abundance associated with *Rosa spinosissima* (= *pimpinellifolia*), a species mainly restricted to coastal habitats in the UK (Graham & Primavesi, 1993). In the dull conditions that prevailed they could be found clinging motionless to the undersides of thin twigs of *Rosa*, readily dropping to the ground if disturbed. A few females were observed ovipositing close to the tips of some twigs. Given the food plant preferences of this sawfly on the continent, it is surprising that this species has not been reported from cultivated roses before being found in the wild.

DISTRIBUTION

Monardis plana is known from much of northern and western Europe so it is no surprise that it occurs in Britain. In Europe there are records from Austria, Belgium, Bosnia and Herzegovina, Czech Republic, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Macedonia, Romania, Russia, Slovakia, Spain, Switzerland and The Netherlands (www.faunaeur.org/).

MATERIAL EXAMINED

BRITAIN, South Wales, Glamorgan VC41 Merthyr-mawr SS8677 16.iv.2003
1♀1♂.

BRITAIN, South Wales, Glamorgan VC41 Merthyr-mawr SS8677 16.iv.2005
15♀2♂.

DISCUSSION

It is interesting to note that Cameron (1882) possibly introduced this species to the British list under the name *Blennocampa sericans* Hartig, 1837, a junior synonym of *M. plana* Klug, 1817. Benson (1952: 103) treated this record as a misidentification of *Cladardis elongatula* (Klug, 1817). The description by Cameron (1882) does resemble *C. elongatula* and not *M. plana* Klug, 1817. The single record of *Cladardis elongatula* from 'York' does not seem to be supported by any extant specimens so this problem cannot be resolved.

ACKNOWLEDGEMENTS

The author is very grateful to David Sheppard for looking at specimens and passing so much information on to me. I am also very thankful to Andrew Liston for his comments and much useful information.

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ANNOUNCEMENT

The National Macro-moth Recording Scheme

Butterfly Conservation is delighted to announce that, after several years of careful planning and hard work, the bid to the Heritage Lottery Fund for funding for the National Macro-moth Recording Scheme has been successful. The award is for £806,000. This funding will cover the initial four years of the scheme, though we intend the scheme to run beyond this.

Many of you will be aware of the higher profile ‘Planning Phase’ of the project, which took place during 2003 and 2004, with articles appearing in several journals subsequently—we would like to take this opportunity to thank all of you who contributed and supported this part of the process. We would also like to thank the many organizations* and individuals who have offered matched funding for the scheme itself, this was an essential requirement for the Heritage Lottery Fund and helped us demonstrate wide support for the project at both local and national levels. Fundraising is not quite complete and efforts will continue to try to raise the additional costs required.

At the time of writing there were still many contractual details to sort out with the Heritage Lottery Fund and a precise timetable for the project had not been formulated in detail. However, it is hoped that a Project Manager will be in post by the end of summer/early autumn 2006 and that the scheme will start in earnest at around this time. We will keep you informed of further developments (see also website www.mothrecording.org.uk).

This is very much a partnership project with Butterfly Conservation taking the lead. A Steering Group will be formed and will have representatives from a range of organisations, including, hopefully, the British Entomological & Natural History Society, the governmental conservation organisations, at least one County Recorder and a representative from a local moth group (although this could be the same person).

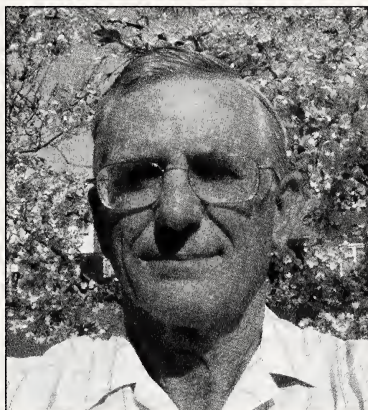
This is a very exciting development for the recording of moths and moth conservation:—we look forward to working with you and hope you can all contribute to making this project a success.—MARK PARSONS, Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QP.

*This includes the British Entomological & Natural History Society.

SOCIETY NEWS

Norman Hall, BENHS President 2006–2007

I have always had a general interest in Natural History, and a love of wild countryside, and a love of wild countryside, but even in my school days—at King Edward’s School Birmingham—I had still not specialised in any particular group of plants or animals, wishing rather to be able to put names to everything. At age 15 I joined the Youth Hostels Association and started going on hostelling cycling tours, which eventually took me to almost every county in England and Wales. I was particularly interested in the connection between the scenery and the underlying geology, and often arrived back home with saddle bags full of rocks, and bigger leg muscles as a consequence. In later years my bicycle was to take me to most western European countries and also to Greece, Turkey, the USA and the Canary Islands.



Knowing that I had a strong interest in Biology, I opted for Biology, Chemistry and Physics as my subjects for A & S level exams at school, having to make a choice between Biology and Mathematics at that stage. However, knowing that Mathematics was by far my strongest subject, my parents and my teachers persuaded me to switch to Mathematics, Physics and Chemistry after a term or two, which was probably sensible, so a ‘biological’ career was no longer an option.

I went up to Oxford to read ‘Science of Metals’—an interesting combination of Physical Chemistry, Inorganic Chemical & Metallurgy—and afterwards got a job as a Materials Scientist at the Gillette Research Laboratory in Reading, Berkshire studying razor blades, their coatings and their modification by state-of-the-art surface techniques, mostly by transmission electron microscopy. In the end, I spent all but three years of my working life with Gillette, taking early retirement aged 56 ‘to spend more time with my Entomology’.

For the other three years (1964–67) I lived in Switzerland, teaching in English at an International School. Here I found myself living in a fantastic natural environment on a major bird migration route, at the eastern end of Lake Geneva, where I developed a passionate interest in birds and a strong interest in plants.

Returning to England, I was introduced to the moths through a friend and was fascinated by their variety and frustrated by being told that some of the beautiful smaller moths were ‘only micros’ and that few people could name them. But by chance I met Teddy Pelham-Clinton at Portland Bird Observatory, when the Warden at Portland had just taken a few micros and set them under thick, barely transparent paper. Teddy then demonstrated that he could name them all except for one that could be one of two species and that you could only distinguish them by dissection

and examination of the genitalia. I was inspired and asked for advice on how to start on the micros.

Following up his advice led me into contact with three entomologists then living in or near Reading; Mark Shaw from whom I learnt much about raising larvae, Mike Britton from whom I learnt almost all of my basic field skills and Brian Baker (our President in 1983) who encouraged me to try dissections and to attend the immensely helpful Microlepidoptera Workshops that were then occasionally organised by the staff at the Natural History Museum (who have since then always been helpful and encouraging).

My passion for ornithology was thus augmented by a passion for lepidopterology which eventually took over. My cycling/birding trips to Europe evolved into car/birding/mothing trips, some of which were done with Barry Goater, from whom I learnt a great deal more. Most of my collecting is now done in Spain always with authorizations from the relevant Autonomous Communities.

I was always reluctant to specialise, aiming to be able to name everything accurately on sight, in so far as this is possible, as Pelham-Clinton could do (an objective never achieved), but I have developed special interests in the Sterrhinae ("Waves") and Pyralidae, though nothing substantial is published.

I consider it a pity that more BENHS members do not study European moths. They are less studied than the British moths because the tradition of amateur collecting is not as strong as in Britain. European mothing puts British mothing into perspective. The need to know the scientific names becomes obvious and some parochial English vernacular names begin to look silly. Having said that, I must admit that when showing moths to interested people at the Parque Garaio near Vitoria in the Basque Country, which I have done during the last ten years, it would be helpful to be able to use some quaint vernacular Spanish names to help stimulate their interest.

I went to Belize (Central America) in 1998 on a BENHS sponsored expedition led by Paul Waring, and seeing the range and numbers of species that occur in tropical forests has now put my European mothing into world perspective. Most of the genera occurring in Central America have not been revised recently and I know that many of the 'identifications' I have made by comparison with specimens in the Natural History Museum (BMNH) are unlikely to be correct. Faced with this problem, I decided that a list of such 'identifications' was not likely to be of lasting value, and constructed an illustrated catalogue of everything I had collected, using digital techniques, with tentative identifications and Museum drawer references. This is now available 'as a resource' in the BMNH, which now holds the specimens, and in the Carnegie Museum in Pittsburg, which holds a lot of Schaus's specimens from the region.

I now feel a great connection with the wonders in all the world's ecosystems, and can only hope that predictions of catastrophic irreversible global warming are wrong. But I think we have no option other than to be optimistic, and to continue to press for conservation on a global scale.

OFFICERS' REPORTS FOR 2005

COUNCIL REPORT 2005

The Society's Council has 20 elected and 7 co-opted members and this year Council members travelled to meetings from homes as far apart as Devon, South Wales, Northampton and Suffolk. Membership of the Council is not, therefore, restricted to members living in London and the surrounding counties and new faces are always welcome. Please contact a member of Council if you would like to volunteer to join us. The Council had seven meetings during the year and these were attended by between 12 and 15 members.

This year the Council approved 34 applications for membership and the reinstatement one former member. Fourteen members resigned and 21 were struck-off for non-payment of their subscription. With regret we have to report the deaths of seven members, including two Special Life Members and three others who had each been members for around 40 years. With these deaths some 240 years of combined experience have been lost to the Society. As a result of these changes the total membership at the end of the year was 893, a net loss of eight members over the year and the first time we have had to report a fall in membership for a number of years. An increase in the subscription rate in 2006 means that a further loss is almost inevitable. At the end of the year J. Firmin, T.J.G. Homer and N.B. Potter completed 50 years continuous membership and were elected Special Life Members.

As predicted last year, a questionnaire was circulated to the members asking for their opinions on the Society's activities. The questionnaire was initiated by our past President and brought to fruition by our present President. Nearly 40% of the membership responded, a figure well beyond our expectations, and over half of these added comments in addition to answering the questions. The results will be analysed and presented to the Society in 2006. The Council, having asked the membership their opinion, will now have to respond with some actions and we will be deliberating on these matters in the coming months. It has been pleasing to find that the general response has been appreciative but there are sufficient areas of disquiet for us to avoid becoming complacent.

One of the society's most appreciated activities of recent years has been its publications. The long-awaited books on the British Heteroptera, the Plume Moths and the second edition of *New British Beetles* remain tantalisingly close to completion but we have yet to see them, and the membership could be excused for thinking that, aside from the *Journal*, our publication programme has ceased. On a more positive note a new Christmas card for 2005 was produced from a design by Julie Tennent and featured the bumblebee *Bombus terrestris* (L.) and the Christmas rose. The production of the card from design to delivery was overseen by John and Julie Tennent and we are very grateful to them for their work on behalf of the Society. This year also saw the publication of a new membership list and our thanks for this must go to Graham Collins and Roger Hawkins. The Council is now considering how the Society's leaflet might be improved to provide a more attractive introduction to the Society.

The anticipated consultation on the Fourth Quinquennial Review of Schedules 5 and 8 of the Wildlife & Countryside Act 1981 was announced during the year. The Society's submission, as detailed last year, was that the two burnet moths, *Zygaena lonicerae jocelynae* Tremewan and *Z. loti scotica* (Rowanland-Brown), did not warrant full protection under the Act but that the sale of them should be prohibited. A similar view regarding these two sub-species has been taken by other invertebrate

societies making submissions. The results of the consultation are now awaited. A review of Part 1 of the same Act was announced and opened for submissions from interested parties. For this more complex matter it was felt that the Society's view would best be conveyed by its representatives on Invertebrate Link. John Phillips was involved in drawing up a draft submission by Invertebrate Link which was commented on and approved by the Council. Mike LeRoy agreed to attend Buglife board meetings as the official BENHS observer. The invitation to send an observer has been open for some time but has only now been taken up. We hope it may give us some insight into the rationale behind Buglife's actions with which we do not always feel in accord, and help prevent future misunderstandings even if we cannot necessarily see eye to eye with them. During the year the Society wrote a letter of support to Butterfly Conservation for submission with their application for a grant from the Heritage Lottery Fund to help finance the National Moth Recording Scheme. The results of this application are awaited. Should it be successful it will be of direct interest and benefit to many members.

The Society's core activities continue with the Field and Indoor Meetings programme, the workshops and open days at the Pelham-Clinton Building and the Annual Exhibition and Dinner. The numbers attending the Indoor Meetings continue to disappoint, with only the AGM producing a reasonable, though still small, attendance. The reduction in the frequency of these meetings has done nothing to improve attendance and it is difficult to escape the conclusion that these meetings are no longer viable in their current format. The Field Meetings programme remains buoyant, although with greatly differing numbers attending individual meetings. It seems that the British weather, or the anticipation of it, plays a large part in determining attendance figures. This is something beyond the control of the Council. The workshops and open days continue to be well attended but the workshop programme has had to be adapted following an announcement by Dinton Pastures Country Park that they could take no bookings for the Loddon Room (where lectures accompanying workshops are held) in 2006. This is because the local authority is intending to review the use of all the buildings in the park. If the Loddon Room was not available, and no replacement forthcoming, workshops would be restricted to activities that could take place entirely within the Society's rooms. The total number attending the Annual Exhibition (220) was slightly lower than last year. Although the number attending the exhibition varies from year to year, the overall trend is of a downward attendance at a time when the Society's membership has been growing. It would seem that our new members are not being attracted to the exhibition. During the year we investigated the Wetland Centre at Barnes in south-west London as a possible exhibition venue. Although there were a number of points in its favour there simply was insufficient space to stage our exhibition. None of the above activities would have taken place without the efforts of our stalwart team of Ian McLean, Mike Simmons and Paul Waring. The Society extends its thanks to these gentlemen.

This year has seen the resignation of Andrew Godfrey as Membership Secretary and David Wedd as Building Manager. Andrew has been Membership Secretary since 1990, a period when our membership has increased by over 20%. This must have been one of the most rapid periods of growth in the Society's history and it follows that Andrew must have been the busiest Membership Secretary. Trying to juggle the demands of his own work with that of the Society has become increasingly difficult and Andrew felt that, as the Society was considering changes to the membership procedure, this would be a good time to leave the post. We wish him well and thank him for efforts over the last 15 years. Pending a possible

reorganisation the posts of Membership and Distribution Secretaries have been merged under David Young. David Wedd has been our second Building Manager and has concentrated on maintaining our good relations with the Country Park staff, setting up joint activities with the Country Park, brightening up the inside of our building and letting the membership know what an excellent asset we have. While doing all these things he has also found the time to ensure that the planned maintenance of the building has continued. David's resignation is understandable following his removal to the Channel Isles where we hope he will soon settle in. We thank him and look forward to seeing some of his more interesting finds at future exhibitions. We are fortunate that Martin Albertini has agreed to become the new Building Manager.

As will be appreciated the Council faces some uncertainties and challenges in the next few years but we are sure that with the members' continued support these can be overcome.

JOHN MUGGLETON

TREASURER'S REPORT

FINANCIAL YEAR TO 31 DECEMBER 2005

I indicated last year that we should take action to stem the deficit which has been running for some time and as a result, Council took the decision to increase subscriptions from 1st January this year to a headline rate of £19.00. There is always a dilemma concerning the length of time we can hold subscriptions versus the amount of increase when it inevitably comes. It is clearly easier for our members paying by standing order if we hold a rate for as long as possible, but is the resultant increase then too much? The proof will be in 2006.

In fact our finances are in considerably better state than a year ago thanks to another buoyant year on the financial markets. We are some £23,000 better off overall, having absorbed an actual deficit for the year of £10,360. The main factors in arriving at that deficit have been a sharp reduction in income from sales of publications, we really do need those new books, and an increase in the costs of services provided to members including the annual exhibition. This has been offset by a reduction in costs not of a direct charitable nature, that is management costs, and also in grants made during the year. Although a deficit of over £10,000 may seem daunting, it should be remembered that half of that amount is depreciation of long term assets and does not represent cash flowing out of the Society, and the General Fund from which most of the day to day running costs are drawn has only reduced by £1,400.

Although it is possible that the markets will slow down over the next year, there is no indication that they will go into reverse, so I am confident that we remain able to fund our future programme.

I was able to take a prolonged break during last year and I extend special thanks to Roger Hawkins and John Flynn for dealing with problems which arose during my absence, as well as their contributions throughout the year in their roles of Assistant and Deputy Treasurer. My input has been reduced very significantly. I also thank our auditors, Alec Harmer and Mark Middleton who have once again performed their task promptly and diligently on behalf of the Society.

This year, in a break with tradition it is intended to publish an abbreviated version of the accounts in the Journal in keeping with wishes expressed in answers to our questionnaire. A full set of accounts will be lodged at Dinton Pastures or may be obtained on application to the Treasurer.

TONY PICKLES

**THE BRITISH ENTOMOLOGICAL
AND NATURAL HISTORY SOCIETY
ABBREVIATED ACCOUNTS**

*Statement of Financial Activities
for the year ended 31st December 2005*

	Unrestricted Funds	Restricted Funds	Endowment Funds	Total Funds 31.12.05	Total Funds 31.12.04
<i>Incoming Resources</i>					
Bequests and donations	–	–	–	–	1000
Subscriptions	12088	–	–	12088	13237
Investment Income	5355	3815	1134	10304	10637
Trading Income	1080	4376	–	5456	10573
Sundry Income	1980	–	–	1980	3151
<i>Total Incoming Resources</i>	20503	8191	1134	29828	38598
<i>Resources Expended</i>					
<i>Direct Charitable Expenditure:</i>					
Cost of Journal & Distribution	13349	–	–	13349	15806
Cost of facility at Dinton Pastures	–	5073	–	5073	4592
Members Meetings & Services	8599	–	–	8599	6902
Library & Curation	1649	–	–	1649	1616
Grants	938	–	–	938	2750
Depreciation	2988	2210	–	5198	5946
	27523	7283	–	34806	37612
<i>Other Expenditure</i>					
Management costs	2077	–	–	2077	2780
Trading costs	676	2629	–	3305	5446
	2753	2629	–	5382	8226
<i>Total Resources Expended</i>	30276	9912	–	40188	45838
<i>Net Resources before transfers</i>	(9773)	(1721)	1134	(10360)	(7240)
<i>Net Incoming/Outgoing Resources</i>	(9773)	(1721)	1134	(10360)	(7240)
GAINS & LOSSES ON INVESTMENT ASSETS					
Realised	–	–	–	–	–
Unrealised	17026	12686	3672	33384	4967
<i>Net movement in Funds</i>	7253	10965	4806	23024	(5174)
Fund Balances brought forward at 1st January 2005	97268	282735	16399	396402	398675
<i>Fund Balances carried forward at 31st December 2005</i>	104521	293700	21205	419426	396402

*Balance Sheet
as at 31st December 2005*

	2005	2005	2004	2004
<i>Fixed Assets</i>				
Tangible Assets		152906		158104
Investments		<u>241217</u>		<u>207828</u>
		394123		365932
<i>Current Assets</i>				
Stocks	14776		14127	
Debtors	9664		9717	
Cash at Bank and in hand	<u>7159</u>		<u>15688</u>	
	31599		39532	
<i>Creditors:</i>		<u>6296</u>		<u>9062</u>
<i>Net current assets</i>		<u>25303</u>		<u>30470</u>
<i>Net assets</i>		<u>419426</u>		<u>396402</u>
<i>Funds</i>				
Endowment Funds—Hering Fund		21205		16399
Restricted Funds—Housing Fund	216815		207597	
Special Publications Fund	<u>76885</u>	293700	<u>75138</u>	282735
Unrestricted Funds:				
Maitland Emmet BENHS Research Fund	60111		51438	
General Fund	<u>44410</u>	<u>97268</u>	<u>45830</u>	<u>97268</u>
		419426		396402

Tangible fixed assets

	Leasehold Property	Fixtures & Equipment	Total
<i>Cost</i>	£	£	£
At 1 January 2005	<u>154736</u>	<u>69399</u>	<u>224135</u>
At 31 December 2005	<u>154736</u>	<u>69399</u>	<u>224135</u>
<i>Depreciation</i>			
At 1 January 2005	26520	39511	66031
Charge for year	2210	2988	5198
On disposals	—	—	—
At 31 December 2004	<u>28730</u>	<u>42499</u>	<u>71229</u>
<i>Net book values</i>			
At 31 December 2005	<u>126006</u>	<u>26900</u>	<u>152906</u>
At 31 December 2004	<u>128216</u>	<u>29888</u>	<u>158104</u>

Investments

In accordance with accounting requirements investments are shown in the balance sheet at market value.

	2005		2004	
	M.V.	Cost	M.V.	Cost
Shell T & T	6384	1250	5831	1250
Unilever	10632	248	10030	248
M & G Charifund	86909	20238	63749	20238
Hendersons Bond	59376	58000	56184	58000
Axa Sun Life Bond	51681	56000	47942	56000
Barings Bond	<u>26235</u>	<u>25000</u>	<u>24092</u>	<u>25000</u>
	<u>241217</u>	<u>160736</u>	<u>207828</u>	<u>160736</u>

Unrealised gains arising in the year are shown in the Statement of Financial Activities.

Funds Analysis

	Tangible		Net	Total
	Fixed Assets	Investments	Current Assets	
Endowment Funds:				
Hering Fund	–	21205	–	21205
Restricted Funds:				
Housing Fund	126006	90809	–	16815
Special Publications	–	60717	16168	76885
Unrestricted Funds:				
Maitland Emmet				
BENHS Research Fund	–	60111	–	60111
General Fund	26900	8375	9135	44410
	<u>152906</u>	<u>241217</u>	<u>25303</u>	<u>419426</u>

These abbreviated accounts are extracted from the Trustees' Report and accounts, a full copy of which has been lodged at Dinton Pastures and is available to members upon application to the treasurer.

EDITOR'S REPORT

Strictly speaking, five parts of the *British Journal of Entomology & Natural History* were printed during 2005. The main issue of the year, Volume 18, was published in four parts in April, June, September and December 2005, respectively. Volume length reached a record 292 pages, about 40 pages longer than the average for the preceding ten years. This is encouraging, but I am sure we could do a great deal better.

Our sister society, the Botanical Society of the British Isles, with a mere 2951 UK species to study, published 444 pages of its journal *Watsonia* and 218 pages of *BSBI News* over the same period. The last issue of *BSBI Abstracts*, which provides abstracts from the literature relating to the vascular plants and charophytes (stoneworts) of the British Isles, ran to an additional 158pp. To be fair, the BSBI has a few more members than we do, but I am sure we are just as observant and have more species to choose from to write about. A negative feature among entomologists is a strong desire for specialist publications along taxonomic lines that tends to restrict rather than improve general communication.

We need to be more broad-minded and be prepared to read about groups other than our own area of interest. Why do lepidopterists not expand their interests, for example, to cover picture-winged flies, which are equally patterned, have a good handbook and we know so little about? They could very quickly transform our knowledge of this family of flies in Britain. I would be delighted to receive more communications on groups such as caddis flies, mayflies, stoneflies, dragonflies, Hemiptera, ectoparasitic Orders as well as the usual majors such as Lepidoptera, Coleoptera and Hymenoptera. I am still amazed how little has been published on the biology of British moths; most of the information comes from breeding insects in captivity rather than observing them in the wild. Have you ever tried to find out how many larval instars a species has in the wild, for example? I would be delighted to find a book that tells me.

This year the journal covered a wide range of taxa with papers describing new British species of Diptera, Hymenoptera and Hemiptera. Several papers had a

conservation theme and more manuscripts on this subject would be most welcome. Part 3 was devoted mainly to the exhibition, and it is noticeable how increasingly difficult it is to adequately illustrate the full diversity of species on display. The last issue of the year covered two extensive ecological studies, of factors affecting pitfall trap sampling of epigeal arthropods and Hemiptera found on urban roundabouts, a habitat not normally recognised as a wildlife haven.

No report would be complete without thanks: to Adrian Knowles for electronic proof reading, David Young and Roger Hawkins for the onerous task of preparing the Index to Volume 17 (2004) and Richard Jones for photography at the exhibition. Special thanks are also due to the compilers of the exhibition reports. I conclude with the usual editor's plea, for more papers in 2006.

JOHN BADMIN

CURATOR'S REPORT

Following on from the report last year that a little more space had been made available in the collections room by sale of cabinets, a little further reorganisation has been carried out to more fully remove central obstructions. This was done to facilitate showing of slides and other activities at workshops, after we were informed that the Country Park's Loddon Room would not be available for future workshops, starting with the current programme. There has since been a respite in this and the room is presently available again. This may, however, only be for those workshops already arranged and its availability in subsequent years is still very uncertain.

As predicted last year we have now purchased a deep freeze to assist in the control of pests in incoming collections. This was initially sited in the adjacent Country Park building, which is a barn. For various reasons it soon became apparent that its location there would not be satisfactory. I am grateful to the Librarian for agreeing to the relocation of this unit just inside the library where it is now situated. I am also grateful to him for the transfer to the library of a number of diaries until recently held on shelving in the collection room, but not relevant to the collections; thus freeing some storage space.

After being mentioned in some previous reports, the Heteroptera collection has now at last been moved to the new cabinets purchased for the purpose a few years ago. I am indebted to Bernard Nau for supplying me with a draft checklist to use as a label list pending the appearance of a new Hemiptera checklist. I also thank Mike Wilson for a similar draft list of the Auchenorrhyncha (part of the former "Homoptera"). The removal of this group to a new cabinet will be carried out in 2006.

There have been no major acquisitions of collections during 2005 but I am grateful to several members for continuing to donate specimens to fill gaps in the collections and for other assistance provided. I also thank Peter Baker for further work on repapering of cabinet drawers.

PETER CHANDLER

LIBRARIAN'S REPORT

In March 2005 I began a stock-take of the books held in our library. With over 4000 titles this is a massive undertaking. I believe it is the first stock-take since our

library came out of store in 1992 and was installed in the Pelham-Clinton Building at Dinton Pastures. Consequently, this process is continuing but I hope to complete it in April 2006. All titles on the shelves have been logged, new acquisitions incorporated into the collection and loaned titles recalled via an announcement in our *Journal* (*BJENH* 18: 258). It is most gratifying to report that many items have been returned in response to this, several having been overdue for prolonged periods. One of the benefits of this exercise is that I have been able to reorganise the allocation of shelf space to the various classifications. This has enabled additional space to be made for the rapidly expanding categories such as Conservation, Local Lists, Hemiptera, Diptera, Coleoptera, Myriapoda and General Natural History. Apologies if your favourite category is not where it used to be, but I hope members will find the new layout more user-friendly.

As part of this reorganisation, and that of the collection area, Peter Chandler has placed a large collection of manuscripts in the Library. During the "sorting process" he identified additional diaries from the late Baron de Worms bequest. These will be sent to the National Museum of Scotland in Edinburgh, to join those we sent there last year. I am grateful to Peter for organising this.

Another change that was alluded to in last years' report was the ending of journal loans. This was announced formally in our *Journal* (*British Journal of Entomology and Natural History* 18: 127) and took effect from 30 June. Personally, I was unsure about how this would be received by library users, but am pleased to report that I have had no complaints so far, nor any problems brought to my attention. Also, I have had no requests for loans of journals for research purposes, so it seems that my worries regarding this change in policy were unfounded. I believe that the ballot of library users regarding our position on this was crucial in Council making the correct decision.

I wish to close this years' report by thanking the following, Dr John Muggleton for his assistance in logging new journal receipts, Gavin Boyd for selling numerous back numbers of our *Journal*, so creating additional valuable shelf space, and Jonty Denton and Tony Pickles for donating books to the library. Finally, I wish to acknowledge gratefully the generous donation of titles by Dr. Bernard Verdcourt. These included a complete set of *The Bedfordshire Naturalist* and several unusual books.

IAN SIMS

THE MAITLAND EMMET BENHS RESEARCH FUND

Three applications for grants were received this year and all were considered by the panel to be suitable for funding. The three grants awarded were as follows.

1. Dr Graham Hopkins, £375 to help cover travel and other costs for a joint project with Dr Jonathan Thacker on the distribution and population ecology of *Stomaphis quercus* (L.) within Great Britain and Europe. This is believed to be the world's largest aphid. Its limited distribution gives cause for concern for its future and its association with the ant *Lasius fuliginosus* (Latreille) needs to be investigated.
2. Dr David Goulson, £500 to cover part of the travel costs for a project on a new British bumblebee, *Bombus cryptarum* F. Almost nothing is known about the ecology and distribution in Great Britain of this recently recognised species. This

project will help to establish its distribution and answer some basic questions about its ecology.

3. Dmitry Telnovs of Riga, £50 to provide photographs of specimens of British Anthicidae to illustrate a paper on this family resulting from a Research Fund grant awarded in 2003.

Three reports of work arising from grants in previous years have been received this year. Mr S. Williams received a grant in 2002 to enable him to set up a recording scheme for Orthoptera in Monmouthshire. As a result almost all of the county's twenty-four 10km squares have been visited at least twice and almost 100% coverage has been achieved for tetrads in the lower Wye Valley, Gwent levels and western coalfield valleys. As a result the number of species recorded from the county has increased from ten to seventeen. First county records include the lesser and Lesne's earwigs and the second Welsh record for the long-winged conehead. Work has commenced on inputting records into a mapping programme.

Mr Robert Coleman received a grant in 2004 to assist fieldwork on the scarlet malachite beetle, *Malachius aeneus* (L.), a UK BAP species. 437 beetles were captured during a mark-release-recapture experiment. The beetles were found to be able to live up to 18 days with a daily chance of survival of 70%. Dispersal distances were short with more than 95% of individuals being recaptured less than 100m from the site of release. The beetle's current status was assessed by visits to sites it had been recorded from in the last 10 years.

Mrs Jane Smith received a second grant from the Fund in 2004 to assist with work to produce a Sciarid Identification Handbook in the Royal Entomological Society series. This grant enabled Mrs Smith to visit Dr Frank Menzel, the authority on this group of flies, in Germany and to work there on a manuscript of a paper to precede the handbook and on the introductory chapters of the book. The manuscript has subsequently been accepted for publication in the *Zoological Journal of the Linnean Society*. It is hoped that work for the handbook will be completed in 2006.

In 2005, John Phillips and Mark Parsons published a paper in the Society's *Journal* on the history, ecology and current status of the Brighton wainscot moth, *Oria musculosa* (Hbn.) (*BJENH*, 18: 81–95). The final year of the four year survey into the current status of this moth was funded by a grant from the Research Fund and this is recorded in the paper. The moth seems to be close to extinction in the UK.

Once again I must extend the Society's thanks to the members of the Research Fund panel for their care in assessing the applications. I would ask members of the Society to advertise the existence of these grants to friends and colleagues who might be interested. Applications for future awards from this fund in the fields of non-marine arthropod taxonomy, field biology and conservation related to the fauna of the British Isles should be sent to the Society's Honorary Secretary (from whom further details can be obtained) before 30th September in any year.

JOHN MUGGLETON

PROFESSOR HERING MEMORIAL RESEARCH FUND

There were no appropriate applications to the Fund for 2006. This is not of concern, as I am aware of applications likely to be made next year. Furthermore, Hering is a specialised fund, and the number of applications to it is likely to be small with year by year variation accentuated as a consequence of that small number. Income will be able to be rolled up within the Fund.

I have received a report from Jenny Craven, a PhD student in the Department of Biology at the University of Leeds, and now at the University of Sheffield, whom the Fund supported last year for her work on endemic beetle taxa (one on the UK Biodiversity Action Plan) associated with the Lundy Cabbage (*Coincya wrightii*). The grant helped towards the cost of a nineteen-day field trip to no fewer than 85 sites in Scandinavia. The field work proved very successful, its purpose being to collect material so as to assist in research to place the target taxa in a broader taxonomic and phylogenetic context.

Dr Henry Disney, Department of Zoology at Cambridge University, was awarded a grant to support his work on scuttle flies (Phoridae). Eight papers, published or in press, have acknowledged the Hering Fund, and it is pleasing that we were able to support such a very productive taxonomist.

Professor Sir Richard Southwood, an eminent member of the Hering Committee, and a Life Member of the BENHS, died in October 2005. Although he held many great offices in British science, he always managed to respond assiduously and thoughtfully to applications to the Fund. Dick Southwood will be greatly missed by many, not least by the other members of the Hering Fund Committee.

Publications in which the Fund is acknowledged

Disney, R.H.L. (2005). Duration of development of two species of carrion breeding scuttle flies and forensic implications. *Medical and Veterinary Entomology* **19**: 229–235.

Disney, R.H.L. (2005). Rudimentary halteres of some flightless female Phoridae (Diptera) reassessed, and some taxonomic implications. *Zootaxa* **1042**: 39–54.

Disney, R.H.L. & Berghoff, S.M. (2005). New species and new records of Scuttle flies (Diptera: Phoridae) associated with army ants (Hymenoptera: Formicidae) in Trinidad and Venezuela. *Sociobiology* **45**: 887–898.

MALCOLM J. SCOBLE

BEES, WASPS AND ANTS RECORDING SOCIETY (BWARS) REPORT

Membership of the society continued to rise in 2005 to a record 340. Many of these had been recruited through the society's web-site (www.bwars.com), and the subsequent drop-out rate is encouragingly low.

The highlight of the society's year is the AGM and workshop. In 2005 we returned to Liverpool as guests of the Liverpool Museum. Attendance was much higher than at the previous event held here with at least twenty people meeting for the dinner on Saturday night. The workshops comprised short sessions aimed at beginners, including the all-important topic of setting and labelling specimens.

Members' talks followed an international theme. Murdo Macdonald described his involvement in aculeate recording in northern Scotland, starting with bumblebees and progressing to solitary aculeates and ants. Rob Paxton told us about the Irish bee project which aims to produce a quantitative assessment of bees in Ireland leading to the production of a Red Data Book. This involved collaboration between entomologists from the Republic and from Northern Ireland. Stuart Roberts talked about the bee *Colletes halophilus* (P.M.F. Verhoeff). This is a species restricted to coastal sites around the North Sea, and Britain holds a significant proportion of the world population.

Nearer to home, Steve Falk described his autecological study of the wasp *Odynerus melanocephalus* (Gmelin). Careful study had revealed the nest-sites and prey items of this species. It was apparently restricted to collecting larvae of the weevil *Hypera postica* (Gyllenhal) feeding on black medick, despite other species of *Hypera* larvae being present and those of *H. postica* also occurring on alternative host-plants. Such limited search patterns (a bit like most entomologists!) help to explain why species can be so restricted.

2005 saw a major change in the newsletter, from a bundle of A4 pages to a more manageable A5 publication with a glossy cover. It now resembles a journal and rivals anything the dipterists or coleopterists can produce.

Two new publications were produced by the society. Part 5 of the Provisional Atlas appeared, covering a further 60 species of bees, wasps and ants. This marks the half-way stage of atlas production.

A completely new edition of the *Members' Handbook* was also produced. The previous version was little more than a pamphlet, but the current edition is a bound book of some 158 pages. In addition to covering the basics such as collection, identification and recording, there are essays on photography, gardening for bees, and analysis of pollen collected by bees. There is also a complete checklist of British aculeates and a flight chart showing where and when individual species may be found. It should become essential reading for anyone intending to start the study of aculeate Hymenoptera.

GRAHAM A. COLLINS

DIPTERISTS' FORUM REPORT

Membership continues to increase and there are now 294 members of Dipterists Forum and 282 subscribers to our peer-reviewed journal "Dipterists Digest". Dipterists Forum again had a stand at the AES Exhibition at Kempton Park and we have been fortunate to have filled the long vacant post of Publicity Officer. This year our AGM was held over a weekend at the Preston Montford FSC Centre with the usual good standard of accommodation that we receive there and the opportunity to include workshops over the two days.

The identification workshop this year was on Craneflies and gave an opportunity to further test the keys for the Cranefly book that is in preparation for publication by BENHS. A new venture was a weekend Spring Field Meeting, held in the Northamptonshire limestone area. This was well attended and further such meetings are planned.

The Summer Field Week, which as usual was not restricted to Dipterists, was based in the excellent accommodation provided by St John's College in the historic centre of Durham. Despite losing some field days to unsuitable weather and unexpected logistical challenges (such as having to leave very early on the final day before the start of the Miner's Gala) the meeting was a success. The Isle of Wight was the venue for our autumn long-weekend meeting. As usual it was an enjoyable social as well as entomological event.

We are grateful to our BAP Species Officer who has done an enormous amount of work in drawing up and reviewing a list of proposed Diptera to contribute to the Invertebrate Biodiversity Prioritisation via Buglife (the Invertebrate Conservation Trust).

KEN MERRIFIELD

PRESIDENTIAL ADDRESS PART 1: THE PRESIDENT'S YEAR AND A LOOK AHEAD

MARK G. TELFER

10, Northall Road, Eaton Bray, Dunstable, Bedfordshire, LU6 2DQ

Officers' reports are the least interesting part of the Society's Journal! This was one of the results of the questionnaire sent out to all individual members in autumn 2005. Completed questionnaires were returned by nearly 40% of recipients – an excellent response. The detailed results of the questionnaire will be published in the Journal (*BJENH* 19: 50–63) and will be used to guide many of the decisions taken by the Council and Officers of the Society in the coming months and years. Specifically, the result about Officers' reports has guided my decision to keep this report brief, relevant and interesting, as best I can!

I was honoured to be asked, by then President Basil Harley, whether I would accept a nomination to become BENHS President. I served my Vice-presidential year in relative silence, observing the workings of the Council and learning from Mike Wilson the skills of chairing Council and Indoor Meetings.

My presidential year began at the AGM in March 2005 and as it draws to an end, I can endorse Eric Philp's observation that a year as President is just enough time to get to grips with the role. A second consecutive year as President would really allow one to capitalise on lessons learned during the first year.

I was determined not to be merely a figurehead for the year but to play a hand in bringing about some positive changes to the Society. However, I remained mindful of Chris Preston's words of advice to me: "One is a Queen not a Führer"! The development of the questionnaire has been my main contribution during the past year, over and above the routine presidential duties.

The main perk of the year was to receive an invitation to the lavish launch of the BBC's "Life in the Undergrowth" television series at BAFTA on Piccadilly in central London, hosted by Sir David Attenborough. The series included some quite awe-inspiring footage, and an impressive amount of it was film of British invertebrates. While entomologists themselves will always be a tiny minority of the population, it would help if a greater proportion of the population had a better understanding of and sympathy for invertebrates, combined with a greater respect for entomologists. "Life in the Undergrowth" must have gone some way towards that goal.

One of the insights I can pass on from my year as President, is that we should all be enormously grateful to the stalwarts who ensure the smooth and efficient running of the Society's broad spectrum of resources and activities. These include the Annual Exhibition and Dinner (Mike Simmons), the Indoor Meetings and Workshops (Ian McLean), the Open Days (Peter Chandler) and Library facilities (Ian Sims) at Dinton Pastures, as well as the management of the building itself (David Wedd and Martin Albertini). The Journal is edited by John Badmin and distributed by David Young, who also manages the Society's website. Memberships and subscriptions are managed by Roger Hawkins and Andy Godfrey with the latter's role having recently been taken over by David Young. Sales of books and journals are managed by Gavin Boyd. Paul Waring runs a flourishing Field Meetings programme. Tony Pickles as Treasurer manages the Society's finances. It is a striking feature of the Society that all these roles are filled by dedicated and reliable people. It has been a comfort to know that the Society's affairs are in safe hands.

The contribution made by our Secretary John Muggleton to the Society deserves special mention and without John's guiding hand, the role of President would be a great deal more difficult. Thank you one and all.

I owe thanks to the Royal Society for the Protection of Birds (RSPB) for making it possible for me to serve as President. As my employer (until the end of March 2006), the RSPB has allowed me to leave work early on numerous occasions to travel into London for Council or Indoor Meetings, and bore the cost of all my travel expenses, representing a considerable saving to the Society. Many entomologists recognise that the RSPB has been playing a greater role in the conservation of biodiversity other than birds in recent years. This has been to the benefit of the BENHS and also of the RSPB which has hosted several joint Field Meetings on its reserves over the last few years.

Over the past year, the deaths of seven members of the Society have been notified, including four Special Life members. Mr P. Calderara, a member since 1948 and latterly Special Life Member, died in June 2003 though this was only brought to the Society's notice during the past year. Professor Sir Richard Southwood, another Special Life member, died on 26 October 2005 having been a member since 1946. He was eminent as an entomologist, Vice-Chancellor of Oxford University and government adviser on BSE. He made a substantial contribution to the Society as a member of the editorial panel, the Hering Memorial Trust Fund panel and by opening the Pelham-Clinton Building.

Mr I. Carter died in December 2003 having been a member since 1978. Though initially interested in Lepidoptera, he developed an interest in beetles and was county recorder for Gloucestershire. Mr A.J. Dewick died in 2005 and was a Special Life member having joined the Society in 1947. He was a well known lepidopterist based at Bradwell-on-Sea, Essex. Dr G.A.N. Horton died on 29th August 2005 having been a member since 1967. He was interested in Lepidoptera as well as Coleoptera, wrote *Monmouthshire Lepidoptera* and discovered the Silurian *Eriopygodes imbecilla* (F.). An obituary to Mr C. Rivers appeared in *The Daily Telegraph* of 18th January 2006 reviewing his career as an eminent entomologist and insect virologist. He was a prominent lepidopterist and a Special Life member, having joined the Society in 1953. Mr C. Watson died suddenly in October 2005, having been a member since 1993 and a regular at the Annual Exhibition. We have already stood in memory of these members so I will not ask you to do so again.

The coming year will I think be dominated by the results of the questionnaire which gives Council a clear mandate to develop some of the Society's activities. The questionnaire results point the direction but it is up to Council to turn pointers into sound and detailed plans. I have every confidence in the safe hands on Council to develop the Society in line with the wishes of existing members but also to attract new members.

From the time I joined the BENHS in 1992 I have felt part of a society with a small 's' – a social community. I was 22 then and seemed to be one of the youngest people in the Society. Fourteen years later I still feel that I'm one of the youngest people in the Society! I would like our Society and our society to become more attractive and welcoming to younger members in future.

INDOOR MEETINGS

13 September 2005

Keith Hyatt of the London Natural History Society chaired the joint meeting of the two societies. He announced the death of Richard Fitter, a past President of the LNHS.

Mr A. J. HALSTEAD showed two types of caterpillar collected from the RHS Garden, Wisley, Surrey. These were of Pale Tussock moth, *Calliteara pudibunda* (L.), found feeding on *Salix alba*, and Sedum small ermine moth, *Yponomeuta sedella* Treitschke, feeding on the *Sedum* cultivar 'Stewed Rhubarb Mountain'. Mr P. MABBOTT showed a variety of colour forms of the Harlequin ladybird, *Harmonia axyridis* Pallas that he had collected in Victoria Park, London E9 that day.

The following were approved as members by Council: Mr Christopher A. Borrow, Mr Roger W. Brereton, Dr Richard J. Burkmar, Mr Stuart E. Coleman, Mr Randolph E. Drew, Mr Joe Hawthorne, Mr David Hopkins, Dr John J. Hopkins, Dr Edith I. H. Rom and Mr Ronald W. Waters. Mr Louis M. Thorogood and Miss Emily Throgmorton were approved as junior members and the Thames Valley Environmental Records Centre became a corporate member.

The Secretary gave notice that the BENHS annual subscription would increase to £19.00 from January 2006. The Society hopes to hold subscriptions at this level for the next five years.

PAUL MABBOTT gave the 11th Brad Ashby Memorial Lecture on the topic of "Invertebrate surveys – can the public help?" Britain's fauna and flora are amongst the best recorded in the world, thanks to a long history of recording by both professional and amateur naturalists. Some aspects, such as birds and higher plants, are particularly well recorded but with insects and other invertebrates the coverage is more patchy. Some recording schemes have many recorders but a relatively small core of people who have provided most of the records. The recording schemes with the biggest data sets and widest national coverage tended to be for the larger, more colourful and easily identified insects, such as butterflies and larger moths, dragonflies and hoverflies. The development of computers, the Internet and digital cameras has allowed better handling and storage of data, and has increased the accuracy of identifications and the ability to check someone's identifications. The ability to take and send digital images is very helpful in surveys involving the general public, where there may be a reluctance to kill specimens for identification purposes.

Surveys can generate useful information in addition to preparing distribution maps. They can provide information on the abundance of species and how this changes with time, land use or land management. New-to-Britain species can be tracked as they disperse and colonise new areas. The data can be analysed to extract phenological information. Recorders can also be a useful source of observations on insect behaviour and biology.

The speaker used the survey of carabid beetles in the London area to illustrate some of the problems inherent in recording schemes. This had patchy coverage for even the common species and there was bias towards squares that contained either notable sites, such as Bookham Common, Epping Forest and Oxleas Wood, or the homes of recorders. Carabid identification requires some specialist knowledge, which limits the number of people who can contribute to the recording scheme.

Another group of beetles, the ladybirds, offers more scope for participation by the general public. Most ladybirds are easily seen and found, and can be confidently identified from illustrations in books or websites. There are not too many species and

they have a good public image, especially among gardeners. A London area ladybird recording scheme was started in 1998 and this has steadily increased its numbers of records and recorders. Relatively few errors of identification have been detected; only one recorder has been considered so unreliable that his records have been rejected. Most errors have concerned confusion over the common 7-spot ladybird and the rare 5-spot, and with the Adonis ladybird. *Anthrenus* beetles are sometimes mistaken for ladybirds but other non-ladybirds are infrequently submitted for checking. By contrast, the national survey set up to monitor the occurrence and spread of the newly arrived Harlequin ladybird has received large numbers (87%) of ladybirds and other insects that were not *Harmonia axyridis*. This may have been due to misleading pictures and information in the press, together with a popular conception of what "the ladybird" looks like, so any other type must be the new arrival.

Certain types of ladybird are likely to be under recorded. These include the small species that do not look like typical ladybirds, such as *Nephus*, *Clitostethus*, *Scymnus* and *Stethorus* spp. Arboreal species are less likely to be seen, especially those that frequent the tops of tall trees.

A series of slides was shown that illustrated the range of ladybirds found in the London area and their biologies. These included the recently established Harlequin ladybird, which in London is most frequently seen in Chelsea, Battersea and Brixton, especially on lime and sycamore trees.

The speaker concluded that the public can help with invertebrate surveys but these need to be for single species or groups of species that are distinctive and easily identified. Spiders have some distinctive species but the experience of the Essex Field Club suggests that spiders are not popular with the public. Some possible groups of invertebrates that could be suitable for non-specialist participation surveys are soldier beetles (cantharids), longhorn beetles (cerambycids) and some plant galls.

8 November 2005

The President, Dr M. TELFER, announced the deaths of Special Life Member, Professor Sir Richard Southwood and Dr G.A.N. Horton.

Mr R. D. HAWKINS showed some live adults and larvae of the Harlequin ladybird, *Harmonia axyridis* Pallas, found in large numbers at Morden, South London. A new generation of adults was emerging from pupae on walls and fences near lime and sycamore trees.

The following persons were approved as members by Council: Mr David L. Beech, Mr Martin J. Heywood, Mr W. Denis Jackson and Miss Ellie C. Lindsay.

Mr MATTHEW SHARDLOW spoke on Buglife—the Invertebrate Conservation Trust. The ICT was set up in 2000 with the aim of maintaining sustainable populations of invertebrate animals in the UK and preventing extinctions. One area in which the ICT has been active was in promoting the importance of brown field sites for invertebrates. About 15% of the Red Data Book species have been recorded on brown field sites, making them as important as ancient woodland. Brown field sites are diverse but often have areas of bare soil with good nectar/pollen sources.

At Northwick Road, Canvey Island, outline planning permission for redevelopment as a business park had been granted for a brown field site where 33 RDB and 105 Nationally Scarce invertebrates, including five Biodiversity Action Plan priority species had been recorded. The ICT produced a press release and the story was taken up by The Guardian newspaper. This helped to persuade the developers to withdraw their plans and replace it with a more sustainable one that took into consideration

the wildlife value of the site. One feature of the new plan was the use of green roofs that will provide nectar and pollen sources for insects.

New planning guidelines for brown field sites now require the wildlife interest and the presence of BAP species to be taken into consideration. Many brown field sites in the Thames Gateway area are likely to be redeveloped in the near future. These sites are being mapped and assessed for invertebrate biodiversity in order to identify key sites that need protection.

Soft rock cliffs have at least 29 specialist invertebrates dependent on this habitat. The ICT had undertaken a review of this habitat to define the resource and promote management principles. Surveys were being carried out in Dorset, Kent, Isle of Wight and Yorkshire.

The ICT had campaigned to save endangered sites. It also works with other organisations, such as Action for Invertebrates, The Riverfly Partnership, Wildlife and Countryside Link Biodiversity Taskforce, Invertebrate Link and the BAP Priority Species Review. Riverflies were a particular cause for concern as their numbers overall had declined by as much as two thirds. The contamination of waterways with pyrethroid insecticides used as sheep dips had caused some major losses of aquatic invertebrates.

Other ICT activities included giving conservation advice through its web site and publications, conducting species surveys, such as the current Scarlet Malachite beetle survey, lobbying government departments and monitoring new legislation and regulations. The original wording of the 'Clean Neighbourhood' Bill could have resulted in insects being declared statutory nuisances. As a result of ICT comments, the Bill has been amended to exclude insects in the countryside and other outdoor areas.

Since its inception, the Invertebrate Conservation Trust, otherwise known as Buglife, has made its mark and has succeeded in raising awareness of invertebrate wildlife and their conservation needs in the UK and elsewhere.

10th January 2006

The President Dr M. TELFER chaired the meeting.

The following persons were approved as members by Council: Mr Sean P. Clancy, Mr Sean P. Cooch, Mr Roger Harris, Mr Robin A. Howard, Mr Anthony D. Lewis and Miss Rachel R. Terry.

Mr J. BADMIN reported that the last part of the 2005 journal was printed and ready for distribution. He said that short notes for publication were always welcome. He also announced that leaflets giving information about the RES national entomological meeting, Ento '06, to be held at the University of Bath 20–22 September 2006, were available in the hallway upstairs.

Mr R. PARKER reported receiving a sighting of a red admiral at Shotley, Suffolk on 9.i.2006, and a peacock on the same day at Long Melford Village Hall, Suffolk. The latter was roosting under an exterior security light.

Dr CAROLINE BULMAN spoke on the work that Butterfly Conservation is doing to conserve butterflies on a landscape scale. There was a biodiversity crisis taking place with many animals and plants showing a reduction in abundance and range. This has affected butterflies more severely than birds or plants. Butterflies have suffered an overall decline of 71%, compared with 54% for birds and 28% for plants. Macro-moths have also suffered with a 32% decline during 1968–2002, with the south of England being the worst affected.

Butterfly Conservation staff were involved in 44 landscape scale projects in the UK. This involved the co-ordinated management of habitats for a range of species over a wide area, with the aim of creating a network of linked, rather than isolated sites. Species extinctions were more likely to occur on isolated sites, whereas linked sites provided the opportunity for recolonisation. Many of the landscape scale projects are aimed at conserving butterflies of the fritillary group, which have declined sharply over the last 50 years as a result of loss of suitable habitat.

The marsh fritillary develops as larvae on devil's bit scabious in wet grassland and chalk downs. It had declined elsewhere in Europe, as well as in the UK. It had gone from eastern England and was now found mainly in the south west, western Wales, north west Scotland and Ireland. If it continued to decline at its present rate, by 2020 it would be confined in the UK to south west Wales, Dorset and Wiltshire, and Dartmoor. In the Dorset study area it had been shown that the bigger and better quality sites were more likely to retain the marsh fritillary. These sites needed to be managed appropriately and, where possible, expanded so that the sites could be linked.

The heath fritillary has one of its strongholds at Blean Woods in Kent. The larvae feed on cownheat, which develops during the early stages of growth after coppicing. More coppicing within the woods has created new colonies of the butterfly. It was important to target the areas for coppicing, so that the cleared areas were within reach of existing heath fritillary colonies. The coppicing programme has also benefited another uncommon insect, the cow wheat shield bug, *Sehirus biguttatus* (L.).

On Salisbury Plain, Butterfly Conservation was taking part in a four-year EU-funded project with six partner organisations. This was aimed at improving the habitat for the marsh fritillary, stone curlews and juniper. This involved scrub clearance and the introduction of grazing for long-term management. The mid Cornwall Moors project and the Two Moors project on Dartmoor and Exmoor were both aimed at conserving fritillary butterflies. The Two Moors area has three BAP butterflies, the high brown fritillary, marsh fritillary and heath fritillary, all of which have declined as traditional farming practices have changed. The project area has six farms, all with different owners and differing management systems. An important part of these schemes was raising the awareness of land owners of the needs of butterflies and the effects of changing management regimes. Recent changes in farm subsidies should be helpful as farmers can apply for higher level stewardship payments when their land management is favourable for BAP species. This will help pay for habitat restoration and future management.

ENTO 06. The National Meeting of the Royal Entomological Society will be held at the University of Bath, 20th–22nd September 2006. Presentations are invited for the following sessions: Butterflies & Moths, Beetles, Insect Conservation, Insects & Microbes, Physiology & Immunity, and Insects & Microbes. For further details please contact the convenors, Professor Stuart Reynolds (S.E.Reynolds@bath.ac.uk) or Dr Glenda Orledge (g.m.orledge@bath.ac.uk).

OBITUARY

SIR RICHARD SOUTHWOOD 1931–2005



Professor Sir Richard Southwood FRS, our most senior entomologist, ecologist and former Vice-Chancellor of the University of Oxford died at his Oxfordshire home on Wednesday 26th October 2005 at the age of 74. He was christened Thomas Richard Edmund, TRES for short, and thus possibly pre-ordained to become a Fellow of the Royal Entomological Society. Sir Richard who was better known to his contemporaries and colleagues simply as Dick, was always happiest in the field observing insects and contemplating ecological problems.

His interest in entomology was sparked off at the age of three with a wish to know the names of the insects and plants he encountered on his parent's dairy farm near Northfleet, Kent. He gradually accumulated a series of named insects from a number of local sites and a collection of entomological books. His continued enthusiasm for insects led his father to take him to the Natural History Museum, at the age of eight, to meet taxonomists to ask for advice on which groups of insects to study. Jack Balfour-Browne reputedly advised him "to specialise in Heteroptera".

He joined the South London Entomological & Natural History Society in 1946 and published his first paper, on insects from Kent, in *The Entomologists' Monthly Magazine* in 1947, aged sixteen. His undergraduate career was spent at Imperial College, the best place in the world to study insects. He graduated from Imperial in 1952 gaining a first and the Forbes Medal for best student. Vacation work in C.G. Johnson's department at Rothamsted led to his first substantive paper on Heteroptera in 1949. He subsequently moved to Rothamsted to undertake his Ph.D and submitted his thesis on the subject of "Some studies on the systematics and ecology of Heteroptera" in 1955. He often admitted to enjoying his short stay at Rothamsted, and it was here that he met and married Alison (née Langley).

It was during this period that he began to publish a long series of papers on British Heteroptera, often in conjunction with Dennis Leston (another former member of our society). Their teamwork eventually led to the publication of the Wayside and Woodland book *Land and Water Bugs of the British Isles* in 1959. This classic reference work on British bugs has increased in price more than one hundred-fold since publication, an indication of its true value to British biologists. It is a

delightfully informative book to read, though some of the taxonomic keys are far from easy to interpret when looking at dried specimens.

Dick returned to Imperial from Rothamsted, initially as Reader in Insect Ecology, rising eventually to Professor and Head of Department and Director of Silwood Park Field Station (1967–1979). He undertook pioneering research on insect-plant communities, insect abundance and diversity and insect succession. His thought-provoking paper in 1961 entitled ‘The number of species of insects associated with various trees’ provoked a flurry of research by ecologists throughout the world as they rushed to produce similar data-sets confirming his ideas. During this period he wrote his hugely influential *Ecological Methods* which was published in 1966. This is THE entomologist’s bible. It has been so successful over the years that it is now in its third revision, co-authored by Peter Henderson.

Dick was also a naturally-gifted administrator, who early on recognised the importance of interdisciplinary research. His expertise in these matters, led to the creation of a formidable team of entomologists and ecologists at Imperial and later at Oxford. Despite being a manager he was always extremely approachable and would always listen to his colleagues’ concerns. He also had a considerable talent at remembering faces *and* names and would greet colleagues by their first names even after an absence of ten years or more. As a consequence his departments were always a hive of friendly activity and at the cutting edge of science.

In 1979, Dick moved to Oxford to become Linacre Professor of Zoology and Head of Department, a position he held until 1993. Here he succeeded in bringing together the various groups studying molecular biology, animal behaviour and ecology into a larger interdisciplinary team. This sparked novel hybrid work including that of Richard Dawkins who moved from research on animal behaviour to evolution. He was also highly successful in attracting new talent to his department, including the late Professor William Hamilton and Lord May, former President of the Royal Society. The year 1984 saw the publication of another classic entomological treatise *Insects on Plants* in conjunction with Donald Strong and John Lawton. He co-authored a book with Barry Juniper on *Insects and the Plant Surface* (1986). His lectures to undergraduate students while Head of Department and subsequently as Vice Chancellor of the University were published under the title *The Story of Life* in 2003.

He acted as Vice-Chancellor of the University of Oxford from 1989–1993. During his period of office, he was appointed Presidency of the Campaign for Oxford, the first fund-raising campaign ever organised by the university, and he succeeded in raising £340 million surpassing the target by more than £100 million.

Dick also played an influential role in wider public life. As chairman of the Royal Commission on Environmental Pollution in the 1980s, he produced the report, *Lead in the Environment* (1983), which described the dangers to human health of lead in the atmosphere and led to the adoption of lead-free petrol. He later became chairman of the working party established by the Ministry of Agriculture, Fisheries and Food in 1988 to advise on bovine spongiform encephalopathy (BSE). The report is full of sound precautionary advice and an immediate recommendation was the proposal to prevent any part of an animal suspected of having the disease from entering the food chain. The compulsory slaughter of BSE-affected cattle was introduced with effect from 1988. However not all the report’s advice was acted upon. To quote the *Sunday Telegraph* of 27 November 2005 ‘In this capacity he (Southwood) played an important part in events that have become a classic cautionary tale of the dangers of mixing the conditionalities of science with the glib certainties of politics’.

Sir Richard's contributions to ecological research, administration and public policy resulted in many awards, including a knighthood in 1984, and numerous honorary degrees. He was elected President of the British Ecological Society (1976–78), a Fellow of the Royal Society (1977) and President of the Royal Entomological Society (1983–84).

It is strange that the Society somehow missed the opportunity of offering the Presidency to Sir Richard and I suspect this was because he appeared to be so busy dealing with matters of state that we dared not ask. I am sure he would have been delighted to accept if offered and would soon have been in his element among fellow entomologists. He was still collecting in the field not long before he died. However we were honoured that Sir Richard was able to officially open the Society's new Pelham-Clinton building at Dinton Pastures on 27th June 1993. He had been on the Society's journal editorial committee since 1958 (then called the 'paper panel') and was refereeing papers until two years ago. He was also a member of the Hering Memorial Fund panel for many years, and to quote Malcolm Scoble, invariably the first to respond to the paperwork and always made very thoughtful comments.

The first time we really met was when I arrived at Silwood Park on a Sunday afternoon to begin my entomological career and the place was virtually deserted with no familiar faces, as all the overseas students had just departed home and the new year's intake of M.Sc. and Ph.D. students had yet to arrive. I was very uncertain whether to proceed with a career in research and had eyed an advertisement for a post in the tax inspectorate with great interest: I was at a very low ebb. Dick happened to pass by, took command, found me a room and helped to make my bed. Of course, I stayed, and have enjoyed entomology and Dick's company ever since.

JOHN BADMIN

Personal details have been obtained from a variety of sources. However I wish to thank Bernard Nau for providing the selected references on British Heteroptera cited below.

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SHORT COMMUNICATION

A further record of *Gerris lateralis* Schummel (Hemiptera: Gerridae) from Hampshire. – Jonty Denton recorded *Gerris lateralis* new to Hampshire (*Br. J. Ent. Nat. Hist.* **18**(4): 252). Rather belatedly, I would like to record that I found this species, rather sparingly on the 18th April 1982 on a small, shallow backwater on the Leckford Estate, North Hampshire (SU3737). This was in a rather similar habitat to that recorded by Jonty Denton, for a pond skater which appears to make itself less obvious in the field than do other members of the genus. I would like to thank the Trustees of the John Spedan Lewis Trust for permission to collect on the Leckford Estate. – ERIC PHILP, 6 Vicarage Close, Aylesford, Kent ME20 7BB.

FIELD MEETINGS

Beacon Hill Country Park, Woodhouse Eaves, Leicestershire, 14 May 2005

Leader: **Paul Waring**.—On the sunny afternoon of 14 May I had the pleasure of leading a “Caterpillar Hunt” for Leicestershire County Council’s Community Heritage Initiative at Beacon Hill Country Park, Woodhouse Eaves, Leicestershire. This was also advertised as a BENHS field meeting. The event was attended by two dozen people who came along to see a selection of caterpillars and how to find them locally. They were not disappointed. The date of the meeting was carefully chosen to coincide with the peak abundance of spring moth larvae feeding on the new leaves on trees and shrubs. The party (Fig. 1) was divided into small groups, each equipped with a stick to tap branches and dislodge caterpillars onto a beating tray. A wide range of broad-leaved trees and shrubs were sampled in this way, principally around the large open grassy field by the lower visitor car park and the newly planted woodland. The most abundant larvae were those of the Winter Moth *Operophtera brumata* (L.) which was found on a range of broad-leaved trees including common hawthorn *Crataegus monogyna*, downy birch *Betula pubescens*, oak *Quercus robur* and hornbeam *Carpinus betulus*, and the Early Moth *Theria primaria* which we found only on common hawthorn and Blackthorn *Prunus spinosa*. Larvae of the Dotted Border *Agriopsis marginaria* (Fab.) were also fairly frequent and were recorded on the oak, birch and hornbeam. In all we recorded fourteen species of macrolepidopterous larvae during the afternoon. The velvety-green larvae of the November Moth *Epirrita dilutata* (D. & S.) which we found on the oaks were already about 2.5 cm in length and fully grown while those of the Pale Brindled Beauty *Phigalia pilosaria*



Fig. 1. Examining foliage for caterpillars, Beacon Hill Country Park, 14 May 2005 (Photo: Paul Waring)

(D. & S.), Satellite *Eupsilia transversa* (Hufn.) and Dunbar *Cosmia trapezina* (L.) on the same trees were still less than half grown. We also obtained one larva of the Purple Hairstreak butterfly *Neozephyrus quercus* (L.), 7 mm in length, from the oaks, making a total of seven species in all from this type of tree. Common hawthorn produced six species in about the same amount of sampling, including the Common Emerald *Hemitea aestivaria* (Hbn.), Brimstone Moth *Opisthograptis luteolata* (L.), Yellowtail *Euproctis similis* (Fuess.) and the Green-brindled Crescent *Allophyes oxyacanthae* (L.) while hazel *Corylus avellana* and hornbeam only yielded two species each and on which larval population densities were much lower. The species were the Winter Moth and Dotted Border on hornbeam and the Feathered Thorn *Colotois pennaria* (L.) and Mottled Umber *Erannis defoliaria* (Clerck) on hazel. Sweeping the long grass by the hedgerows at this time of day and year proved rather unproductive of moth larvae, with only one, a small noctuid, being found, which was not reared.

