Hoverfly Newsletter

No. 5 - May 1987

Graham Rotheray has taken over the job of compiling and editing the Newsletter from Philip Entwistle. All recording scheme members and hoverfly enthusiasts everywhere owe a debt of thanks to Philip for so ably editing the Newsletter over its first few issues and for contributing so much himself to both the Newsletter and recording scheme. Philip's increased workload at the Institute of Virology in Oxford has necessiated this change. In the future, contributions (by 1 September for the next issue please) should be sent to:

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At the same time, in acknowledgement of the fact that the scheme is doing so well and likely to expand, it has been decided to set up a network of 'local advisors' rather than burden one 'national scheme organizer' with the task of carrying the recording scheme forward. Advisors will check and forward records to BRC so would **everyone please note** the name and address (overleaf) of your nearest local advisor and send records to him/her.

CONTENTS

LOCAL ADVISORS

Ireland	Dr M C D Speight, Forest and Wildlife Service, Research Branch, Sidmonton Place, Bray, Co Wicklow, Eire.
Scotland	Graham E Rotheray, Royal Museum of Scotland, Chambers Street, Edinburgh EH1 1JF.
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Sorby area (Sheffield/ Derbyshire)	John Coldwell, 42 Norwood Drive, Barugh, Barnsley, S Yorks S75 1LP.
Yorkshire (rest of)	Peter Skidmore, Museum & Art Gallery, Chequer Road, Doncaster DN1 2AE.
Lancs/Cheshire	Chris Palmer, Liverpool Museum, William Brown Street, Liverpool L3 8EN.
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London (LNHS area)	Colin Plant, 14 West Road, Bishops Stortford, Herts CM23 3QP.

Observations on Eristaline behaviour

Jon Heal, 24 Russell Street, Wolstanton, Newcastle-under-Lyme, Staffordshire

We all know that every species of hoverfly tends to be found in some habitats, and not others. There is usually something special about the behaviour of the adult insect that enables it to remain in a particular habitat. Simple observations of captive insects can, sometimes, reveal clues about these specialized behavioural mechanisms underlying habitat choice.

For example, when I was breeding Eristalis species, I noticed that where adults chose to rest in the cages overnight was quite significant. Eristalis tenax rested on the walls of the cages, usually as high up as possible, in the angle at the top, and often clustered together in groups. Eristalis intricarius was sometimes on the walls, but also frequently clinging to flowers or other vegetation in the cages. Eristalis arbustorum showed few signs of any preference and so was more likely to be on the floor of the cage.

These simple observations make sense ecologically. E. tenax is more or less an urban species, often found near buildings, and it hibernates in crevices in walls, as well as in natural caves. Clustering together is presumed to be an advantage to hibernating adults. E. intricarius is more likely to be present around bushy vegetation, whilst E. arbustorum has a more widespread (ecological) distribution than the other 2 species.

Note also that flies that choose to perch on leaves rather than walls will experience a more humid environment - at least while the sun is shining! I did indeed find that E. tenax was easiest to breed in cages with netting covers and so a fairly low humidity, whilst E. intricarius had better survival and reproduction in plastic containers with a much more humid atmosphere inside.

On another subject, concerning behaviour, most of the published statements on the mating tactics of Eristalis species are incorrect. Species are often misidentified especially in the field (eg E. tenax and E. pertinax) (see notes by D Iliff and N Frankel below - Ed) and behaviour can also be misunderstood when judged out of context.

Hovering is most important in larger species at woodland edges and similar habitats (E. pertinax, E. intricarius). This gives a headstart in chasing passing females, but uses up a large amount of energy - and note that most passing objects are not receptive females! In cooler weather this behaviour is limited to darting out at nearby insects from a perch such as a bush. Smaller species tend to search for females on patches of flowers; bramble bushes are often chosen. Curiously, E. tenax males spend very little time pursuing females, although the fact that females only need to mate once will put a premium on detecting unmated females rather than wasting energy in fruitless chases.

The very distinctive behaviour of Eristalis nemorum is shown at the front of Stubbs & Falk's "British Hoverflies". To my own knowledge, it is only E. nemorum males that hover 1-2 cm above a feeding female for a long period of time, sometimes a minute or so. (Does anybody know about E. rupium? It could be similar.) Males only attempt to mate with the female when she is in flight after leaving the flower. They will dive at the female in an attempt to disturb her if she feeds for too long. E. arbustorum males are neither so patient, nor so discriminating; they tend to patrol an area of flowers in a rather wasp-like manner, sometimes diving towards feeding insects, and occasionally following and alighting by a likely female. E. horticola can

behave in a similar way, although their courtship is more flexible; some males dart out at insects from a bushy perch, and may also hover for short spells nearby.