The leader would like to thank Rebecca Cleaver, Volunteer Support Officer for Leicestershire County Council's Community Heritage Initiative for the invitation to hold this meeting and her help on the day. He would also like to thank all those who attended and ensured a good haul of caterpillars, all of which were released back onto appropriate foodplants on site after everyone had examined them.

Highwayman's Haunt, Chudleigh, Devon, 14 May 2005

Leader: **Roy McCormick**.—It rained solidly all day in Devon and continued up to around 17.30h; the temperatures were not good either, not reaching above 12°C. Despite the rain we assembled in the meeting place and decamped to the bar of the local hostelry to discuss the evening's arrangements such as where to place our six light-traps. Emerging at around 20.45h after the rain had stopped there was absolutely nothing flying and beating the herbage to flush out insects merely got the beater wet, so it was back to the bar—at least we stood the chance of seeing double the number of moths when we looked later at the traps! We next visited the traps around 22.00h, thinking we would give whatever was foolish enough to fly a chance to come to our lights. How wrong could you be! We found around one moth per trap of five species (all common) and it was obvious this was not even going to be an average night, despite the temperature (9–10°C) and lack of rain. Back to the bar again for an hour, then out to the traps again for a final round before packing up our equipment. The leader left his Robinson trap running and another member decided he would stay the night as he was running two Skinner type traps.

The following morning the Robinson and the two other traps were inspected and we added a further nine species to our list. The grand total was 19 species with the best of these: one *Watsonalla cultraria* F. (Barred Hook-tip) and one *Cyclophora annularia* F. (Mocha) which was found in the grass between the Skinner type traps.

Seal Chart, Sevenoaks, Kent, 21 May 2005

Leader: **John Badmin**.—The idea of a meeting at Seal Chart seemed a good one at the time. My attention had been caught by a photograph of a group of entomologists on a 'South London' field meeting at Seal Chart, May 1905 that had been reprinted recently in *The Aurelian Legacy* (Salmon, 2000). The time seemed ideal for a return visit to the same locality 100 years later. The photograph (Fig. 1) showed 25 people, all male, mostly wearing moustaches, hats, suits and ties. Among those present were the President, Robert Adkin, Richard South and Edward Step (of British Moths and Butterflies, and Bees, Wasps and Ants, Wayside & Woodland Series' fame).

By contrast, our party numbered five, of both sexes and one moustache (Fig. 2). The meeting was a joint one arranged between the British Entomological & Natural History Society (the successor to the 'South London') and the Kent Field Club, but a minor printing error in the former's programme precluded all attending except those with a Sudoku mindset.

The weather was not conducive to entomological recording, being dull, drizzly and noticeably windy at times, in contrast to sunnier weather experienced simultaneously on another KFC meeting 20 or so miles further east. In the church grounds where we met, we recorded the newly arrived Asian psyllid *Capsopsylla fulguralis* (Kuwayama) on *Elaeagnus*, *Spanioneura fonscolombii* (Forster) on *Buxus* and not too far away the whitefly *Aleurotrachelus jelinekii* (von Frauentfeld), one of the UK's most intensively studied insects on *Viburnum*.

We walked through the woods, first along the trackway above the scarp and then northwards back towards the main A20. The area consisted mostly of well-established oak and birch with bracken, bilberry and heather undergrowth. Here Laurence Clemons was able to record the wood ants *Formica rufa* L. and *F. fusca* (L.). The commonest bug on oak was the mirid *Harpocera thoracica* (Fall.), though newly-emerged *Tachycixius pilosus* (Olivier) were widespread. The birch shieldbug *Elasmotethus interstinctus* (L.) was beaten from almost every large birch tree. Unfortunately we were unable to refine the treehopper *Centrotus cornutus* (L.) on oak, but recorded the hemipterans *Ulopa reticulata* (F.) and *Strophingia ericae* (Curtis) as new from heather.

Spring insects included the click beetles, *Agriotes acuminatus* (Stephens) and *Athous haemorrhoidalis* (F.) and the day-flying moth *Adela reamurella* (D. & S.) – the latter two recorded in 1905. Quite a few flies were about despite the conditions, notably the St Mark flies *Bibio anglicus* Verrall and *B. johannis* (L.) and a solitary



Fig. 1. Field Meeting at Seal Point Meeting 1905.



Fig. 2. The Richardson family, John Badmin and Laurence Clemons, Seal Chart, 2005.

hoverfly *Cheilosia albitarsis* (Meigen). Young instars of the bush crickets *Leptophyes punctatissima* (Bosc) and *Pholidoptera griseoaptera* (De Geer) were also noted.

The walk back to the cars along the A25 was an eye-opener. Not too long ago, the M25 and M20 were opened to alleviate east-west traffic through mid Kent. Vehicles are probably now in higher numbers than ever before, and travel at even greater speeds. Any animals crossing the road are courting disaster – a situation that was certainly not the case when the South London crowd emerged from having their late tea in the Crown Point Inn and making their way back to Sevenoaks railway station to take them back to London. We recorded nearly 60 species of insect, approximately the same as in 1905, but with a much smaller party. Their interests were largely Lepidoptera (including dusking), ours Diptera, Coleoptera and Hemiptera, so direct comparisons of species richness are rather difficult to determine. One gets the impression there was much more room to accommodate wildlife a century ago. Luckily, large tracts of the woodland remain in common ownership for all to enjoy. Robert Adkin kindly read his field report, a full eight pages, at a Society meeting on 11th January 1906; how times have changed.

Saltfleetby-Theddlethorpe Dunes NNR, Lincolnshire, 26 May 2005

Leader: **Paul Waring (PW)**. – A special field meeting held on the nights of 1 & 2 June 2004 demonstrated that the Marsh Moth *Athetis pallustris* (Hbn.) occurs in the central portion of the Saltfleetby-Theddlethorpe Dunes NNR as well as in ‘Sandbanks’, the Sea View field at the north end of the reserve (Waring, 2005a). The Sea View field has been monitored almost annually for this species since the late 1980s and more intermittently back to the early 1970s. In marked contrast, the

central part of the reserve, to be referred to as Rimac, has received very little moth recording effort in recent years. The twin aims of this field meeting on the night of 26 May 2005 were to compare the population density in the central Rimac area, with that in the northern Sea View field, as indicated by numbers of adult moths in light-traps, and to see if the Marsh Moth could be found right at the south end of the Rimac area, having failed to record any even further south, at the far end of the reserve, on the meeting in 2004. As in 2004, this meeting was organised jointly for the BENHS and Butterfly Conservation (BC), as part of the BC 'Action for Threatened Moths' project. The meeting was advertised as an all-night session because *A. pallustris* often flies late into the night.

The leader was joined by Roger Labbett, Toby Ludlow and Steve Green (SG), all from Lincolnshire, Dave Wright from Grimsby, Yorkshire, Keith Tailby (KT) from Leicestershire and Philip Horsnail (PH) from Northamptonshire. SG was representing BC Lincolnshire Branch and PH is involved in organising the Northamptonshire Moth Group.

We enjoyed a pleasant mild evening after a hot day as we set up our light-traps. KT, SG and PH covered the Sea View Meadow, deploying a light-trap on both the north and south side of the large clump of Sea Buckthorn *Hippophae rhamnoides* and Goat willow *Salix caprea* at the north end of this field, and two traps in the middle portion of the field, one on the west side, the other on the east, both in positions where the leader has seen the Marsh Moth before. A light-trap was also operated in the adjacent field on the west side of the south end of this meadow, just a few metres inside the gate between the two because a male *A. pallustris* was recorded here by Tony Davis of BC on 27 May 2004. In addition, two light-traps were operated in the large field immediately north of the Sea View field. This is a field that was growing arable crops annually during the 1990s but which has been seeded with hay from the



Figure 1. Rimac central area, from the southern sandhill looking north, Saltfleetby-Theddlethorpe Dunes NNR, Lincolnshire. 26 May 2005, showing Robinson light-trap which captured two male *A. pallustris*.

NNR and allowed and encouraged, with grazing, to develop a sward with an abundant biomass of herbs. A lush sward is now present which is packed full of Ribwort plantain, at a density even higher than the places where *A. pallustris* has been captured. The plantain appears to be the main larval foodplant of the Marsh Moth on the NNR. Here the sward reaches at least to mid-calf deep, with the plantain flowerheads on stalks at knee height. If *A. pallustris* is able to occupy this field, the result will be at least a doubling of the area of breeding habitat currently represented in the Sea View field.

We watched a Barn owl flying over carrying a prey item and later quartering the dunes, perching on fence-posts and looking at us. A cuckoo was calling in the background and skylarks were noisy overhead. After supervising the siting of the traps, PW departed to join the rest of the group at the Rimac area, where a Short-eared owl was hunting over the marsh. There was soon a brilliant red sunset as the traps here were set up and switched on. Two lights were placed in exactly the same positions in which *A. pallustris* were recorded on the meeting in 2004, near the large conical sandhill. Meanwhile PW took two standard Robinson-pattern light-traps right down to the far end of this open, flattish area of grassland to see if the moth would turn up at the south end, near the foot of the next large sandhill. All lights used on this evening were 125W mercury vapour bulbs.

Grasshopper warblers were still calling at dusk at the edge of the marsh just below the traps. PW turned on the car radio, hoping to catch a weather forecast about 22.00h, and heard "Twilight Time" by the Platters (a ballad with lines like "Heavenly shades of night are falling..."). This moment was quite surreal.

The weather conditions for the night were excellent for the coastal location and the time of year. The air was calm and warm after a hot day. The temperature at dusk and at midnight was 11°C and did not fall below 9°C throughout the night. There was no moon and although any cloud had dispersed by nightfall, light cloud had built up again by dawn.

Fox moths *Macrothylacia rubi* (L.), mostly females but at least one male, arrived at the lights almost as soon as it was dark, together with numbers of Small Elephant Hawk-moths *Deilephila porcellus* (L.) and the Shears *Hada plebeja* (L.). Moths arrived steadily and there were usually one or two flying round the bulb when the traps were inspected.

A total of eight Marsh Moth was recorded on this night, all males and all but one in very fresh to immaculate condition. The first arrived at 23.20h to the trap on the south side of the Sea Buckthorn clump in the Sea View field just before the recorders here retired to their vehicles for some sleep. Another was seen on the outside of the trap on the north side of this clump at 04.00h at first light and must have arrived between 23.30h and dawn. These were the only two seen at the four traps in the Sea View meadow or the adjacent gated field, and none have yet been recorded in the restoration meadow. The other six *A. pallustris* were captured in the Rimac grassland. Toby Ludlow and Dave Wright had two which both arrived at their light just as they were starting to pack up their equipment at 00.45h because they could not stay the whole night. Roger Labbett had two, which arrived at 01.08 & 01.18 h, shortly before he too departed. The leader was also rewarded with two, both of which were in the northernmost of his two light-traps, nearest the others. The average number of Marsh Moth per trap for the four traps at Rimac was thus 1.5 compared to only 0.5 per trap for the four traps in the Sea View field.

As an indication of the numbers and species richness of moths on the wing, PW's standard pattern Robinson light-traps, with 125W MB/U bulbs, operated all night from before dusk until after dawn, captured 55 macro-moths of 18 species and 55

macro-moths of 20 species, respectively. The Small Elephant Hawk-moth was the most abundant species in both traps, with 15 and 11 individuals, respectively. The Shears was the next most numerous species with 8 and 5 in these traps. All the other species were represented by six or fewer individuals per trap and most usually by only one or two. The most noteworthy species recorded included only the Dog's Tooth *Lacanobia suasa* (D. & S.), Least Black Arches *Nola confusalis* (H.-S.), Sharp-angled Peacock *Macraria alternata* (D. & S.) and Latticed Heath *Chiasmia clathrata* (L.), none of which is nationally scarce.

Foxes were calling at first light, Grey partridges were seen and Sedge warblers were soon vocal in the reedy channels by the gate trap-site. A Wall Brown *Lasiommata megera* (L.) and a Small Copper *Lycaena phlaeas* (L.) were disturbed and two final instar larvae of the Six-spot Burnet moth *Zygaena filipendulae* (L.) noted while Keith Tailby assisted the leader in taking measurements of the sward in the Sea View field after everyone else had departed.

DISCUSSION OF MARSH MOTH RESULTS

The pattern in the catches of Marsh Moth on the meeting in 2005 were consistent with those from 2004. It would appear that the Marsh Moth is more widely distributed and frequent at Rimac than at the Sea View field, where results since 2000 indicate that the moth is only really surviving principally around the sea buckthorn clump. This is in contrast to the situation in the late 1980s and in 1990 when both adults and larvae were more widely spread and more frequent in the Sea View field. The most obvious difference between Rimac and Sea View is that the former is not subject to either annual mowing or aftermath grazing, both of which have been applied to the Sea View field in recent years. Differences between the areas are apparent in the height of the sward, as measured by the Boorman drop-disc method. In the Sea View field the mean sward heights around the northern and southern sides of the sea buckthorn clump on 26 May 2005 were 9 cm and 7.5 cm, with ranges of 7–13 cm and 6–12 cm respectively, reflecting the effects of the cutting and grazing. At Rimac the mean heights at the south end were 13 cm and 11 cm, with ranges from 4–20 and 7–15 cm, respectively. The results in 2004 and 2005 are consistent with the view that hay-cutting, or aftermath grazing, or both, may have resulted in a decline of *A. pallustris* on the site and that it is now only surviving in parts of the site which are not cut or grazed, or around the sea buckthorn clump where cutting and grazing do not penetrate. Hopefully, the Marsh Moth will colonise the restoration field, where the mean sward height was measured at 16 cm, with a range from 8–30 cm and where plantains are in ample supply, but the suitability of this sward and the colonising ability of *A. pallustris* are not yet known. It is likely that the females, with their reduced wings, are less mobile than the males, and seldom fly. This is consistent with observations in captivity, in which the females prefer to scuttle about in the vegetation, and it may explain why they are never captured in light-traps. There are however a couple of reports from the nineteenth century where female *A. pallustris* were encountered flying by day in other counties. It is therefore of great interest and importance that the restoration field continues to be monitored for *A. pallustris*. Meanwhile, the leader will continue to draw attention to these results and pursue ways in which management of the Sea View field can be manipulated to test whether annual cutting and/or aftermath grazing are the cause of the definite decline in the Marsh Moth population on the site.

The leader thanks all those who supported this meeting, BC for financial support as part of the Action for Threatened Moths project, which receives contributory

funding from English Nature, Writtle College for support in writing up and publishing the results and John Walker, Assistant Site Manager, and his colleagues at English Nature for their continued efforts in managing and conserving *A. pallustris* along with all the other interests on the site.

Additional news

The leader is pleased to report that a single male *A. pallustris* was recorded at Gibraltar Point at light on 5 June 2005 by Paul Troake (Waring, 2005b). This was after a negative result at a light-trapping session on 27 May 2005 led by Adrian Russell involving about a dozen light traps at Gibraltar Point, including one trap only 300m from where the moth was seen on 5 June. These results add to those from the BENHS field meeting on this site involving 11 light-traps on 16 June 2001, and subsequent searches by Adrian Russell and Ron Follows on 23 June 2001 with nine light-traps and in similar habitat on the adjacent Seacroft Golf Course on 6 June 2002 with ten light-traps, all of which produced no *A. pallustris*. The conclusion is that *A. pallustris* is now in very small numbers at Gibraltar Point, and probably very localised, in stark contrast to the situation described by Pilcher (1973) who was able to obtain it in various places on the reserve by leaving a single actinic light-trap out overnight. Coincidentally, grazing and cutting has been intensified at Gibraltar Point in recent years. On 25 September 2005 PW found a total of 40 larvae of *A. pallustris* by sifting 24 specially prepared piles of cut grass litter on the Rimac site at the Saltfleetby-Theddlethorpe Dunes NNR, compared with none in 23 litter-piles prepared at the Sandbanks/Sea View field, strongly confirming and even more clearly emphasising the differences in population density in these uncut and cut/grazed sites described above.

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Godmersham Downs, Kent, 9 June 2005

Leader: **Paul Waring (PW)**. – This report could have been titled “The discovery of a population of the Black-veined moth *Siona lineata* (Scop.) at Godmersham Downs”. However, the report is written in the usual format for a field meeting, including details of the other wildlife seen during the event. There is an extra dimension in that Godmersham Downs was the site of an attempt to establish a population of the moth in 2000, under licence from English Nature, as part of the Species Recovery Programme for this moth. The Black-veined moth is endangered in Britain and only known to survive on four other sites, all in Kent.

The meeting was advertised as a morning meeting, to be held jointly with the Kent Branch of Butterfly Conservation (BC). The aim was to inspect light-trap catches operated throughout the previous night by the leader and by Dan Hoare, the BC South East Regional Development Officer, followed by day-time survey of the invertebrates. By way of background information, this is a rough chalk grassland site with which the leader has been involved since 1995 in connection with his work on

the Black-veined moth. On 2 June 1992 a single Black-veined moth was seen on this site by R.V. (Bob) Russell. This appears to be the first sighting on record of the moth from this site. At that time Bob was a local site manager for the Nature Conservancy Council. He is now retired but continues to be involved in research on the Black-veined moth. On 16 & 19 June 1995 PW searched the site by day and at dusk respectively, with negative results. In 1996 PW, Steve Davies and Amanda Marler examined the site at dusk on 11 June and PW and Amanda again on 14 June. On the first night four sightings of adults were made, although possibly not all were separate individuals, and on the second night one was seen (Waring, 1996, English Nature confidential report). Many other visits were made in search of the moth during the flight season from 1997–1999, mainly by Allen Williams and PW, weekly from late May to late June, all with negative results (Waring, 1999, English Nature confidential report, for a tabulation of all visits). The manager of the site, Greg Ellis, had never seen one in this time, despite knowing what to look for. During the late 1990s the site was entered into the Countryside Stewardship Scheme. The perimeter was fenced and the site divided into two halves or compartments, so that it could be grazed very carefully, with the aim of producing a sward that closely resembled that found on the sites occupied by the Black-veined moth. Grazing was by cattle, which are greatly preferable to sheep in this context. This is because they produce a tussocky rather than even sward by the way they feed and they do not selectively graze out the broad-leaved herbs in preference to the coarse grasses. Initially the grazing was a little too heavy and was concentrated to particular areas around bales of straw which were supplied as supplementary feed. More recently the grazing intensity has been relaxed, especially in the last two years. Subsequent management has included topping in the centre of the western compartment in the summer of 2003 to stop ragwort *Senecio* spp. seeding. Ragwort and thistles had started to become an issue following the results of the supplementary feeding, when cattle had even created bare patches in the sward and PW had estimated that 20% of the site had been overgrazed over the winter of 1998/99. Greg confirms that there has been no grazing by any domestic livestock during the 12 months up to June 2005. However, wild Fallow deer continue to graze the site as they have done for many years. Indeed, PW counted a group of eight animals on site during this meeting. The deer move freely between this site and adjacent ownerships. About twenty deer are culled on the site every year.

In 2000, after five years of weekly transect walks in the flight season with no positive results (including late May–early June 2000), an attempt was made to establish a population of the moth on this site, as part of the English Nature Species Recovery Programme. PW released six female and three male Black-veined moths in mid-afternoon on 9 June 2000 (Waring, 2002). The moths were translocated from a native site where they had been collected the same day. A few eggs were laid in boxes in transit and these duly changed colour and hatched, indicating that the females were mated. One of the females was observed laying five eggs on a blade of Tor-grass *Brachypodium pinnatum* within minutes of release and none of the adults flew more than a few metres from the release point at the time of the release. The cattle-grazing had reduced the rank tor-grass to tussocks in this area and had increased the abundance of herbs such as marjoram *Origanum vulgare*, St John's-wort *Hypericum* spp. and wood-sage *Teucrium scorodonia* between and within the tussocks. The following year, on 9 June 2001, Allen Williams saw a male Black-veined moth on the site and, on 13 June 2001, PW saw and filmed a male in good condition, both at the release point used the previous year. This strongly suggested there had been successful breeding. However, no moths were seen there during three transect walks annually by Sean Clancy in the flight periods of 2002, 2003 and 2004, nor during a



Fig. 1. Paul Waring having discovered Black-veined moths resting in rough grassland, Godmersham Downs, 9 June 2005.

brief inspection by PW on 14 June 2002, so it appeared the establishment had been short-lived.

In terms of the recording of other animals at Godmersham Downs, there appears to have been limited survey work on this privately-owned site, particularly for invertebrates. A few Lepidoptera and other insects have been noted during the visits by PW and Allen Williams in connection with the Black-veined moth—mainly in June but also in the spring and late summer. Butterflies seen include Green Hairstreak *Callophrys rubi* (L.), Brown Argus *Aricia agestis* (D.&S.) and Wall Brown *Lasionmata megera* (L.). There are a few records of invertebrates from the Kent Field Club and others during mainly botanical excursions. PW had registered that there was a fair population of adders on the site. These snakes have been seen basking on the larger tussocks of tor-grass and other grasses, mainly in the eastern end of the site where the sward has always been longest and the tussocks are most substantial. In addition to the grassland, there is a fringe of scrub woodland around the open parts of the site. It is evident that this too has some interesting wildlife associated with it. For example, PW found a nest of Lesser-spotted woodpeckers 5 m above ground in a main stem of an overhanging stool of coppiced hazel at the western end on 9 June 2000, with both parents visiting and the young calling incessantly. Nightingales were heard in the scrub. PW has recorded the Black-headed Cardinal beetle *Pyrochroa coccinea* L. which is associated with ancient woodland in some parts of Britain, though not in Kent, where it is more widespread.

The site owners, Sunley Farms Ltd, permit a number of site visits per year by special interest groups, and this is encouraged as part of the Countryside Stewardship Agreement. So the suggestion by PW of a BENHS field meeting to find out more about the other invertebrates on the site was favourably received.

Both 8 & 9 June were warm sunny days with clear blue skies and the lightest of breezes. On the evening of 8 June the sky was still clear and it was evident as PW and Dan set up the light-traps that the night would be a cool one. In fact both the dusk temperature and the minimum for the night were 6°C. Dan operated two 125W MV light-traps, one a Robinson design, the other a Skinner pattern, in the rough grassland of the eastern compartment but near the shelter of trees. PW operated two standard Robinson traps in a track that runs along the top of the downs through the woodland and scrub, in which birches, ash, Field maple *Acer caespitense*, Sweet chestnut and Common hawthorn predominate, with much bracken *Pteridium aquilinum*, Common nettle *Urtica dioica* and wood-sage amongst the ground flora. The traps were operated all night from before dusk and in the morning we had a good selection of species to show BC and BENHS members. Dan and I were somewhat surprised that the only person to join us on such a sunny, promising morning was Greg Ellis, the site manager. Probably this was because the meeting was on a weekday morning, which is a major departure from the norm, although both societies have a substantial number of members who are retired or work reduced or flexible hours, so the idea was worth trying. The leader has had some good attendances when occasionally he has held field meetings on weekday evenings.

As expected from the night conditions and time of the year, the catches in the moth-traps were not large. The traps captured a total of 32 species of macro-moth but the Treble Lines *Charanycha trigrammica* (Hufn.) was the only species to occur in double figures in any of the traps and the vast majority of species occurred as singletons or two per trap. There were no nationally scarce or Red Data Book species amongst them. The most noteworthy were the Light Brocade *Lacanobia w-latinum* (Hufn.) (five in the grassland, none in the scrub woodland) and the Chamomile Shark *Cucullia chamomillae* (D. & S.) (one only, in the grassland). There were clear differences in the catches of the two pairs of traps which related to the different habitats. It is worth noting that of the two Peppered moth *Biston betularia* (L.) caught during the night, both in the scrub woodland, one was the typical white form and the other an intermediate. When we showed the moths to Greg, he was understandably most impressed by an Eyed Hawk-moth *Smerinthus ocellata* (L.) and an Elephant Hawk-moth *Deilephila elpenor* (L.), both taken in the grassland—he had never seen either species previously. As a guide to the night, and for the record, one of the standard Robinson traps captured 46 macro-moths of 13 species, the other 25 macro-moths of ten species. Dan did not record the catches in his two traps separately—but the combined catch was 56 macro-moths of 23 species. One of PW's traps was placed by an old field maple and some sweet chestnut but it failed to record any of the potential maple specialists likely to be on this site at this date. PW beat a larva of the Dingy Footman *Eilema griseola* (Hbn.) from field maple foliage and this was reared and its identity confirmed as an adult.

A Red Admiral butterfly *Vanessa atalanta* (L.) was already flying around and basking in the sun on the track through the scrub at 08.30h and as the sun warmed up some of the caterpillars in a larval web of the Peacock butterfly *Inachis io* (L.) on common nettle began to twitch. The larvae were 25 mm in length. A Chiff Chaff was calling loudly in a tree above us.

Dan and PW then began exploring the open grassland, continuing this more systematically when we were joined by Greg at 10.30h. The sward is similar to that on the four remaining sites where the Black-veined moth survives in Britain, except that wood-sage is much more frequent. At 9.25h we found two pairs of Common Heath *Ematurga atomaria* (L.) mating in the sward, several Burnet Companion *Euclidia glyphica* (L.) were on the wing and we had seen at least two Speckled Yellow

Pseudopanthera macularia (L.). There had been unbroken sunshine since dawn. PW was then amazed and delighted when a male Black-veined moth fluttered up from the grass at his feet. It settled in the sward only a couple of paces distant, where it was seen to be in very good condition with absolutely perfect fringes on the wing margins. This was in the centre of the western compartment. The moth was then mobbed by a male Adonis Blue *Lysandra bellargus* (Rott.) which came flying by. While Dan was running over to see the moth and take a photograph of the exact location, he flushed a second male Black-veined moth, and then a third was flushed while we were taking a photograph of the spot from a different position. All three moths were in view simultaneously and all were males in good condition. Then at 9.45h, while we were walking across the western half of the grassland to meet Greg, a female Black-veined moth was flushed and then a second. These were seen clearly at rest without any need to net them, and were in perfect condition. The differences between the recurved slender abdomen of the male and the torpedo-shaped, fatter, more tapered abdomen of the female are very obvious. These moths were such an exciting discovery that had we been wearing hats, we would undoubtedly have thrown them in the air at this point!

Greg, Dan and PW then walked the grassland from the west end to the east, in parallel routes, police cordon-style. We counted a total of three males and four females in the western compartment (10.50–11.10h) and three males and six females in the eastern compartment (11.10–11.30h). We are certain all were separate individuals. Only one showed evident wing-wear, all the others were in fresh to good condition. All but one of the individuals in the eastern half of the grassland were concentrated at the eastern end. One female was observed nectaring and another seen to lay five eggs in a row on a blade of tor-grass. The height of the eggs above ground was measured at 14 cm and the height of the sward at that point was 18 cm as measured by the Boorman drop-disc method, using a standard hardboard disc 30 cm in diameter. The sward height in this part of the eastern compartment ranged from 5–23 cm with an average of 14 cm based on twenty measurements. In the western compartment the range was 4–23 cm with an average of 13 cm from twenty measurements. The frequency of marjoram (a major larval foodplant) in two 50 pace transects where the moths were seen in the western compartment was 36% and 38% respectively, and at the eastern end of the eastern compartment was 36% and 58%. It is worth noting that the female laid the five eggs immediately on settling, without further exploration of the vegetation. She was within 1 metre of an animal track in which marjoram was abundant, but immediately beneath the eggs were only Salad Burnet *Sanguisorba minor* (which the hatching larvae definitely will not eat) and Common Bird's-foot Trefoil *Lotus corniculatus* (which they will accept). There were also sprigs of Germander Speedwell *Veronica chamaedrys* and bramble *Rubus fruticosus* agg. present, but these are not believed to be suitable larval food-plants. These observations are all quite typical of many sightings of egg-laying by the Black-veined moth observed by PW since 1987.

With no other members having arrived, the leader and Dan spent the rest of the day on Black-veined moth research, including visiting other occupied sites.

The question remains as to whether the well-distributed and 'substantial' population of Black-veined moths we discovered at Godmersham Downs is the result of the establishment trial in 2000 or has established naturally by dispersal from one of the occupied sites, which is feasible. The observed population density reported above currently exceeds or rivals that on all four remaining native sites. Clearly such an adult population had not just arrived this year by dispersal and, for it to be so well distributed, it is unlikely to be the result of one or two founding adults arriving in

2004. It is more plausible that some dispersing adults arrived in the warm summer of 2003 and acted as founders but were undetected. It is perhaps even more likely the released population continued its establishment during 2002 and 2003, at low levels and in patches, undetected, from which it has now increased as grazing pressure has been relaxed further and weather and/or other factors (e.g. lack of parasitoids) have been favourable during critical stages. Perhaps the populations became established at the ends of the site, where they were less likely to be seen. We have also noted that when a single observer walks through grassland he often does not see every Black-veined moth he flushes, because they sometimes fly up only after the observer has passed and walked on. At low population density the moth could have been missed. The dates of the transect walks from 2002–2004 by Sean Clancy were certainly appropriate (e.g. 25 May & 3, 9 & 16 June in 2004) based on sightings for the other sites. In 2005 Sean only made a single visit, following this field meeting, on 20 June, when he too saw the moth—one male and three females (Clancy, 2005, Butterfly Conservation confidential report).

Irrespective of whether this is a natural or assisted colonisation, this population is most welcome and it confirms that suitable additional habitat can be provided for this endangered and protected species.

On behalf of the BENHS and BC, Paul Waring and Dan Hoare would like to thank Greg Ellis, Manager of Sunley Farms Ltd who own the Godmersham Estate, for granting permission to hold this meeting and for their co-operation with English Nature in the continued management of the site and the moth.

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Highwayman's Haunt, Chudleigh, Devon, 16 July 2005

Leader: **Roy McCormick**.—We met in the car park of the public house at the appointed time and made our way into the bar garden to discuss where to place our lights. Three of the 10 people who came brought light-traps, producing a total of six including the leader's Robinson trap which was left on all night to be checked in the morning. A bit of dusking produced a few *Xanthorhoe montanata* (Silver-ground Carpet) and *Idaea biselata* (Hufn.) (Small Fan-footed Wave) and the public house had a fluorescent light which pulled in a couple of *Mitochrista miniata* (Forster) (Rosy Footman), and one of the catches of the night *Meganola albula* D. & S. (Kent Black Arches). The traps were started and the list built quickly with successive rounds, but with most of the species in single figures with only 14 species venturing into double numbers. The presence of an almost full moon, clearing skies and the temperature falling to around 14°C did not help matters and so it was decided to pack-up at around 23.30h. We finished up with 83 species with the best of these: two *Eucosma campoliliana* (D. & S.); two *Catoptria falsella* (D. & S.); six *Eudonia dehunella* (Stt.); one *Pempelia formosa* (Haw.); one *Oidaematophorus lithodactyla* Treit.; one *Melanthia procellata* (D. & S.) (Pretty Chalk Carpet); six *Cleorodes lichenaria* (Hufn.) (Brussels Lace); one *Meganola albula* D. & S. (Kent Black Arches) and two *Acrionicta aceris* (L.) (Sycamore). The following morning the leader went back to the site and added a further 13 species from the Robinson making a grand total of 96.

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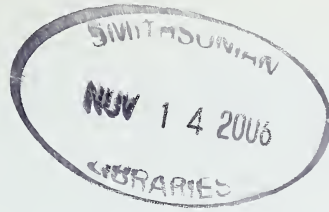
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October 2006

ISSN 0952-7583

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BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY



BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY
Published by the British Entomological and Natural History Society
and incorporating its Proceedings and Transactions

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British Journal of Entomology and Natural History is published by the British Entomological and Natural History Society, Dinton Pastures Country Park, Davis Street, Hurst, Reading, Berkshire RG10 0TH, UK. Tel: 01189-321402. The Journal is distributed free to BENHS members.

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Typeset by Dobbie Typesetting Limited, Tavistock, Devon.

Printed in England by Henry Ling Ltd, Dorchester, Dorset.

BRITISH ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY
Registered charity number: 213149

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Cover photograph: *Grammotaulius nitidus* (Muller), observed at Wicken Fen, Cambridgeshire, 2 September 2005 and exhibited at the 2005 BENHS Annual Exhibition. Photo: Emma Ross.

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**ODONTOTHRIPS CONFUSUS PRIESNER (THYSANOPTERA:
THRIPIDAE) NEW TO BRITAIN AND RECENT RECORDS OF
OTHER BRITISH THRIPS**

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ABSTRACT

Odontothrips confusus Priesner, a species from central Europe is reported for the first time in Britain, at Friday Wood, south of Colchester, Essex. Information on its identification and biology is provided. This is the first addition of a species of thrips to the British list from specimens found in a natural habitat since 1974. Also recorded here is a second non-indigenous species, *Scirtothrips inermis* Priesner, which was found breeding outdoors at the Chelsea Physic Garden in London; in this case the probability is that the thrips were there as the result of an accidental introduction by man. A brief review of new British records of thrips since the publication of the last check list in 1976 is provided and the bias towards adventive horticultural records in protective cultivation is discussed. New county records are given for twenty-nine species of thrips from eight counties.

INTRODUCTION

The last published check list of Thysanoptera recorded in Britain listed 158 species (Mound *et al.*, 1976). Since then, thrips have increasingly been recognised throughout the world as major crop pests, both as a result of their direct feeding damage and also because of their role in vectoring plant tospoviruses. Most researchers working on thrips in Britain are agricultural scientists and the majority of recent British literature on thrips reflects this. Over the past three decades or so, much research has been carried out with the aim of developing chemical and biological means of control for thrips populations found under glass in this country. Much of this work has been spurred on by the arrival in the UK of new horticultural pest species that originate from the Americas and elsewhere. The arrival, and spread, of such species has been well documented by agricultural and quarantine entomologists (albeit largely as unpublished records), as has the continuing interception of yet further species that are being transported into the country on plant material. By contrast, there has been very little investigation of thrips in natural habitats in Britain during this period. This is merely a continuation of the historical trend. Very few entomologists have ever collected thrips in this country; as a result, individual workers have heavily influenced the pattern of distribution records throughout Britain. The best coverage is to be found in the south-east of England. Elsewhere, the north-east corner of Scotland has been particularly heavily collected relative to much of the rest of the country almost entirely due to the long tenure of Guy Morison at the North of Scotland College of Agriculture in Aberdeen during the middle decades of the last century. The purpose of this paper is twofold. Firstly, the finding of two species of thrips hitherto not recorded from Britain is reported. Secondly, information is provided so as to help bring the literature up-to-date for a number of species, with the current status of certain thrips in this country discussed and new geographical distribution records provided for others. Information is

provided for species both restricted to glasshouses and found naturally outdoors in the UK.

ODONTOTHIRIPS CONFUSUS, NEW TO BRITAIN

Two adult female *Odontothrips confusus* Priesner, were collected during a British Entomological and Natural History Society (BENHS) field meeting at Friday Wood, south of Colchester, Essex on 19.vii.2003. The species determination was made using keys by Pitkin (1972) and Strassen (2003) and after comparison with specimens of *O. confusus* and other species in the collections of the Natural History Museum, London (NHM).

The genus *Odontothrips* Amyot & Serville comprises 27 species, with most species apparently feeding exclusively in the flowers of the family Fabaceae (Pitkin, 1972). All but two of the species are naturally found in the Palaearctic region. *Odontothrips confusus* is found across central Europe (including Germany) and the Balkans, and has also been recorded from France (the Rhône Valley), Spain, Italy and Turkey (Pitkin, 1972; Fauna Europaea, 2004). The species is primarily found in the flowers of *Medicago* species (Fabaceae), particularly cultivated lucerne *Medicago sativa* L., on which it has been reported as a pest (Bournier & Kochbav, 1965). Other recorded host associations include: *Coronilla vulgaris* (sic), *Lotus corniculatus* L., *Trifolium repens* L. and *T. pratense* L. (all Fabaceae) as well as *Artemisia absinthium* L. (Asteraceae) and *Eryngium campestre* L. (Apiaceae) (Pitkin, 1972).

Friday Wood, located 4 km south of the centre of Colchester, forms the main part of the Roman River Valley SSSI. The core of the site is ancient deciduous woodland, with secondary woodland and scrub extending onto a sandy plateau. To the west and east of the woodland core, hawthorn and blackthorn-dominated scrub areas are interspersed with open grassland and heathland. To the south, in the valley bottom itself, there is an area of wetland with a strip of fen, reedbank and riverbank vegetation following the river, reduced at this stage to little more than a wide stream. The two thrips females were found in the flowers of gorse, *Ulex europaeus* L. (Fabaceae) and ragwort, *Senecio* sp., (Compositae) respectively, the two plants spaced about 50 metres apart, on the north-east margin of the woodland core at the point where it gives way to scrubby heathland.

The author made two further visits to the area, in August 2003 and July 2004, but was unable to find any lucerne in the local vicinity. During these visits *L. corniculatus* was found to be growing in the grassland to the west of the woodland. The flowers of these plants were carefully searched but whilst *Odontothrips loti* (Haliday), *Sericothrips bicornis* (Karny) and *Frankliniella intonsa* (Trybom) were all collected, no further specimens of *O. confusus* were found.

It is not possible to accurately identify where lucerne is currently being grown in this country. Statistical records maintained by the Department for Environment, Food and Rural Affairs (Defra) record lucerne only in combination with other fodder crops such as clover, sainfoin and grasses. However, the Pesticide Usage Survey Team at the Central Science Laboratory (CSL) undertakes annual surveys of pesticide usage in selected sectors of the agricultural and horticultural industries, sampling for grassland and fodder crops every four years. Their records show that at least in 1993, and again in 2005, lucerne was being grown in Essex (David Garthwaite, CSL, pers. comm.). As lucerne has been grown in Essex in the recent past, it is also possible that self-seeded flowers are around.

Thrips are weak fliers, but nevertheless are capable of staying airborne for considerable distances (Lewis, 1996), certainly for distances far beyond that surveyed

by the author on his three visits to Friday Wood. The breeding source of the thrips and hence the status of this species in Britain could not be determined; that is, whether these individuals represent an established population in the locale or a transient invasion possibly even originating from the continent (see Lewis, 1973, for a summary of the evidence for long-distance travel by thrips). There is no theoretical reason why cross-channel transient migration in thrips should not occur though there is no strong direct evidence either for or against the proposition. Mound *et al.* (1976) did, however, suggest several species whose, infrequently recorded, presence in Britain might be the result of immigration on warm southerly winds. Indeed, of the species of thrips recorded in the British list (omitting species restricted to glasshouses), seven are known in Britain only from single individuals, and another seven species have been collected on only one occasion; a further 12 species have been recorded four times or less (Mound *et al.*, 1976). Many of these species are recorded only from southern coastal counties, and overall the majority of these records are restricted to counties in the south of England; few have been found in the north (and one of these, *Apterothrips apteris* (Daniel), was clearly introduced into Britain via Scotland (Collins, 2000a)). Thrips, however, are not conspicuous migrants and this, considered together with the paucity of potential recorders to meet any incoming individuals, might suggest that even isolated records are likely to be indicative of a considerable number of additional individuals then present in the wider area, even if permanent establishment of a species does not ultimately take place.

The two voucher specimens of *O. confusus* have been donated to the collections at the Natural History Museum, London.

IDENTIFICATION OF *ODONTOTHRIPS CONFUSUS*

Seven species of *Odontothrips* have previously been recorded from Britain (Mound *et al.*, 1976): three of these species (*O. binucus* John, *O. cytisi* Morison and *O. ulicis* (Haliday)) have two prominent, ventrally-positioned, curved claws protruding forward from the apical edge of each fore tibia, each as long or longer than the neighbouring setae; two species (*O. loti* (Haliday) and *O. phalaratus* (Haliday)) have a single, otherwise similar, claw and a bristle-bearing tubercle (Fig. 1a); and two species (*O. ignobilis* Bagnall and *O. meliloti* Priesner) lack the prominent claws but bear instead an apical bristle-bearing tubercle and a small ventrally-positioned tooth (Fig. 1b). *Odontothrips confusus* also lacks prominent fore-tibial claws, but bears two small apical teeth sited on the ventral/inner margin, clearly smaller than the neighbouring setae (Fig. 1c; Plate 2, Figs 1 & 2).

Whereas in *O. ignobilis* the disc of the pronotum has clear, albeit faint lines of sculpture (Fig. 1d), *O. confusus* resembles *O. meliloti* in lacking such sculpture medially on the pronotum (Fig. 1e). At most, some transverse lines of sculpture are present slightly anterior to the posterior margin of the pronotum.

Odontothrips confusus is brown except for antennal segment III, which is bright yellow, and the tarsi and the fore-tibiae, which are yellow-brown (Plate 2, Fig. 1). Antennal segment IV is as dark as segment V. By contrast, in most specimens of *O. loti* antennal segment III is yellowish-brown and segment IV intermediate between this and the darker brown of segment V. The lines of sculpture in *O. confusus* extend medially between the S1 setae on tergites II and III. The Friday Wood specimens lack metanotal campaniform sensillae. The majority of specimens of *O. confusus*, *O. meliloti* and *O. ignobilis* examined by the author in the collections of the NHM do

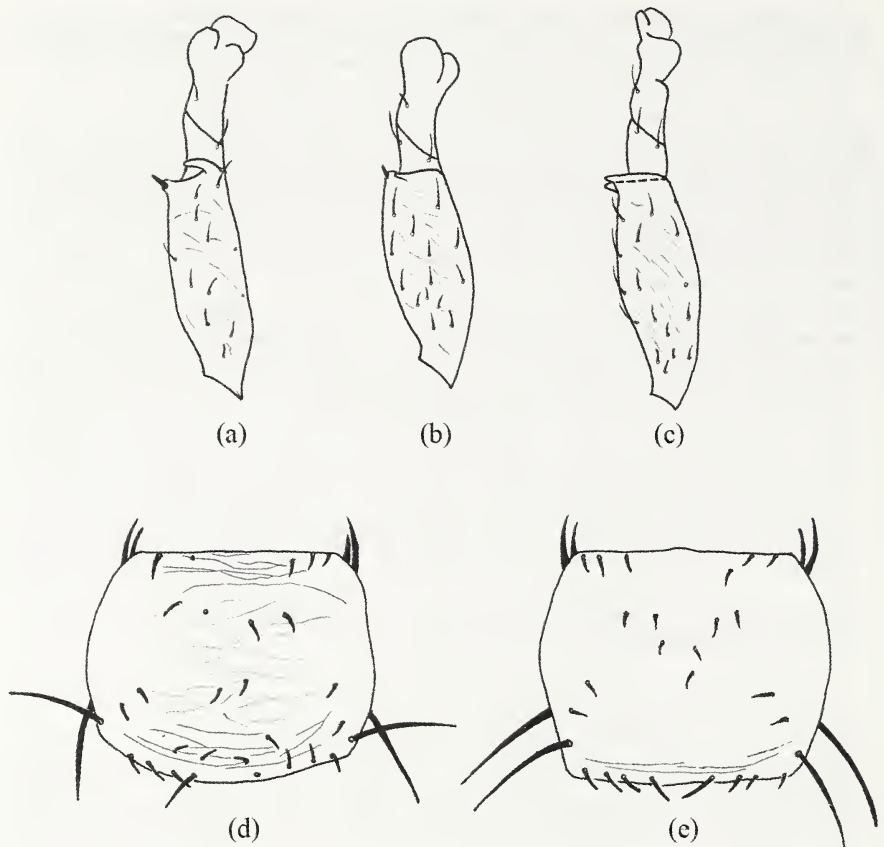


Figure 1. (a) *Odontothrips loti* ♀, right fore tibia and tarsus, ventral view; (b) *O. meliloti* ♀, right fore tibia and tarsus, ventral view; (c) *O. confusus* ♀, right fore tibia and tarsus, ventral view; (d) *O. ignobilis* ♀, pronotum; (e) *O. confusus* ♀, pronotum.

possess campaniform sensillae but, for each of the three species, specimens were seen in which they are absent.

Another central European species, *O. dorycnii* Priesner, known from the flowers of *Dorycnium* spp. (sometimes included in the genus *Lotus*), is very similar to *O. confusus*; the females of the two species are essentially separable only by size with *O. confusus* the larger species (though the genitalia of the two males are clearly distinct from each other). No specimens of *O. dorycnii* were available at the NHM for study, but various length measurements taken from the two Friday Wood females clearly aligned these specimens with the measurements for *O. confusus* rather than those for *O. dorycnii*, as provided firstly by Pitkin (1972)—hind tibia in the Friday Wood specimens 220–240 μm —and secondly by Strassen (2003)—antennal length 360–376 μm , antennal segment III length 64–70 μm , antennal segment V length 42–45 μm , antennal segment VIII length 19–22 μm , and length of seta S1 on tergite IX 160–168 μm .



Fig. 1. Adult female *Odontothrips confusus*.



Fig. 2. *Odontothrips confusus*, apex of the right fore-tibia.

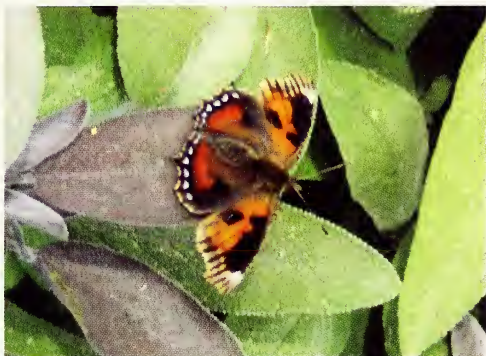


Fig. 3. Small Tortoiseshell *Aglais urticae* ab. *conjuncta*, Bradwell, Great Yarmouth, 4th September 2005.



Fig. 4. Spittle mass of *Aphrophora salicina* nymphs feeding (3x) on creeping willow, Dungeness, Kent, 25th May 2006.



Fig. 5. Large spittle mass of *A. salicina* (1.5x) on grey willow, Dungeness, Kent, 25th May 2006.

The section of the RES key for the genus *Odontothrips* (Mound *et al.*, 1976) should therefore be amended as follows:

- 1 Fore tibia without distinct apical claws 2
- Fore tibia with 1 or 2 apical claws 3
- 2 Pronotum with lines of sculpture medially in both sexes; apex of the fore tibia with a small ventral tooth and a tubercle bearing a bristle on the inner margin; ♂ genitalia with 4 or 5 (rarely more) pairs of endothelial spines which are almost equally spaced and which decrease in size distally. **ignobilis** Bagnall
- Pronotum with no lines of sculpture medially in either sex; apex of the fore tibia with a small ventral tooth and a tubercle bearing a bristle on the inner margin; ♂ genitalia with 3 or 4 pairs of endothelial spines, the basal pair set apart and usually larger. **meliloti** Priesner
- Pronotum with no lines of sculpture medially in either sex; apex of the fore tibia with two small teeth on the ventral/inner margin, but no apical bristle; ♂ genitalia with two pairs of fairly stout endothelial spines supported by canaliculi **confusus** Priesner

NEW BRITISH RECORDS SINCE 1976 AND THE IMPORTATION OF THRIPS INTO BRITAIN

Until now, no further named species of thrips have been added to the British list on the basis of specimens found outdoors in a natural habitat since Pitkin & Palmer (1974) described *Dendrothrips eastopi* from specimens collected from leaves of *Hedera helix* L. from Kew Gardens. Prior to that, Pitkin (1969) had added four species after examining material held by the NHM. This was based on specimens originally collected between 1947 and 1966, the latter being *O. meliloti* (collected by Laurence Mound at Ham in Surrey, 12.vi.1966, though specimens from Somerset collected in 1946 by Guy Morison were subsequently identified). In 1984, specimens of an undescribed species of *Hoplothrips* formed part of the thrips assemblage collected after mature oak trees (*Quercus robur* L.) in a wood in Richmond, Surrey, were subjected to survey by means of canopy fogging (Palmer, 1986), but these were not later described. Since then, the only thrips that have been continually and systematically collected in this country have been those found under glass, or found to be moving in plant trade. This collecting work has been carried out by the Plant Health and Seeds Inspectorate (PHSI) of Defra.

During this period, two pests of protected crops have been introduced to Britain and become widespread under glass in England and Wales, *Frankliniella occidentalis* (Pergande), known as the western flower thrips (Baker *et al.*, 1993), and *Echinothrips americanus* Morgan (Collins, 1998).

In addition, three new species have been described from type material collected in England, the latter two species having been originally collected by the PHSI. The first, *Psydrothrips kewi* Palmer & Mound, was found under glass at the Royal Botanic Gardens, Kew, where it was causing damage to the leaves of a number of *Philodendron* plants. This species appears to be related to certain New World genera and the thrips is therefore presumed to have been imported into Kew on *Philodendron* plants from Central or South America (Palmer & Mound, 1985). *Suocerathrips linguis* Mound & Marullo, was also discovered under glass at Kew and is apparently restricted to plants in the African genus *Sanseveria* (including Mother-in-Law's Tongue). The population had clearly been introduced into the house with the plants and like them must be presumed to have an African origin (Mound & Marullo, 1994) (also found on the Kew *Sanseveria* was a single female of

Karnyothrips melaleucus (Bagnall), a predator of scale insects that is widespread in the tropics, a first British record). The third species, *Sinuoithrips hasta* Collins, was described from specimens collected after fumigation of thatching reed, *Phragmites australis* (Cavanilles), on a domestic roof in Devon. The reed had recently been imported from Turkey (Collins, 2000b). None of these species, therefore, is naturally British. The current status of *P. kewi* at Kew is not known to the present author, but in the other two cases the populations were eradicated by the plant health authorities.

Commercially traded cut flowers, and other plant material, are the source of continual importation of non-indigenous thrips into Britain. Between April 1995 and December 2005, in addition to species discussed elsewhere in this paper, a minimum of 54 different species of non-indigenous thrips representing 29 genera were intercepted by the plant health service of England and Wales (CSL, unpublished records). Commercially traded cut flowers were the most common source, but on occasion thrips were also found under glass in public and private botanical collections. In most of these cases, the number of thrips present was very small, and the context of the interception implied almost no chance of the population establishing itself. However, occasionally small populations were still present on their host of introduction some months later; that is, their presence was not detected immediately upon arrival. In each case, once the population was discovered, it was eradicated; it therefore seems very likely that not one of these species is currently to be found in Britain. Very few of these species, most of which originate in the tropics or subtropics, would have any more than a low probability of overwintering outdoors under British conditions, even with the onset of predicted climate change. In the case of one large outbreak of the quarantine-listed species *Thrips palmi* Karny at a commercial glasshouse, eradication though ultimately successful proved to be a major undertaking (MacLeod *et al.*, 2004).

There was only one instance of such a species found to be breeding outside; small numbers of both adults and larvae of *Scirtothrips inermis* Priesner were found on the leaves of a large established bay laurel (*Laurus nobilis* L.) at the Chelsea Physic Garden in London (27.vii.2000, C.P. Malumphy). The tree was being treated for an infestation of the recently introduced whitefly pest *Bemisia afer* (Priesner & Hosny) and the population may have been eradicated. However, the host tree has not been checked for the thrips in subsequent years, nor has there been any attempt to search for the species elsewhere in the surrounding area. There remains, therefore, uncertainty as to the current status of *S. inermis* in this country. The thrips is known from the Mediterranean area and the Atlantic islands off the north-west African coast, and it has also been introduced into Australia, California and New Zealand. It is associated with a number of different plants including *Begonia*, *Citrus*, *Ilex*, *Myrtus*, *Prunus*, *Rosa*, *Rumex* and *Tamarix*. The route by which it came to be introduced into the garden is unknown.

Of the 158 species listed in the last British list, 11 are described as being found only under artificial conditions, and the following notes on the current status of these species in Britain are based on CSL unpublished records. Three of these species, *Heliothrips haemorrhoidalis* (Bouché), *Parthenothrips dracaenae* (Heeger) and *Hercinothrips femoralis* (Reuter), continue to be frequently encountered under glass, particularly in heated houses, and clearly maintain a continual presence in Britain. Indeed, *H. haemorrhoidalis* has recently been recorded breeding outside, in the Scilly Isles and at the Royal Botanic Gardens, Kew (Robinson & Collins, 2005). *Chaetanaphothrips orchidii* (Moulton) has been confirmed from the same temperate-conditions glasshouse at a complex open to the public in the north-west

of England, in 2001 and then again at the end of 2003, both times on *Sparmannia africana* L. (Tiliaceae). This species, therefore, is currently known to be present and breeding here. *Heliothrips errans* (Williams) and *Hercinothrips bicintus* (Bagnall) have each been recorded once under glass in recent years, but this may well represent isolated re-introductions rather than sustained continuity and their long-term status remains unclear. No recent records exist for *Aurantothrips* (= *Anaphothrips*) *orchidaceus* (Bagnall), *Dichromothrips orchidis* Priesner, *Leucothrips nigripennis* Reuter or *Scirtothrips longipennis* (Bagnall) and these are probably not currently to be found in Britain. The final species is *Gynaikothrips ficorum* (Marchal), a species easily found in Mediterranean countries by searching out rolled-up leaves of the decorative tree *Ficus microcarpa* L., its sole plant host. These have not been seen in Britain since a small breeding population was discovered at a nursery in Surrey in 1992 (Collins, 1993).

One species in the British list on the basis of a single individual found outdoors is of interest for it seems unlikely to have reached Britain naturally. *Frankliniella schultzei* (Trybom) is listed on the basis of a single female collected on *Pinus* sp. (not a natural host) in Berkshire in 1914. This species, a polyphagous flower thrips, is widespread throughout the tropics and subtropics and is also found in the Mediterranean area. Further north in Europe, it is known (with one exception) only from regular quarantine interceptions in association with imported cut flowers, and occasional findings in glasshouses. The one exception is The Netherlands, where in recent decades it has become established in glasshouses specialising in the Cactaceae (Vierbergen & Mantel, 1991). A single adult female was caught on a sticky trap in a British commercial glasshouse in 2001 (which had almost certainly escaped from a neighbouring packing house for imported cut flowers) but that is the only other occasion on which any individual has been found outside of cargo sheds at ports-of-entry or in warehouses and other indoor premises belonging to wholesale distributors of cut flowers. If this species were present in the UK, it would surely have been discovered during the extensive survey work carried out during the eradication campaign against *F. occidentalis* (1986–1989) or during more recent surveys for *T. palmi*. There is no evidence to suggest that *F. schultzei* is, or has ever been, present in the UK as a breeding population. It would seem that the sole finding in Berkshire was, despite the odds, the most fortuitous finding of an isolated escapee, originally imported into Britain on traded plant material.

NEW COUNTY RECORDS

Mound *et al.* (1976) provided county distribution records (using the pre-1974 county divisions) for all the species that they listed. In the absence of any systematic collecting since then, it is almost certain that any species found by the current author in counties for which they are not recorded in the *RES Handbook* will represent true new county records. Details of such records are given in Table 1 for 29 species across eight counties (Cambridgeshire, Essex, Hampshire, Lancashire, Middlesex (North London), Northamptonshire, Suffolk and Yorkshire as per the *RES Handbook*, although it is also here indicated, as appropriate, whether records are from East, North or West Yorkshire).

It should be noted that thrips are readily carried by winds and so adults are often found on plants on which they do not breed. In the absence of confirmed breeding, plant records should always be treated as associations rather than as true host records.

Table 1. Thysanoptera: new county records.

Aeolothripidae

<i>Aeolothrips intermedius</i> Bagnall	NORTHAMPTONSHIRE: Bradlaugh Fields, Northampton, on <i>Convolvulus arvensis</i> , 1♀, 28.vi.03. NORTH YORKSHIRE: Osbaldwick, York, on <i>Ranunculus</i> sp., 1♂, 23.v.98; York cemetery, on <i>Chrysanthemum leucanthemum</i> , 1♀, 31.v.98.
<i>Aeolothrips melaleucus</i> Bagnall	NORTH YORKSHIRE: York cemetery, on leaf of <i>Fraxinus</i> sp., 1♀, 17.v.98.
<i>Aeolothrips tenuicornis</i> Bagnall	NORTHAMPTONSHIRE: Bradlaugh Fields, Northampton (on <i>Convolvulus arvensis</i> , 1♀, 28.vi.03; on <i>Galium verum</i> , 1♂, 28.vi.03).

Thripidae

<i>Anaphothrips obscurus</i> (Müller)	SUFFOLK: RSPB reserve at Lakenheath Fen (on <i>Phragmites australis</i> , 1♀ macr., 1♀ micr., 24.vii.04; on grasses, 1♀ macr., 24.vii.04).
<i>Dendrothrips degeeri</i> Uzel	NORTH YORKSHIRE: York cemetery (on <i>Fraxinus</i> sp., 5♀, 17.v.98; on unidentified tree, 3♀, 3.v.99; on <i>Fraxinus</i> sp., 1♀, 4.vi.02), Tadcaster, on leaf of <i>Aesculus</i> sp., 1♀, 12.v.03.
<i>Frankliniella intonsa</i> (Trybom)	NORTH YORKSHIRE: Strensall Common (beaten from an unidentified plant, 2♀, 23.iii.02; on <i>Ulex europaeus</i> , 1♀, 10.v.03; beaten from an unidentified plant, 2♀ 2♂ 7 imms, 01.vi.04). WEST YORKSHIRE: Harewood, on <i>Ulex europaeus</i> , 1♀, 10.v.04.
<i>Frankliniella tenuicornis</i> (Uzel)	NORTH YORKSHIRE: Ripley, on a ? <i>Crataegus</i> sp. hedgerow, 2♀, 30.iii.02.
<i>Mycterothrips consociatus</i> (Targioni-Tozzetti)	NORTH YORKSHIRE: Skipwith Common, on ? <i>Betula</i> sp. leaf, 1♀, 30.v.98.
<i>Odontothrips loti</i> (Haliday)	ESSEX: Friday Wood, Colchester, in <i>Lotus corniculatus</i> flowers, 2♀ 1♂, 12.vi.04.
<i>Odontothrips ulicis</i> (Haliday)	ESSEX: Epping Forest, in <i>Ulex europaeus</i> flowers, 6♀, 11.iv.02. EAST YORKSHIRE: Flamborough, on <i>U. europaeus</i> , 4♀, 1998 (Justy Clark). NORTH YORKSHIRE: Strensall Common (in <i>U. europaeus</i> flowers, 2♀, 27.iv.98; on <i>U. europaeus</i> , 5♀, 3♂, 23.iii.02; on unidentified plant, 1♀, 23.iii.02; on <i>U. europaeus</i> , 1♀, 14 imms, 11.v.02; on <i>U. europaeus</i> , 1♀, 10.v.03). WEST YORKSHIRE: Harewood, in <i>U. europaeus</i> flowers, 4♀ 2♂ 3 imms, 10.v.04.
<i>Oxythrips ajugae</i> Uzel	NORTH YORKSHIRE: York cemetery, on <i>Taraxacum</i> sp., 1♀, 17.v.98; Strensall Common (on <i>Pinus</i> sp., 3♀, 1♂, 25.iv.99; on <i>Pinus</i> sp., 23♀, 2♂, 1.v.02; beaten from grasses, 1♀, 11.v.02).
<i>Rubiothrips silvarum</i> (Priesner) ¹	NORTHAMPTONSHIRE: Bradlaugh Fields, Northampton, on <i>Galium verum</i> , 8♀, 28.vi.03.
<i>Sericothrips bicornis</i> (Karny)	ESSEX: Friday Wood, Colchester, in <i>Lotus corniculatus</i> flowers, 2♀ micr., 12.vi.04.
<i>Sericothrips staphylinus</i> Haliday	NORTHAMPTONSHIRE: Bradlaugh Fields, Northampton, on <i>Ulex europaeus</i> , 1♀ macr. 3 imms, 28.vi.03.
<i>Stenothrips graminum</i> Uzel	NORTHAMPTONSHIRE: Bradlaugh Fields, Northampton, on <i>Ulex europaeus</i> , 1♂, 28.vi.03.

(continued)

Table 1. (continued)

Thripidae (continued)

<i>Taeniothrips inconsequens</i> (Uzel)	NORTH YORKSHIRE: York cemetery (on <i>Quercus</i> sp., 1♀, 17.v.98; on <i>Fraxinus</i> sp., 1♀, 17.v.98; host unknown, 1♀, 3.v.99); Tadcaster (on unidentified tree, 2♀, 2.v.99; on <i>Prunus</i> sp., 1♀, 12.v.03); Ripley, 3♀ on unidentified seedlings, 3♀, 30.iii.02.
<i>Taeniothrips picipes</i> (Zetterstedt)	WEST YORKSHIRE: Eccup, on <i>Stellaria</i> sp., 4♀, 10.v.04.
<i>Thrips major</i> Uzel	NORTHAMPTONSHIRE: Bradlaugh Fields, Northampton (on <i>Cytisus scoparius</i> , 6♀ 2♂, 28.vi.03; on <i>Galium verum</i> , 1♀, 28.vi.03; on <i>Tanacetum vulgare</i> , 1♀, 28.vi.03).
<i>Thrips minutissimus</i> L.	MIDDLESEX: Hampstead Heath (on young <i>Sorbus ?aria</i> , 1♀, 10.iv.02; beating dead branches, 2♀ 1♂, 10.iv.02). NORTH YORKSHIRE: Skipwith Common, on <i>Ranunculus</i> sp., 1♀, 30.v.98; Strensall Common, on <i>Pinus</i> sp., 1♀, 11.v.02.
<i>Thrips physapus</i> L. ²	NORTH YORKSHIRE: Strensall, on <i>Taraxacum</i> sp., 1♀, 27.iv.98. (Ward's Principle Component (wpc) = 425.4)
<i>Thrips pillichii</i> Priesner	NORTH YORKSHIRE: Strensall, on unidentified tree flower, 1♀, 27.iv.98.
<i>Thrips sambuci</i> Heeger	SUFFOLK: RSPB reserve at Lakenheath Fen, on <i>Sambucus nigra</i> , 7♀, 24.vii.04.
<i>Thrips trehernei</i> Priesner ²	NORTHAMPTONSHIRE: Bradlaugh Fields, Northampton, on <i>Tanacetum vulgare</i> , 2♂, 28.vi.03. NORTH YORKSHIRE: York cemetery (on <i>Taraxacum</i> sp., 1♀, 17.v.98 (wpc = 469.7); on <i>Taraxacum</i> sp., 3♀, 8.vi.02 (wpc = 462, 509, 530)); Strensall, on <i>Taraxacum</i> sp., 1♀, 27.iv.98 (wpc = 473.53).
<i>Thrips urticae</i> Fabricius	HAMPSHIRE: Exton, on <i>Urtica dioica</i> , 7♀ 1♂, 27.viii.03. SUFFOLK: RSPB reserve at Lakenheath Fen, on grasses, 1♀, 24.vii.04.
Phlaeothripidae	
<i>Haplothrips aculeatus</i> (Fabricius)	CAMBRIDGESHIRE: Wicken Fen, on grasses, 1♀ 2♂, 18.v.02. SUFFOLK: RSPB reserve at Lakenheath Fen, on <i>Phragmites australis</i> , 6♀ 3♂, 24.vii.04.
<i>Haplothrips distinguendus</i> (Uzel)	NORTH YORKSHIRE: Askham Bog, on alder leaf, 1♀, York, 9.v.98 (Justy Clark).
<i>Haplothrips juncorum</i> Bagnall	LANCASHIRE: Crossens Marsh, Southport, 1♀, 10.v.99 (L. Banks). NORTH YORKSHIRE: Askham Bog, York, on grasses, 1♂, 03.vii.04.
<i>Haplothrips leucanthemi</i> (Schrank)	MIDDLESEX: Hampstead Heath, in <i>Chrysanthemum leucanthemum</i> flowers, 3♀ 2♂, 13.vi.04.
<i>Hoplandrothrips bidens</i> (Bagnall)	SUFFOLK: RSPB reserve at Lakenheath Fen, on <i>Salix</i> sp., 1♀, 24.vii.04.

¹See also Boyd (2004); ²the males of *T. physapus* and *T. trehernei* (= *T. hukkineni* in the *RES Handbook* (Gentile & Bailey, 1968)) are separable by colour; separation of the females is more problematic and can only be partially achieved using a discriminatory function that distinguishes two segregates based on size (Ward, 1968).

Some of these records undoubtedly reflect the paucity of previous collecting in the area rather than any hitherto unrealised geographical shift. Other records, however, are of more particular interest.

Dendrothrips degeeri Uzel is common on the leaves of ash trees in York cemetery in late spring (collected between 1998 and 2002 by the author), and the capture of a female in Tadcaster in May 2003, 13 km to the south west, suggests that this may not be an isolated population. Yet previously, the species was only recorded from southern England, south of a line between Norfolk and Gloucestershire.

A single female of *Mycterothrips consociatus* (Targioni-Tozzetti) collected 30.v.1998 on scrubland adjacent to Skipwith Common, North Yorkshire, is likewise the most northerly British record for this uncommon species, which has previously only been noted from south-east England and Norfolk.

Odontothrips ulicis (Haliday), a host-specialist found in the flowers of gorse at the very beginning of spring, was already known to be widespread across many parts of Britain such as south-east, south-west and the far north of England, as well as Scotland. Certainly in Yorkshire (where it had not been previously recorded) the species appears to be common from Flamborough Head in the east to the area north of Leeds in the west. It might be expected that the species would therefore be found wherever gorse is growing; this species of thrips is not difficult to find. The absence of records from Wales and from the east and west Midlands is therefore intriguing, and worth investigating. The host plant is present across these regions. Does the absence of the thrips merely reflect a gap in field collecting, or does it point to some underlying biological factor across time and space, some variation in the relationship between the thrips and its plant host?

Sericothrips bicornis (Karny) recorded from Friday Wood, Essex, 12.vi.2004, is a specialist on *L. corniculatus* (bird's foot trefoil) that is reputedly uncommon in southern England, with previous records only from Kent, Surrey and Norfolk. It is difficult to assess the current status of this thrips. This thrips hides away in the small, closed flowers of its host and it is easily overlooked by entomologists.

Thrips urticae Fabricius, found in the flowers of the common nettle, appears to be uncommon. The author searched for this species in south-central and south-east England throughout the summer of 2003 without success before the discovery of a small population in late August at the hamlet of Exton in Hampshire. Here, a number of individuals were beaten from a single plant along with specimens of *T. tabaci*. Other plants growing in the same row in front of a fence were clean of any thrips of either species. The single *T. urticae* taken at Lakenheath Fen, 24.vii.2004, was beaten from grasses. None of the nettles in the area hosted any thrips.

Haplothrips aculeatus (Fabricius) was previously known only from Oxfordshire and Norfolk. Findings at Wicken Fen (Cambridgeshire), 18.v.2002, and Lakenheath Fen (Suffolk, although immediately adjacent to the border with Norfolk), 24.vii.2004, indicate that this species is more widespread across the East Anglian fens than hitherto realised. It is particularly common at Lakenheath Fen where it is present in large numbers in the beds of common reed.

The single female of *Haplothrips distinguendus* (Uzel) found at Askham Bog, near York, 9.v.1998, is the most northerly county record for this species (previously Shropshire), which was previously known only from nine counties in England and Wales.

Previous records of *Haplothrips juncorum* Bagnall were limited to ten counties south of Berkshire and Norfolk plus an isolated record from Cumberland. The records reported here from suitable habitats, with beds of rushes, at Crossens Marsh, Lancashire, 10.v.1999, and at Askham Bog, North Yorkshire, 03.vii.2004, partially

fill in the gap and suggest the possible presence of local populations elsewhere in the north of England.

Voucher specimens of all the new county records reported here have been deposited in the collections of the Central Science Laboratory, York.

ACKNOWLEDGEMENTS

The author is grateful to Joe Firmin for introducing him to Friday Wood, and to Jon Martin for allowing access to the collections at The Natural History Museum. Other records published here include thrips collected during BENHS field meetings at Wicken Fen, Bradlaugh Fields and RSPB Lakenheath Fen, organised by David Wilson, Gavin Boyd and Mark Telfer, respectively. I am also grateful to Roy Crossley for permission to collect at Askham Bog. All statutory identification work at CSL is funded by Plant Health Division, Defra.

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SHORT COMMUNICATIONS

***Lasius brunneus* (Latreille) (Hymenoptera: Formicidae) in Cambridgeshire.** – A nest of the brown tree ant *Lasius brunneus* was found amongst dry cuboidal red-rotten heartwood in an old apple tree within a large complex of old orchards at Wilcock Farm, Wisbech St Mary (TF415075; VC29 Cambridgeshire), 27 May 2004. This site is the furthest north which this species has ever been found in England – the closest previous record is some 40–50 km away in TL17 (VC31 Huntingdonshire) (Alexander & Taylor, 1998).

Many thanks to Mike Lush who spotted my voucher specimen which had been overlooked amongst other dark *Lasius* sent to him for identification. The find was made during a survey being carried out for Just Ecology, under a contract with English Nature. – KEITH N.A. ALEXANDER, 59 Sweetbrier Lane, Heavitree, Exeter EX1 3AQ.

REFERENCE

- Alexander, K.N.A. & Taylor, A. (1998). The Severn Vale, a national stronghold for *Lasius brunneus* (Latreille) (Hymenoptera: Formicidae). *British Journal of Entomology & Natural History* **10**: 217–219.

***Capsosylla fulguralis* (Kuwayama) (Hemiptera: Psyllidae) reaches Tresco.** – The appearance of the Asian jumping plant louse in the UK in 2002 was documented by Malumphy & Halstead (*BJENH* **16**: 89–93). Subsequent records (op.cit.) indicated that it was spreading very rapidly having reached Yorkshire in the north and west into Hampshire. On 5.iii.2006 I recorded two individuals of this psyllid from a patch of *Elaeagnus* × *ebbingei* near the island shop at New Grimsby, Tresco, about as far west in Britain that it can go (no hostplants seen on Bryher). This was towards the end of a prolonged cold spell during which most of mainland Britain had been suffering subzero temperatures and snow. Despite the inclement weather, insects were about: an amazing nine *Bombus terrestris* (L.) queens were observed nectaring on a single tree heather and a couple of vanessids were seen dashing along the coastal paths. – J. S. BADMIN, Coppice Place, Selling, Kent ME13 9RP.

**AGLAIS URTICAE AB. CONJUNCTA NEUBERG
(LEPIDOPTERA: NYMPHALIDAE) FOUND IN THE WILD**

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ABSTRACT

Unusual variations of nymphalid butterflies, including a very dark form of *Aglais urticae* ab. *conjuncta* Neuberg observed in southern England, 2005, are reported.

On 4.ix.2005, Ken Medler noticed an unknown butterfly in his garden at Bradwell (TG5004) near Great Yarmouth (VC25) (Plate 2, Fig. 3). It obligingly remained in residence for 3 days, and his photograph found its way to the Suffolk recorder for identification. It was a very dark form of the Small Tortoiseshell, close to ab. *semi-ichnusoides* illustrated in most good books (e.g. Thomas & Lewington, 1991), yet this specimen was even darker and brought to mind a series of breeding experiments displayed by Karl Bailey at our annual exhibition in 2004. By luck, the exhibition report had just been published in the latest edition of the *Journal*, and included a photograph (Bailey, 2005). Contact with Karl unearthed more about temperature shock.

During the last 24 hours of larval existence and the first 48 hours of the pupal stage, metamorphosis reaches the stage of "pattern differentiation" during which morphogens trigger the colouration of scales forming wing patterns. This process is progressive, with the forewings differentiating before the hindwings, the dark scales developing in accordance with a genetically pre-determined pattern—to orange, yellow, white and finally the metallic blue parts of the hind wing. A more comprehensive description of wing pattern development is given by Nijhout (1991).

An extreme temperature shock at a critical time can inhibit the differentiation process. The impact is transient, leaving parts of the forewing melanic, after which differentiation may resume to colour remaining parts of the pattern. In nature, such a shock could occur when a larva settles for pupation in a shady situation and an object causing the shade is removed, leaving the pupa in direct sun. The insect needs to reach c. 44°C to create these forms, a temperature that also sterilises the insect, and an extra 1°C is fatal (K. Bailey, pers. comm.).

Most of our knowledge comes from experiments in captivity, during which artificial heat or cold is applied at the critical time. Temperature and light experiments were conducted in the 19th century (Standfuss, 1900) and were studied in *A. urticae* by Professor E. B. Poulton in 1892 (Ford, 1945). Little has been published in the UK since Merrifield (1893) described his experiments on *Vanessa atalanta* (L.), and current research has turned to the hormonal control mechanisms that activate the processes of development.

In *A. urticae*, there is a range of aberrations; one level of exposure creates ab. *semi-ichnusoides* Pronin, a little more fuses all three black costal blotches of the forewing to create ab. *conjuncta* Neuberg, and the most extreme exposure produces an almost entirely melanic form, ab. *osborni* Donckler. Ken Medler's field specimen was the intermediate form, ab. *conjuncta*. The three forms vary in rarity; *semi-ichnusoides* is rare, *conjuncta* even more rare, and *osborni* the rarest. It is difficult to discover how frequently any of these occur in nature; few wild-caught specimens are to be found in museum collections. The Hope Collection includes the results of the Merrifield experiments. The Natural History Museum's Cockayne Collection contains a wide range of natural and experimental aberrations, and these can be inspected on-line at: www.nhm.ac.uk/entomology/cockayne where similar forms of other Nymphalidae

may also be found. In addition, a number of the Argynninae, notably *Argynnis aglaja* L. can appear with heavy black suffusion along the lines of the veins. A selection of these partially differentiated melanic forms is illustrated in Emmet & Heath (1990).

There is a subtle difference between the results of heat and cold. Specimens of *A. urticae* exposed to heat feature a series of fine black lines along the veins at the outer margin of the forewing (Plate 2, Fig. 3), but these lines are absent from subjects of cold shock treatment. Experimentally, cold shock aberrations seem easier to reproduce than those following heat. It also seems that the effects occur more readily in spring and autumn, during the periods when daylight hours are changing most rapidly.

Russwurm (1978) illustrates one wild-caught ab. *conjuncta* from Ringwood, Hants, 30.ix.1947. Since heat shock also renders the butterflies sterile, each example is a one-off, and not a genetic strain. Given the millions of *A. urticae* over the years, it seems fair to judge these aberrations genuinely rare in the wild.

Two Suffolk sightings of the rather less rare aberration *semi-ichmusoides* are on record. On 26.viii.1990, Jim Foster photographed one in his Stonham Aspal garden (Foster, 1991). In September 2003, Richard Stewart found one in his Ipswich garden (Stewart, 2004), although this butterfly remained just out of photographic range.

Interestingly, at least three other aberrations of different species also put in appearances in 2005. In Bedfordshire, at Sharpenhoe Clappers on 4.vii.2005, Peter Glenister photographed an extremely melanic *Argynnis aglaja* ab. *wimani* Holmgren (unpublished). David Dennis had the amazing good fortune to find first *V. atalanta* ab. *klemensiewiczzi* Schille and then *P. c-album* ab. *reichstettensis* Fettig in his Buckinghamshire garden within days of one another [(19.ix.2005 & 21.ix.2005 – Dennis (2005) includes photographs of both)]. These two wild insects had apparently pupated on the side of a metal barn, and it seems conceivable that this could have subjected them to higher than ambient temperatures. Has any reader heard of such aberrations created under similar conditions?

The author thanks Karl Bailey for his patient guidance, and Ken Medler, for his consent to use the photograph.

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THE ARBOREAL FROGHOPPER *APHROPHORA SALICINA* (GOEZE) (HEMIPTERA: APHROPHORIDAE) ON CREEPING WILLOW AT DUNGENESS

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ABSTRACT

The abundance of the froghopper *Aphrophora salicina* (Goeze) on grey willow *Salix cinerea* at Dungeness, Kent is reported. Mean numbers of nymphal spittle masses ranged from 13.8–24.7 per 50 branchlets over the period 2000–2006. Much lower numbers of spittles were found on creeping willow *S. repens*, a previously unreported hostplant for *A. salicina* in UK. Possible reasons for the differences between the two *Salix* species are discussed. A brief botanical survey revealed there were very few plants of *S. repens* at Dungeness, and as a result, a more detailed census of this species is recommended.

INTRODUCTION

The willow froghopper *Aphrophora salicina* (Goeze) (Hemiptera: Aphrophoridae) is widely distributed in Kent, though it tends to occur locally in higher numbers in wooded areas in the south of the county. It occurs in low numbers on the Isle of Sheppey, where it appears to be associated equally with cultivated and native trees. For a homopteran, the adult insect is relatively large and conspicuous, with adult males ranging in body size from 8.7–10.2 mm and females 9.0–10.8 mm. *Aphrophora salicina* is thus approximately twice the size of the common meadow spittlebug *Philaenus spumarius* (L.), whose nymphs produce ‘cuckoo spit’, a familiar sight in early summer.

Aphrophora salicina nymphs and adults feed primarily on grey willow, *Salix cinerea* L., the commonest species of willow in southern, lowland Britain. The willow exists in two forms, ssp. *oleifolia* Macreight, formerly referred to as *S. atrocinearea* (Brot.), and ssp. *cinerea* L. In Kent, ssp. *oleifolia* (*S. atrocinearea*) is extremely common (666/1044 tetrads), whereas ssp. *cinerea* is local and restricted to very wet marshes and fens (20/1044 tetrads) (Philp, 1982). The froghopper feeds on both subspecies and occurs in high numbers in wooded, shrubby areas such as at Bough Beech Reservoir, Ham Street Woods and Dungeness. It also occurs in man-made habitats. A very heavy infestation of this species was observed this year on various *Salix* cultivars planted as hedging around the roundabout at junction 10 of the M20, east of Ashford (TR038415).

Aphrophora salicina is particularly common on stands of grey willow scrub growing by the Long Pits at Denge Beach, Dungeness. During a long-term study of the froghopper at this locality it became apparent that *A. salicina* occasionally occurs on creeping willow *Salix repens* L. (*S. arenaria* L.), a very local plant in Kent (Philp, 1982). This note brings together some casual observations on this host plant association.

METHODS

The study site was located south of the Dungeness Road/Kerton Road junction (TR082187), near Lydd-on-Sea, Kent.

Nymphs of *A. salicina*, feed communally, in groups of up to 20 individuals in spittle masses on *Salix* stems. Estimates of population size of *A. salicina* were obtained by recording the number of individual spittle masses per 50 branchlets (4–10 cm growth extensions) on 10 bushes during the first week of June, each year. Up to two counts were made of 50 branchlets on *S. repens* growing in the same patch of willows for comparison.

RESULTS

Estimates of the mean number of nymphal spittle masses of *A. salicina* on the two *Salix* species for the period 2000–2006 are shown in Table 1. Peak numbers of *A. salicina* occurred in 2000 and 2001, and again in 2004 and 2005. Appreciably lower numbers were recorded in 2003 and in 2006, with numbers 38% below the peak of the previous year.

Table 1 Mean number of nymphal spittle masses of *Aphrophora salicina* at Dungeness, 2000–2006

		Mean no. of spittle masses per 50 branchlets						
	n	2000	2001	2002	2003	2004	2005	2006
<i>S. cinerea</i>	10	23.9	24.7	–	17.8	20.8	22.1	13.8
<i>S. repens</i>	1–2	–	13	–	0	4.0	2.0	2.0

The frequency of spittle masses of *A. salicina* on *S. repens* was generally one tenth of that found on *S. cinerea*. Much higher numbers were recorded on *S. repens* in 2001 when numbers were at their highest on *S. cinerea*. No spittle masses were found in 2006 when numbers were low on the main host plant.

Spittle masses also varied considerably in size. Those on *S. repens* were relatively small (1.0–1.8 cm) and contained on average 1–3 nymphs (Plate 2, Fig. 4), whereas those on *S. cinerea* were 2.0–6.5 (8) cm long and contained 2–8 nymphs (Plate 2, Fig. 5). Total numbers therefore tended to be approximately 20× higher on *S. cinerea* than on *S. repens*.

DISCUSSION

The results show that *A. salicina* prefers to feed on grey willow. The nymphal densities observed at Dungeness were unusually high (13.8–24.7 spittles per 50 branchlets), with average infestations elsewhere in Kent ranging from 1–5 spittles per 50 branchlets. The exact reason for the relatively high numbers is unknown but may be related to the exposed, isolated, rather atypical scrub found at Dungeness, where normal woodland predators may not occur. The nearest areas of extensive, dense woodland are to be found along the former coastline at Ham Street and Kenardington, 15–18 km away. Whatever the reason, there is increasing evidence at Dungeness that heavily-infested trees, can remain heavily-infested for a period of 10 years or more, whereas other similarly-aged trees nearby continually support low numbers of froghoppers (J. Badmin, pers. observ.).

The results are not an ideal data-set to work with simply because they relate to chance observations. It is tempting to speculate that the froghopper chooses to lay its eggs on *S. repens* when densities on its main food plant are high and oviposition sites

are relatively scarce. There is some evidence to support this, but considerably more data are required to confirm this hypothesis. In years when there are large numbers of adults, there is a greater probability of individuals finding *S. repens* by chance. *Aphrophora salicina* prefers to lay its eggs 1.0–1.5 m above ground level, based on the position of spittle masses, which is higher than most *S. repens* plants grow at Dungeness. The lower densities found on *S. repens* may therefore be due simply to a matter of height and not to perceived differences in host plant preference.

Although there are no references to *A. salicina* nymphs feeding on *S. repens* in the UK, Nickel (2003) cites this species as a hostplant in his table of Auchenorrhyncha utilizing Salicaceae in Germany, though he does not state specifically that this refers to nymphal feeding. The occurrence of this species on *S. repens* is more likely in the west and north of England where the plant is more prevalent (Preston *et al.*, 2002). Creeping willow in Kent is restricted to Dungeness and the coastal area around Sandwich. The distribution map illustrated in the current county flora (Philp, 1982) can give the impression that *S. repens* is widespread and common at Dungeness (4 tetrads), but the plant is apparently extremely rare. During a recent visit this autumn, only nine mature plants, well separated from each other, were found in the shingle to the east of the Long Pits. *Salix repens* is dioecious and it was not possible to determine whether both sexes were present. Stace (1991) states that *Salix* species are usually represented by both sexes in roughly equal numbers and that bisexual catkins are not rare, particularly in hybrids. In view of the relatively low number of individual plants found, it is possible that stochastic events could result in the sex ratio shifting markedly from 1:1 and thus restricting the possibility of fertilization and regular seed production. Pollination in *Salix* is reported to be mainly entomophilous (Meikle, 1984).

All of the plants observed were relatively mature; no seedling plants were discovered. The willow is obviously able to increase in size by rhizomatous growth and several of the larger bushes, 2–2.5 m in diameter, were in good condition with a mass of new stems sprouting around the edges. However several other bushes showed signs of die-back. The willow has long been known to occur at Dungeness (Hanbury & Marshall, 1899) and was first recorded there by Parkinson (1640) as *Salix pumila latifolia*. There are no published reports describing the abundance of *S. repens* at Dungeness so it is difficult to determine whether the plant has always been rare or that numbers are declining. The results of the recent national survey show that *S. repens* has declined (–0.42), especially in southern England (Preston *et al.*, 2002). A detailed survey of the status of this willow at Dungeness would appear desirable.

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2005 ANNUAL EXHIBITION

Imperial College, London SW7 – 12 November 2005

The following account of exhibits has been compiled by A. M. Jones (British butterflies), J. S. Badmin (British Macrolepidoptera), M. R. Young (British Microlepidoptera), N. M. Hall (Foreign Lepidoptera), P. J. Chandler (Diptera), R. G. Booth (Coleoptera), A. J. A. Stewart (Hemiptera), and M. N. Smith (Hymenoptera and other Orders). The photographs of individual insects were taken by Richard Jones and the cost of printing these was met by a grant from the Hammond Memorial Fund.

About forty members and their guests attended the Society's Annual Dinner which took place in the Senior Common Room at Imperial College immediately following the exhibition. The pre-dinner drinks at the bar allowed everyone to mingle and chat about the day's events. The sit-down meal was most enjoyable and the excellent company entirely relaxed after a day's intense entomology. This is the main occasion when members of the Society can socialise and make new acquaintances and it is hoped that many more members will attend in future.

BRITISH BUTTERFLIES

BAILEY, K.E.J. – Results of breeding experiments during 2005. *Apatura iris* (L.) ab. *iridella* Cabeau, a specimen of a dwarf form that now appears regularly in the exhibitor's inbred stock despite adequate larval food plant. *Euphydryas aurinia* (Rott.) ab. *virgata* Tutt, strong examples of this polygenic form from selected pairings and including a bilateral gynandromorph (Plate 3, Fig. 13). The exhibitor believes that as the characters for ground colour and degree of expression of *virgata* are identical on both sides it is likely that the condition arose from the loss of a Z chromosome at the first cell division after fertilisation (based on related published research). The autosomes are unaffected, but as the male side is unusually small the question was posed whether the lost Z chromosome had been retained on the male side thus giving it a ZZZ configuration and causing the small size? Other *E. aurinia* included examples of the recessive ab. *atratus* Bailey, combined with genes for *virgata*.

Argynnis paphia (L.), extreme ab. *ocellata* Frings and ab. *nigrizina* Frohawk from cold-shocked pupae.

Vanessa cardui (L.) from heat-shocked pupae included extreme ab. *rogeri* Meilhan and ab. *elymi* Rambur (Plate 3, Fig. 4). Similar examples of *rogeri* resulted from very long cold-shocked pupae.

Aglais urticae (L.) ab. *pseudoconnexa* Cabeau, strong examples of this polygenic form, heat shock to pupae of the same stock gave rise to examples of ab. *semiichnusoides* Pronin but suppressed the *pseudoconnexa* characteristics. The same strain gave rise to a single extreme homoecite example; the right forewing costal segment is completely reproduced in parallel while a central segment is lost with the union of two small central spots. The segment involving the tornal area was more normal. The exhibitor suggests it may be possible that when the wing imaginal discs are a mere strand of cells in the ovum, a morphogen is liberated in the presumptive tornal region, this sets up a concentration gradient as it diffuses towards the presumptive costal cells, where it would be weakest. According to the strength of the morphogen, these early cells are programmed to produce in their successors, cells that are predetermined to make the final segments. The loss of the central segment

due perhaps to cell death might have caused a shift in the concentration gradient and thus faulty programming and the double costal segments. Lewis Wolpert did much work on this process in the 1980s.

Lycaena dispar batavus (Oberthür), an extreme radiated underside form that appeared spontaneously in greenhouse stock of the late H.G. Short. This was almost certainly an unplanned heat-shocked specimen. An attempt to breed from it was unsuccessful as it proved to be sterile; the exhibitor has noted low fertility rates in butterflies from heat-shocked pupae.

BULMAN, C., WIGGLESWORTH, T. & BOURN, N.—A poster exhibit titled: 'Conserving UK Biodiversity Action Plan Butterfly Species in Britain'. The status of *Melitaea athalia* (Rott.) and *Argynnis addipe* (F.) was discussed, the conservation requirements, causes of decline and the range of actions undertaken in recent years by Butterfly Conservation to help address this.

BURROWS, D.—*Gonepteryx rhamni* (L.), a bilateral gynandromorph taken 28.viii.2005 at Lullington Heath, East Sussex (Plate 3, Fig. 3).

BUTLER, A.L.—Results of temperature experiments. *Plebejus argus* (L.) ab. *anticoradiata* Tutt, two females that emerged in July 2004 from pupae subjected to a long cool period. Ten percent of the batch showed a similar degree of variation with the rest ranging through to completely typical (20%). *Satyrium pruni* (L.) specimens from pupae subjected to cold or heat shock with reduced underside banding, ab. *albosoleta* Verity. The specimens from cold shock differed to those from heat shock in that they were less well defined, the white bands appearing smudged. Some heat-shocked specimens had other characteristics including elongation of the black markings and/or inward diffused orange markings (Plate 3, Fig. 8). *Euphydryas aurinia* (Rott.) ab. *suffusa* Frohawk, two females that emerged from pupae subjected to multiple cold shocks, from captive bred stock supplied by K. Bailey. Similarly treated *Melitaea athalia* (Rott.) resulted in upper sides ab. *corythallia* Hübn. and undersides ab. *tetramelana* Cabeau.

Two wild taken specimens: *Ladoga camilla* (L.) ab. *nigrina* Weymer, one of seven seen over a period of three consecutive days in July 2005 at a single Northamptonshire woodland. It is known that these sightings included at least three individuals; previous years have only yielded one similar specimen. *Polyommatus coridon* (Poda.) ab. *ultra-alboconata* Bright & Leeds taken from the Chilterns July 2005.

CALLOW, M.—*Polyommatus bellargus* (Rott.), a rare mixed gynandromorph or intersex (Plate 3, Fig. 5), captured 2.vi.2004. A largely female specimen but with the upperside right forewing slightly smaller than the left and with an extreme mosaic of blue male colouration. The underside appears entirely typical. This bears some resemblance to the famous intersex specimens of *Polyommatus coridon* (Poda) ab. *roystonensis* Pickett, that used to be taken at Royston, Hertfordshire in the early part of the last century.

FENSOME, B.—Butterflies taken or bred over the last few years. *Maniola jurtina* (L.) ab. *anticrassipuncta* Leeds, a female from Bedfordshire. *Melanargia galathea* (L.) ab. *galaxaera* Esper and a dark suffused male *Pyronia tithonus* (L.) both from Dorset. *Polyommatus coridon* (Poda.), two ab. *obsoleta* Tutt, a male ab. *livida* Bright & Leeds, a female ab. *radio* Bright & Leeds with a very dark ground colour ab. *atrescens* Tutt and a female with a typical left hand side and ab. *radio* right hand side (Plate 3, Fig. 7).

Lycaenid butterflies resulting from chilled pupae, *P. coridon*, *Aricia agestis* (D. & S.), *Polyommatus icarus* (Corv.), and *Polyommatus bellargus* (Rott.) with either reduced or elongated underside spotting or upperside colour change.

HALSEY, J. – An example of a *Lampides boeticus* (L.) reared from sugar snap peas imported from Kenya.

JONES, A.M. – *Pyronia tithonus* (L.) ab. *albinotica* Goodson, a female captured 7.viii.2004. This laid 37 ova before it died, 12 reached maturity but the adults (all type) showed little interest in pairing, though two ova eventually proved fertile. *Maniola jurtina* (L.) ab. *grisea-aurea* Oberthür, a female captured 20.vii.2005. *Argynnis paphia* (L.) ab. *nigricans* Cosmovici, a male and female (Plate 3, Fig. 2). Both captured during July 2005 and clearly demonstrating the result of hot June weather giving shocks to the wild pupae. Numbers of less extreme examples were also noted at several localities.

Pieris napi (L.) ab. *fasciata* Kautz, extreme specimens bred in an F₂ from a *fasciata* female of the English ssp. *sabellicae* Stephens. The F₂ was very variable and the strain is being maintained for further study.

Polyommatus icarus (Rott.) ab. *pallida* Tutt, a chance breeding. A female specimen from an ab. *radiata* Courv. strain of *icarus* was out-crossed to a type wild male in June 2005 in order to keep the *radiata* gene. The F₁ produced both typical and ab. *extensa* Tutt specimens. Pairing these gave an F₂ in September/October of 45 butterflies some being good *extensa* and surprisingly two male (one crippled) and three female *pallida*, 11%. This seems below the normal percentage expected of a recessive gene but in a previous chance breeding of *pallida* in 2002 only 8% of a much larger brood were aberrations and the gene seemed to have a serious weakening effect, specimens often being small or crippled.

Lycaena phlaeas (L.) ab. *extensa-conjuncta* Tutt, a female captured 3.ix.2005.

MCCORMICK, R.F. & HATCH, S. – *Aricia artaxerxes* (F.), recorded during day time searching of grass stems, Straloch Estate, 6.vii.2005.

PORTER, J. – A worn male specimen of the South-East Asian species *Precis lemonias* (L.) (The Lemon Pansy), captured in the exhibitor's hands 18.vi.2005 on the window of a fashion shop in Church Street, Kingston-Upon-Thames, Surrey (TQ179692, VC17). This is undoubtedly an accidental introduction or an escapee from captivity. The London Butterfly House at Syon Park, 7km due north, confirmed that they had the species on the wing during the date of capture and there are also a number of SE Asian food outlets in the area which could have been a source of the insect.

REVELS, R.C. – *Vanessa cardui* (L.) ab. *rogeri* Meilhan, a specimen bred by chance, ix.2003 by Mr A. Darrington from larvae collected from thistles during viii. 2003 for the purpose of photographing the life cycle. Whilst in captivity the larvae had been kept in plastic boxes well away from any temperature extremes. All the other butterflies were typical. The aberration was very weak, unable to fly and could barely walk across the bottom of the cage.

Polygonia c-album (L.), a bilateral gynandromorph, this emerged ix.2004 from stock bred to allow photography of the species hatching from the pupa. Only after the series of photographs had been taken did the exhibitor realise that the markings were different on each side.

Lycaena dispar batavus (Oberthür), with an extreme radiated under side (Plate 3, Fig. 11), bred by chance in viii.2005. This was reared with 25 typical butterflies in a well-ventilated greenhouse, it is assumed that it received an accidental heat shock at the time of pupation (see notes on K. Bailey's exhibit).

Polyommatus coridon (Poda) ab. *radiata* Bright & Leeds the only aberration from a brood of 20 newly-formed pupae subjected to a week in a refrigerator at 1–2°C. *Polyommatus bellargus* (Rott.) ab. *striata* Tutt (Plate 3, Fig. 6), two batches of 15 pupae were treated in a similar way to those of the *P.coridon*. The first batch

produced four male ab. *striata* and one approaching ab. *krodeli* Gillmer with tiny streaking spots. The second batch and a control of 30 reared out of doors emerged as types.

ROOK, S. – *Polyommatus coridon* (Poda) ab. *alba* Bright & Leeds (Plate 3, Fig. 10), a male captured in Dorset, 2005. A *Melanargia galathea* (L.), with black suffused hind wings.

TEBBUTT, P. – Butterflies resulting from temperature experiments included; *Lycena dispar batavus* (Oberthür), four quite different specimens from long cool shock, a female upper side ab. *sagittifera* Hormuzaki, two undersides with extended spotting and a male ab. *infraparvipuncta* Lempke with small spotting. Similarly treated *Satyrium pruni* (L.) produced parallel results to those of A. Butler (see exhibit note) including one extreme example with elongated black wedges and the white 'hairstreak' replaced with black. *Thecla betulae* (L.), a specimen of ab. *virgata* Tutt, from long cool shock and an extreme ab. *unistrigata* Schultz with the single white line radiating basally. This resulted from a single cold shock (Plate 3, Fig. 12).

Wild taken aberrations included a worn but intact female *Ladoga camilla* (L.), ab. *obliterae* Robson & Gardner, a male *Melanargia galathea* (L.) with a black left hind wing *Thymelicus sylvestris* (Poda) with whitish forewings (Plate 3, Fig. 9) and a similar *Thymelicus lineola* (Ochrs.), though probably pathological. An *Aricia artaxerxes* (F.) ab. *vedrae* Harrison a short series of *Polyommatus coridon* (Poda) females with varying amounts of blue scaling.

WINOKUR, L. – *Apatura iris* (L.), A male underside (Plate 3, Fig. 1), the only aberration from a brood of eight specimens reared in the F1 from a female taken near Woodmancott, Hampshire in 2004. The specimen is noticeably smaller than the type and has more deeply scalloped wing margins, with an increase in maroon colouration on the hind wings and marginal grey rays.

BRITISH MACROLEPIDOPTERA

BROOK, S., DAVIS, A. & PARSONS, M. – A poster exhibit on The Action for Threatened Moths Project. The project aims to oversee the implementation of the UK's Biodiversity Action Plans for over 50 species of moths. UK BAP is the government's response to the Convention on Biological Diversity – see www.ukbap.org for further details. Distribution maps and ecological requirements of a small selection of species covered by the project were displayed.

BROOKER, R.J. & MASTERS, I.D. – *Idaea degeneraria* (Hübner), a suspected immigrant, Middleton-on-Sea, W. Sussex (VC13), 29.v.2005. An asymmetrical aberration of *Colotois pennaria* (L.), Owlsmoor, Sandhurst, Berks. (VC22), 15.xi.2005 (IDM).

CLANCY, S. – Unusual moths from Kent and the South-East in 2005: *Cyclophora annularia* (F.), first area record, suspected migrant, Lydd-on-sea, 1.v.2005; *Scopula emutaria* (Hübner), a heavily suffused individual, Dungeness, 9.vi.2005; *Spargania luctuata* (D. & S.), an aberrant form, Denge Wood, Kent, 16.vi.2005; *Eupithecia abietaria* (Goeze), a probable immigrant, Biddenden, Kent 20.vi.2005; *Chiasma clathrata* (L.), two examples of several immigrant specimens recorded in May that resemble the Irish race *hugginsi* (Baynes); *Chiasma aestimaria*, bred from female taken in September 2004 that was exhibited the previous year; *Macraria signaria* (Hübner) an immigrant, Dungeness, 10.vii.2005 and two specimens from Barham, Kent, 13.vii.2005, where a resident population has now been discovered; *Pseudopanthera macularia* (L.), an unusually marked individual, at light, Headley Warren, Surrey, 1.vi.2005; *Lymantria dispar* (L.), Lydd-on-sea, 1.viii.2005 and

Dungeness, 10.viii.2005; *Rhyacia simulans* (Hufn.), first area record for nine years, New Romney 20.ix.2005; *Acrionicta auricoma* (D. & S.), third area record, 2.v.2005; *Platyperigea kadenii* (Frey.), two of at least 60 specimens recorded in New Romney, suggesting the moth is now almost certainly established as a resident in the area; *Tristales emortualis* (D. & S.), a probable immigrant, Greatstone 24.vi.2005.

CLARKE, J.—Moths recorded during the year. *Zygaena filipendulae* (L.) ab. *aurantia* Tutt, Brandon Suffolk, 14.vii.2005; *Aspitates gilvaria* ssp. *burrenensis* Cock., netted in flight, Knockaunroe, Kilnaboy, Burren, Ireland; 30.vii.2005; *Rhodometra sacraria* (L.) ab. *sanguinaria* Esp., Tolver, Penzance, Cornwall, 16.x.2005; *Rochanara algae* (Esp.), Loch Ballyveleghan, Burren, Ireland, 5.viii.2005; *Lithosia quadra* (L.), at mv, Tullage, Kilfenora, Ireland, 30–31.vii.2005; *Calamia tridens* ssp. *occidentalis* Cock. on grass stems, Knockaunroe, Kilnaboy, Ireland, 30.vii.2005; *Acontia lucida* (Hufn.) and *Antigastra catalaunalis* (Dup.) Freshwater Bay, Portland, Dorset, 1.ix.2005; *Conistra erythrocephala* (D. & S.), Crawley Down, W. Sussex, 30.ix.2005; *Noctua janthina* (D. & S.), West Hythe, Kent, 27.viii.2005; *Spodoptera exigua* (Hüb.) and *Spodoptera ciliium* (Guen.), West Hythe, Kent, 16.x.2005; *Eublemma purpurina* (D. & S.), West Bexington, Dorset, 31.viii.2005; *Eublemma parva* (Hüb.), Tolver, Penzance, Cornwall, 17.x.2005; *Hypena obsitalis* (Hüb.), Swanage, Dorset, 9.ix.2005; *Mythimna loreyi* (Dup.), West Bexington, Dorset, 30.viii.2005; *Acrionicta menyanthidis* (Esp.), Wixall, Shropshire, 9.vii.2005; *Apamea ophiogramma* (Esp.), Lopham Fen, Suffolk, 13.vii.2005.

CRONIN, A.R.—Live *Callimorpha dominula* (L.), F₁₅ generation, one typical, two form *bimacula* Cock., from stock originating from Merseyside.

DEANS, M.—Macromoths recorded at light, Bawdsey Peninsula (TM335380), East Suffolk (VC25), 2004–2005. *Pelosia muscerda* (Hufn.), *Eilema pygmaeola pygmaeola* (Doubl.), *Nola aerugula* (Hüb.) all rare migrants in Suffolk. *Euxoa nigricans* (L.), *Noctua janthina* (D. & S.), *Peridroma saucia* (Hüb.), *Mythimna vitellina* (Hüb.), *Mythimna unipuncta* (Haw.), *Xylena vetusta* (Hüb.) second recent county record, *Conistra erythrocephala* (D. & S.) first and second county records, *Cryphia algae* (F.), *Luperina nickerlii* (Frey.) ssp. *demuthi* Goater & Skinner, *Platyperigea kadenii* (Frey.), first county record, *Helicoverpa armigera* (Hüb.) two specimens, *Chrysodeixis chalcites* (Esp.), two specimens, part of an influx recorded at Bawdsey in 2005.

DOBSON, A.H.—Aberrations from N Hampshire, VC12: *Operophtera brumata* (L.), Greywell, 21.xi.2004, (P.A. Boswell, leg.); *Drymonia ruficornis* (Hufn.) and *Orthosia munda* (D. & S.), Pamber Forest Farm, 11.iv.2005; *Xanthia aurago* (D. & S.) var. *rutilago* F., Bramley Frith Wood, 15.iv.2005; *Hoplodrina ambigua* (D. & S.), Basingstoke, 5.vii.2005; *Atolmis rubricollis* (L.), Healey Gravel Pits Reserve, V12, male and female, 18.vi.2005, a new site; *Mythimna albipuncta* (D. & S.), Kempshott, 31.viii.2005, (G.A. Henwood, leg.).

HALL, N.M.—Lepidoptera 2005. *Hoplodrina ambigua* (D. & S.), an aberration with linked orbicular and reniform stigmata, Reading, Berks, 30.viii.2005; *Atolmis rubricollis* L., Reading, Berks, 23.vi.2005. A visit to Hastings Country Park, East Sussex on 13–16.vii.2005 proved very productive: most of the records could be explained by local movements of up to 14 kilometres, but there was some immigration. Anyone wishing to record overnight in the Park should contact Andy Phillips who is the Nature Reserves Officer for Hastings Borough Council (01424 451043), since overnight parking is not normally allowed. Species of interest were; *Noctua janthina* (D. & S.), Firehills Picnic Site, 13.vii.2005 and Norths Seat, 14.vii.2005, together with *N. janthe* (Borkh.); *Cucullia asteris* (D. & S.), Firehills Picnic Site, 13.vii.2005; *Trisateles emortualis* (D. & S.), Firehills Picnic Site,

13.vii.2005; *Hyales gallii* Rott., Firehills Picnic Site, 15.vii.2005, *Meganola albula* (D.& S.), Helipad, 16.vii.2005, and *Parastichtis suspecta* (Hübner), 16.vii.2005. A visit to Hastings on 27–28.viii.2005 was far less productive. The following were of note; *Mythimna albipuncta* (D.& S.), *Mythimna vitellina* (Hübner) and *Nycteola revayana* (Scop.), Firehills Picnic Site, 27.viii.2005; *Mythimna pallens* (L.), an orange form, Firehills Picnic Site, 28.vii.2005. *Macrochilo cribrumalis* (Hübner) taken at light, North's Seat, Hastings, 11.vii.2005 and a specimen from Rye Harbour LNR (Chalk Curve), East Sussex, 11.vii.1999 for comparison.

HALSEY, J. – *Platyperigea kadenii* (Frey.), Bonchurch, Isle of Wight, 26.ix.2005, first island record, five additional specimens recorded during the year; *Aplasta ononaria* (Fuessli) a rare migrant, first island record, Bonchurch, 17.viii.2005; *Dryobota labecula* (Esp.), Bonchurch, Isle of Wight, 21.x.2005; *Petrophora chlorosata* (Scop.), a strikingly-marked specimen, Wicken Fen, 14.vi.2005; *Agrochola lychnidis* (D.& S.), a very dark specimen, captured at actinic light, Earnley, W. Sussex, 10.x.2005 and *Xestia agathina* ssp. *hebridicola* (Stdgr.), Glen Borrowdale, Ardnamurchan, 30.viii.2005.

HARMAN, T.W. – Lepidoptera records from Turville Heath Farm, Turville Heath, Henley-on-Thames, Oxon. Three specimens of *Colocasia coryli* (L.), one typical, one form *melanotica* Haver. and one extreme f. *melanotica* Haver.; *Abrostola triplasia* (L.), first site record, 2.vii.2005; two specimens of *Hepialus hecta* (L.), one typical and one extreme variety with gold margins to forewings, 16.vi.2005; a series of *Xanthia citrigo* (L.), bred from wild-collected larvae; a well-marked specimen of *Erannia defoliaria* (Cl.), 30.xi.1995; *Parascotia fuliginaria* (L.), 12.vii.2005; two specimens of *Nycteola revayana* Scop. showing various forms; *Colostygia olivata* (D.& S.) 12.viii.2003; a well-marked specimen of *Hydriomena furcata* (Thunb.), 13.vii.2005; *Apamea sublustris* (Esp.), 23.vi.2001; a short series, taken and bred of *Panemeria tenebrata* (Scop.), 2005.

HARPER, M. – A melanican specimen of *Omphaloscelis lunosa* (Haw.), captured at mv light, Ledbury, Herefordshire, 24.viii.2005.

HAYWARD, R. – Moths at mv light or bred, mainly in 2005. (1) Migrants – *Rhodometra saccharia* (L.), Slough, VC24, 29.x.2005; *Mythimna albipuncta* (D.& S.), Slough, 8.ix. and 10.ix., representing third and fourth vice-county records; *Mythimna vitellina* (Hübner), Ermington, Devon, 14.ix.2005. (2) Varieties – *Hepialus humuli* (L.), yellow scales and hairs replaced by red, Slough, 1.vi.2005 (Plate 4, Fig. 2); dwarf form of *Hepialus sylvina* (L.), Slough, 5.ix.; *Hepialus fusconebulosa* (Degeer) form *gallicus* Led., Gussetts Wood, Bucks, 11.vi.; *Cyclophora punctaria* (L.), with heavy cross-lines on all wings, Slough, 18.v.; *Cyclophora linearia* (Hübner), brick red specimens that emerged 19.iv. and 20.iv.2005, derived from adults taken in Gussetts Wood, Bucks, 18.vii.2004; *Drymonia ruficornis* (Hufn.), dark form, Slough, 10.iv.; *Xylocampa areola* (Esp.), pale form, Slough, 1.iv.; *Dryobotodes eremita* (F.) ab. *nigra* Cock., Black Park, Bucks, 5.v.; *Colocasia coryli* (L.), exceptionally pale specimen, Slough, 29.iv.; *Abrostola tripartita* (Hufn.) form *plumbea* Cock., Slough, 17.viii.; *Lithosia quadra* (L.), one individual with grey terminal area paler than ground colour, the other with the yellow terminal area paler than ground colour, Leigh South, Co. Galway, 3.viii.2005. (3) Interesting species. *Eriogaster lanestris* (L.), adults emerged 23.ii. and 15.iii.2005 from larvae collected from The Burren, Co. Clare, 2001; *Clostera pigra* (Hufn.), ex -2004 larvae from Lough Bunny, Co. Clare, emerged 24.iv. and 3.v.2005; *Eilema sororcula* (Hufn.), Slough, 3.v.2005 and Black Park, Bucks, 26.v.2005, becoming more plentiful at both sites; *Euxoa tritici* (L.), Black Park, Bucks, 30.viii.2005; *Hecatera dysodea* (D.& S.), emerged 21.v. and 22.vi.2005 from larvae collected from Middle Green, Bucks, 2004, and adults in

garden mv trap, Slough, 23.viii. and 3.ix.2005; *Lithophane hepatica* (Clerck), Slough, 27.iii.2005; *Conistra rubiginea* (D. & S.), Slough, 18.x.2005, second record in 28 years; *Xanthia gilvago* (D. & S.), Slough, 6.x.2005; *Acronicta euphorbiae* (D. & S.) ssp. *myricae* Guen., F₁ adults emerged 32.iv. and 26.iv.2005 from larvae collected from Leigh South, Co. Galway, 2004; *Apamea ophiogramma* (Esp.), Slough, 1.viii.2005, second individual in 28 years; *Hoplodrina ambigua* (D. & S.), Slough, 30.x.2005, possible second brood; *Macrochilo cribrumalis* (Hübner), first VC24 record, Slough, 29.vi.2005.

HECKFORD, R.J. – *Heterogenea asella* (D. & S.), first county record for >100 years, Lower Hooksburry Wood, Devon, 22.viii.2004. Larva found feeding on underside of *Quercus robur* leaf, moth emerged 4.v.2005. *Xanthorhoe montanata* (D. & S.) (Plate 4, Fig. 12), specimen with median fascia obsolete, Cliffs of Magho, Co. Fermanagh (H33), 20.vi.2004.

HENWOOD, B. – *Acherontia atropos* (L.) bred from a fully-grown larva found wandering at Exminster Marshes, S. Devon (VC3), 26.viii.2004, adult emerged 30.iv.2005.

HIGGOTT, J.B. – Notable moths from Suffolk. *Nola aerugula* (Hübner), a rare migrant, Landguard Point, 21.vii.2004, recorded by M. Marsh; *Hecatera dysodea* (D. & S.), a former resident species, now migrant, Landguard Point, 31.vii.2004; *Aplasta ononaria* (Fuessl.), first county record, Orford Ness NNR, 10.viii.2003; *Eilema pygmaeola* (Doubl.), Orford Ness NNR, 1.viii.2004 (J. Askins); *Eilema caniola* (Hübner), first county record, Orford Ness NNR, 24.vi.2003 (J. Askins); *Chortodes extrema* (Hübner), third county record, Orford Ness NNR, 13.v.2004 (J. Askins); *Actinotia hyperici* (D. & S.), second British record, Landguard Point, 6.v.2003 recorded by N. Odin. Three additional specimens have since turned up, but though the site supports a profusion of *Hypericum*, there is no evidence to date of breeding. *Thaumetopoea processionea* (L.), Landguard Point, 9.viii.2004 (N. Odin); *Spodoptera littoralis* (Boisd.), first county record, Ipswich, 19.vii.1998; *Chrysodeixis chalcites* (Esp.), Rushmere St. Andrew, 6.ix.2005 and Dunwich Heath NT, 5.ix.2003.

JENKINS, A. – Unusual moths in 2005: *Cryphia algae* (F.), >30 individuals observed at mv light, West Kent, 28.vii.2005 and 18 individuals at same locality, 2.viii.2005, indicating this moth is now well-established and breeding in U.K.; *Thera juniperata* (L.) ssp. *scotica* (White), bred from larva collected from juniper in the Cairngorms; *Catarhoe eculata* (Hufner), taken at mv light, Cambridgeshire; *Eugnorisma glareosa glareosa* (Esp.), taken at mv light Aviemore.

KNILL-JONES, S.A. – (1) Moths from Totland, Isle of Wight. A unicolorous straw-coloured form of *Mythimna vitellina* (Hübner), 23.vii.2005; a well-marked form of *Xestia xanthographa* (D. & S.), 1.xi.2005; *Lampropteryx suffumata* (D. & S.), 1.iv.2005; a very late third generation individual of *Peribatodes rhomboidaria* (D. & S.), 4.xii.2004; a very late second generation individual of *Apamea monolypha* (Hufner), 6.xii.2004; *Epirrita autumnata* (Borkh.), 30.x.2005; *Trichopteryx polycomata* (D. & S.), 2.iv.2005, new VC record; *Abraxas sylvata* (Scop.), 31.vii.2005; *Macraria alternata* (D. & S.), 5.vii.2005; *Xanthorhoe designata* (Hufner), an individual with differing forewings, 25.v.2005; *Dicallomera fascelina* (L.), 18.vii.2005; *Agrotis segetum* (D. & S.), 4.viii.2005; *Dryobota labecula* (Esp.), 30.x.2005; *Platyperigea kadenii* (Frey.), 16.x.2005; small individuals of *Agrotis trux* (Hübner), 11.vii.2005; *Agrotis clavis* (Hufner), 1.vii.2005; *Agrotis ipsilon* (Hufner), 11.vii.2005; *Hoplodrina ambigua* (D. & S.), 3.viii.2005; *Heliothis armigera* (Hübner), 28.x.2005; *Ochropleura plecta* (L.), 12.viii.2005, wing expanse 18 mm. *Autographa gamma* (L.), with differing forewings, 6.x.2005; *Xestia ditrapezium* (D. & S.), 14.vi.2005; a large individual of *Xestia c-nigrum* (L.), 16.vi.2005; *Hoplodrina ambigua* (D. & S.) showing joined discal

spots, 16.vi.2005; *Lacanobia oleracea* (L.), with elongated discal spot, 24.vi.2005; an extreme form of *Agrotis exclamationis* (L.), 11.vii.2005; a nearly unicolorous buff individual of *Omphaloscelis lunosa* (Haw.), 24.ix.2005; a near albino individual of *Phragmatobia fuliginosa* (L.), 14.viii.2005; a pale brown form of *Nycteola revayana* (Scop.), 13.ix.2005; a melanic form of *Idaea biselata* (Hufn.), 20.viii.2005; a well-marked *Schranksia costaestrigalis* (Steph.), 20.viii.2005; *Elaphria venustula* (Hübner), 23.vi.2005; two pink-coloured *Rhodometra sacralia* (L.), 9 & 10.x.2005 and a dark melanic *Agrotis segetum* (D. & S.), 10.x.2005. (2) Two *Bembecia ichneumoniformis* (D. & S.), attracted to pheromones, Afton Down, Isle-of-Wight, 22.vi. and 8.vii.2005.

KOLAJ, A. – *Xanthorhoe fluctuata fluctuata* (L.) (Plate 4, Fig. 15), aberrations taken in exhibitor's garden, Tile Hill, Coventry 10.viii.2005 & 10.ix.2005. A melanic form of *Eupithecia exiguata exiguata* (Hübner), confirmed by genitalia examination and possibly the first melanic example from Waverley Wood, Warks. Also exhibited were: *Perizoma minorata* (Treitl) ssp. *ericetata* (Steph.), bred from larva collected from Cairngorms, Scotland, 2.ix.2004 and *Lithomoia solidaginis* (Hübner), ex female from Balgowan, Highlands, Scotland, 01.ix.2004.

MCCORMICK, R.F. – (1) Interesting moths from Devon in 2005. *Heterogenea asella* (D. & S.), Cadworthy Wood, near Shaugh Bridge, Dartmoor, nearly full grown larvae, 10.ix., R.McC. & R. Heckford; *Synanthedon vespiformis* (L.), larvae from Stover Park area, Newton Abbot, 31.iii.; *Cyclophora pendularia* (Clerck), at mv light, Hatherleigh, 17.vi., Rob Wolton, first specimen seen in Devon since 1936; *Cyclophora porata* (L.), at light, Bere Alston, 8.vi., Tom Sleep; *Idaea trigeminata* (Haw.), Kingsteignton, 23.vi., first confirmed Devon record. *Idaea degeneraria* (Hübner), Slapton Reed Beds, 2.vi., Jeff Clarke (confirmed by photograph of moth); Woodbury Salterton, 13.vi., Mike Meehan; and Dawlish Warren, 14.ix., at light, Ivan Lakin, all assumed to be migrants. *Costaconvexa polygrammata* (Borkh.), near Lyme Regis, 27.iii., Oliver Woodland, second county record. *Eulithis mellinata* (F.), Harcombe Wood, Chudleigh, 18.vii., first Devon record this century; *Thera cupressata* (Geyer), Holcombe, 24.vi., a new Devon locality; *Perizoma taeniata* (Steph.), Watersmeet, 12.vii., a species now known to occur from Lynmouth, along Lyn Cleave, Myrtleberry Cleave through to Hillsford Bridge; *Eupethecia simplicata* (Haw.), Harcombe Wood, Chudleigh, 18.vii., R.McC., and Prawle Point, 22.vii., Ivan Lakin. *Furcula bicuspis* (Borkh.), New Bridge Wood, Holne, near Ashburton, 27.v., also Shaugh Prior, Shaugh Bride, Dartmoor, vi.2005, taken at light, Andy Trout. *Furcula bifida* (Brahm), Hatherleigh area, 17.v. at light, Rob Wolton; *Ptilodon cucullina* (D. & S.), Watersmeet, 12.vii.; *Leucoma salicis* (L.), Teignmouth, 30.vii.; *Lithostia quadra* (L.), Brooking's Wood, Noss Mayo, 9.viii.; *Agrotis crassa* Hübner), Torquay, 10.viii., at light, second county record, Bill Deakins; *Sideridis albicolon* (Hübner), Northam, Bideford, 13.vii., at light, D.E. Paull, also at Dawlish Warren, 28.vi., at light, Ivan Lakin; *Papestra biren* (Goeze), Princetown, Dartmoor, 30.v., at mv light, Paul Stubbs; *Hadena albimacula* (Borkh.), Branscombe to Beer undercliff, 10.vi.; currently the only known locality for this species in Devon. *Orthosia miniosa* (D. & S.), New Bridge Wood, Ashburton, 27.v., larvae in spun oak leaves; *Mythimna putrescens* (Hübner), Northam, Bideford, 20.v., D.E. Paull and Prawle Point, 22.vii., mv light, Ivan Lakin; *Mythimna loreyi* (Dup.), Yelverton, 8.viii., Richard Bolster, also Prawle Point, 18.viii., Ivan Lakin; *Moma alpium* (Osbeck), new sites at Palmers Hill Copse, Kingscott, 21.vi., and Torrington Common, where a larva was found earlier in the year by Steve Hatch; *Trachea atriplicis* (L.), third county record at Crownhill, Plymouth, 6.vii., J. Beswetherick; *Cosmia affinis* (L.), Brooking's Down Wood, Noss Mayo, 9.viii.; *Eublemma parva* (Hübner), Bere Alston, 8.vi., at mv light, Tom Sleep; *Earias clorana* (L.), in the exhibitor's garden, Teignmouth, 24.vi., far

from known wetland localities; *Catocala nymphagoga* (Esp.), Holcombe, near Teignmouth, 28.vi., probable fourth British record; *Lygephila pastinum* (Treit.), Braunton Burrows, 9.vii., at mv light, Steve Hatch. This is the first north Devon record since 1971. (2). Variations in 2005. *Epirrhoe alternata alternata* (Müll.) (Plate 4, Fig. 4), at light, Tavistock, 16.viii., passed to me for identification by Fred Slatter; *Lampropteryx otregiata* Met. (Plate 4, Fig. 5), undercliff near Lyme Regis, (Devon), 15.viii.; *Ecliptopera silaceata* (D. & S.) (Plate 4, Fig. 6), Teignmouth, 26.v.; *Agrotis clavis* (Hufn.), exhibitor's garden, Teignmouth, 21.vi.

MCCORMICK, R.F. & HATCH, S. – Records from Scotland in 2005. *Scopula ternata* (Schrank), Rotheimurchus Estate picnic area, 2.vii.; *Entephria flavicinctata* ssp. *ruficinctata* (Guen.), larvae on stonecrop, Pass of Drumochter, Allt an Stalcair waterfall, 5.vii.; *Glacies coracina* (Esp.), Dalwhinnie, Coir nan Cisterchan, up to 20 adults seen flying in sunshine, 4.vii.; *Parasemia plantaginis plantaginis* (L.), F₁ offspring, originating from one female, Braemar, Meikle Elrick, 3.vii.; *Blepharitia adusta* (Esp.), common at light, Devils Elbow, Glen Shee, Braemar, 5.vii.; *Syngrapha interrogationis* (L.), at mv light, Brerachan Forest, 4.vii.2005.

MERRIFELD, R.K. & MERRIFELD, R.M. – Photograph of a mating pair of *Synanthedon vespiformis* (L.) observed at Barnack Hills and Holes, Barnack, Peterborough, Northants (TF0704), 3.vi.2005. The female had noticeable red edges to its wings, referable to form *rufimarginata* Spul.

OWEN, J. – Species taken at mv light in exhibitor's garden, Dymchurch, Kent in 2005. Six additional species were recorded during 2005 bringing the total to 496 since 1974. *Eupithecia virgaureata* (Doubleday), 17.viii.; *Drepana curvatula* (Borkh.) 17.viii. & 1.ix.(exhibited); *Platyperigea kadenii* (Frey.), 10.x.; *Colostygia multistrigaria* (Haw.) 28.iii.; *Apamea sublustris* (Esper) 15.vii.; and *Perizoma albulata* (D. & S.), 27.v. Also exhibited were *Eurois occulta* (L.), 9.viii., fifth garden record and *Noctua janthina* (D. & S.), 10.viii., by far the latest date in the year for this species.

PARSONS, M., CONRAD, K., FOX, R., WOIWOD, I. & WARREN, M. – A poster exhibit summarising trends in widespread and common British moths. The Rothamsted Insect Survey has operated a Great Britain-wide network of light-traps since 1968. Rothamsted Research and Butterfly Conservation, with generous funding from the Esmée Fairbairn Foundation have produced a report summarising estimated national indices and population trends for over 300 common and widespread macro-moth species. The total number of macro-moths captured has decreased by 32% during the sampling period and about two-thirds of species show decreasing trends. Most species are declining in southern Britain, but some species e.g. *Deileptenia ribeata* (Clerck) have increased spectacularly.

PATTON, S. – A tiger moth, *Hyphoraia testudinaria* (Geoff.) Arctiidae, new to Britain, captured at mv light, Chichester, W.Sussex, 30.v.2005 (Plate 4, Fig. 1).

PHILLIPS, J.W. – Macrolepidoptera taken or bred during 2005. *Mythimna litoralis* (Curtis) and *Euxoa tritici* (L.), Sinah Common, Hayling Island, Hants, 20.vii.; *Pasiphila debiliata* (Hübner) bred from larvae collected Friday Street, Abinger Common, Surrey, 2.v.; *Laothoe populi* (L.), buff-coloured form, Northney, Hayling Island, Hants, *Mimas tiliae* (L.) ab. *brunnea* Bartel, Northney, 21.vi.; *Eilema cantola* (Hübner), migrant at mv light, fourth VC11 record, Northney, Hayling Island, 16.vii.. *Noctua orbona* (Hufn.), bred ex larvae, Tunstall Common, East Suffolk, 2.x.; *Ennomos quercinaria* (Hufn.), bred ex female, Tilshead, Wilts, 31.vii.2004, *Eilema complana* form *sericea* (Gregs.), Shropshire; *Eilema complana* (L.) nominate form; *Atolmis rubricollis* (L.), W. Sussex, 19.vi.2005.

PLANT, C.W. – Aberrant examples of *Anticlea derivata* (H.-S.) and *Epirrhoe alternata* (Müll.) each shown alongside a typical example for comparison. Specimens

of *E. alternata* from Sawbridgeworth, Herts., 27.vii.1990; Wyre Forest, Wores., 8.viii.1988 (CWP), and Bishops Stortford, Herts., 30.vii.2005 (J. Fish). *Anticlea derivata*, aberrant form from Ashwell, Herts., April 2005, coll. V. Judd, (Plate 4, Fig. 3).

ROUSE, T. – Moths from two localities in East Kent (VC15). *Conistra ligula* (Esp.) 14.x.2005; *Agrius convolvuli* (L.), heavily-marked female, 13.ix.2005; *Idaea dimidiata* (Hufn.) 3.viii.2005, all from Densole. *Cryphia algae* (F.), 22.vii.2005, *Platyperigea kadenii* (Frey.) and *Noctua janthina* (D.&S.), 27.vii.2005 & 4.viii.2005, from Folkestone Warren.

SHERMAN, N. – Notable moths from Ipswich Golf Club (TM208432), Suffolk (VC25) in 2005. *Pelosia muscerda* Hufn., presumed migrant, second site record, 31.viii.2005; *Dicallomera fascelina* (L.), first Suffolk record for over 100 years, 1.viii.2005; *Trisateles emortualis* (D. & S.), first Suffolk record, 22.vi.2005.

SMITH, E.G. & SMITH, M.H. – *Agrotis trux* ssp. *lunigera* Stephens, first record for Wiltshire, VC8, Bullen Hill Farm, 13.vii.2005. Various aberrations and variations, all from Wiltshire: *Anticlea badiata* (D.&S.), Green Lane Wood, 27.iii.2003; *Opisthograptis luteolata* (L.), Bullen Hill Farm, 9.viii.2003; *Colotois pennaria* (L.), Trowbridge, 2.x.2004; *Crocallis elinguaris* (L.), Bullen Hill Farm, 7.viii.2005; *Orthosia gothica* (L.), Bullen Hill Farm, 10.vii.2005, *Hydraecia micacea* (Esp.), Bullen Hill Farm, 26.ix.2000.

STERLING, P.H. – Species collected at mv light in Dorset (VC9) during 2005: an aberration of *Lomographa temerata* (D.&S.) (Plate 4, Fig. 7) by River Eden, 20.ix.2005; *Eilema sororcula* (Hufn.) aberration, Warre Wood, 10.vi.2005, *Nola chlamitulalis* (Hüb.), second specimen recorded from British mainland, River Eden, 19.vi.2005; *Nycteoila asiatica* (Krulikovsky) from Weymouth, 3.ix.2005, together with a specimen of *N. revayana* (Scop.) collected in Dorset in 2005 by J. Burge for comparison.