Once you can reliably identify each species in the field, it is worthwhile looking at their mating behaviour. It is a suitable study for the fair weather entomologist because most Eristalis species cease any signs of courtship as soon as the sun goes behind a cloud!

Eristalis tenax - field recognition

Norman Frankel, Penymynydd, Pwllglas, Ruthin, Clywd LL15 2PD

In the book, "British Hoverflies", Stubbs and Falk mention that field recognition is by way of a thick black band across the face, up to a third of the width of the face.

In many circumstances Eristalis tenax moves too quickly to see the width of the black band across the face. Even if the hoverfly is obliging enough to wait, it is often scared off whilst leaning over to see the face!

A reliable feature that I have found whilst at home and in the field is the remarkable thickness of the hind tibia, compared to those of other Eoseristalis species, except E. intricarius which has a white band on the tibia.

Food plant choice in Eristalis tenax and Eoseristalis pertinax

David Iliff, Green Willows, Station Road, Woodmancote, Cheltenham, Glos GL52 4HN

When writing to members of the hoverfly recording scheme a few years ago, Philip Entwistle commented on the dearth of records of the very common species Eoseristalis pertinax. I suspect that since the publication of "British Hoverflies" and the consequent increased momentum of the scheme, this deficiency will largely have been remedied, but I remember wondering at the time whether E. pertinax was suffering from being overlooked because of its close resemblance to that most publicised of hoverflies, Eristalis tenax.

Popular general books on insects (as opposed to specialist works on Diptera) will almost always, if they contain illustrations of hoverflies at all, include a picture of E. tenax. After all, it is something of a gift for an author writing for a non-specialist readership: unlike most syrphids it has an officially accepted popular name (the drone fly), it is a very good mimic of perhaps the best known insect of all (the hive bee), and, of course, there is always the Samson story to refer to. In such books there will be a severe limitation on the number of hoverfly illustrations that can be included, and therefore, if as wide as possible a cross section of the family is to be features it follows that if E. tenax is included, pertinax should not be. I recently did an ad hoc survey of 10 or so popular insect books; of these all had illustrations purporting to be E. tenax; in 2 cases however the illustrations so captioned were in fact photographs of pertinax, and one other was a photograph of Volucella pellucens! No book contained illustrations of pertinax (except the above 2 instances where the species was misidentified as tenax). Yet the 2 species would appear to be about equally common in this country.

Eoseristalis pertinax is however far more than a mere drone-fly lookalike but with orange front and mid tarsi and plumose arista. In nearly all cases it can be instantly distinguished without the need to examine those features: the abdomen shape tends to be different (triangular or carrot shaped rather than ovate), and the pattern and colour of the abdominal markings are usually distinctive; in the case of pertinax, the yellowish abdominal markings are usually of a dull gold shade and confined to tergite 2, while in tenax the markings tend to be a warm orange and often extend to tergite 3 also.

In my view however, the most interesting distinction between the species is the difference in their choice of food plants. E. tenax seems to have a preference for yellow, orange and red flowers (ragwort is especially popular), while pertinax favours white flowers, particularly white umbellifers (such as hogweed, wild carrot and angelica) and meadowsweet. Pink and mauve flowers seem to attract both species in approximately equal numbers. On a disused railway track in Gloucestershire I have seen ragwort flowers covered with Eristalis tenax, with only occasional pertinax, while the reverse was true on adjacent clumps of wild carrot. This difference in choice of flower does not appear to be simply related to colour (at least as perceived by the human eye): I have a white buddleia in my garden, which attracts Eristalis tenax in quantity but is largely ignored by pertinax.

An early record for Eristalinus aeneus

Derek Whiteley, City Museum, Weston Part, Sheffield S10 2TP

My first hoverfly record last year was not Eristalis tenax, Episyrphus balteatus or even Melangyna lasiophthalma, as in previous seasons, but a species I had formally known only on the south coast of England, namely Eristalinus aeneus. On 30 March 1986, I found a very drowsy specimen resting on a raptor pellet, at the top of a shingle beach by the entrance to King's Cave, Isle of Arran, Scotland. Presumably this attractive hoverfly had overwintered as an adult in the cave. Obviously, spiders, as the Robert the Bruce legend has it, are not the only inhabitants of King's Cave!

[Hartley, 1961 Proc. Zool. Soc. Lond., **136**, 505-573 states that adults of this species have been found overwintering in buildings. The only other related species that overwinters as an adult (in caves and similar sites) is E. tenax (Kendall & Stradling 1972 Entomologist, **105**, 229-30). These authors record that few males overwinter and that most overwintering females are already fertilized. Perhaps the advantage is that it allows them to start egg-laying earlier than potential competitors? Most other Eristalines overwinter as third stage larvae (Hartley loc. cit.). - Ed]

Discovering a hoverfly new to Britain - the easy way!

K R Watt, Department of Zoology, University of Aberdeen, Tillydrone Avenue, Aberdeen AB9 2TN

While sitting comfortably in the lab checking through a collection of local hoverflies donated to Aberdeen University Natural History Museum by a former student, Susan M Swift, I came across a large specimen resembling Metasyrphus or a Scaeva. It came out in Stubbs & Falk as Scaeva pyrastri but something was not right - its eyes were bare. On re-checking I was pleased to find that the specimen was in fact Metasyrphus lundbecki (Soot Ryen), a European species new to Britain. The specimen, a male, was taken on Rowan by Susan on 4 August 1976 at Grandholm Moss, a wet heathland just north of Aberdeen. Steven Falk, who has confirmed my identification, will be publishing a note on this find in due course.

[Ken is organizing a field meeting on 28-30 August this year in the Aberdeen area. Visits are planned to include the poorly known coastal sites where M. lundbecki was found. Details from Ken. - Ed]

Neoascia unifasciata (Strobl 1898) : could it be in Britain?

Alan Stubbs, NCC, Northminster House, Peterborough PE1 1UA

This species has recently been redescribed on the continent (Barkemeyer W & Claussen C, 1986 Bonn Zool. Beitr., 37, 229-239). The abdomens and heads of both sexes, and the male genitalia of all west European species are illustrated.

N. unifasciata has clouded outer cross-veins and the third antennal joint is elongate (short in interrupta). Hence it would run to couplet 3 in Stubbs and Falk (p 93). However, unifasciata lacks markings on tergite 2 (normally present in obliqua and podagrica). Tergite 2 is stout and scarcely waisted, this being especially obvious in the female where the tergite is very broad. These characters give a good lead but obviously a more critical check is required if you find a possible specimen.

This species is now recognized from the highlands of Holland, Belgium, N Germany and the Alps. In N Germany (Harz Mountains) it was found in a valley at 400 m with a small artificial lake and brooks, both surrounded by Petasites. In Holland it is found associated with chalk steams (pers. comm.).

There is a fairly good chance that this species occurs in Britain. The most obvious areas are chalk and limestone streams; the Cotswolds would seem a good bet, also the Chilterns and the North Downs around Folkestone. The limestone valleys with Petasites in the Peak District (Derbyshire) and the Pennines would also be hopeful areas. The calcareous districts in Wales seem promising, too. Anyway, you've got the idea, so let's see if 1987 can place unifasciata on the British list.

Adaptation or over reaction? - responses of Platycheirus fulviventris females to varying levels of prey

John Dobson, School of Applied Biology, Lancashire Polytechnic, Preston

In June 1986, I was fortunate in being able to make a series of observations on oviposition in the uncommon hoverfly, Platycheirus fulviventris which was flying in some numbers at Chippenham Fen, Cambridgeshire.

I saw females ovipositing next to colonies of the mealy-plum aphid, Hyalopterus pruni on reed sweet-grass, Glyceria maxima, which is one of this aphid's summer foodplants. Quite independently, in Scotland, Graham Rotheray was also studying this hoverfly and, comparing our data, some interesting points have emerged concerning the response of this hoverfly to low numbers of available prey. We shall be publishing our results more formally in due course but here, in summary, are our main findings.

The aphid colonies I saw in Cambridgeshire were smaller than those in Scotland. Scottish colonies occurred in the size range 1-100+ aphids with about 25% comprising over 50 aphids. The ones at Chippenham Fen were in the range 1-30, with colonies of 50 aphids or more very rare.

The first interesting finding was that this hoverfly lays its eggs side by side in batches varying from 2-30+ eggs each. One of the 'problems' a P. fulviventris female has to face is how big to make each egg-batch. In Scotland, where aphid colonies were more abundant and larger, egg-batches tended to be laid next to the largest colonies with a corresponding tendency for egg-batch size to increase with aphid colony size. Small aphid colonies, comprising less than 10 aphids, had no batches laid next to them at all. This behaviour is obviously adaptive in the sense that most eggs are laid where there are most prey.