WARING, P. – (1) Provisional data on the performance of the new ‘Moonlander’ light-trap now being supplied by Worldwide Butterflies Ltd.. The two most novel features of the design are that the entrance funnel to the trap is set at the base and the light source is set within the body of the trap as a safety feature. The trap was tested as supplied, and in an inverted position with the entrance funnel to the trap in the more usual position at the top. More moths tended to be caught with the trap in the inverted position. Comparison with other trap designs was not reported. (2) Photographs of Otmoor in Oxfordshire, which is to be visited by BENHS for a series of annual meetings (2004–2008).

WARING, P. & DAY, J.D. – Unusual moths from Potton, Bedfordshire, 4.viii.2005: *Cosmia diffinis* (L.), *Cosmia affinis* (L.), *Ennomos fuscantaria* (Haw.) and *Idaea rusticata atrosignaria* Lempke.

WHEELER, P.R. – Noteworthy moths from Surrey 2000–2005. Wetland species: *Scopula immutata* (L.), Walsham Meadows, 17.vii.2000; *Mythimna obsoleta* (Hüb.), Papercourt Marshes, 16.vii.2003; *Archanara sparganii* (Esp.) and *Archanara algae* (Esp.), 18.viii.2005, Hedgecourt Lake, *Coenobia rufa* (Haw.), Worplesdon, 5.viii.2003. Species recorded from garden, Chobham (SU977625): *Apoda limacodes* (Hufn.), 24.vi.2001 & 14.vi.2004; *Rheumaptera cervicalis* (Scopoli), 25.iv.2001 & 26.iv.2002; *Euphyia biangulata* (Haw.), 16.vii.2001 & 20.vii.2001; *Eupithecia abietaria* (Goeze), 28.vii.2003; *Euchoeca nebulata* (Scopoli), 15.viii.2001; *Semiothisa wauarua* (L.), 18.vii.2000; *Pachynemema hippocastanaria* (Hüb.), 2.viii.2001; *Epione repandaria* (Hufn.), 9.viii.2000; *Clostera curtula* (L.), 20.iv.2002; *Thumatha senex* (Hüb.), 2.vi.2001; *Euoxa tritici* (L.), 2.viii.2004; *Agrotis vestigialis* (Hufn.), 20.vii.2004; *Xestia castanea* (Esp.), 6.ix.2004; *Anarta myrtilli* (L.), 5.viii.2005,

Mythimna conigera (D. & S.), 26.vi.2001; *Ipimorpha retusa* (L.), 1.viii.2001; *Ipimorpha subtusa* (D. & S.), 25.vii.2001; *Parastichtis ypsilon* (D. & S.), 5.vii.2001; *Apamea scolopacina* (Esp.), 16.vii.2001; *Chortodes pygmina* (Haw.), 22.ix.2000 and *Parascotia fuliginaria* (L.), 24.vii.2000. On Chobham Common, near Langshot Bog (SU9763): *Idaea muricata* (Hufn.), 14.vii.2002; *Idaea sylvestriaria* (Hüb.), 22.vii.2001; *P. hippocastanaria*, 22.vii.2001; *Clostera pigra* (Hufn.), 23.vii.2003; *Cybosia mesomella* (L.), 25.vi.2001, *Xestia agathina* (Duponchel), first records for Common, 25.viii.2005; *A. myrtilli*, ex-larva, 25.vi.2001; *Polia trimaculosa* (Esp.), 25.vi.2002; *Lacanobia contigua* (D. & S.), 22.vi.2005; *Mythimna pudorina* (D. & S.), 25.vi.2001; *Elaphria venustula* (Hüb.), 1.vi.2003. *Schrankia costaestrigalis* (Stephens), and *Hypenodes lumidalis* Doubl., Langshot Bog, 28.vii.2005.

WINOKUR, L. – *Camptogramma bilineata bilineata* (L.), aberration with two dark cross-bands linked to form a letter 'H', captured Shirley, Southampton, 24.vi.2005.

YOUNG, M. – Above the tree-line, moths of the Cairngorms. *Xestia alpicola* (Zett.), widespread where dwarf heath overlies boulders; *Anarta melanopa* (Thunb.), widespread on plateau, flying to nectar sources; *Glacies coracina* (Esp.), widespread on plateau and ridges.

BRITISH MICROLEPIDOPTERA

BLAND, K.P. – *Enteucha acetosae* (Staint.), a further specimen reared from Alva Glen, Perthshire (VC87) at what is the second Scottish site. *Ectoedemia angulifasciella* (Staint.) present as vacated mines on *Rosa canina*, collected on 15.x.2005 also from Alva Glen. Apart from an old record from Renfrewshire (VC76), the only recent Scottish records are from East Ross (VC106) and East Sutherland (VC107).

CLANCY, S. – *Olinidia schumacherana* (F.) as a second brood individual, bred from *Stachys sylvatica* collected in August 2005 from Cookbury, Devon (VC4). *Cydia amplana* (Hüb.) taken in New Forest, Hampshire (VC11) on 17.viii.2005, together with an extreme ab. *portlandica* form of *Eudonia mercurella* (L.) and a specimen of *Dioryctria sylvestrella* (Ratz.) showing further establishment of this species. Also the first British specimen of the pyralid *Sciota rhenella* (Zinck.) (Plate 4, Fig. 11), a male taken at Greatstone, Kent (VC15) on 26.vi.2005. Lastly *Cnaemidiphorus rhododactyla* (D. & S.) taken at Biddenden, Kent (VC15) on 15.vii.2005. Only one recent breeding location is known in Kent.

DEANS, M. – *Cydia amplana* (Hüb.), the fourth county record; *Palpita vitrealis* (Rossi), a rare migrant; and *Conobathra tumidana* (D. & S.), the third recent county record, all from Bawdsey Peninsular, East Suffolk (VC25) during 2005.

DICKERSON, B. – Photographs and specimens of the mines of *Phyllonorycter leucographella* (Zell.) on leaves of London Plane (*Platanus × hispanica*). This foodplant was recorded as new by Kevin Royles on 3.x.2005 at Brington and then by the recorder at St Neots, both in Huntingdon (VC31).

DICKSON, R.J. – A number of species taken in South Hampshire (VC11) in 2005, namely: *Cnaemidiphorus rhododactyla* (D. & S.) from Cams Hall; *Pelochrista caecimaculana* (Hüb.) from Portchester Common; *Elachista alpinella* Staint. from the Moors, Bishop's Waltham; *Eupoecilia ambiguella* (Hbn.) from Horsea Island; and *Caloptilia populetorum* (Zell.) from Botley Wood.

DOBSON, A.H. – *Triaxomera fulvimitrella* (Sodof.) attracted in large numbers to the clearwing pheromone lure 'myo' on 13.v.2005 at Bramley Frith Wood,

Hampshire (VC12). *Coleophora atriplicis* Metr. and *C. aestuariella* Bradl., both bred from cases collected on Gutner Salt Marsh, Hayling Island (VC11) on 26.ix.2005; and *Dioryctria abietella* (D. & S.) from Headley Gravel Pits Reserve on 4.viii.2005, a new VC12 record.

HALL, N.M. – Species found during July 2005 at Hastings, East Sussex (VC14): *Cochylis molliculana* Zell., *Anania verbascalis* (D. & S.), *Cryptoblabes bistriga* (Haw.), *Apomyelois bistriatella* (Hulst), *Elegia similella* (Zinck.) and a species of *Capperia*. Also shown was *Assara terebrella* (Zinck.), which appeared regularly in the exhibitor's garden in Reading (VC22) during 2005.

HARPER, M.W. – *Denisia albimaculea* (Haw.), a species with very few recent records, from near Newent, Glos. (VC34) in July 2005.

HART, C. – An exhibit of *Stenoptilia annadactyla* Sutter (Plate 4, Fig. 8), a member of the *S. bipunctidactyla* 'group', newly recognised as resident in Britain in the Breck District of East Anglia and possibly other areas. The exhibit displayed a number of differences between *S. annadactyla* and *S. bipunctidactyla* s.s.. The new species normally has three tufts of black scales in the termen of the second forewing lobe, although these may run together so that the fringe is mostly black, whereas *S. bipunctidactyla* has only two small tufts in the termen. In the female genitalia the antrum of *S. annadactyla* is short, wide and straight, whereas that of *S. bipunctidactyla* is relatively long, thin and slightly curved. *S. annadactyla* also appears to prefer Small Scabious (*Scabiosa columbaria*), whereas *S. bipunctidactyla* normally uses other species of scabious. Now that it has been recognised, it will be interesting to see where it occurs in Britain.

HECKFORD, R.J. – *Bryotropha similis* (Staint.), Invernaver, West Sutherland (VC108) 1 & 4.vii.2005, first record from West Sutherland. *Pancalia schwarzella* (F.), Glen Callater, South Aberdeen (VC92), larvae feeding on underside of leaves of *Viola riviniana* 27.vii.2004, moths reared 25 & 26.iii.2005. Possibly this is the first record of larvae being found in the wild either in the British Isles or on the Continent. *Crambus pratella* (L.), Invernaver, West Sutherland (VC108) 4.vii.2005, first record from West Sutherland. *Pyrusta ostrinalis* (Hübner), Shute Shelve Hill, Somerset (VC6), pupa found amongst *Thymus* sp. and a larva feeding on same foodplant 9.vii.2005, moths reared 16.vii.2005 and 24.vii.2005, respectively. Moth also reared 20.vii.2005 from ovum obtained from female caught 29.v.2005 (larva also fed on *Thymus* sp.) at same locality. Possibly this is the first confirmed record of a larva being found in the wild in the British Isles.

HENWOOD, B. – Larvae and cocoons of *Cosmopterix pulchrimella* Chambers on *Parietaria judaica* from Totnes, Devon (VC3) collected on 10.xi.2005; also specimens bred from the first Devon locality at Prawle, where larvae were collected on 28.i.2005. Other Devon (VC3) microlepidoptera were exhibited as follows: *Cydia strobilella* (L.) taken as a presumed migrant at Abbotskerswell on 30.iv.2005 during a period of migrant activity, well away from the foodplant. *Crassa tinctella* (Hübner) from New Bridge on 27.v.2005. *Phycitodes maritima* (Tengstr.), bred from larvae collected from flowers of Ragwort (*Senecio jacobaea*) from Cockington, Abbotskerswell, Torquay and Kingskerswell. There are few previous records for this species from Devon. *Dasystoma salicella* (Hübner) bred from larvae from *Swida sanguinea* from Branscombe collected in June and August 2004. *Cydia amplana* (Hübner) from Abbotskerswell on 31.viii.2005.

HIGGOTT, J.B. – *Phylloecnistis xenia* Her. reared from mines on *Populus alba* at Trimley St. Martin, Suffolk (VC25), as a new county record. *Acleris logiana* (Clerck) from Rushmere St. Andrew. This species is now recorded regularly east of Ipswich and is double-brooded. *Cydia medicaginis* (Kuzn.) from Orford Ness NNR and

C. amplana (Hübner) from Landguard Point and Minsmere, both as first county records for Suffolk. *Haimbachia cicatricella* (Hübner) from Orford Ness in 2004, the first away from the Dungeness area.

KNILL-JONES, S.A. – Various species from the Isle of Wight (VC10), including *Cydia amplana* (Hübner), *Thysanotia chrysonuchella* (Scop.), *Evergestis extimalis* (Scop.) (taken by D.B. Wooldridge) and *Phlyctaenia perlucidalis* (Hübner).

KOLAJ, A. – *Dioryctria sylvestrella* (Ratz.) and *D. schuetzeella* Fuchs, both from the New Forest (VC11) on 9.vii.2005 and *Nephoterix angustella* (Hübner) from Pagham Harbour, Sussex (VC13) on 17.vi.2005.

LANGMAID, J.R. – *Caloptilia falconipennella* (Hübner), one of the summer brood (f. *oneratella* Zell.) bred from larvae collected from *Ahus incana* at Hursley Park, Hampshire (VC11) on 28.v.2005 and one from a pupa on *A. cordata* from Portsmouth on 29.viii.2005, to show the remarkable difference between the broods. An aberrant specimen of *Paraswammerdamia nebulella* (Goeze) from Southsea, with brownish-ochreous colouring replacing the usual grey (plus a normal specimen for comparison). *Elachista adscitella* Staint. bred from larvae collected from *Deschampsia cespitosa* from Talybont, Breconshire (VC42) on 20.v.2005, new to the VC. *Caryocolum kroesmanniella* (H.-S.) bred from larvae on *Stellaria holostea* from Speech House, Glos (VC34), collected on 18.v.2005. *Eucosma parvulana* (Wilk.) from Norton Down, Wilts (VC8) on 13.vii.2005, new to the VC.

MCCORMICK, R.F. – Various species from Scotland and Devon collected in 2005. *Olethreutes schultzi* (F.) from near Braemar (VC 92) and near Dalwhinnie (VC96); *Crambus pratella* (L.) from near Braemar; *Eudonia alpina* (Curtis) from near Dalwhinnie; and *E. murana* (Curtis) from near Braemar, all in July 2005. *Aplota palpella* (Haw.) from Harcombe Wood near Chudleigh, Devon (VC3) (with R. Heckford); *Donacaula forficella* (Thunb.) from Kingsteignton (VC3) (B. King) and Branton Burrows (VC4) (S. Hatch); *Evergestis limbata* (L.) from Kingsteignton (B. King) and Teignmouth (VC3) as the second and third records from Devon; *Anania verbascalis* (D. & S.) from Lincombe, near Sidmouth, the first Devon record (I. Lakin); *Anerastia lotella* (Hübner) from Branton Burrows (R. Coomber); *Conobathra tumidana* (D. & S.) from Crownhill, Plymouth (R. Beswetherick) and Teignmouth, first records from Devon; and *Trachycera marmorea* (Haw.) from Branton Burrows (S. Hatch). All Devon records were from late June or July.

OWEN, J. – Five species recorded from Dymchurch, Kent (VC15) namely: *Dioryctria schuetzeella* Fuchs, *Plodia interpunctella* (Hübner), *Psammotis pulveralis* (Hübner), *Hypsopygia costalis* (F.) and *Bisigna procerella* (D. & S.).

PORTER, J. – Two species new to Surrey (VC17), *Digitivalva perlepidella* (Staint.) from Oxted on 3.vi.2005 and *Tebenna micalis* (Mann) from Hambledon on 22.vii.2005. The following scarce species in Surrey, *Nemophora cupriacella* (Hübner) from Brook on 22.vii.2005 (R. Palmer); *Phyllonorycter quinquegutella* (Staint.) from Horsell Birch collected as mines on *Salix repens*, *P. scabiosella* (Dougl.) from Addington, bred from *Scabiosa columbaria*, *Yponomeuta rorella* (Hübner) collected by A.R. Mitchell at Weybridge on 12.vii.2005, and *Pelochrista caecimaculana* (Hübner) from Westcott Downs on 2.vii.2005. *Coleophora therinella* (Tengstr.) new to Wiltshire (VC8) from Tilshead on 2.viii.2005 (g. det. R.M. Palmer and J.R. Langmaid). Finally some scarce species from Kent (VC15 and VC16), exhibited for the captor, D.C. Gardner: *Micropterix mansuetella* (Zell.) from Hoad's Wood on 6.v.2005, *Pseudatemelia flavifrontella* (D. & S.) from Rolvenden on 9.vi.2005, *Coleophora ochrea* (Haw.) from Gillingham on 21.vii.2005, and *Eucosma aemulana* (Schlag.) from Mereworth Woods on 2.viii.2005.

SHARPE, P. – *Euchromius cambridgei* (Zell.), new to Britain from Northampton on 17.viii.2005 (Plate 4, Fig. 14) and *Pammene agnotana* Rebel, taken at Collyweston on 30.iv.2005.

SIMS, I. – *Etainia louisella* (Sirc.) bred from larvae from Lower Earley, Reading (VC22), Dinton Pastures, Reading and Hainault Forest, Essex (VC18). Also bred specimens of *Stigmella minusculella* (H.-S.) and *S. aceris* (Frey) from southern England. *Nemophora cupriacella* (Hüb.) from near Dinton Pastures, the first recorded in Berkshire since 1900. *Nemapogon granella* (L.) reared from the bracket fungus *Ganoderma adpersum* (Schultz) growing on Bird Cherry (*Prunus padus*) near Marlow, Bucks (VC24), collected 18.iii.2005.

SMITH, E.G. & SMITH, M.H. – *Acrolepiopsis assectella* (Zell.) bred from cultivated leeks at Bullen Hill Farm in 2005, new to Wilts (VC8), *Dichrorampha sedatana* Busck, also new to VC8, from Trowbridge on 3.vi.2005, and *D. sequana* (Hüb.) also from Trowbridge on 20.vi.2005. Also leaves of aspen, *Populus tremula* with green islands caused by the presence of larvae of *Ectoedemia argyropeza* (Zell.).

STERLING, P.H. – *Chrysoclista lathamella* Fletcher from Eype's Mouth undercliff, Dorset (VC9), the first VC record since 1950s. *Dichelia histrionana* (Frolich) (Tortricidae) (Plate 4, Fig. 10) new to Britain collected on 8.vi.2003 by M. Ashby from Wood Green, Middlesex (VC21).

THIRLWELL, I.R. – *Caloptilia semifascia* (Haw.) from Portsmouth (VC11) on 23.viii.2005, now common at the site, following the recent planting of its foodplant. *Bactra lacteana* (Carad.), also from Portsmouth on 28.vii.2005, an unexpected site for this scarce species.

WINOKUR, L. – *Calamotropha paludella* (Hüb.) from Otmoor RSPB Reserve, Oxon (VC23) on 23.vii.2005.

YOUNG, M.R. – Species from above the tree-line in Scotland: *Ethmia pyrausta* (Pallas) from Glas Maol (VC90), *Olethreutes obsoletana* (Zett.) and *Catoptria furcatalis* (Zett.) from Aberdeenshire (VC92), *Eudonia alpina* (Curtis) from Strathspey (VC96), and *Udea uliginosalis* (Steph.) from Aberdeenshire.

FOREIGN LEPIDOPTERA

DOBSON, A.H. – A selection of moths from Paphos, Cyprus, 7–13.xi.2004: *Herpetogramma licarsisalis* Walk., common, *Euchromius* sp., *Microloxia herbaria* Hüb., *Larentia* sp., near *clavaria* (Haw.), at present unknown, *Utetheisa pulchella* (L.), *Agrotis spinifera* (Hüb.), *Xestia xanthographa* (D. & S.), *Spodoptera cilium* (Gn.), common, *Caradrina syriaca* (Stdgr), *Caradrina* unknown sp., and *Chrysodeixis chalcites* (Esp.).

HALL, N.M. – Moths from Spain and the Canary Islands. Spanish moths were collected with authorizations from the relevant Autonomous regions (Pais Vasco, Aragón, Cataluña, Castilla y León, Andalucía).

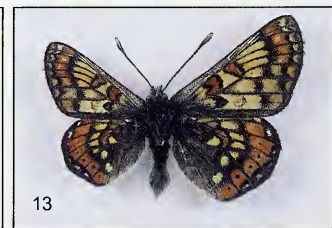
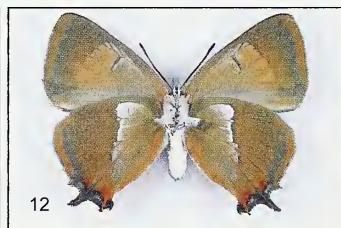
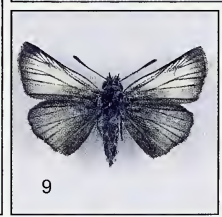
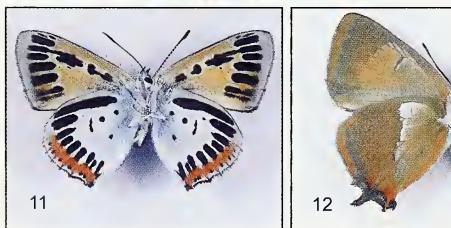
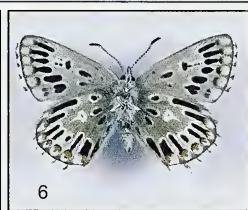
(A) Some microlepidoptera displayed adjacent to magnified images of the same specimens showing the wing markings more clearly: (i) *Agonopterix rutana* F., Dunas de Cabopino, Málaga, 3.vi.2005 (3), 5.vi.2005; (ii) *Blastesthia tessulatana* Stdgr, Dunas de Cabopino, Málaga, 9.vi.2005; (iii) *Ypsolopha* sp., Embalse de Guadalhorce, Málaga, 13.vi.2005; (iv) *Reisserita* sp. & (v) *Mesophleps* sp., both Dunas de Cabopino, Málaga, 10.vi.2005. (vi) *Ethmia lepidella* Chrét., El Pozo del Esparto, Almería, 14.x.2003. (vii) *Cydia strigulatana* Kennel, Pradales, Segovia, 29.v.2005

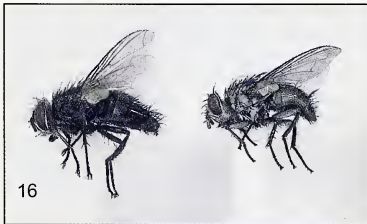
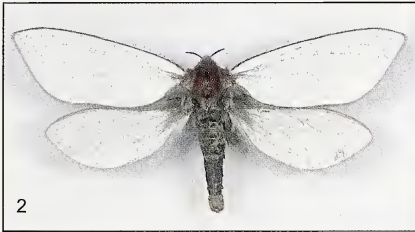
(B) Pyralidae: (i) *Diplopseustis perieresalis* (Walk.) (Spilomelini) (Plate 4, Fig. 13), El Torn, L'Hospitalet, Tarragona, 8.vi.2003. det. M.Shaffer. A dark form of this species was recorded in the British Isles in 2001 by Andy Mackay & Richard Fray [Tresco, Isles of Scilly, 19.x.2001, *Atropos* 16 (2002): 26, fig. 1 (set) & fig. 25 (live)]. Mackay & Fray, considering the importation of plants to the Abbey Gardens on Tresco, thought that it was probably an adventive species rather than an immigrant. The Spanish specimen was a pale form, found among natural vegetation, but near rubbish bins. N.B. '*perieresalis*' was incorrectly spelt in *Atropos*, though the correct spelling was used in Internet reports; (ii) *Hypotia delicatalis* Asselbergs 2004, Dunas de Cabopino, 14 km E of Marbella, Málaga, 4.vi.2005 (2), 5.vi.2005, 9.vi.2005. Sierra de la Creu, Vandellós, Tarragona, 3.viii.1999. This pyrale was well-known to the BMNH, but has only recently been described. This is the first year NMH has encountered fresh specimens, which are a beautiful pale green; (iii) *Psorosa malagensis* Hamps. (M/S), El Pozo del Esparto, Almería, 1.v.1999 & 23.v.2004 (3). This is another species known to the BMNH, which holds specimens from Malaga (ex Traugott-Olsen). The raised scales are quite distinctive. However, the description may only exist in manuscript form, so the name may be invalid. (iv) *Pyralis farinalis* L., Dunas de Cabopino, 14 km E of Marbella, Málaga, 3 & 4.vi.2005. Specimens, presumed to be *P. farinalis* from Cabopino had the wing-shape of *farinalis* and the hind-wing pattern of *lienigialis*. *Pyralis lienigialis* Zeller, Uffington, VC22, 11.vii.1986 (ex B. Goater) and *P. farinalis* L., Harcourt Drive, Reading, Berks, 26.vi.2005 were shown for comparison. (v) *Polychoa cremoricosta* Rag. Bco de las Agüillas, Las Negras, P.N. Cabo de Gata, Almería, 7.ix.2002., Cala Bordonares, Mojácar, Almería, 8.ix.2002. (vi) *Anerastia lotella* Hübn., Cala Bordonares, Mojácar, Almería, 8.ix.2002 (2). The identities of the '*cremoricosta*' and '*lotella*' need checking. There is a specimen labelled '*cremoricosta*' in the BMNH matching the specimen exhibited, but it is not in the Karsholt & Razowski checklist and may be a synonym. There is no specimen in the BMNH main collection matching the '*lotella*' from Almería. (vi) *Cataonia erubescens* Christ. Bco de las Agüillas, Las Negras, P.N. Cabo de Gata, Almería, 27.v.2004, Cala Medio Luna, P.N. Cabo de Gata, Almería, 6.ix.2002 (3), Cerro Colorado, San José, Almería, 1.vi.2000, Jandia, Fuerteventura, 26.xi.–9.xii.1996, Sol Jandia Mar Apartments, Jandia, Fuerteventura, 8.xii.2002, 11.xii.2002, 15.xii.2002. *Cataonia erubescens* is an odontiine described from Krasnowodsk. The BMNH does not have any Russian specimens labelled '*erubescens*', but it does have '*monocerialis* Rag.', which is a synonym according to Karsholt & Razowski. Christoph's description includes the pointed projection on the forehead. The specimens from Almería and the Canary Islands look different, so more work will be needed to see if there is a species complex. (vii) *Mecyna auralis*

PLATE 3. BENHS Annual Exhibition, Imperial College, 12 November 2005

1: *Apatura iris*, aberration, bred vii.2005, L. Winokur. 2: *Argynnis paphia*, ab. *nigricans*, Surrey, 20.vii.2005, A. Jones. 3: *Gonepteryx rhamni*, gynandromorph, Lullington Heath, Sussex, 28.viii.2005, D. Burrows. 4: *Vanessa cardui*, melanic, temperature experiment, K. Bailey. 5: *Polyommatus bellargus*, intersex, Wilts., 2.vi.2004, M. Callow. 6: *Polyommatus bellargus*, ab. *striata*, temperature experiment, R. Revels. 7: *Polyommatus coridon*, somatic mosaic, Chilterns, viii.2002, B. Fensome. 8: *Satyrrium pruni*, ab. *albobsoleta*, temperature experiment, A. Butler. 9: *Thymelicus sylvestris*, aberration, Northants., vii.2005, P. Tebbutt. 10: *Polyommatus coridon*, ab. *alba*, Dorset, viii.2005, S. Rook. 11: *Lycaena dispar batavus*, aberration, bred 2005, R. Revels. 12: *Thecla betulae*, ab. *unistrigata*, temperature experiment, P. Tebbutt. 13: *Euphydryas aurinea*, gynandromorph, K. Bailey.

Photographs by R.A. Jones. All illustrations are life size.





H. de Peyerimhoff, Puerto de la Mora, Granada, 12.vii.1991 & 4.vii.1994 (3). (viii) *Mecyna flavalis* D.Mecyna sp. Puente Ventilla, Ronda, Málaga, 16.ix.2004 (2), 2.vi.2005, 8.vi.2005. There are difficulties distinguishing the Spanish *Mecyna* species. The *Mecyna* sp from Málaga (Ronda) need further examination. (ix) *Pempelia geminella* Eversm., Serrania de Ronda, N of Alpandeire, Málaga, 6.vi.2005, 12.vi.2005. (x) *Eudonia* sp., Corralejo Gardens Apartments, Fuerteventura, 9.xii.2001, Los Carmenes Apts, Costa Teguse, Lanzarote, 1.xii.2003, 4.xii.2003, Oliva Beach Apts, Corralejo, Fuerteventura, 5–18.ii.1997, 11–31.iii.1998, 29.xi.2000, 8.xii.2000. [These were thought at the time of the exhibition to be *E. parviangusta* Nuss, Karsholt & Meyer, but since the exhibition, ‘Microlepidoptera of Europe’ Volume 5 (Apollo Books), including Scopariinae by Matthias Nuss, has been published. According to Nuss, *E. parviangusta* occurs on Gran Canaria, but not on Lanzarote or Fuerteventura, and flies in October. They may have been *E. lineola dorada* Nuss, Karsholt & Meyer, which is small with narrow forewings, occurs in Fuerteventura and Lanzarote, and flies from December to May. (xi) *Mnesixena sp.*, Vista Dunas, Maspalomas, Gran Canaria, 11.iii.2001. For comparison *Mnesixena pectinalis* H.-S., Oliva Beach Apts, Corralejo, Fuerteventura, 28.iv.2002. The *Mnesixena sp.* (Hypotiini) is unknown to the BMNH (M. Shaffer). *M. pectinalis* is the only member of the genus known to occur on the Canary Isles.

(C) Macrolepidoptera: (i) *Agrotis cinerea* D. & S., Prádena, Segovia, 30.v.2005 (5). All five were similar and unlike British *cinerea*. (ii) *Hadula gredosi* Laever, Embalse de las Cogotas, Avila, 7.vi.2004, 13.ix.2004 (2). La Portina, Talavera, Toledo, 8.v.1996. The wing pattern is more like *Cardepija sociabilis* Grasl. than *Hadula trifolii* Hufn. (iii) *Mythimna languida* Walk., Bco de las Agüillas, Las Negras, P.N. Cabo de Gata, Almería, 27.v.2004. This species is a recent arrival in Spain. NMH first became aware of it in ix.2005 at Cabopino in Málaga, but had unknowingly taken this species in v.2005 in Almería. (iv) *Agrochola lychnidis* D. & S., 6 km N Fuentes de Ropel, (Dehesa de Rubiales), Benavente, Zamora, 23.x.2003 (6). (v) *Conistra rubiginea* D. & S., Raissac sur Lampy, Aude, France, 2.x.2003. (vi) *Conistra staudingeri* Grasl., bred specimens, emerging 5–28.xi.2005. ex female (18.v.2004), Parque Provincial Garaio, Alava. *C. rubiginea* and *C. staudingeri* are closely related

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1. *Hyphoraia testudinaria* (life size), Chichester, W. Sussex, 30.v.2005, Sarah Patton. 2. *Hepialus humuli* (life size), Slough, Berks., 1.vi.2005, R. Hayward. 3. *Anticlea derivata*, Ashwell, Herts., iv.2005, coll. V. Judd, exhib. C.W. Plant. 4. *Epirrhoe alternata alternata*, Tavistock, Devon, 16.viii.2005, R.F. McCormick. 5. *Lampropteryx otregiata*, Lyme Regis, Dorset, 15.viii.2005, R.F. McCormick. 6. *Ecliptopera silaceata*, Teignmouth, Devon, 26.v.2005, R.F. McCormick. 7. *Lomographa temerata*, West Bexington, Dorset, 20.ix.2005, P.H. Sterling. 8. *Stenoptilia annadactyla*, Breck District, Norfolk, C. Hart. 9. *Lophoptera longipennis* (life size), Hong Kong New Territories, 13.iv.2001, M. Sterling. 10. *Dichelia histriana* (2 × life size), Wood Green, Middx, 8.vi.2003, coll. M. Ashby, exhib. P.H. Sterling. 11. *Sciota rhenella*, Greatstone, Kent, 20.vi.2005, S. Clancy. 12. *Xanthorhoe montanata*, Cliffs of Magho, Co. Fermanagh, 20.vi.2004, R.J. Heckford. 13. *Diploseustis perieresalis*, El Torn, L'Hospitalet, Tarragona, Spain, 8.vi.2003, N.M. Hall. 14. *Euchromius cambridgei* (2 × life size), Northampton, 17.viii.2005, P. Sharpe. 15. *Xanthorhoe fluctuata*, Tile Hill, Warwickshire, 10.vii.2005 (upper) and Tile Hill, Warwickshire, 10.ix.2005 (lower), A. Kolaj. 16: *Townsendiomyia nidicola* (2 × life size), male (left), Durlston Country Park, Dorset, 3.viii.2005 and female (right), Cheyne Weare, Dorset, 1.viii.2005, I. Perry. 17: *Tephritis divisa* (3 × life size), Bognor Regis, W. Sussex, 13.viii.2005, P.J. Hodge. 18: *Frontina laeta* (2 × life size), Stoborough, Dorset, 3.viii.2005, I. Perry. 19: *Myopa occulta* (3 × life size), RHS Garden, Wisley, Surrey, 16.viii.2005, A.J. Halstead.

Photographs by R.A. Jones. All illustrations are 1.5 times life size unless otherwise stated.

and have similar larvae with long hairs. (vii) *Cryphia erepriculata* Treit. or ?*Cryphia ravula* Hb. ssp. *erepriculoides* Bours., Bco de las Agüillas, Las Negras, P.N. Cabo de Gata, Almería, 2.vi.2000, Dunas de Cabopino, 14 km E of Marbella, Málaga, 3.vi.2005.

(D) Species seen in the Serranía de Ronda. The Serranía de Ronda has some good natural karst areas adjacent to disturbed land (old cultivation terraces). One surprise was that a trap set on the karst, which is treeless, though it has stunted shrubs, produced three species of catocalids, whereas the disturbed land with bushes produced none. (Traps were run close together on the same night). (i) *Catocala sponsa* L., Serranía de Ronda, N of Alpandeire, Málaga, 12.vi.2005. (ii) *Catocala nymphagoga* Esp., Puente Ventilla, Ronda, Málaga, 8.vi.2005. (iii) *Catocala conversa* Esp., Serranía de Ronda, N of Alpandeire, Málaga, 12.vi.2005. (iv) *Calophasia hamifera* Stdgr, Cala Bordonares, Mojácar, Almería, 22.v.2004., Serranía de Ronda, N of Alpandeire, Málaga, 12.vi.2005. (v) *Macaria artesiaría* D.&S., Serranía de Ronda, N of Alpandeire, Málaga, 6.vi.2005, St Gilles, Vendée, France, 13.vi.1984. Two very different forms. (vi) *Hecatera cappa* Hb., Serranía de Ronda, N of Alpandeire, Málaga, 6.vi.2005.

(E) Bred from Spain. *Idaea manicaria* H.-S., Puente Ventilla, Ronda, Málaga, 2 & 3.vi.2004. specimens emerging 4–21.vi.2005 ex females (16.ix.2004) and wild-caught spring generation females.

(F) Bred by accident (serendipity) from Spain. (i) *Leptotes pirithous* L., em. 28.x.2004. (ii) *Eublemma cochylionides* Guen., em. 16.ii.2005. (iii) *Eublemma parva* Hb., em. 12.xi.2004. Raising larvae in the UK, NMH sometimes finds that he has introduced other larvae unintentionally with the foodplant and ends up with adults of, for example, *Gymnoscelis ruffasciata* Haw., *Epiphyas postvittana* Walk. or *Cacoecimorpha pronubana* Hübn., which are not very exciting. The specimens displayed were obtained while raising *Idaea* larvae from Spain. These are far more exciting, but since new foodplant was added every few days in Spain when moving from site to site there was no way of knowing exactly where they came from (though in each case it was almost certainly somewhere in the Málaga province of Spain). With the *Leptotes* NMH was of course soon aware that he had introduced another species because lyaenid larvae are distinctive. He was therefore able to isolate it and breed it through, being curious to find out what it was. But with each *Eublemma* he was unaware that he was breeding anything other than *Idaea*, and their emergence was a surprise. If they need special conditions and food they had been provided purely by accident.

(G) Bred from the Canary Islands: (i) *Cornutiplusia circumflexa* L., emerging 27–29.v.2005, ex female (12.iv.2005) Rio Club II Apts., Maspalomas, Gran Canaria. (ii) *Spodoptera littoralis* Boisd., emerging 11.v.2005, ex larva (on *Ricinus* 16.iv.2005), Maspalomas, Gran Canaria.

HARMER, A.S.—(A) A selection of butterflies collected in the Medelpad, Ångermanland, Norrbotten, Lule Lappmark and Torne Lappmark regions of Sweden, and the Troms region of Norway in vi & vii.2004. *Artogeia napi adalwinda* Fruhst, Green-veined White; *A. napi bicolorata* Bj. Pet. Green-veined White; *Colias nastes werdandi* (Zett.), Pale Arctic Clouded Yellow; *C. palaeno lapponica* Stdgr, Moorland Clouded Yellow; *C. hecla sulitelma* (Aurivillius), Northern Clouded Yellow; *Leptidea sinapis* (L.), Wood White; *Lycaena phlaeas polaris* Courv., Small Copper; *Heodes virgaureae* (L.), Scarce Copper; *Vacciniina optilete cyparissus*, Cranberry Blue; *Plebejus idas* (L.), Idas Blue; *P. idas lapponica* Gerh.; *Eumedonia eumedon borealis* Wahlgren, Geranium Argus; *Cyaniris semiargus* (Rott.), Mazarine Blue; *Agrodiaetus amanda* (Schneider), Amanda's Blue; *A. amanda* f. *isia*

Fruhstorfer; *Polyommatus icarus septentrionalis* Fuchs, Common Blue; *Limenitis populi* (L.), Poplar Admiral; *Aglais urticae polaris* (Stdgr), Small Tortoiseshell; *Boloria ino sigurd* Higgins, Lesser Marbled Fritillary; *Procllossiana eunomia ossianus*, Bog Fritillary; *P. eunomia montana* Bj. Pet.; *Boloria aquilonaris scandinavica* Bj. Pet., Cranberry Fritillary; *Clossiana euphrosyne lapponica* Esp., Pearl-bordered Fritillary; *C. selene hela* Stdgr, Small Pearl-bordered Fritillary; *C. chariclea* (Schneider), Arctic Fritillary; *C. freija* (Thunb.), Freija's Fritillary; *C. frigga* (Thunb.), Frigga's Fritillary; *Mellicta athalia* (Rott.), Heath Fritillary; *Oennis bore* (Schneider), Arctic Grayling; *O. jutta* (Hübner.), Baltic Grayling; *Erebia ligea* (L.), Arran Brown; *E. embla* (Thunb.), Lapland Ringlet; *E. pandrose* (Borkh.), Dewy Ringlet; *Aphantopus hyperantus* (L.), Ringlet; *Pyrgus andromedae* (Wall.), Alpine Grizzled Skipper; *P. centaureae* (Ramb.), Northern Grizzled Skipper.

(B) A bred series of Swedish Green-veined Whites *Artogeia napi* ssp. *adalwinda* Fruhst. from Abisko, Torne Lappmark, and *A. napi bicolorata* Bj. Pet. from Puoltikasvaara, Lule Lappmark. These two subspecies are comparable to *A. napi bryoniae* Hübn. from the Alps. Despite being reared on the South Coast of England, the F₁ and F₂ generations have remained univoltine, with the exception of two males which emerged on 2.x.2005 (*bicolorata*) and 7.xi.2005 (*adalwinda*).

PLANT, C.W.—Some Lepidoptera from Hungary and Slovakia, viii. 2004 and v.2005.

From 10–20.viii.2004, Colin Plant, Marcel Ashby and Les Hill collected Lepidoptera on sites in Slovakia and Hungary. They visited seven sites and recorded 526 moth species (macros and pyralids). Six of the sites were visited again from 23–30.v.2005 by Colin Plant, Rachel Terry and Duncan Fraser. Though the list from the 2005 visit is not complete, they know they have added at least another hundred species. Permits were arranged for the restricted sites with the help of Szabóky Csaba in Hungary and Frantisek Slamka in Slovakia. Some of the species captured in 2004 were exhibited last year, so only a small selection of additional species was shown this time. The sites and dates were (A) In Slovakia. Site 1: Mikulášov (Malacky District, Bratislavský Kraj County). A sandy forest ride. *Pinus* plantation with deciduous trees along rides, military training area, 48.33.37°N: 17.13.14°E. Site 2: Luká (Piešťany, Trnavský Kraj). Mixed conifer and broad-leaved deciduous woodland with derelict dolomite quarry, calcareous grassland and ruderal areas, 48.39.24°N: 17.53.47°E. Site 3: Valley above Rajecka Lesná, (Žilina, Žilinský Kraj). Grassy ski slope amongst mixed woodland on the northern slope of Grúň (mountain) at 650m, 49.01.08 N: 18.41.37 E. Site 4: Priesmyk Branisko, near Pol'anovce (Levoča, Prešovský Kraj). Mixed deciduous and conifer woodland along a barely used track to the summit of Priesmyk Branisko, between S-bends of Road 18 at 692 m, 49.00.51°N: 20.51.05°E. (B) In Hungary. Site 5: Senyö Valley, Zempleni hegység (Borsod). At edge of mature *Fagus* woodland, with *Quercus petraea*, *Pinus*, and other species at 450 m, 48.27.00°N: 21.24.18°E. Site 6: Sirok (Heves). *Quercus petraea*-dominated deciduous woodland around a marshy area with *Salix* and *Sphagnum*. 47.55.44°N: 20.11.12°E. Site 7: Sár hegy, near Gyöngyös (Heves). A dry, steeply sloping volcanic hillside with xerophilic vegetation at 510 m, 47.47.43°N: 19.35.22°E. This 'phenomenal' site produced an estimated ten thousand macro moths to three lights (a vertical sheet and two Skinner-pattern traps) on the night of 30.v.2005, just as the party was racing around trying to pack up at 2.30am ahead of a 'serious' thunderstorm. Geometridae: (i) *Thetidea smaragdaria smaragdaria* (F.), Site 6, a non-British subspecies. (ii) *Cyclophora porata* (L.), Site 7, 20.viii.2004. (iii) *Cyclophora albiocellaria* (Hübner.), Site 7, 20.viii.2004. (iv) *Idaea elongaria* (Rarab.) ssp. *pecharia* Stdgr, an endemic subspecies, Site 7, 20.viii.2004. (v) *Scotopteryx*

bipunctaria ssp. *bipunctaria* D. & S., Site 2, 11.viii.2004. A non-British subspecies. (vi) *Xanthorhoe biriviata* (Borkh.), Site 1, 10.viii.2004. (vii) *Eustroma reticulatum* (D. & S.), Site 5, 18.viii.2004. (viii) *Melanthia procellata* (D. & S.), Site 2, 11.viii.2004. (ix) *Pareulype berberata* (D. & S.), Site 2, 11.viii.2004. Very common. (x) *Tephрина arenacearia* (D. & S.), Site 4, 15.viii.2004. (xi) *Ascotis selenaria* (D. & S.), Site 6, 19.viii.2004. (xii) *Pungeleria capreolaria* (D. & S.), Site 4, 15.viii.2004. (xiii) *Epione respertaria* (L.), Site 2, 12.viii.2004. (xiv) *Macaria wauaria* (L.), Site 3, 13.viii.2004. Crambidae: (xv) *Euchromius bella* (Hübner), Site 7, 20.viii.2004. (xvi) *Crambus ericella* (Hübner), Site 1, 23.v.2005. (xvii) *Pediasia fascelinella* (Hübner), Site 1. (xviii) *Platytes alpinella* (Hübner), Site 1. Pyralidae: (xix) *Mecyna trinalis* (D. & S.), Site 2. (xx) *Diasemia reticularis* (L.), Site 6. (xxi) *Actenia brunnealis* (Tr.), Site 2, 11.viii.2004. (xxii) *Herculia rubidalis* (D. & S.), Site 6, 19.viii.2004. (xxiii) *Eurhodope rosella* (Scop.), Site 2, 11.viii.2004. Phycitidae: (xxiv) *Anerastia lotella* (Hübner), Site 1, 10.viii.2004. Noctuidae: (xxv) *Cucullia xeranthemi* Boisdu., Site 7, 30.v.2005. (xxvi) *Cucullia luciptaga* (D. & S.) Site 4, 15.viii.2004. (xxvii) *Cucullia lactucae* (D. & S.), Site 4, 15.viii.2004. (xxviii) *Cucullia campanulae* Freyer, Site 2, 26.v.2005. (xxix) *Cucullia umbratica* (L.), Site 7, 30.v.2005. (xxx) *Cucullia tanacetii* (D. & S.), Site 7, 30.v.2005. (xxxi) *Cucullia dracunculi* (Hübner), Site 7, 20.viii.2004. (xxxii) *Calliergus ramosa* (Esp.), Site 4, 28.v.2005. (xxxiii) *Acroniecta cuspis* (Hb.), Site 1, 23.v.2005. (xxxiv) *Pyrrhia purpurina* (Esp.), Site 7, 30.v.2005.

SIMPSON, M.—European Butterflies. A small collection of butterflies from Iran, Turkey, Lebanon, Sweden and Austria. Mostly taken by Lionel Higgins, coming from the collection of the late Sir John Dacie. These were presented to the Simpson Collection of Entomological Memorabilia by Lady Dacie in 2005.

STERLING, M.J.—Lepidoptera of Hong Kong, taken or determined in 2005. (1) Noctuidae: *Antirissuloides catocalina* (Moore), one of five Hong Kong records, listed from China and Indonesia; *Erebus caprimulgus* (F.) (Catocalinae), one of only two Hong Kong records. A variable species which is also recorded from India, Burma, Malaysia and Taiwan; *Stenhyphena costalis* Wileman & South (Herminiinae), the only Hong Kong record MJS can find for this species. Also recorded from Taiwan; *Oraesia argyrosigna* Moore (Calpinae), only four Hong Kong specimens, all from a single locality. Also known from Sri Lanka, mainland China and New Caledonia; *Lophoptera longipennis* (Moore) (Stictopterinae) (Plate 4, Fig. 9). Maybe the only record for Hong Kong. The stictopterines are generally taken to be good primary woodland indicators. Much of Hong Kong's woodland was felled during the Japanese occupation and the stictopterines are poorly represented; *Mythimna taiwana* (Wileman) (Hadeninae). Also recorded from Taiwan. This species was shown at last year's exhibition as *Mythimna* sp. nr. *decisissima*; *Leucania substriata* Yoshimatsu (Hadeninae), recorded recently from Taiwan. This specimen was also shown last year as a tentative *Mythimna polysticha* Turner, with the strong caveat that *polysticha* is an Australian species and the record was somewhat unlikely; *Nonagria (?) grisescens* (Hadeninae). The scarcer of the two species of *Nonagria* that occur in Hong Kong. The determination of the Chinese *Nonagria* is problematic; *Tiracola aureata* Holloway and *T. plagiata* Walk. (Hadeninae). There is great confusion between these two. *Tiracola aureata*, the common species in Hong Kong, is larger and more well marked than *T. plagiata*. MJS's record of *plagiata* may be the first for Hong Kong. (2) Geometridae: *Eupithecia melanolopha* Swinhoe, also known from Taiwan and Indonesia. Four other records have been found for Hong Kong. Pugs are fairly diverse in Hong Kong though the genus *Eupithecia* is poorly represented.; *Achrosis rosearia* (Leech) (Geometrinae), known from only one locality in Hong Kong where about six specimens have been seen. Also recorded from

mainland China; (3) Notodontidae: *Allata costalis* Moore, a common species in Hong Kong but almost invariably worn. This was the first specimen MJS has taken in good condition; (4) Sphingidae: *Macroglossum mediovitata* Roths. & Jordan. There are 17 species of *Macroglossum* recorded from Hong Kong of which this is one of the largest and most spectacular. There are about five other records; (5) Saturniidae: *Actias heterogyna* Mell., the South China Moon Moth, known only from South China; (6) Limacodidae: *Narosa ochracea* Hering, a common species in Hong Kong but only identified as a Hong Kong species this year. Also recorded from China, Himalaya, South East Asia, Peninsular Malaysia and (?) Sumatra; (7) Tortricidae (Eucosminae): *Megaherpystis melanoneura* Meyrick, known from China, South Korea, Japan and India. The semi-hyaline hindwings of this species are unmistakable; (8) Xyloryctidae: *Metathrinca* sp. nr. *iridostoma* Diakonoff. The species exhibited was very close to *iridostoma*, which is described from and may be endemic to the Philippines, but its palps were a different colour. (9) Lyonetidae: *Proleucoptera* sp. nr. *smilactis* Kuroko. Both the exhibited species and *smilactis* feed on *Smilax china*. *P. smilactis* is described from Japan. The Hong Kong species has an apical hook in the forewing whereas the Japan species does not and is therefore a different species; (10) Gracillariidae: *Acrocercops* sp. nr. *labyrinthica* Meyrick. The larva of the exhibited species and *labyrinthica* both mine *Trema orientalis*. The life history of the latter was described by Kuroko in 1964. The frass in the mine of the Hong Kong species forms a broad blackish blotch whereas in the mines figured by Kuroko the frass is collected in two neat lines.

TERRY, R. – A very interesting selection of unidentified European moths.

They were from the UK (an unidentified epermeniid from Greenford, Middlesex, taken by D. Howdon), Hungary & Slovakia (accompanying C. W. Plant in 2005 q.v. above), France (Tarn & Landes) and Spain (Picos de Europa). (Hopefully those identified will be re-exhibited in 2006. Ed.)

WARING, P. – *Catocala atocala* Brou. At the BENHS annual exhibition in 2004 PW exhibited a selection of North American *Catocala* species seen on an expedition to Kentucky in vii & viii.2004, but some the species had yet to be finally identified. One of these proved to be *Catocala atocala* Brou. The specimen was collected in Hickman County on 4.viii.2004, when PW and members of the Society of Kentucky Lepidopterists (SKL) set up traps in light woodland along the bluff tops of the Mississippi river. This had evidently been logged for timber and firewood, probably many times, and the undergrowth was dense. The precipitous soft-rock cliffs that led down to the floodplain area of the river had much semi-natural vegetation. *Catocala atocala* was at first thought to be new to Kentucky, but a member of the SKL, Leroy Koehn, had unknowingly collected a specimen in Paducah, McCracken County on 8.ix.2001, which is now confirmed as the first Kentucky record. *C. atocala* has distinctive whitish areas in the central part of the forewing by the trailing edge, but was not illustrated in 'Field Guide to the Moths of Eastern North America' (Covell, 1984) nor in 'Legion of the Night – The Underwing Moths', Sargent (1976), and was determined initially from Internet sources. It would appear that an overlooked resident population has been discovered, whilst it might have been considered a vagrant on the basis of LK's singleton.

DIPTERA

BLAND, K.P. – *Cornutrypeta spinifrons* (Schroeder) (Tephritidae), new to Scotland. Occupied leaf mines were collected on 8.ix.2004 and the fly emerged on 25.iv.2005; hitherto only scattered records in southern England.

BOWDREY, J. – (1) *Triglyphus primus* Loew (Syrphidae), reared from a gall of the aphid *Cryptosiphum artemisiae* Buckton on *Artemisia vulgaris*, found by J. Firmin, 14.vi.2005 at Gosbecks Archaeological Park (TL9622), Colchester, N. Essex, VC 19. The larvae left the gall, pupating in the sides of the container and the first adult emerged on 30.vi.2005.

(2) *Leopoldius signatus* (Wied.) (Conopidae), Colchester, N. Essex, VC19, 5.x.2005, male taken at ivy *Hedera helix* flowers in old garden in the company of *Vespula vulgaris*, its presumed host.

DICKSON, R.J. – Some Diptera found in S. Hants (VC11) in 2005: *Tanyptera nigricornis* (Mg.) (Tipulidae), in Malaise trap, Botley Wood (SU5510), 1 female, 3–4.vi and 1 female 25.v; *Thereva fulva* (Mg.) (Therevidae), 24 males, Portchester Common SSSI (SU6206), 24.vi; *Leopoldius signatus* (Wied.), at ivy *Hedera helix* blossom, Warnash shore (SU4905), 29.v; *Xyphosia miliaria* (Schrank) (Tephritidae), one female at mv light, Titchfield Haven NNR (SU5302), 26.viii; *Lipoptena cervi* (L.) (Hippoboscidae), at mv light in Botley Wood (SU5510), 23.ix and at Wickham Common (SU5810), 14.x; *Musca autumnalis* De Geer (Muscidae), at mv light, The Moors, Bishop's Waltham (SU5516), 9.ix; *Tachina grossa* L. (Tachinidae), Malaise trap in Botley Wood (SU5410), 29–30.vi.

HALSTEAD, A.J. – Some local Diptera recorded in 2005: *Limonia nigropunctata* (Schumm.) (Limoniidae), Nower Wood SSSI (TQ195548), Surrey, one female, 8.v; *Rhagio tringarius* (L.) (Rhagionidae), allotments at Brookwood, Surrey, female on runner bean leaf, 26.vi, with the abdominal spots missing; *Vanoyia tenuicornis* (Macq.) (Stratiomyidae), Castor Hanglands (TF119016), Cambs, female, 4.vi; *Dolichopus brevipennis* Mg. (Dolichopodidae), the Gauldrons, Machrihanish (NR628206), Kintyre, Argyllshire, male, 20.vi; *Eristalis rupium* F. (Syrphidae), Scar Close NNR (SD749775), near Ingleborough, N.W. Yorks, female, 27.vii; *Myopa occulta* Wied. (Conopidae) (Plate 4, Fig. 19), RHS Garden (TQ064583), Wisley, Surrey, 16.viii, female on *Eryngium planum* flowers; *Goniglossum wiedemanni* (Mg.) (Tephritidae), Barnack Hills & Holes NNR (TF075047), Cambs, female, 4.vi; *Tephritis matricariae* (Loew) (Tephritidae), Horsell Common (SU986599), 24.iv and Betchworth Lime Works (TQ206514), Surrey, 7.v; *Ceratinostoma ostiorum* (Hal.) (Scathophagidae), Westport Dunes (NR655261), Kintyre, Argyllshire, 17.vi; *Cylindromyia interrupta* (Mg.) (Tachinidae), Horsell Birch (SU988597), near Woking, Surrey, female, 25.vi; *Phasia barbifrons* (Girschner) (Tachinidae), RHS Garden (TQ064583), Wisley, Surrey, 12.viii, both sexes on *Eryngium planum* flowers.

HODGE, P.J. – Two species of Tephritidae found in Sussex during 2005, one of them new to the British Isles list: *Campiglossa malaris* Séguy, Kidbrook Meadow, Forest Row, E. Sussex, TQ410339, several swept off hoary ragwort *Senecio erucifolius*, 26.vii, until recently recorded in the British Isles only from E. Kent; *Tephritis divisa* Rondani (Plate 4, Fig. 17), a south European species not previously recorded from the British Isles, from the Brooks, North Bersted, near Bognor Regis, W. Sussex, SZ987013; Railway Land LNR, Lewes, E. Sussex, TQ421099, 13.ix and TQ420100, 20.ix; Pannel Valley Nature Reserve, Icklesham, E. Sussex, TQ888155, 10.x, all swept off flowering plants of bristly ox-tongue *Picris echioides*.

ISMAY, J.W. & SCHULTEN, B. – Uncommon or interesting Diptera recorded in recent years, including many from Salisbury Plain Training Area, Wilts (VC8), given below as 'Salisbury Plain (grid reference) only: *Lonchoptera scutellata* Stein (Lonchopteridae), Jones's Mill, Wilts, 31.v.2004 and Stanwell, Surrey, 30.viii.2002, associated with sedges at water margins, in fens and in damp woods more often found by suction sampling; *Cistogaster globosa* (F.) (Tachinidae), recorded from several sites in Wilts and seven specimens in Malaise trap at Isleworth, Middx, VC21,

TQ17, 13–22.vi.2005—a common factor was dry conditions (chalk grassland, dry grassland, Brownfield sites) and its European host *Aelia acuminata* was found with it at one site; *Stenomicroa delicata* (Collin) (Stenomicroidae), Jones's Mill, 31.v.2004, five specimens, also found by the exhibitors in Oxon and Notts, most frequently by suction sampling large *Carex* tussocks in fenland; *Symphoromyia immaculata* Meigen (Rhagionidae), from an area of tall chalk grassland, Salisbury Plain (ST94), 29.vi.2003, four specimens in soft sweep, a fly of chalk and magnesian limestone grassland; *Terellia vectensis* (Collin) (Tephritidae), recorded from several sites on Salisbury Plain (ST94), 29.vi.2003, its larvae attacking the capitulum of *Serratula tinctoria*; *Urophora spoliata* (Haliday) (Tephritidae), as previous species, 23.vi.2003, three specimens, soft sweep, J.W. Ismay and 3.vii.2003, one specimen, hard sweep, B. Schulten, larvae also develop in seedheads of *Serratula tinctoria*; *Chaetorellia loricata* (Rondani) (Tephritidae), several sites on Salisbury Plain (ST95), 30.v.2003, larvae in capitulum of *Centaurea scabiosa*; *Tephritis matricariae* (Loew) (Tephritidae), a recent addition to the British list from Kent and south Essex, from two sites in Kent (VC16), Dartford, 2.viii.2004, one specimen swept and Dartford Marsh, 13.viii.2005, 2 specimens leg. M. Townsend, reared in Britain from *Crepis vesicaria* and *Crepis capillaris*; *Ulidia erythrophthalma* Meig. (Uliidiidae), recently found at only two sites in Britain, from Cambs and the specimens exhibited from Salisbury Plain (ST95), 4.vii.2003, leg. B. Woodcock and B. Schulten; *Philygria semialata* (Collin) (Ephydriidae), a short-winged species widespread on Salisbury Plain (ST94 and SU04), 6.–9.ix.2003, leg. B. Woodcock and has also been found in dry habitats in East Anglia; *Eribolus gracilior* (de Meijere) (Chloropidae), usually recorded from wetlands dominated by *Carex*, apparently a new county record from Smallbrook Meadows, Wilts, 1.vi.2004, four specimens swept; *Incertella scotica* (Collin) (Chloropidae), originally described from Scotland, this species has now been found at several sites in England, but this appears to be a new county record from Smallbrook Meadows, Wilts, 1.vi.2004, five specimens swept; *Stilpon nubilus* Collin (Hybotidae), Salisbury Plain (ST95), 4.vii.2003, two specimens leg. B. Woodcock, a tiny, short-winged fly widespread on Salisbury Plain, taken by Vortis or suction sampling from very short chalk grassland at many sites; *Neria ephippium* (F.) (Micropezidae), a very local species found in damp meadows in England, one specimen swept from *Deschampsia* at Wanister Bog (NZ2549), Waldridge Fell, Durham, 7.vii.2005; *Bombylius minor* L. (Bombyliidae), one specimen hovering 3 m above a patch of bare sand at Bovington TA, Dorset, 24.vii.2004, a parasitoid of the solitary bee, *Colletes succinctus* and a declining species with almost all recent records from the Dorset Heaths; *Freraea gagatea* R.-D. (Tachinidae), one specimen, Isleworth, Middx (VC21), TQ17, 13–2.vi.2005, Malaise, known from about 10 sites, apparently a new county record; *Litophasia hyalipennis* (Fall.) (Tachinidae), one specimen, pan trap in *Phragmites*, same data as previous species, recently found on a small number of sites in southern England, a typical 'brownfield site' species of early successional stages; *Tachina grossa* (L.) (Tachinidae), two specimens from heathland, Wareham, Dorset, 25.vii.2004, swept off *Eupatorium cannabinum*, leg. M. Townsend and B. Schulten; *Psilopa marginella* Fall. (Ephydriidae), 5 specimens, Bovington TA, Dorset, 24.vii.2004, by suction sampling in *Molinia caerulea* tussocks, a new county record for a short-winged fly with few records from southern England; *Chlorops gracilis* Meigen (Chloropidae), swept from *Calamagrostis epigejos* in Beds, a new county record, a widespread but local species on heavy soils in damp woods, fens and ditches; *Camilla atrimana* Strobl (Camillidae), Isleworth, Middx (VC21, TQ17), 28.vii.–3.viii.2005, associated with rabbit dung with very few records known to the exhibitors; *Opomyza lineatopunctata* von Roser (Opomyzidae), found in numbers on

Molinia caerulea at Wareham Forest, Dorset, 25.vii.2005, also recorded from the same plant at other sites in England.

MERRIFIELD, R.K. & MERRIFIELD, R.M. – Diptera from 2005 Field Meetings and Ruislip Woods: *Tipula pierrei* Tonnoir (Tipulidae), Ruislip Woods, Ruislip Lido (TQ087892), 26.viii.2003; *Ogcodes gibbosus* (L.) (Acroceridae), Aston Rowant NNR, Beacon Hill, Oxon (SU7297), 11.vi.2005, with photograph of the specimen in a glass tube; *Choerades marginatus* (L.) (Asilidae), Ruislip Woods NNR, Park Wood, Middx. (TQ088887), 28.vi.2005, also a photograph of a mating pair; *Chlorops gracilis* Mg. (Chloropidae), Castor Hanglands, Peterborough (TF1101), 4.vi.2005, with photograph taken in the field.

PARKER, M.J. – Some rare and local Diptera taken in 2005 from Dorset (VC9), Durham (VC66) and Kintyre (VC101): *Oxycera morrisii* Curtis (Stratiomyidae), Dene Mouth (NZ454411), Durham, female swept from coastal seepage, 5.vii; *O. pygmaea* (Fall.), two males from same locality and date as previous species; *Stratiomys potamida* Mg. (Stratiomyidae), disused East Hetton Colliery (NZ346367), female swept from streamside vegetation, 8.vii; *Choerades marginatus* (L.) (Asilidae), Cranbourne Chase (ST9718), female basking on pine *Pinus* logs, 7.viii; *Didea fasciata* Macq. (Syrphidae), Ballochgar Forest (NR779278), Kintyre, male at *Cirsium arvense* (L.) flowers, 18.vi; *Eriozona erratica* (L.) (Syrphidae), Stubhampton Bottom (ST896163), Cranbourne Chase, Dorset, 11.vi; *Eristalis rupium* F. (Syrphidae), Swinhope Head 'house area (NY896344), meadowland adjacent to a stream, male at *Conopodium majus* flowers, 7.vii; *Heringia pubescens* (Delucchi & Pschorn-Walcher) (Syrphidae), Cranbourne Chase (ST971180), Dorset, male at *Euphorbia amygdaloides*, l.v; *Lejogaster tarsata* (Megerle in Mg.) (Syrphidae), Shotover Heath (SY994855), male and Wyth Heath (SY982853), female, both at *Daucus carota* flowers, 17.vii; *Platycheirus amplus* Curran (Syrphidae), Aros Moss, Kintyre (NR681223), male, 17.vi, a new record for Kintyre; *Rhingia rostrata* (L.) (Syrphidae), Cranbourne Chase (ST971180), Dorset, female on bramble *Rubus* leaf in shaded situation beneath an oak tree, 16.vii; *Myopa fasciata* Mg (Conopidae), Brownsea Island (SZ024878), Dorset male at *Senecio jacobaea* flowers, 8.viii; *Tetanops myopinus* Fall. (Ulidiidae), Tees Mouth (NZ536280), Durham, both sexes swept from sand dunes, 4.vii; *Campiglossa producta* (Loew) (Tephritidae), Bindon Hill, West Lulworth (SY828803), two males swept from herb-rich chalk grassland, 4.ix; *Dioxya bidentis* (R.-D.) (Tephritidae), Bindon Hill, West Lulworth (SY828803), both sexes swept from herb-rich chalk grassland, 4.ix; *Ensina sonchi* (L.) (Tephritidae), Higher Melcombe (SY754025), Melcombe Bingham, Dorset, both sexes swept from *Sonchus arvensis*, 1.ix; *Urophora cuspidata* (Mg.) (Tephritidae), the Grove, Portland (SY698729), Dorset, a female swept from limestone grassland, 23.vii.

PERRY, I. – A selection of uncommon Diptera found during 2005: *Nephrotoma crocata* (L.) (Tipulidae), Center Parcs, Elveden, Suffolk, 19.vi, at edge of scrub adjacent to damp sandy ground; *Chrysopilus erythrophthalmus* Loew (Rhagionidae), River Findhorn, Randolph's Leap, Moray, 13.vii, on exposed shingle partly shaded by trees, first record from the Scottish Highlands; *Xylomya maculata* (Mg.) (Xylomyidae), Denny Wood, New Forest, emerged 18.vi, from puparium found in beech rot hole on 1.vi; *Callicera aurata* (Rossi) (Syrphidae), Durlston Country Park, Swanage, Dorset, 3.viii, a female on flowers of parsnip *Pastinaca sativa*; *Urophora spoliata* (Hal.) and *Terellia vectensis* (Collin) (Tephritidae), Bindon Hill, Lulworth, Dorset, 31.vii, both swept from their food plant saw-wort *Serratula tinctoria* in calcareous grassland; *Odinia hendeli* Collin (Odiniidae), Lode, Cambs, 21.vi, on exposed heartwood of a horse-chestnut *Aesculus* sp., which also contained an active

sap run; *Microsoma exiguum* (Mg.) (Tachinidae), Pondhead Inclosure, New Forest, Hants, 29.v, swept from edge of ride; *Athrycia impressa* (Wulp) (Tachinidae), Morden Bog, Dorset, 4.viii, swept from heather in dry heathland; *Townsendiellomyia nidicola* (Townsend) (Tachinidae) (Plate 4, Fig. 16), Durlston Country Park, Swanage, Dorset, 3.viii, several males on parsnip *Pastinaca sativa*; Cheyne Weare, Portland, 1.viii, on flowers of an unidentified ornamental shrub, first found in Britain in 1984, this species appears to be well established along the Dorset coast; *Frontina laeta* (Mg.) (Tachinidae) (Plate 4, Fig. 18), Stoborough, Dorset, 3.viii, a female on parsnip flowers on roadside verge adjacent to heathland; *Hemyda vittata* (Mg.) (Tachinidae), Stoborough, Dorset, 4.viii, a male as above; Crab Wood, Hants, 3.vi, several on wood spurge *Euphorbia amygdaloides* L. flowers, a further extension westward for a species that has been extending its range in recent years; *Blepharipa schineri* (Mesnil) (Tachinidae), Park Ground Inclosure, 30.v and Buskett's Lawn Inclosure, 31.v, both in New Forest, Hants, and Crab Wood, Hants, 4.vi, all on wood spurge flowers, a recent addition to the British list that appears to be well established in S. Hants.

STOREY, M.—Two examples of *Atylotus rusticus* (Tabanidae), Otmoor Rifle Range, Oxon, 9.vii.2005: male visiting wild carrot *Daucus carota*, flowers; female investigating curled dock *Rumex crispus*; new to Oxon, otherwise only recent records from Bucks and the Central Weald apart from a small number of recent records from the longer term stronghold of the Lewes/Eastbourne area of E. Sussex.

COLEOPTERA

ALLEN, A.J.W.—A selection of beetles collected in 2004 and 2005. *Zabrus tenebrioides* (Goeze) (Carabidae), Damerham, Hampshire, SU0818, common in a cornfield, viii.–ix.2004; Cranborne, Dorset, SU0313, several seen on a grassy path between two ploughed fields, 11.ix.2005 and 1.x.2005. *Philonthus punctus* (Gravenhorst) (Staphylinidae), Shellness, Isle of Sheppey, Kent, TR0568, one at the edge of a dyke close to the shore, 15.viii.2005. *Aphodius putridus* (Geoffroy) (Scarabaeidae), Detling, Kent, TQ7858, in rabbit droppings, 25.iv.2004. *Lyctus brunneus* (Stephens) (Bostrichidae), Mallard Wood, New Forest, Hampshire, SU3109, one in dead beech, 19.vi.2005. *Aplocnemus nigricornis* (F.) (Melyridae), Denny Wood, New Forest, Hampshire, SU3306, one, 20.v.2004. *Diaperis boleti* (L.) (Tenebrionidae), Denny Wood, New Forest, Hampshire, SU3306, several in birch polypore, 11.xi.2005, the first the exhibitor has found in the New Forest, a beetle that has become much more widespread in recent years but which was not found in Hampshire by David Appleton. *Oncomera femorata* (F.) (Oedemeridae), Detling, Kent, TQ7858, one by beating ivy, 23.ix.2005. *Cryptocephalus biguttatus* (Scopoli) (Chrysomelidae), Ambersham Common, Sussex, six males and one female seen, 8.vi.2005. *Cryptocephalus frontalis* Marsham (Chrysomelidae), Broyle Side, Sussex, TQ4714, several by beating a hawthorn hedge, 18.vi.2005. *Cryptocephalus parvulus* Müller (Chrysomelidae), Lavington Common, Sussex, TQ9418, two, 8.vi.2005. *Cryptocephalus primarius* Harold (Chrysomelidae), Ballard Down, Dorset, SZ08, a pair, 3.vi.2004. *Byctiscus populi* (L.) (Rhynchitidae), Ham Street Woods, Kent, TQ9835, several on aspen, 30.v.2005.

CUMING, N. St J.—*Rhynchites auratus* (Scopoli) (Rhynchitidae), Colchester area, Essex, on an old hedge of *Prunus spinosa*, iv.–vii.2005, evidence of a strong breeding colony found of this supposedly extinct to Britain species, mating was observed on several occasions; the exhibit showed typical specimens, together with examples showing a wide size variation, also examples of larvae found feeding on the kernels of

P. spinosa. *Isochnus populicola* (Silfverberg) (Curculionidae), Abberton, Essex, TL9618, found on *Salix fragilis*, iv.–viii.2005, together with the adults, examples of 'blotch' leaf mines showing larval development, early and late instar larvae, and pupae.

DICKSON, R. J. – *Agrilus* sp. (Buprestidae), Botley Wood, S. Hampshire, SU5410, in Malaise trap, 25–26.vi.2005. *Silis ruficollis* (F.) (Cantharidae), Hook Park shore, South Hampshire, SU4904, 13.vii.2005. *Endomychus coccineus* (L.) (Endomychidae), Kites Croft near Fareham, S. Hampshire, SU5206, one under loose sawlog bark, ix.2005, D. M. Appleton. *Harmonia axyridis* (Pallas) (Coccinellidae), The Moors Nature Reserve, Bishop's Waltham, S. Hampshire, SU5516, one swept, 22.viii.2003 [sic]. *Bitoina crenata* (F.) (Colydiidae), Botley Wood, S. Hampshire, SU5410, 10–11.vi.2005. *Pogonocherus hispidus* (L.) (Cerambycidae), Fareham, S. Hampshire, SU5706, 31.vii.2005. *Psylliodes* sp. (Chrysomelidae), Wallington water meadows, S. Hampshire, SU5807, beaten from hop *Humulus lupulus* overgrowing a blackthorn and hawthorn hedge, 7.viii.2005, these were close to *P. attenuatus* (Koch) but lacked a cross formed by the ocular furrows and the anterior margins of the frontal calli. *Platystomos albinus* (L.) (Anthribidae), Botley Wood, S. Hampshire, SU5410, one male in Malaise trap, 10–11.vi.2005.

GIBBS, D. – *Dyschirius inpunctipennis* Dawson (Carabidae), Titchwell RSPB Reserve, W. Norfolk, TF7544, 10–17.v.2005 and 13–20.vii.2005. *Pogonus luridipennis* (Germar) (Carabidae), Titchwell RSPB Reserve, W. Norfolk, TF7544, 10–17.v.2005. *Pogonus littoralis* (Duftschmid) (Carabidae), Titchwell RSPB Reserve, W. Norfolk, TF7544, 13.vii.2005. *Dromius longiceps* Dejean (Carabidae), Titchwell RSPB Reserve, W. Norfolk, TF7544, 10–17.v.2005. *Cercyon bifenestratus* Küster (Hydrophilidae), Titchwell RSPB Reserve, W. Norfolk, TF7544, 10–17.viii.2005. *Pyropteris uigroruber* (De Geer) (Lycidae), Edwinstowe (Centre Parcs), Notts, SK6263, 2.vii.2005. *Ampedus elongantulus* (F.) (Elateridae), Radstock Sidings, N. Somerset, ST6954, 15.v.2005. *Cardiophorus asellus* Erichson (Elateridae), Elveden (Centre Parcs), W. Suffolk, TL8080, 8.v.2005. *Cerapheles terminatus* (Ménétriés) (Melyridae), Poole Harbour, Shotover Moor, Dorset, SY9985, 2.vi.2005. *Conopalpus testaceus* (Olivier) (Melandryidae), Edwinstowe (Centre Parcs), Notts, SK6363, 2.vii.2005. *Ceutorhynchus atomus* Boheman (Curculionidae), Elveden (Centre Parcs), W. Suffolk, TL8080, 8.v.2005.

HALSTEAD, A. J. – *Ampedus elongantulus* (F.) (Elateridae), Bedford Purlieu, Northamptonshire, TF041003, swept, 5.vi.2005. *Cantharis paludosa* Fallen (Cantharidae), Mull of Kintyre, NR5908, swept 18.vi.2005. *Hedobia imperialis* (L.) (Anobiidae), Arboretum, RHS Garden, Wisley, Surrey, TQ061582, swept from *Robinia pseudoacacia*, 26.v.2005. *Korynetes caerulescens* (De Geer) (Cleridae), Royston, Herts, TL356407, on *Berberis thunbergii*, 29.v.2005. *Rodolia cardinalis* (Mulsant) (Coccinellidae), Carlyle Square, Chelsea SW3, TQ269779, pupa on *Acacia dealbata*, 26.x.2005, imago emerged 8.xi.2005, this is near to where the species was first found in the UK in 2003. *Harmonia axyridis* (Pallas) (Coccinellidae), Royal Avenue, Chelsea SW3, TQ277783, on lime trees, 26.x.2005, six colour forms exhibited, this species was recorded new to UK in 2004. *Anatis ocellata* (L.) (Coccinellidae), Stoke Wood, east of Oxshott, Surrey, TQ162606, swept, 22.v.2005, a form lacking pale margins to the spots. *Coccinella magnifica* Redtenbacher (Coccinellidae), Horsell Birch, near Woking, Surrey, SU988597, swept 2.iv.2005. *Pogonocherus hispidulus* (Piller & Mitterpacher) (Cerambycidae), Stoke Wood, east of Oxshott, Surrey, TQ162606, swept, 22.v.2005. *Galerucella pusilla* (Duftschmid) (Chrysomelidae), Castor Hanglands, Northamptonshire, TF119016, swept, 4.vi.2005. *Platyrhinus resinosus* (Scopoli) (Anthribidae), Bedford Purlieu, North-

amptonshire, TF041003, swept, 5.vi.2005. *Platystomos albinus* (L.) (Anthribidae), Barnack Hills & Holes NNR, Northamptonshire, TF075047, swept, 4.vi.2005.

HODGE, P. J. – Twelve species of Coleoptera collected in Sussex and Kent during 2004 and 2005, including a rove beetle not previously recorded from the British Isles. *Acilius canaliculatus* (Nicolai) (Dytiscidae), St. Dunstan's Farm, Heathfield, E. Sussex, TQ608197, female in pond, 8.x.2004 and Combe Haven Level, Crowhurst, E. Sussex, TQ754106, female in recently excavated peaty pool, 8.ix.2005. *Hydrochus ignicollis* (Motschulsky) (Hydrochidae), Railway Land LNR, Lewes, E. Sussex, TQ423097, male in marsh ditch, 7.x.2005, a new record for the lower Ouse valley. *Enochrus nigrinus* (Sharp) (Hydrophilidae), Moneypenny Pits, East Guldeford, E. Sussex, TQ945208, in disused gravel-pit, 2.vi.2004. *Astrapeus ulmi* (Rossi) (Staphylinidae), Newhaven, E. Sussex, TQ449001, male under stone at base of chalk cliffs, 16.v.2004, a native of southern Europe, this species is new to Britain (another male was found in May 2005 by D. Hance (paper in prep.)). *Hylecoetus dermestoides* (L.) (Lymexylidae), Snipe Bog, Burton Park, W. Sussex, TQ971178, female flying in afternoon sunshine, 26.v.2005. *Mordellistena nanuloides* Ermisch (Mordellidae), Oare near Faversham, E. Kent, TR008630, several on sea wormwood *Seriphidium maritimum* growing on the sea wall, 29.vi.2004. *Meloe rugosus* Marsham (Meloidae), Castle Hill, Newhaven, E. Sussex, TV445999, male crawling amongst long grass on cliff-top, 25.iii.2005, first discovered at this site by D. Bangs in 2004 which is a new vice-county record. *Sitona cinerascens* Fahraeus (Curculionidae), Cuckmere Haven, E. Sussex, TV519976, female swept from a small area of saltmarsh adjacent to a grassy area close to the shingle beach, 17.viii.2005, this is a new vice-county record, the host plant, said to be *Lotus tenuis*, has been recorded from this site. *Bagous puncticollis* Boheman (Curculionidae), East Guldeford Level, Rye, E. Sussex, TQ955217, male in marsh ditch, 2.vi.2004 and Broomhill Level, Camber, E. Sussex, TQ966197, male in marsh ditch, 5.vi.2004. *Mecinus janthinus* Germar (Curculionidae), Brickfield Meadow, Fairwarp, E. Sussex, TQ473264, one swept in flowery grassland, 16.v.2005, a new vice-county record. *Rhamphus subaeneus* Illiger (Curculionidae), Colhook Common near Petworth, W. Sussex, SU964272, several on leaves of wild apple, 22.v.2005, a new vice-county record. *Trypodendron signatum* (F.) (Curculionidae), Sparite Wet Hole near Parham, W. Sussex, TQ054155, one crawling on stump of recently felled birch tree, 13.viii.2004, a new vice-county record.

MORRIS, M.G. – Some weevils (Curculionoidea) from Europe and the Canary Islands. (1) Continental specimens of *Rhynchites auratus* (Scopoli), recently re-discovered in England, showing the great range of size in the species, probably associated with different hosts. Male and female near Pestani, Macedonia, 17 and 14.vi.1990, beaten from *Prunus dulcis* (almond). Male near Ledignan, Gard, France, 18.iv.1989; female Causee Mejean, Lozere, France, 24.vii.2004, both beaten from *Prunus spinosa* (blackthorn). (2) Recently described and undescribed species. *Eutrichapion mystriophorum* Alonso-Zarazaga, 1993, an apionid which apparently replaces *E. viciae* (Paykull), a very common species in Europe (including the British Isles), in the Iberian Peninsula. Male and female, Barragem de Bravura, Algarve, Portugal, 5.v.2003, on *Vicia cracca*, Tufted Vetch?. *Phrissotrichum joannium* Ehret, 1997, the largest species in this apionid genus and characteristic of the fauna of the Algarve. Male and female, Cabo São Vicente, Algarve, Portugal, 10.iv.2000, beaten from *Cistus palhinhae* (no English name). *Catapion vulnerariae* Wanat & Dieckmann, 1991, an apionid addition to the fauna of *Anthyllis vulneraria* (kidney Vetch). Paratypes, 'A-Bgld-Breitenbrunn, Thenau NSG 1990.05.06' On *Anthyllis vulneraria*, leg. W. Suppanttschitsch [in coll. MGM]. *Aspidapion acerifoliae* Suppanttschitsch,

1996, an apionid endemic to the Canary Islands and so far known only from Tenerife. Quite distinct from *A. radiolus chalybeipenne*, a very common Macaronesian apionid. Male and female, Buenavista, Tenerife, 24.iv.2003, on *Lavatera acerifolia*, leg. W. Suppanttschitsch [in coll. MGM]. *Hemitrichapion (Lotapion)* sp., an apparently undescribed Macaronesian apionid known from Madeira and the Canary Islands. Possibly, however, *H. (L.) wollastoni* (Chevrolat, 1852), if that species has been wrongly identified as = *Holotrichapion rotundipenne* (Wollaston, 1854). Arenas Blancas, El Hierro, Canary Is., 14.iii.2003, on *Lotus glaucus*. *Pseudoprotapion* sp., a distinctive large species of this apionid genus that is apparently undescribed. Male and female, near Parises, Algarve, Portugal, 27.iv.2004, on a distinctive species of *Astragalus* (milkvetch). *Tychius colonnellii* Caldara, 1991, a curculionine weevil endemic to the Canaries, where it has been found in Tenerife and La Palma (new island record). Larvae feed on the seeds of *Lotus* spp. Male and female, Montaña Tagoja, La Palma, Canary Is., 13/15.vi.2001, shaken from *Lotus campylocladus*. *Mogulones biondii* Colonnelli, 1990, a ceutorhynchine weevil known only from Gran Canaria, where it is associated with an *Echium* sp. Male and female from near Moya, Gran Canaria, Canary Is., 18/19.iii.1994, on *Echium*. A *Mogulones* species (indet.) new to Lanzarote, probably conspecific with the montane *M. delectus* Colonnelli, 1992, known hitherto only from Fuerteventura, although the exhibited species is lowland and apparently feeds on *Echium lanzarottense*, endemic to Lanzarote. Male and female collected from Valle de Malpaso, Lanzarote, Canary Is., on *E. lanzarottense*. Three undescribed species of *Laparocerus*, a very speciose Macaronesian entimine genus, which Dr Antonio Machado is studying. Species A, two examples, Las Moradas, La Palma, 30.xi.2000, under stones at c. 2000 m; Species B, Hermigua, La Gomera, 19.xii.1995, on *Euphorbia regis-jubae*; Species C, near Mt. Chiombe, Tenerife, 12.iii.1993, swept. All Canary Is. An apparently undescribed species of *Cathormiocerus*, an entimine genus, confined to the extreme western edge of the Palaearctic and speciose in Iberia and western North Africa. The sp. will be described by R. Borovec, who is revising the genus. Cabo São Vicente, Algarve, Portugal, 7.v.2003, on sand under rosettes of *Plantago coronopus* (buck's-horn plantain). *Otiiorhynchus atrohippus* Davidian & Yunakov, 2001. A newly described species in this very speciose entimine genus. Paratypes. Studentsheskyi Pass, west Caucasus, Georgia. In alpine meadow, 12.vii.1994. leg. G.E. Davidian [in coll. MGM]. *Plinthus helenae* Davidian, 1992, a high-altitude molytine weevil. Paratypes. Mt. Shalbuzdae, Mingrella, Georgia, 13.vii.1990, 2000–2400 m. leg. G.E. Davidian [in coll. MGM].

NELSON, B.—Two species of weevil new to Ireland. *Stenopelmus rufinasus* Gyllenhal (Eriirhinidae), Lough Skale, Fermanagh, H310441, taken in a mesotrophic lake, 7.viii.2005, its foodplant, the water fern *Azolla filiculoides*, has not been common in Ireland until recently, but is now spreading. *Bagous lutosus* (Gyllenhal) (Curculionidae), Carrickslavan, Leitrim, G975043, swept in fen/swamp by deep drain into turlough-like marsh, 3.x.2005, this rare species (RDB1 in Great Britain), reputed to be associated with branched bur-reed *Sparganium erectum*, had not been taken for some years, but has now occurred at Ainsdale, Lancashire and in the Norfolk Breckland.

OWEN, J.A. & OWEN, D.J.M.—Photographs illustrating early stages in the genus *Cryptocephalus* (Chrysomelidae) with examples involving the following species: *aureolus*, *biguttatus*, *coryli*, *decemmaculatus*, *frontalis*, *fulvus*, *nitidulus*.

TELFER, M.G.—*Bembidion quadripustulatum* Audinet-Serville (Carabidae), Sutton Gault causeway, Ouse Washes RSPB reserve, Cambridgeshire, TL4279,

in week-old flood debris, 12.v.2004, one of a few new records of this species in and around the fens in recent years. *Bembidion octomaculatum* (Goeze) (Carabidae), Great Cornard moat, Sudbury, W. Suffolk, TL892394, 22.v.2004, discovered new to Suffolk by Peter Harvey and Peter Hammond at the adjacent Cornard Mere in 2003. *Ophonus azureus* (F.) (Carabidae), Harwich, N. Essex, TM234323, on weedy road verge covered with gravel, 22.v.2004, rare in East Anglia with few recent records. *Harpalus dimidiatus* (Rossi) (Carabidae), Culver Down, Isle of Wight, SZ63208555, one of 16 seen by torchlight on very short cliff-top grassland, 31.v.2004, this species was discovered here by John Walters. *Badister collaris* Motschulsky (Carabidae), Great Cornard moat, Sudbury, W. Suffolk, TL892394, 22.v.2004, new to Suffolk, and Canvey Wick (the Northwick Road site on Canvey Island), S. Essex, TQ755837, at edge of shallow reedy pool, 23.v.2004, new to Essex and a substantial extension of the range of this species which is classified as Endangered (RDB1). *Microlestes minutulus* (Goeze) (Carabidae), The Lodge RSPB reserve, Sandy, Bedfordshire, TL1847, found in a flower-border, 22.iii.2004, a new county record and Brading Marshes RSPB reserve, Bembridge, Isle of Wight, SZ633884, on dry sandy corner of silt lagoon, 1.vi.2004, a new vice-county record. *Syntomus obscuroguttatus* (Duftschmid) (Carabidae), Port Holme meadow, Huntingdonshire, TL2371, in rotten log, 14.xii.2003, apparently new to Huntingdonshire. *Cryptophagus intermedius* Bruce (Cryptophagidae), Monks Wood, Huntingdonshire, reared from fallen twigs and thin branches of ash collected on 10.iv.2004, the male beetle had emerged by 4.v.2004. *Rhyzobius chrysomeloides* (Herbst) (Coccinellidae), Aylesbury B&Q store, Buckinghamshire, SP822138, captured in flight, 30.iv.2005. *Schizotus pectinicornis* (L.) (Pyrochroidae), Cwm yr Esgob, Carngafallt RSPB reserve, nr Rhayader, Breconshire, SN9365, male, female and larva (note the curved terminal cerci) in fallen oak bough, 29.v.2004. *Cassida hemisphaerica* Herbst (Chrysomelidae), Abbey Dore, Herefordshire, SO3830, in flood litter on a tributary of the River Monnow, 7.ii.2004. *Otiorhynchus raucus* (F.) (Curculionidae), Snettisham RSPB reserve, W. Norfolk, TF64582998, in strandline debris on sea wall, 19.v.2004. *Xyleborus monographus* (F.) (Curculionidae: Scolytinae), Langley Park, Buckinghamshire, TQ009820, found by torch-light on oak trunks, 18–19.vii.2003, the first British record for this species, it was also common at Langley Park in 2005.

HEMIPTERA

DICKSON, R.J. – *Adelphocoris ticinensis* (Meyer-Dur) (Miridae), two swept from wet grazing, The Moors NR, Bishop's Waltham, South Hampshire, SU5616, VC11, 17.viii.2005; *Sehirus bicolor* (L.) (Cydnididae), Chalton District, South Hampshire, SU 7215, VC11, 26.iii.2005; *Gastrodes grossipes* (DeGeer) (Lygaeidae), Botley Wood, South Hampshire, SU5510, VC11, 20.vi.2005; *Callicorixa praeusta* (Fieber) (Corixidae) at mv, Portchester Common SSSI, South Hampshire, SU6206, VC11, 24.vi.2005; *Dictyla convergens* (Herrich-Schaeffer) (Tingidae), The Moors NR, Bishop's Waltham, South Hampshire, SU5516, VC11, 14.vi.2005; *Blepharidoptera angulatus* (Fallen) (Miridae), mv, Wickham Common, South Hampshire, SU5810, VC11, 19.viii.2005; *Aneurys laevis* (F.) (Aradidae), Chilling Copse, South Hampshire, SU5102, VC11, 26.v.2004.

GIBBS, D. – *Stictopleurus punctatonervosus* (Goeze) (Rhopalidae), Elveden (Centre Parcs), Suffolk, VC26, TL8080, 8.v.2005; *Orthotylyus rubidus* (Puton) (Miridae),

Dingle Marshes RSPB reserve, Suffolk, VC26, TM4872, 12.vii.2005; Titchwell RSPB reserve, Norfolk, VC28, TF7544, 13–20.vii.2005; *Aphrophora alpina* Melichar (Cercopidae), Morrision, Swansea, Glamorgan, VC41, SS6599, 27.vi.2005 and 15.vii.2005; *Calligypona reyi* (Fieber) (Delphacidae), Poole Harbour, Wytch Moor, Dorset, VC9, SY9885, 18.v.2005.

HAWKINS, R.D. & KEAY, A.N.—A single female of a red-and-black crucifer-feeding shieldbug, *Eurydema ornatum* (L.) (Pentatomidae), found by ANK on *Salix* at the edge of Solom's Great Wood, Woodmansterne, Surrey, TQ272588, on 17.iv.2005. No further examples were found in the area, so this specimen was considered an accidental importation, especially since a great many trees had been planted earlier in the year on a neighbouring estate. This species is common in southern Europe and has occasionally been imported to Britain, but other recent records suggest that it may now be a natural migrant that has already established itself on the south coast (*Entomologist's Rec. J. Var.* 117: 221–227).

HODGE, P.J.—Four species of Heteroptera collected in Sussex and Kent during 2005, including a mirid new to the British Isles. *Eurydema ornatum* (L.) (Pentatomidae), Peacehaven, East Sussex, TQ414017, mv light trap (C.R. Pratt), 13.x.2003, new vice county record and a recent colonist in Britain; *Macrotylus horvathi* (Reuter) (Miridae), Queenborough, E. Kent, TQ916717, 22.vii.2005, many on *Ballota nigra* growing amongst long grass, new to the British Isles; *Agnocoris reclairi* (Wagner) (Miridae), Rye Harbour, E. Sussex, TQ928192, one swept off ragwort *Senecio jacobaea* growing beside Castle Water, 9.viii.2005, associated with white willow *Salix alba*, new vice county record; *Lygus pratensis* (L.) (Miridae), Pannel Valley Nature Reserve, E. Sussex, TQ882152, 10.x.2005, swept from marsh vegetation in *Phragmites* reed-bed, a RDB3 species now apparently rather common in south-east England.

ISMAI, J.W. & SCHULTEN, B.—*Nezara viridula* (L.) (Pentatomidae) nymphs and one adult, Isleworth, Middlesex, TQ17, 9.ix.2005, mainly on bramble, *Rubus* sp., and stinging nettle, *Urtica dioica*, some in small aggregations of up to eight individuals. The nymphs were being fed on green tomatoes in captivity. This species, a major vegetable pest in warmer parts of the world, has recently been discovered in the London area (*Brit. J. Ent. Nat. Hist.* 17: 143–146), but it is not clear whether it can survive an English winter; a return visit is planned for April or May 2006.

NAU, B.S.—Exhibit of some recent immigrants to East Anglia and southern England. *Cymatia rogenhoferi* (Fieber) (Corixidae), male exhibited, Bedfordshire, x.2005, new to Britain; *Sigara iactans* Jansson (Corixidae), male exhibited from Wageningen, Netherlands, per B. Aukema, three sites in Britain (East Anglia and East Sussex), 2004–2005; *Sigara falleni* (Fieber) (Corixidae), male of this common species exhibited for comparison with previous species, North Essex, ix.2004; *Sphragisticus nebulosus* (Fallen) (Lygaeidae), Icklingham, West Suffolk, ix.2003, male exhibited, collected by BSN, new to Britain in 1997 at RSPB Lakenheath Fen, West Suffolk; *Eurydema ornatum* (L.) (Pentatomidae), male exhibited, Southbourne, Dorset, vi.2005, per Andy Collins, possibly established at several sites on south coast of England 1997–2005; *Carpocoris purpureipennis* (DeGeer) (Pentatomidae), male exhibited, Portland, Dorset, x.2005, per Andy Collins, rare vagrant to south-west England; *Lygus pratensis* (L.) (Miridae), 24 example specimens exhibited showing variability in this species.

HYMENOPTERA

DICKSON, R.J. – Aculeate Hymenoptera recorded from the exhibitor's garden in Fareham (SU5706, VC11). Melittidae: *Macropis europaea* Warncke, vii.2005, several specimens found in a malaise trap close to yellow loosestrife *Lysimachia vulgaris* L. Megachilidae: *Chelostoma campanularum* (Kirby), 29.vi.2003, around flowers of nettle-leaved bellflower *Campanula trachelium* L. and clustered bellflower *C. glomerata* L.. Sphecidae: *Gorytes laticinctus* (Lepeletier), 29.vi.2003, inside conservatory.

GIBBS, D. – Scarcer Hymenoptera collected in 2005. Tiphidae: *Methocha articulata* Latreille, 3.vi.2005, Edwinstow (Centre Parcs), Notts., SK6263, VC56. Andrenidae: *Andrena nitidiuscula* Schenck, 17.vii.2005, Radstock Sidings, Radstock, Somerset, ST6954, VC6. Sphecidae: *Passaloecus clypealis* Faester, 8.vii.2005, Poole Harbour, Wytch Moor, Dorset, SY9885, VC9; *Passaloecus eremita* Kohl, 2.vii.2005, Edwinstow (Centre Parcs), Notts., SK6363, VC56.

HALSTEAD, A. – (1) The poplar sawfly *Trichiocampus grandis* (Lepeletier). An exhibit including a specimen of the adult and examples of the feeding damage caused by larvae. A local species, sometimes causing a noticeable degree of defoliation on species of poplar *Populus* sp. The green and orange larvae are often more easily recorded than the adult insect.

(2) Some local sawflies taken in 2005. Pamphiliidae: *Pamphilus fumipennis* (Curtis), 22.v.2005, swept, Stoke Wood, Oxshott, Surrey, TQ162606; *Pamphilus sylvarum* (Stephens), 3.vi.2005, swept, Wakerley Great Wood, Duddington, Northants., SP962983. Tenthredinidae: *Aneugmenus fuerstenbergensis* (Konow), 3.vi.2005, swept from bracken, Wakerley Great Wood, Duddington, Northants., SP962983; *Perineura rubi* (Christ), col. C. Spilling, 3.vi.2005, Prior's Coppice, Braunston, SK830051; *Amauronematus puniceus* (Christ) 14.v.2005, swept from willow, Horsell Common, Woking, Surrey, SU986599; *Pristiphora biscaulis* (Foerster), 11.iv.2005, swept from blackthorn flowers, river bank. RHS Garden, Wisley, Surrey, TQ061584; *Hoplocampa rutilicornis* (Klug), 17.iv.2005, swept from blackthorn flowers, Newlands Corner, Guildford, Surrey, TQ042498.

KNIGHT, G. – Some interesting sawflies from Wales. Tenthredinidae: *Blasticotoma filiceti* Klug, Caernarvonshire, VC49, viii.2005, a photograph of the 'foam ball' produced by the larvae of this species boring into the rachis of lady fern *Athyrium filix-femina* (L.). The first record of this species from the site since the collection of a single female specimen in 1997; *Emphytus laticinctus* (Serville), Creigiau Gwbert, Cardiganshire, VC46, 2005, larvae found to be feeding on burnet rose *Rosa spinosissima* L.; *Pachyprotasis simulans* Klug, Crymlyn Burrows, Glamorganshire, VC41, 2005, new to Wales; *Eutomostethus gagathinus* Klug, swept from wet meadow, Tenby Burrows, Pembrokeshire, VC45, 2005, apparently the first record from Wales for this species; *Athalia rosae* (L.), recorded from a number of sand dune systems in south Wales. Argidae: *Sterictiphora geminata* (Gmelin), single male swept from burnet rose *R. spinosissima* L., Whitford Burrows, Gower, Glamorganshire, VC41, 2005, second Welsh record, *Arge nigripes* (Retzius), swept from burnet rose *R. spinosissima* L., Tenby Burrows, Pembrokeshire, 2005, not previously recorded from south Wales. Pamphiliidae: *Pamphilus inanitus* (Villers), swept from burnet rose *R. spinosissima* L., Tenby Burrows, Pembrokeshire, 2005, not previously recorded in Wales.

LEECH, M.J. – An exhibit of ichneumon wasps. Ichneumonidae: *Callajoppa exaltatoria* (Panzer) bred from wild caught larvae of *Smerinthus ocellata* (L.) (Lepidoptera: Sphingidae); two specimens of *Amblyjoppa proteus* Christ, one bred

from a wild-collected larva of *Deilephila elpenor* (L) (Lepidoptera: Sphingidae), one caught at umbellifer flowers, viii.2005, Forest of Dean.

MERRIFIELD, K. & MERRIFIELD, R. Hymenoptera from VC21 & VC24. Chrysididae: *Hedychridium roseum* (Rossi), 28.vi.2005, Park Wood, Ruislip Park Woods NNR, Middx., TQ088887; *Hedychrum niemelai* Linsenmaier, 17.viii.2005, Ruislip Lido, Ruislip Woods, Middx., TQ090898. Tiphidae: *Tiphia femorata* F., 8.ix.2004, Crong Meadow, Dancersend BBOWT Reserve, Tring, Bucks., SP903088. Sphecidae: *Cerceris rybyensis* (L.), 26.viii.2005, Ruislip LNR, Ruislip Park Woods NNR, Middx., TQ0989; *Trypoxylon clavicerum* Lepeletier, 19.vi.02, Weston Turville Reservoir BBOWT Reserve, Bucks., SP8609.

ORTHOPTERA

HAWKINS, R.D. – A female specimen of the Southern Oak Bush-cricket *Meconema meridionale* Costa, from Horley in Surrey, 7.xi.2005, found dead but undamaged on a suburban pavement under an oak tree. A male and female, again both dead, had been found here on 21.x.2005 following strong winds, at almost at the same spot. It would appear that the species is breeding here, 22 km south of the nearest known colony.

FOREIGN NEUROPTERA

ORAM, D. – *Libelloides longicornis* (L.) (Neuroptera: Ascalaphidae). A specimen taken in open woodland, Panacole, San Gimignano, Tuscany, Italy, vi.2005.

PLANT, C.W. – A third Palaearctic record for *Isoscelipteron glaserellum* (Aspöck, Aspöck & Holzel) (Neuroptera: Berothidae). An exhibit of one of two male specimens of this species taken on 4.x.1986 at mv light in a cork oak *Quercus suber* forest near Aliseda, Cáceres, Extremadura Province, Spain, 06.41°W, 39.25°N.

TRICHOPTERA

ROSS, E. – Caddis flies collected from Wicken Fen, Cambridgeshire and Minsmere, Suffolk. Species lists and photographs of caddis flies taken from these two sites in 2004 and 2005. Most of the specimens were taken using light traps. A total of 30 species was recorded, including a specimen of *Grammotaulius nitidus* Mueller, the first time this scarce species has been recorded from Wicken Fen since 1936 (*BJENH* 19:206).

GENERAL

SIMPSON, M. – Drawings by F.W. Frohawk including a coloured drawing of the larvae and pupa of the black arches *Lymantria monacha* (L.) executed in 1882 when he was aged 21 years. Also, a coloured drawing of the chrysalis of the small white butterfly *Pieris rapae* (L.) just prior to emergence dated 1885, and two drawings of a breeding cage and a set butterfly on a setting board, the originals for illustrations in Frohawk's 'The Complete Book of British Butterflies' published in 1934.

STUBBS, J. – 'Useless facts and useful insects', a display of information and pictures relating to three species of economically important insects. The 'Kermes insect' *Coccus ilicis*, Fab. was cultivated on kermes oak *Quercus coccifera* L. and during the middle ages was the source of 'scarlet grain', the dye used for court robes. *Dactylopius coccus* Costa is the source of cochineal and was cultivated by native people on the stems of *Opuntia* cacti in south and central America. *Elaeidobius kamerunicus* Faust is a weevil native to west Africa where it is a natural pollinator of oil palms. The introduction of this species into the oil palm growing regions of south-east Asia has greatly increased the levels of pollination achieved in palm oil plantations in the region.

FIRST BRITISH RECORDS OF THE SAWFLY *EMPHYTUS LATICINCTUS* (SERVILLE) (HYMENOPTERA: TENTHREDINIDAE)

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ABSTRACT

The rose-feeding sawfly *Emphytus laticinctus* (Serville) is reported as a breeding species in south Wales. Recent nomenclatural changes are highlighted. A habitus figure of the female and genitalia drawings of both sexes are provided together with characters for separation from British congeners are described. Consideration is also given to literature relating to *E. didymus* (Klug), another continental species previously regarded by some authors as conspecific. Details of biology, host plant associations, pest status and characters for recognition of larvae are also included.

INTRODUCTION

In 2003, six specimens of a sawfly not previously recorded from Britain were found in samples resulting from an invertebrate survey of Welsh coastal soft cliffs, undertaken by National Museums Liverpool for the Countryside Council for Wales.

All of the insects, subsequently identified as *Emphytus laticinctus* (Serville, 1823), originated from two coastal soft cliff sites near Cardigan (VC46), south Wales. Four ♀♀ and one ♂ were collected in a Malaise trap set between 16.vi.2003 and 1.vii.2003 at Creigiau Gwbert SN16244908, a complex of flushed soft cliffs and hard Ordovician coast with glacial deposits, less than one mile in length (Howe, 2002). An additional ♀ was collected in a yellow water-trap, set at Traeth y Mwnt SN19435186, between 17.vi.2003 and 7.vii.2003. The site, approximately three miles from Creigiau Gwbert, is a 200m stretch of steep, partially vegetated, soft cliffs from which arise several springs and seepages.

Further visits to Creigiau Gwbert in 2005 confirmed that the population had persisted at this site for a further two years. On 25.vi.2005 three adults, one ♂ and two ♀♀, were swept from Burnet Rose, *Rosa spinosissima* L., which grows extensively on scrubby headlands at the site. Larvae were subsequently found in numbers feeding on this plant on 6.viii.2005, and reared in captivity.

TAXONOMY

The generic name *Emphytus* Klug, 1815, has been used in accordance with the current British checklist (Sheppard, 2003). Lacourt (1989) characterises the genera *Allantus* Panzer, 1801 and *Emphytus*, (often applied virtually synonymously), by differences in wing venation, antennae and male genitalia. As a result of this revision *E. laticinctus*, and, with the exception of *A. togatus* Panzer, 1801, all British *Allantus sensu lato* species, belong to *Emphytus*.

Emphytus laticinctus is commonly dealt with under the name *balteatus* (Klug, 1818). This was shown by Liston (1995) to be a primary homonym of *Tenthredo balteata* (Klug, 1817). Full synonymy is detailed by Lacourt (1999). Further references relating to the taxonomy of this species include: Le Peletier de Saint-Fargeau (1823), Kriechbaumer (1884), Blank (1996), Taeger & Blank (1996), Blank & Taeger (1998) and Lacourt (2000).



Figure 1. *Emphytus laticinctus* female.

IDENTIFICATION

Unfortunately, the sexual dimorphism of this species would make any attempt to adapt an existing key to include this species clumsy and unworkable. There follow some notes on how to separate each sex from similar British congeners.

Females can readily be distinguished. They are distinctive in their red-girdled abdomens and the markedly bicoloured stigma of the forewing (Fig. 1, body length 7 mm). Both *E. calceatus* (Klug), and *E. rufocinctus* (Retzius), the red-girdled species separated in couplet 2 of Benson's (1952) key to *Allantus sensu lato*, have well-developed sculpture on at least the upper half of the mesopleura, whereas in *E. laticinctus* it is uniformly smooth and polished. In the female, the colour of the stigma is also distinctive, the white basal half contrasting strongly with the dark apical half. Although rare dark-legged specimens are known (Koch, 1988), the hind femora are typically red, whereas in *E. rufocinctus* the hind legs are black. Also, the orange-red colouration of the abdomen is concentrated on the fifth and sixth tergites, and, as in all the Welsh specimens, the third and fourth tergites may also be touched with red. In both *E. rufocinctus* and *E. calceatus*, the red girdle covers the fourth and fifth tergites. The saw of *E. laticinctus* is illustrated in Fig. 2.

Females can be keyed in a number of continental works (Enslin, 1918; Berland, 1947; Muche, 1969; Scobiola-Palade, 1981; Magis, 1999). Enslin (1918) did not know the male with certainty but refers to a specimen in Konow's collection with a uniformly black abdomen. Zirngiebl (1937) described the male from specimens he had obtained through captive breeding and confirmed this sexual dimorphism.

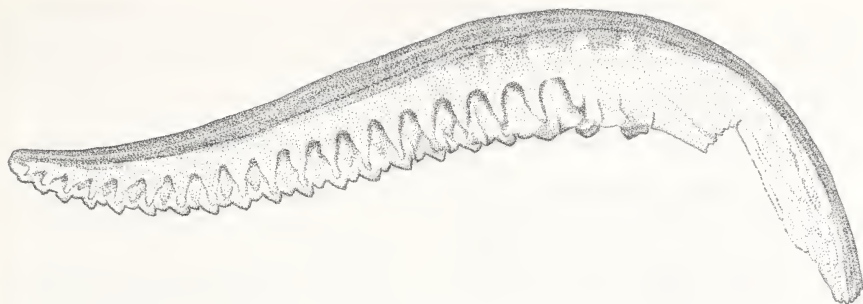


Figure 2. Female saw of *Emphytus laticinctus*.

However, none of the keys referenced above takes account of this, and will not work for males.

Apart from the black abdomen [very rarely marked with red on the hind margins of the fifth and sixth tergites (Koch, 1988)], the male resembles the female. If identified using Benson (1952), it could be confused with the extremely rare *E. melanarius* (Klug, 1818). The male of *E. melanarius* was not known to Benson, however, the penis valve figured for this species by Muche (1972) is different to that of *E. laticinctus* (Fig. 3). The male superficially resembles *E. cinctus* (L.), as the base of the stigma may also be pale in this species. The ordinarily red hind femora, smooth mesopleura, penis valve, and strong colouration of the stigma, distinguish males of *E. laticinctus* from this and other British species.

Enslin (1918) speculated that *E. laticinctus* may be an intraspecific form of another continental species, *E. didymus* (Klug), differing only in the red-girdled abdomen of the female. Zirngiebl (1937) described and figured the male of *E. laticinctus*. He was unable to compare this with *E. didymus*, but does demonstrate differences in the female saw. The penis valve of the male is difficult to distinguish from the examples of that of *E. didymus* figured by Muche (1972), although Koch (1988) gives additional morphological characters. Zhelokhovtsev (1988) treats the taxon as a synonym of *E. didymus*. Similarly, all specimens in the collections of the Natural History Museum, London are placed under *E. didymus*, most probably indicating that Benson also believed the insects to be conspecific (Springate *pers. comm.*). A more recent work (Liston, 2004) describes the larva of *E. didymus* and clearly demonstrates host-plant and other biological differences between the species.



Figure 3. Male penis valve of *Emphytus laticinctus*.

It is also worth noting that Stephens (1835) records *E. didymus* from England. Although the occurrence of this species in Britain at this time is plausible, the provenance of the specimen or specimens concerned is somewhat questionable (Liston *pers. comm.*).

BIOLOGY

Zirngiebl (1937) and Scheibelreiter (1973) give detailed accounts of the biology of this insect. Typically it inhabits scrubby, dry habitats. In Austria it has three generations a year, with adults flying in May, mid-late July and August.

Larvae feed for 20–25 days at the margins of older leaves of *Rosa* spp., including *R. canina*, *R. arvensis*, *R. agrestis*, *R. pendulina*, *R. rubiginosa*, *R. gallica* and ornamental varieties. The larva of *E. laticinctus* can be separated from other members of the genus by its uniform yellow head and dark-marked clypeus (Lorenz & Kraus, 1957). Older larvae also have distinctive brownish lateral and dorsal stripes along the body. Prior to pupation, larvae often bore into the pith of cut stems or similar material. Keys to immature stages of rose-feeding sawflies can also be found in Scheibelreiter (1973).

The larvae collected on 6.viii.2005 were reared indoors under artificial conditions. After continuing to feed for a further week, the larvae bore into cork in preference to cut stems of *R. spinosissima*, fully fed larvae taking on a pinkish hue. Three adult females emerged between the 9–11.ix.2005, whilst about ten individuals persisted as prepupae into the winter in cells lined with consolidated sawdust excavated in the cork.

This species has been recorded from central and southern Europe (Austria, Albania, Belgium, Switzerland, Cyprus (Schedl, 1993), Czechia and Slovakia, Germany, Spain, France, Hungary, Italy, Luxembourg, Romania) (Liston, 1995), Caucasus, Turkey (Çalmasur & Özbek, 2004), Iran, Siberia and Central Asia (Lacourt, 1999). It is regarded as rare in Belgium (Magis, 1999), Austria (Scheibelreiter, 1973), and Germany (Zirngiebl, 1937; Taeger *et al.*, 1998) where it is placed in category three of the Red List.

DISCUSSION

Welsh coastal soft cliffs have a rather limited sawfly fauna, most probably because of their dry, warm conditions and limited flora. The abundance of ants may add to their unsuitability. Creigiau Gwbert is a relatively damp and scrubby site, and produced a more extensive species list than others, including two additional *Rosa* feeding *Emphytus* spp. In Europe *E. laticinctus* is associated with sandy, warm, dry situations (Zirngiebl, 1937; Scheibelreiter, 1973; Taeger *et al.*, 1998). In this sense, coastal soft cliffs would appear to be a likely habitat to support this insect.

The sawfly is a potential horticultural pest, but its scarcity and the limited feeding damage caused by its larvae (Scheibelreiter, 1973) has meant it has not been notified as such in any country. There seems little reason to suspect it will be more injurious to roses in Britain than any of its six native rose-feeding congeners. At Creigiau Gwbert it feeds on *Rosa spinosissima*, with which it has not previously been associated. In all likelihood the larvae are oligophagous on a wide variety of roses. Other rose species, including *R. canina*, occur at Creigiau Gwbert, as well as at Traeth y Mwnt, where *R. spinosissima* is absent.

Emphytus laticinctus is clearly now a breeding species in south Wales, where it is conceivable that it is a native species which has been previously overlooked. The

northwesterly aspect of the Cardiganshire coast and relative unimportance of wind-dispersal in sawflies (Benson, 1950), suggest that it is unlikely to have arrived in the country as a vagrant. The transport of immature stages with rose plants by humans is well known in this genus (Benson, 1950; Smith, 1979), however, both Welsh localities are relatively remote from significant areas of human habitation.

All material is currently deposited in the collections of National Museums Liverpool.

ACKNOWLEDGEMENTS

The author is grateful to Dr. M. A. Howe, Countryside Council for Wales and Dr. N. D. Springate, Natural History Museum, London, for generous help and advice. G. R. Else for access to the collections of the NHM, London; A. D. Liston; Dr. D. A. Sheppard, English Nature; A. J. Halstead, Royal Horticultural Society, Wisley; A. Wright; M. Pavett, National Museums and Galleries of Wales and D. J. Mann, Oxford University Museum, for useful advice and comments, and to A. Rietzke and B. Wallace for help with translations.

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SHORT COMMUNICATION

Summer-cypress, a new host plant for Vapourer *Orygia antiqua* (L.) (Lepidoptera: Lymantriidae). – Summer cypress *Bassia scoparia* (L.), is a bushy annual chenopod, up to one metre high, similar in general appearance to fat hen *Chenopodium album* and grass-leaved orache *Atriplex littoralis* to which it is closely related. Although *Bassia* has been cultivated in gardens in the British Isles since 1629 (why?), it has only started to spread along roadsides and motorways in the past few years. The first records for Kent, along the M20, were made by Rodney Burton in 2004 (Kitchener, G. & Palmer, J.R., *KFC Bulletin* **50**:54–56). The plant has continued to spread and the opportunity was taken on 12.ix.2006 to inspect some plants in relative safety in the lay-by halfway up Detling Hill on the A249 north of Maidstone. Two larvae of the Vapourer moth *Orygia antiqua* (L.) were found in the foliage and appeared to be eating the leaves. This is probably a new host plant for this species in UK. A large, isolated *Bassia* plant was noted further north at Stockbury roundabout, where the A249 joins the M2. The invasion of east Kent and Sheppey would appear to be only a matter of time. It is very likely that invertebrates feeding on related chenopods will transfer to this plant. – J. S. BADMIN, Coppice Place, Selling, Kent ME13 9RP

**A CAMBRIDGE POPULATION OF THE RARE LEAF-HOPPER
SAGATUS PUNCTIFRONS (FALLÉN)
(HEMIPTERA: CICADELLIDAE)**

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Little appears to be known about the rare (Red Data Book indeterminate) cicadellid leaf-hopper *Sagatus punctifrons* (Fallén) in England. The only records are for single sites in Surrey (Woking, 1890–1892 and another undated), Somerset (Stoke St Gregory, no date) and two from modern Cambridgeshire (Kirby, 1992a, b and pers. comm.; Alan Stewart, pers. comm.). Peter Kirby's records are of two specimens taken at the Ouse Washes RSPB Reserve, Cambridgeshire (3 August 1992), and one female from a gravel pit at Buckden, Huntingdonshire (31 August 1999). *Sagatus* is a willow-feeder, recorded from *Salix repens* at the Surrey site, from *S. purpurea* at the Ouse Washes, and from young willows invading water fringe habitat and seasonally flooded sediments at the edge of a gravel pit at Buckden where *S. alba*, *S. viminalis* and *S. cinerea* were growing.

As part of a survey of the Ouse Washes RSPB Reserve, I was asked to establish whether *Sagatus* was still present at the small osier bed (c. 2 ha in size) where Peter Kirby had recorded it, and whether the current management was beneficial to the insect (Drake, 2004). The osier bed was once a withy bed, and over the last six years the RSPB has re-instated management by coppicing about one-fifth of the area every two years, on a ten-year overall cycle. When I surveyed it there was re-growth of three ages.

The osier bed near Sutton Gault (TL419789) was visited on 16 June, 21 July and 2 September 2004, in fine weather in each case. The trees were divided, as far as could be judged, into four age-classes, comprising trees cut one, three or five years previously, and old tall uncut trees. The foliage of each age-class was swept using a standard light-weight insect net, and beaten (using the net as the 'beating tray') in a search lasting for 15 minutes. The contents of the net were inspected frequently during this time and nearly all cicadellids collected. A fifth sample concentrated on the undergrowth of mixed tall fen and ruderal vegetation comprising mainly dense *Phalaris*, *Lythrum salicaria* and *Solanum dulcamara*.

Sagatus punctifrons was found in fair numbers in July, but not in June or September, on all stages of re-growth from trees coppiced in the previous year and just starting re-growth, through to trees coppiced about 3 and 5 years previously (Table 1). It was markedly less frequent on old tall willows forming a dense canopy, and only a few strays were found in the fen understory. A few specimens were found in tall vegetation beside a ditch across the track from the osier bed even though no willows grew along this ditch margin. Males were slightly more numerous than females in the samples although, with such a small sample, this difference may not be significant. Few other species of cicadellids were found and none was particularly frequent, so the few immature yellow-and-black cicadellids collected were assumed to be those of *Sagatus*. Similar numbers of immatures were found on all three ages of coppice re-growth. Immatures were not collected in June since they were assumed to be unidentifiable, although in retrospect this would have been useful. Willow foliage of mainly large trees in other parts of the washes was swept but not assiduously and no other locations for *Sagatus* were found.

There appears to be no preferred age of coppice growth supporting the leafhopper but coppicing is probably necessary to maintain a strong population since the insect

Table 1. Numbers of *Sagatus punctifrons* on trees of different ages at the Ouse Washes osier bed.

Sample	Age of re-growth	Male	Female	Immature
Fen understory	fen understory	2	9	0
Young re-growth from stools cut the previous winter, so < 1m tall in July 2004. These willows were in poor condition with much rust and tatty, pock-marked leaves.	1 year	19	11	6
Young re-growth c. 2–3 years old, reaching 3–4m high in July, and making up bulk of coppiced trees in the area.	2–3 years	21	21	5
Old re-growth, cut about ≥ 5 years ago, and up to 5 m high in July. They could not be clearly distinguished from slightly younger trees.	5 years	22	15	5
Old uncoppiced trees growing to 7–8 m tall casting dense shade that excluded the fen vegetation.	old trees	5	1	0
Nearby ditch		3	2	0
Total counts		73	59	16

was scarce on old trees. All these trees – young and old – are in close proximity so there was ample opportunity for the bug to move between different age-classes by flying a few metres. The preference for coppice over old trees is probably therefore real.

The species of willow was not identified at the time of the survey but the site was visited in March 2005 when single twigs were collected from a number of trees across the area that had been surveyed. These were potted-up awaiting identification when the foliage developed. Most rooted and were later identified using Meikle (1984) as 19 *Salix triandra*, six *S. purpurea* and three *S. alba*, or hybrids of these. Clearly it was not possible to say whether *Sagatus* fed on all three willows, but the predominance of *S. triandra* suggests that this species, at least, was used. *Salix cinerea* also grew along the ditch bordering the osier coppice.

Other bugs as numerous as *Sagatus* on the willows were the common species *Populicerus confusus* (Flor), *I. stigmatalis* Lewis and *Aphrophora salicina* (Goeze); the last was more frequent on older re-growth and on large trees than on recently coppiced willows. There were occasional *Kybos rufescens* Melichar, and one *Metidiocerus elegans* (Flor) on the old trees.

ACKNOWLEDGEMENTS

I thank Peter Kirby for kindly allowing details of his records to be included here, for confirming my identification of *Sagatus* and for naming *K. rufescens*. Alan Stewart sent details from the recording scheme. The survey was funded by the RSPB.

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**TRISETACUS CHAMAECYPARI SMITH
(ACARI: PHYTOPTIDAE) DAMAGING LEYLAND
CYPRESS IN BRITAIN: A NEW HOST AND
COUNTRY RECORD FOR THIS MITE**

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ABSTRACT

The eriophyoid mite *Trisetacus chamaecypari* Smith was found for the first time in Britain on a hedge of Leyland Cypress (\times *Cupressocyparis leylandii*) in Cheshire. This find represents a new host and country record for this mite and it is the first eriophyoid species to be reported from \times *C. leylandii*.

INTRODUCTION

In September 2002, a Leyland Cypress hedge (\times *Cupressocyparis leylandii*) (Dallimore & Jackson) approximately 25 years old and growing in a private garden near Altrincham, Cheshire (SJ755878) was observed to have areas of dieback. Samples were forwarded by the owner to the Royal Horticultural Society (RHS) Garden at Wisley, where foliar damage, the main symptom, was identified as being caused by an aphid, *Cinara* sp. (Hemiptera: Lachnidae). During this examination several pale yellow eriophyoid mites were observed in association with some of the small dead vegetative buds at the shoot tips. The sample was forwarded to the Central Science Laboratory (CSL) where 32 live adult female specimens were removed, slide mounted in polyvinyl-lactophenol (Heinze, 1952) and identified as *Trisetacus chamaecypari* Smith (Phytoptidae), a first British and host record. The male of this species has been described (Smith, 1977) but none was found in this sample.

Three slides with a total of 11 specimens have been deposited in the collection of the NHM (Accession Number BMNH (E) 2003-62), one slide of four specimens is deposited in the Forestry Research Agency collection, Alice Holt, Hampshire and the remaining 17 specimens on three slides are retained at CSL (Ref. 20027326).

HOST PLANTS AND BIOLOGY

Most species of eriophyoid mite have a restricted host range, usually being found on a single plant species or group of closely related hosts within the same plant genus or family. In addition, infestations often result in the formation of characteristic host plant symptoms. The close host relationship and host symptoms are a helpful guide to identification prior to the examination of slide-mounted specimens.

The genus *Trisetacus* is currently represented by at least 56 species all of which inhabit gymnosperm hosts in the families Cupressaceae, Pinaceae and Taxodiaceae. *Trisetacus chamaecypari* was described from the cones of *Chamaecyparis nootkatensis* (Smith, 1977) and has since also been recorded from the cones and foliage of *Chamaecyparis lawsoniana*, *Chamaecyparis thyoides*, *Juniperus virginiana* and *Cupressus macrocarpa* (Smith, 1984). Finding *T. chamaecypari* inhabiting \times *C. leylandii* is not surprising because this host is a hybrid formed by a cross between *C. nootkatensis* and *C. macrocarpa*.

The biology of *T. chamaecypari* has not been investigated. Studies of some of the North American species of *Trisetacus* found that in those that inhabit fruiting bodies and vegetative buds, such as *T. chamaecypari*, the females migrate from the feeding sites in the autumn and hibernate in fresh parts of the plant (Smith, 1984). The following spring as new growth begins the females resume feeding and egg laying. The generation time from egg to adult takes 3–4 weeks, with the adults of both sexes apparently living for several weeks. The early summer generation then produces a second generation in the autumn to complete the cycle (Smith, 1984).

GEOGRAPHICAL DISTRIBUTION

Most of the known species of *Trisetacus* are Holarctic, being found in Europe and North America (Amrine & Stasny, 1994; 1996), the exceptions are: *T. abietivagrans* Kandon from Japan (Kandon, 1981), *T. calvus* Navia & Fletchmann from Brazil (Navia & Fletchmann, 2000), *T. taiwanensis* Huang from Taiwan (Huang, 2001) and *T. distinctus* Smith, a new country record in Taiwan (Huang & Boczek, 1996). *Trisetacus chamaecypari* was described from Canada (Smith, 1977) and is recorded from coastal British Columbia and southern Ontario, the USA (coastal Oregon, California and Pennsylvania) (Smith, 1984), and Britain, reported here.

Four species of *Trisetacus*, namely: *T. juniperinus* (Nalepa) and *T. quadrisetus* (Thomas) both on *Juniperus communis*; *T. laricis* (Tubeu) on *Larix decidua*, and *T. pini* (Nalepa) on *Abies pectinata* and *Pinus sylvestris* have been recorded in Britain (Swanton, 1912; Bagnall & Harrison, 1928; Burkill, 1930; Turk, 1953). Smith (1984) rightly points out that no, or very incomplete, morphological descriptions exist for *T. quadrisetus*, *T. laricis* and *T. pini* thus making a definitive identification difficult. Most of the early eriophyid records were based solely on observations of host damage, i.e. 'distinctive' symptoms such as erineae, galls and leaf rolling and not by examination of slide-mounted mites, a practice that continues to this day particularly in amateur gall-recording circles. As a result it is rare to find any reference specimens that can be used to confirm these records. There were, for example, no specimens of *Trisetacus* deposited in the CSL or Forest Research Agency collections (C. Tilbury & S. Heritage, pers. comm. 2002) and no examples of *T. chamaecypari* in the Natural History Museum (NHM), London (A. S. Baker, pers. comm. 2002) prior to this find.

DETECTION AND IDENTIFICATION

Host symptoms indicating an infestation by *T. chamaecypari* are not obvious and required close observation. Infested terminal vegetative buds had turned brown and died. Dissection of these dead buds revealed the remains of old mite colonies and examination of the healthy foliage revealed the presence of the live mite in amongst the bases of the scale-like leaves. In life these mites are pale yellow, spindle-shaped and very small, the largest specimens being 275 μm in length and therefore barely visible to the naked eye (Fig. 1a–d).

Members of the genus *Trisetacus* are easily separable from all other eriophyid genera by the presence of three setae on the prodorsal shield (two scapular and one anteriomedial) (Fig. 1a) and identification to genus can be made using Amrine (1996). At the present time there is no fully comprehensive key available to the species of *Trisetacus*. In his review of 22 North American species, Smith (1984) provided the following description of *T. chamaecypari*:

'Prodorsal shield 24–32 \times 37–49; admedial lines long; with depressed pit postero-medially; anteromedial shield setae long (2/5–1/2 as long as shield). Idiosoma of ♀ moderately long (250–275), of ♂ short (150–200). Opithosoma of ♀ with 63–75, of ♂

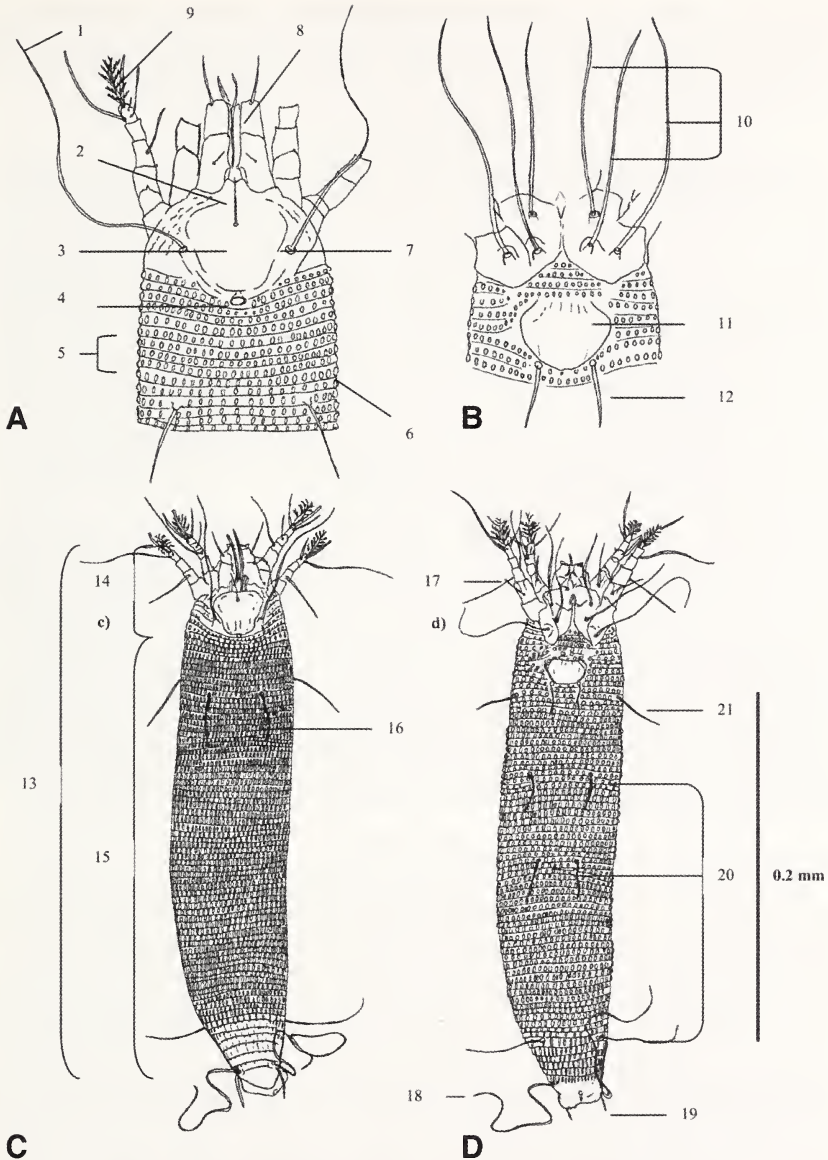


Fig. 1. *Trisetacus chamaecyperi* (female specimen).