In contrast, at Chippenham Fen, not only were egg-batches much larger, with up to 30 eggs per batch compared with 2-8 eggs per batch in Scotland, but these huge batches were laid next to small aphid colonies. Frequently, egg-batches were larger than the associated aphid colony! Clearly the relationship between egg-batch size and colony size had broken down.

In Scotland, out of 238 aphid colonies studied only 33% had egg-batches associated with them suggesting that oviposition sites, ie aphid colonies, were not a limiting factor. However at Chippenham Fen, nearly every colony (95%) had an attendant egg-batch suggesting that aphid colonies were in short supply.

The incubation time for P. fulviventris eggs is in the range 48-72 hours. The generation time of the aphids shows a close temperature dependence; each viviparous female might produce about 30 young over a 2-week period and each of these would take about 2 weeks to mature. So, at Chippenham Fen, one cannot easily balance the predator-prey numbers by extrapolation and it seems likely that there were a lot of hungry P. fulviventris larvae!

What had caused the behaviour change at Chippenham Fen? Presumably the fact that aphids were in short supply; but why did females lay such large egg batches given the high probability that many offspring were doomed to die? Couldn't females migrate or attack other aphids? The answer to these latter 2 questions seem to be no. Female P. fulviventris only oviposit among H. pruni aphids. Larvae were successfully reared on other aphid species in the laboratory, but eggs or larvae were never found among other aphids in the field despite their close proximity. This suggests that female oviposition behaviour lies behind the specificity of P. fulviventris for H. pruni. It is also a marshland specialist in terms of the habitats in which it is found, so the places it can migrate to are limited. Thus when H. pruni aphids are scarce, female P. fulviventris have few options and respond by ovipositing large batches of eggs at every aphid colony encountered.

The problem remains, however, can the oviposition of large batches of eggs be adaptative, or is it an over reaction on the part of stressed females? We have no answer yet, but batching of eggs in other aphidophagous insects is well known and interpreted as a survival tactic - larvae can resort to cannibalism ensuring that at least one or two survive.

Neither Graham or I was able to investigate whether cannibalism took place. Unfortunately I will be unable to revisit the site this year, although I will stick my neck out and make one small bet; and that is, the situation I glimpsed last year was unsustainable, and that anyone visiting Chippenham Fen this summer will find few small egg-batches laid close to large aphid colonies. Any takers?

Identifying female Parhelophilus - a clarification of key characters

Colin Plant points out in a recent letter that following problems encountered by him in identifying P. consimilis, couplet 4 in Stubbs and Falk p 100, needs

to be rewritten to take account of a dark ventral patch at the tip of the fore tibiae in P. frutetorum and P. versicolor. The couplet would be better phrased

4. Front tibiae with an obvious black patch on the dorsal surface at the apex; face profile extended well forwards - consimilis

- Front tibiae without a dark patch in this position but usually with a darkened ventral patch, otherwise tibiae entirely yellow - 5

Colin also says that female consimilis appear to have dark hairs on the eye margin, as in female frutetorum, which further enables the females of these 2 species to be separated from versicolor.

Xanthandrus comtus reared from a larva

Colin Plant, 14 West Road, Bishops Stortford, Herts CM23 3QP

Whilst leading an entomological meeting for the Kent Field Club near Shoreham on 2 August 1986 I found a small bright green syrphid larva resting motionless in the centre of the upper surface of a hogweed leaf (Heracleum sphondylium). Since I did not recognize the species I decided to bring it home to try and feed it up, half expecting it to die in the rarified atmosphere of my east London garden. By the following day however, it became apparent that the beasty had not moved, and was quite obviously ready to pupate. By 5.30 in the evening of 4 August pupation was complete, the pupa being the same bright green colour of the earlier larva. After 2 further days however, this colour was lost and although the overall hue was still greenish, it became progressively more blackish until suddenly, on the fifth day after pupation, an adult hoverfly, clearly holoptic and with paired yellow spots on tergites 2-4, was clearly visible through the puparium. Over the next 2 days the features became more clearly defined, and the yellow spots on tergites 3 and 4 became joined at the leading edges to form partial bands. The adult male Xanthandrus comtus finally emerged at around midday on 11 August, after 7 days as a pupa. No doubt I am not the first person to raise this species in this manner, but the facts may nevertheless be of some interest - even if only to cause an influx of dipterists to Shoreham!