A, dorsal prosoma—(1) scapular seta (2) anteriomedial seta (3) prodorsal shield (4) depressed pit (5) annuli (6) microtubercle (7) admedial line (8) pedipalps (9) empodial featherclaw.

B, coxo-genital region—(10) coxal setae (11) genital shield (12) genital seta.

C, dorsal aspect—(13) idiosoma (14) prosoma (15) opithosoma (16) dorsal seta.

D, ventral aspect—(17) ventral femoral seta (18) caudal seta (19) accessory seta (20) ventral setae (21) lateral seta.

A & B adapted from Smith (1984).

with 52–65 annuli; microtubercles elongate elliptical basally, dome-shaped and rounded apically. Pedipalps shorter than to as long as prodorsal shield (20–32). Empodial featherclaws with 6–8 rays. Femora II with ventral setae'. (all measurements in μm).

ECONOMIC DAMAGE

Of the known *Trisetacus* species, five appear to be the most economically damaging, namely; *T. ehamanni* Keifer (Saunders & Harrigan, 1976), *T. campnodus* Keifer & Saunders (Keifer & Saunders, 1972) and *T. gemmavitiensis* Styler *et al.* (Styler *et al.*, 1972) on *Pinus sylvestris*; *T. juniperinus* (Castagnoli & Simoni, 1998; Roques *et al.*, 1999) on *Cupressus sempervirens* and *T. kirghisorum* Shevtchenko (Organezova & Pogosova, 1994) on *Juniperus polycarpus* and *Juniperus foetidissima*. Postner (1976) discusses the economic importance of the eriophyoid species known to occur on fir and spruce in Europe including data on *T. abietis* Postner, *T. grossmani* Keifer; *T. pini floricolus* Trotter and an unidentified *Trisetacus* species.

No bud or foliar symptoms have been reported due to the presence of *T. chamaecypari* on any of its recorded hosts. However, infestations in the cones of the type host *C. nootkatensis* have been reported to result in the destruction of a significant proportion of the seeds (Hunt, 1976).

The first seedlings of $\times C. leylandii$ were discovered in south Wales in 1888 (Edlin, 1975) and since then eight cultivars have been developed. Being a vigorous and fast growing ornamental, $\times C. leylandii$ has become commercially important in many parts of the world. It is planted extensively as hedging, used in shelter belts and is a popular garden ornamental in the United Kingdom. In New Zealand and Australia it is used in timber production and in the USA it is used as a 'Christmas tree'. The damage that *T. chamaecypari* may cause to $\times C. leylandii$ has yet to be assessed in economic terms. It appears from the material examined that the damage caused is limited to some of the smaller terminal buds. All cultivars of $\times C. leylandii$ are sterile and must be propagated by cuttings, so any potential damage to the flowers or cones that are occasionally produced is of lesser significance than the bud damage.

DISCUSSION

The population of *T. chamaecypari* on the hedge in Cheshire may have been present for some time, remaining unnoticed due to the small size of the mites and the subtle nature of damage they cause. It is also possible that this species will be found elsewhere in Britain because all the known hosts of this mite have been grown widely here for many years, eriophyoids are easily dispersed on air currents and in the case of $\times C. leylandii$ the large scale and obligatory use of vegetative propagation would provide an efficient means of dispersal. It is most likely that *T. chamaecypari* was imported into Britain on one of its natural hosts. Non-indigenous eriophyoids are inadvertently and regularly imported into the British Isles on a variety of plants, e.g. *Aceria ficus* (Cotte) and *Rhyacaphytoptus ficifoliae* Keifer on Fig *Ficus carica*. (Ostojá-Starzewski, 2002), and occasionally become naturalised e.g. *Vasates quadripedes* Shimer on Sugar maple *Acer saccharinum* (Ecott, 2002; Wurzell, 2002).

ACKNOWLEDGEMENTS

The authors thank Patrick Fay for submitting the sample of damaged foliage and Dr Anne Baker (Natural History Museum), Christine Tilbury and Dr Stuart Heritage (Forestry Research Agency) for information regarding their invertebrate collections. This work was funded by the Plant Health Division of DEFRA.

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CADDIS FLIES (TRICHOPTERA) COLLECTED FROM WICKEN FEN, CAMBRIDGESHIRE AND MINSMERE, SUFFOLK DURING 2004–2005

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ABSTRACT

Caddis fly records from two large wetland nature reserves in south-east England are reported. Nineteen species were recorded from Wicken Fen, Cambridgeshire and 21 species from Minsmere, Suffolk during 2004–2005. The most important find was a specimen of the Red Data Book 1 species *Grammotaulius nitidus* (Muller), which has not been recorded at Wicken Fen for nearly 70 years

Wicken Fen [TL 55 70] is a National Nature Reserve that was set up to protect part of the fen from drainage and has been owned by the National Trust since 1899. The network of dykes and reed beds at this site supports a diverse caddisfly fauna. I visited there on 12–13.vi.2004 and 2–3.ix.2005, and collected 19 species (Table 1). Most specimens were collected using two MV light traps (with permission); one set up in Sedge Fen compartment 19 and the other in St Edmund's Fen compartment 93. Sweeping was undertaken during the day but few specimens were caught. Four of the species recorded are not listed in Friday & Harley (2000): *Ecnomus tenellus* (Rambur) and *Linnephilus sparsus* Curtis are new records for the locality; the larvae of *Leptocerus tineiformis* Curtis were found previously in 1990 and 1991, and there is a single prior record of *Linnephilus extricatus* McLachlan from 1907 (S. Warrington, pers. comm.). Additionally, *Molanna angustata* Curtis has not been recorded there since 1936.

Table 1. Species of adult caddis flies collected from Wicken Fen, Cambridgeshire during 2004–2005.

<i>Ceraclaea senilis</i> (Burmeister)	2–3.ix.2005
<i>Ecnomus tenellus</i> (Rambur)	2–3.ix.2005
<i>Glyptotaelius pellucidus</i> (Retzius)	2–3.ix.2005
<i>Grammotaulius nigropunctatus</i> (Retzius)	12–13.vi.2004, 2–3.ix.2005
<i>Grammotaulius nitidus</i> (Muller) RDB1	2–3.ix.2005
<i>Holocentropus dubius</i> (Rambur)	12–13.vi.2004
<i>Holocentropus picicornis</i> (Stephens)	12–13.vi.2004
<i>Leptocerus tineiformis</i> Curtis	2–3.ix.2005
<i>Linnephilus affinis</i> Curtis	2–3.ix.2005
<i>Linnephilus extricatus</i> McLachlan	2–3.ix.2005
<i>Linnephilus flavicornis</i> (F.)	12–13.vi.2004, 2–3.ix.2005
<i>Linnephilus incisus</i> Curtis	2–3.ix.2005
<i>Linnephilus lunatus</i> Curtis	2–3.ix.2005
<i>Linnephilus marmoratus</i> Curtis	2–3.ix.2005
<i>Linnephilus sparsus</i> Curtis	2–3.ix.2005
<i>Molanna angustata</i> Curtis	2–3.ix.2005
<i>Mystacides longicornis</i> (L.)	12–13.vi.2004, 2–3.ix.2005
<i>Oecetis ochracea</i> (Curtis)	12–13.vi.2004, 2–3.ix.2005
<i>Phryganea grandis</i> L.	12–13.vi.2004

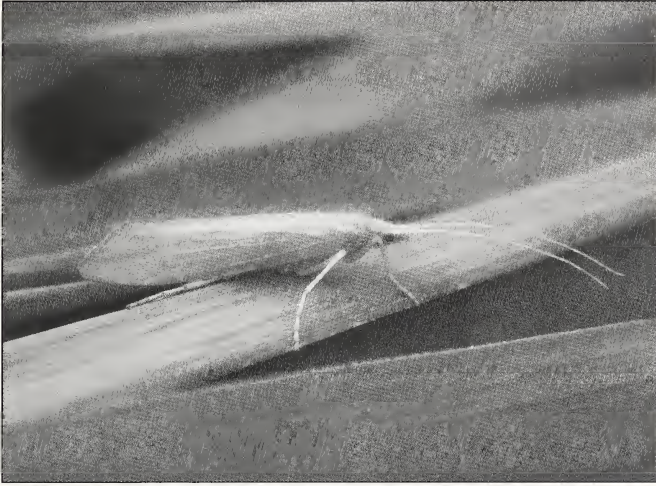


Fig. 1. *Grammotaulius nitidus* (Muller), female, collected Wicken Fen, Cambridgeshire, 2 September 2005, forewing length 20 mm.

The most important record was of *Grammotaulius nitidus* (Muller) (Fig. 1), which is a RDB1 species that has not been recorded from Wicken Fen since 1936 (Wallace, 1991 and S. Warrington pers. comm.). The National Caddis Recording Scheme has records from only 19 British sites and the last British record supported by a voucher specimen (at the Royal Scottish Museum) was collected in 1967 from Barton Turf in Norfolk (I. D. Wallace, pers. comm.), and there is a published record from Kent in 1977 (Harman, 1978).

The single specimen collected recently at Wicken Fen is a female and was found at night on a reed near to the light trap in Sedge Fen compartment 19. I was able to take photographs of this specimen while it was alive and these are believed to be the first live photographs of this species ever taken in Britain. The identification was confirmed by Peter Barnard who compared its genitalia with others in the collections at The Natural History Museum (NHM). When clearing the genitalia it was noted that the abdomen was full of eggs, and that the spermatheca was swollen, indicating that she had recently mated (P. Barnard pers. comm.). This suggests that there is probably a breeding population at Wicken Fen. The larvae of this species have yet to be found in Britain (Wallace *et al.*, 2003); it is hoped this confirmation of a breeding site will encourage searches for the larvae, or breeding from an egg-mass, as the identification characters based on Russian material are very uncertain (I. D. Wallace, pers. comm.). The specimen, preserved in alcohol, has been deposited at the NHM and is the first addition of this species to the collection since 1922.

Minsmere [TM 474 672] is a nature reserve owned by the Royal Society for the Protection of Birds. It is a brackish to fresh-water wetland next to the sea, with open water areas and reed beds (Ogilvie, 1979). A total of 21 species (Table 2) was collected during 10–11.ix.2004 and 30.vii–1.viii.2005. All specimens were collected using two MV light traps, set up near the Eel's Foot Pub in 2004, and inside the reserve (with permission) in 2005 – one on a walkway over a pond in the sandpit and the other in nearby scrub. Sweeping was unsuccessful. The records have been passed

Table 2. Species of adult caddis flies collected from Minsmere, Suffolk during 2004–2005.

<i>Agrypnia pagetana</i> Curtis	30.vii–1.viii.2005
<i>Agrypnia varia</i> (F.)	30.vii–1.viii.2005
<i>Athripsodes aterrimus</i> (Stephens)	30.vii–1.viii.2005
<i>Ecnomus tenellus</i> (Rambur)	30.vii–1.viii.2005
<i>Glyptotaelius pellucidus</i> (Retzius)	10–11.ix.2004
<i>Holocentropus picicornis</i> (Stephens)	30.vii–1.viii.2005
<i>Lepidostoma hirtum</i> (F.)	30.vii–1.viii.2005
<i>Leptocerus tineiformis</i> Curtis	30.vii–1.viii.2005
<i>Limnephilus affinis</i> Curtis	10–11.ix.2004, 30.vii–1.viii.2005
<i>Limnephilus binotatus</i> Curtis	30.vii–1.viii.2005
<i>Limnephilus centralis</i> Curtis	10–11.ix.2004
<i>Limnephilus decipiens</i> (Kolenati)	10–11.ix.2004
<i>Limnephilus flavicornis</i> (F.)	10–11.ix.2004, 30.vii–1.viii.2005
<i>Limnephilus hirsutus</i> (Pictet)	30.vii–1.viii.2005
<i>Limnephilus lunatus</i> Curtis	10–11.ix.2004
<i>Limnephilus marmoratus</i> Curtis	10–11.ix.2004, 30.vii–1.viii.2005
<i>Limnephilus sparsus</i> Curtis	10–11.ix.2004, 30.vii–1.viii.2005
<i>Melampophylax mucoreus</i> (Hagen)	30.vii–1.viii.2005
<i>Mystacides longicornis</i> (L.)	10–11.ix.2004, 30.vii–1.viii.2005
<i>Polycentropus flavomaculatus</i> (Pictet)	30.vii–1.viii.2005
<i>Trienodes bicolor</i> (Curtis)	30.vii–1.viii.2005

to the RSPB who have updated their faunal list for this locality. In addition to the species in Table 2, the following species are also known from this site – *Agraylea sexmaculata* Curtis, *Grammotaulius nigropunctatus* (Retzius), *Limnephilus rhombicus* (L.), *Oecetis lacustris* (Pictet), *Oecetis ochracea* (Curtis) and *Phryganea grandis* L. (R. Harvey pers. comm.). It is anticipated that this list will grow with further collecting.

I would like to thank Peter Barnard (NHM) for confirmation of identifications, Ian Wallace for additional comments, Martin Lester (NT) for permission to collect at Wicken Fen, Stuart Warrington (NT) for a current Wicken Fen checklist, Robin Harvey (RSPB) for permission to collect and for a current Minsmere checklist, and Andrew Ross (NHM) for general help.

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ANNOUNCEMENT

Who will watch the small things that run the world?

Recruiting the next generation of invertebrate specialists

Invertebrate Link (JCCBI) Conference 2006
9th November, the Natural History Museum (Flett Theatre), London

Britain has a long tradition of natural history. Generations of amateur naturalists have played a key role in accumulating knowledge of our flora and fauna. Such knowledge is vital to conservationists, and is increasingly important as we face the challenges of accelerating environmental change. However, there are concerns that the natural history tradition is slipping away. Many factors have been blamed for its decline: urbanisation and a diminishing sense of connection with the countryside, decreasing leisure time, children playing computer games instead of playing outdoors, the loss of nature studies and field trips from the school curriculum.

As well as accounting for the majority of our native biodiversity, insects and other invertebrates are critical to the survival of many other species – either as pollinators for plants, or as food for birds and other animals. They also do much of the work that keeps ecosystems functioning – contributing to decomposition and keeping soils in good condition, for example. Invertebrates really are ‘the little things that run the world’ in the words of E. O. Wilson. They also provide excellent indicators of environmental change. Freshwater invertebrates have been used for many years to monitor the water quality of rivers, and changes in insect behaviour and distribution are now being used to monitor climate change. Entomology has long been at the heart of natural history study, for good reason.

If the next generation of natural historians and invertebrate specialists is to be inspired, nurtured and supported, many factors will need to be considered. This conference brings together representatives of the media, the education sector, publishers, specialist societies and conservation charities, amongst others, to explore the solutions and the underlying problems.

Attendance of the conference is free, and lunch and refreshments will be provided. However, delegates are requested to **confirm in advance** that they will be attending, to assist registration on the day. Please contact:

Oliver Cheesman (oliver@dipsacus.org)
Chairman, Invertebrate Link (JCCBI)



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BRITISH JOURNAL OF ENTOMOLOGY AND NATURAL HISTORY

Published by the British Entomological and Natural History Society
and incorporating its Proceedings and Transactions

Editor: J. S. Badmin, Coppice Place, Perry Wood, Selling, nr Faversham, Kent ME13 9RB (Tel: 01227 752291) email: jbadmin@btinternet.com

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British Journal of Entomology and Natural History is published by the British Entomological and Natural History Society, Dinton Pastures Country Park, Davis Street, Hurst, Reading, Berkshire RG10 0TH, UK. Tel: 01189-321402. The Journal is distributed free to BENHS members.

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Typeset by Dobbie Typesetting Limited, Tavistock, Devon.

Printed in England by Henry Ling Ltd, Dorchester, Dorset.

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Cover photograph: Adult ant lion *Euroleon nostras* (Fourcroy) (Myrmeleontidae), Minsmere, Suffolk, 27.vii.2005. Photo: J. B. Higgott.

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CHANGES IN ANTENNAL SEGMENTATION DURING THE NYMPHAL DEVELOPMENT OF BRITISH GRASSHOPPERS (ORTHOPTERA: ACRIDIDAE)

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ABSTRACT

The mode of increase in the number of antennal segments during nymphal development common to ten species of British grasshoppers is described and shown to correspond with that recorded by others for a range of non-British examples. This provides a theoretical background to the system used previously for deriving numerical nymphal stages from antennal segmentation in two species, and forms the basis of a simpler procedure now proposed for this purpose. Enumeration of a stage by the means described reveals, for an adult, the number of stages through which it has passed and, for nymphs of the last two instars, the total number required to complete development; in combination with other features it may provide a useful indication of this for certain nymphs at one stage earlier.

INTRODUCTION

A typical feature of the nymphal development of grasshoppers is the increase in the number of antennal segments that accompanies each moult. Should these changes follow a predictable pattern a count of the segments would afford a useful addition to the other characters normally enlisted to indicate the serial number of the stage attained. The upsurge of attention to the locust problem in the early years of the last century gave impetus to the recording of such counts, so that Uvarov (1928) was able to produce a table, compiled from various sources, of the antennal segmentation of successive stages of eight named locust species. Two aspects of these counts stand out: their close similarity, stage by stage, for most of the species included; and their variability which, although small, often involved listing as ranges. Uvarov also commented that in numerous counts for *Locusta migratoria* (L.) Lebedeva (1925) had found some deviations from the averages shown in the table, so that identification of a stage by this means alone could be liable to error.

Although counts of antennal segments continued to be recorded, this variability caused their potential value for this purpose to be rather under-explored. Uvarov (1928) had also warned that such counts could be difficult to determine as some segments were often very imperfectly separated. A few counts introduced in studies of modified developmental histories of some locust species (e.g. Burnett, 1951; Rемаудиере, 1954) lent general support to conclusions based largely on other characters, but views differed on whether, for inclusion in the totals, these poorly-separated segments should be regarded as single or double. A notable contribution had already been made by Michelmores and Allan (1934) who showed that, for the Red-Winged Locust *Nomadacris septemfasciata* (Serv.), appending to the total count a note of the position of these rudimentary sutures permitted the recognition of the stage of any hopper with certainty. The possible significance of the linking of these two variable aspects of segmentation appears to have received no further attention at the time.

While these counts were being recorded some efforts were made to determine the manner in which the "new" segments originated. Uvarov (1928) reproduced

a diagram of Takahashi (1925) showing for *L. migratoria* how the segments of each stage became divided to give the increased number of the next. Paoli (1937) gave a similar scheme in tabular form for the Moroccan Locust, *Doclostaurus maroccanus* Thunb. Both schemes show that, for these species, the two basal segments (scape and pedicel) and the five apical segments of the first nymphal stage are not involved in the subsequent segmental divisions. The agreement between these was noted by Santoro and Carames (1973) who in turn gave a detailed and clearly presented account of a similar process for twelve South American species, differing only in that the number of unaffected apical segments was less than five in some of these.

As regards British grasshoppers, information of this nature has been slow to emerge. The first list of segmental counts for almost all nymphal stages of both sexes of ten species was produced by Richards and Waloff (1954). Here again the broad equivalence between the figures for a particular stage of the different species is apparent, as also is the need for the counts to be expressed as ranges, sometimes of as many as four or five consecutive figures. There must be at least a suspicion that the spread of seven figures for "Instar II" of female *Chorthippus brunneus* (Thunb.), showing a hint of two maxima, could have resulted from confusion between stages two and three.

A range of counts for 30 individuals of each sex for the first three or four stages of *C. brunneus* was given by Hassall and Grayson (1987). Counts for the later nymphal stages and for adults of *C. brunneus* (Collins, 2001), and a few for the full development of *Stethophyma grossum* (L.) (Collins, 2003) were used to ascribe serial numbers to the stages of these species. This was based on a system recognising that the variation resulted from the position as well as the presence of incompletely separated segments, but presented without explanation. The theoretical background to this is shown here to be provided by the manner in which new segments originate at each moult by subdivision of those of the preceding instar.

EXPERIMENTAL

All ten species of Acrididae currently accepted as resident in mainland Britain (see Marshall & Haes, 1988) have been reared from eggs laid in captivity and, except for *Omocestus rufipes* (Zett.), from first-stage nymphs taken in the field. These were reared individually under conditions similar to those described previously for *C. brunneus* (Collins, 2001). Details of the antennal segmentation were recorded for all instars and for the resulting adults, and supplemented by similar data for a full range of wild-caught examples. Additionally, complete sequences of the antennal sheaths detached from nymphal casts of both sexes of reared individuals were prepared for microscopic examination and the changes in segmentation for all species found to reproduce those seen in the living insects. While numerous examples of the more abundant species have been examined in this way, the numbers available have of necessity been reduced for those less widely distributed. For *Chorthippus vagans* (Eversmann) in particular, only about 20 individuals, including those bred in captivity, were reared. Most samples were taken in south-east England, and all south of the 300km National Grid line. For all specimens available the growth processes described below were found consistently in both sexes of all ten species.

RESULTS

The antennae of first-stage nymphs consist of a scape, a pedicel, and a flagellum of 11 segments, of which the first and sixth are the longest while the second to the

sixth show an overall, although often not quite regular, increase in length (Fig. 1). At the inner apical corner of the seventh is a specialised area, usually recognisable at low magnification in the living insect as a small blister-like protuberance, somewhat smoother than the background and often differing slightly in colour (Collins, 1992). This retains its position relative to the apex throughout development, and may consequently provide a useful marker for the five apical segments which, with the scape and pedicel, are not involved in the production of new segments as growth proceeds (Fig. 2). For the subsequent stages therefore the changes that occur may be related to flagellar segments 1 to 6 of the first stage. In accordance with the nomenclature of Santoro and Carames (1973) the terms "basal segment" will be applied to the first of these, "basal group" to all segments subsequently derived from this, and "medial" to segments 2 to 6 and those derived from them.

The somewhat complex appearance of the schemes shown by Takahashi (1925) and Paoli (1937) is considerably simplified when recognised as presenting two distinct processes occurring simultaneously. At each moult one new segment is split off from the apex of the basal segment while, at the same time, a sequence of subdivision of each segment into two, and no more, beginning at segment 6 of the first instar moves progressively down the flagellum towards the base. At the first moult, segments 1 and 6 both become divided into two, while new divisions appear on segments 5, 4 and sometimes 3, becoming progressively weaker as the base is approached. Even on segments 1 and 6 the new divisions are recognisable as being slightly weaker than those of the first stage, and by causing almost no indentation of the side margins, while all the new divisions leave the relative lengths of the pre-existing segments virtually unchanged (Fig. 1).

Examination of the cast skins provides confirmatory evidence for the sites of the new segments from the distribution of the coeloconic sensillae. In the first instar two of these are normally present on the underside of segments 2 and 4 (although one or both may be missing from either segment or, very occasionally, an additional one may be present), while segments 1, 3 and 5 have none. Segment 6 bears a larger and rather variable number. In the second stage the subdivision of segment 1 causes segment 2 to move up into third place, accompanied by its coeloconic sensillae, while that of segment 6 carries the coeloconic sensillae into the new apical portion, leaving the basal portion with none. Moreover, at the first appearance of subdivision of each segment downwards from 6 in this and the later instars, any coeloconic sensillae present pass without change into the new apical portion. The change for segment 4 at the first moult may therefore reflect both these effects, the same movement up the antenna shown by segment 2, usually accompanied by the subdivision passing down (Fig. 1).

From the third instar onwards the divisions resulting from the doubling process passing down the antenna no longer show the gradual decrease in intensity noted for the second stage. Nonetheless, the advance often results in only a partial subdivision of the segment at the leading edge; at the following moult this division becomes complete while the next segment down shows the partial subdivision. Because this subdivision can show all gradations between being scarcely visible and being almost as definite as the others the segment involved may be referred to as the "doubtful" segment. Occasionally two adjacent segments show this effect, one having a fairly marked subdivision and the other only a faint indication of this. Eventually, and usually in the third or fourth instar, the foremost segment of the basal group moving up the antenna meets the front of the doubling process passing down and becomes the doubtful segment. While the progress of the former is regular and predictable the

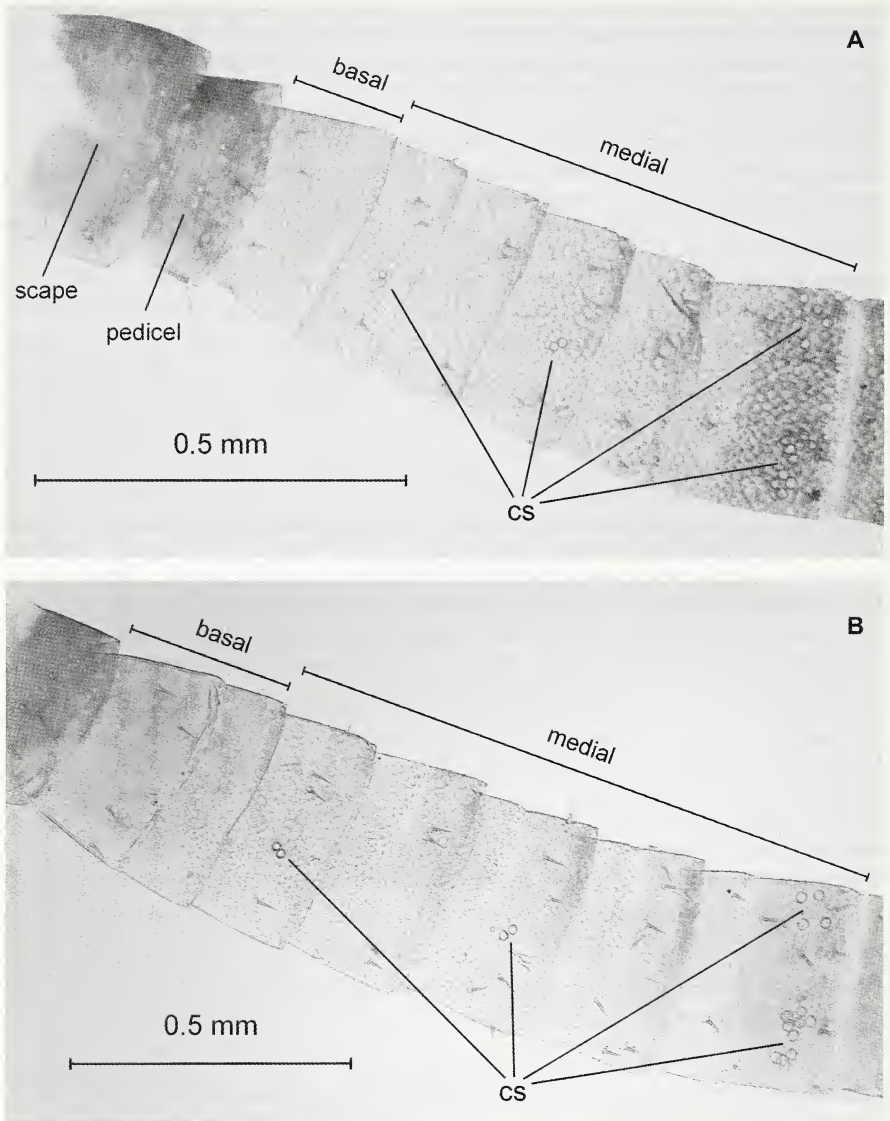


Fig. 1A & B. Basal and medial portions of the first two antennal casts from a nymphal sequence of female *Stethophyma grossum*. The sites of the new segments in the second (B) are shown by the resulting displacement of those bearing the coeloconic sensillae (cs).

rate of advance of the latter can vary to some extent from moult to moult and between individuals. When, as often happens, the advance of the doubling front proceeds at one segment per moult the site of the doubtful segment remains constant relative to the flagellar base, and for many individuals tends to be in the third or fourth position.

As the stages progress, each successive new segment of the basal group gradually lengthens as it passes up the antenna so that, in the absence of further subdivision, these segments would form a sequence, extending to at least the first of the medial series, showing a regular increase in length. The effect of the downward subdivision however is the production of two new segments, each only slightly more than half as long as that from which it was derived. While the doubtful segment, if regarded as single, conforms to the regular increase in length, and is longer than the adjacent component of the fully-divided segment beyond, if regarded as divided into two, each new portion is shorter than the undivided segment immediately nearer the base. This sudden change in regularity is usually very noticeable in nymphs (Fig. 2). In adults,

Total count, based on Mason's notation. Sum, as defined in text, 22 for each.

A 19 (3+4)
 B 18 (4+5)
 C 17 (5+6)

Reduced count, equivalent to the original 5 medial segments, plus 3 from the basal group.

A } 8
 B }
 C }

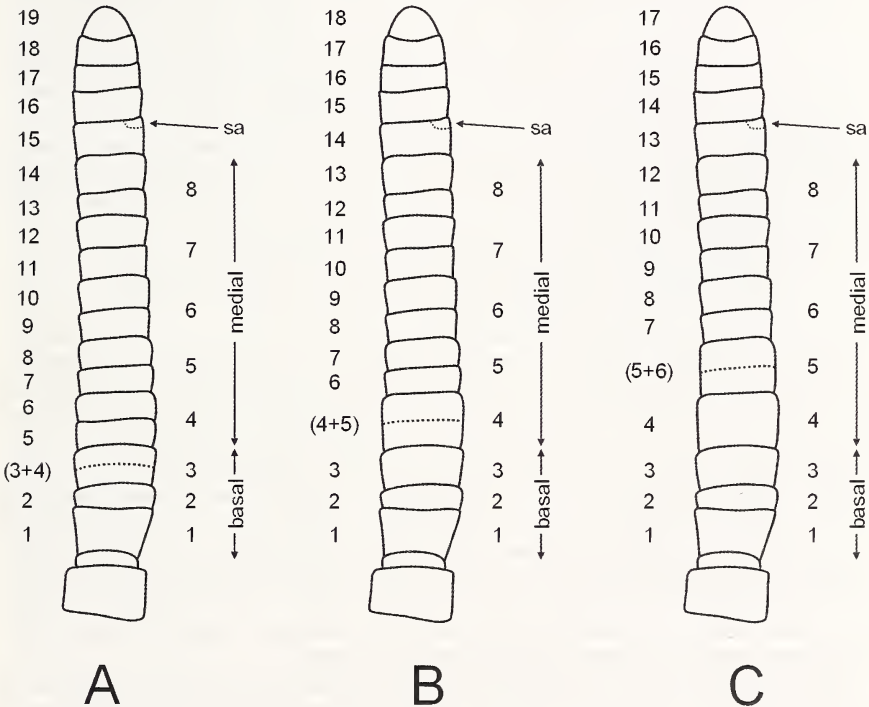


Fig. 2. Segmentation (diagrammatic) of the left antenna of a third instar acridid. (A) showing partial subdivision of the flagellar segment in the third position, (B) in the fourth and (C) in the fifth. All three show the site of the specialised area (sa), and have the total flagellar count on the left. The reduced count, shown on the right, is the same for A, B or C, whichever segment is regarded as the doubtful.

particularly in males, the marked increase in length of the antennae at the final moult may lead to a succession of mid-antennal segments having much the same length. This does not usually affect the relative lengths in the region where the doubtful segment is likely to occur, although it may reduce the contrast between them.

DISCUSSION

For all ten British species the manner of increase in the number of antennal segments follows the same basic pattern as that already described by others for several non-British species. This permits the assessment of the order of any nymph in the developmental sequence and, for adults, the number of stages through which they have passed. The regular production from the basal segment of one new segment per moult would provide an immediate indication of the stage attained were it not for the complication introduced by the advance of the doubling front. Recognition of the doubtful segment serves to show how far this has reached, and thus provides a means of allowing for it. This was the background to the empirical procedure used earlier for this purpose (Collins, 2001, 2003). In a modification of the notation introduced by Mason (1954), the sequential numbers of the two partially fused segments were included in brackets after the total flagellar count. Addition of the first of these numbers to the total count yielded a figure that was constant for, and typical of, any particular instar. This addition of a positional number to a total that already includes it is closely equivalent to regarding all the basal and medial segments as having been doubled, thus eliminating the variable aspect. For the first instar, with as yet no doubtful segment, this system is not applicable; for the second the sum is found to be 20 and then to increase by 2 at each subsequent moult up to a total of 28 for an adult that has passed through five nymphal stages. Disadvantages of this procedure are that it involves counting all the flagellar segments when, for at least the later instars, it is easy to "lose count", and that it leads to a figure with no immediate physical significance.

A simpler alternative procedure involves counting the flagellar segments from the base until the doubtful segment is reached, counting this, and continuing to count each pair beyond, as one, and ceasing as soon as the apical five are reached. This effectively reduces the count to a total that would have been obtained for the medial and basal group segments had no doubling occurred. As the former is constant at five, subtraction of this from the reduced count yields a figure equal to the number of the stage. With a little practice this method of counting becomes much easier than the description would suggest, the eye automatically adjusting to the change from singles to pairs as soon as the doubtful segment is reached. If more than one segment shows incipient subdivision some uncertainty may remain as to which should be regarded as the doubtful. In this method of counting, as indeed in the other, so long as the gradual increase in length shown by the first few single segments and then by pairs is recognised it does not matter unduly which segment is so accepted. This can be appreciated by reference to Fig. 2, where the same reduced count results whichever segment is shown as incompletely subdivided.

Occasionally no obvious doubtful segment as defined by a weaker subdivision is observed, all intersegmental divisions appearing equally strong. Should this be accompanied by the lack of contrast in lengths mentioned earlier the result may be a short sequence of segments of almost equal length, which in turn makes it unclear as to when counting in pairs should commence. An error here will normally lead to the presence of a single segment "over" at the end of the count; counting downwards in pairs from the apical five will usually give a clue as to the correct interpretation.

For living or recently dead specimens, barring damage or deformity, there is normally little difficulty in recognising the segmentation and disregarding the five apical segments. Preserved material may present more of a problem. In spirit-stored nymphs the antennal contents often shrink away from the outer walls, thus confusing the position of the segmental divisions. This difficulty is compounded by the fact that the shrunken inner matter probably exhibits the segmentation of the next instar, so that the divisions no longer correspond either in position or number. In pinned dried adults shrivelling of the antennal tips and a tendency to acquire a surface bloom can obscure both the divisions and the specialised area, making identification of the apical five difficult. Repeated moistening of the tip may help to reveal the segmentation; otherwise some clue may be afforded by the relative lengths of the regions involved. Enumeration by the reduced method will normally lead for adults to a count of 10 or 11; if, when a count of 10 has been reached, the remaining apical portion is less than twice as long as the last pair counted, this count is probably correct. If the remaining apical portion is twice, or rather more, than as long as this the presence of a further doublet giving a count of 11 should be suspected. For both types of problem, removal of the antenna for microscopic examination after clearing with aqueous alkali may be the only solution.

The study of locusts referred to above had shown that variable instar numbers within certain species could be a regular feature of their development, and was associated in some with phase change. Early views on this aspect were well summarised by Albrecht (1955). It is now clear that such variability can also occur in some British species, where it is usually restricted to females. While the males of these, except *S. grossum*, seem normally to have four nymphal instars, females of *C. brunneus* may pass through four or five (Hassall & Grayson, 1987; Collins, 2001) and similar effects, leading to reduced flagellar counts for adult females of 10 or 11 respectively, have been observed in certain other species (Collins, unpublished). Further investigation into potential causes underlying this variability requires an unambiguous means of determining the numerical order of any nymph within a moulting sequence so as to recognise the possible developmental types as they may be encountered.

Serial numbers are often assigned to nymphal stages on the evidence of qualitative characters such as the degree of development of wing-rudiments and external genitalia, or of dimensions, such as hind-femora lengths, that are subject to a range of individual variation. These can only be assessed by comparison with corresponding features in nymphs of known or assumed history, and may show differences too subtle for distinguishing between instars that are members of development sequences differing in the total number of stages. The interpretation of flagellar segmentation described here provides a quantitative approach that requires no previous knowledge of the stages involved, and offers the only external feature so far observed for distinguishing between adults having different nymphal histories.

On the assumption that the last two instars may be recognised by the possession of reversed wing-rudiments (Uvarov, 1966) and distinguished by the degree of development of these, assessment by antennal segmentation of their numerical stage provides an indication of the number of nymphal stages required for their full development. Even before wing-reversal some nymphs that have hind-femora dimensions that fall within or close to quoted ranges for Instar II may show antennal segmentation typical of the third instar. These may be regarded as requiring a total of five nymphal stages for completion of development. In studies designed to monitor nymphal progress within a population, or to examine such variability in development as may be influenced by differences in site characteristics, this approach should offer a simple, rapid and probably more reliable means for judging these aspects.

ACKNOWLEDGEMENTS

The author is indebted to the late Dr. N. Jago for calling his attention to the publication of Santoro and Carames, whose valuable contribution he would not otherwise have encountered. Particular thanks are also due to my son, Graham A. Collins, for his painstaking preparation of the figures in a form suitable for reproduction.

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NOTES ON BRITISH PIMPLINAE AND POEMENIINAE (HYMENOPTERA: ICHNEUMONIDAE), WITH ADDITIONS TO THE BRITISH LIST

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ABSTRACT

British (*sensu* British Isles) species of two ichneumonid subfamilies, Pimplinae and Poemeniinae, treated as “Pimplinae” in a Royal Entomological Society Handbook for the Identification of British Insects (Fitton, Shaw & Gauld, 1988), are reviewed. Taxonomic and nomenclatural changes are indicated, and means to identify the ten additional species found to occur in Britain since the latter publication are given. Significant new data on distribution and/or host associations are given for a total of over 50 species, four of which are here recorded from Britain for the first time.

INTRODUCTION

The main purpose of this paper is to update the Royal Entomological Society’s Handbook for the Identification of British Insects on “Pimpline ichneumon-flies” (Fitton, Shaw & Gauld, 1988; henceforth FSG) as, in the period since the publication of that work, the higher classification of the group treated has been radically revised, ten additional species have been found in the British fauna and, for some species, misinformation needs correcting and/or significant additional information of various kinds can be given. It is timely to do this because the long-standing problem of keying subfamilies of British Ichneumonidae has been largely overcome in a new key drafted by Gavin Broad (http://www.brc.ac.uk/downloads/Ichneumonidae_subfamily-key.pdf), which is further supported by his revised check list of the entire British ichneumonid fauna (http://www.brc.ac.uk/downloads/Ichneumonidae_checklist.pdf) that, of course, gives current perceptions of subfamily content and placements for all taxa.

Unless indicated otherwise, the specimens on which the new (i.e. hitherto unpublished) data are based are deposited in the National Museums of Scotland (NMS). Copious new material and notable data have come especially from various large surveys led in the 1980s or early 1990s by Keith Porter and Peter Holmes (both for the former Nature Conservancy Council) in respectively S. England and Wales, Iain MacGowan for Scottish Natural Heritage in Scottish native pinewoods, Jeremy Field at particularly rich sites in East Anglia (Chippenham Fen and Santon Downham), the late David Phillips in deciduous woodland in the extreme south of Perthshire and, in 2003 and 2004, by Sally Fraser in small woods near York (cited below as “N. Yorkshire” but not necessarily to be taken as Watsonian North Yorkshire). The last two donated processed specimens to NMS while the first four passed their unsorted (or semi-sorted, to parasitic wasps) samples to me for specimen selection and processing (most of which happened too late for inclusion in FSG).

Several species regarded as “rare” by FSG have proved to be reasonably widespread and frequent in suitable habitat within (or somewhat beyond) the area of distribution indicated (e.g. in reedbeds and fens *Fredegunda diluta* (Ratzeburg), *Endromopoda phragmitidis* (Perkins), *Clistopyga rufator* Holmgren and *Itopectis melanocephala* (Gravenhorst); in (especially old) woodland *Dolichomitus agnoscendus* (Roman), *Townesia tenuiventris* (Holmgren), *Scambus calobatus* (Gravenhorst),

S. planatus (Hartig), *Sinarachna pallipes* (Holmgren), *Zatypota albicoxa* (Walker), *Poemenia collaris* (Haupt), *P. lectica* (Gravenhorst), *P. notata* Holmgren and *Deuteroxorides elevator* (Panzer); in grassland and scrub *Acropimpla didyma* (Gravenhorst), *Gregopimpla inquisitor* (Scopoli) and *Delomerista mandibularis* (Gravenhorst)), but specific entries usually are not provided for them here unless there is more to say. On the other hand, in addition to there being no further sightings of *Delomerista laevis* (Gravenhorst) (see later) and the species suggested by FSG as being probably extinct (*Pimpla aethiops* Curtis and *Theronia atalantae* (Poda)) or possibly never really British (*Liotryphon strobilellae* (Linnaeus)), it is a matter of concern that no recent British specimens of *Dolichonitus diversicostae* (Perkins), *D. messor* (Gravenhorst), *Paraperithous gnathaulax* (Thomson), *Afrephialtes cicatricosus* (Ratzeburg) and *Pimpla arctica* Zetterstedt have come to light, despite extensive Malaise trapping programmes and considerable attention having been paid to this group of ichneumonids.

Because many Pimplinae are conspicuous and fairly large insects they were much collected (and described) by early entomologists. Klaus Horstmann's researches on the correct interpretation of valid names in the older literature has sometimes been aided by the long series present in the NMS collection, and has resulted in the elucidation of species limits of several pimpline taxa since FSG, as well as some necessary nomenclatural changes.

The 108 British species treated by FSG as "Pimplinae" are now classified in the four separate subfamilies Pimplinae, Poemeniinae, Rhyssinae and Diacritinae (cf. Gauld, Wahl & Broad, 2002). For the last two (corresponding to Rhyssini and Diacritini in FSG) there is nothing substantive to add: except to say that *Diacritus aciculatus* (Vollenhoven) is much commoner than is suggested by FSG, they are not treated further here. Pimplinae and Poemeniinae (the latter corresponding to part of Poemeniini in FSG) are dealt with below.

Only the species for which a significant change is needed to the entry provided by FSG are dealt with. New distributional records at the country level (treating the whole of Ireland as one) and other major additions are included, but usually extra host records that fall within the summary host range given previously are not. When wider distributions than those given in FSG are indicated it should not generally be taken as evidence of recent range extension, but rather be seen as a consequence of an enlarged range of collecting sites and methods.

CHANGES AND ADDITIONS TO HANDBOOK

In the following treatment the order of taxa follows that given in FSG, except when changes in the higher classification prevent it. To facilitate cross-reference, FSG page numbers are given against species entries below. Terminology and methods of measurement follow FSG, except that metasoma is used instead of gaster. It should be noted that counts of segments of the flagellum and the antenna will differ (flagellum + 2 = antenna): both are used here because sometimes direct citation is involved.

PIMPLINAE

The genera classified by FGS in the tribes Ephialtini and Polysphinctini are all treated as Ephialtini by Gauld, Wahl & Broad (2002), because to recognise the tribe Polysphinctini would leave the remainder of Ephialtini paraphyletic (nevertheless, the informal term "polysphinctines" remains useful). Two of the genera previously placed in Delomeristini by FSG have been transferred to other groups: *Theronia* to

Pimplini and *Pseudorhyssa* to the subfamily Poemeniinae. The groups treated by FSG as the tribes Rhyssini and Diacritini have each been excluded from the Pimplinae following their elevation to subfamily rank.

Ephialtini

Ephialtes manifestator (Linnaeus, 1758) (FSG: 35)

Additional English record: N. Yorkshire (*S. Fraser*).

Additional rearings: 8 ♂ reared in v and vi.1985 from trap-nests consisting of cut stems of *Phragmites australis* set up for the period 19.vii–26.ix.1984 at Chippenham Fen, Cambridgeshire, from which *Trypoxylon attenuatum* (Smith) (Hymenoptera: Sphecidae) was the most numerous aculeate to emerge, but *Passaloecus clypealis* Faester (Sphecidae), the parasitoid *Trichrysis cyanea* (Linnaeus) (Hymenoptera: Chrysididae) and the chrysomelid beetle *Oulema melanopa* (Linnaeus) were also present (*J. Field*); 1 ♂ reared 9/10.viii.1985 from trap-nest in *Sambucus nigra* stems set up for the period 16.vi–8.vii.1985 at the same place, that also produced *Ancistrocerus nigricornis* (Curtis) (Hymenoptera: Vespidae: Eumeninae) and the parasitoid *Hoplocryptus confector* (Gravenhorst) (Hymenoptera: Ichneumonidae) (*J. Field*). These records tend to confirm aculeate Hymenoptera as hosts (see also Matsumoto, 2005) and that *E. manifestator* can be plurivoltine, and show that the winter is passed in the site of development. No females were reared, and indeed the above hosts are not large enough to support normal-sized females of *E. manifestator* (unless the content of more than one host cell were to be consumed). However, 1 ♀ has been reared 8.v.2003 from a trap-nest occupied by the bee *Megachile centuncularis* (Linnaeus) at Broadstone, Dorset (*A. J. Philpott*).

Dolichomitus* and *Liotryphon (FSG: 36)

In addition to those given by FSG, a useful character for the generic placement of males is that, certainly in most cases, the underside of the scape and pedicel is dark in *Dolichomitus*, but pale in *Liotryphon*. Exceptions sometimes (but ?rarely) arise in *D. agnosendus* (Roman) which, as FSG remark, is rather *Liotryphon*-like in certain other respects as well, and in *Liotryphon punctulatus* (Ratzeburg). (All British species except *D. pterelas* (Say) have been seen).

Dolichomitus agnosendus (Roman, 1939) (FSG: 38)

Additional English record: N. Yorkshire (*S. Fraser*).

Additional rearings: 2 ♀, 3 ♂ from dead stems of *Rubus fruticosus* agg. containing *Gracilia minuta* (Fabricius) (Coleoptera: Cerambycidae) (*E. S. Bradford*); 9 ♀, 4 ♂ from fallen dead *Ilex aquifolium* branches with many *Grammoptera ruficornis* (Fabricius) and a few *Pogonocherus hispidus* (Linnaeus) (both Coleoptera: Cerambycidae) (*M. R. Shaw*); 2 ♂ from twigs of *Malus* with *P. hispidus* and *Ptinomorphus imperialis* (Linnaeus) (Coleoptera: Anobiidae) (*A. P. Fowles*).

Dolichomitus imperator (Kriechbaumer, 1854) (FSG: 38)

This predominantly Scottish species has proved to be more widespread in England than indicated by FSG (several additional records: Oxfordshire and Wiltshire). The suggestion (FSG) that hosts in long-dead timber are used is supported by Stuart Taylor's observation (pers. comm.) of a female (now in NMS) apparently ovipositing into a half-fallen 16 years dead *Pinus sylvestris* log on 26.vii.1992 at Loch Garten, Inverness-shire.

Dolichomitus mesocentrus (Gravenhorst, 1829) (FSG: 38)

Rearing record: 1 ♂ from an oak gall of *Andricus kollari* (Hartig) (Hymenoptera: Cynipidae), secondarily occupied by an unknown host, coll. 13.i.2001, em. v/vi.2001, Shorn, Kent (*M. Jennings*).

This species is close to *D. messor* (Gravenhorst), and females of the two are not easy to separate unless specimens of both are available for comparison. In addition to the characters given by FSG, *D. mesocentrus* is on the whole a slenderer insect (second tergite of metasoma ca 1.5–2.1 times as long as wide, as opposed to ca 1.1–1.6 in *D. messor*), but there is substantial variation in both species and small specimens (as judged by fore wing length), especially, are liable to have markedly broader tergites in comparison to their length. The separation of males is easy as only *D. mesocentrus* has a thorn-like projection on the outer side of the mid coxa.

Dolichomitus messor (Gravenhorst, 1829) (FSG: 38)

See under *D. mesocentrus* for notes on separation from that species.

Dolichomitus pterelas (Say, 1829) (FSG: 40)

Additional English record: N. Yorkshire (*S. Fraser*)

Dolichomitus tuberculatus (Geoffroy, 1785) (FSG: 40)

A confirmed rearing from the sesiid moth *Synanthedon culiciformis* (Linnaeus) was obtained by Roy Leverton at Speybridge, Morayshire. Several solitary cocoons were removed 13.iv.1997 from workings of this moth in cut *Betula* stumps, although only 1 ♀ *D. tuberculatus* emerged (4.v.1997).

Townesia tenuiventris (Holmgren, 1860) (FSG: 40)

Scottish record: 4 ♀, Paddockmuir Wood, Errol, Perthshire, Malaise trap, vii.1989 (*D. S. Phillips*).

Liotryphon ascaniae (Rudow, 1883) (= *ruficollis* (Desvignes), invalid) (FSG: 44)

The name *Ephialtes ruficollis* Desvignes, 1856 is invalid (cf. Perkins, 1940, 1943; Yu & Horstmann, 1997, following ICZN Code, 1985 Arts 59b, 60a).

Scottish record: 2 ♀, Paddockmuir Wood, Errol, Tayside, Malaise trap, vii and viii.1989 (*D. S. Phillips*).

Liotryphon caudatus (Ratzeburg, 1848) (FSG: 42)

Scottish record: 3 ♀, Paddockmuir Wood, Errol, Perthshire, Malaise trap ix.1987 and viii.1989 (*D. S. Phillips*).

Liotryphon punctulatus (Ratzeburg, 1848) (FSG: 42)

Rearing record: 1 ♀ from the fungus *Daldinia concentrica* with the pyralid moth *Apomyelois biastriatella subcognata* (Ragonot), on burnt *Ulex*, coll. 4.iv.1992, em. 13.iv.1992, Handy Cross Plain, New Forest, Hampshire (*D. H. Sterling*).

Exeristes ruficollis (Gravenhorst, 1829) (FSG: 44)

Although it is relevant to the behaviour of females of *E. ruficollis*, the reference given (twice) by FSG to Thorpe & Caudle (1938) was a mistake: the intended reference is Thorpe (1930).

Afrephtaltes cicatricosus (Ratzeburg, 1848) (FSG:44)

Amended ending of specific epithet (cf. Yu & Horstmann, 1997).

Recorded from Ireland by O'Connor & Shaw (2004), but from a 50 years old specimen.

Fredegunda diluta (Ratzeburg, 1852) (FSG: 45)

Welsh record: 1 ♀, Cors Penally, Pembrokeshire, SM1198, 22.vii.1987 (*P. Holmes*). (The rejection in FSG of a rearing record from a nymphalid butterfly depended more on the highly improbable host than its supposed Welsh provenance).

Endromopoda detrita (Holmgren, 1860) (FSG: 46)

Males of this species can be hard to separate from males of *Scambus nigricans*

(Thomson). However, the underside of the pedicel is usually pale in *E. detrita* but dark in *S. nigricans*.

Endromopoda uitida (Brauns, 1898) (FSG: 47)

Welsh record: 1 ♂, Llyn Ystumllyn, Carnaerfon, SH5238, 12–26.vii.1988 (*P. Holmes*).

Endromopoda phragmitidis (Perkins, 1957) (FSG: 47)

Further rearings from England (*J. W. Ismay*; *M. Jennings*) strongly support the contention that *E. phragmitidis* is primarily a parasitoid of the chloropid fly *Lipara rufitarsis* (Loew) rather than *L. lucens* Meigen, though one specimen apparently from a certain *L. lucens* gall has been obtained (*A. Godfrey*).

Scambus brevicornis (Gravenhorst, 1829) (FSG: 52)

Hosts such as *Hadena* species (Lepidoptera: Noctuidae) in seed capsules of Caryophyllaceae are frequently attacked (19 rearings; many sources); an addition to the host range expressed in FSG.

Scambus calobatus (Gravenhorst, 1829) (FSG: 53)

Several rearings (*M. Jennings*; *M. R. Shaw*) from the workings of *Acrobasis* spp. (Lepidoptera: Pyralidae) on *Quercus* have demonstrated that *S. calobatus* is regularly (though not exclusively) a pseudohyperparasitoid; e.g. attacking cocoons of the braconid *Microtypus wesmaelii* Ratzeburg. It has also been reared from several cocoons in a batch of the gregarious braconid *Macrocentrus linearis* (Nees) in Turkey (*M. R. Shaw*).

Scambus cincticarpus (Kriechbaumer, 1895) (FSG: 53)

As noted under *S. nigricans*, the ecological separation between these two species may not be as strong as supposed by FSG.

Scambus encosuidarum (Perkins, 1957) (FSG: 54)

Host records from *Cydia aurana* (Fabricius) given by FSG are in error: the relevant specimens are in poor condition but probably belong to *S. signatus* (Pfeffer).

Welsh records: several specimens from eight sites (Carnaerfon, Ceredigion, Denbighshire, Merionethshire, West Glamorgan) collected during a survey of Welsh peatlands (*P. Holmes*) suggests that this species is widespread in Wales.

Recorded from Ireland by O'Connor & Butler (1992).

Scambus foliae (Cushman, 1938) (FSG: 54)

Isle of Man record: 1 ♀, Laxey, Croften, ex mine *Heterarthrus aceris* (Kaltenbach) (Hymenoptera: Tenthredinidae) in *Acer pseudoplatanus*, coll. 1.viii.2000, em. 26.viii.2000 (*F. D. Bennett*). These data show that this species is plurivoltine.

English record: 2 ♀♀, New Covert, Melbourne, N. Yorkshire, Malaise trap 5–12.viii.2003 and 15–29.vii.2004 (*S. Fraser*).

Scambus inanis (Schrank, 1802) (= *annulatus* (Kiss), s. str.) (FSG: 50)

The “species” treated as *S. annulatus* (Kiss) by FSG was recognised as probably representing an aggregate, with nomenclatural problems requiring resolution. Partly on the basis of his examination of material in NMS, Horstmann (2005) has now separated two species (*S. inanis* (= *annulatus* (Kiss), s. str.) and *S. signatus* (Pfeffer)) that FSG had treated together as *S. annulatus*, and (see also Horstmann, 2003) recognised a further species (*S. tenthredinum* (Goeze)), apparently related to these two, that FSG had compounded with the seemingly less closely related *S. vesicarius* (Ratzeburg). As all of this material will key to couplet 14 (the last couplet) of the key to *Scambus* given in FSG, that couplet needs replacing with the notes on separation provided below. Furthermore, the distribution and host data needs revision for all of these species.

The characters to separate *S. vesicarius* from the “*annulatus*-group” are straightforward but the separation of *S. inanis*, *S. signatus* and *S. tenthredinum* is difficult as the characters overlap:

S. vesicarius. Female: the somewhat depressed saddle-like area immediately distad of nodus of upper valve of ovipositor bordered laterally by weak carinae; proximal teeth of lower valve of ovipositor well developed, somewhat produced laterally; hind tibia reddish brown, more or less weakly infusate subproximally and apically. Male: fore femur flattened ventrally (hind tibia often coloured as in males of “*annulatus*-group”).

S. “annulatus-group”. Female: the somewhat depressed saddle-like area immediately distad of nodus of upper valve of ovipositor not bordered laterally, rounded; proximal teeth of lower valve of ovipositor poorly developed, not produced laterally; hind tibia subproximally and apically infusate with central area broadly yellow or whitish. Male: fore femur with a double concavity ventrally.

According to Horstmann (2005), 80–90% of specimens of the three species in the “*annulatus*-group” can be separated from the following (overlapping) characters:

<i>S. inanis</i>	<i>S. signatus</i>	<i>S. tenthredinum</i>
Head strongly narrowed behind eyes, tangents to eyes and temples converging on mesosoma (includes propodeum).	Head less narrowed behind eyes, tangents to eyes and temples converging on propodeum or metasoma.	Head as <i>S. signatus</i> . [Although Horstmann’s (2005) figure shows temple longer, it reflects only infraspecific variation].
♀: 2nd flagellar segment 3.0–3.6 × width.	♀: 2nd = 2.6–3.0	♀: 2nd = 2.8–3.0
6th flagellar segment 2.3–2.7 × width.	6th = 2.0–2.3	6th = 2.2–2.3
1st metasomal tergite 0.9–1.1 × width.	1st tergite 0.8–0.9	1st tergite 0.8–0.9
Ovipositor 2.3–2.5 × hind tibia.	Ovipositor 2.4–2.6	Ovipositor 2.5–2.7
♂: 2nd flagellar segment 2.6–3.0 × width.	♂: 2nd = 2.2–2.6	♂: 2nd = 2.5–2.6
6th flagellar segment 1.9–2.3 × width.	6th = 1.7–2.0	6th = 1.8–1.9
Front femur weakly to strongly granulate in ventral concavity.	Front femur in ventral concavity shiny, rarely weakly granulate.	Front femur weakly to strongly granulate in ventral concavity.
1st metasomal tergite 1.3–1.6 × width.	1st tergite 1.1–1.5	1st tergite 1.1–1.5

Scambus inanis is a common and widespread parasitoid of fairly small arboreal hosts, especially lepidopterous leaf-miners and rollers, such as Gracillariidae and Tortricidae. It also commonly behaves as a facultative pseudohyperparasitoid (as do *S. signatus* and *S. vesicarius*). Material in NMS has been reared from the following hosts: Lepidoptera: *Eriocrania* sp. (1) (Eriocraniidae), *Tischeria angusticollella* (Duponchel) (5), *T. ekebladella* (Bjerkander) (4) (Tischeriidae), *Caloptilia alchimiella* (Zepoli) (14), *C. betulicola* (Hering) (7), *C. elongella* (Linnaeus) (2), *C. populetorum* (Zeller) (2), *C. rufipennella* (Hübner) (3), *C. stigmatella* (Fabricius) (6), *C. syringella* (Fabricius) (14), *C. alchimella* or *robustella* Jäckh (15), *Callisto denticulella* (Thunberg) (1), *Parornix betulae* (Stainton) (4), *P. devoniella* (Stainton) (1),

P. scoticella (Stainton) (1), *P. torquillella* (Zeller) (3), *Phyllonorycter coryli* (Nicelli) (1), *P. corylifoliella* (Hübner) (2), *P. emberizaepenella* (Bouché) (1), *P. lautella* (Zeller) (1), *P. maestigella* (Müller) (2), *P. nicellii* (Stainton) (4), *P. platani* (Staudinger) (2), *P. quercifoliella* (Zeller) (3), *P. salicicolella* (Sircom) (1), *P. spinolella* (Duponchel) (1), *P. trifasciella* (Haworth) (1), *P. ulmifoliella* (Hübner) (2), *Phyllonorycter* sp. on *Alnus* (1) (Gracillariidae), *Atemelia torquatella* (Zeller) (3) (Yponomeutidae), *Coleophora alticolella* Zeller (9), *C. ardeaepenella* Scott (1), *C. binderella* (Kollar) (1), *Coleophora* sp. on *Malus* (1), *Coleophora* sp. on *Quercus* (1) (Coleophoridae), *Perittia obscurepunctella* (Stainton) (1) (Elachistidae), *Mompha conturbatella* (Hübner) (9) (Momphidae), *Acleris schalleriana* (Linnaeus) (3), *Ancylis paludana* Barrett (2), *Epinotia immundana* (Fischer von Röslerstamm) (1), *Pandemis cerasana* (Hübner) (1), tortricid sp. on *Betula* (2) (Tortricidae), *Alucita hexadactyla* (Linnaeus) (2) (Alucitidae). Additionally as a pseudohyperparasitoid from cocoons of *Apanteles* (sensu lato)/*Caloptilia* (13), *Macrocentrus*/indet. tortricid (1), *Rhysipolis/Caloptilia* (8), *Meteorus*/indet. tortricid (1) (Hymenoptera: Braconidae), *Phytodietus*/indet. tortricid (1) and ?*Zaglyptus/Chubiona* (1) (Hymenoptera: Ichneumonidae). Also reared from leaf-mines and leaf-rolls of other orders: *Zeugophora* sp. (Coleoptera: Chrysomelidae) (1), *Deporaus betulae* (Linnaeus) (Coleoptera: Attelabidae) (2), *Scolioneura betuleti* (Kug) (Hymenoptera: Tenthredinidae) (1), and “sawfly mining *Acer* or *Tilia*” (1).

***Scambus nigricans* (Thomson, 1877) (FSG:54)**

A note on the separation of males of *S. nigricans* and *Endromopoda detrita* is given under the latter species.

Several specimens reared from stem-inhabiting sawflies, including *Heptamelus* and *Hartigia* spp, at various sites in England appear to belong to *S. nigricans* rather than to the anticipated *S. cincticarpus*. This makes the host range distinction between the two species expressed by FSG (under *S. cincticarpus*) less clear.

***Scambus planatus* (Hartig, 1838) (FSG: 54)**

Additional rearing records: 1 ♀ from acorns with *Andricus quercuscalicis* (Burgsdorf) (Hymenoptera: Cynipidae), which unfortunately does not necessarily reflect the true host. Specimens reared from acorns isolated by Malcolm Jennings show that *Cydia* spp. (Lepidoptera: Tortricidae) (2) as well as *Curculio* spp. (Coleoptera: Curculionidae) (8) serve as host. He has also repeated the rearing from the twig-galling cephid sawfly *Janus femoratus* (Curtis) (3).

***Scambus pomorum* (Ratzeburg, 1848) (FSG: 55)**

Zijp & Blommers (2002) have elucidated the life-history of this univoltine parasitoid of *Anthonomus pomorum* (Linnaeus) (Coleoptera: Curculionidae) in the Netherlands. Adult females emerging in early summer mate and then feed extensively on the larvae of various leaf-mining (and probably other) insects before overwintering as adults. Interestingly, Westwood (1833) long ago recounted observations by E. W. Lewis on adult females of what was probably a *Scambus* species feeding voraciously on the larvae of what was clearly *Caloptilia syringella* (Fabricius) (Lepidoptera: Gracillariidae).

***Scambus signatus* (Pfeffer, 1913) (FSG: 50)**

See also under *S. inanis*. *Scambus signatus* is a common and widespread species (seen from England and Scotland): it usually parasitises hosts in the field layer, including tortricids feeding in the seed pods of Fabaceae and the seed heads of Apiaceae. Material in NMS has been reared from the following hosts: Lepidoptera: *Yponomeuta sedella* Treitschke (1) (Yponomeutidae), *Caryocolum blandella* (Douglas)

(1) (Gelechiidae), *Cydia aurana* (Fabricius) (112, from a large collection of *Heracleum sphondylium* seed heads), *C. nigricana* (Fabricius) (1), *Cydia* sp. in *Vicia sativa* pods (7), [*Cydia* sp. in] *Lathyrus pratensis* pods (5), [*Cydia* sp. in] *Astragalus glycyphyllos* pods (2), [*Cydia* sp. in] *Genista anglica* pods (3), [*Cydia* sp. in] *Ulex* pods (3) (Tortricidae); Coleoptera: cocooned *Cionus scrophulariae* (Linnaeus) (1) (Curculionidae). Additionally as a pseudohyperparasitoid from cocoon of ?*Phytodietus* sp./indet. ?tortricid (1) (Hymenoptera: Ichneumonidae).

***Scambus tenthredinum* (Goeze, 1776) (FSG: cf. 50, 55)**

See also under *S. inanis*. *Scambus tenthredinum* appears to be a rare species, and possibly a specialist parasitoid of the stem-galling tenthredinid sawfly *Euura amerinae* (Linnaeus) (but note that the common species *S. vesicarius* is very much more regularly reared from that host). All material in NMS is reared from *E. amerinae* on *Salix pentandra*: 3 ♀ [1 now in Horstmann collection, Würzburg], Scotland, Linlithgo, West Lothian, coll. 2.i.1983, em. 14-18.vi.1983 (*A.D. Liston*) – these host records were included in error with others that were correctly attributed to *S. vesicarius* by FSG. Horstmann (2005) also cites a specimen in Manchester Museum: 1 ♂, from the same host, England, Bredbury, Cheshire, em. 3.v.1928 (*H. Britten*) – this host record was incorrectly attributed to *S. "annulatus"* by FSG. For non-reared material, only series containing both sexes can reliably be determined (Klaus Horstmann, pers. comm.).

***Scambus vesicarius* (Ratzeburg, 1844) (FSG: 55)**

See also under *S. inanis*. *Scambus vesicarius* is a moderately common and widespread species (England, Scotland, Ireland), especially where *Salix* is plentiful. It specialises on *Pontania* leaf-galls and *Euura* stem-galls (including *E. amerinae*) (Hymenoptera: Tenthredinidae), but sometimes uses other hosts on *Salix*. Some of the hosts given by FSG are rendered unreliable as a result of many nomenclatural confusions in the genus *Pontania* (at least some of the records given for *P. dolichura* (Thomson) should be attributed to *P. nigratarsis* Kopelke, and those for *P. viminalis* (Linnaeus) to *P. aestiva* (Thomson) according to Andrew Liston (pers. comm.)). Three of the 14 records given by FSG for *Euura amerinae* really belong to *Scambus tenthredinum*, but the others are valid.

***Tromatobia lineatoria* (Villers, 1789) (= *oculatoria* misident.) (FSG: 58)**

Horstmann (2001a) has found that the type of *Ichneumon oculatorius* Fabricius, 1798 is a species of *Lissonota* (Ichneumonidae: Banchinae), and that the earliest available name for the pimpline taxon previously known as *T. oculatoria* is *T. lineatoria* (Villers).

***Tromatobia ornata* (Gravenhorst, 1829) (FSG: 58)**

The characters given by FSG to separate this species from *T. ovivora* are by themselves unreliable. The two species may most reliably be separated on the form of the occipital carina: in *T. ornata* it is raised to form a definite flange (seen in dorsal view the flange at the side of the head is ca 0.2 times the width of the fourth antennal segment), whereas the occipital carina is unmodified in *T. ovivora*. Males can also be distinguished on face colour: yellow in *T. ovivora*, but black centrally with yellow orbits in *T. ornata*. In both sexes the mesoscutum of *T. ovivora* is usually entirely black, but in *T. ornata* there is usually a more or less distinct pair of reddish stripes or sometimes more extensive red colouration.

Jim Brock has collected four females of this species by Malaise trapping at two sites in Surrey (Ashted Common in (vii)/viii(ix).1993 and 1994, and Thursley Common in vii/viii.1996) (one in NMS; the remaining specimens in Brock collection, Horniman

Museum). Its known host on the continent is the araneid spider *Argiope bruennichi* (Scopoli) (e.g. Sacher, 2001) but, despite several populations of this colourful spider being established in the extreme south of Britain (Smithers, 2002), it seems improbable that either of the above sites supported an overlooked population at that time. Specimens of *T. ornata* have been reared from a spider's egg sac very different from that of *A. bruennichi* and considered to be *Agalenatea redii* (Scopoli) (Araneidae) collected in 2001 in Hungary (*M. R. Shaw*), suggesting a possible host for the Surrey populations.

Tromatobia ovivora (Boheman, 1821) (FSG: 58)

Welsh record: 1 ♀, Longstone Meadows, Gwent, 23.ix–12.x.1988 (*P. Holmes*).

Characters to separate *T. ovivora* from *T. ornata* are discussed under the latter species.

Tromatobia variabilis (Holmgren, 1856) (FSG: 58)

Several broods have been reared from egg sacs of the araneid spider *Larinioides cornutus* (Clerck) in East Anglia (*M. R. Shaw*), and this seems likely to be its most regular host in Britain.

Clistopyga incitator (Fabricius, 1793) (FSG: 60)

Townes (in Owen *et al.*, 1982) published his view that the series of a *Clistopyga* species collected by Malaise trapping in a Leicestershire garden in 1972–1974 represents an undescribed species close to *C. incitator*. The material is in the American Entomological Institute, Gainesville and, through the kindness of David Wahl, I have been able to examine 3 ♀, 4 ♂ from this series (labelled with various dates from 18 June to September in 1972, 1973 and 1974), and I believe them to be merely rather small examples of *C. incitator*, towards the dark end of the wide spectrum of colour variation seen in British specimens of this species. J.-F. Aubert had previously added (undated) determination labels (as *C. incitator*) to 1 ♀, 2 ♂ of the specimens I saw. One male is labelled “*Clistopyga* 19 Tow. 1975”.

Dreisbachia pictifrons (Thompson, 1877) (FSG: 62)

Gauld & Dubois (2006) discussed the equivocal status of the genus *Dreisbachia*, and somewhat tentatively (though formally) synonymised it under *Schizopyga*. However, this is not followed here in recognition of the different egg-placement strategy (where known): *Dreisbachia pictifrons* on the side of the host's cephalothorax, above the middle two pairs of coxae, and *Schizopyga* species transversely and dorsally on the posterior face of the cephalothorax (see FSG).

Schizopyga circulator (Panzer, 1801) (FSG: 63)

Welsh records: many specimens from 12 sites (Anglesey, Carmarthen, Carnarfon, Ceredigion, Denbighshire, Merionethshire, Pembrokeshire, West Glamorgan) collected during a survey of Welsh peatlands (*P. Holmes*) suggest that this species is widespread in Wales.

Schizopyga podagrica Gravenhorst, 1829 (FSG: 63)

FSG remarked that probably no male had been seen, and failed to distinguish the male of this species from that of *S. circulator*. One male *S. podagrica* has now been seen, reared from the clubionid spider *Cheiracanthium erraticum* (Walckenaer) at Horsell Common, Surrey, em. ix.2000 (*M. Edwards*), from which it is clear that indeed no male had been available to FSG (see key, below).

Schizopyga varipes Holmgren, 1856 (FSG: cf. 17, 62)

Schizopyga varipes was listed as a valid species by Oehlke (1967) but as a probable junior synonym of *S. podagrica* (Gravenhorst) by Aubert (1969). Yu & Horstmann

(1997) list it as a junior synonym of *S. podagrica* without reservation. In older literature (e.g. Schmiedeknecht, 1907) it is treated and characterised as a distinct species, which seems undoubtedly to be the case. Hedström (1990) correctly pointed out the error that FSG regarded the two yellow-faced species of *Schizopyga* in Europe, *S. flavifrons* Holmgren and *S. varipes* Holmgren, as the same (neither had been found in Britain at that time: *S. varipes* was deleted from the British list (Fitton *et al.*, 1978) by FSG on the grounds that all available specimens purporting to be it had been misidentified).

New to Britain (*sensu* British Isles). Two females and two males (one male now in National Museum of Ireland; the rest in NMS) reared by Colm Ronayne in spring 1999 from trap-nests (*Rubus idaeus* stems) placed the previous summer in *Quercus* trees at the edge of a raised bog in Ireland: Derry Hills, Co Laois, and a further male from trap nests in 1999/2000 but without unquestionable locality data (though certainly Ireland) have been seen. Cocoons were recovered from the trap-nests, but there were no host remains: there was no evidence that aculeate Hymenoptera had been involved, although the traps concerned had been occupied by *Ectemnius* (Sphecidae) in one case and *Ancistrocerus* (Vespidae: Eumeninae) in another. The less well-provenanced trap-nest was probably occupied by *Passaloecus* (Sphecidae). Most surprisingly, one stem contained three adjacent cocoons. It was concluded that probably parasitised spiders had entered the trap-nests and that the host remains had been scavenged subsequently (or conceivably pushed out by the parasitoid larva, or even the emerging adult), though positive evidence for this is lacking and it is based entirely on the assumption that *S. varipes*, like its congeners, is a parasitoid of spiders. The presence of three cocoons close together in one trap-stem also requires further explanation.

Key to British *Schizopyga*

1. Female (ovipositor–hind tibia index about 0.1-0.2; metasoma black or in one species red and black) 2
 – Male (metasoma usually black, rarely marked with red in one species). 5
2. Face and clypeus yellow; trochanters mostly ivory (at least below); hind femur dark brown or black (except extreme base and apex ivory). (*Tegula ivory*; *metasoma black*; *hind tibia black, banded with yellow or white centrally and basally*; *antenna with about 21 segments*) *varipes* Holmgren
 – Face and clypeus dark brown (sometimes partly faintly reddish) or black; trochanters black or red (or both); hind femur red, apically darkened 3
3. Metasoma with tergites 4 and 5 usually wholly, and tergites 2 and 3 (often also 1) partly, red (the remainder black). (*Antenna with about 23–24 segments*).
 *circulator* (Panzer)
 – Metasoma black or dark brown 4
4. Tegula yellowish or pale red; tergite 2 at least 1.2 times as long as broad; middle femur usually wholly reddish. (*Antenna with 23–26 segments*) *frigida* Cresson
 – Tegula blackish; tergite 2 less than 1.2 times as long as broad; middle femur reddish but apically darkened. (*Antenna with about 22 segments*) . . . *podagrica* Gravenhorst
5. Face and clypeus almost wholly yellowish; mandible more or less yellow basally; hind femur black, except sometimes at extreme base and apex. (*Tegula mostly yellow*; *antenna with about 20–22 segments*). *varipes* Holmgren
 – Face and clypeus usually uniformly brown or black, sometimes (*podagrica*) partly dirty yellowish white; mandible wholly black; hind femur reddish with the apex darkened. 6

6. Mid femur usually entirely red; tegula mostly yellowish. (*Antenna with 23–26 segments*) *frigida* Cresson
 – Mid femur red but blackish at apex; tegula mostly brown or black 7
7. Metapleuron rather closely punctate and appearing somewhat matt, its sculpture contrasting with the shiny adjacent area of the mesopleuron; pale parts of hind tibia often somewhat reddish; temples rather rounded behind eyes. (*Antenna with 23–25 segments [21 in one exceptionally small specimen]; metasoma usually black but occasionally marked with red*). *circulator* (Panzer)
 – Metapleuron, although sparsely and shallowly punctured, strongly shining like the adjacent area of the mesopleuron; pale parts of hind tibia yellowish white; temples converging behind eyes linearly. (*Antenna with ca 22 segments*).
 *podagrica* Gravenhorst

***Piogaster albina* Perkins, 1958 (FSG: 64)**

FSG gave only two British records (both from England). A further female was reared by Dave Gibbs on 6.iv.2000 from an oak marble gall (*Andricus kollari* (Hartig) (Hymenoptera: Cynipidae)) collected at Goblin Combe, Somerset (ST4765) on 5.iii.2000. The presumption is that a parasitised spider host had entered the (?vacated) gall to die, but unfortunately host remains could not be sought as the gall was not retained.

Polysphinctine larvae on the posterior of the cephalothorax of salticid spiders have been seen by me on two occasions (once in Britain; once in France) but neither could be reared. The suspicion (Shaw, 1998a) that these may have been *Piogaster* (whose biology has remained unknown) is supported by the mention by Gauld & Dubois (2006) of a specimen of a N. American species of *Piogaster* supposedly reared from a salticid. If *Piogaster* does indeed develop on the cephalothorax of the host, the phylogeny of polysphinctines proposed by Gauld & Dubois (2006) would indicate that egg placement on the cephalothorax is plesiomorphic, with abdominal placement on more exposed hosts associated with webs the derived condition. A rearing of any *Piogaster* species, including observation of the precise position of the parasitoid larva on the host, would therefore be of particular interest.

***Piogaster punctulata* Perkins, 1958 (FSG: 64)**

Additional English males have been collected in Malaise traps, on heathland at Santon Downham, Norfolk 2–11.vi.1983 (*J. Field*); and in chalk grassland/scrub at Folkstone Warren, Kent, 4.vi–6.vii.1996 and Banstead Down, Surrey, 15.v–1.vi.2000 (both *J. P. Brock*: specimens in Brock collection, Horniman Museum).

***Reclinervellus nielsenii* (Roman, 1923) (FSG: 65)**

Gauld & Dubois (2006) transferred *Polysphincta nielsenii* Roman to the genus *Reclinervellus* He & Ye, 1998.

Further British specimens, reared in vi from the araneid spider *Cyclosa conica* (Pallas) coll. in v, have been obtained (in NMS: Monks Wood, Huntingdonshire, 1988 (*D. Beaumont*), and Hartslock, Oxfordshire, 2000 (*C.M.T. Raper/D. Blench*); in BMNH: Burnham Beeches, Buckinghamshire, 1990 (*H. Read*)). Host remains associated with the single British specimen noted in FSG have been examined and appear to be compatible with *C. conica* (cf. Badmin, 1987).

The reference given as Nielsen (1982) in FSG should read Nielsen (1923); the entry in the list of references is correct.

***Polysphincta vexator* Fitton, Shaw & Gauld, 1988 (FSG: 65)**

Recorded from Ireland by O'Connor & Butler (1992).

Oxyrrhexis carbonator (Gravenhorst, 1807) (FSG: cf. 17)

This species had previously been regarded as British (Fitton *et al.*, 1978) but was deleted from the British list by FSG on the grounds that no material could be found and the examined British specimen determined as *O. carbonator* had been misidentified. In 1998 Gavin Broad picked a female of this species out of an unlabelled Malaise trap sample being used for practice identification by students at Silwood Park, Ascot, Berkshire (England). There is now no real doubt that the trap had been run locally at Silwood Park, probably in 1996 or 1997, as had been asserted at the time (Donald Quicke, pers. comm.), since further investigation of the catch has shown it to be characteristic of this site. The specific name *carbonator* has been widely misapplied, with the result that supposed host records for this species are very diverse (cf. Shaw, 1994), but in fact *O. carbonator* is a parasitoid of spiders in the genus *Steatoda* (Theridiidae), to which it is probably restricted. The Silwood specimen was drawn to the attention of arachnologists (Shaw, 1998b), but so far no further British specimens have been seen.

In FSG *O. carbonator* will run to *Polysphincta* in the key to genera. It will not run at couplet one in the key to species of *Polysphincta* because it has the metasomal (=gastral) tergites strongly and coarsely punctured *and* the scutellum black. The only other British species place by FSG in *Polysphincta* with strongly punctured tergites is *Reclinervellus nielsenii*, which is much slenderer and more brightly coloured: *O. carbonator* is largely black (but clypeus reddish brown; hind corner of pronotum and sometimes subtegular ridge marked with yellow or red) with mostly red legs (first segment of hind tarsus and hind tibia basally, and hind tibia sometimes centrally, whitish); submetapleural carina strongly developed; mesoscutum rather evenly hairy (thinning posteriorly on lateral lobes in some specimens); ovipositor–hind tibia index about 0.5.

Megaetaira madida (Haliday, 1838) (FSG: 67)

Gauld & Dubois (2006) erected the new monobasic genus *Megaetaira* Gauld & Dubois to receive *Pimpla (Acrodactyla) madida* Haliday, which had been treated by FSG as a somewhat isolated species of *Acrodactyla*.

Acrodactyla carinator (Aubert, 1965) (FSG: cf. 68)

New to Britain. Niclas Fritzén (*in lit.*) suggested the possibility that *Acrodactyla carinator* might have been overlooked as a British species among the *A. quadrisculpta* (Gravenhorst) recorded by FSG, and this has indeed proved to be the case. Of 58 ♀, 35 ♂ British specimens in the species group now present in the NMS collection, 25 ♀, 13 ♂ proved to belong to *A. carinator*, and a further three English specimens are present in BMNH. The two species are fairly easily separated by the pattern of carinae on the posterior half of the propodeum: although somewhat variable in both species, in *A. carinator* (fig. 1) there is a more or less closed apparent area superomedia, with division of the region posterior to it into three subrectangular areas because the paired submedian carinae remain separated to the posterior margin of the propodeum; but a simpler arrangement with less heavy sculpture in *A. quadrisculpta* (fig. 2), in which the strongest carina is arched forward, the carina that might have closed an apparent area superomedia posteriorly is hardly indicated, and the region posterior to it is less evidently divided, with the paired submedian carinae (when present) converging in front of the posterior margin of the propodeum. The more robust ovipositor of *A. carinator* (fig. 3) in comparison with *A. quadrisculpta* (fig. 4) is also a reliable character, though easiest to appreciate when both species are present. *A. carinator* has fewer antennal segments (specimens from all sources in NMS: ♀=23(8), 24(15), 25(3); ♂=21(3), 22(5), 23(5)) than



Fig. 1.

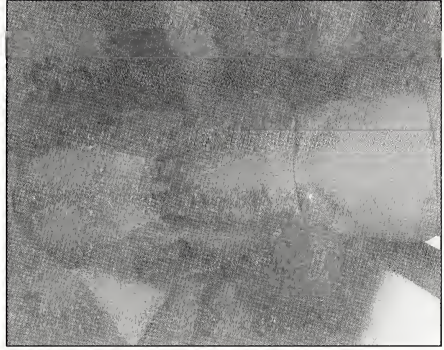


Fig. 2.

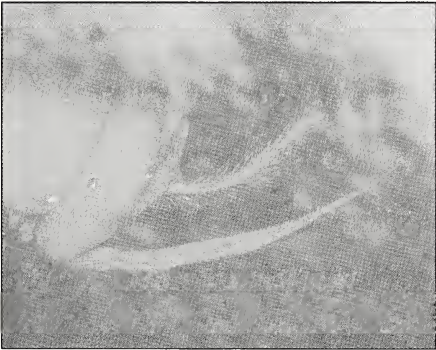


Fig. 3.



Fig. 4.

Figures 1–4. *Acrodoactyla* species.

1, 2 Propodeum and basal tergites of metasoma. 1 *A. carinator* (Aubert), 2 *A. quadrisculpta* (Gravenhorst). 3, 4 Ovipositor. 3 *A. carinator*, 4 *A. quadrisculpta*.

A. quadrisculpta (♀ = 24(1), 25(1), 26(9), 27(14), 28(5), 29(1); ♂ = 23(3), 24(8), 25(11), 26(1)), but with a small overlap in both sexes. In all specimens of *A. carinator* seen the central area of tergite 2 is at least weakly granular or coriaceous, while in most females of *A. quadrisculpta* it is completely smooth (but often weakly granular in males). The colour of the hind leg in *A. carinator* is a little more starkly blackish and whitish than in *A. quadrisculpta* (having more redish and yellowish tinges), and *A. carinator* is a generally somewhat more robust species than *A. quadrisculpta*.

Acrodactyla carinator is widely distributed in England north to Yorkshire, and also occurs in Wales (Mid Glamorgan, *S. Warmingham*). It seems to be commonest in wetlands and waterside habitats. It sometimes co-occurs with *A. quadrisculpta* (e.g. at Chippenham Fen, Cambridgeshire, where both are common). Rearing records from specimens in NMS are (all Araneae: Tetragnathidae): *Tetragnatha* sp. (6), *T. ?montana* Simon (1), *T. ?obtusa* C.L. Koch (1). There is also a specimen labelled as from *?Meta* sp., but this should be regarded as dubious. See also under *A. quadrisculpta*.

Acrodactyla degener (Haliday, 1839) (FSG: 66)

It has become clearer (Klaus Horstmann, *in lit.*; Niclas Fritzen, *in lit.*) that more than one species is present among British specimens hitherto identified as *A. degener*, as was suggested by FSG, but the issue (though under active investigation by Niclas Fritzen) remains unresolved.

Acrodactyla quadrisculpta (Gravenhorst, 1820) (FSG: 68)

See above under *A. carinator*. Even after the removal of the latter, the widespread distribution of *A. quadrisculpta* in Britain (including Wales and the Isle of Man) continues to be as expressed in FSG, except that its occurrence in Ireland now requires confirmation. Some of the rearing records given by FSG were in error (really belonging to *A. carinator*), but there are many new ones to add and (from the NMS collection alone) the following rearing records can be given (all Araneae: Tetragnathidae): *Tetragnatha* sp. (13), *T. extensa* (Linnaeus) (14), *T. montana* Simon (1), *T. obtusa* C. L. Koch (5). From these data and those given for *A. carinator* there would appear to be little separation in the host ranges of the two species (especially as practically all rearings from *T. extensa* resulted from persistent sampling of this host in Scotland, where *A. carinator* appears not to occur): however, Niclas Fritzen (pers. comm.) finds evidence of strong specialisation of the two species within the more extensive *Tetragnatha* fauna of Finland, and the possibility of species-level misidentifications in the British host data should not be ruled out.

Zatypota albicoxa (Walker, 1874) (FSG: 69)

Additional English records: five sites in N. Yorkshire (*S. Fraser*).

Zatypota bohemani (Holmgren, 1860) (FSG: 69)

Welsh record: 1 ♂, Cors Erddreiniog, ex *Theridion mystaceum* L. Koch (Araneae: Theridiidae), coll. 23.v.1997, em. 25.vi.1997 (*M. R. Shaw*).

Zatypota percontatoria (Müller, 1776) (FSG: 69)

Horstmann (2000) has designated a neotype for *Ichneumon percontatorius* Müller, thereby stabilising the use of the name *Zatypota percontatoria* in the sense of FSG.

Pimplini

Itoplectis clavicornis (Thomson, 1889) (FSG: 73)

Additional Scottish records: 2 ♀, Paddockmuir Wood, Errol, Perthshire, Malaise trap, vi(vii).1989 (*D. S. Phillips*); 1 ♀, Killearn, Stirlingshire, 6.vii.1990 (*J. P. Brock*; in Brock collection, Horniman Museum).

Itopectis enslini (Ulbricht, 1911) (= *griseanae* Perkins) (FSG: 73)

This species was misidentified as *Itopectis insignis* Perkins by FSG, as became clear when additional British specimens (7 ♀, 4 ♂) became available. These were collected in northern Scotland (in native stands of *Pinus sylvestris*, and in a plantation of *Pinus contorta*) and in England (Santon Downham, Norfolk, at the edge of a *Pinus nigra* plantation), mostly by Malaise trapping. Most were collected in viii-ix(x), but one male was collected in v in Scotland, which (taken with data in FSG) suggests that *I. enslini* is plurivoltine and overwinters in a pre-adult stage. Its association with conifers is clear.

In the key to species of *Itopectis* in FSG it is suggested that females may lack the minute tooth on the fore tarsal claw: however, this was inserted to take account of the (Swiss) specimens of the true *I. insignis* that had been examined, and the tooth in all British females of *I. enslini* so far seen is distinct (though minute). *Itopectis insignis* and *I. griseanae* (a junior synonym of *I. enslini*) were both described from Swiss specimens by Perkins (1957).

Itopectis melanocephala (Gravenhorst, 1829) (FSG: 74)

Welsh records: 1 ♂, St. Davids Airfield, Pembrokeshire, vii.1987 (*P. Holmes*); 1 ♂, Magor Marsh, Gwent, vii.1988 (*P. Holmes*).

Itopectis viduata (Gravenhorst, 1829)

New to Britain. Graham Collins collected one female by the Channel Tunnel Rail Link at Gravesend, Kent, TQ 646708 on 26.v 2005, which he kindly donated to NMS. *Itopectis viduata* is widespread in Europe, where it has regularly been reared as a primary parasitoid of many species of *Zygaena* (Lepidoptera: Zygaenidae), emerging the same summer. Although it is not clear how it overwinters, a range of other hosts are given in the literature and it seems likely to do so in a pre-adult (probably prepupal) stage.

Itopectis viduata will run to *Itopectis* in the key to genera in FSG, although the front claw of the female has a distinct tooth rather than a basal lobe. It will not run at the first couplet of the key to species because its metasoma (= gaster) is blackish and its hind tibia is red (sometimes faintly yellowish subapically), the combination of which will distinguish it at once from other British *Itopectis*. (Ovipositor–hind tibia index about 1.0). The British specimen is rather smaller (fore wing 7mm) and much more shiny and less strongly punctured (e.g. on mesopleuron) than continental specimens I have seen reared from *Zygaena* (in NMS ex *Z. lonicerae* (Scheven) (2), *Z. lonicerae* or *Z. viciae* (Denis & Schiffenmüller) (3), *Z. ephialtes* (Linnaeus) (1)), but this may be a seasonal difference as unlike them the British specimen seems likely to have overwintered in a pre-adult stage.

Pimpla contemplator (Müller, 1776) (FSG: 78)

Scottish records: 23 ♀, 14 ♂, Paddockmuir Wood, Errol, Perthshire, Malaise trap v–vii and ix.1987–1989 (*D. S. Phillips*); 1 ♀, Dalry Park, Midlothian, 30.vi.2001 (*B. Saville*). Despite its abundance in the Perthshire locality (on the Tay estuary) and further south in Britain, this species seems to be rather local in Scotland.

Recorded from Ireland by O'Connor & Butler (1992).

An additional character (e.g. Kasparyan, 1974) for separating females of this species from *P. spuria* Gravenhorst is that the length of the third+fourth antennal segments combined is only ca 0.8 times the maximum length of the eye combined in *P. contemplator*, but ca 1.0 in *P. spuria* (the character works less well for males).

Pimpla flavicoxis Thomson, 1877 (FSG: 78)

From an examination of material in NMS, Horstmann (2000) established *P. insignatoria* (Gravenhorst) (= *connixta* Kiss) as British. This showed that FSG had compounded two species, *P. flavicoxis* and *P. insignatoria*, under the name *P. flavicoxis*. The second species had been overlooked despite its abundance in Britain and although some of the previous literature on European Pimplinae (e.g. Kasparyan, 1974) had keyed the two species separately.

Males are fairly easy to separate provided the antennae are present, as *P. insignatoria* has tyloids on the outer side of flagellar segments (6)7–8(9). Although small, these are normally clear if present, and *P. flavicoxis* lacks them completely. (The scutellum can sometimes be whitish in both species). Most females can be separated by antennal colour: in *P. flavicoxis* the flagellum (especially the underside) is paler basally, changing in colour (from somewhat reddish yellow – though the contrast is not always strong) over a small number of segments to a darker (brown or blackish) apical half (or more); while in *P. insignatoria* the flagellum is uniformly blackish or (reddish) brown for its whole length. Useful supporting characters are the usually longer malar space of *P. flavicoxis* (0.9–1.0 times basal width of mandible, compared to ca 0.8 in *P. insignatoria*), and to a lesser extent the usually darker hind corner of the pronotum and minute sclerite preceding the tegula in *P. flavicoxis*. Some females are intermediate and might not be identifiable with certainty from these characters, and especially in some northern specimens of *P. flavicoxis* the flagellum is scarcely paler basally.

Pimpla flavicoxis is common and widespread in the British Isles (as stated in FSG). The rearing records in FSG should be discounted, but from material in NMS the following (all Lepidoptera pupae) can be given: noctuid under moss (1), indet in moss (1), geometrid under *Quercus* (1), *Thera juniperata* (Linnaeus) (Geometridae) in *Juniperus* [at about 1 m] (5), indet. (1). This suggests that hosts are sought relatively low down (see also *P. insignatoria*)

Pimpla insignatoria (Gravenhorst, 1807) (= *connixta* Kiss)

See entry under *P. flavicoxis* Thomson. *Pimpla insignatoria* is at least as common over much of Britain as *P. flavicoxis*, especially in deciduous woodland, though its presence in Ireland needs investigation. Rearing records (material in NMS) are all from Lepidoptera pupae: *Agonopteryx nervosa* (Haworth) (Oecophoridae) on *Ulex europaeus* (1), tortricid on *Betula* (1), geometrid on *Betula* (1), indet. on *Sorbus aucuparia* (1), indet. on *Malus* (1) and indet. (1). Additionally 1 ♀, 3 ♂ reared from experimentally exposed *Thera obeliscata* (Hübner) (Geometridae) pupae (*M. R. Shaw*). The five hosts for which the location was recorded were all on exposed shrubs or on deciduous trees, and *P. insignatoria* was fogged in good numbers (about 15 specimens) from *Quercus* canopy in S. England (*N. E. Stork*) in the absence of *P. flavicoxis*. This, and the rearings of *P. flavicoxis* from Lepidoptera pupae at ground level (3) or in understorey shrubs (5) might suggest an ecological difference between the two species.

Pimpla melanacrias Perkins, 1941 (FSG: 80)

Welsh records: 1 ♂, Llyn Ystumllyn, Carnaerfon, vii.1988 (*P. Holmes*); 1 ♀, Gors Maen Llwyd, Denbighshire, vi/vii.1988 (*P. Holmes*).

Rearing record: 1 ♂ ex pupa of *Acleris* sp. (Lepidoptera: Tortricidae) in *Alchemilla alpina* spinning (*K. P. Bland*).

Pimpla rufipes (Miller, 1759) (= *hypochondriaca* (Retzius)) (FSG: 79)

Horstmann (1999) established that *Ichneumon rufipes* Miller is an earlier available name than *Ichneumon hypochondriacus* Retzius for this species.

Pimpla sodalis Ruthe, 1859 (FSG: 81)

Additional Scottish record: 2 ♀, Beinn Dearg, Easter Ross, on 17.vi.1988 at 730m and on 7.vii.1988 at 655m (*I. MacGowan*).

Pimpla spuria Gravenhorst, 1829 (FSG: 81)

See note under *Pimpla contemplator* for an additional character to separate the two species.

Pimpla wilchristi Fitton, Shaw & Gauld, 1988 (FSG: 81)

Hedström (1990) synonymised *Pimpla wilchristi* under *Pimpla strigipleuris* Thomson, 1877, and this position was followed by Yu & Horstmann (1997). However, Hedström had not examined type material of either nominal species, and subsequently Shaw (2006) has designated a lectotype for *Pimpla strigipleuris* and synonymised it under *Pimpla spuria* Gravenhorst, 1829, as had been the view of Perkins (1941), Aubert (1969) and Fitton (1982), as well as earlier authors. This action resurrected *P. wilchristi* as a valid name.

FSG were unable to give host data, but *P. wilchristi* has now been reared on two occasions from pupae of the oecophorid moth *Depressaria pastinacella* (Duponchel) collected in autumn/winter in *Heracleum sphondylium* stems: 1 ♂, Peebles-shire, em. iv.1997 [?forced] (*K. P. Bland*); 2 ♀, 1 ♂, Isle of Man (two sites), em. vi.2005 (*F. D. Bennett*). Further British material of *P. wilchristi* has been collected in England (Cumbria, as long ago as 1952 (*H. Britten*), and two sites in Oxfordshire (*K. Porter*)), in July and August.

Delomeristini***Delomerista laevis*** (Gravenhorst, 1829)

Horstmann (2001b) has identified the type of the nominal taxon *Lissonota suborbitalis* Gravenhorst, 1829, which was collected in England, as *D. laevis*. Therefore, although no further British material has been seen, *D. laevis* should be added to the British list. In the key to *Delomerista* species in FSG females would run to *D. mandibularis*, from which they can be distinguished by having a longer malar space (1.0–1.2 times as long as basal width of mandible, as opposed to 0.5 in *D. mandibularis*) and also an almost unpunctured face (weakly punctured in *D. mandibularis*). Males would also run to *D. mandibularis*, but differ in having a centrally black face marked with white at the sides (wholly yellowish or whitish in *D. mandibularis*) as well as a longer malar space (0.8 times basal width of mandible, as opposed to 0.3–0.4 in *D. mandibularis*). The characters for *D. laevis* are taken from Gupta (1982).

Delomerista novita (Cresson, 1870) (FSG: 86)

Phillips (1997) recorded a series of this species from a deciduous wood in Perthshire, Scotland (the specimens are now in NMS). The several additional specimens seen from England support the notion of two annual generations centered on v–vi and ix–x, though it has also been collected in vii–viii.

Delomerista pfanknuchi (Brauns, 1905) (FSG: 86)

Phillips (1997) recorded this species from a native *Pinus sylvestris* wood in Inverness-shire, Scotland (the single specimen is now in NMS). Several other specimens from native and plantation (both *P. sylvestris* and *P. contorta*) pine stands in Scotland have also occurred, as well as specimens from predominantly deciduous woodland sites in S. England. Specimens have been collected in vi–vii and in viii/ix.

Perithous albicinctus (Gravenhorst, 1829) (FSG: cf. 17)

Added to the British list by Brock & Shaw (1997). It appears to have become well established in S. England, now extending north to N. Yorkshire (1 ♀, New Covert, Melbourne, 15–29.vii.2003, *S. Fraser*).

Perithous scurra (Panzer, 1804) (FSG: 87)

Recorded from Wales by Formstone (1999).

Perithous septemcinctorius (Thunberg, 1824) (FSG: 88)

This had been treated by FSG under the generic name *Hybomischos*, which was synonymised under *Perithous* by Wahl & Gauld (1998).

Additional English records: two sites in N. Yorkshire (*S. Fraser*).

Since FSG four British specimens have been reared from unknown hosts (possibly aculeate Hymenoptera) in long-dead or rotten twigs, suggesting that hosts in such substrates indeed are regularly used (see FSG). In three of the cases it was clear that the parasitoid had overwintered in that situation.

Perithous speculator Haupt, 1954

New to Britain. 1 ♀, England: Richmond Park, Surrey, fogged ex *Quercus robur* canopy, 26.vi.1984 (*N. E. Stork*). This is a rarely collected yet moderately widespread species in Europe, and it would be interesting to know if this might be because it is strongly associated with the canopy (where dead wood is often plentiful). This speculation is supported (K. Horstmann, pers. comm.) by a further female (in Horstmann collection, Würzburg) fogged ex *Quercus* canopy in Poland.

Key to British *Perithous*

1. Mesosoma mostly black (streak at upper hind corner of pronotum, scutellum posteriorly, postscutellum, and subalar ridge more or less, yellowish). (*Propodeum black. Fairly large species. Female: forewing ca 12mm, inner and frontal orbits yellow, legs mostly reddish with hind tibia and tarsus darker, ovipositor-hind tibia index ca 4.5; male: face, clypeus and frontal orbits yellow, fore and mid legs mostly yellow*) *albicinctus* (Gravenhorst)
– Mesoscutum and mesopleuron mostly red. 2
2. Propodeum and tergite 1 matt, with granular sculpture strongly contrasting with the more shiny tergite 2. [*Additional features cf. FSG*]. *septemcinctorius* (Thunberg)
– Propodeum and tergite 1 shiny and more or less punctured, like tergite 2. . . . 3
3. Tergite 2 with a distinct median longitudinal keel anteriorly. [*Additional features cf. FSG*] *scurra* (Panzer)
– Tergite 2 anteriorly with a small median depression (sometimes bordered by weak lateromedian keels) 4
4. Metasoma with tergites (after tergite 1) reddish brown, bordered with a thin darker and then yellowish band posteriorly; hind coxa red with a white fleck dorsoapically; female ovipositor-hind tibia index ca 4. (*Female: forewing ca 7mm, most of mandible, upper margin of clypeus, inner and frontal orbits yellowish white, rest of clypeus reddish brown, head otherwise black; upper lateral margin of pronotum, subalar prominence, scutellum posteriorly and laterally, postscutellum, and a broad arch on the propodeum yellowish white; legs mostly red and white, middle and hind tarsal segments apically darkened, hind tibia ringed brown at extreme base and apex but dorsally white along the rest of its length and this bordered brownish; male similar to female but all of face, clypeus and vertical orbits yellowish white*). . *speculator* Haupt
– Metasoma black (sometimes tergites narrowly reddish or yellowish apically); hind coxa red (sometimes suffused blackish on inner face); female ovipositor-hind tibia index 2.5–3.2. [*Additional features cf. FSG*] *divinator* (Rossius)

POEMENIINAE

Poemeniini

Poemenia collaris Haupt, 1917 (FSG: 89)

Rather than being as rare as suggested in FSG, this species has proved to be widespread and sometimes abundant in southern England. The furthest north records are from N. Yorkshire (*S. Fraser*), where it was collected rather commonly in a total of nine small woods in 2003 and 2004. Specimens collected in Malaise traps, vii–viii(ix), are almost invariably females, but the only two reared British specimens seen have been male. In addition to that cited in FSG, one was reared vi.1995 from a rotten branch of *Corylus avellana* collected at Chippenham Fen, Cambridge in v.1995 (*M. R. Shaw*), but no candidate host was reared with it. In Sweden a further male was reared vi.1998 from a dead *Acer platanoides* branch with the cerambycid beetle *Leioderes kollari* Redtenbacher (a non-British species as well as being an improbable host), and the two sphecoid wasps *Rhopalum clavipes* (Linnaeus) and *Psenulus concolor* (Dahlbom) (*C. U. Eliasson*).

Horstmann (1998) gives additional characters to separate the males of *P. collaris* and *P. hectica* (Gravenhorst). In *P. collaris* the third antennal segment (inclusive of annellus) is 4.0–4.4 times as long as wide, tyloids are present on segments (3)4–9(10) (those on the proximal segments are very elongate and relatively indistinct), and the posterior edge of the subgenital plate is evenly rounded over its whole width with the genital claspers relatively slender. In *P. hectica* the third antennal segment is 4.9–5.3 times as long as wide, tyloids are restricted to segments 8–10(11), and the subgenital plate is centrally produced posteriorly with the genital claspers relatively broad. Horstmann (1998) figures the male terminalia of the two species.

Poemenia hectica (Gravenhorst, 1829) (FSG: 89)

Additional English records: 11 sites in N. Yorkshire (*S. Fraser*); Cumbria (*P. Summers*).

Colm Ronayne has reared 2 ♀, 1 ♂ of this species in v.1999 from separate trap nests placed in trees in Ireland (Thomastown Bog, Co. Meath) during 1998. The traps had been occupied by the sphecoid wasp *Passaloecus monilicornis* Dahlbom, and in each case the parasitoid larva was seen to have consumed the content of several (up to 4) cells. One female is in the National Museum of Ireland; the other two specimens are in NMS.

See notes under *P. collaris* Haupt for the separation of males of *P. collaris* and *P. hectica*.

Poemenia notata Holmgren, 1859 (FSG: 89)

Several additional specimens of this species have been found in England, mainly in woodland habitats. The furthest north are from two woods in N. Yorkshire in 2003 (*S. Fraser*).

It seems probable that the recent spread and growing abundance of the sphecoid wasp *Passaloecus eremita* Kohl in Britain (Else, 1997; Baldock, 2001) has enabled *P. notata* to increase similarly. Additional rearings (all from *P. eremita*) are 1 ♀ (in BMNH) from *Pinus* bark, Wiltshire, viii.1994 (Else, 1997); 1 ♂ from bark, W. Sussex, v.1991 (*R. K. Morris*) and 2 ♀, 1 ♂ from dead *Carpinus*, Berkshire, v–vi.2001 (*M. R. Shaw*). A further male was reared in v.1995 from dead *Corylus arellana*, Cambridgeshire (*M. R. Shaw*) but no candidate host accompanied it. It has also been collected in Malaise traps in vii–viii which, together with George Else's record, suggests that it may be plurivoltine.

Deuteroroides elevator (Panzer, 1799) (FSG: 90)

Additional English records: nine sites in N. Yorkshire (*S. Fraser*).

Pseudorhyssini***Pseudorhyssa alpestris*** (Holmgren, 1859) (FSG: 88)

Pseudorhyssa was transferred to the subfamily Poemeniinae by Wahl & Gauld (1998).

Recorded from Wales by Formstone (1999).

ACKNOWLEDGEMENTS

The author is grateful to all those mentioned in the text, and many more, for donating material to the NMS collection, to Roy Danielsson, Mike Fitton and David Wahl for facilitating the examination of specimens under their care and to Jim Brock, Gavin Broad, Niclas Fritzén, Mike Fitton and Klaus Horstmann for much information and advice, including helpful comments on the manuscript. Sarah Martin kindly bore the brunt of the typing, and Diane Mitchell graciously took the SEM images.

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SHORT COMMUNICATIONS

***Iassus scutellaris* (Fieber) (Hemiptera: Auchenorrhyncha) new to Berkshire**—A single female *I. scutellaris* was swept from a 2m high *Ulmus procera* on 12.ix.06 at the edge of a mixed deciduous woodland at Reading University campus, Reading, Berkshire (SU741715). Identity was confirmed following dissection using Wilson (1981). No further examples were found. *Iassus scutellaris* has been recorded from Middlesex, Surrey, Kent and Essex (Kirby, 1992) with recent records from Suffolk and Cambridgeshire (Kirby, 2004), suggesting that it is actively spreading in Britain. It is extremely likely that *I. scutellaris* is already well established in Berkshire and has merely been overlooked, as the Berkshire locality is less than 50 miles west from Mitcham Common where *I. scutellaris* was first discovered in the UK (Wilson, 1981).—ALEX J. RAMSAY, Centre for Agri-Environmental Research, School of Agriculture, Policy and Development, University of Reading, Reading RG6 6AR.

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Two new predatory insects reach Perry Woods, Selling, Kent. – The hornet *Vespa crabro* L. has been spreading eastwards and northwards across Kent (VCs 15 & 16) in recent years. The first sighting locally was of adults and a nest of this species in an old cherry tree on the southern edge of Fridhill Wood in 2005, but the nest was completely destroyed by ?woodpeckers during the winter of 2005/06. I received reports of adult workers in various localities around Perry Woods during the summer of 2006. The very first workers captured in the Rothamsted trap in my garden were recorded on 20.ix.2006, and the odd specimen or two have appeared nightly since then, though not on rainy nights.

The first adult harlequin beetle, *Harmonia axyridis* Pallas appeared in the light-trap on 21.ix.2006. This species appears to be established in an area east of Faversham (Mervyn Crow, pers. comm.) but until now has not reached the surrounding wooded countryside. No other adults have been found locally despite a fortnightly sampling regime of trees and shrubs in Perry Woods. – J. S. BADMIN, Coppice Place, Selling, Kent ME13 9RP.

OBITUARY

BRIGADIER ERNEST CLIVE LITTON SIMSON
1907–2005



Clive Simson was born in Edwardian England and pursued the interests of an English country gentleman. These included Polo, racing, fishing, shooting, (it was whilst wildfowling that he met, in a Lincolnshire dyke, James Robertson-Justice, who was to become a firm friend), cricket, rugby, ornithology, entomology . . . and much more!

Educated at Wellington College, Clive did his Gunner training at Woolwich before serving with the Mountain Artillery in India. During WW II he commanded a Gunner Yeomanry regiment and later was CO of a regiment in West Germany during the reconstruction. After serving in the Canal Zone in Egypt he returned to the UK and commanded the ack-ack school in Wales. Completing his army career at the War Office Selection Board, he retired, having reached the rank of Brigadier, to live in Hampshire. During his distinguished military career he was Mentioned in Despatches.

It is as an avid collector that many will remember Clive. His first love was the British wild birds and he was an eminent ornithologist and oologist. A former president of the Jourdain Society he possessed one of the finest collections of British birds' eggs in private hands. His book *A Bird Overhead*, published in 1966, is still

highly acclaimed. Along with his book on British butterflies it is notable, not only for displaying his superb ability as a field naturalist, but also for his wonderfully evocative use of language.

When the days of egg-collecting were past, Clive made a relatively small though comprehensive collection of the British macrolepidoptera. He was not especially interested in migrant species or aberrant forms, being intent on assembling a short series of each resident species. Yet he was no mere acquisitive lepidopterist, for he delighted in rearing species from their early stages and recorded detailed observations of their life histories in his diaries. Among the butterflies he loved the Purple Emperor *Apatura iris* L. His friend Major-General C.G. Lipscomb instructed Clive in the art of locating *iris* ova, and over the years Clive became adept at this and at breeding out the adult butterflies. He would then release every female *iris* he bred at the spot where the egg was taken.

He had a fine set of the Pug moths, mostly bred from wild larvae. However, one species, the Cloaked Pug *Eupithecia abietaria* Goeze, always eluded him, despite a number of attempts to find it in the spruce woods of northern England.

Those of us who had the pleasure of accompanying Clive on his expeditions were happy to act as his batman. Such expeditions were planned with military precision. They were usually successful and seldom uneventful! Howard Elston, a friend of the Brigadier for over 35 years, relates how, as a shy teenager in the late 1960s, he accompanied Clive to the New Forest in search of the Annulet *Charissa obscurata* (D. & S). After a fruitless search of the heath, Clive headed for the nearest pub. The Beaulieu Road Station Hotel was a haven for leather-clad bikers and that evening it was packed. Clive elbowed his way to the bar in full 'grouse moor' regalia with the embarrassed Howard following behind. On the counter stood a sandwich container lit by a small electric strip light. Inside the container beside the light sat a dark greyish moth. The Brigadier noticed the moth and immediately uttered a parade ground word of command - STOP! The whole bar froze! The Brigadier, the sandwich container and Howard were the focus of dozens of pairs of eyes. The bikers stood aghast - who were these oddities? Clive then commanded 'the boy' to 'fetch a box!' After hurrying to fetch a pill box from the car, Howard re-entered the bar with trepidation, only to find, to his astonishment, the Brigadier holding court to a dozen fascinated bikers who to a man were gazing intently at the little Annulet moth. Clive was in full flow encouraged by gasps of amazement from his enraptured audience!

A product of his class and generation, Clive was apt to display some associated prejudices. His qualities of single-mindedness and determination could make him perhaps ruthless and obstinate at times, though to those who knew him well he was a kind and generous friend. Wilson Stephens, in his foreword to Clive's book, *The Butterflies' Fly-Past* (1994), speaks of 'Simsonian gusto and high spirits' and that's how friends will remember him.

Clive Simson was not a great entomologist but he was a huge character! He was a wonderfully charming man, a consummate raconteur with a sharp mind and a great sense of humour. He was a big man, larger than life, who loved life and lived it to the full. In the world of natural history I doubt we shall see his like again.

He is survived by his wife Rosemary and by his four sons.

STEPHEN C. PITTIS

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OUTBREAKS OF CACTUS FELT SCALE, *ERIOCOCCUS COCCINEUS* COCKERELL AND FELTED PINE COCCID, *ERIOCOCCUS ARAUCARIAE* MASKELL (HEMIPTERA: ERIOCOCCIDAE), ON ORNAMENTAL PLANTS IN BRITAIN

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ABSTRACT

Outbreaks of two non-indigenous eriococcids, *Eriococcus coccineus* Cockerell and *E. araucariae* Maskell, on ornamental plants at commercial plant nurseries in the UK, are reported. The distribution, biology and economic importance of these plant pests are reviewed.

INTRODUCTION

In December 1997, Les Wardlow (a private consultant) reported finding cacti heavily infested with 'mealybugs' at a nursery in West Sussex. The plants had been imported from the USA in the previous spring, and on arrival had been kept in quarantine for about six weeks. Specimens were collected from *Rebutia* sp. (Cactaceae) and passed to Mike Lole of the Agricultural Development Advisory Service (ADAS) before being sent to the Central Science Laboratory (CSL), where they were identified as *E. coccineus*. Further samples were collected by the Plant Health and Seeds Inspectorate (PHSI). *Eriococcus coccineus* was subsequently found infesting plants of *Echinopsis pentlandii* (W.J. Hooker) Salm-Dyck (Cactaceae) at a nursery in Norfolk in April 1999 by the PHSI. Previous to these findings, it had been intercepted at a botanical garden, Surrey on *Harrisia tortuosa* (J. Forbes ex Otto & A.Dietr.) Britt. & Rose (Cactaceae) imported from the Virgin Islands in June 1985.

In August 2005 three Norfolk Island pines, *Araucaria heterophylla* Franco (Araucariaceae), imported from The Netherlands were found to be heavily infested with *E. araucariae* by the PHSI on 10.x.2005. This species has been previously intercepted also, at a nursery in West Drayton, Middlesex on *Araucaria* sp. imported from Spain in March 1979. In all cases the eriococcids were eradicated following advice from CSL and the PHSI.

ERIOCOCCUS COCCINEUS COCKERELL

The taxonomy of *E. coccineus* is complex; it was described by Cockerell (1894) from specimens collected by Professor Bruner in May 1894 from 'rat-tailed' cactus in a greenhouse in Lincoln, Nebraska (USA). Cockerell also described a 'variety' of this species at the same time, under the name *lutescens*. Ferris (1955) dismissed the variety *lutescens* as 'unworthy of serious consideration' and according to Miller & Miller (1992) it 'is only a colour form and should not be considered as a valid subspecific or specific name'. Lindinger (1931) considered *Rhizococcus cactearum* Leonardi a synonym of *E. coccineus* and Zimmermann (1948), Ferris (1955) and Hoy (1962) also thought that it was possibly a synonym. Later workers, however, have recognised these species as distinct (Hoy, 1963; Tranfaglia & Esposito, 1985; Köhler, 1998). Cockerell (1900) and Lindinger (1931) both treated *Eriococcus multispinosus* (Kuhlgtatz) as a synonym of *E. coccineus* but this was not accepted by subsequent

workers (Hoy, 1963; Köhler, 1998). Lindinger (1933) referred the species *coccineus* Maskell to the genus *Nidularia*, Kozár & Walter (1985) to *Acanthococcus* and Tang & Hao (1995) to *Rhizococcus*. More recently, Köhler (1998) and Miller & Miller (1992, 1993) assigned the species to the genus *Acanthococcus*. However, Miller & Gimpel (2000) in their catalogue of the family Eriococcidae, considered *Acanthococcus* to be a synonym of *Eriococcus*.

Eriococcus coccineus is commonly known as the 'Cactus Felt scale', 'Woolly Cactus scale' or 'Cactus eriococcin'. Miller & Miller (1992, 1993) provide a detailed morphological description, illustration and keys for its identification.

Geographical distribution

Eriococcus coccineus appears to be native to Mexico and southern parts of the USA (Miller & Miller, 1992). It has been transported on ornamental cacti all over the world and has been recorded in the following regions and countries: Palaearctic: Canary Islands (Spain), Egypt, France, Germany, Israel, Italy and Japan. Afrotropical: South Africa. Nearctic: Mexico, 13 states in USA (mostly southern). Neotropical: Brazil. Oceania: Australia, Hawaii (USA) and New Zealand (Miller & Gimpel, 2000). Hoy (1963) also listed England but this record is doubtful as he provided no details and it was not included in the comprehensive checklist produced by Boratyński & Williams (1964), nor in the detailed work on British Eriococcidae by Williams (1985).

Host plants and biology

Eriococcus coccineus feeds almost exclusively on Cactaceae, being recorded on the following genera: *Acanthocereus*, *Astrophytum*, *Brasilicactus*, *Cephalocereus*, *Cereus*, *Cleistocactus*, *Echinocactus*, *Echinocereus*, *Echinopsis*, *Harrisia*, *Hylocereus*, *Mammillaria*, *Neomammillaria*, *Opuntia*, *Pelecyphora*, *Rebutia*, *Rhipsalis*, *Selenicereus*, *Thelocactus*, *Wilcoxia* and other unspecified Cactaceae (Miller & Gimpel, 2000). There are several unusual records of *E. coccineus* found on plants not in the Cactaceae. For example, in New Zealand, on Orchidaceae imported from California (Hoy, 1962) and on *Ananas* (Bromeliaceae), *Dudleya* (Crassulaceae), *Euphorbia* (Euphorbiaceae), *Haworthia* (Aloaceae) and *Pinus* (Pinaceae) in the western USA (Miller & Miller, 1992, 1993). These may not be true hosts because the mature females typically leave the feeding site before parturition and may have wandered off adjacent cacti onto these plants in order to produce the ovisac. Ovisacs are even occasionally found on plastic plant pots and wooden benching in green houses containing cacti.

Eriococcus coccineus has continuous overlapping generations (Gill, 1993).

Economic importance

Eriococcus coccineus is considered to be economically important in the USA (O'Brien, 1991) and is a pest of Cactaceae in Italy (Longo *et al.*, 1994). It feeds on the phloem, which reduces plant vigour by depletion of plant sap and, if left unchecked, can kill ornamental cacti. Feeding by a related species, *Eriococcus coriaceus* Maskell, has been shown to consistently reduce root growth in seedlings of the host plants. Low levels of scale insect infestation significantly decreases root and lignotuber biomass but not shoot biomass. High levels of infestation, however, adversely affect all plant parts (Vranjic & Ash, 1997). The 'cocoon-like' ovisacs produced by

E. coccineus can lower the aesthetic appearance of ornamental cacti, thereby reducing their quality and commercial value. The ovisacs are most conspicuous on cacti with long spines.

ERIOCOCCUS ARAUCARIAE MASKELL

Eriococcus araucariae was described by Maskell (1879) from specimens collected near Governor's Bay, South Island, New Zealand. Cooke (1881) referred the species *araucariae* Maskell to the genus *Uhleria*, Comstock (1881), Kozár & Walter (1985) and Köhler (1998) referred it to *Rhizococcus*, Lindinger (1933) to *Nidularia*, and Tereznikova (1981) to *Acanthococcus*. However, Miller & Gimpel (2000) synonymized *Acanthococcus* with *Eriococcus*.

Eriococcus araucariae has many common names including 'Araucaria Mealybug', 'Araucaria pest', 'Araucaria Scale', 'Felted Pine Coccid' or 'Norfolk Island Pine Scale'. Kosztarab (1996) provides a morphological description, illustration and keys for its identification.

Geographical distribution

Eriococcus araucariae appears to be native to the Neotropics and has been transported on ornamental *Araucaria* all over the world, including to the following regions and countries: Palaearctic: Algeria, Azores (Portugal), Canary Islands (Spain), Egypt, France, Germany, Greece, Iran, Israel, Italy, Madeira Islands (Portugal), Malta, Morocco, Netherlands, Portugal, Russia, Sardinia (Italy), Sicily (Italy), Spain and Turkey. Oriental: India, Malaysia, Philippines and Sri Lanka. Afrotropical: Kenya, Mauritius, South Africa and Zimbabwe. Nearctic: Mexico, nine states in USA. Neotropical: Argentina, Bermuda, Brazil, Chile, Costa Rica, Cuba, Guatemala, Nicaragua, Panama, Puerto Rico & Vieques Island, Uruguay and Venezuela. Oceania: Australia, Cook Islands, Fiji, Hawaiian Islands, New Caledonia, New Zealand, Papua New Guinea and Vanuatu (Miller & Gimpel, 2000).

Host plants and biology

Eriococcus araucariae is most commonly recorded on *Araucaria* (Araucariaceae) but has occasionally been recorded feeding on plants belonging to other genera and families including Cupressaceae: *Cupressus*, *Juniperus*; Myrtaceae: *Kunzea*; Pinaceae: *Pinus*; and Poaceae: *Eleusine*.

Gill (1993) reported that *E. araucariae* has two generations per year in the USA and that the adult males are active in August.

Economic importance

Eriococcus araucariae is considered an economic pest of *Araucaria heterophylla* Franco (= *A. excelsa* R. Br.) in Egypt (Moursi Khadiga *et al.*, 2001). The large amounts of honeydew produced by the insect provide a medium for sooty moulds which often blacken the host foliage (Williams & Watson, 1990); and the 'cocoon-like' ovisacs can lower the aesthetic appearance of ornamental *Araucaria*, thereby reducing their quality and commercial value.

CONCLUSION

All known outbreaks of *E. coccineus* and *E. auraucaariae* in the UK have been eradicated under the guidance of the PHSI and CSL but there is a risk of these pests being accidentally introduced with international plant trade. Nine species of exotic Coccoidea that feed on Cactaceae have already become established in Britain under artificial conditions (*Abgrallaspis cyanophylli* (Signoret), *Diaspis echinocacti* Bouché, *Parasaissetia nigra* (Nietner), *Phenacoccus defectus* Ferris, *Rhizoecus cacticans* (Hambleton), *Pseudococcus longispinus* (Targioni Tozzetti), *Pseudococcus viburni* (Signoret), *Spilococcus mammillariae* (Bouché), *Vryburgia brevicurvis* (McKenzie)), and two species that feed on *Araucaria* have also become established (*Chrysomphalus aonidium* (L.) and *Rhizoecus falcifer* Kunckel d'Herculeis). There are many other coccoid species, not recorded in Britain, which feed on cacti and *Araucaria*. These plants are popular as ornamental houseplants and care must be taken to avoid the accidental introduction of coccoid pests, since once established, they are often difficult to control.

Any suspected findings of non-indigenous insects on recently imported plants should be passed to the local Defra PHSI or to the PHSI Headquarters, York (Tel.: 01904 455174, email: planthealth.info@defra.gsi.gov.uk).

ACKNOWLEDGEMENTS

The author is indebted to Mike Lole of ADAS, Les Wardlow (private consultant) and to Karen Pugh and Amanda Riley of the PHSI for providing valuable information. This work was funded by the Plant Health Division.

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SHORT COMMUNICATIONS

Small Copper *Lycaena phlaeas* (L.) nectaring on creeping willow. – Two adult Small copper butterflies were observed repeatedly feeding on catkins of creeping willow *Salix repens* L. at the Long Pits, Dungeness on 17.v.2006. This butterfly is quite common in wind-protected areas there and may be a potential pollinator of this local willow. The two butterflies, however, were rather territorial and kept to their small patch of grassland. The distances they were observed flying during the afternoon (10–15 m) were very much shorter than the average distance between two *S. repens* plants (50 + m). – J. S. BADMIN, Coppice Place, Selling, Kent ME13 9RP.

Beetling through history: extracts from the diaries of John Loftus Henderson. – John Loftus Henderson was a Surrey-based entomologist, specialising in Coleoptera. He was inspired by his father to become interested in Lepidoptera but by his late teens had taken up the Coleoptera and in particular the water beetles in which he subsequently became very knowledgeable.

He added a number of species to the British list including *Ceuthorhynchus turbatus* Schultz and *Chaetocnema aerosa* Letzner and showed that *Phyllobius artemisiae* Desb. (now *P. vespertinus* (F.)) was a valid species – he published little else however. He was an active member of the South London Entomological and Natural History Society being at different times Treasurer and Vice-President and he bequeathed his collections to the Society (Buck, 1966). His beetle collection and diaries now reside at Dinton Pastures. I found browsing through his extensive collecting notes, evocative, amusing and melancholic, and was left feeling that the mentality of the Coleopterist has changed little over the passing decades.

His first collecting diary covers the period from 1895–1927, and it would appear that the first few years are written retrospectively, highlighting some important finds. The first entry provided a first for Surrey:

1895. June 8th ‘Found a specimen of *Trichodes aparius* on a sunflower in garden at Pinfold Rd, Streatham.’

The yearly entries get progressively larger from 1897, as did his burgeoning collection. His local haunts were Streatham and Mitcham Commons, and he compiled a local list of the Streatham area over the next 30 years. He made regular sojourns to the Natural History Museum to identify specimens.

The 1910 entry ends with a huge list of new species added to his collection. The next entry must rank as one of the most brief and ambiguous summaries of the most horrific decade in European history.

Sailed for Canada, March 1911.

9 years *C.Ex forces landed, Salisbury Plain Oct 19th 1914. Married Apr. 8th 1915.*
NO Returned to Saskatchewan April 1919.

Collecting Arrived Liverpool, and London 1919.

1920 April 6th ‘Exhibited *Lucanus Aphodii* drawer at SENH Soc. meeting, Streatham College.’ Normal service resumed, but he found his collection had suffered much from damp and mould during this nine year hiatus.

May 24th ‘Have finished transferring collection; contents of 23 drawers, spaced out B.M.N.H. style, have gone into 14 drawers. Not much room left, but enough for present requirements.’

Ever vigilant, even the Christmas preparations yielded a record!

Dec 24th ‘Digging up carrots on the plot, found *Choleva cisteloides* in same.’

Dec 30th ‘Spent afternoon at B.M.N.H. naming a few puzzlers. Had not been for over ten years, place does not alter a bit’. Until 2005 he may still have felt the same!

1921 March 13th ‘“Betty” found *Coccinella 7-punctata* on Mitcham Common’. Even the dog was collecting!

May 19th ‘*Quedius mesomelinus* in bathroom’.

May 22nd ‘*Tachinus humeralis* in carrot’.

May 25th ‘*Hedobia imperialis* in kitchen’.

November 1st ‘Exhibited 4 additions to the local list including *Oxytelus rugosus*, *O.sculptus*, *Cis boleti*, & *Cis bilamellatus*. The last is the most interesting addition we have had for a long time: I felt rather disappointed at S. Ken[sington] on Saturday when [K.G.] Blair told me it was turning up “everywhere”.

1922 Feb 12th ‘Have put away various *Homalota*, worked out as near as I can to the right species.’ Sounds familiar? Only we call them ‘*Atheta*’, these days.

March 25th 'Every time I go shaking tufts in the woods something new turns up, but I do not get many species a second time, except of course *Tachypori* . . . Also some minute coleop. which I am dubious of being able either to identify or set!' Ah, the dreaded Corylophidae and Ptilidae, but undaunted, he had a go!

March 29th 'Have set the minute species fairly well, with aid of woodcock's pinion feather given me by Philpot last meeting. 3 *Sericoderus lateralis*, 1 *Ptenidium*.'

1923 June 20th 'To Camber. *Bidessus unistriatus* turned up in usual old place.' Alas, now long gone beneath a caravan park.

October 2nd 'Elected president of the S.E.N.H.S.'

1924 January 5th 'To Mitcham Com. With C.P. [Cyril Paton, his regular collecting chum] in search of coleopterous and other records for the new year. First beetle – *Adalia bipunctata*!' Obviously the winter blues were just as strong back then!

July 11th 'The annual *Ernobius mollis* in bathroom'.

September 27th 'In evening to Blenkarn's. Went with him to Bedwell's. Saw part of his 120 drawer collection. He gave me *Claviger testacea*'. Terrible thing, drawer envy!!

The final entry for 1924, reads: 'This year I have added 350 species of Coleoptera to my collection, chiefly due to making acquaintance with Blenkarn, Walsh, Williams, Bedwell, Harwood and Cox, from all of whom I have had things, and heard of localities for good species which duly turned up when looked for.'

1925 August 30th 'At Deal. Yesterday and today a large number of beetles have been flying and crawling about everywhere, particularly on the front. Mostly staphs and weevils. On golf links took a series of *Heptaulacus sus*'.

1926 Feb 20th 'Note from J.Harvey Bloom, to whom I sent *Brachinus* with fungi attached, to effect that fungi is *laboulbenia*. Specimen annexed! By BMNH.'