[Mr M C Brian (1 Trevelyans Green, Trinity Fields, Stafford ST16 1LJ) tells me he recorded a male X. comtus on 19 September 1986 on Cannock Chase, Staffs. Did anyone else record this species in 1986? Is it making a come back after a long period of relative absence? - Ed]

Book review: Hoverflies Naturalist's Handbooks 5 by Francis S Gilbert. Cambridge University Press. £15.00/£4.50.

Francis Gilbert is probably well known to most hoverfly enthusiasts from his talks on hoverflies at the annual Dipterists' Meetings. He is currently lecturer in zoology at Nottingham University. His book gives us a thorough but easy-to-read account of ecological and behavioural aspects of hoverflies and shows how simple, inexpensive techniques and observations can be made to yield new and worthwhile information. For anyone not used to carrying out biological investigations this is a perfect place to learn the ropes. With knowledge of hoverfly biology at such a rudimentary level this book should give a badly needed thrust to the study of hoverflies. Steven Falk has done the colour plates and some very good black-and-white illustrations.

Recent publications on hoverflies

ALLEN, A.A. 1985. A colony of Anasimyia interpuncta Harris (Dipt., Syrphidae) on the Thames Marshes. Entomologists' Rec. J. Var., **97**, 85-86.

GILBERT, F.S. 1985. Diurnal activity patterns in hoverflies (Dip., Syrphidae). Ecol. Ent., **10**, 385-392.

GILBERT, F.S. 1986. Hoverflies. Naturalist's Handbooks 5. Cambridge: Cambridge University Press.

HANSON, M. 1985. A provisional list of the larger Brachycera, Syrphidae and Conopidae of the Epping Forest area. Proc. Trans. Br. ent. nat. Hist. Soc., **18**, 37-48.

MCLEAN, I.F.G. 1986. Pipizella maculipennis (Meigen) (Dipt., Syrphidae) found in Gloucestershire. Ent. mon. Mag., **122**, 5.

PLANT, C.W. 1986. A further colony of Anasimyia interpuncta Harris in the Thames Estuary area. Entomologists' Rec. J. Var., **98**, 22-23.

ROBERTSON, D.M. 1986. Some hoverfly (Dipt., Syrphidae) records from Scotland. Ent. mon. Mag., **122**, 208.

ROTHERAY, G.E. 1986. Colour, shape and defence in aphidophagous syrphid larvae (Diptera). Zool. J. Linn. Soc., **88**, 201-216.

ROTHERAY, G.E. 1986. The larva and puparium of Epistrophe grossulariae (Meigen) (Dipt., Syrphidae) with a note on overwintering behaviour. Ent. mon. Mag., **122**, 215-218.

SPEIGHT, M.C.D. 1985. Adjustments to the Irish hoverfly list (Diptera : Syrphidae). Ir. Nat. J., **21**, 385-391.

SPEIGHT, M.C.D. 1986. Cheilosia nasutula, Neocnemodon vitripennis and Parasyrphus nigritarsis: hoverflies (Dip., Syrphidae) new to Ireland. Ir. Nat. 5, **22**, 149-152.

SPEIGHT, M.C.D. 1986. Cheilosia argentifrons (Dip. Syrphidae) new to Ireland : Donacia cineria (Col., Chrysomelidae) and Palloptera muliebris (Dip., Pallopteridae), presence in Ireland confirmed. Ir. Nat. J., **22**, 159-160.

SPEIGHT, M.C.D. 1986. Portevinia maculata: last instar larva and puparium, with notes on the relationship between this hoverfly and its larval host plant, Allium ursinum (Diptera, Syrphidae) Nouv. Revue. Ent., **3**, 37-43.

THOMPSON, F.C. & TORP, E. 1986. Synopsis of the European species of Sphegina Meigen (Diptera : Syrphidae). Ent. scand., **17**, 235-269.

Field meetings

Dumfriesshire. 13-14 June. Meet Glencaple Hotel (south of Dumfries) Friday evening. Details from Graham Rotheray on 031 225 7534.

Derbyshire, Cromford Canal. Meeting High Peak Junction car park (SK 315561) on 19 July at 10.30 am. Details from John Coldwell on Barnsley 387025 (after 6 pm).

Aberdeen, 28-30 August. Details from Ken Watt on 0224 48021 ext 6413.