May 4th–15th 'The General strike' and the bad weather prevented any collecting'. Talk about living history!

June 26th 'To Oxshott. Tried for *Tigers*, but saw only one *campestris*'. Alas, *Cicindella sylvatica* was last seen at Oxshott in the late 1960s, but the elusiveness of the Wood tiger beetle remains the same at its other Surrey haunts.

One of the final entries is the most melancholic, and says so much about the matter-of-fact attitude of the day.

1927 Oct 31st 'Blenkarn died from injuries in a collision between his motorcycle and a car at Purley'.

JONTY DENTON

29 Yarnhams Close, Four Marks, Hampshire GU34 5DH

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Amiota rufescens (Oldenberg) (Diptera: Drosophilidae) reared from the fungus *Daldinia fissa* Lloyd in Wales. – In October 2002 I collected three fruiting bodies of the fungus *Daldinia* from scorched dead gorse trunks (*Ulex europaeus* L.) growing near Conwy football ground, SH771783, vice county Caernarfonshire. *Daldinia* in this situation can safely be named *D. fissa* Lloyd (= *vernica* (Schwein) Ces. & De Not.) judging by the British Mycological Society's Fungal Records Database, which

shows 56 records of *D. fissa* on (usually burnt) *Ulex* and only three records from 1930 and 1973 of other *Daldinia* species on *Ulex*, namely *D. concentrica* (Bolton) Ces. & De Not. Until recently, all British *Daldinia* were often assigned to *concentrica*, regardless of host plant (e.g. Hingley, 1971).

The fungi collected were kept in a cool room in a jar. Between late May and 10 June 2003, five drosophilid flies emerged, two males and three females. These were identified as *Amiota leucostoma* Loew using the key by Assis-Fonseca (1965). The more up-to-date key by Bächli *et al.* (2004) led to *A. rufescens* (Oldenberg), confirmed when the dissected genitalia of a male specimen matched their figures 108 and 109. Bächli *et al.* point out that *A. rufescens* has been misidentified as *A. leucostoma* by several authors. The true *leucostoma* Loew is a North American species (Máca, 1980).

This association between *A. rufescens* and *D. fissa* seems not to have been reported before, though *Amiota* spp. have been reared from *Daldinia* 'concentrica' (e.g. Edwards, 1936; Hingley, 1971). Edwards recorded *A. albobuttata* (Wahlberg) from *Daldinia* on burnt birch at Studland Heath, Dorset, but work towards a handbook to British Drosophilidae by P. Beuk and B. Pitkin has led to Edwards' specimens being reidentified as *A. subtusradiata* Duda, a species new to Britain (P.J. Chandler, pers. comm.). Thus the identity of Hingley's reared *A. albobuttata* from scorched birch, oak or gorse at High Woods, East Sussex, should also be checked if possible. Evans (1988) reared *A. basdeni* d'Assis-Fonseca from the related fungus *Hypoxylon rubiginosum* (Pers.) Fr.

The distribution table by Bächli *et al.* (2004), covering northwest Europe, records *A. rufescens* only from Finland. In the text they describe *A. rufescens* as widespread in Europe but rarely collected, and they give no details of its biology. The Fauna Europaea database shows it has been found in Austria, Belarus, Czech Republic, Finland, Hungary, Romania, northwest Russia, Slovakia, Switzerland and the eastern Palaearctic (www.faunaeur.org, 27 June 2006). *Amiota rufescens* was included in the British checklist (Chandler, 1998) because *A. leucostoma* had been included in Assis-Fonseca's 1965 key. British specimens thus labelled have turned out to be misidentified, though the draft handbook (Beuk & Pitkin, in prep.) includes *A. rufescens* on the basis of a male reared from '*Daldinia concentrica*' from Ockham, Surrey (P.J. Chandler, pers. comm.). I have not found any published records of *A. rufescens* in Britain, and there are none in the dataset of Welsh invertebrate records held on Recorder 3 by the Countryside Council for Wales (CCW). Indeed, the Recorder 3 database does not include *A. rufescens* (Oldenberg) or *A. leucostoma* Loew in its species dictionary, though it does contain *A. rufescens* (Fal.) with the comment "Validity of specific status questionable". The Recorder 2002 database contains Chandler's checklist (1998), so it includes both the misidentified *leucostoma* under *rufescens* (Oldenberg) and an invalid preoccupied name *leucostoma* (Becker) as a synonym of *A. albobuttata*. However, Máca (2003) has examined the lectotype of *leucostoma* Becker and found it to belong to *A. albilabris* (Roth in Zetterstedt). This latter synonymy is followed by Bächli *et al.* (2004). This is clearly an area where one could easily allocate a record to the wrong species.

I am grateful to Dr Mike Howe, Countryside Council for Wales, for recognising the specimens as drosophilids, to the CCW library staff for obtaining the recent *Fauna Entomologica Scandinavica* volume, Dr Jan Máca for copies of his papers, Peter Chandler for comments in his role as referee, and David Paull, Norfolk & Norwich Naturalists' Society, and Alistair Crowle, English Nature, for copies of Evans' and Edwards' notes.—JOHN H. BRATTON, 18 New Street, Menai Bridge, Anglesey, LL59 5HN.

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 BOOK REVIEW

Die Zikaden Deutschlands – Bestimmungstabellen für alle Arten by Robert Biedermann & Rolf Niedringhaus. 409 pp. 2004, WABV, Scheeßel, Germany. ISBN 3-00-012806-9. 84.50€

Despite their diversity and abundance in many habitats the leafhoppers and planthoppers (Hemiptera, Auchenorrhyncha) are rather a minority interest. In the British and European fauna they have been generally overlooked and even considered difficult to study. However, over the last 10 years or so there have been some important books published, mostly from Germany and Austria, which have made both the British and Central European fauna much more accessible. Some of these texts are even in English (or bilingual German-English). This latest book is in German only but that should not discourage English speaking (or others for that matter) from using it. It is a most remarkable volume and is an illustrated key to the entire Auchenorrhyncha fauna of Germany (covering 619 species). Almost all the UK species (around 360 species) are included – I think only 6 species present in the UK are not covered.

A short introduction “what constitutes an Auchenorrhynchan”, is followed by a section on biology and ecology, and the collection and preparation of specimens. Clearly labelled drawings show morphology of a typical leafhopper and planthopper. Keys are given to families, and then genera within each family. Each couplet is accompanied by clear, labelled drawings and excellent habitus drawings, (even showing diversity of forms within a genus). The keys are to genera so where these only contain one species the name is given. When each genus contains more species the page is given where species differences are to be found. The format adopted for the book – A4, allows a clear layout of drawings and text. These keys occupy around 100 pages. So far this all sounds normal in taxonomic monographs. The novel part of the book is the largest section, occupying around 240 pages, which comprises tables to species (“artentafeln”). Each A4 page is divided in columns. Each column provides information for one species on habitus (usually an illustration but also notes on comparison), head shape, anal segment, aedeagus structure etc. Host plants are given where known. Literature cited in the column is abbreviated in a simple code. Once

you have the genus it is simply a matter of comparing your specimen with the drawings! The emphasis is on identification and only some synonyms are given. Clearly it does help to know some German terms but these can be acquired by use of the book. Most morphological drawings have been redrawn (with acknowledgement to source) so they are the same style. All habitus drawings have been made especially for this book.

Following these tables the 'red list' categories are given for each species in Germany (and the different regions). Also provided are the full details of where drawings for each 'field' in the columns have originated. A bibliography and index to species complete the book.

This book has its origins in the University of Oldenburg, Germany where both authors are based and whose interests are largely centred around the ecology of Auchenorrhyncha. They and 5 other collaborators in that University have produced this wonderful book. They are all included in a table of information at the end in the style of the species – with habitus photos! In addition there is a list of all those who have 'sponsored' species and assisted in bringing this project to completion. Clearly a lot of thought has been given to its design and layout – even book marks have been provided. I cannot see any reason why other groups should not be covered in such a format. If I have any comments on how it could be improved it would be that digital photographs could possibly replace the habitus drawings (but not the line drawings of the genitalia structures). But they would have to be very good images. I could easily imagine the 'template' of the book being adopted by others in countries around Germany – add the species that are not found in Germany and remove those that are not found in the new country.

This is a remarkable book, which is indispensable for all European Auchenorrhyncha specialists, but has a use far wider than just specialists and its modest price for such an important book has already ensured that the first edition has sold well.

M. R. WILSON

FIELD MEETINGS

Tidcombe Fen, Devon, 18 June 2005

Leader: **Roy McCormick**. – The night promised to be good with average temperatures. Once everybody had found the elusive car park, the party of 19 split into three equal-sized groups for recording purposes. Barry Henwood and the leader, along with a couple of late comers who were expected, placed seven lights out in the main Fen area; the disused railway was covered by Andy Trout, Brian Bewsher and Darren Willets with five lights and the Poll Anthony Farm fen area was sampled by Steve Hatch and Alan Jenkins with six lights. One official recorder was appointed for each site so that we could quickly produce a full species list of the area for the Environment Agency who manages the fen.

It was only after we had started the traps that the leader discovered a small herd of cattle in the vicinity – they knocked over the cones and bulbs and licked the traps; producing a sticky mess, but fortunately no damage was done. The warden and the leader tried to corral the cattle into an adjacent field but failed despite enticing them with food, but as it was now dark and they were at the other end of the area, it was presumed they would be no further worry; which turned out to be correct.

Moths started to arrive soon after starting, with the earliest arrivals, the swifts and Ghost moth *Hepialus humuli* (L.) along with all the midges and flies you would expect from a fenland site. There were no real rarities you might find from this type of area, but it was a bit early in the year for some of these and the night began to turn chilly. Despite this, the list built steadily with very few species making double figures with only the *Hepialus lupulinus* (L.) (Common Swift), *Chrysoteuchia culmella* (L.), *Colostygia pectinataria* (Knoch) (Green Carpet), *Agrotis exclamationis* (L.) (Heart and Dart), *Ochropleura plectra* (L.) (Flame Shoulder) and *Rivula sericealis* (Scop.) (Straw Dot) getting into this territory. Around 23.30h the leader visited the other sites and they were having similar problems with low numbers, but we finished up with a total of 88 species from the Main Fen, 78 from Pool Anthony Farm and 59 from the Disused Railway site. The best of these were: four *Eudonia dehumella* (Stt.) from the two fenland sites; one *Amblyptilia punctidactyla* (Haw.) from the Railway site; five *Tethea ocellaris octogesimea* (Hb.) (Figure of Eighty) from the Railway and Main Fen sites; six *Cleorodes lichenaria* (Hufn.) (Brussels Lace) from the two fenland sites; three *Parectropis similaria* (Hufn.) (Brindled White-spot) from the Railway site; nine *Arctia villica britannica* Ob. (Cream-spot Tiger) from the two fenland sites; one *Naenia typica* (L.) (Gothic) from the Railway site; four *Acronicta aceris* (L.) (Sycamore), the moth of the night from the Main Fen site and one *Plusia festucae* (L.) (Gold Spot) from the Pool Anthony Farm area. The temperature for all the sites stood at around 12°C by the time we left at 01.30h and despite the logistics of running three sites at the same time, it all worked out very well.

Wolvercote Green, Oxfordshire, 25 June 2005

Leader: Paul Waring. – With this field meeting the leader realised an ambition he has held for some 35 years—to operate light-traps on the permanent, flower-rich grassland that is the village green at Wolvercote on the north side of Oxford (SP496096). After early childhood in the New Forest, Hampshire, my family moved to Oxford. Wolvercote Green was within walking distance of the family home at 31 Southdale Road and from the mid 1960s to the mid 1970s the Green was frequently visited on family walks and then by bicycle. The Green lies adjacent to the Oxford Canal and a railway line, and in those days it was possible to walk over the hump bridge crossing the canal, then over a level crossing on the railway line and on to famous Port Meadow and beyond. The area always contained, and still does, an abundance of open grassy spaces, hedgerows with blackberries, waterside vegetation with tall emergent plants, Crack Willows *Salix fragilis* screening the railway line, and there was a pond too. One of the highlights of many trips was to see one or more water voles *Arvicola terrestris* (L.) swimming across the canal, usually into the cover of the taller vegetation on the far side from the canal tow-path. A wide range of butterflies and dragonflies was seen in season and if we were lucky we might see a grey heron, a kingfisher, a grass snake or a slow-worm.

Now, readers will be aware that water voles have suffered a massive decline in Great Britain, which is being blamed on recent invasion of most of our waterways by the descendants of American Mink *Mustela vison* Schr. which have both escaped and been released from fur-farms. It is well-documented that as mink colonise an area they prey on water voles to such an extent that they can wipe them out. Indeed, Alison McDonald, who joined me for this meeting, reports that just two years ago the water vole population on the canal between Wolvercote and the Rushy Meadows, Kidlington, was lost to mink. The last water vole I saw



Fig. 1. Paul Waring inspecting larval foodplants on Wolvercote Green, Oxfordshire, 25 June 2005.

personally on this canal was on 13 August 2000 near Duke's Lock at approximately SP492122 (Waring & Townsend, 1991). So it was good to hear from Alison that water voles still occur around the pond on the Green, although we were not lucky enough to see them on this occasion. Often one returns to a site years later to find it changed, and frequently it seems the changes are all negative. In returning to Wolvercote Green for this meeting, I would like to record here some of the changes I noticed, and it is my pleasure to report that I consider most of these are for the better in this case.

Firstly, the Green has been protected from cars driving onto it by timber bollards and most of the grass is being allowed to grow as a hay crop and cut only once in the summer. This is part of an arrangement between the Wolvercote Commoners' Committee and English Nature, who are also working towards getting aftermath grazing by a few cattle, according to Alison. The sward was standing tall at the time of the meeting (see Fig. 1). Only the area around the children's swings and play area is outside this regime and this is now fenced off. When I was a boy the Green was mown more frequently and kept more like a rough-cut lawn, with fewer flowering and seeding opportunities. The pond was silting up and the remaining open water was hard to reach because of boggy but cut grassland. The pond is now larger, with more open water, broader margins of emergent plants, with lots of reedmace and uncut stands of willowherbs and possibly of a greater range of plant species than I recall formerly, but with informal access points to the water. We saw both a pair of coot and a pair of moorhen with young on the pond during the meeting. Alison informs me that the pond was sensitively dredged and extended in 1991 as a village project and that it still supports a population of the Water Scorpion *Nepa cinerea* L. It does not have boardwalks and explanatory notices however!

Because the grass on the Green is not cut frequently, Meadowsweet *Filipendula ulmaria* and other plants have extended further into it from the margins and can flower. Immediately, I noticed a large area of tufted vetch *Vicia cracca* in flower and hoped to see the dependent Blackneck Moth *Lygephila pastinum* (Treit.) after dark. Nearer the canal another area of the Green contained much Yellow Rattle *Rhinanthus minor*, Lady's Bedstraw *Galium verum* and Ox-eye Daisies *Leucanthemum vulgare*. The difference in vegetation may have been a consequence of past disturbance due to loading activities near the canal, where goods may have been stacked temporarily. Right by the canal we saw the introduced Orange Balsam *Impatiens capensis* which I do remember from the 1970s. The level crossing has been closed due to danger from the much higher speed trains using the line today so one has to use other routes to access Port Meadow. I was pleased to see that Port Meadow did not look too heavily grazed by comparison with some past years, but sad to see that Wolvercote Paper Mill has been pulled down in the last six months, because the mill chimney was something of a landmark.

The meeting got off to a great start. The first insect record was of a Scarlet Tiger moth *Callimorpha dominula* (L.) which the leader found squashed on the road by the Plough Inn which was our meeting point. This moth is so closely associated with Oxford, the University and particularly the work of E.B. Ford, P. Sheppard and others. During the 1960s and 1970s I used to see the moth annually in the grounds of St Phillip's & St James's Primary School in Leckford Road in the centre of Oxford, where my mother was a teacher. This population, which included the form *bimacula* Cockayne, had been established, possibly accidentally, as a consequence of captive-rearing work at the University using livestock from Cothill Fen, but I do not recall seeing the moth at Wolvercote Green at that time. I showed Alison the squashed moth when she joined me and she reported that she knows that since at least the early 1990s Scarlet Tigers have been seen in the garden of the late Mr Venny, who died in 2004. The garden of his house is right on the edge of the Green. I suspect that the area was colonised by moths flying along the course of the canal from Oxford and that this took place in the hot summers of the 1980s or early 1990s because by 1992 it was evident that the species was increasing its national range (see Waring, 1992).

As no-one else turned up for the afternoon session, Alison and I were able to explore the Green together and also join in with the mid-summer festivities simultaneously taking place in the village. These included a tug-of-war on Goose Green at the north end of the Green, playlets and musical performances in the village hall and meeting several people who remembered various members of my family!

The afternoon was rather cool and overcast, which kept many insects from flying, but at 16.54h we were standing on the hump-bridge looking at the vegetation on the canal banks when a Scarlet Tiger moth flew by, and we had a second sighting a few minutes later. Back in the 1980s at Cothill Fen, where the species is frequent, I recall noticing that many males would start flying in late afternoon, patrolling and searching for mates, and I found pairs mating openly on the reeds and other vegetation.

On a nearby crack willow we found a small caterpillar of the Vapourer moth *Orygia antiqua* (L.) on the upper surface of a leaf upon which it has just moulted from its former skin.

Alison and I then went briefly to reconnoitre Somerford Meadow nearby, where Alison is comparing the results of cattle-grazing, sheep-grazing and no grazing. On this date the sheep-grazed areas were notably less rich in flowers. Knapweeds and

ox-eye daisies were much more frequent in the other two treatments and we saw a Six-spot Burnet moth *Zygaena filipendulae* (L.) visiting one of the knapweed flowers for nectar. We hope to organise a BENHS field meeting on this site in 2006 to investigate the invertebrates present.

For the evening light-trapping session the leader was joined by new BENHS members Stephanie and Chris Carter and four ladies, a gentleman and a five year old son from the village. Amongst these the leader was pleased to be joined by Julie Hamilton, an old friend now resident in Wolvercote, and by Marina Rose, a representative of the Commoners' Committee for the Green. Two Robinson light-traps were operated, one on the Green between the canal and the children's swings, by the meadowsweet and crack willows and the other amongst tufted vetch and ox-eye daisies in flower-rich vegetation nearer the canal and a little further north. With a dusk temperature of only 13°C, it was a little cool, but otherwise the weather was favourable, with dry vegetation, no rain, a light breeze and 100% cloud cover. At dusk five male Ghost moths *Hepialus humuli* (L.) were counted performing their pendulum flight around projecting stems in otherwise rather short vegetation near the children's play area. A total of twenty-eight species of macro-moths had arrived by midnight when we had arranged to start packing up the gear. Local moths in the catch included five Blackneck moths in the trap by the stand of tufted vetch and two in the other trap, and they were continuing to arrive, plus a single White Satin *Leucoma salicis* (L.). Several Large Elephant Hawk-moths *Deilephila elpenor* (L.), Drinker moths *Euthrix potatoria* (L.), a Light Emerald *Campaea margaritata* (L.) and a Buff Arches *Habrosyne pyritoides* (Hufn.) were the most attractive to the villagers, and it was good to see the Straw Dot *Rivula sericealis* (Scop.), Latticed Heath *Chiasmia clathrata* (L.) and Light Arches *Apamea lithoxyla* (D. & S.).

The leader would like to thank Alison McDonald for all her help with this meeting, Andrew Burchardt and Marina Rose of the Wolvercote Green Commoners' Committee and all those who attended for helping to make this a most enjoyable and productive event. A copy of the full list of moths recorded during the meeting, and this report, have been supplied to Andrew Burchardt and to Martin Townsend, County Moth Recorder for Oxfordshire.

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Wyndcliffe, Wye Valley woodlands, Tintern, Monmouthshire, 28 June 2005

Leader: **Paul Waring**.—This field meeting was organised as an evening and night event with the specific aim of capturing a fertile female Scarce Hook-tip moth *Sabra harpagula* (Esper) to obtain eggs for rearing. This was so that the larval habits could be studied in captivity as part of a project supported jointly by the BENHS and Writtle College, with a view to finding the larvae of this Red Data Book species more easily in the wild and assessing the impact of thinning and coppicing of stands of Small-leaved Lime *Tilia cordata*. The latter is the only recorded larval foodplant of this moth in the British Isles and the moth appears to be confined now to the ancient

lime-woods of the Wye Valley woodlands on the borders of Gloucestershire and Monmouthshire. For more information on the background and context of this project, see Waring (2004 & 2005a).

As we gathered under some massive small-leaved limes in the Forestry Commission picnic site at Wyndcliffe near Tintern (Fig. 1), this was definitely a meeting only for the hardest and bravest members of the BENHS. There had been light rain during the afternoon and this became extremely heavy and persistent from soon after our arrival, well before dusk, with both forked and sheet lightning and claps of thunder. One locally based member thought the better of it and did not venture out from his house and another decided not to risk his trap and bolted for home, crossing flooded roads in the process. Four of us stuck it out, running a dozen light-traps all night in initially atrocious conditions. We slept in our cars under the lime trees. We were rewarded with a female in perfect condition, together with a number of males varying from fresh to worn. The first male was seen at 23.15h, flying around a Robinson trap (Trap A) operated by PW on the south side of the car-park, on the east side of the road. The moth was somewhat worn, with a chipped left forewing. It was boxed to show the others and released in the morning. By this time Tony Rouse, who was operating four 125 W mv Skinner traps and Peter Smytheman, who had two 125 W, one 80 W and two actinics, all amongst the trees and in the track on the north side of the car-parking area, had one male between them. By midnight, Peter Clarke had recorded one male at one of his two 125 W Skinner traps in the quarry on the opposite side of the road and one in a similar trap in the woodland in between. The female *S. harpagula* had not arrived at the traps by midnight but was present by 00.30 h and was captured in the track running north from the carparking area on the east side of the road. The air temperature was 13°C at dusk and throughout the night. It was cloudy all night but there was no more rain after 23.30h. The full catches of moths in the traps were recorded at dawn, when it was apparent from the increased numbers of geometrids on and around the traps, that more moths had arrived after midnight while we were sleeping. The total catch of *S. harpagula* was three males and one female jointly between Tony Rouse and Peter Smytheman, with Peter recording two males in one trap, and three males between Peter Clarke and the leader. All had arrived by 01.00h. Most were released at dawn but one male was kept for the female, in case she proved to be unmated.

Capture of a female Scarce Hook-tip appears to be much less frequent than capturing males, one or two of which are usually obtained per trap during sessions under the limes at this location within the flight season. Two of us have trapped here before in more typically favourable conditions without seeing a female. Roy McCormick reported rearing larvae from a female captured on 10 July 1987 and Bernard Skinner (pers. comm.) and others have trapped occasional females. The chances of catching a female seem to be improved by trapping in the second half of the flight season, that is from the end of June and into early July, rather than earlier in June, hence the date of this meeting. There would have been a second field meeting a week later, had we not been successful this time. Our female laid 224 eggs, from which larvae have been reared to pupation (see *British Wildlife* 17: 53–55). From her perfect condition and the number of eggs laid, she must have been freshly emerged and recently mated. We wonder if the females tend to spend most of their time in the tree canopy, possibly from which our female was driven or dislodged by the down-pour. However, the pupae are formed wrapped in a portion of a growing leaf, folded by the larva, and they fall to the ground with the leaves in the autumn. The females emerging the following summer have to make their own way back into the canopy, and at this stage they may be more susceptible to light-traps operating on the ground under the trees.



Fig. 1. Lower Wyndcliffe, Tintern, Wye Valley woodlands, Monmouthshire, 28 June 2005: the quarry site on the west side of the road, with Peter Clarke and light-trap.

Other noteworthy moths recorded at the traps included the following, with the numbers recorded at Trap A unless otherwise stated (the only trap at which numbers were recorded in full): Orange Moth *Angerona prunaria* (L.) (1 male), Ruddy Carpet *Catarhoe rubidata* (D. & S.) (1), Mocha *Cycloptora annularia* (Fab.) (only one seen and not in Trap A), Red-necked Footman *Atolmis rubricollis* (L.) (several, but not in Trap A), Blomer's Rivulet *Discoloxia blomeri* (Curtis) (5), Clouded Magpie *Abraxas sylvata* (Scop.) (7), Satin Lutrestring *Tetheella fluctuosa* (Hbn.) (1), Common Lutestring *Ochropacha duplaris* (L.) (1), Clay Triple Lines *Cyclophora linearia* (Hübner) (1), Treble Brown Spot *Idaea trigeminata* (Haw.) (4), Small White Wave *Asthena albulata* (Hufn.) (2), Rosy Footman *Miltochrista miniata* (Forst.) (1), Peppered moth *Biston betularia* (L.) (two white, one intermediate form), Lobster *Stauropus fagi* (L.) (1), Green Arches *Anaplectoides prasina* (D. & S.) (2), Grey Arches *Polia nebulosa* (Hufn.) (several, but not in Trap A) and Beautiful Hook-tip *Laspeyria flexula* (D. & S.) (2). We only saw one Lime Hawk-moth *Mimas tiliae* (L.) (a female in Trap A), probably explained by the fact that we were rather late in the flight season for this species. Other hawk-moths seen were the Large Elephant Hawk-moth *Deilephila elpenor* (L.) (2 in Trap A) and the Poplar Hawk-moth *Laothoe populi* (L.) (several, but none in Trap A).

As an indication of the total numbers of moths seen, 134 macro-moths of 40 species were captured by Trap A, a single standard pattern Robinson trap fitted with a 125 W MB/U bulb placed under a lime tree on the south side of the car-parking area, nearly 100m metres from the rest of the traps. Most interestingly, the overall catch at this trap was much higher than in any of the other traps, many of which had 125W bulbs but were placed much closer together, some only 10-20m apart. The catches in these other traps varied from 14 to about 40 individuals only. In the

quarry Peter Clarke recorded 14 macro-moths of 12 species in one trap and 20 of 15 species in the other. These results strongly suggest that these other traps, especially in the woodland, were competing with each other for the same moths and probably affecting each others results by reducing the degree of contrast between the bulbs and the background illumination. However, Trap A was not the trap that caught the female *S. harpagula*, and the other traps were also useful in extending the total species list for the night. The two traps in the quarry were placed by two clumps of small-leaved lime growing on the sides of the quarry. These limes were smaller and more bushy than those under which we trapped in the woodland opposite.

The field meeting was also notable in that Peter Clarke had his first ever experience of seeing a Common Dormouse *Muscardinus avellanarius* (L.). This happened while he was checking and refuelling his generator about midnight. The dormouse came alongside his boot, put its forelegs up on the boot and looked around before scurrying off on its way—a fantastic event that Peter will remember for the rest of his life and one that will probably never happen to him again. Interestingly, although the leader has never heard of quite such a close encounter with a dormouse, one was seen, in this same quarry, sitting on a light-trap, on 24 June 1994. This was when the leader, Ray Barnett and others came here to confirm that *S. harpagula* was on the wing prior to searching, unsuccessfully, for it the following night during the BENHS field meeting among the small-leaved limes at Welshbury Hill, near Cinderford, Gloucestershire (*BJENH* 10: 39–42).

The full species list, other information from this field meeting and a copy of this report have been supplied to the Forestry Commission who manage the site, and to Martin Anthony, the County Moth Recorder for Monmouthshire. The ongoing observations from rearing the *S. harpagula* larvae which resulted from the captive female will be published in a separate report.

The leader and all those attending are grateful to Richard Gable (FC for the Monmouthshire part of the Wye Valley woodlands) and Jeremy Gissop (FC for the Gloucestershire portion) for their help and co-operation in the organisation of this meeting and the inspections of other sites in the area which preceded and followed this event. The project benefited from the support of the Centre for Environment & Rural Affairs, Writtle College, and a contribution from a BENHS research grant towards costs.

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Otmoor, Oxfordshire, 23 July 2005

Leader: **Paul Waring** (PW)—This meeting was one of those occasions when we had perfect weather both during the day and for the light-trapping at night—a warm sunny afternoon but not burning hot, and a muggy, dead calm, dry night with full cloud and threatening rain, which did not arrive until well after dawn. The temperature at dusk was 15°C and the minimum for the night was 14°C. It was the second visit the BENHS have made to this inland, wetland site. The first field meeting on 26 June 2004 (*BJENH* 18: 278–285) includes a description of the site, a brief summary of its history, including previous entomological recording, and some useful references.

The day session in 2005 started after lunch and the leader was joined by Bernard Nau, Sheila Brooke, David Hastings and Ron Louch (Fig. 1). Bernard and Sheila ensured that the Hemiptera were well covered and between them they recorded over 60 species during the day by beating, sweeping and pond-dipping as we all walked around the site together. The great majority were common species, at least in southern England, but one female of the somewhat local mirid *Orthocephalus saltator* (Hahn.) was swept by the old hedged lane which is a Roman road leading out across the moor. Amongst aquatic Hemiptera which Bernard netted from the dykes by the pump-house, such as the Common Water-boatman *Notonecta glauca* L., PW was pleased to see a number of individuals of the more local *Ilyocoris cimicoides* (L.), the Saucer Bug, and two females of the water-boatman *Hesperocorixa moesta* (Fieber). David assisted PW in recording Lepidoptera and Odonata and between us we covered some of the more obvious invertebrates of other Orders, while Ron was invaluable in showing us some bird's nests and highlighting some management issues. Len Winokur joined the leader for the night session from 20.00h to dawn. The leader operated two standard Robinson light-traps fitted with 125W MB/U mercury vapour bulbs on 50m cables from a power-point at the RSPB pump-house and mini-office (SP568129) by the main southern dyke and the access point from the RSPB car-park at Moor Leys. There were Bulrushes *Typha latifolia* within a couple of metres of the trap by the waterside (Fig. 2) and woody vegetation by the other trap on the top of the ditch bank. The bank site was described and illustrated in the first field report. Len operated from a power-point on the far north side of the RSPB reserve, by a large newly planted reed-bed and a poly-tunnel used for reed propagation. The Common Reed *Phragmites australis* here looked much taller and more vigorous than in 2004. Len used a single 125W MBF/U bulb over a sheet, which he manned until 02.00h but left running until dawn. It was wonderful



Fig. 1. L-R David Hastings, Sheila Brooke and Bernard Nau with meadow, stop butts and rifle range behind, Otmoor, 23 July 2005.

not to need to operate generators and we enjoyed the peace of this site, broken only by the calls of birds and bush crickets. The sound of traffic on the nearby M40 motorway was mercifully almost inaudible – when there is a wind blowing from that direction the constant sounds of engines and of tyres on tarmac ruin the feeling of solitude that was the case in the 1970s.

Initially we walked around the Ministry of Defence Rifle Range and Stop Butts, with advance permission from the Range Warden. Butterflies seen included many Meadow Brown *Maniola jurtina* (L.) and Gatekeeper *Pyronia tithonus* (L.) on the abundant flowers of bramble along the hedgerows, smaller numbers of Ringlets *Aphantopus hyperantus* (L.) and Green-veined White *Pieris napi* (L.), a Peacock *Inachis io* (L.), a Speckled Wood *Pararge aegeria* (L.) and a Large Skipper *Ochlodes faunus* (Turati) on the range. Both the fields on the west side of the range had been cut for hay, which had been baled on site but not yet collected. Park Meadow, on the east side of the range by Otmoor Spinney, had not been cut and here we saw a lot more butterflies, including a worn Marbled White *Melanargia galathea* (L.) evidently coming to the end of its flight period. The sandy banked area around the Stop Butts was searched intensively for the Wall Brown *Lasiommata megera* (L.), but none was seen. Large numbers of aestivating dark brown and white snails of at least two species, the dark brown-striped *Cermea virgata* (da Costa) and the paler, less-striped *Candidula intersepta* (Poiret) (dets. Bernard Nau) were found at rest on dry poppy stems and other plants. Our approach disturbed an immature grass-snake which slipped off across bare ground at the Stop Butts. We also disturbed an immature common frog on the Range and found a Six-spot Burnet moth *Zygaena filipendulae* (L.) nectaring on a flower of Betony there. A Comma *Polygonia c-album* (L.) of the typical form was basking in the late afternoon sunshine on nettle leaves by the main gate. In his Nature Notes in the Otmoor Review, a local circular for



Fig. 2. Robinson light-trap in open ground by channel near pump-house, Otmoor, 23 July 2005.

residents of the Otmoor villages, Gordon Ushaw notes that Meadow Browns, Gatekeepers, Ringlets and Marbled Whites have been seen in above average numbers on Otmoor during 2005.

Orthoptera noted included plenty of Dark Bush Cricket *Pholidoptera griseoaptera* (DeGeer), several Speckled Bush Cricket *Leptophyes punctatissima* (Bosc.), Oak Bush Cricket *Meconema thalassinum* (DeGeer) and a nymph of one of the coneheads *Conocephalus* sp. along the hedgerows and Common Field Grasshopper *Chorthippus brunneus* (Thunb.) and a Common Ground-hopper *Tetrix undulata* (Sow.) on the Range, but no attempt was made at an exhaustive listing.

Dragonflies and damselflies seen along the ditches by the range included several Common Blue Damselfly *Enallagma cyathigerum* (Charp.), several Ruddy Darter *Sympetrum sanguineum* (Mllr) and a Brown Hawker *Aeshna grandis* (L.), with another of the latter seen in the RSPB car park. Later, walking along the water channels constructed by the RSPB we added Banded Demoiselle *Calopteryx splendens* (Harris), Blue-tailed Damselfly *Ishnura elegans* (Van L.), Black-tailed Skimmer *Orthetrum cancellatum* (L.), Common Darter *Sympetrum striolatum* (Charp.) and an Emperor Dragonfly *Anax imperator* Leach flying over a *Potamogeton* sp. in the water channel.

In the water Bernard noticed quite a few water-spiders carrying egg-sacs and disappearing under water. A Marsh Harrier had been seen earlier in the day and we had been informed by the RSPB that there were two pairs of Hobby nesting on site, but a walk across Otmoor in late afternoon failed to detect either. Significantly, although it was possible to walk along the track of limestone chippings that now runs diagonally over this western part of the site, the surrounding ground was also hard and dry and a person could have walked across in carpet-slippers.

A party of RSPB volunteers planted over 2000 reed-plants during the course of the day. The RSPB is aiming to plant 150,000 reed plants. At the time of this field meeting, they had planted 131,000 and so were only 19,000 short of their target. One of the aims of the reserve is to create the largest reed bed system in central England. Water Voles *Arvicola terrestris* have also been confirmed present in these parts of the site.

We noted that hay-making had taken place in fields to the west of the Range and in the Hundred Acre field behind the Stop Butts. Rolled bales of hay were standing in these places. The field between the Range and the Spinney had not been cut however, and was full of flowering plants and satyrid butterflies. An hour was spent inspecting bird's nests with Ron, who demonstrated the value of small bushes within these grassy fields by showing the use made of them by songbirds. Ron showed us a nest of Yellow-hammers with three naked youngsters in the base of a small common hawthorn surrounded by fleabane, and another nest of the same species just 30 cm above ground in young blackthorn with a thick growth of bramble, grasses and thistles giving it cover. This nest contained three of the white eggs speckled with dark reddish-brown. Another crook of low blackthorn in bramble by a hedge contained the nest of a Song Thrush from which three youngsters had successfully fledged. Ron reports that such situations were also favoured by Reed Buntings, White-throats and Grasshopper Warblers on this site. These were just some of the nests Ron was following through. Ron considers that removal of such woody growth had been overzealous in recent years in the fields surrounding the range, where such growth has been an important feature over the years. He also reported that when such growth first developed on the banks of the ditches that were installed on Otmoor in the early 1970s, this was a superb nesting habitat, but over the last fifteen years this transient stage has passed and the density of nests has declined somewhat. It was

pleasing to see that neither Otmoor Closes nor Moor Leys (by the visitor car park) had been cut by the RSPB and that such habitat was plentiful there as a consequence. Small scattered bushes in longish swards of grasses and herbage are widely considered the favoured habitat of the declining Lappet moth *Gasteropaha quercifolia* (L.) which was recorded on the field meeting here on 26 June 2004. The larvae of the lappet can be found low on the mainstems of the bushes in the shelter of the sward by day, as can the cocoons, a fact widely known amongst lepidopterists and recorded by Tutt, 1901–1905, (especially ii p. 47), who also considered this one of the favourite non-heathland habitats for Emperor moths *Saturnia pavonia* (L.), for which this site is also important locally.

We also noted that the tall Crack Willows *Salix fragilis* in the western hedge between the Roman road and the car park had been pollarded, apparently because some branches had dropped across the lane in gales. This left the lane looking much more open than previously, but the tall fen vegetation was thriving and uncut.

After the afternoon contingent had departed there was a brief shower of rain between 19.30 and 20.00h, during which Len Winokur arrived to set up a mothing light as described above. We both had a tranquil evening scanning Otmoor for birds moving about before dusk and then taking up positions at our respective trap sites from which we could see each others lights on opposite sides of the otherwise unlit moor and dark sky, and speak to each other by our mobile phones.

One of our main target species for the night was the Garden Tiger moth *Arctia caja* (L.) which has declined greatly in central and southern England in the decades since the 1960s. PW has observed that this species seems to be surviving, in reduced numbers, in some wetlands when it has disappeared from surrounding areas, for example on Misson Carr in Nottinghamshire (*BJENH* 16: 258–262) and the Rushy Meadows in Oxfordshire (*BJENH* 14: 59–64). He had noted back in the 1980s that wetlands such as Woodwalton Fen, Huntingdonshire, supported some of the densest populations of Garden Tiger found inland and speculated on the reasons for this (Waring, 1990). We were hoping that Otmoor would also prove to be such a refuge. Knowing the moth to fly late at night the leader decided to rely on his traps and climbed into his car soon after dark to get some sleep before arising again soon after dawn, about 05.30h. Len worked at his light until 02.00h, then slept for an hour before manning it again at 03.00h. He was accompanied by John Harrison from the RSPB until 01.00h when John decided to head for his home, having seen no Garden Tigers. Len had not seen any by 02.00h either, but at 03.00h he found eight individuals gathered around his light, including several still actively flying near the bulb. There were also lots of Ruby Tiger *Phragmatobia fuliginosa* (L.) and Yellow-tail *Euproctis similis* (Fuess.) in attendance by this time, a very fresh male Bulrush Wainscot *Nonagria typhae* (Thunb.), several male Lackey moth *Malacosoma neustria* (L.) of both the reddish and yellow forms, but only one species of macro-moth not also recorded at PW's traps, a single Canary-shouldered Thorn *Ennomos alniaria* (L.) in perfect condition. Apart from the Garden Tigers, the numbers of other moths at Len's light were not counted.

At dawn PW recorded the numbers of all the macro-moths in his two Robinson traps. Trap A covered the embankment along the southern boundary dyke (see Fig. 2 in *BJENH* 18: 283) and Trap B was within 5 m of a dyke pool and the margins of one of the water channels installed by the RSPB (Fig. 2). Both these sites were described in the field meeting report for 26 June 2004. Trap A caught 525 macro-moths of 64 species and Trap B 462 macro-moths of 52 species. These were the largest catches of individuals PW had in his traps in 2005.

The most noteworthy records, differences and patterns in the catches are summarised in the following list, with the numbers of individuals at A and B respectively shown in brackets: Double-lobed *Apamea ophiogramma* (Esper) (6, 1), Magpie Moth *Abraxas grossulariata* (L.) (4, 0), Crescent *Celaena leucostigma* (Hbn.) (2, 0), Smoky Wainscot *Mythimna impura* (Hbn.) (87, 41), Ruby Tiger (31, 23), Dingy Footman *Eilema griseola* (Hbn.) (16, 7), Yellow-tail (14, 7), Pebble Prominent *Notodonta ziczac* (L.) (6, 2), Sallow Kitten *Furcula furcula* (Clerck) (6, 3), Lunar-spotted Pinion *Cosmia pyralina* (D. & S.) (3, 2), Small Scallop *Idaea emarginata* (L.) (1, 1), Blackneck *Lygephila pastinum* (Treit.) (1, 1), Common Footman *Eilema lurideola* (Zinck.) (20, 18), Common Rustic *Mesapamea secalis* agg. (117, 115), Heart & Dart *Agrotis exclamationis* (L.) (12, 13), Uncertain *Hoplodrina alsines* (Brahm) (24, 26), Poplar Hawk-moth *Laothoe populi* (L.) (3, 8), Large Yellow Underwing *Noctua pronuba* (L.) (49, 68), Garden Tiger (2, 4, all males), Dark Arches *Apamea monoglypha* (Hufn.) (31, 65) and Lesser Cream Wave *Scopula immutata* (L.) (0, 2). Repeat sampling will be required to show whether these differences are significant.

The more noteworthy species recorded as singletons were as follows: Black Arches *Lymantria monacha* (L.) (1, 0), Beautiful Hook-tip *Laspeyria flexula* (D. & S.) (1, 0), Bordered Beauty *Epione repandaria* (Hufn.) (1, 0), Bordered Sallow *Pyrrhia umbra* (Hufn.) (1, 0), Dingy Shears *Parastichtis ypsilon* (D. & S.) (1, 0), Lackey (0, 1), Round-winged Muslin *Thumatha senex* (Hbn.) (0, 1), Drinker *Euthrix potatoria* (L.) (0, 1), Fen Wainscot *Arenostola phragmitidis* (Hbn.) (0, 1), Bulrush Wainscot (0, 1 very fresh) and Southern Wainscot *Mythimna straminea* (Treit.) (0, 1).

Pyralid moths associated with aquatic or emergent larval foodplants included Small China-mark *Cataclysta lemnata* (L.) (0, 8), Beautiful China-mark *Nymphula stagnata* (Don.) (1, 1), Reedmace Grass-veneer *Calamatotropha paludella* (Hbn.) (3, 5) and the reed-dependent Pale Water-veneer *Donacaula forficella* (Thunb.) (1, 11).

While packing up the traps the piping of a Kingfisher was heard approaching along the dyke and this brightly-coloured bird arrived and perched on a fence rail by the water's edge ready to catch its breakfast, which it soon did. Len and I left this atmospheric place shortly afterwards for equally welcome cooked breakfasts on our way home.

A few days after this meeting, on 28 July 2005, Ron Louch found a larva of the Emperor moth in grass amongst low regrowth of common hawthorn on Long Meadow which runs from the Beckley road, adjacent to the Rifle Range and across to Otmoor Spinney. The local importance of this population of Emperors was discussed in the report of last year's meeting. He recorded an additional three individual larvae during the remainder of the year.

The leader thanks Neil Lambert, John Harrison and Barbara Reason of the RSPB for their permission and assistance in holding this meeting and Harvey Swift, Range Manager, for permission to examine the MOD Rifle Range and neighbouring holdings. Copies of this report and the full species list have been supplied both to the RSPB and MOD.

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Bridford and Dunsford Wood, Devon, 18 August 2005

Leader: **Roy McCormick**. – It rained during the afternoon at Teignmouth, but the weather forecasters said that it would clear later and stay dry (wrong!). Despite some drizzle 15 brave souls decided to come. We had two main areas to sample and placed four traps at Bridford Wood and six at Dunsford Wood, both National Trust sites. As we put out our lights the rain started again, but we decided to carry on and hope for the best. The rain stopped eventually, but the damage had been done by the afternoon downpours damping everything down, and although the temperature stayed at around 15°C very few moths came to our lights, averaging around four new moths per trap on each round.

A total of 50 species was recorded from the Dunsford Wood area with the best of these: one *Eupithecia virgaureata* Doubl. (Golden-rod Pug); four *Eilema complana* (L.) (Scarce Footman); one *Euplagia quadripunctaria* (Poda) (Jersey Tiger); three *Mormo maura* (L.) (Old Lady) and one *Chortodes pygmina* (Haw.) (Small Wainscot).

Elmley Marshes RSPB reserve, 20th August 2005

Leader: **Mark Telfer**. – A party of 12 assembled at the reserve car park at 11.00h on what was a rather cool day for August, though thankfully dry. After a round of teas and coffees in the reserve office and a briefing by Barry O'Dowd (warden) and Mark Telfer, the party set out. Dave Nellist and Doug Marriott set out in search of spiders. The remainder of the party shared a common interest in seeing the 'Pride of Kent' beetle *Emus hirtus* (L.) which no longer occurs anywhere else in Britain. Barry's mention of a carcass was greeted with great enthusiasm. Disposable gloves were donned and we were soon encountering the carrion fauna, including the clerid beetles *Necrobia violacea* (L.) and *N. rufipes* (De Geer), and the staphylinid beetles *Creophilus maxillosus* (L.) and *Ontholestes* (in abundance). While transporting us in the reserve pick-up, Barry spotted an Osprey flying past giving decent views to the several members of the party with binoculars. This was the first Osprey sighting on the reserve in 2005. To continue the birding theme, we paused at one of the hides and spent a few minutes watching a Temminck's Stint (a scarce visitor to the reserve), as well as a Little Stint, and numbers of Spotted Redshanks, Avocets and Yellow Wagtails. We continued in the pick-up, pausing to observe a Curlew Sandpiper amongst a high-tide gathering of waders. We stopped to explore the area around Cod's House. Of particular interest here was a fenced area containing a lot of *Ballota nigra* L. (Black Horehound), popular with foraging bumblebees. The commonest species was *Bombus muscorum* (L.), with a few *Bombus lucorum/terrestris* and *B. lapidarius* (L.), and two workers of the Shrill Carder-bee *Bombus sylvarum* (L.). This latter is a BAP species and one of the aims of the Field Meeting was to establish the continued presence of this species at Elmley Marshes, following a blank year in 2004. Also sheltering amongst the horehound and other tall herbs were the dragonflies *Sympetrum striolatum* (Charpentier), *Lestes sponsa* (Hansemann) (a single female), *Ischnura elegans* (Vander Linden) and a single *Erythromma viridulum* (Charpentier) (the first record at Elmley Marshes since it was first recorded here in 2003).

We gathered for lunch in one of the hides and then headed back out into the field for a concerted effort to find *Emus hirtus*. *Emus* is a top predator of the dung invertebrate community and on hot, sunny days, there is a chance of seeing it hunting on cow-pats or even flying around. It is recorded at Elmley in most years but usually only one or two a year. Our luck was not in on this visit.

There was some concern that the dung seemed fairly lifeless in the first field we visited. We sampled a second field and found a greater richness of dung invertebrates. The herd grazing the second field had not been treated with veterinary anthelmintics during their time at Elmley, whereas the other herd had been. Avermectins are not used on the reserve but in this case a levamisole wormer had been used. The available evidence is that this formulation has relatively little impact on dung invertebrates. However, RSPB will be discussing this with the grazier with a view to minimising the use of wormers at the reserve.

Eric Philp and Kevin Chuter had opted to investigate the beetle fauna of the sea wall and saltmarsh habitats. Their best find was the remarkable elongate weevil *Lixus scabricollis* Boheman (RDBK) by vacuum-sampling Sea Beet *Beta vulgaris* L. This is the third Kent site for this beetle. Other Nationally Scarce beetles recorded in this area included: *Ophonus ardosiacus* Lutschnik (Nb), *Dicheirotrichus obsoletus* (Dejean) (Nb), the Bombardier Beetle *Brachinus crepitans* (L.) (Nb), *Cassida nobilis* L. (Nb), *Podagrica fuscicornis* (L.) (Nb) and *P. fuscipes* (Fabr.) (Na), the latter two both feeding on mallow *Malva sylvestris*.

Other rare and scarce beetles recorded during the Field Meeting were as follows: *Philonthus punctus* (Gravenhorst) (RDB3), *Bembidion fumigatum* (Duftschmid) (Nb), *Anthraxus consputus* (Duftschmid) (Nb), *Hygrotus parallelogrammus* (Ahrens) (Nb), *Agabus conspersus* (Marshall) (Nb), *Rhantus frontalis* (Marshall) (Nb), *Dytiscus circumflexus* Fabr. (Nb), *Ochthebius viridis* Peyron (Nb), *Enochrus halophilus* (Bedel) (Na), *Cercyon bifenestratus* Küster (Na) and *Astenus immaculatus* Stephens (Nb).

Browndown ranges, Hampshire, 9 October 2005

Leaders: **David Biggs** and **John Langmaid**. – This was a joint field meeting of the BENHS and the British Plant Gall Society held on a calm, dry, warm Sunday, and attended by eleven members of one or other of the Societies.

The locality is one of vegetated shingle, somewhat reminiscent of Dungeness, with a hinterland of scrub and grassland. Seventeen species of microfungi (powdery mildews) were recorded, all of which were common species. Of the gall-inducing organisms, four were species of Acari (mites), nine species of Diptera and fifteen of Hymenoptera. The latter group included *Andricus aries* Mayr (ramshorn gall), on *Quercus robur* which has only been known in England since 1998, and *Andricus grossulariae* (Giraud) also on *Q. robur* and only known in England since 2000. Four species of agromyzid (Diptera) leaf-mines were seen, all of them common species. Of the non-lepidopterous adult insects seen, the only dragonfly was the Common Darter, *Sympetrum striolatum* (Charpentier). There were three species of Hymenoptera; four of Diptera including the local tephritid species *Sphenella marginata* (Fallén); nine of Hemiptera including *Aelia acuminata* (L.) which is nationally local, though fairly common in south Hampshire, *Nysius senecionis* (Schilling) which is widespread but relatively uncommon species and *Lygus maritimus* Wagner which is generally local though common enough in this locality. One species of Orthoptera was recorded and sixteen Coleoptera including the carabid *Nebria salina* Fairmaire & Laboulbène which tends to replace the very similar *N. brevicollis* (F.) in this type of well-drained terrain. We recorded seventy-one species of Lepidoptera, eight of which were butterflies and included a single *Colias croceus* (Geoffr.). Most of the rest were common leaf-miners but there was one notable find: a vacated mine of the plutellid *Acrolepiopsis marcidella* (Curtis) in a berry of *Ruscus aculeatus* (Butcher's Broom) – a new 10 km square record for the species.

The day was enjoyed by all, and the excellent weather contributed in no small part to the large list of species recorded. This kind of joint meeting seems very popular with all who attend them, as enthusiasts of different disciplines can learn a great deal from one another.

RHS Garden, Wisley, Surrey, 15 October 2005

Leaders: Ian Sims and Andrew Halstead. – The main objective of this field meeting was to search for leaf-mining micro-Lepidoptera. The Royal Horticultural Society's garden at Wisley (TQ 065 583) holds collections of exotic plants from around the world, together with many native trees and shrubs. Historically, several species of invertebrates new to Great Britain have been discovered here, and we were fortunate in having Andrew Halstead, the RHS's principal entomologist to whom many of these new British records are attributable, as joint leader for this meeting. Unfortunately no members or guests attended, despite the weather being sunny and unusually warm for mid October. Undaunted, the leaders had an interesting and productive days recording in this impressive garden.

On entering the Garden we soon had a close view of a humming-bird hawk moth *Macroglossum stellatarum* (L.) feeding at Verbena flowers overhanging the water-lily canal pond. So intent on feeding was it that we were able to approach to within a couple of feet and still it continued nectaring. After this we walked to a nature reserve area on the banks of the River Wey. This area is not normally open to the public, but has an impressive stand of sapling alders (*Alnus glutinosa*) and other deciduous trees from which a good list of fungi, flora and fauna has been recorded. Here we found *Caloptilia elongella* (L.) and *C. falconipennella* (Steph.) larval rolls and folds on the alder leaves, and larval cones of *C. stigmatella* (F.) on leaves of a grey poplar (*Populus × canescens*).

During lunch, which was taken in the picnicking area near the entrance to the Garden, we saw a male brimstone butterfly, *Gonepteryx rhamni* (L.), in flight in the warm autumn sunshine. After lunch we walked to several areas of specialised planting. In the Rhododendron bed we saw leaf mines of *Caloptilia azaleella* (Brants) in *Rhododendron simsii* and on other rhododendrons there were numerous examples of the Rhododendron leafhopper (*Graphocephala fennahi* Young), and Pieris lacebug (*Stephanitis takeyai* Drake & Mao). These are non-native Hemiptera of which the latter is a recent arrival in Britain that is becoming somewhat troublesome to horticulturists.

In the Rock Garden area, cases of the tineid *Psychoides filicivora* (Meyr.) were found feeding on the sorii of Hart's-tongue fern *Phyllitis scolopendrium*.

Other species of interest noted during this part of the meeting were: *Etainia louisella* (Sirc.) mining numerous keys of field maple (*Acer campestre*), *Stigmella aceris* (Frey) numerous mines in field maple, *Stigmella pyri* (Glitz), two mines in pear (*Pyrus* sp.), *Caloptilia semifascia* (Haw.) cones on field maple, *Parornix fagivora* (Frey) many folds on beech (*Fagus sylvatica*), *Stigmella samiatella* (Zell.), mines in sweet chestnut (*Castanea sativa*), *C. robustella* Jäckh, folds on oak (*Quercus robur*), *Bucculatrix thoracella* (Thunb.), mines and cocoons on lime (*Tilia × europaea*).

On the way back to the garden entrance many red admirals, *Vanessa atalanta* (L.), were seen feeding in the warm sunshine on ivy (*Hedera helix* 'Arborescens') bloom. Unfortunately our humming-bird hawk moth had moved on by then.

The meeting closed at 16.30h, the two leaders having recorded a total of 70 species of leaf-mining micro-Lepidoptera. A full species list has been sent to the Royal Horticultural Society and to the BE&NHS Field Meetings Archivist.

**Launch of “Amateurs as Experts” report, Darwin Centre,
Natural History Museum, 16 November 2005**

Reporter: **Paul Waring**. – During 2004 some of the activities and views of the BENHS were studied by a group of social scientists from Lancaster University as part of the ESRC-funded “Amateurs as Experts” project, working closely with English Nature and the Natural History Museum. Aims of the project included finding out the scope and types of information the Society and its members collect on biodiversity in the UK, our motives for doing so, how that knowledge is harnessed for nature conservation purposes and our views on the various organisations with which we interact and exchange information. The involvement of the BENHS in this project arose through contact made between one of the Lancaster group, Dr Rebecca Ellis, and Dr Paul Waring, BENHS Field Meetings Secretary, when the latter presented an illustrated lecture on the activities of the BENHS at the Natural History Museum on 17 June 2004 for National Insect Week (see *BJENH* 18: 136–137). Dr Ellis accepted an invitation to attend the BENHS field meeting held at London Zoo, Regent’s Park, London, 17 July 2004, which she duly did, accompanied by her daughter Mila (see *BJENH* 18: 149–152). They observed us sweeping and beating and pootering by day, interviewed us discreetly, stayed up till late at night with moth-traps and slept in sleeping bags on the floor of one of the zoo buildings the remainder of the night until we went through the catches at dawn. Photographs of some of this feature in the colourful document “Nature: Who Knows?” prepared for the report launch which took place at the Darwin Centre, Natural History Museum, London, on 16 November 2005. As part of the launch Dr Waring was invited to give another illustrated guest lecture, this time entitled “The wonder of British Naturalists”, in which he explored the main topics addressed by the “Amateurs as Experts” project, and some related issues, frequently illustrated with reference to BENHS examples.



Both the report and the lecture were well received and there was much stimulating discussion afterwards. The accompanying photograph shows left to right: Rebecca Ellis and colleagues Claire Waterton and Robin Grove-White of Lancaster University, holding copies of the launch document, with Paul Waring, BENHS and Centre for Environmental & Rural Affairs, Writtle College.

Dipterists Forum Field Meetings in 2005

Reporter: **Roger Morris**. – Dipterists Forum held three field meetings in 2005 starting with a spring weekend based at Stamford in South Lincolnshire on 4 and 5 June. This was a new venture for the Forum aimed at attracting entomologists who would like to attend a residential weekend but did not feel inclined to participate in the traditional summer and autumn field meetings. The summer field meeting was based at St Johns College, Durham, from 2–9 July and was followed by the autumn field meeting from 15–18 October based at Sandown on the Isle of Wight. A total of 30 members and friends attended the meetings (Stamford [19], Durham [22], Sandown [8]). In keeping with previous field events, the meetings were open to non-Dipterists and attracted a number of coleopterists and hymenopterists several of whom were BENHS members; the meetings might also appeal to microlepidopterists.

The spring field meeting at Stamford concentrated on six local sites within ten miles of our base. On the Saturday (4.vi.) we visited Barnack Hills & Holes National Nature Reserve, Castor Hanglands NNR and Southey Wood. Although rather variable, conditions were good enough for recording and for some interesting flies to be noted. As with all of the field meetings, data will take a while to assemble, but an immediate snapshot of this day's visits includes the tephritid *Goniglossum wiedemanni* (Meigen) at Barnack Hills & Holes, the large and scarce chloropid *Chlorops gracilis* Meigen at Castor Hanglands, and a very fresh *Brachypalpoidea lentus* (Meigen) at Southey Wood. The following morning started at Collyweston Quarry SSSI, a limestone grassland that on a good day would have allowed pleasant recording; but conditions were too poor to take advantage of the opportunity to visit the site. Our party went on to Bedford Purlieus NNR where we tagged on to a joint BENHS/Plant Gall Society field meeting. Here, we noted the crane fly *Dictenidia bimaculata* (L.) and a very fresh *Volucella inflata* (F.). Some of us also watched the dragonfly *Libellula quadrimaculata* L., which was initially mistaken for a hornet, thus raising the question of whether *L. quadrimaculata* is a hornet mimic – a distinct possibility given that hornets are quite abundant in this area. Finally, the remaining members of the party descended upon Old Sulehay Forest SSSI where we noted the crane flies *D. bimaculata* and *Nephrotoma crocata* (L.).

When the meeting at Durham was booked, we were unaware of the coincidence of our meeting with both the Durham Festival and Miners Gala on consecutive weekends. This gave us some problems as Durham is a difficult place to park and this was made very much more difficult by the festivities when the City was closed to vehicular traffic. These difficulties failed to dampen our spirits, especially as our hosts were quite excellent and the accommodation was as good as we have had anywhere. Regrettably the weather was poor for the first five days, with one day completely washed out and other days rendered difficult. Nonetheless, the nearby Durham coast proved a great lure and yielded a series of important records, including a species of *Microphor* (Empididae), new to Britain. Wet weather meant

that various members of the group visited the hothouses at Durham Botanic gardens where they took a species of *Scaptomyza* (Drosophilidae) that appears to be new to Britain. Other highlights included the hoverfly *Mallota cimbiciformis* (Fallén) at Thrislington Plantation NNR, the rhagionid *Chrysopilus erythrophthalmus* (Loew), a variety of interesting soldier flies (Stratiomyidae) including *Oxycera morrissi* Curtis, *O. nigricornis* Olivier, *O. pulchella* (Meigen) and *O. rara* (Scopoli) the coastal cliff seepage crane fly *Idiocera bradleyi* (Edwards) and the empid *Heleodromia irwini* Wagner. At the end of the week the weather broke into sunshine and we visited the Pennines en-masse. Upper Teesdale NNR proved to be an absolute delight with fine weather and plenty of insects. Here *Tachina grossa* (L.) was noted in numbers – it is a parasitoid of lasiocampid larvae and was almost certainly associated with the Northern Eggar *Lasiocampa quercus callunae* Palmer, males of which were abundant. A further noteworthy record was that of the Lunar Hornet Clearwing *Sesia bembeciformis* (Hb.), which was taken at a patch of *Salix* adjacent to an upland stream.

The autumn field meeting on the Isle of Wight attracted rather fewer members than in previous years, possibly because the ferries to the island are amongst the most expensive in the world. Conditions were not ideal, with high winds and for the most part overcast and damp weather. However, the meeting was a considerable success, yielding ten species of Platypezidae including *Paraplatypeza bicincta* (Szil.) and *Platypeza hirticeps* Verrall plus *Opetia nigra* Meigen (Opetiidae). Other unusual records included *Lonchoptera scutellata* Stein at America Wood, the crane fly *Dicranomyia goritiensis* (Mik) (a cliff seepage specialist with attractive spotty wings) from Whale Chine and a number of records of the tachinid *Siphona geniculata* (DeGeer). Alan Stubbs also found a woodland seepage site that is not currently SSSI but which would represent an important contribution to the series because seepages are a very rare habitat on the island. A particularly surprising record was a male of the calliphorid *Stomorhina lumata* (F.) at St Catherine's Point, which is a locust egg pod parasitoid regarded as a vagrant that usually turns up at the same time as "locust years" – has anyone else recorded it in 2005?

Data from these three meetings will be assembled over the next year and will be reported upon in more detail in reports for site owners, English Nature and the wildlife trusts that granted access permission. Meanwhile, the Forum is at last making progress on assembling data from previous meetings. Datasets for the past three years' summer field meetings (Wiltshire, Suffolk and Muir of Orde) have largely been computerised and will ultimately be lodged on the National Biodiversity Network website. Meanwhile, organisation of the 2006 programme is ongoing. The Forum will be visiting Herefordshire (13–14.v.2006), Sussex (24.vi., 1.vii.2006) and Radnorshire (18–22.x.2006). Details of these meetings, including updates, can be found on Dipterists Forum website www.dipteristsforum.org.uk. BENHS members are most welcome to join us.

THE SOCIETY'S PUBLIC LIABILITY INSURANCE

In 1997 the Society extended its third party liability insurance for cover in respect of official Society events to include field work carried out by members as part of their personal activities. It was expected that this would cover the insurance obligations, which accompany applications for collecting and recording permits in many cases.

The Society has received a number of queries regarding the scope of the cover provided and this notice will hopefully clarify the position.

At events arranged by the Society and its sister organisations, Dipterists' Forum, BMIG, and BWARS, public liability insurance is in place which covers injury and damage to third parties arising from the activities of members and guests. Events include both field meetings and indoor events such as workshops and exhibitions. The cover provided is £5,000,000. It is important that permits for field meetings are issued in the name of the Society, or sister organisation, or to an individual on behalf of the Society, not in the name of the leader of the meeting.

The Society's insurance policy also provides £5,000,000 of public liability insurance to individual members of the Society and sister organisations, in respect of their own field work and entomological research which is not part of a Society activity, providing this is undertaken in the United Kingdom and is not carried out with a view to financial reward.

Members who are contemplating carrying out field work on a paid basis are specifically excluded from this cover. We have now procured an arrangement by which such members can approach our brokers directly to obtain individual third party liability cover under our policy. This will incur the payment of an additional premium by the member concerned. We understand this will result in a very marked saving compared with obtaining this cover through a fresh policy.

We must emphasise that the cover referred to above is Public Liability Insurance and does not include Professional Indemnity, for which separate arrangements have to be made.

The Society's insurance policy number is,

Royal Insurance H2/RKE274258-7.

Our brokers are,

John Ehrhardt
Lansdowne Insurance Brokers
Bracken House
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Bournemouth, BH1 3NJ
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